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# ARMY AL&T

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JULY-SEPTEMBER 2014

## TRAINING+ FORCE READINESS

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DIMOC uses a unique  
contract strategy to get  
images online

**A LEG UP**  
A Soldier invents his  
own prosthesis so he  
can run again

**'DIGITAL DIRT'**  
PEO STRI creates virtual  
'real estate' for training  
with LVC-IA



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or  
[armyalt@gmail.com](mailto:armyalt@gmail.com)

Mailing Address:  
DEPARTMENT OF  
THE ARMY  
ARMY AL&T  
9900 BELVOIR RD.  
FORT BELVOIR, VA  
22060-5567

# From the Editor-in-Chief

Three decades ago (gasp!), when I first joined the Army, we conducted training pretty much the same way it had been conducted all the way back to colonial days: massive classroom and group instruction, and massive field deployments for maneuvers to train and evaluate Soldiers on weapons, logistics and doctrine. While weapons and doctrine were changing at a rapid rate, training methods lagged far behind and were reminiscent of the group instruction and mass deployments of a bygone era.

Early in my career, I saw the beginnings of what are now distributed learning, virtual classrooms and simulation training. At that point, the only way you could train without going to the field or the classroom was to watch TEC Tapes on various subjects in the library (how to dig a foxhole was my favorite!) or get correspondence courses in the mail. (Command and General Staff College, anyone?) Virtual reality was either a movie or a good book.

Fast forward to the present day. In line with Moore's Law, which predicts that processing power for computers will double every two years, we have witnessed an unprecedented increase in the rate of technological change not seen since the dawn of the industrial age, dramatically altering how we train and prepare forces for combat. The geometric increase in computing power, the proliferation of smartphones and the omnipotent Internet have fundamentally shaped how we communicate, what we communicate and, increasingly, how we learn.

Today, America's Army is widely recognized as the best ever fielded, and the Army Acquisition Corps is responsible for equipping our Soldiers with the best in cutting-edge technology—including training systems. The Army Acquisition Workforce effectively manages more than 600 programs that are vital to success in combat, from the MQ-1C

Gray Eagle Unmanned Aircraft System to Interceptor Body Armor. Taking a requirement from the U.S. Army Training and Doctrine Command and turning it into a useful system is long, hard, painstaking work, not to mention developing technologically advanced training that will motivate the newest generation of smartphone-wielding, video-game savvy Soldiers to master the system for success in the real fight.

Those same acquisition experts create the enabling products and services that train Soldiers. After all, the best system is of little use if Soldiers cannot readily learn how to employ it to perform their mission. Without proper training, the system will not function properly, nor will it integrate properly with other systems, and Soldiers' lives may be at stake.

This issue has numerous articles not only on cutting-edge programs that Army Acquisition Corps members are working on, but also the training systems in place to ensure the transition from concept to reality. Check out "Training on the Virtual Net" to see how program managers for the Warfighter Information Network – Tactical are leading the transformation of classrooms into cost-effective paperless environments with global access. Learn how limited training space expands in cyberspace to accommodate many more Soldiers in "Digital Dirt," thanks to the technology behind the Live, Virtual, Constructive – Integrating Architecture. Finally, read about future training technologies in RDECOM Director Dale A. Ormond's commentary, "Shaping Systems to the Soldier," as the Army ventures into the age of customized, interactive training using human systems integration and human factors engineering.

As always, if you have comments about this issue or ideas for future issues, please don't hesitate to contact me at [armyalt@gmail.com](mailto:armyalt@gmail.com). Happy reading!

**Nelson McCouch III**  
*Editor-in-Chief*



# ARMY AL&T

JULY–SEPTEMBER 2014

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For more than a decade, the U.S. Army has had serious on-the-job training in theater. As that comes to an end, the Army still needs to train and prepare for the conflicts of the future, even as budgets are slated for decline. To meet the needs of future missions, the Army is beefing up its capabilities in virtual, simulated and constructive training, and integrating those capabilities with live training.



## THE HONORABLE HEIDI SHYU

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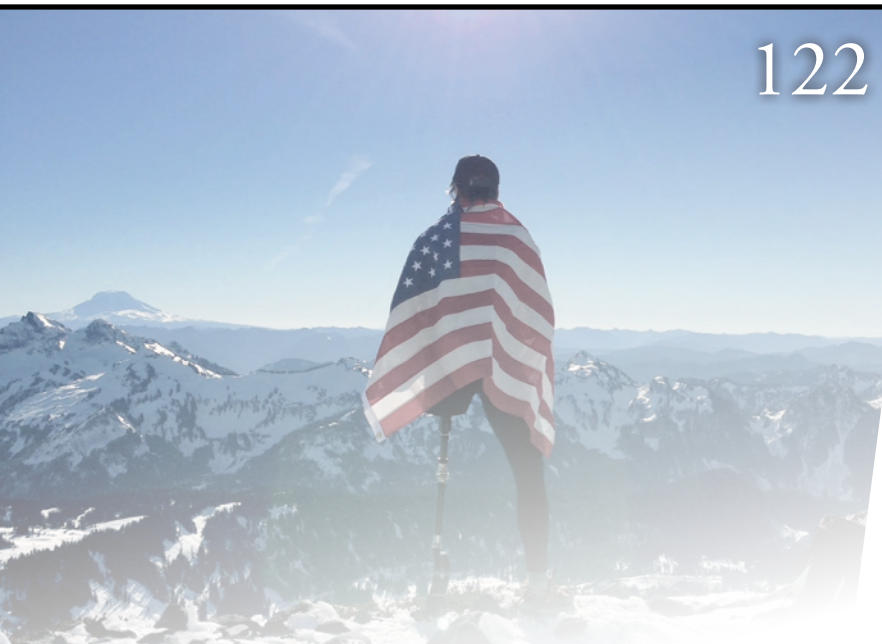
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Administrative Assistant to the  
Secretary of the Army  
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## CORPORATE IMMERSION

MAJ Anthony Leach, then a TWI officer assigned to the Airbus Group, confers with Stacie Hunnell, senior contracts administrator, in his office at Airbus Defense and Space Inc. TWI, developed in the 1970s, exposes midlevel acquisition officers to the managerial techniques and procedures of corporate America, with the ultimate goal of bringing industry best practices back to the Army. (Photo by Melissa Johnson, Airbus Group)







FROM THE AAE

FROM THE ARMY ACQUISITION EXECUTIVE  
THE HONORABLE HEIDI SHYU



FROM THE AAE

# Train for the **CHALLENGE**

Wealth of opportunities makes acquisition  
one of Army's top career fields

**W**hen it comes time for Soldiers to choose a specialty in the Army, they often weigh personal interests, educational background and civilian career prospects. The acquisition career field is consistently among the most popular paths. The opportunity to hone skills valuable in both the private sector and the military is one reason there are generally more individuals pursuing acquisition than the number of positions available.

Meanwhile, many of our Army civilians apply to competitive internships and other educational programs to develop their skills as acquisition or contracting specialists. Acquisition attracts mission-driven professionals who want to apply business skills to saving the lives of our Soldiers. Developing products and services that protect Soldiers as they, in turn, protect Americans is the most rewarding aspect of this work for me and many acquisition professionals—both military and civilian. We continue to have our pick of the best and brightest talent, but we cannot rest on our laurels.

The Army Acquisition Workforce is a learning organization filled with knowledge workers, those who work primarily with information or who develop and use knowledge in the workplace. I

challenge every member of the workforce to take advantage of the many unique training opportunities available to enhance their professional skills. Equipping the U.S. Army is a tremendously complex endeavor. An acquisition professional must devote years to gaining the experience, education and training necessary to successfully manage a multibillion-dollar program, which is no small feat.

The Army of today is developing many of the most technically advanced systems and technologies in human history. There is no cookie-cutter approach to acquisition. While we focus on some of its inherent challenges—cost, performance and schedule risks as well as funding instability—it is worthwhile to note that we continue to succeed in fielding the best-equipped Army in the world. However, moving the world's largest land force forward requires an ongoing commitment to learning and innovation.

## INNOVATIVE TRAINING

Training is one driver of the popularity of acquisition as a career. We offer classroom, online and multiple on-the-job training opportunities. One program that I would like to highlight is **Training with Industry** (TWI). Developed in the 1970s, TWI is a work-experience program providing long-term, daily exposure



## EXEMPLARS OF EXCELLENCE

Members of the 2011 CDG/AAF gather May 19 at the Defense Acquisition University on Fort Belvoir, VA, during a graduation ceremony hosted by the Army Director, Acquisition Career Management (DACM) LTG Michael E. Williamson, center. Representing the U.S. Army Acquisition Support Center (USAASC), which administers the program, at the ceremony were Tom Evans, left, chief of USAASC's Workforce Management Division; Giselle Whitfield, third from left, program manager; and Craig A. Spisak, right, USAASC director. (Photo by Stephanie Watson, USAASC)

to managerial techniques and industrial procedures within corporate America, with a particular emphasis on firms in the defense and information technology sectors. The earliest students focused on training for careers in materiel acquisition and logistics management. Today, the Army's program supports career paths in public affairs, physical security and finance as well as acquisition. The Army benefits from developing a cadre of Soldiers trained in state-of-the-art management techniques and possessing deep knowledge of our industrial base.

The Army Acquisition Corps offers this assignment to highly motivated and skilled officers in the ranks of major and lieutenant colonel. Each applicant for the

125 TWI positions throughout the Army, 10 of those within the Acquisition Corps, must meet prerequisites. Candidates are awarded TWI positions after a review of their personnel records. Our Soldiers work with many of the most innovative private companies in America, including FedEx, General Dynamics, Google and Microsoft. Participants then return to acquisition and contracting roles with a deeper understanding of our industry partners and new techniques for addressing our shared challenges. (See related articles starting on Page 128.) TWI alums interact directly with our industry partners and often can benchmark Army performance based on industry standards. The training received in TWI assignments is not generally available

through the military school system or civilian university system.

A significant part of the program's value comes from the fact that we do not really build anything in Washington. Rather, every end product relies on the diligence and hard work of people across America in the organic and commercial industrial base. Our ability to thrive in the current environment of declining budgets depends on improved collaboration with industry and adoption of the lean, agile methods of the private sector.

While TWI trains young officers in Army acquisition to leverage current private-sector trends, the **Competitive Development Group/Army Acquisition Fellowship** (CDG/AAF) provides opportunities for midcareer civilian professionals. Established in 1997, the three-year program helps to strengthen the leadership and management skills of our most promising civilian Acquisition Corps members. To date, 196 civilians have completed the program. More than 100 graduates have been promoted to GS-14 or GS-15, and three now serve our country as members of the Senior Executive Service.

Civilians also have the opportunity to learn fundamentals of leading a military organization in the **Defense Acquisition University's Senior Service College Fellowship** (SSCF). The purpose of SSCF is to train GS-14s and GS-15s for senior leadership roles, including program managers, program executive officers and other key acquisition positions. After completing the program, each participant is assigned to a position of greater responsibility. SSCF meets a current need for increased civilian leadership training while leveraging talent already developed in the Army Acquisition Corps. SSCF has been recognized for its excellence in career development and is a great example of the outstanding





training and skills that Army acquisition offers as a career.

## CONCLUSION

Discussing the acquisition career path and its impact on equipping Soldiers offers me an appropriate opportunity to welcome my new principal military deputy (PMILDEP), LTG Michael E. Williamson, back to ASA(ALT). In his most recent assignment, Michael served as deputy commanding general for the Combined Security Transition Command – Afghanistan. Now he returns to serve as the most senior military officer working in Army acquisition and our director of acquisition career management. (Read his first “From the DACM” column on Page 112.)

I have had the pleasure of working with Michael since his days as a colonel serving as the deputy program executive officer for integration, and recognized his tremendous talent even then. His distinguished career has also included service as chief of information technology, acquisition career management and director of systems integration within ASA(ALT); a Congressional Fellow; and acquisition military assistant to the secretary of the Army. He also skillfully led the fielding of the Handheld, Manpack, Small Form Fit (HMS) Rifleman Radio in combat to the 75th Ranger Regiment in Afghanistan.

Michael has led acquisition-building teams everywhere the Army operates around the world. He comes to the PMILDEP role in a time of declining resources, and his depth of acquisition experience, strategic thinking and well-regarded leadership skills will be invaluable assets. Decisions made when resources are most limited determine how capable the Army will be when it is most challenged by the next contingency. Michael is just the man for the job, and our Soldiers deserve nothing less.



## CALLED TO SERVE SOLDIERS

Soldiers of 3rd Squadron, 71st Cavalry Regiment, 3rd Brigade Combat Team, 10th Mountain Division (Light Infantry) (3-10 MTN) set up a command post May 4 in the Chamkani district of Paktia Province, Afghanistan. Developing products and services that protect Soldiers as they, in turn, protect Americans is the greatest reward of working in Army acquisition for many professionals. (U.S. Army photo by SGT Javier Amador, 3-10 MTN Public Affairs)



## OPPORTUNITIES FOR INTERNS

Dwayne A. Morton, Functional Area 51 Intermediate Qualification Course director at the Army Acquisition Center of Excellence, opens a U.S. Army Contracting Command (ACC) Mobile Training Team class session about hiring Army contracting interns. The team augments training opportunities that contracting specialists, including interns, need to obtain their Defense Acquisition Workforce Improvement Act certifications. (Photo by Edward G. Worley, ACC)



## ACQUISITION

# TRAINING BOOM

Suite of trainers for towed artillery systems  
blends realism, modularity

*by MAJ Daniel Cowling and Mr. Joshua Zawislak*

**E**ngineers from the U.S. Army Armament Research, Development and Engineering Center (ARDEC) and the Army's project manager for towed artillery systems (PM TAS) have been collaborating on an innovative training package that will take an avatar-based gaming approach to training for the M777A2 and M119A3 towed howitzers.

The current overseas conflict has required Soldiers and Marines to deploy for extended periods in nonstandard missions, without their howitzers and performing jobs outside their normal military occupational specialties (MOSs). While this flexibility has been essential to managing a complex conflict, often it has eroded the warfighters' core technical skills. This has been especially significant for the towed field howitzer community, for whom operation and maintenance of complex systems with both optical and digital fire control requires a high degree of technical proficiency.

This fact has not been lost on the U.S. Army Training and Doctrine Command capability manager for brigade combat team

fires (TCM BCT Fires), who received correspondence from multiple parties in the field concerning lost proficiencies for field artillery. The correspondence highlighted the need for a portable training product to help MOS 13B Soldiers and 0811 Marines maintain their core artillery proficiencies in any environment. PM TAS, which manages the M777A2 and M119A3 howitzers within the Program Executive Office for Ammunition (PEO Ammunition) and received responsibility for managing the effort, worked with the field artillery community and the ARDEC labs to develop the project's requirements and technical approach.

### SYSTEM COMPONENTS

The result is that the Army is putting together a suite of trainers to address individual, collective and institutional training needs. The new trainers will provide Soldiers and Marines an interactive review of the proper procedures for safely and accurately performing critical crew tasks. The trainers derive from a common base set of government-owned software, whose architecture allows for the use of additional modules to customize the training focus.





### VIRTUAL HOWITZER

TADSS interactive multimedia instruction software depicts the crew trainer for the digitized M777A2. The software runs a virtualized 3-D environment in which avatars representing crew members can operate the M777A2 howitzer and DFCS on a COTS PC. (Image courtesy of Joshua Zawislak, ARDEC)

At the core of this product line is a PC trainer that uses virtualization of tactical hardware to execute the same digital fire control system (DFCS) software that resides on the weapon platform. The PC trainer focuses on training operations for the chief of section and runs on a common commercial off-the-shelf (COTS) computer. The tactical software is packaged with an emulated environment and a user interface. The PC trainer user interface shows the tactical display and the howitzer via a 3-D model to simulate gun movement and firing.

The PC trainer extends into crew operational and maintenance training that uses 3-D game engines with a first-person, avatar-based task approach to critical MOS tasks. The product runs on COTS PCs with midrange graphics cards and

provides collective training over a network connection. It immerses Soldiers and Marines in a 3-D environment—both the vehicles and surrounding terrain—that they can navigate. The user can manipulate the avatar's hands to interact with the platform in the virtual world.

The system supports task-based training for single users on a stand-alone machine, and can be networked with up to three other users to provide collective training for howitzer crews. It embeds the PC trainer to provide the functionality of the tactical software and emulates the mechanical, electrical, hydraulic and other physics-based aspects of the weapon system.

Motion capture technologies capture howitzer crew tasks performed by military instructors. Artists re-create the tasks

digitally for the trainers using the instructors as the basis for the avatars that students will use. ARDEC's software engineers and its Gaming Interactive Technologies and Multimedia Team use 3-D scans to capture participants' faces, and then use the virtual rendering to create lifelike avatars in current Army and Marine uniforms. Synchronization of video footage simultaneously with the recorded motion capture footage ensures that the animations in the training products are accurate and realistic.

The operational and maintenance training is delivered in two configurations for sustainment and classroom training. The sustainment product, targeted to units outside of a classroom, provides training that is embedded with fielded units. The classroom configuration supports institutional training by adding instructor



## MISSION-FOCUSED

This trainer screen shot shows the gun crew working through a mission using the M777A2 training software. In this image, the chief of section, right, is verifying the projectile for a fire mission. The software runs on COTS computers, which partly addresses affordability concerns, as does the training products' use of government-owned, open-architecture software that incorporates existing tactical software. (Image courtesy of Joshua Zawislak, ARDEC)

control and monitoring to the sustainment configuration. A 3-D immersive trainer with content specific to multiple levels of maintenance is provided with the Lightweight Maintenance Desktop Trainer and Maintainer Computer Based Trainer. Scenario-based training, using maintenance forms and reports, leads a Soldier or Marine to perform the duties for remove/install, assemble/disassemble, troubleshooting and verification.

## TRAINING BENEFITS

The innovation reflected in the trainers is the modular architecture and design of the training aids, devices, simulators

and simulations (TADSS), separating the logic in external emulation from the game engine. The game engine is a thin user interface, and the interaction and behavior logic is allocated to external emulations. The architecture allows developers to independently change subcomponents' visuals, independent of the logic, between release versions. For example, swapping in a new box with a different size or shape to replace an aging box with similar characteristics, because of a weapon system configuration update, would require an update to the 3-D model, but the emulator for behavior of the box could remain the same. This architecture

approach addresses programmatic issues with updating the trainers to current weapon system configurations.

## REQUIREMENTS DEVELOPMENT

PM TAS, which manages the M777A2 and M119A3 Howitzers, and TCM BCT Fires, which is the user representative for the indirect fire community, refined requirements for the training products to reflect modernization of the weapons and changes in the force structure. The M777A2 Howitzer requirements derived from the joint U.S. Army, U.S. Marine Corps operational requirements





### SHOT OF REALITY

ARDEC's Gaming Interactive Technologies and Multimedia Team works with Army and Marine participants in July 2012 during a motion capture session involving operations of the M777A2 Howitzer. Military instructors act as avatar models for scenarios depicting various howitzer crew tasks. (Image courtesy of Joshua Zawislak, ARDEC)

document for the Advanced Towed Cannon System. The M119A3 requirements derived from the System Training Plan for the M119A2E1 Digitized 105 mm Light Towed Howitzer.

The core artillery tasks that form the basis for the 13B Crew Trainer are the result of collaborative efforts of the Master Gunners Division, the NCO Academy, the Field Artillery Marine Corps Detachment, TCM BCT Fires, Directorate of Training and Doctrine at the Fires Center of Excellence and PM TAS.

PM TAS and the product manager for self-propelled howitzer systems (PdM SPHS) in PEO Ground Combat Systems are using a common approach for training products for the M777A2 Howitzer, the M119A3 Howitzer, the M109A6 Paladin and the Paladin Integrated Management (PIM) vehicles. The M777A2 products will support the Army, Marines, Army National Guard and foreign military opportunities with Australia and Canada.

PM TAS has fielded the M777A2 PC Trainer for DFCS V3.1.1 and will field an updated trainer along with the

tactical software fielding of DFCS 4.1.1. The other trainer products for M777A2 and M119A3 are currently under development. PdM SPHS has fielded the Paladin PC Trainer and the Paladin Maintenance Trainer products. ARDEC is developing the PIM training products in parallel with vehicle development and will use them in new equipment training of the vehicle operations.

### CONCLUSION

Use of the PC trainers and the 3-D immersive crew and maintenance trainers promises not only to improve skills



## FIRED UP

Soldiers of 2nd Battalion, 12th Field Artillery Regiment, 1st Stryker Brigade Combat Team, 4th Infantry Division (1-4 ID) fire artillery rounds from an M777A2 Howitzer during operator new equipment training April 16 at Fort Carson, CO. The PC trainer and associated TADSS respond to a need for the towed field howitzer community to maintain the high degree of technical proficiency needed to operate and maintain the complex systems. (U.S. Army photo by SPC William Howard, 1-4 ID Public Affairs)

but also to reduce the costs of time spent on the actual weapon platform. It will enable training of the DFCS and interactions with fire direction computer operators without taking the howitzers out of the motor pool. Howitzer crews can train individually or collectively with the crew trainers to refine their roles and interactions required for fire missions, emplacement and movement of the tactical systems, all without expending ammunition and fuel or putting wear on the tactical systems.

Maintenance trainers provide an environment that is safe from electrical and mechanical hazards to the warfighter, allowing Soldiers and Marines to learn the interactive electronic technical

manuals for troubleshooting and maintenance activities without risking damage to the tactical hardware. The institutional use of classroom trainers for operation and maintenance also reduces the potential for hazards arising from unfamiliarity.

The trainers can accommodate large classes with a broad view of the weapon system, and students can perform their training in parallel, thus improving the use of both students' and instructors' time.

Programmatic execution of real-time interactive trainers poses a number of challenges, including tight budgets for developing and sustaining the product.

Using COTS computers partly addresses affordability concerns by eliminating the need to pay for engineering of specialized hardware. The training products' use of government-owned, open-architecture software that incorporates existing tactical software sets the stage for cost savings through software reuse.

To remain relevant, training products must mirror changes in weapon systems as they evolve. The acquisition strategy and release of updates for the training products are scheduled to align with weapon system upgrades, maximizing the relevance of training.

In a climate of limited resources, TADSS for towed artillery systems provide a clear benefit by effectively providing critical training to Soldiers and Marines and by saving Army and Marine Corps funds for the future that otherwise would have been spent on training and sustainment.

*For more information, contact the Project Management Office for TAS at 973-724-8868.*

---

*MAJ DANIEL COWLING is an assistant PdM for PM TAS, Picatinny Arsenal, NJ. He holds a B.S. in geology from Colorado State University. He is Level II certified in program management and is a member of the U.S. Army Acquisition Corps.*

*MR. JOSHUA ZAWISLAK is a software engineer lead in the Automated Test Systems Division of ARDEC's Fire Control Systems and Technology Directorate at Picatinny Arsenal. He has a B.S. in computer science from the Stevens Institute of Technology and is Level III certified in systems planning, research, development and engineering – systems engineering.*





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<http://www.eis.army.mil/index.php/programs/dcats>

# All Together Now

Tactical network training becomes more holistic and more versatile with every capability set fielding

*by MAJ Jonathan Swan, CPT Keith Jordan and Mr. Larry Spence*

When fielding complex new equipment to a unit, there's only one chance to get it right. If the training is off—in content, timing or audience—the unit can end up worse than it was without the new gear.

To get the most out of the Army's advanced communications network, Soldiers need to understand how to fully employ their systems to satisfy their mission requirements, and how to maximize system capability as part of a holistic network that spans the entire force.

As the Army fields its network capability sets, it is leveraging Soldier feedback and lessons learned from previous fieldings, deployments and Network Integration Evaluations to improve equipment and training. The service has learned the importance of taking a holistic, collective approach to network training while

infusing that training with operationally relevant scenarios that hone in on the requirements of specific military occupational specialties (MOSs). This approach is expected to improve Soldiers' performance and expand network capability while reducing burdens on the Soldier and the unit.

The Army has fielded Capability Set (CS) 13 to two division headquarters and four infantry brigade combat teams (BCTs), with three of the BCTs and both division headquarters deploying to Afghanistan with the system.

This integrated package of radios, satellite systems, software applications, smartphone-like devices and other network components provides connectivity across the entire BCT formation, from the static main command post to the commander on-the-move to the dismounted Soldier.

Throughout 2014, the Army will field CS 14 components to seven BCTs and two division headquarters, building on CS 13 with hardware and software enhancements and adding the dual-channel Handheld, Manpack, Small Form Fit radio. User feedback identified the need to simplify the network to make it easier to use; provide quicker and more dynamic task reorganization; incorporate more time to train and prepare; and better synchronize capability set fielding and training with other unit tasks.

## SUCCESS FACTORS

After the intensive developmental process for each system and the effort to integrate the systems into a capability set, the next phase—new equipment training (NET) and new equipment fielding (NEF)—might seem initially like the easiest part of the life cycle. However, executing capability set NET/NEF introduces new challenges to ensure that these





### A LITE TOUCH

Soldiers from the 2nd BCT, 82nd Airborne Division train on WIN-T Tactical Communications Node (TCN) Lite systems at Fort Bragg, NC, in April. Installed on a High-Mobility Multipurpose Wheeled Vehicle rather than a Family of Medium Tactical Vehicles platform, TCN Lite allows the 82nd greater mobility and shows how the Army can tailor capability set fielding and training for different units across the force. (U.S. Army photo by CPT Keith Jordan, SoSE&I)

new technologies can fulfill their role for a BCT.

A capability set takes months to train. Early in the process, it is vital to ensure that the unit understands the training as a team effort that includes the Soldiers, program executive offices, individual program manager (PM) offices, the System of Systems Engineering and Integration Directorate (SoSE&I) and other stakeholders. It is also important to set expectations for all parties as to the necessary manpower, facilities, time and effort.

The success of fielding and training events is tied directly to engagement of the unit leadership. The energy and emphasis applied to any mission derive from the value the unit leadership places on a mission. SoSE&I and PM representatives need to engage with the fielded unit's key leaders early in the process so they understand the operational value of the network, the commitment necessary to internalize the new systems to BCT

operations and the support that the acquisition community can provide.

Timing is possibly the greatest factor in setting the conditions for success. Leadership emphasis is closely tied to the unit's current Army Force Generation cycle. Failure to time fieldings effectively means the unit could have simultaneous and conflicting missions, in which case the unit's leadership will likely emphasize the upcoming mission over capability set training. The likelihood of a successful fielding increases, as does the ability to employ the new capability effectively, if unit fielding is synchronized with the U.S. Army Forces Command during a period that minimizes distractions from external missions.

### SYSTEM-OF-SYSTEMS TRAINING

In the first few capability set fieldings, PM offices were responsible for fielding their equipment, which ultimately provided more stovepiped individual NETs. Units ended up with systems on which

they were well-trained, but some Soldiers weren't familiar with how their systems interoperated across the brigade. The Program Executive Office for Command, Control and Communications – Tactical (PEO C3T), which supplies most of the systems that make up capability sets, has now opted for a more collective approach to training that underscores how each element of a capability set operates in a unified network. Taking place after individual system NET, this crawl-walk-run, system-of-systems training package is synchronized with the unit's mission-essential tasks.

Other important changes have come from the units themselves. The 3rd BCT, 101st Airborne Division (Air Assault) (3-101 ABN) was the fourth unit to receive CS 13 and did not face the compressed deployment timeline that challenged the first three units. The 3-101 took the opportunity to develop several process improvements since starting capability set fielding in late 2013. Working with PEO C3T and SoSE&I, the unit implemented

a sustainment training program to ensure that Soldiers do not lose the skills developed in NET/NEF, created quarterly update briefs to account for leaders and signal personnel rotating in and out of the unit, and identified Soldiers throughout the brigade to serve as CS 13 subject-matter experts and troubleshooters, thus reducing dependence on civilian field support. This approach, which 3-101 has shared with counterparts in 1-101 receiving CS 14, also helps ensure that thorough training is provided not just to signal Soldiers but also to operators and leaders, so a BCT can “fight” the network to its maximum potential.

### TO THE SCHOOLHOUSE

As part of the Army’s push to continually improve the network and training, it established Warfighter Information Network – Tactical Increment 2 (WIN-T Inc 2) institutional training at the U.S. Army Signal Center of Excellence, Fort

Gordon, GA, in October 2013, with the first Soldiers (25N MOS, nodal network systems operator-maintainers) completing the courses in April. As part of capability set fielding, WIN-T Inc 2 is installed on tactical vehicles to add on-the-move access to the tactical network and extend the network over vast distances and difficult terrain. Institutional training will provide a pipeline of Soldiers who can operate the equipment proficiently when they arrive at their unit, enhancing mission accomplishment.

The Army is also working to provide WIN-T Inc 2 schoolhouse training over the next few years for Soldiers in ordnance and other MOSs, including NCOs and warrant officers, who will provide maintenance support. As the Army improves institutional training and increases the number of trained Soldiers from Fort Gordon, it will be able to reduce its reliance on contracted field

service representatives and achieve the objective of completely sustaining equipment with signal Soldiers.

Training in many of the capability set systems uses classroom and hands-on packages that contain an increasing amount of simulation. PM WIN-T is working to develop simulation packages for all of the WIN-T Inc 2 configuration items so that Soldiers can refresh their knowledge when needed. LandWarNet eUniversity, the Army’s online presence for sustainment and training in command, control, communications and computers, contains information on how Soldiers can deploy, operate and maintain some of the capability set systems. Soldiers can access WIN-T Inc 2 training material, review modules or obtain operating procedures on the LandWarNet portal (<https://lwn.army.mil>) using their Common Access Card (CAC).

### WIN-T NET SNAPSHOT

WIN-T Inc 2, the backbone of the Army’s capability sets, is the most capable and diverse of the network systems. Its NET is critical to the success of the entire capability set package. Depending on the MOS, Soldiers take different NET blocks, which include briefings, virtual and hands-on training designed to provide the skills needed to configure, operate, maintain and troubleshoot the equipment.

During the last two weeks of WIN-T Inc 2 NET, Soldiers participate in integrated capstone exercises involving all of the components within the WIN-T Inc 2 network. These drills exercise every layer of the network within the brigade simultaneously, enabling network operators to see how the different nodes behave on the network and interact at various echelons across the BCT. This also gives Soldiers who have just trained



### HANDS-ON TRAINING

Soldiers from the 2nd BCT, 82nd Airborne Division practice loading crypto keys for tactical radios using a simple key loader at Fort Bragg, NC, in April. Many capability set systems are trained with classroom and hands-on packages that increasingly also include simulation training. (U.S. Army photo by CPT Keith Jordan, SoSE&I)



on their WIN-T Inc 2-equipped vehicles a firsthand look at how they operate within the network.

The capstone training is evolving into a collective-level training event involving individual Soldiers, unit leaders from company through brigade levels, and operations and signal officers.

## TRAINING, EQUIPMENT GO HAND-IN-HAND

Soldier feedback from CS 13 training and operations indicated that the Army might better resolve problems by fixing software or hardware rather than just adjusting training.

For instance, Soldiers initially reported difficulty in employing the WIN-T Inc 2 Combat Net Radio Gateway, which uses the vehicle's on-the-move satellite communication systems to help extend lower tactical Internet radio networks. Instead of modifying training to alleviate the problems, the Army developed system improvements to decrease complexity and increase ease of use.

These changes were part of an overall WIN-T Inc 2 simplification across all network-equipped vehicles, drastically reducing startup and shutdown times, and providing a new, easy-to-use graphical interface and improved troubleshooting tools—all of which simultaneously reduced the training burden.

## CONCLUSION

Properly training capability sets is vital to a unit's success. As the Army continues to field incremental network improvements, it will have to improve and streamline the training process to incorporate needed changes. Processes are in place to obtain feedback from Soldiers and apply it for follow-on NET events and sustainment training as well as in the schoolhouse.



### LEARNING CS 14

A Soldier from the 1-101 trains on a WIN-T Inc 2 TCN system at Fort Campbell, KY, in March. The 1-101 is the first unit to receive the complete CS 14 tactical network. It benefited from the CS 13 training experiences of the 3-101, which was the fourth unit to receive CS 13 and did not face the compressed deployment timeline that challenged the first three units. (U.S. Army photo by Claire Heininger, PEO C3T)

Leveraging that feedback, the acquisition community is working to make training more relevant and palatable for the unit.

A network is only as good as the Soldiers running it, and the Army is aiming to provide the best capability efficiently with the best-trained force possible.

For more information, go to the PEO C3T website at <http://peoc3t.army.mil/c3t/> and the PM WIN-T website at <http://peoc3t.army.mil/wint/>; or contact the PEO C3T Public Affairs Office at 443-395-6489 or [usarmy.APG.peo-c3t.mbx.pao-peoc3t@mail.mil](mailto:usarmy.APG.peo-c3t.mbx.pao-peoc3t@mail.mil). DOD employees can find more information, including the DOD encyclopedia entry on PM WIN-T, in milWiki at <http://go.usa.gov/4Qvk> (CAC login required).

MAJ JONATHAN SWAN, an assistant product manager for WIN-T

Inc 2, recently redeployed from Operation Enduring Freedom, where he supported CS 13 units. He holds a B.S. in mechanical engineering from Virginia Tech and is Level II certified in program management.

CPT KEITH JORDAN is the trail boss for synchronized fielding for SoSE&I, Aberdeen Proving Ground, MD. He holds an MBA from the Naval Postgraduate School and a B.B.A. in finance from Texas State University.

MR. LARRY SPENCE is the training manager for WIN-T Inc 2. An employee of Scientific Research Corp., he has managed all of the WIN-T Inc 2 unit training since the program began fielding. He is retired from the Navy, where he worked as an information systems technician. He holds an associate degree from Brookdale Community College in New Jersey and is pursuing a degree in cybersecurity from the University of Maryland.

# TRAINING

## *on the* Virtual Net

Video game-like approach reduces classroom time, increases engagement

*by MAJ Naim R. Lee, Ms. Caroline McCarthy and Dr. Samuel Johnson*

**T**oday's Soldiers have grown up in the digital age. They play video games that enable friends and even strangers to team up online to slay aliens, combat terrorists and save the world. They take advanced high school and college classes online, and their smartphones are almost an appendage. "Death by PowerPoint" is no longer an effective means of training, especially on the Army's advanced network and communications equipment. Soldiers are now learning faster and more efficiently, immersed in operational scenarios within virtual training environments and using the power of their own new network equipment to defeat the enemy.

As the Army continues to modernize its tactical communications network, it is also shifting the network training paradigm: Instead of tailoring the training to new equipment, it is tailoring the training to the Soldier. The Army's network reaches across the entire U.S. and coalition force, yet it must be taught in a way that best targets a specific military occupational specialty (MOS). Training Soldiers to use the network virtually is no longer the wave of the future; it is quickly becoming today's reality.

The old training paradigm had Soldiers undergoing weeks to months of new equipment training (NET) for Warfighter Information Network – Tactical Increment 1 (WIN-T Inc 1), the Army's tactical communications backbone, in a traditional classroom environment with instructor facilitation, followed by hands-on equipment instruction.

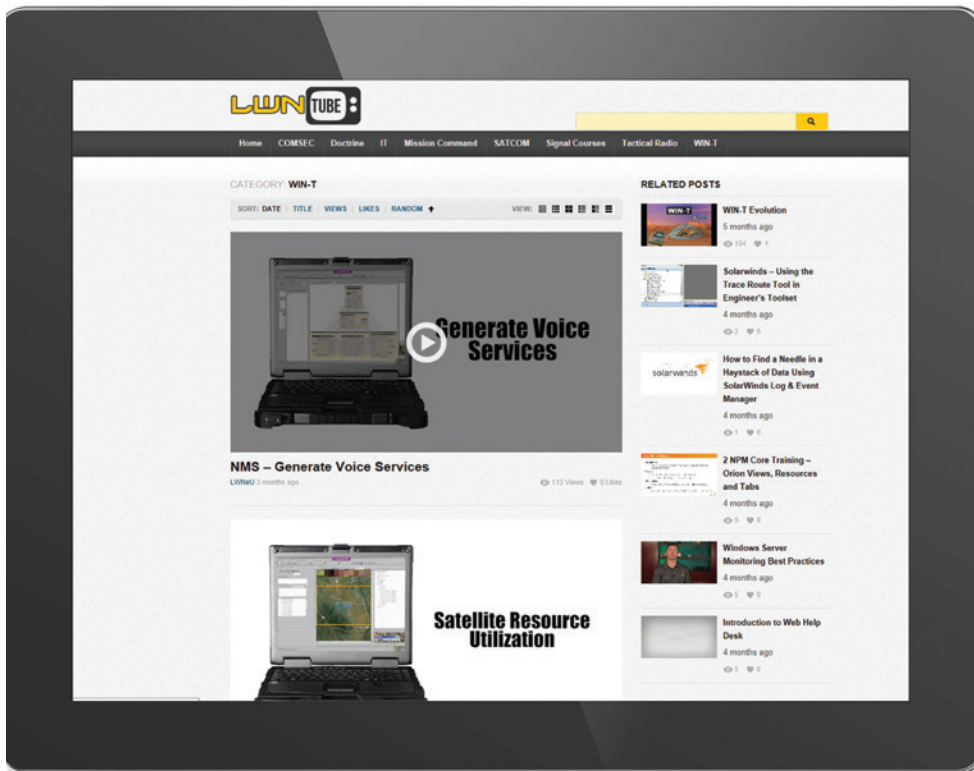
### **A WIDE-OPEN 'CLASSROOM'**

The new approach transforms that classroom into a cost-effective, paperless environment with global access, using the Internet, smartphones, tablets and personal computers to teach the ins and outs of the WIN-T network and its corresponding satellite equipment. Simulation training products are also very important to Army Reserve and National Guard communities to enhance individual and collective training opportunities.

The project manager (PM) for WIN-T within the Program Executive Office for Command, Control and Communications – Tactical (PEO C3T) is also working with the U.S. Army Signal Center of Excellence at Fort Gordon, GA, and Fort Gordon's LandWarNet eUniversity to provide WIN-T training materials and technical manuals online so that Soldiers can access training 24/7 and train on their own timelines. The Common Access Card-enabled LandWarNet eUniversity, the Army's online presence for command, control, communications and computers (C4) sustainment and training, contains information on how Soldiers can deploy and operate WIN-T and other C4 systems from start to finish. This pool of information is constantly available for Soldiers to refresh their skills.

Several WIN-T Inc 1 simulation training pilot projects are in the works, all supported by a joint venture with support from PM WIN-T, the U.S. Army Communications-Electronics Command's Logistics Readiness Center, equipment vendors and the





## ROUND-THE-CLOCK TRAINING

PM WIN-T is working with the Signal Center of Excellence at Fort Gordon to provide WIN-T training materials and technical manuals online through the LandWarNet eUniversity portal so that Soldiers can access training 24/7 and train on their own timelines. (Image courtesy of U.S. Army Acquisition Support Center)

Training Division at Fort Gordon. PM WIN-T is starting its Inc 1 virtual training journey with several smaller pilot projects that include network operations and information assurance tools. As a follow-on to these pilots, the PM plans to expand NET simulation training throughout WIN-T Inc 1B, the updated

capability baseline that improves the network's security, efficiency and interoperability with WIN-T Inc 2. Simulation training is also planned for WIN-T Inc 1 end of life (EOL), which addresses technology for refresh of obsolete equipment.

During classroom instruction under the old training model, Soldiers who learned at a slower pace often were not willing to hold up the class in order to catch up, despite the detriment to their own knowledge base. Simulation training provides self-paced instruction; Soldiers can work at their own speed and achieve a more thorough grasp of the curriculum. During WIN-T Inc 1 NET, Soldiers take the simulation training online and meet regularly with a facilitator to pose any questions and discuss the material, greatly reducing classroom time. WIN-T Inc 1 simulation will also include collective

training events in which students of different MOSs can interact, using the equipment in various real-world signal scenarios via the schoolhouse's collective training simulator, the Network Nodal Management System.

Following WIN-T Inc 1 NET simulation training, Soldiers will receive hands-on training with actual equipment. Simulation as a part of NET is not meant to replace hands-on training, but can reduce hands-on training time and costs by ensuring that Soldiers already have a good understanding of the equipment and how it operates within the network.

The schoolhouse has developed the baseline for the WIN-T Inc 1B NET and EOL virtualization programs. Once the curriculum is established, the PM is planning to establish standard operating

**SIMULATION  
TRAINING CUTS  
DOWN CLASSROOM  
TIME, HANDS-ON  
TRAINING AND  
UNIT DISRUPTION.**



## MOBILE TRAINING

The Phoenix mobile IMI, which has been optimized for use on smartphones and tablets, immerses Soldiers in a 3-D operational environment and allows them to virtually set up, tear down, operate and troubleshoot the AN/TSC-156 Phoenix Quad-Band Satellite Communications System. (Photo courtesy of PM WIN-T)

procedure (SOP) for standing up new simulation training requirements for WIN-T Inc 2 and other new equipment programs. In the future, whenever the PM needs to develop a new simulation training package, the process will already be in place to produce any new virtual training tools using a standard work plan. The SOP is expected to reduce contract processing time for new training modules, which can be turned around quickly and efficiently.

Both increments of WIN-T are deployed today as part of the Army's interoperable tactical communications network

architecture. WIN-T Inc 2 adds mobility to the network, with network-equipped vehicles that provide the mobile communications, mission command applications and situational awareness that commanders need to lead from anywhere on the battlefield. Currently, a simulation package is part of training for the WIN-T Inc 2 Tactical Communications Node, but the PM is working to develop simulation packages for all of the WIN-T Inc 2 configuration items to provide Soldiers with an information reservoir they can use to refresh their knowledge whenever needed following NET. The PM is also developing maintenance task simulations so that

Soldiers can reinforce their maintenance training to better support the WIN-T systems and reduce reliance on field service representatives (FSRs).

## SATCOM TRAINING MEETS ANDROID APP

PM WIN-T also employs simulation training for many of its ground satellite terminal programs. It recently fielded new training and simulation software for interactive multimedia instruction (IMI) for the Phoenix tactical satellite terminal. Initial development of the IMI was spurred by a shortage of physical Phoenix terminals to meet the training





### A STUDY IN ACCESSIBILITY

Soldiers at the Signal Center of Excellence at Fort Gordon train on upgraded computer-based and simulation training for the Army's Advanced Extremely High Frequency Secure Mobile Anti-Jam Reliable Tactical – Terminal, which PM WIN-T manages. (U.S. Army photo)

requirements of satellite communication systems operator-maintainer (MOS 25S) Soldiers at Fort Gordon.

The result is a highly interactive simulation environment that incorporates multimedia elements and scenario-based learning. The training immerses Soldiers in a 3-D operational environment and allows them to virtually set up, tear down, operate and troubleshoot the AN/TSC-156 Phoenix Quad-Band Satellite Communications system. Since inception, the Phoenix IMI software has been continually updated to keep pace with upgraded versions of the Phoenix terminal. There is also a version of the software

to support the Marine Corps' C model Phoenix.

This valuable training tool will soon be even easier to access. PM WIN-T's Phoenix team is leading the way through the development of a mobile Android tablet-based simulated training environment for the Phoenix IMI, with fielding expected in the spring of 2015, which could set the standard for lightweight, pocket-sized training aids and materials. The IMI training software was also placed on LandWarNet's eUniversity portal to allow signal units and Soldiers to access and download it to their desktops, for refresher and familiarization training at

home or in garrison. As it does for all of its training packages, PM WIN-T continues to work with the schoolhouse to obtain feedback from Soldiers and trainers to keep improving capability.

### MEASURABLE EFFICIENCIES

The Army's WIN-T simulation training efforts are expected to increase efficiencies in training time as well as equipment and personnel costs. Simulation training cuts down classroom time, hands-on training and unit disruption. Units will benefit from training packages that can be loaded into military-issued personal computing devices and smartphones to train or refresh training from the field



## THE SYSTEM ITSELF

Soldiers from the Army's 86th Expeditionary Signal Battalion train on WIN-T Satellite Transportable Terminals upgraded with WIN-T Inc 1B advancements, at Fort Bliss, TX, Feb. 20. (U.S. Army photo by Amy Walker, PEO C3T)

without having to travel to a major Army simulation facility or back to the schoolhouse.

This decreases reliance on FSRs to provide support before NET, during pre-deployment refresher training and through over-the-shoulder refresher training in theater. There is also a cost saving in terms of equipment downtime, since using and moving these terminals in the field requires personnel and satellite time as well as fuel and maintenance.

## CONCLUSION

The Army's network simulation training packages resemble some of the most popular warfighting games available on

store shelves today. The packages give the Army more options in training curricula, and Soldiers can experience a virtual realistic environment without having to draw on limited resources such as fuel, generators and airtime.

The simulation holds Soldiers' attention and interest, and improves comprehension and retention far better than dry, antiquated presentations.

In realistic operational scenarios, Soldiers learn how to operate the equipment and how to use it collectively in the heat of battle, enabling them to employ the network to its fullest capability while performing their mission-essential tasks

with the utmost proficiency. Being in the battle, without the battle, is a well-learned lesson in efficiency and readiness for today's forces.

For more information, go to the PEO C3T website at <http://peoc3t.army.mil/c3t/> and the PM WIN-T website at <http://peoc3t.army.mil/wint/>; or contact the PEO C3T Public Affairs Office at 443-395-6489 or [usarmy.APG.peo-c3t.mbx.pao-peoc3t@mail.mil](mailto:usarmy.APG.peo-c3t.mbx.pao-peoc3t@mail.mil). DOD employees can find more information, including the DOD encyclopedia entry on PM WIN-T, in the milWiki at <http://go.usa.gov/4Qvk> (Common Access Card login required).

*MAJ NAIM R. LEE is PM WIN-T's assistant product manager for satellite communications. He holds an M.A. in leadership and management from Webster University and a B.S. in computer science from Prairie View A&M University. He is Level III certified in program management and is a member of the U.S. Army Acquisition Corps (AAC).*

*MS. CAROLINE MCCARTHY is the Readiness Management Branch chief for the product manager for WIN-T Inc 1. She holds a B.A. in business management and administration from Monmouth University. She is Level III certified in life-cycle logistics and Level II certified in program management and in life-cycle logistics. She is an AAC member.*

*DR. SAMUEL JOHNSON (USA, Ret.) is the training manager for WIN-T Inc 1. He holds an Ed.D. with a specialization in adult education from Nova Southeastern University, an M.A. in marketing from Webster University and a B.S. in journalism from the University of Kansas. He is a retired Army lieutenant colonel.*





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# GROUND TRUTH

Lessons learned on training and readiness

*by Mr. Harry Reed*

**R**eading the lessons learned (LLs) by product developers in Army acquisition, it is clear that careful orchestration of training is necessary throughout the product life cycle to maximize readiness. The Army Acquisition Lessons Learned Portal (ALLP), championed by the Army acquisition executive and deployed in October 2012, captures and shares these thoughts. This article encapsulates LL reports returned through a search of the terms “training” and “readiness” in the ALLP.

## TESTING AND INTEGRATION

**LL\_598: Take care to modify vehicles and platforms properly modified for testing, especially when performing multiple integrations sequentially.** Field service representative (FSR) training should include adding systems to vehicles with other, previously added systems.

### *Background*

A Network Integration Evaluation (NIE) test required the installation of networking components in vehicles, such as laptops and routing, command and control, and digital backbone systems. FSRs unknowingly removed also-required equipment that others had added, gravely affecting performance.

### *Recommendation*

Ensure that FSR training includes proper procedures to add systems to vehicles with previously added systems. Create vehicle integration and physical design descriptions for all

systems added to a vehicle, including the order of addition and instructions to avoid damaging or incapacitating previously added components.

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**LL\_503: Provide planning and training in test system frequencies and allocation to avoid integration problems, including violations of the frequency plan during system testing or use.**

### *Background*

During an NIE, an unsuitable UHF frequency had to be replaced, new equipment training (NET) was hurried because of the issuance of a new unmanned aircraft system (UAS) just before the exercise began, and frequency cards proposed for the UAS were invalid for use in the United States. Planning for the assignment of frequencies reflected inadequate system experience and fidelity.

### *Recommendation*

Provide adequate training time to ensure that Soldiers and staff have the essential planning and operational skills to integrate frequency planning and test system allocations into the total frequency plan.

## TRAINING DESIGN AND REHEARSAL

**LL\_220: Embedded training (ET), interactive electronic technical manuals and interactive computer-based training (ICBT) enhance sustainment training and improve unit readiness.**





### CLEARING THE ROOM

Soldiers from 1st Brigade, 1st Infantry Division rehearse room clearing procedures April 19 during Decisive Action Rotation 14-06 at the National Training Center (NTC), Fort Irwin, CA. The exercises at NTC take a comprehensive approach to training brigade combat teams in a joint, interagency, intergovernmental and multinational environment. Use of collective training exercises for operational testing may come with limitations, however. (U.S. Army photo by SPC Randis Monroe)

#### *Background*

In the Joint Network Management System program, using training aids and manuals reduced the requirement for trainers to travel to all units, minimizing training costs and the time burden on the user. Initial NET for the units receiving the system also served as a baseline for developing institutional training and other units' training. ICBT programs were available to the units before they received equipment, facilitating verification and validation.

#### *Recommendation*

Include training aids and manuals that minimize trainer travel. Reuse unit NET as a baseline for other training programs. Make ICBT programs available to the units before they receive equipment. Also, the ET concept must address collective training tasks for garrison and field

environments. Make ET part of the basic system, identifying it sufficiently early in system design to be a concurrent part of operational development.

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**LL\_579: Reduce the risk of inadequate training with rehearsals, reviewed by stakeholders before the first day of delivery.**

#### *Background*

On the first day of training, just before the start of a major test, operations personnel, trail boss teams and other stakeholders met to report their training status. Each had a different yet valid point of view based on aspects including formal training preparedness, meeting unit needs with Soldiers assigned via battle roster and the proper setup of instructional systems.

Corrections to accommodate the needs of each group resulted in added schedule risk because they required significant, unplanned time to maintain coordination and continuity.

#### Recommendation

Provide time for rehearsals to assess the adequacy of training, with representatives of all stakeholders reviewing performance. As differences surface, allow for corrections to accommodate the needs of each group while maintaining coordination and continuity.

### ENSURING EFFICACY

**LL\_223:** Evaluate the complexity of the human-computer interface (HCI) during NET and testing events, and add labels or adjust instructions for usage. Observe trainees' performance to improve design and application and thus minimize human errors, conform to human

engineering criteria and handle conditions such as Mission Oriented Protective Posture IV.

#### Background

A carefully tuned, uncomplicated and intuitive HCI enhanced training and performance related to Soldiers' usage of an information network. Tuned characteristics included screen content and layout, the availability of help, feedback, labeling, functional design and safeguards.

#### Recommendation

Evaluate formal and informal feedback from NET and testing events, adding labels, adjusting instructions and generating courses of action to reduce complexity. Minimize human performance errors, interface problems and workload. Make sure that complete design and operation satisfy human engineering criteria. Use standard degradation metrics, including

time and number of errors, across all operational conditions and environments.

**LL\_233:** Through training or in other settings, use test participants who are at readiness level 1 (RL1) or fully mission-qualified in their respective roles. Otherwise, participants' lack of preparation may significantly affect results.

#### Background

Operator-trainees of an ancillary developmental system were not prepared. They did not communicate and interact effectively with other parts of the maneuver force, hindering teaming demonstrations. Their poor skills reflected unfairly on the capabilities of the primary system under test; only astute analysis could explain the anomalous results.

#### Recommendation

Even when tactical units and equipment are not available to provide adequate support and it is necessary to accept the best alternative, insist on using only test participants who are at RL1 or fully mission-qualified in their respective roles.

**LL\_234:** Use of collective training exercises for operational testing may have limitations.

#### Background

Superimposing an operational test (OT) on a major collective training exercise (TE) to leverage the exercise's hostile- and friendly-force maneuver elements seemed to offer considerable cost savings, but also posed significant risk to the program. The TE rotation for which the OT was scheduled was canceled. Only a portion of the range was permitted for the OT, and OT evaluator access was limited. The TE schedule allowed little or



### GATEWAY TO KNOWLEDGE

The ALLP gives members of the acquisition community the opportunity to exchange information on avoiding pitfalls, developing best practices and analyzing lessons learned. (SOURCE: U.S. Army Materiel Systems Analysis Activity)





### TEST BED

The 2nd Brigade Combat Team, 1st Armored Division (2-1 AD) readies its integrated motor pool in preparation for NIE 14.2, held this spring at Fort Bliss, TX. NIE 14.2, which focused on joint and coalition force integration, assessed communications and network gaps. The NIEs have yielded many lessons learned for the Army in a number of areas, including training and readiness. (U.S. Army photo by SGT Vincent Byrd, 2-1AD Public Affairs)

no accommodation for weather and other factors that might affect OT.

#### Recommendation

Assume that test objectives are subordinate to training objectives, sacrificing control of an OT any time it is superimposed on a collective training event. Develop explicit acceptance and contingency plans when performing OT in conjunction with any training exercise.

**LL\_531: NET should include what to write, and how, when generating trouble tickets.**

#### Background

During a network integration test, trouble ticket information did not provide sufficient details. This resulted in delays and rework to clarify and fill in missing information and to track the correction of issues as clarification was received.

#### Recommendation

To ensure that trouble tickets contain sufficient detail to understand a problem, NET should include discussions of system architecture and how components

interface with the system, internally and externally. Also, training should include how to properly complete a trouble ticket.

**LL\_527C: Offer common courtesy and conduct meetings and performance training appropriately so that all participants may benefit, including both those physically present and those attending virtually.**

#### Background

During daily issue resolution tag-up meetings at a major network integration test, poor presentation and inadequate skills with audiovisual equipment prevented some attendees, both those present and those who called in, from participating. Poor techniques included not speaking loudly enough for others to hear, improper microphone use and failure to announce slide numbers.

#### Recommendation

Rooms should have no audio obstructions. The meeting host should insist that all presenters speak loudly, clearly and directly into microphones placed at appropriate locations. Presenters should

reference slide numbers. Side discussions should take place outside the meeting room. Questions should be repeated if attendees find them difficult to hear or understand. It may be helpful to outline common speaking courtesies and meeting practices on a large poster in the meeting room, in plain sight of all presenters.

### CONCLUSION

You can benefit from these experiences by becoming a registered ALLP user; look for these lessons by their LL identifiers.

*For more information on acquisition lessons learned, go to <https://allp.amsaa.army.mil> and request an account.*

*MR. HARRY REED is an operations research analyst with the U.S. Army Materiel Systems Analysis Activity's Army Acquisition Lessons Learned Team. He is pursuing a master's degree in program management from the Florida Institute of Technology and holds a B.A. in mathematics from Johns Hopkins University. He is Level II certified in engineering and is a certified Lean Six Sigma Black Belt.*

# SOLDIER-BASED TRAINING

C4ISR Field Support Vision 2020:  
Preparing the self-sufficient force

*by MAJ Robert C. Moyer*





**FIELD INTELLIGENCE**

Soldiers from 1st Battalion, 27th Infantry Regiment use a radio to communicate during Decisive Action Rotation 14-07 at NTC on Fort Irwin, CA, May 17. Information on field support trends identified during site visits to the JRTC and NTC can shed light on strengths and weaknesses in the field. (U.S. Army photo by SPC Stephen Solomon, Fort Irwin Operations Group)



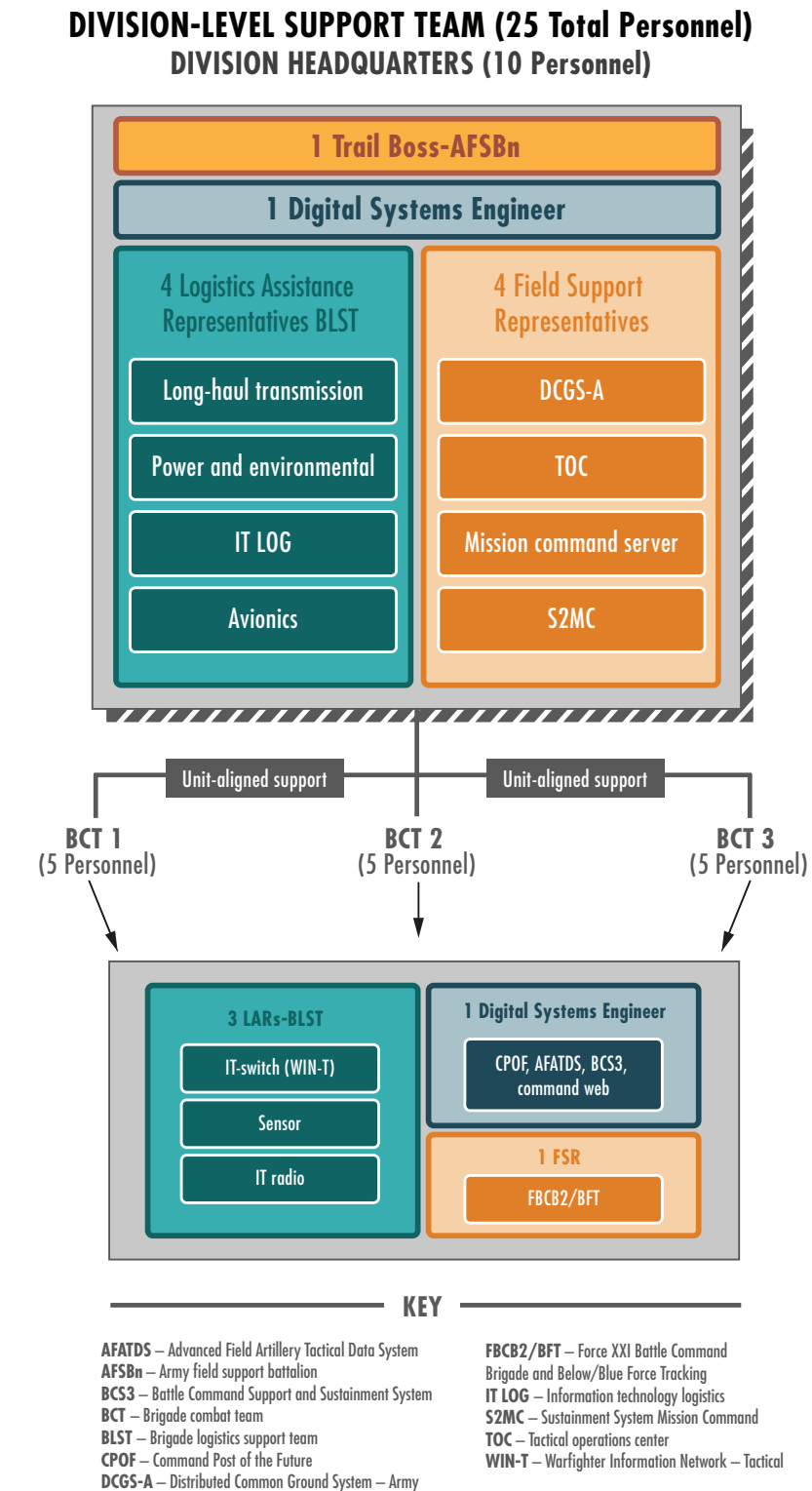
FIGURE 1

Since the start of contingency operations, the Army has acquired a variety of urgently needed quick reaction capabilities, such as communications, networking, surveillance and counter-IED solutions, in response to urgent operational needs. In addition to being fast-tracked through the acquisition process to meet critical warfighting demands, these systems, designed to better connect Soldiers and commanders and provide visibility into battlefield threats, represented increasingly complex technology requirements for operators and maintainers alike.

To deliver immediate support for these systems to Soldiers in theater, the Army successfully implemented a robust, contractor-based field support model. However, with the drawdown from Afghanistan and the transition to a leaner, more agile Army, the C4ISR Center of Excellence (CoE) of U.S. Army Materiel Command (AMC) is building an enduring field support capability for command, control, communications, computers, intelligence, surveillance and reconnaissance (C4ISR) systems that maintains readiness while better aligning to the shifting operations tempo.

The C4ISR CoE built the capability as a result of a right-sizing analysis and is partnering with U.S. Army Forces Command (FORSCOM) and the U.S. Army Training and Doctrine Command (TRADOC) to refine and implement it. The capability is designed to serve as a holistic solution that facilitates gradual, deliberate shifts to organic support across the force structure while prioritizing Soldier training and readiness.

It is intended not only to emphasize organic field support and Soldier skill development, but also to solve a key issue facing units across the force and



#### LEVELS OF SUPPORT

The new C4ISR field support structure establishes division- and brigade-level field support teams, augmented by regionalized system-specific support. (SOURCE: CECOM)





FIGURE 2

signal community: the need to keep pace with the demands of cutting-edge, complex systems and evolving battlefield technology while responding to evolving mission requirements.

### SOLDIERS ARE THE CENTERPIECE

The comprehensive effort of the C4ISR CoE focuses on more than simply reducing support in concert with drawdowns overseas. The CoE, which began implementing its new field support structure in spring 2014, intends to synchronize all field support activities across the C4ISR community and thus enhance capability over time by addressing manpower requirements, organizing and optimizing organic support, responding to training needs, and integrating continuous improvement and evaluation initiatives.

From a manpower perspective, the new field support structure places Soldiers at the forefront of weapon system maintenance and issue resolution, supported by division and regional field support teams that align with a tiered structure that dictates roles and functions. (See Figure 1 on Page 30.) The purpose of the tiered structure is to define roles and responsibilities; it positions Soldiers as the focal point for basic field support issues, using on-site multifunctional logistics assistance representatives (LARs), digital systems engineers, field support representatives and field support engineers for low-level problems or issues within the divisions. Regionalized reachback support will handle issues with specific systems or complex challenges, but the structure calls for Soldiers to serve as self-sufficient first responders.

When implemented, 23 staffers divided across division- and brigade-level teams will execute C4ISR field support services



### TRAINING UP

The C4ISR CoE is working with TRADOC and FORSCOM to ensure that commanders leverage the full spectrum of training resources to address directly any gaps in unit knowledge or skills before transitioning to the new field support model. (SOURCE: CECOM)

per the tiered structure, with regional reachback support from system-specific experts. The team will possess most of the skills necessary to meet C4ISR requirements in the field; however, this support package will be flexible as necessary to accommodate the needs and equipment of each unit.

### INVESTING MORE IN TRAINING

This approach signifies a fundamental shift regarding the means whereby units will access and integrate field support. The intention is not simply to reduce historical field support personnel levels, but

to regionalize system-specific staff while improving the depth of Soldier proficiency through targeted training. The C4ISR CoE is working with FORSCOM and TRADOC in a deliberate effort to prepare units and Soldiers to build in-house proficiency while maintaining readiness.

Throughout Operations Enduring Freedom and Iraqi Freedom, units received deployment-specific training and did not have the time to focus on building profound Soldier military occupational specialty (MOS) skills. As deployment training requirements shift and commanders prepare for a new C4ISR

field support structure, the C4ISR CoE, FORSCOM and TRADOC recognize the need to help units target specific training to prepare for the transition and continue to build Soldier proficiency in C4ISR systems operations and maintenance.

To understand current proficiency levels and determine training needs, G-6/S-6 interviews were conducted recently across the force to obtain feedback on TRADOC training within the Signal Branch. The 1st Infantry Division, which will be the first division to implement the new structure, also began an analysis in March.

These data sets, juxtaposed against field support trends identified during site visits to the Joint Readiness Training Center (JRTC) and the National Training Center (NTC), are helping AMC and its U.S. Army Communications-Electronics Command (CECOM), TRADOC, FORSCOM and field commanders better understand strengths and weaknesses in the field. In turn, they will help units develop and implement brigade-focused training strategies to mitigate current gaps from both the operational and doctrinal vantage points.

The intent is to apply training resources to support a crawl-walk-run approach for implementation, in order to enhance the Army Force Generation training cycle for both individuals and units. (See Figure 2 on Page 31.)

During implementation, division support teams will immediately begin to provide over-the-shoulder training for Soldiers. Regional teams will augment division support teams with system-specific subject-matter experts. CECOM's LAR program personnel will work with the division signal leaders to support that knowledge transfer.



### SIGNAL UNIVERSITY

Signal University students at Iron Horse University, Fort Carson, CO, receive training on the AN/PSC-5 Multiband Radio. Located at 11 installations inside and outside the United States, Signal University has instructors and training teams who deliver C4ISR training. Its curriculum helps Soldiers prepare for company- and battalion-level field training exercises and obtain specific MOS training. (U.S. Army photo)

Additionally, units will need to take efficient advantage of mission training complex (MTC) and Signal University training opportunities to prepare for company- and battalion-level field training exercises. MTCs can provide a simulated environment for Soldiers to hone their skills. They exist to provide commanders and staffs the capability to sustain Soldiers' individual digital skills, unit mission command collective training, warfighting functional competencies

and delta training in support of decisive action using live, virtual and gaming enablers. The MTC staff analyzes unit training objectives and recommends a mix of simulation, gaming and virtual training tools, then develops and executes training scenarios that integrate multiple events and/or echelons.

Signal Soldiers may also leverage Signal University for specific MOS training. Signal University is designed to promote



self-reliance through high-quality, cost-effective, computer-based training curricula. Located at 11 installations inside and outside the United States, Signal University provided more than 600 courses to Soldiers and helped more than 2,300 Soldiers obtain commercial information technology certifications in FY13.

Signal University staff also work to connect Soldiers to applicable training available within the Army, across DOD and through commercial or private institutions such as local community colleges. The curriculum focuses on:

- Local area networks—Microsoft products, VMware, information assurance and Battle Command Common Services administration.
- Wide area networks—Cisco, Juniper, Warfighter Information

Network – Tactical (WIN-T) network operations, WIN-T-focused basic routing and Voice over Internet Protocol.

- Transmission—Tactical radios, WIN-T transmission products and fiber transmission.

### FIELD SUPPORT OF THE FUTURE

The C4ISR CoE Field Support Integrated Product Team (IPT) recently began the multiyear implementation process at posts, camps and stations. The process will start with III Corps units, followed by I Corps and then XVIII Airborne Corps. In each instance, the IPT will apply a consistent, three-phase approach to implementation: corps- and division-level planning (approximately two months); Soldier training and preparation (approximately four months); and program implementation (approximately six months). That schedule is subject to change depending

on division-by-division success with each phase.

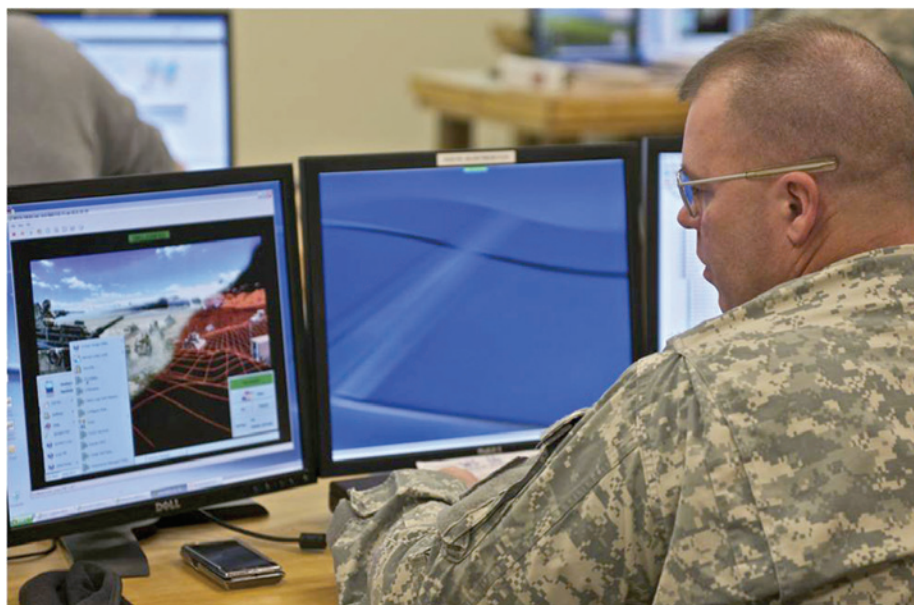
Concurrently, the C4ISR CoE, along with FORSCOM and TRADOC, will continue to work with units to integrate and prioritize necessary training as part of implementation. It also will leverage NTC and JRTC training exercises in FY15 to validate the field support footprint after the first implementation cycle.

### CONCLUSION

The C4ISR field support structure of the future will serve as a model for Army-wide implementation and will support a number of enterprise-level priorities as it reenergizes the Army's organic field support capabilities. It is expected to reduce costs at combat training centers and home station training exercises by 40 percent annually.

Furthermore, combining training with a deliberate implementation will bolster the Army's organic resources and further strengthen C4ISR field support capabilities over time, while investing in the Army's most important asset—its Soldiers.

*For more information, contact the author at the CECOM Logistics and Readiness Center's Field Support Directorate, 443-861-6218 or [robert.c.moyer.mil@mail.mil](mailto:robert.c.moyer.mil@mail.mil).*



### CRAWL, WALK, RUN

Increased investment in signal training, including mission training complexes, Signal University and courses such as the Digital Master Gunner class shown here, will be critical to the success of the new field support construct, ensuring that Soldiers have opportunities to build the skills needed to address operator-level issues in the field. (U.S. Army photo)

*MAJ ROBERT C. MOYER serves as the military deputy for CECOM's Field Support Directorate within CECOM's Logistics and Readiness Center, Aberdeen Proving Ground, MD. He has an M.A. in information technology management from Webster University and a B.S. in criminal justice from North Georgia College and State University. He is also a graduate of the U.S. Army Command and General Staff College.*

# SEEKING SYNCHRONIZATION

Army Sustainment Command's Distribution Management Center marks major gain in evolution of materiel management

*by COL William Krahling and Mr. Matthew Meenan*



As the Army transitions from a force focused on two simultaneous theaters of operation, it is experiencing the institutional effects of the fielding and equipping measures required for an Army at war. From accounting for rapidly fielded equipment from multiple pools managed by multiple agencies, to readjusting authorizations to reflect a changing operations tempo (OPTEMPO), the Army is a force out of balance. A culture change is required to effectively balance new production, reset and modernization of systems to enhance unit readiness.

To this end, the Army is executing several concurrent operations: divesting equipment that will be in excess of requirements for supporting the future force, reorganizing brigade combat teams, and modernizing the force to regain balance and drive readiness to support its missions. Enter the U.S. Army Sustainment Command (ASC) Distribution Management Center (DMC), a brigade that serves as the single materiel integrator and executing agent for the enterprise. The DMC provides materiel readiness and management to ensure that the Army maintains the appropriate equipment in accordance with unit authorizations. Greater modularity—in that units can accept release equipment in response to changes in OPTEMPO—and a better

balance of equipment on hand mean that units can spend less energy tracking unneeded equipment and return more rapidly to “Train/Ready” status as they return from deployments.

As the operational arm of U.S. Army Materiel Command (AMC), ASC provides materiel readiness capabilities to the force at home and abroad. DMC, working with ASC's field support brigades and logistics readiness centers, provides an end-to-end capability to deliver equipment from the national sustainment base to tactical units throughout the world.

The Army could no longer continue operating with multiple organizations managing materiel, using various independent information systems and stovepiped supply chains. The previous system, in which the processes and points of contact depended on what you needed and when, had to change. So the Army tapped ASC to leverage and synchronize materiel managers across the service, allowing the DMC to take the lead in reshaping and modernizing the force in terms of materiel readiness.

## LEAD MATERIEL INTEGRATOR

To effect the necessary changes, the secretary of the Army designated AMC as the lead materiel integrator (LMI) in March





#### READY TO FIRE

Bradley Fighting Vehicles from the 1st Battalion, 16th Infantry Regiment, 1st Armored Brigade Combat Team, 1st Infantry Division, escorted by High Mobility Multipurpose Wheeled Vehicles, start their run on the gunnery range during the unit's Table XII at the Digital Multipurpose Training Complex, Fort Riley, KS, Aug. 14, 2013. The DMC provides materiel readiness and management to ensure that the Army maintains the appropriate equipment in accordance with unit authorizations. (U.S. Army photo)

2011. As the executing agent for LMI, ASC assumed the role of synchronizing and integrating Army equipment according to Army priorities and directives. ASC is now the Army's single synchronization point, ensuring that the right materiel is provided in the right quantity and condition, to the right place at the right time.

Before the Army instituted the LMI concept, legacy processes relied on commands to balance themselves by requisitioning to fill shortages and divesting excess equipment on their own. Now, the Army has the technology whereby various

automated systems can communicate, integrating data and allowing for big-picture visibility, based on data from the Logistics Information Warehouse (LIW) of AMC's Logistics Support Activity.

The LIW in turn uses the LMI Decision Support Tool to pull data, including unit equipment authorizations (current and future) and quantities on hand, enabling ASC's materiel and unit integrators to work with program managers, life cycle management commands (LCMCs) and higher headquarters to perform readiness analysis and propose sourcing decisions for a given item, whether it is distribution

of new procurement and depot stocks or redistribution of command-identified excesses. The redistribution across commands allows the Army to match equipment excesses with identified shortages, promoting enterprise-level readiness and reducing the need to procure items already in the inventory. In addition, LMI analysis can determine when units have no current or future shortages, thus directing the responsible divestiture of equipment.

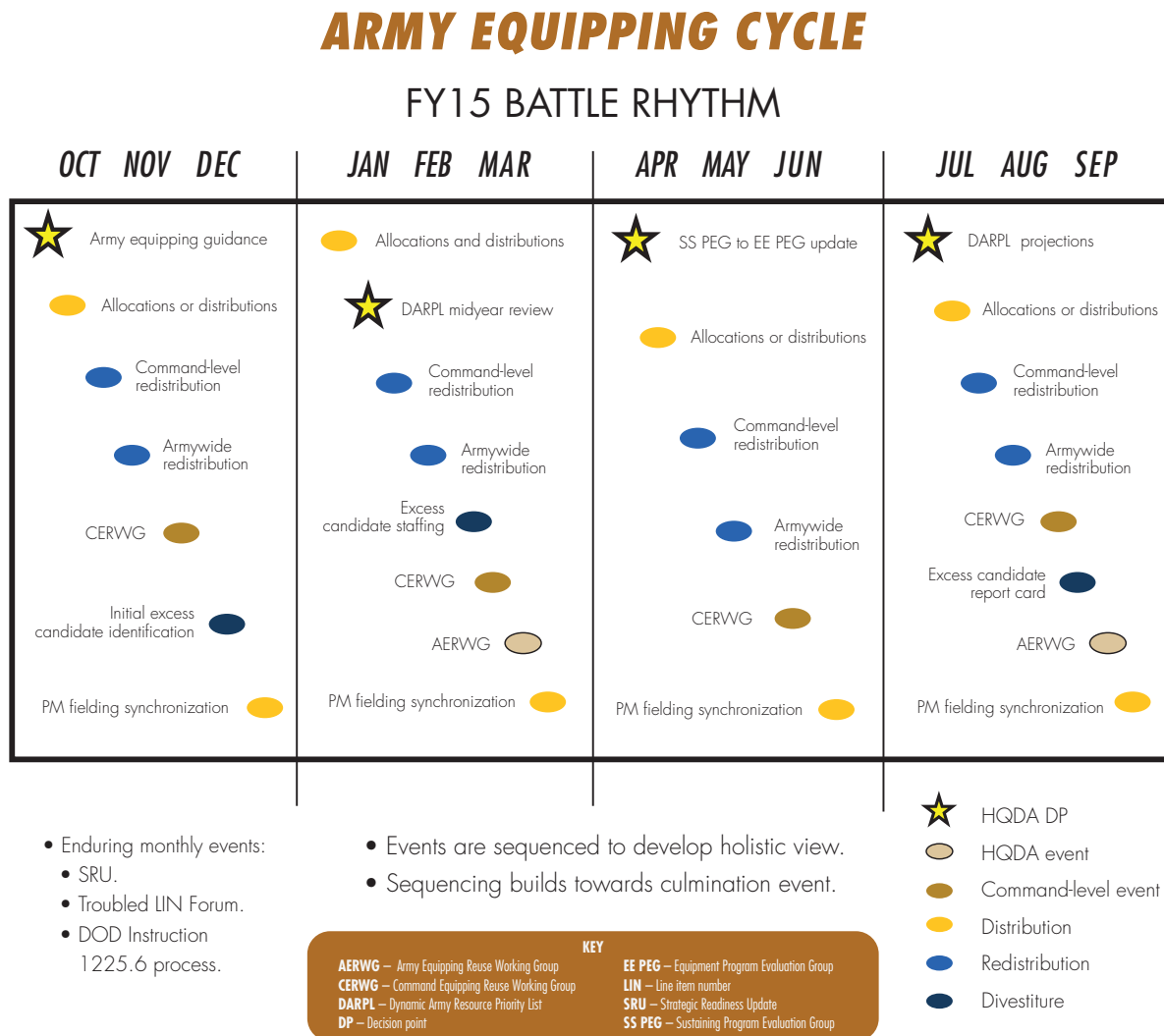
The synergy among Army commands, program managers and HQDA G-3 and G-8 promotes optimal decision-making, as well as the agility to adjust to emerging requirements. (LMI not only balances the force based on present requirements and authorizations, but also has the capability of analyzing future production schedules and authorizations. See Figure 1 on Page 36.) The resulting insights on the future readiness of a given unit or piece of equipment allow managers to influence long-term strategy. For example, a command may find itself with an equipment excess, but will see an increase in authorizations next year. So it would be wise for the command to retain the current excess rather than turn in equipment only to requisition it a year later. LMI enables commands to make more informed decisions on retention and divestiture of equipment.

#### CONNECTIVE TISSUE

By integrating materiel stakeholders, DMC acts as the connective tissue for program managers, industry and Army depots, allowing the Army to optimize new production and equipment through program managers.

DMC focuses on equipment on hand and maintenance availability with visibility of the complete Army requirements to support the Global Response Force, Army

FIGURE 1



#### IN SYNC

The LMI process provides the HQDA G-8 Army equipping strategy with a sequential method to help the Army meet the goal of achieving balance. (SOURCE: Command Equipping Reuse Working Group)

contingency forces, Army commands and U.S. Army Prepositioned Stocks. (See Figure 2.)

Thus DMC enhances readiness at both the unit and installation levels. An example of success at the unit level is the modernization of the Eighth Army in Korea. DMC enhanced readiness of forces on the Korean peninsula, namely, increasing readiness of equipment on

hand, as measured by the percentage of authorized equipment a unit possesses, by more than 10 percent from FY12 to FY13. This effort also succeeded in modernizing the 2nd Infantry Division fleets, and sourcing the reconnaissance squadron deployed to Korea

At the installation level, namely Fort Hood, TX, the DMC identified opportunities for readiness increases. By

recommending materiel redistributions across commands, the installation saw a potential readiness increase of 2.9 percent and enhanced effectiveness of returning Theater Provided Equipment to home station, all without incurring second-destination transport costs.

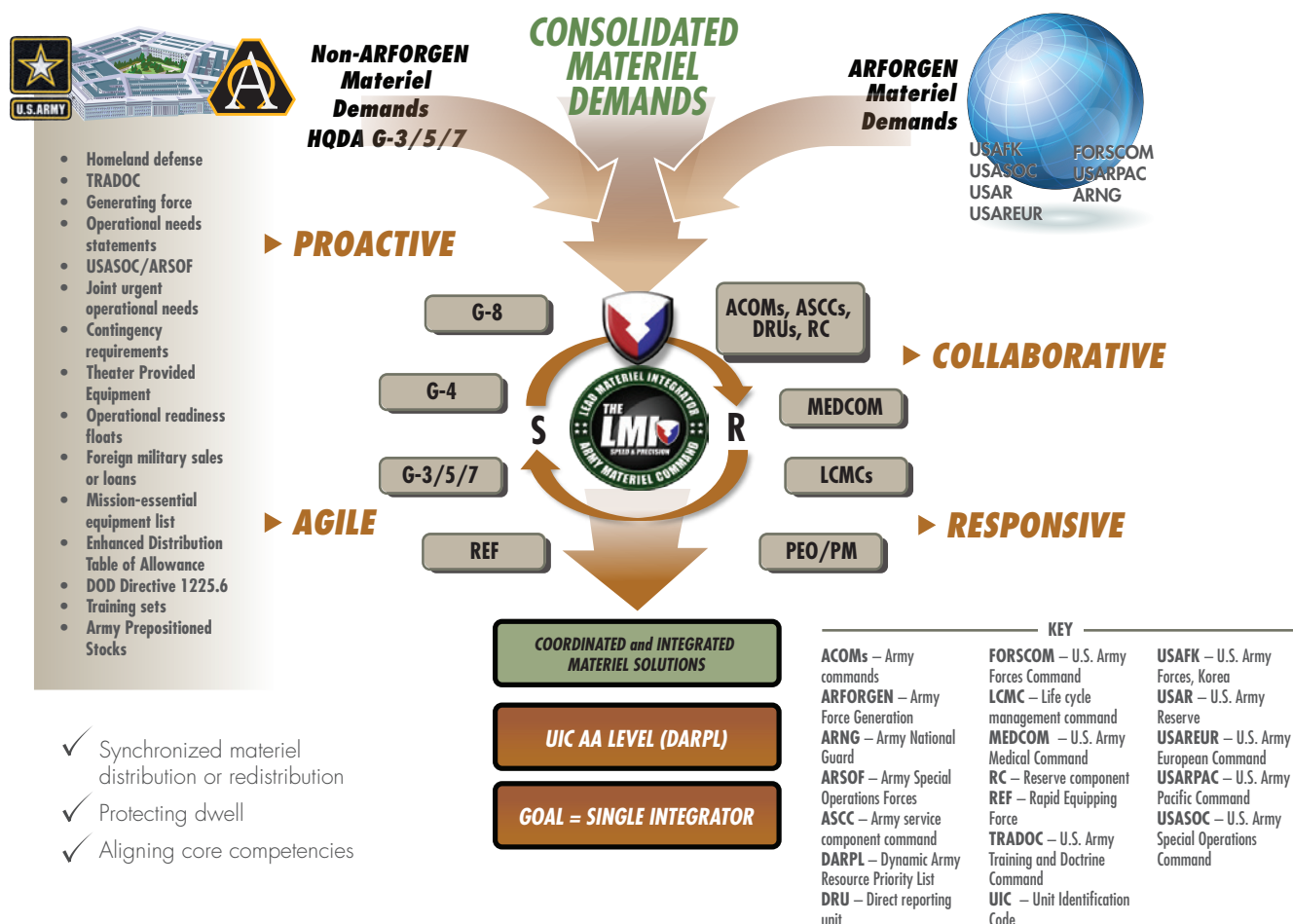
#### CONCLUSION

Today, the significant events in the LMI process are nested within the HQDA G-8





FIGURE 2



### THE BIG PICTURE

In synchronizing distribution, redistribution and divestiture of equipment, LMI is expected to produce a number of efficiencies, such as reducing the need for new procurement and for storage and maintenance of excess equipment, as well as increased predictability in tracking on-hand equipment, easier adjustments to emerging requirements and increased accountability. (SOURCE: Command Equipping Reuse Working Group)

**THE ARMY COULD NO LONGER CONTINUE OPERATING WITH MULTIPLE ORGANIZATIONS MANAGING MATERIEL, USING VARIOUS INDEPENDENT INFORMATION SYSTEMS AND STOVEPIPED SUPPLY CHAINS.**

Army equipping strategy. This approach incorporates a sequential method to help the Army meet the equipping goal of achieving balance.

First, as HQDA provides its quarterly materiel allocations, ASC's DMC representatives will engage LCMCs and Army commands, directing distributions to units based on priority order. Next, commands will balance themselves internally, identifying excesses and shortages and directing transfer of materiel among units.

Once command shortages and excesses are identified, ASC will coordinate redistribution between and among commands. Then the DMC will direct the transfer of materiel across commands and the divestiture of enterprise-level excesses.

As the LMI mission evolves, the sequencing of distribution, redistribution and divestiture of equipment will lead to a number of efficiencies, such as reducing the need for new procurement and for storage and maintenance of excess



### GATHERING THE GOODS

Soldiers from the 402nd Army Field Support Brigade at Camp Virginia, Kuwait, receive tactical vehicles and other equipment from units redeploying from Iraq. LMI enables commands to make more informed decisions on retention and divestiture of equipment. (U.S. Army photo)

equipment. Anticipated efficiencies also include increased predictability in tracking on-hand equipment, easier adjustments to emerging requirements and increased accountability.

In addition, there are materiel management forums in place throughout the equipping sequence, bringing together parties from Army commands, LCMCs, ASC and higher headquarters. The Unit Equipping Reuse Working Group focuses on resetting units after a deployment to prepare them for their training phase. The Command Equipping Reuse Working Group addresses readiness at the command level and focuses on getting commands in balance by providing them the ability to see themselves. The Army Equipping Reuse Working Group is the forum in which the Army community gathers to discuss policies and regulations that enable materiel management, resolve issues and promote best practices across the equipping community.

The LMI approach was born of necessity. The Army simply could not sustain a disjointed system of materiel management.

The technology to enable change was already available; our approach had to evolve. The LMI concept evolves materiel management to keep pace with our technological capabilities.

*For more information, contact the ASC DMC at [usarmy.RIA.asc.mbx.dmc-dst@mail.mil](mailto:usarmy.RIA.asc.mbx.dmc-dst@mail.mil) or visit the DMC website at <http://www.aschq.army.mil/home/DMC.aspx>.*

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*COL WILLIAM KRAHLING is the commander of the DMC at ASC Headquarters, Rock Island Arsenal, IL. He holds a Master of Strategic Studies degree from the U.S. Army War College and a B.S. in communications from St. Cloud State University.*

*MR. MATTHEW MEENAN is a logistics management specialist for DMC. He holds an MBA from St. Ambrose University and a B.A. in journalism and mass communication from the University of Iowa. He is Level III certified in life-cycle logistics.*





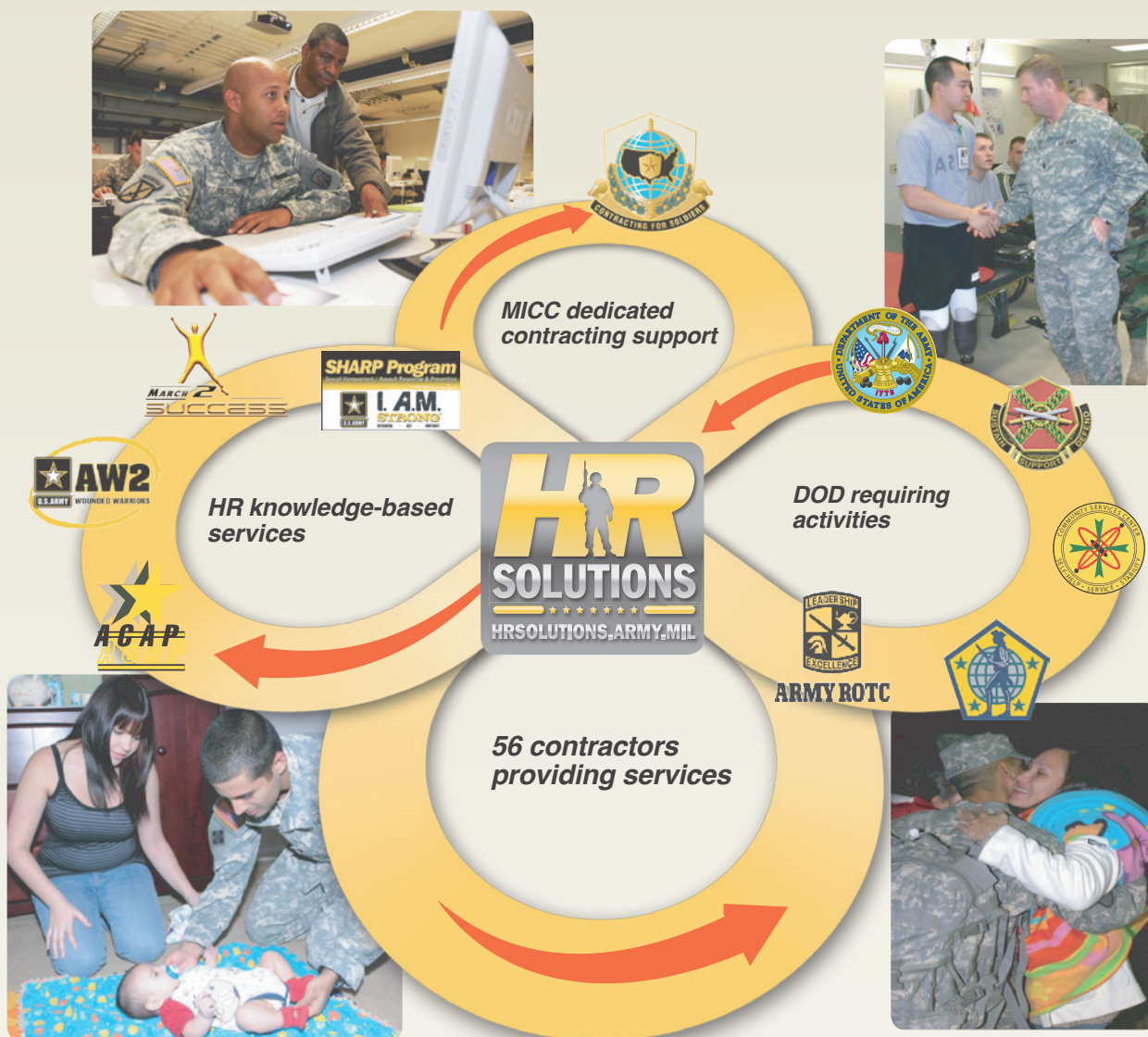
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#### **MANY TANKS, BUT IT'S NO REFORGER**

The armored vehicles for EAS, shown here arriving at the Grafenwoehr Training Area Jan. 31, include 29 M1A2 Abrams tanks, and 41 M2 Bradleys, along with 40 tracked armored vehicles, 150 wheeled vehicles, 10 pieces of engineer equipment and eight M109 Paladins—a fraction of the hundreds of main battle tanks, for example, that took part in REFORGER at its peak. Altogether, EAS comprises 350 Class VII major end items, along with about 2,900 items in the MTOE and Table of Distribution and Allowance. (U.S. Army photo by Markus Rauchenberger)





# ROTATIONAL READINESS

AMC supports regional shift with  
European Activity Set

*by LTC William J. Shinn Jr. and Mr. Ronnie Lawson*



### PM PRESENCE

A fielding team for the project manager for heavy brigade combat teams of Program Executive Office Ground Combat Systems prepares for an Abrams tank issue to AFSBn – Germany. Establishing EAS required detailed coordination between the battalion and program managers for the various systems, among numerous other logistic concerns. (U.S. Army photo)

The Army plans to conduct two 60-day European training rotations with Soldiers this year to support the leadership's regionally aligned forces plan—rotations that will show the Army's intent to improve its capability to meet the requirements of combatant commanders. The U.S. Army Materiel Command (AMC) will support the rotations with its latest prepositioned equipment program, the European Activity Set (EAS).

In support of the chief of staff of the Army's (CSA's) vision for regionally aligned forces, described in the 2013 "Army Strategic Planning Guidance," the U.S. Army Sustainment Command (ASC) helped develop and resource the EAS. With personnel and equipment from U.S. Army Prepositioned Stocks (APS), redistributed from within Europe as well as from retrograde equipment from the U.S. Central Command area of responsibility, the EAS surpassed projections for equipment on hand and readiness.

EAS, which includes the latest versions of the Abrams tanks and the Bradley infantry fighting vehicle, enables training in support of U.S. European Command's (EUCOM's) theater goals as well as the rapid projection of combat

power throughout Europe. ASC's role as a global command, arrayed with seven geographically aligned Army field support brigades (AFSBs) that are focused on sustaining Army and joint forces in support of combatant commanders, was instrumental to the success of the EAS program.

"EAS validates ASC's end-to-end sustainment capabilities by the work our CONUS-based brigades do to prepare and ship units, and by our forward-stationed and -deployed AFSBs conducting reception, staging, onward movement and integration in theater," said MG John F. Wharton, commanding general of ASC, a major subordinate command of AMC.

In April, elements of the 1st Cavalry Division's 1st "Ironhorse" Brigade Combat Team (1-1 CAV) deployed from Fort Hood, TX, to the Joint Multinational Training Command ranges in Grafenwoehr, Germany, for a new training mission to help inaugurate the program. Shortly after their arrival in Germany, the Ironhorse Soldiers assumed temporary ownership from AMC of the new and upgraded combined-arms, battalion-sized set of armored fighting vehicles and promptly moved out to engage in multinational training

exercises in France (Rochambeau 14), Latvia (Saber Strike 14) and Germany (Combined Resolve II, the largest European multinational exercise in 2014). Altogether, more than 4,000 Soldiers from 13 nations participated in these exercises with the 1st Cavalry Division troops.

LTG Patricia E. McQuiston, AMC deputy commanding general, applauded the efforts of ASC's 405th AFSB in support of the mission. "From the earliest discussions of the EAS, the 405th AFSB leaned far forward in its planning efforts to ensure flawless execution," McQuiston said. "From requesting the funding, receiving the equipment, meticulously accounting for it on Army property records, configuring it with communications and mission command systems for operations, performing all required maintenance and service actions, and issuing it to 1-1 CAV, AMC ensured that units received the best equipment possible to conduct critical operations with our allies."

### A CRITICAL MITIGATION

EUCOM considers rotational forces critical to mitigate the recent loss of two brigade combat teams (BCTs) in Europe, whose equipment now makes up the bulk of EAS. Troops from the United States





will serve as a maneuver element for the European Rotational Force and as part of the NATO Response Force. They will conduct combined training and exercises with allies and partner nations in their shared effort to protect global security.

EAS follows standard APS procedures to conduct the inventory, preventive maintenance checks and services, road tests and signing lateral transfer documentation. Depending upon a unit's earlier preparation and the strength of the leadership presence, issue to a company- or troop-sized unit can vary from a day to a much shorter period, said COL Christopher J. Roscoe, 405th AFSB commander.

The November 2012 Army Requirements and Resourcing Board (AR2B) General Officer Steering Committee (GOSC) approved rotational activity sets, along with humanitarian assistance and disaster relief gear, as part of APS. DA assigned EAS to APS 2, the prepositioned equipment stored in Europe and maintained by Army Field Support Battalion (AFSBn) – Italy in Livorno. EAS has been situated at the Grafenwoehr training area, however, to allow a succession of rotational brigades to draw on it for training and contingencies under the Joint Multinational Training Command's watch for U.S. Army Europe (USAREUR). AFSBn – Germany, in Vilseck, is providing AMC oversight of EAS.

In one sense, the EAS mission came at a good time. USAREUR had inactivated two BCTs in Germany since 2012 and provided about 70 percent of the equipment sourcing. Because USAREUR was at the end of a large reduction, equipment was present in theater that otherwise might not have been available. AMC and its APS manager, ASC at



#### LINING UP FOR SERVICE

U.S. Army M1A2 Abrams tanks arrive at the Grafenwoehr Training Area Jan 31. The vehicles are part of EAS, a combined arms, battalion-sized set of vehicles and equipment prepositioned to support the European Rotational Forces and the NATO Response Force during training exercises and real-world missions. (U.S. Army photo by Markus Rauchenberger)

Rock Island Arsenal, IL, pulled the remaining stocks from APS sources in the continental United States (CONUS), Korea, Italy, Afghanistan and Kuwait, except for the Abrams tanks and Bradley Fighting Vehicles, which were shipped to Europe from Fort Hood.

#### NOT THE COLD WAR

The return of heavy armor to Germany as part of EAS calls to mind the Return of Forces to Germany (REFORGER) exercises from 1969 to 1993, which involved divisions of armored vehicles and crew-served weapons—roughly 40,000-120,000 Soldiers. REFORGER was intended to transport units to Europe quickly to fall in on prepositioned warfighting stocks in the event of a Soviet invasion.

But we must let go of that Cold War paradigm. EAS has nowhere near the purpose, scope or scale of REFORGER. While a total of about 4,000 soldiers from 16 countries participated in Europe's first rotational training exercise, they included fewer than 1,250 from the 1-1

CAV. EAS includes 29 M1A2 Abrams tanks and 41 M2 Bradleys, along with 40 tracked armored vehicles, 150 wheeled vehicles, 10 pieces of engineer equipment and 8 M109 Paladins. Altogether, 350 Class VII major end items comprise the set, along with about 2,900 items in the Modified Table of Organization and Equipment (MTOE) and Table of Distribution and Allowance.

#### AMC IMPROVISES

Facilitating the transition from one era to the next in Europe by establishing the EAS was a necessary but challenging task for AFSBn – Germany and its brigade headquarters, the 405th AFSB. Although the EAS decision may have come at a good time for sourcing, from other angles the timing was replete with irony, as sequestration had become the defining feature of Army life. "Some of our challenges arose due to the unique timing of the EAS creation during the budget crisis in 2012 and initial reaction to Army sequestration," Roscoe said. "EAS shipments of MTOE equipment and ASL/PLL [authorized stockage list



and prescribed load list] began to arrive prior to the establishment of facilities or the hiring of the workforce,” resulting in reliance on borrowed military manpower and double or triple material handling of equipment and supplies.

The major challenge unfolded when hundreds of pallets of EAS equipment began arriving on AFSBn – Germany’s doorstep in June 2013, before EAS workforce and facilities had actually been funded and almost eight months before the complete workforce was in place.

As often in the Army, necessity proved to be the mother of invention. AFSBn – Germany and the 405th Support Operations Branch began to improvise, relying heavily on teamwork with other units and organizations within the Grafenwoehr garrison. Elements of the 21st Theater Sustainment Command and the Bavarian military community stepped up to help meet the challenge and move the EAS program forward.

The Theater Logistics Support Center – Europe’s (TLSC-E’s) maintenance activity in Vilseck placed 47 maintenance and materiel management employees under the operational control of AFSBn – Germany. “EAS was the consummate team effort,” said Roscoe.

“USAREUR provided TLSC-E mechanic labor without red tape and hurdles and saved us all from missing the target.”

AFSBn – Germany dedicated its S-4, Curtis Dabney, later promoted to the battalion support operations officer, to coordinate with tenant units for help in offloading, receiving, inspecting and bringing to record arriving equipment and spare parts. Dabney arranged for forklifts, coordinated container movers, and obtained escorts for the FedEx, DHL and other service drivers delivering pallets from CONUS, Italy, Korea and Kuwait.

The 405th Support Operations Branch EAS project manager, Robin Dothager, completed coordination for installation of the logistics automation Army War Reserve Deployment System (AWRDS), a necessity in establishing APS property accountability and issuing equipment.

### CONCLUSION

The Army and USAREUR have embarked on a new era that will rely more heavily on deploying troops from the United States to Europe for contingencies and training. Certainly, the weapons and equipment comprising EAS will remain the materiel cornerstone for these rotational forces. When the 405th AFSB looks to the future, the

### TAKING STOCK

LTC William J. Shinn Jr., commander of AFSBn – Germany, escorts COL Thomas Matsel, G3 of the 7th Army Joint Multinational Training Command, during a Jan. 21 inspection of vehicles and equipment that are part of EAS in Grafenwoehr. EAS has been situated at the Grafenwoehr Training Area to allow a succession of rotational brigades to draw on it for training and contingencies. AFSBn – Germany is providing AMC oversight of EAS. (U.S. Army photo by Markus Rauchenberger)

brigade’s requirement to meet any and all EAS challenges could not be clearer or more compelling.

*For more information, contact Curtis R. Dabney at DSN 314-476-9840 or [Curtis.r.dabney.civ@mail.mil](mailto:Curtis.r.dabney.civ@mail.mil); or Michael J. Printer, deputy commander of AFSBn – Germany, at DSN 314-476-3003 or [Michael.j.printer.civ@mail.mil](mailto:Michael.j.printer.civ@mail.mil).*

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*LTC WILLIAM J. SHINN JR. is the commander of AFSBn – Germany at Vilseck. He served previously as the S-3 for the 10th Sustainment Brigade – Afghanistan. He has an M.S. in adult and continuing education from Kansas State University, an M.S. in health and exercise science from California University of Pennsylvania, and a B.S. in health and physical education from Lock Haven University.*

*MR. RONNIE LAWSON, deputy support operations officer with the 405th AFSB, Kaiserslautern, Germany, has been a logistics assistance representative (LAR), a member of the AMC Logistics Assistance Program, since 2002. His tenure as a LAR includes assignments with five AFSBs and multiple deployments to Operations Enduring Freedom and Iraqi Freedom. He is Level III certified in life-cycle logistics.*



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# A MODESTA PROPOSAL

CERDEC is building a holistic modeling and simulation environment

*by Mr. Daniel Duvak and Mr. Noah Weston*

As Army tactical networks become more and more complex, the tools used to analyze these networks must also evolve. In many cases the modeling and simulation (M&S) capabilities developed by various Army organizations and contractors over the past 10-15 years do not have the technical capabilities to meet the Army's complex needs today, such as detailed routing and latency analysis. As the Army moves to a more complex M&S environment, the acquisition and science and technology communities must work toward a defined end state—that is, a common, robust environment for our M&S capabilities. By doing so, we can avoid stovepiped processes, unneeded and repetitive analyses, and potentially duplicative spending by project managers (PMs).

The complexity of the Army tactical network is causing integration issues with new technologies. That is driving the Army toward a system-of-systems (SoS) engineering and integration approach in which analysis needs to be conducted earlier and at larger scales beyond the component level. Currently, new technologies aren't tested on an SoS network until they are at technical readiness level (TRL) 5 – 6. This often makes it necessary to rework these technologies or to rework the network for them to add value. Therefore, we need to take a conscious look as an Army at cost, in terms of reining in current spending and coordinating capabilities across the Army acquisition community. When possible, if technologies can be integrated at

an earlier level of development, TRL 3 or 4, that would enable course corrections to happen earlier in the development process, and at less cost.

The U.S. Army Research, Development and Engineering Command's Communications-Electronics Research, Development and Engineering Center (CERDEC) is using the expertise and infrastructure of its Space and Terrestrial Communications Directorate (S&TCD) to build a holistic, tactical M&S environment that will provide significant long-term cost savings to the Army.

Working with Program Executive Office Command, Control and Communications – Tactical (PEO C3T) and leveraging capabilities developed by the U.S. Army Research Laboratory Mobile Network Modeling Institute (ARL MNMI), CERDEC has begun development of the Modeling, Emulation, Simulation Tool for Analysis (MODESTA). This tool provides a large-scale, tactical network analysis environment with a centralized framework so engineers and analysts can conduct realistic, operational scenarios with emulated and simulated systems—all while accessing centralized data models and data collection, reduction and analysis tools.

Working under the MODESTA framework will create efficiencies in licensing, waveform development, and maintenance and





### VIRTUAL AND LIVE

MODESTA enables live hardware, such as tactical radios or routers, to be plugged in or emulated, which provides the user a virtual environment in which to interact with live hardware and see true performance characteristics at scale. (Images courtesy of U.S. Army CERDEC)

server costs for tactical network M&S, with the potential to reduce spending by as much as 80 percent. Moreover, using this type of centralized, modular, open framework for SoS M&S analysis will provide a repeatable, scalable, high-fidelity capability so analysts can examine connectivity, capacity and latency in large-scale scenarios in weeks instead of months.

MODESTA combines high-fidelity M&S tools with existing government

open-source tools, such as the Extendable Mobile Ad hoc Network Emulator, and commercial tools, such as Scalable Network Technologies' Joint Network Emulator, in a user-friendly framework with automated processes, standard interfaces and databases. Leveraging existing commercial tools and government off-the-shelf (GOTS) tools to address large-scale problems for which commercial tools have hefty licensing costs will provide significant cost savings and enable sharing across PMs. Essentially, if everyone's using the

same tools, it's much easier to stitch things together for an SoS or family-of-systems analysis. MODESTA will support the GOTS tools by using the Army high-performance computers at ARL.

### MODESTA'S BENEFITS

The MODESTA framework will also enable the S&T and acquisition communities to perform cross-PEO analysis, so that threats, intelligence systems, Distributed Common Ground System – Army and sensor feeds can be



### PUTTING IT ALL TOGETHER

MODESTA provides a large-scale, tactical network analysis environment with a centralized framework so engineers and analysts can conduct realistic, operational scenarios with emulated and simulated systems—all while accessing centralized data models and data collection, reduction and analysis tools.

evaluated in conjunction with the tactical communications network. The MODESTA Configuration Management Structured Query Language databases will help eliminate duplicative analysis by tracking data such as the force structure, scenarios and types of traffic used. As a result, when someone wants to perform an analysis two years from now, he or she will know what was done previously. Additionally, MODESTA's modular framework will provide most of the communications infrastructure and the data

collection and reduction so users can evaluate multiple types of systems—ranging from mission command applications to cyber defensive and offensive systems to sensors—on a scalable network. This could be, for example, an entire brigade of networked systems, which can be as many as 4,000 networked entities. MODESTA could support a “call for fires” thread across the network, or cyber systems could evaluate tactical public key infrastructure and its performance on an Army tactical network.

MODESTA enables live hardware, such as tactical radios or routers, to be plugged in or emulated, which provides the user a virtual environment in which to interact with live hardware. The result is to provide true performance characteristics at scale while running real applications, such as mission command and fires applications.

MODESTA's framework incorporates both emulated and live hardware environments, enabling seamless interaction between them and allowing increased



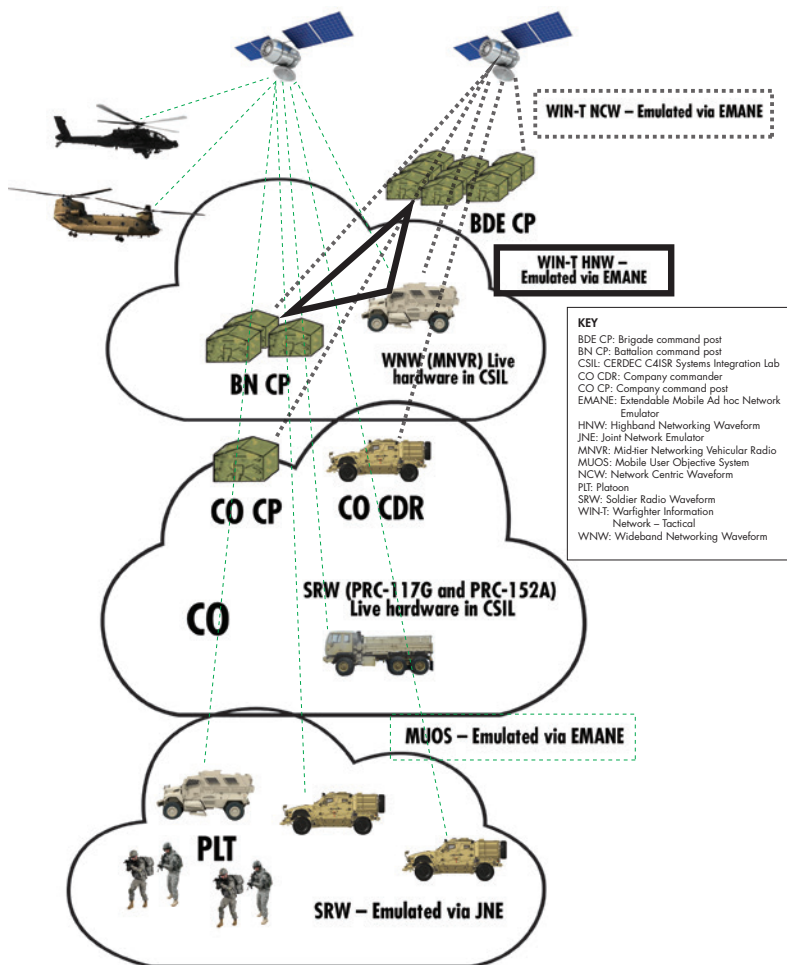
scalability with few limitations. Augmenting live hardware with emulation provides the customer with a good picture of how the technology is going to interact in the full SoS network environment before development gets too far along. Furthermore, users of the system won't have to pull radios, unmanned aerial systems or vehicles out of the field to use as training or laboratory assets.

The MODESTA infrastructure would also support System of Systems Engineering and Integration Directorate initiatives such as the Always On – On-Demand Environment for Networks and Net-Centric Systems, which seeks to federate labs across DOD to allow for large-scale testing, evaluation and analysis. In essence, that means connecting labs at different locations via high-speed fiber optics so that, federated, they appear to be one single lab when doing analysis. CERDEC is now partnered with PEO C3T to build a brigade-scale, high-fidelity M&S environment where we'll be replicating a future capability set for the Army, using high-fidelity emulation of a full brigade and live hardware from the CERDEC C4ISR Systems Integration Laboratory (CSIL).

### WHAT'S NEXT

CERDEC has completed the creation of the data model and structure behind MODESTA and is working on waveform developments to support future capability set analysis. The engineers have put in place much of the code that defines the open architecture and provides the links between the data model and the M&S tools.

We're leveraging labs within CERDEC S&TCD, such as the CSIL and CERDEC C4ISR Ground Activity that have expertise in using M&S to support large-scale assessments such as the Network



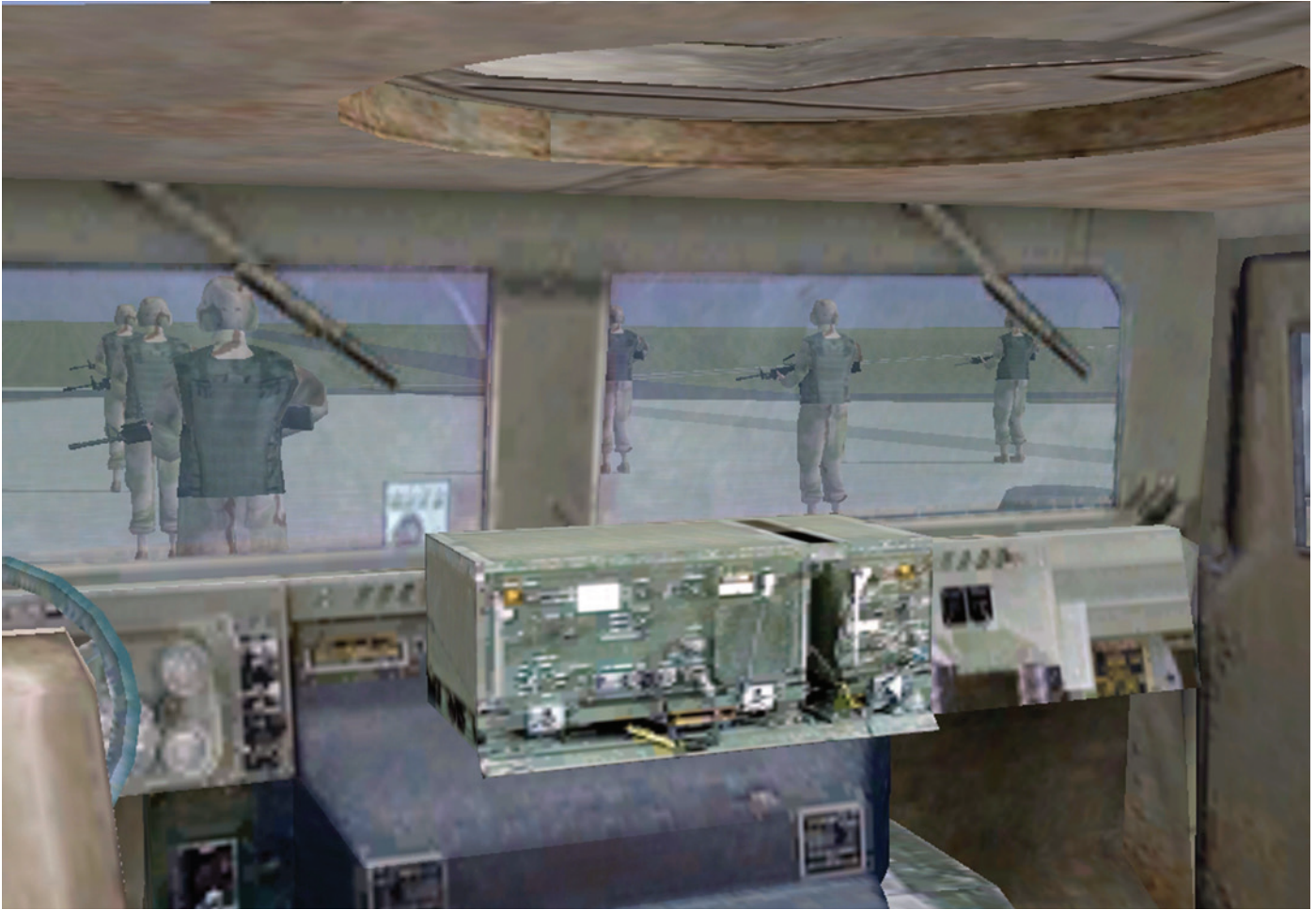
### ECONOMIES OF SCALABILITY

MODESTA's framework enables seamless interaction between live hardware and emulated systems, allowing increased scalability with few limitations. This provides customers with a good picture of how the technology is going to interact in the full SoS network environment early in the development process. CERDEC is partnering with PEO C3T to build a brigade-scale, high-fidelity M&S environment that will replicate a future capability set for the Army, using high-fidelity emulation of a full brigade and live hardware. (SOURCE: U.S. Army CERDEC)

Integration Evaluations (NIE). The CSIL can simulate a slice of a brigade-sized tactical network and replicate terrain, foliage and movement, allowing a system to react naturally as those components change. CERDEC C4ISR Ground Activity has experience running large-scale traffic in the field, using live-virtual-constructive M&S capabilities to perform field-based risk reduction. They can also perform force-on-force simulation, which allows us to include tactically

relevant movement information in the MODESTA environment.

Externally, we're leveraging the high-performance computing systems of ARL MNMI and are working with them on waveform development. We're also working with the U.S. Army Training and Doctrine Command's Architecture Integration and Management Directorate to format our data aggregation so that the operational community and the



### TRUE PERFORMANCE

MODESTA's framework incorporates both emulated and live hardware environments, enabling seamless interaction between them and allowing increased scalability with few limitations.

S&T community can leverage MODESTA to make decisions and develop courses of action.

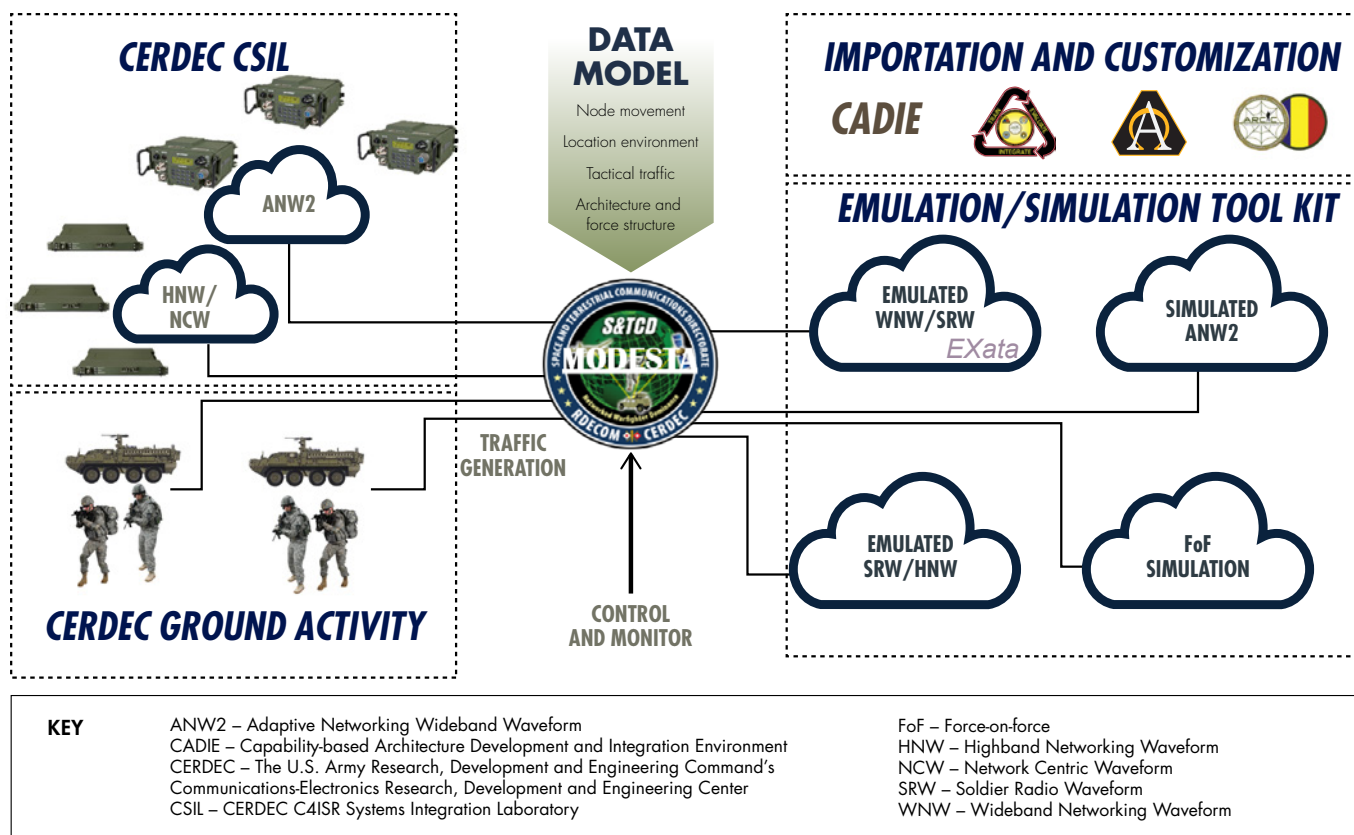
CERDEC also plans to apply MODESTA to its research and development efforts. All CERDEC S&TCD research and development efforts that touch the Army tactical network will go through SoS M&S at the onset of the program. Following M&S, the technology will go to what's known as lab-based risk reduction in the CSIL, where it will actually link to an Army tactical network in the lab environment. Then it will go up to the C4ISR Ground Activity for field-based risk reduction and assessment to work out any kinks so there is less necessity for troubleshooting in field events. This process will allow for

technology progression from TRL 3 to level 6 with a focus on SoS integration. MODESTA will play a key role in this progression, unifying the pockets of M&S expertise across CERDEC for a more integrated M&S capability across the organization.

### CONCLUSION

CERDEC S&TCD has a long history of creating tactical communications models and performing tactical data collection and reduction for analysis, from individual PMs to our lab-based and field-based risk reduction support of NIEs. As a result, we know what data, tools and processes are useful for evaluating these systems. That's why we're leading the charge toward an open, modular, high-fidelity M&S tool.





### FRAMEWORK FOR COST SAVINGS

MODESTA is a holistic tactical M&S environment that will provide significant long-term cost savings to the Army. Working under the MODESTA framework will create efficiencies in licensing, waveform development and maintenance, and server costs for tactical network M&S, reducing spending by as much as 80 percent. Moreover, analysis can be completed in weeks instead of months.

MODESTA will maximize efficiencies for the acquisition and S&T communities and provide significant cost savings to the Army by standardizing processes and potentially eliminating duplicative efforts. It will be easier for the Army to achieve a unified vision for our tactical networks if we're all using the same analysis results to make decisions that will support our Soldiers.

For more information about CERDEC S&TCD, go to [http://www.cerdec.army.mil/inside\\_cerdec/stdl/](http://www.cerdec.army.mil/inside_cerdec/stdl/). For more on MODESTA, contact CERDEC at <http://www.cerdec.army.mil/contact/>.

MR. DANIEL DUVAK is the division chief for CERDEC S&TCD's Systems Engineering, Architecture, Modeling and Simulation (SEAMS) Division. He holds M.S. degrees in systems engineering and in electrical engineering from the Stevens Institute of Technology and a B.S. in electrical engineering from Virginia Tech.

MR. NOAH WESTON is the acting M&S team leader for CERDEC S&TCD's SEAMS Division. He holds a B.S. in computer science from the University of Maryland, Baltimore County.

# ‘DIGITAL DIRT’

With too many boots for too little ground,  
training system expands units’ options

*by COL Wayne Epps*

American humorist Will Rogers is often quoted as saying, “Buy land. They aren’t making any more of the stuff!” The Army is not finding that quip quite as funny as it once was, as the number of troops returning to their home stations puts a serious strain on the available training space.

While the Army was heavily deployed in Iraq and Afghanistan, a typical Army post had most of its units in combat, leaving the pre-deployment units back home with ample space to conduct live training. Today, that situation is reversed, which is creating competition for the limited space in live training areas. At Joint Base Lewis-McChord, WA, for instance, the available maneuver space limits live training to one brigade at a time. That means the seven brigades stationed there don’t have enough land to hone their skills for joint missions.

If Rogers were alive today, he might be inclined to gloat about his statement of the obvious, but “land” isn’t just acreage anymore. Rogers had no way of knowing in the early 1930s that, 80 years later, technology would allow the Army to create what it calls “digital dirt,” thus allowing commanders to significantly increase training space for the battlefield of tomorrow.

## **BLENDING THE DIRT**

The use of digital dirt to greatly expand training space first became an option in October 2012, when the 2nd Brigade Combat Team, 1st Cavalry Division tested the Live, Virtual, Constructive – Integrating Architecture (LVC-IA) at Fort Hood, TX.





### VIRTUAL BEARINGS

CW3 David Fox, right, shows CW2 Steven Stage how to use the GPS on their CH-47D helicopter simulator as they prepare for a tactical platoon air assault mission in the AVCATT at Simmons Army Airfield near Fort Bragg, NC. LVC-IA enables the Army to tie together systems like AVCATT with other virtual assets as well as live and constructive training elements. (Photo by SGT April Campbell, 82nd Combat Aviation Brigade (CAB))



By integrating the virtual element (a real person in a simulator) and the constructive one (computer-generated forces and environments) into live training assets, commanders need less ground to train on because they can expand their battlespace with a synthetic environment, thus allowing more units to be trained while on home station.

Before the introduction of LVC-IA, managed by the Program Executive

Office for Simulation, Training and Instrumentation (PEO STRI), commanders could blend the three training tools in their exercises, but the Soldiers on the ground operated independently of the virtual and constructive assets. LVC-IA technology allows aircrews, for the first time, to do air-ground integration with the live forces and other virtual simulators, creating a combined arms training environment.

It accomplishes this as a system-of-systems providing a net-centric linkage that collects and exchanges data among existing training aids, devices, simulations and simulators for both joint and Army mission command systems. It provides hardware and software to interface with and stimulate the various LVC communication protocols.

The testing of LVC-IA at Fort Hood marked the first time that commanders





#### BATTLESPACE AWARENESS

Bob Cohen, a combat developer for the U.S. Training and Doctrine Command Capability Manager – Live, shows Soldiers the Homestation Instrumentation Training System (HITS) used for a LVC-IA live training exercises. HITS sends geo-referenced data to a central control point, tracking when and where Soldiers shoot or get shot. (Photo by SSG Daniel Wallace, III Corps and Fort Hood Public Affairs)



#### GETTING THE BIG PICTURE

MAJ John Culpepper, simulations operations officer, 3rd Combat Aviation Brigade, watches the action during a field exercise using the LVC-IA at Hunter Army Airfield, GA. (Photo by SGT William Begley, 3rd CAB Public Affairs)

up to brigade level were able to oversee and direct mission planning and rehearsals using LVC assets that could communicate with one another. LVC-IA provides such a realistic common operating environment that commanders cannot distinguish their live assets from virtual or constructive ones.

During training exercises, with the LVC-IA “stimulating” the mission command system, commanders will be controlling the exercise using Soldiers in the field; Soldiers using simulated equipment; and semiautomated simulated forces. They will all appear as live entities on the common operating picture.

As an example, when directing use of aviation assets during a training mission, the commander doesn’t know if a pilot reacting to his orders is in a real helicopter or the Aviation Combined Arms Tactical Trainer (AVCATT) simulator.

AVCATT, which provides the virtual air asset to the commander during mission rehearsal, replicates the cockpit environments of the Apache attack helicopter; the Kiowa observation and direct support helicopter; the Black Hawk troop transport, resupply and combat assault helicopter; and the Chinook heavy-lift transport helicopter. This allows the commander to use any mix of these helicopters to match mission requirements.

#### REAL AND SEMIAUTOMATED

AVCATT crews wear helmet-mounted displays for “out-the-window” realistic virtual environments. They engage with threat or friendly semiautomated forces that are integrated through constructive simulation.

That is where constructive simulation plays such a large role in LVC-IA. During





### BLUE FORCE TRACKING

SFC William O'Neal, armored tank commander in 1st Battalion, 30th Infantry Regiment, updates information on the Blue Force Tracker in his M1 Abrams tank simulator during fielding of the LVC-IA at Evans Army Airfield at Fort Stewart, GA. LVC-IA creates digital dirt where Soldiers can train. (Photo by SGT William Begley, 3rd CAB Public Affairs)

training at their home stations, because of space limitations and their given landscape, commanders can't always replicate the operational environment for which they are training. Incorporating constructive simulation in training exercises can add those realistic conditions in their virtual training simulations and through their mission command systems.

As the Soldiers look through their helmet-mounted displays or out the windows of their virtual ground trainers,

the terrain, weather, buildings, equipment, weapons and other aspects of the battlefield come to virtual life through constructive simulation.

When employing LVC-IA, commanders determine at what level (company, battalion or brigade) they want to run a training exercise based on their mission training objectives. They also can determine what combination of live, virtual and constructive simulations and simulators they need based on their training objectives.

Through coordination with the home station's mission training complex, the unit coordinates availability of the live, virtual and constructive assets, connectivity to the training aids, devices, simulators and simulations being used, and the resources available to support the training event.

The scenario developed as a result mirrors the operational environment in which the unit would conduct the actual mission.



### GOING LIVE

Soldiers at Fort Hood, TX, prepare to participate in the live portion of LVC-IA testing. (U.S. Army photo)

Once all of the training assets are in place, the commander issues an operations order to the lower-echelon commanders, and the training exercise begins.

The exercise can last hours or several days, based on its size and how it progresses. LVC-IA facilitates training exercises lasting up to four days. After the exercise is over, LVC-IA provides commanders consolidated after-action reviews.

Plans for fielding version two of LVC-IA in the second quarter of FY15 include the gaming capability as well as the means to conduct joint exercises with units located at other bases.

### CONCLUSION

The development of LVC-IA technology will continue to focus on the seamless integration of Army training capabilities to achieve the objectives of the Integrated Training Environment. In addition, it will continue to support and be concurrent with

the evolution of mission command systems critical to the conduct of unified land operations.

A measure of LVC-IA's success is that it is now in use at Forts Hood, Bliss, Campbell, Stewart, Drum [NY] and Riley [KS]. Joint Base Lewis-McChord can expand its training capabilities when it receives LVC-IA in FY15.

*For more information, contact Richard Link, PEO STRI's assistant product manager for LVC-IA, at 407-384-5214.*

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*COL WAYNE EPPS is the project manager for constructive simulation at PEO STRI. He holds an M.A. in procurement and acquisitions management from Webster University's Walker School of Business and Technology and a B.S. in economics from Willamette University. He is Level III certified in contracting and in program management.*



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## Virtual Battlespace 3 Brings Greater Realism to the Not-Quite-Real Fight

The Army has released Virtual Battlespace 3 (VBS3), and while its flagship gaming and training platform didn't have gamers waiting in line for days for the new version of the game, Soldiers are pleased with the improvements.

"Video games are very stimulative, they're good for learning, and that's what we see in our VBS systems," said Kim Gilbert Mason, live, virtual and constructive gaming coordinator at the Mission Training Complex at Fort Campbell, KY. "Not only does it capture the Soldier's attention when he comes in, but the Soldiers are excited and motivated to come to training."

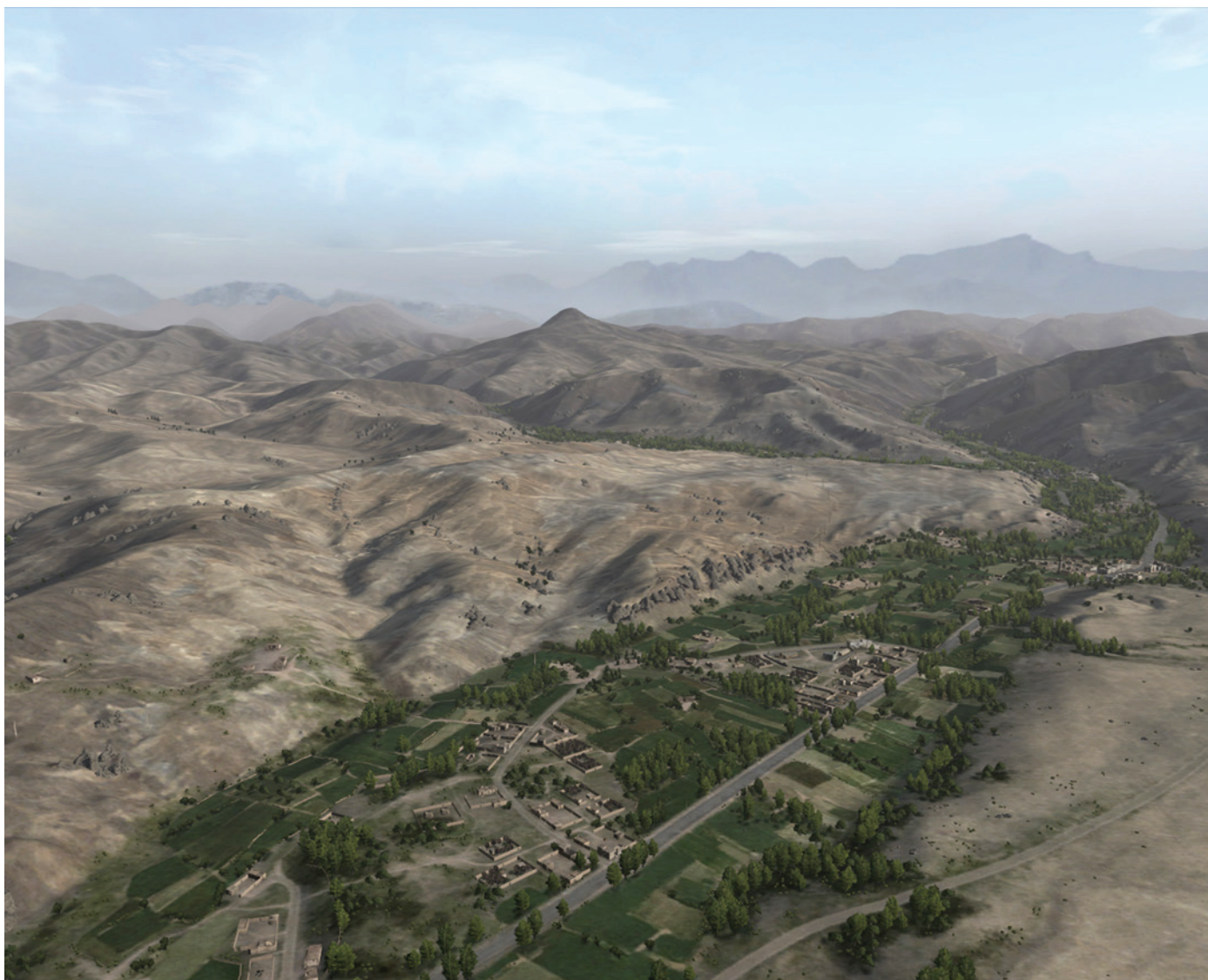
The new version of the system, released March 31, adds significant realism, according to MAJ Greg Pavlichko, gaming requirements chief for the U.S. Army Combined Arms Center (USACAC) at Fort Leavenworth, KS. Better physics, more realistic explosions and wheels on vehicles that actually appear to turn are just some of the improvements.

"Probably the greatest, overarching improvement is the visual rendering," Pavlichko said. "The graphics are much, much better, the environment is more realistically rendered. The ambient light sources are much more natural, so you get much more natural shading and shadows in the environment. It's just much more realistic than it was in the previous version, with better models of equipment and personnel in uniforms. Things look much more realistic and a lot less 'gamey,' if you will."

The other significant improvement is an increase in capability. According to Pavlichko, when his team, the U.S. Army Training and Doctrine Command's capability manager for the virtual training environment (TCM Virtual), developed the requirements for VBS3, the Army wanted to move away from its tight focus on counterinsurgency and get back to "decisive action," he said, "which is the new doctrinal term for major combat operations."

"We made a deliberate effort to increase capabilities that supported those types of operations," Pavlichko continued. "There's a greatly increased engineer capability, the ability





#### LAY OF THE LAND

One of the significant improvements in VBS3 over its predecessor is more realistic terrain, environments and vehicles. According to trainers, the enhanced realism makes VBS3 training more immersive—and more effective. (Image courtesy of TCM Virtual)

to dig, and obstacles—water and mines—and also [to] realistically breach [obstacles] such as water or a ditch, because that’s a major combat operation right there. Also, the NBC [nuclear, biological and chemical] capability has increased, so that now there’s different levels of MOPP [Mission-Oriented Protective Posture] gear, levels 0 through 4 and all those in between. You can put effects for different types of nerve agents and biological agents in the game.”

Those capabilities, he said, make VBS3 better preparation for decisive action.

#### GAMING, THEN FIGHTING

According to Pavlichko, “There are four types of training, by definition, that the Army recognizes.” Live is self-explanatory. Virtual “is something like a flight simulator, where you have a real person operating high-fidelity but fake equipment.” Constructive “is what you use

for the larger-echelon war games” and consists of computer-generated materiel and environments. “And then you have gaming,” Pavlichko said. “Gaming is not as clear-cut as those, but we define it as a semi-immersive environment, and you’re interfacing with a keyboard and mouse.”

For the most part, VBS3 is very much like a computer game, but it also has



#### MISSION PREVIEW

Soldiers at Fort Campbell rehearse a mission on VBS3. It appears that they are simply playing a computer game, which, in a sense, they are, but they are also preparing for live training and working out any issues that might otherwise waste time, gas and money later. (Photos courtesy of 101st Airborne Division (Air Assault))

certain aspects of a console video game, even though it's not really a game at all. Its greatest utility is as a mission rehearsal tool, said Doug Robbins, chief of the Mission Training Complex at Fort Campbell. "It does not replicate a video game," he said, "but it allows that trainee to use their intellectual skills more, and it is more intuitive for them and more immersive when they get into the training."

Robbins added, "The key thing for training here is basic skills, individual tasks, replicating SOPs [standard operating procedures] or conducting battle drills, and then using it for larger-scale collective

training or preparing for maneuver events, like mission rehearsal." A unit can come into the training complex and go through a mission in the game before going into the field for live training.

"They may want to work on key leader engagements," said Jeff Jackson, lead trainer for VBS3. "Some may want to work on convoy operations, squad training exercises, responding to unexploded ordnance..., reacting to small arms fire, or reacting to indirect fire."

While that training may look like a bunch of guys sitting around at desks playing

computer games, Jackson and Robbins said, commanders in mission rehearsals can work out any issues the team may have and orient the Soldiers to the mission, terrain and other variables. That saves time and money, and enables the Soldiers to perform more effectively when they get to the live training environment.

VBS3 enables Soldiers to "rehearse what they would really be doing out there, but they're not out there burning gas, wasting Soldiers' time figuring out how they're going to do it, because they can do it in VBS3," said Brent Sinclair, lead technician at Fort Campbell.





### DECISIVE ENGAGEMENT

This virtual Soldier, and others like him, could be coming to real Soldiers via a new interface, perhaps an Xbox-like controller, depending on results of an ongoing study that USACAC is conducting with the University of Central Florida. (Image courtesy of TCM Virtual)

### MORE TO COME

USACAC is working with the University of Central Florida on “a study to look at the different interfaces that would be beneficial to field, and one of the leading contenders is an Xbox-like controller,” Pavlichko said. “There is anecdotal evidence, but no empirical evidence,” he continued, “that the Soldiers do better using an Xbox-like controller, which is likely because they’re more familiar with it.” The study should be complete by the end of the current fiscal year.

Whatever the input device, the platform, which is designed so that it can be used as an adjunct to the Live, Virtual,

Constructive – Interactive Architecture (LVC-IA), is a crucial part of the Army’s training resources. Using it with LVC-IA, which provides the standards for bringing together the variety of Army LVC assets, only increases that value.

“VBS3 gives you the ability to do a mission rehearsal,” said Robbins. It doesn’t matter what kind of squad it is—infantry, maintenance or transportation. “Whatever it is, whatever they do in the real world, we can build that in VBS3 so they can rehearse what they would actually be doing out on a real operation.”

—MR. STEVE STARK

# TRAINING AS A SERVICE

PEO STRI is working to make the Common Operating Environment truly common for training

*by Dr. Jeremy T. Lanman and Mr. Amit Kapadia*

Industry is spearheading the advance of consumer applications and services that are available anytime, anywhere and on any device. This transformation features streamlined real-time collaboration, universal data access, intuitive user interfaces and seamless, round-the-clock availability on desktops, tablets and mobile devices. The immense popularity and growing adoption of these data and services are being leveraged within the Army's larger Common Operating Environment (COE). This technology provides the key to migrating the Army's simulation and training systems to the training as a service (TaaS) paradigm whereby any user, at any time, anywhere can access an ecosystem of training services, data and applications.

Current systems and capabilities provided by the Program Executive Office for Simulation, Training and Instrumentation (PEO STRI) fall into the live, virtual or constructive (LVC) simulation domain. Live training systems focus on real players for force-on-force and force-on-target exercises. Simulators, such as the Aviation Combined Arms Tactical Trainer, embed real crew members with Army ground or aviation platform mock-ups for human-in-the-loop training. Constructive simulations feature complex models of simulated Army units and entities and their associated behaviors, manipulated with operator input (a keyboard, for example) to support collective command staff training.

Each of these domains has independent standards, components and architectures that facilitate delivery of training systems.

Current PEO STRI LVC systems employ a unique, system-specific and complex configuration of hardware, software, network, facilities and associated personnel expertly skilled to operate and sustain training activities across various Army installations. The heavy overhead and footprint to conduct live force-on-force, force-on-target and command-post training exercises must be streamlined to meet the Army's Force 2025 vision.

To mitigate the complexity, PEO STRI is systematically infusing its live training and constructive simulation product lines with commercial and COE-proven technology to achieve TaaS. These modernization efforts aim to reduce overall acquisition system life-cycle costs, reduce technical complexity, streamline the user experience and enable on-demand access to simulation services, at any time and anywhere.

## COMMON OPERATING ENVIRONMENT

Central to the live-constructive transformation is the Army's establishment of the COE, an approved set of computing technologies and standards that enable the development and rapid deployment of secure and interoperable applications across six





### VIRTUAL ASSIST

Soldiers from the Tennessee National Guard's 278th Armored Cavalry Regiment train Jan. 24 in a virtual environment, performing day and night reconnaissance missions. While one platoon barreled through actual rough terrain and battled the cold, another platoon worked with them while immersed in a simulated environment in trailers. "Embedding" Soldiers virtually in live training expands the number of Soldiers who can train, and can save money. (Photo by SGT Nicole Smart, 118th Mobile Public Affairs Detachment)

defined computing environments: data center or cloud; command post; mounted; real-time, safety critical; mobile or handheld; and sensor. Each computing environment has a minimum standard configuration that supports the Army's ability to produce and deploy high-quality Army applications quickly while reducing the configuration, support and training burdens associated with the computing environment.

The COE marks a wholesale shift from the Army's traditional procurement of systems with dedicated software and hardware. As the COE evolves, these six computing environments

provide standardized processes to insert simulation-based training applications.

### TRAINING AS A SERVICE

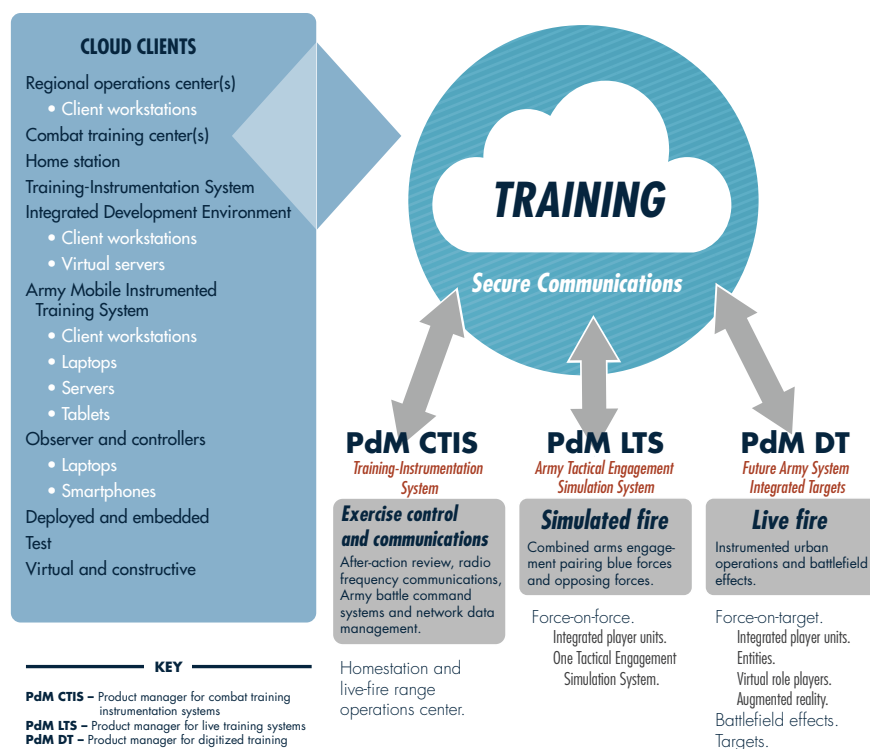
TaaS is an on-demand training-delivery model in which simulation and training software and its associated data are hosted centrally (typically in the cloud) and are accessed by users using a so-called thin client, normally a Web browser over the Internet. (See Figure 1 on Page 64.)

The TaaS strategy is to build simulation and training services (i.e., Web services) and the supporting infrastructure (i.e., networks, communications, sensors and

computing hardware) according to COE principles and practices.

TaaS will evolve to enable product development teams to build common Army training apps and software services for Web browsers, desktop computers and mobile devices (e.g., smartphones, tablets, laptops, etc.) in the cloud environment. Army units and individual Soldiers can access software applications such as a GPS tracking app for land navigation and exercise-control monitoring, tactical engagement simulation apps for laser and simulated fire engagements, and instrumented range apps for fixed live-fire targets. TaaS will support up to

FIGURE 1



## A FAR-REACHING CLOUD

In the TaaS on-demand training delivery model, simulation and training software and its associated data are hosted centrally, typically in the cloud. Users gain access via a so-called thin client, normally a Web browser over the Internet. (SOURCE: PEO STRI)

**HISTORICALLY, EMBEDDING SIMULATIONS WITHIN MC SYSTEMS HAS BEEN PLAGUED WITH SIGNIFICANT TECHNICAL AND OPERATIONAL HURDLES THAT ARE GRADUALLY BEING CLEARED THROUGH THE COE COMMAND POST COMPUTING ENVIRONMENT.**

brigade- and battalion-level force-on-force instrumentation and home-station training with constructive (i.e., One Semi-Automated Forces (OneSAF)) data feeds and battle damage assessment. TaaS will integrate with mission command systems and include the fully immersive LVC simulation and training environment. Software services will include training equipment asset tracking and training exercise replay. TaaS will be cloud-based with a deployable software service infrastructure to support the full live training domain.

## CONSTRUCTIVE SIMULATION

Constructive simulation environments such as OneSAF have long been used to simulate a full spectrum of Army military operations, systems and control processes for training (e.g., command post exercises), testing (e.g., Army mission command (MC) systems), research and analysis (e.g., prototyping), and experimentation activities (e.g., future Army force structures) at fixed simulation data centers. While providing an immersive operational environment, current constructive simulations are becoming complex and expensive to maintain, as they must interoperate within larger LVC environments. In addition, it takes unique sets of computing resources and a skilled set of technicians and operators to conduct simulation-based training events.

To combat this complexity and expense, PEO STRI's OneSAF program has spearheaded a multipronged modernization effort to streamline simulation delivery. OneSAF is the U.S. Army's entity-level constructive simulation environment that models military operations from brigade down to the individual platform and combatant level. From its inception, OneSAF has supported several Army, DOD and international simulation communities supporting LVC applications.



The modernization effort focuses on adopting a Web-based service-oriented architecture (SOA), aligning to larger Army initiatives, and leveraging industry-proven technologies that promote open architectures. In the same way, for example, that Google's ecosystem delivers collaboration, file storage and office productivity applications seamlessly across computing platforms to the user, the OneSAF program is adopting a road map to realize a future, on-demand cloud simulation solution accessible through simple, intuitive Web browsers to support test, training and experimentation.

OneSAF in 2012 marked the introduction of Web browser-based user interfaces along with virtualization and cloud prototyping concurrently. The migration to a Web-enabled capability accessible at any time, anywhere significantly reduced the OneSAF hardware footprint and greatly improved the user experience.

As the next step, OneSAF builds on these Web-based capabilities and folds in virtualization and cloud technologies to deliver a centrally managed, on-demand and persistent simulation service. This centralized approach will minimize the need to replicate simulation infrastructure, technical staff and unique hardware and software across all simulation centers. The result will be significant cost savings by virtue of significantly reducing the number of simulation centers. Users will be able to access the OneSAF cloud portal via Web browsers and conduct a variety of simulation activities, including scenario-generation, execution and after-action review—similar to how users at home can access services for collaboration, streaming video, document management, music and a variety of other services. While still in their early days, these efforts align with larger Army and

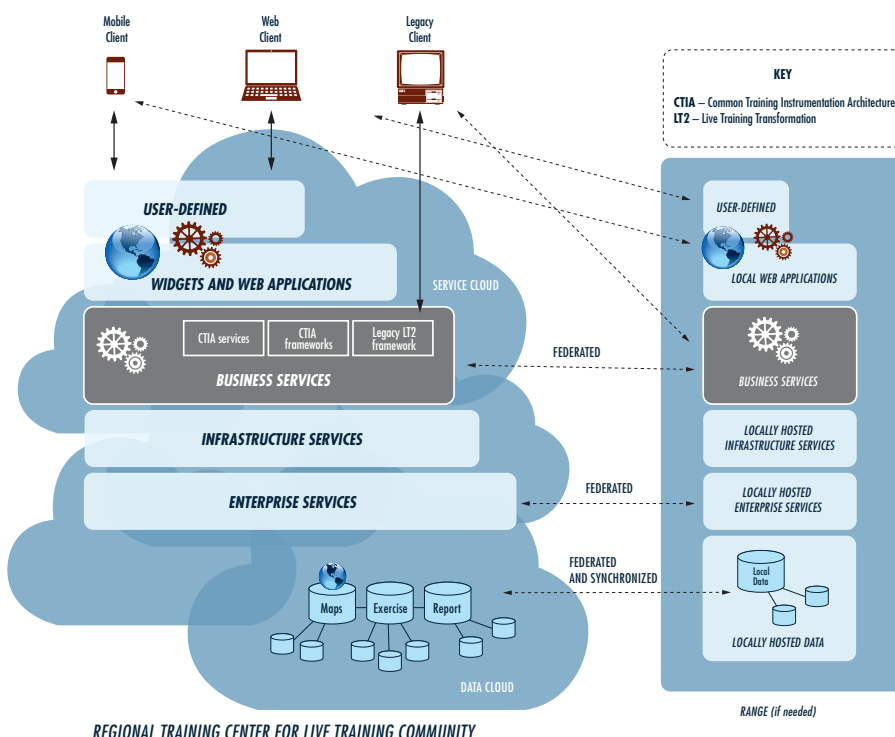
DOD standards and processes with the Joint Information Environment, COE and Intelligence Community-Information Technology Initiative.

Over the long term, employing OneSAF as an operational service embedded within Army MC systems will address key operational requirements for mission planning, rehearsal and course-of-action analysis. Historically, embedding simulations within MC systems has been plagued with significant technical and operational hurdles that are gradually being cleared through the COE Command Post Computing Environment.

## LIVE TRAINING

PEO STRI provides force-on-force and force-on-target capabilities with products composed of reusable and interoperable software components standardized by the Common Training Instrumentation Architecture (CTIA), the software architecture defined by the Army's Live Training Transformation product line. For more than a decade, CTIA has achieved more than \$500 million in return on investment as a product line architectural framework. However, the technology in use today (developed more than 10 years ago) is unable to meet the growing needs of the live

FIGURE 2



## SUPPORTING ARCHITECTURE

This illustration shows the projected end state of the architecture deployed to a conceptual regional training center supporting exercises at home stations and combat training centers. (SOURCE: PEO STRI)



### HUNTING THE ENEMY

SSG Matthew Sullivan, operational law NCO for 3rd Sustainment Command (Expeditionary) (ESC), scans for virtual enemies within the Dismounted Soldier Training System at the Training Support Center on Fort Knox, KY, Jan. 22. Blending LVC training environments through TaaS can vastly increase the scope of training, enabling more Soldiers to train at lower cost. (Photo by SFC Gary Cooper, 3rd ESC)

training community. Therefore, as with the constructive modeling solution outlined above, an SOA approach is the preferred software development strategy to enable TaaS. Using SOA, the live training domain can more easily migrate to the TaaS philosophy where software training apps and services can be accessed on demand in a cloud-based computing environment, such as Amazon's GovCloud. Several key technologies support this solution, including virtualization and wireless connectivity at the training sites, and the training software infrastructure (i.e., enterprise service bus) and services to support the applications, including tracking Soldiers and participants on the exercise battlefield, recording and monitoring services for after-action reviews, and exercise manipulation for observer/controller trainers.

The live training domain encompasses individual shoot houses (small arms training ranges) and weapons proficiency examination, up to battalion engagements that train battle staff. The objective architecture enables all levels of training to coexist during large exercises without sacrificing the quality of training at any level. Figure 2, on Page 65, illustrates the end state of the architecture deployed to a conceptual regional training center to support exercises at home stations and as well as combat training centers. As with global call centers that service a variety of commercial help desks, trainers and analysts who may be physically distributed at various Army posts can provide domain expertise for training exercises.

Today, each CTIA configuration has dedicated infrastructure ranging from server racks full of equipment to installation on

a laptop. In the future, the Army plans to embrace cloud computing by developing a regionalized, distributed training capability that provides the hardware and software on demand. This would relieve the units being trained from having to operate and maintain their own hardware and software. By moving to the cloud, CTIA also can support the emerging COE mobile computing environment through the use of smartphones and tablets; and Soldiers can use mobile devices to capture training observations and events, just as one might use a mobile app to post a picture to a social networking site.

### CONCLUSION

The Army is changing the way it delivers services by leveraging open standards that achieve agility, and reduce the overall operation and sustainment costs and technical complexity of capabilities.

PEO STRI has developed several successful efforts to modernize its simulation and training legacy software for the live and constructive domains. Its TaaS strategy addresses the need to reduce costs in concert with DOD's Better Buying Power 2.0 initiative and to leverage technology developments to better support our Soldiers' training needs.

However, there exist some challenges. For example, SOA and cloud adoption typically centers on network bandwidth, latency, software scalability and other technical issues. Furthermore, any changes to architectures and software components must consider the security and accreditation impacts that might affect information assurance. We must also consider that as the Army evolves to implement the COE and its computing environments, security and information assurance requirements also are likely to evolve and introduce new challenges.





#### GAME DAY

Soldiers of the 3-2 Stryker Brigade Combat Team, 7th Infantry Division (ID) from Joint Base Lewis-McChord, WA, use Virtual Battlespace for training. (U.S. Army photo by SSG Mark Miranda, 7th ID Public Affairs)

In support of the Army Enterprise Network, COE and the U.S. Army Training and Doctrine Command's vision for a future, holistic training environment, PEO STRI will continue to leverage SOA and cloud computing as the enablers to realize TaaS across many common platforms. This effort will include deploying simulation and training services as mobile applications in a cloud-based network and enabling continuous on-demand training in a distributed, Web-based environment.

For more information, go to the Live Training Web portal at [www.LT2Portal.org](http://www.LT2Portal.org). To learn more about the COE, go to: [http://www.army.mil/article/71710/Army\\_Releases\\_Common\\_Operating\\_Environment\\_Implementation\\_Plan/](http://www.army.mil/article/71710/Army_Releases_Common_Operating_Environment_Implementation_Plan/).

*DR. JEREMY T. LANMAN is the chief architect for CTIA and the Consolidated Product-line Management construct supporting the Army's Live Training Transformation Family of Training Systems at PEO STRI, Orlando, FL. He holds a Ph.D. in modeling and simulation from the University of Central Florida, an M.S. in software engineering from Embry-Riddle Aeronautical University and a B.S. in computer science from Butler University. He is a member of the U.S. Army Acquisition Corps (AAC).*

*MR. AMIT KAPADIA is the lead MC systems engineer for PEO STRI's product manager for OneSAF. He holds M.S. and B.S. degrees in electrical engineering from the University of Central Florida. He is an AAC member.*

# A CONTRACT FOR THE FUTURE

Leaders see progress, challenges in growing  
critical Army contracting professionals

*by Ms. Margaret C. Roth and Mr. Steve Stark*

Every contract is, in a sense, a story. While few read like the latest thriller, every contract tells the story of what all parties to the agreement are legally required to do. Contracts underpin everything we do, and we cannot tell the story of Army acquisition without recognizing the underlying “stories” that they tell about what the Army Acquisition Workforce does on behalf of the Soldier and the nation. In the same way a thriller creates its own reality, a contract creates a vastly more concrete reality to which every party must adhere.

That’s why the Army needs contracting professionals with the skills to go toe-to-toe with industry to get the best products and services for the Soldier and the best deals for the taxpayer. The Army contracting workforce is now stronger than it has been in 20 years, leaders say—and growing more knowledgeable and professional each year. These contracting leaders see it poised to weather the lingering effects of sequestration, continuing attrition and the drawdown in Afghanistan.

“I think the prospects are very, very good,” said Harry P. Hallock, deputy assistant secretary of the Army for procurement (DASA(P)). “Give us another three to four to five years, and I

think we will have an amazingly experienced, intelligent and savvy workforce.”

## THE RIGHT STUFF

What are the qualities of that kind of professional, and how does the Army acquire or develop them?

At a minimum, said Hallock, military or civilian contracting personnel must have an undergraduate degree. “The degree can be in anything, but you have to have 24 hours of business [classes] as part of that. We look for people who not only have people skills, leadership skills, but [also] some specialty skills like industrial management or accounting, because pricing is a significant part of what we do, especially in the weapon system side of the house.” Being detail-oriented is a good thing, but in addition, “You want someone who knows how to address people, someone who can influence people and a situation,” he said.

The Army also establishes future contracting professionals as interns, in whom it tries to instill a desire to work for the government early in their careers. According to MG Theodore C. “Ted” Harrison III, commanding general of the U.S. Army Contracting Command (ACC), internships are important “to





#### READY AND WAITING

SPC Josh Sinde, an infantryman in 3rd Squadron, 61st Cavalry Regiment, 4th Infantry Brigade Combat Team (IBCT), 4th Infantry Division, stands watch over the Quick Reaction Force vehicles April 23 in Kandahar, Afghanistan. Every piece of equipment the Army has, every service it receives, boils down to a contract. (U.S. Army photo by SGT Nelson Robles, 4th IBCT Public Affairs)

maintain a skilled workforce even under a constrained resource environment. ACC must continue to maintain a robust intern program. We have to ensure that there is a sufficient pipeline of new contract specialists in future years.”

ACC’s recruiting website, **ArmyHire.com**, has helped ACC hire more than 200 interns in 2014, Harrison said. “We are focusing our future efforts with ArmyHire on retaining our highly capable workforce, ensuring that worldwide contracting requirements are met and embracing the challenges of a transforming Army.”

Some young people stumble into contracting and, discovering they have a talent for it, build their entire careers

there. That’s not too different from how Hallock, who has 34 years as a DA civilian under his belt, got into contracting. He needed a job, he said, and when he graduated from college in 1979, he didn’t know much more about procurement than how to spell the word. “I took the test, the PACE exam as they called it back then, not really intending to ever work for the government.” But, he said, “I fell in love with [procurement] right away. It was just neat working with the industry, being able to negotiate contracts.”

#### THE GANSLER EFFECT

Two kinds of contracting personnel work for the Army: civilian and military. Following the 2007 report “Urgent Reform Required: Army Expeditionary

Contracting” by the Gansler Commission, Hallock said, “we came up with a figure ... to rebuild this workforce at around 9,000.” That figure includes approximately 7,500 civilians and about 900 military. “Today,” Hallock said, “we have about 7,300 civilians and just over 1,000 military ... and we’re at about just under 8,600, so we’re almost there.” That, he continued, “is probably the best we can do at this point, and in this fiscal environment that we’re now facing, our effort is going to be to try and maintain it.”

The Gansler Commission, formally known as the Commission on Army Acquisition and Program Management in Expeditionary Operations and

chaired by Dr. Jacques S. Gansler, former undersecretary of defense for acquisition, technology and logistics, found, among other things, that the Army's acquisition workforce was "not adequately staffed, trained, structured, or empowered to meet the Army needs of the 21st Century deployed warfighters." The commission found that only 56 percent of military and 53 percent of civilians in the contracting career field were certified for their positions. "What should be a core competence—contracting (from requirements definition, through contract management, to contract closeout)—is treated as an operational and institutional side issue," the report stated. In particular, the commission noted major deficiencies in expeditionary contracting.

The report emphasized the role that contractors played in Iraq and Afghanistan, noting that they constituted over 50 percent of the force. "Because of this, contracting (including requirements translation, pricing, acquisition strategy, and contract management) must be part of all operational planning." Making that happen required a culture change in the Army, and the commission recommended adding training to make certain that military commanders understood the fundamental importance of contracting to the Army of 2007 and into the 21st century.

"We didn't have the right qualified people over in theater" doing expeditionary contracting, Hallock said. "But the genesis of that was we really didn't have the right numbers of qualified people here in CONUS [the continental United States] as well. So we had to build up both. In order to build up the contingency contracting expertise, we had to build up the peacetime contracting expertise that was downsized in the 1990s."

Today, Harrison said, "operational commanders understand they can't execute

their missions without professional, well-trained and -equipped contingency contracting officers on the ground and engaged from day one, supporting the full range of contingency missions from humanitarian assistance and disaster response to combat operations."

### 'GROWING' PROFESSIONALS IN CONTRACTING

There's another kind of contract—the Defense Acquisition Workforce Improvement Act (DAWIA)—that spells out the minimum requirements for a defense acquisition professional. In many respects, the process of "growing" the Army contracting professional is significantly more rigorous than that of industry. According to Leonardo Manning, director of the Center for Contracting and Small

Business at Defense Acquisition University (DAU), "it takes four years for a contracting professional to complete all required training and experience requirements to be Level III certified," after obtaining a college degree with 24 hours of business courses. Levels I and II are attainable within a year or two.

The Army Acquisition Center of Excellence (AACoE) in Huntsville, AL, centralizes training, education and career development for Army acquisition officers, noncommissioned officers (NCOs) and DA civilians, but it caters primarily to the military workforce. Military contracting professionals need to complete all of their educational requirements before joining the acquisition workforce at the 8- to 10-year mark in their service



### FROM AWARD TO CLOSEOUT

ACC – Rock Island (IL) Contract Closeout Branch Chief Andrea Kalb, left, joins contracting officers Thomas Petkunas, Joseph Jakubowski and Christine Fricke in a warehouse containing more than 8,000 boxes of contract files that originated in Iraq and Afghanistan. Properly closing contracts is a key part of being good stewards of taxpayer dollars; the Contract Closeout Branch recently surpassed the \$300 million mark in recapturing current and expiring funds. (Photo by Liz Adrian)



and starting to build operational experience. Civilians receive that education primarily through DAU.

“It takes a civilian a little bit longer to get through all of the education requirements because they’re taking individual courses—as opposed to the military, who are completing most of their education requirements at the beginning of their acquisition career. And, of course, we’re taking a little bit of risk in doing it that way,” said Kevin Zurmuehlen, AACoE director. “One of the benefits of DAU’s approach is that you learn something, you go back to your job, you apply it, you gain experience and go back for the next class. ... Whereas we’re teaching them [military contracting professionals] a whole new language, putting them out there [and saying], ‘OK, now go gain experience. Go speak French, and try to do so fluently.’”

Courses at DAU are continually evaluated and updated, as are AACoE courses and their equivalency to DAU’s. Each career field has a functional integrated product team (FIPT) that regularly looks at the requirements. “The contracting curriculum changes all the time to keep up to date with the newest changes to policy and regulation,” Manning said. “It is not uncommon for learning assets to be updated every 90 days in order to keep up with changes in the regulations, new policy emphasis or needed improvements to case studies.”

DAU staff and faculty, he continued, “are assigned to manage courses and to keep them up to date. DAU briefs the contracting FIPT on all significant changes to the curriculum. The FIPT and DAU conduct an annual review of all course material.” In FY12, as a result of the Better Buying Power initiative and a workforce competency assessment, Manning noted, contracting senior procurement



#### HONORING EXCELLENCE

MG Theodore C. “Ted” Harrison III, ACC commanding general, congratulates SSG Eliud Temblador on his selection in June as the ACC Best Warrior for 2014. Temblador, a 51C contracting NCO from the 413th Contracting Support Brigade, Fort Shafter, HI, topped the competition with a total score of 371 out of 500 possible points. He will represent ACC at the U.S. Army Materiel Command competition July 27-31 at Rock Island Arsenal, IL. (Photo by Ed Worley, ACC)

executives directed major strategic course revisions and restructuring in DAU training, including the addition of cost and pricing curricula. Anytime DAU makes a change, AACoE immediately updates its curricula as well, said Zurmuehlen.

But the requirements to be an Army contracting professional include experience as well as schooling. Zurmuehlen noted that those four years of work toward Level III certification include “actually being in a contingency environment or at a contracting center, doing contracts. You can study it all day long, but until you’re actually doing it, that’s when you’re learning the lessons.”

Today, Hallock said, “We have a younger, [relatively] inexperienced workforce by

virtue of the fact that we did very little to no hiring in the 1990s, and then most of our hiring has been done in the last decade. The rule of thumb is 7 to 10 years to make a good journeyman contract specialist,” he said, adding, “I think the folks we are bringing in are super-intelligent and savvy and hardworking individuals. It’s just a matter of getting the experience and the training they need. And frankly, we can expedite the training. We’ve been doing that. The tough part is expediting experience. Sometimes you just need to go through the process in order to understand it.”

One way for contracting professionals to get invaluable experience is through exercises like the Operational Contract Support Joint Exercise (OCSJX), ACC’s



### CONTRACTING ON THE MOVE

MAJ Francisco Mendoza, contracting team leader, 904th Contingency Contracting Battalion, Fort Knox, KY, briefs OCSJX 2014 trainees on the simulated convoy mission they are preparing to do in the Close Combat Tactical Trainer at Fort Bliss, TX, Jan. 18. OCSJX, ACC's premier contracting exercise, has been elevated from an ACC-sponsored program to sponsorship by the Joint Chiefs of Staff J4. (Photo by SGT Robert Golden 16th Mobile Public Affairs Detachment)

premier contracting exercise, which has been elevated from an ACC-sponsored program to sponsorship by the Joint Chiefs of Staff J4.

"The exercise's growth and evolution over the past five years are a testament to the importance of contingency contracting in direct support to the warfighter," Harrison said. This year's exercise, a natural disaster scenario in the United States, involved more than 450 Soldiers, sailors, airmen and Marines from the active, National Guard and reserve components, as well as participants from

the Federal Emergency Management Agency. The first exercise, in 2010, involved only 34 trainees.

Next year's exercise will be led by the U.S. Air Force and will feature split operations at Fort Bliss, TX, and Joint Base Pearl Harbor-Hickam, HI, Harrison said.

### VALUABLE, BUT HARD TO QUANTIFY

It's difficult to quantify the value that able contracting professionals bring to the Army, Hallock said. "I've been in this business 34 years now, and that has been

an issue ever since I started: 'What are the right metrics?' And we constantly look at and experiment with metrics. And frankly, I don't think we've got it right yet."

That's at least in part because it's very hard to measure what doesn't happen. Ask a lifeguard, "How many lives have you saved?" and if he or she says, "None," it's not because of doing the job poorly. It's more likely that he or she has been doing the job exactly right. For Hallock, the biggest benefit of professionalism in contracting "is the money we save the U.S. government by doing the jobs we do."



Even if that means, in simplistic terms, the difference between what a contractor proposes initially and the final contract price after negotiations, “I would tell you, that’s in the hundreds of millions of dollars a year,” Hallock said.

Zurmuehlen agreed. “If we have contracting professionals who are technically competent and they can not only do all the detail-oriented work but also see the larger strategic view of the business decision that they’re executing, ... just intrinsically, there is a value.”

Army contracting professionals are bringing knowledge, experience and expertise to the table when negotiating with contractors. They’re defining requirements because they understand what the Soldier needs. They’re pushing contractors to deliver and coming up with creative incentives to make sure that happens. Even if their value is difficult to measure precisely, it becomes apparent when major programs come in on time and at or under budget, as many do—and when Soldiers receive the materiel and services that they need.

Still, Hallock said, Army acquisition has to do a better job of communicating to Congress and the Army the value it brings to the fight, particularly convincing “the decision-makers that contracting is important, not only for peacetime but for combatant commanders in support of the troops. We can’t fight without contractors anymore. And if we have contractors, we need contracting to rate those contracts. So [we need to] convince leadership that they need to look hard before dictating any cuts for the contracting profession; then, at the same time, maintain that recruitment and our training and our development.”

### ATTRACTING THE BEST

A recruiting slogan from the early 1980s

said about a Navy career, “It’s not just a job, it’s an adventure.” For Hallock, that’s what contracting can be, and the possibility of travel is a major attraction for potential contracting specialists. “The Army has, 242 offices in 163 locations across the world,” he said. “I’d say there are more opportunities in the Army than anywhere else not only to do different types of contracting but also do it pretty much anywhere in the world.” That’s a competitive advantage for the Army, which must compete with industry and with other government agencies for top talent.

But there are also disadvantages. Curveballs like sequestration and furloughs put the government as a whole at a disadvantage as an employer. Still, at least

on the military side, Hallock said they are getting more and better applicants than ever. “The word has gotten out that it’s a good career field to be a part of,” he said.

Continuing to recruit the right people into the job is his number one priority, he said, along with “hopefully avoiding another hard hiring freeze that prevents that from happening.” Close behind that in priority is to maintain “the senior-level folks who are close to retirement as long as we can because frankly, those are the ones who are training, mentoring and coaching the new folks who are coming in. Throughout their careers, these senior-level folks have gathered a wealth of information about this business that we’d like them to share with the new



### TOOLS OF THE TRADE

Roger Molina conducts training with SPC Frisnel Simprevil on the Procurement Desktop Defense (PD2) April 18 at MICC – Fort Bliss. PD2 is part of DOD’s standard procurement system that integrates acquisition, logistics and financial management within one enterprise business system. ACC and its subordinate commands are leveraging technology as a force multiplier. (Photo by MAJ Clarence Blackburn)



### MISSION-ESSENTIAL

Soldiers of the Washington, DC, National Guard's 1946th Contingency Contracting Team traveled to Edinburgh, IN, through the month of February to conduct mission-specific contingency contracting training at the Camp Atterbury Contracting Center of Excellence. Operational commanders have come to understand that professional, well-trained and well-equipped contingency contracting officers are essential to the success of their missions. (U.S. Army photo by Timothy Sproles, Camp Atterbury Public Affairs)

generation of Army contracting personnel before they leave. This transfer of knowledge is absolutely vital, because today more than half of our Army contracting workforce has less than 10 years' experience in contracting and has operated only in an accelerated contracting environment during a time of war."

And priority number three? "Looking at how we develop our workforce and at potentially providing opportunities ... to transfer the learning and the experiences that they have gained in one organization to other organizations." That would supplement the use of more senior personnel to mentor new colleagues. "We've got to

figure out how to crack that code, because I really think that's something that we need to do in order to continue to grow the experience and the expertise of the contracting workforce," Hallock said.

On a similar note, ACC is working to "foster an environment that supports continuous professional development among its veteran contract specialists. The workforce environment should properly recognize outstanding performance for both the new and the veteran contract specialists as well," Harrison said.

Zurmuehlen underscored the value of mentoring, which he sees as an integral

part of the AACoE curriculum. For example, in addition to the course material, contracting students have an opportunity to meet with a panel of civilian and military professionals, including people who will be peers in their new jobs as well as some of their future leaders. AACoE provides the visiting professionals with biographies of the students with whom they'll be meeting. "So we're facilitating a formal introduction that hopefully will translate into a formal mentorship at a later date," he said.

"I think the Army Acquisition Corps as a whole could probably take a little bit more disciplined approach to



mentorship,” said Zurmuehlen, “across the board but particularly in contracting. There’s a lot that has to be learned in a relatively short time, especially for our military workforce members. Doing that by yourself, without the aid of a mentor, I think would prove very difficult.”

## CONCLUSION

For Hallock and Harrison, there are many bright spots on the horizon, despite the uncertainties. “The Army is behind the civilian sector. ... We’re using ’80s and ’90s technology for our contract writing systems,” Harrison said. “ACC’s interim answer,” he continued, “is the use of the Virtual Contracting Enterprise (VCE) modules. The VCE has been a big help getting us to where we want to be for paperless contracting and standardization across the command.”

VCE, he said, “is a homegrown, internal-to-the-Army process that does data mining and other things to help us operate more efficiently across the enterprise.”

The Army is also working on getting the DOD-mandated Army Contract Writing System (ACWS) into place, Harrison said. ACWS, an Armywide, DASA(P)-sponsored initiative that passed its materiel development decision on May 15, “is expected to incorporate the VCE functionality and replace our legacy contract writing systems,” Harrison said.

ACWS leverages modern software architectures “to support the full breadth of contracting processes, with the strategic goal of implementing a single software solution that will meet the Army’s current and future end-to-end business requirements.”

“ACC continues to transform into a more lean, agile and responsive command,”

Harrison continued, in part by consolidating the ACC and its subordinate U.S. Army Expeditionary Contracting Command headquarters staffs—both at Redstone Arsenal, AL—to help meet the Army’s mandated 25 percent reduction of two-star-and-above headquarters staffs. ACC also attached its stateside contracting Soldiers to its subordinate U.S. Army Mission and Installation Contracting Command (MICC) and major contracting centers, to enhance training and provide additional staff for those operations.

“Our transformation working group is studying other opportunities for reshaping our command,” looking at structural changes as well as how to leverage technology and improve business processes, Harrison said. Technology, he continued, “allows the command to compensate for smaller and more diverse staffs” and better prepares employees to “operate in more demanding environments that include contingency deployments.”

“We continue to require a highly educated, skilled and capable workforce to meet the strategic demands of the warfighter,” Harrison said. “As we reshape, our primary focus will remain providing world-class contracting support to the warfighter while being good stewards of the taxpayers’ money. Everything we do has one underpinning goal: providing responsive, innovative and efficient procurement

**THE ARMY CONTRACTING WORKFORCE IS NOW STRONGER THAN IT HAS BEEN IN 20 YEARS, LEADERS SAY—AND GROWING MORE KNOWLEDGEABLE AND PROFESSIONAL EACH YEAR. THESE CONTRACTING LEADERS SEE IT POISED TO WEATHER THE LINGERING EFFECTS OF SEQUESTRATION, CONTINUING ATTRITION AND THE DRAWDOWN IN AFGHANISTAN.**

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*MS. MARGARET C. ROTH is the senior editor of Army AL&T magazine. She has more than a decade of experience in writing about the Army and more than three decades’ experience in journalism and public relations. Roth is a MG Keith L. Ware Public Affairs Award winner. She is also a co-author of the book “Operation Just Cause: The Storming of Panama.” She holds a B.A. in Russian language and linguistics from the University of Virginia.*

*MR. STEVE STARK provides contracting support to the U.S. Army Acquisition Support Center for SAIC. 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 Soldier Portfolio and edited the Army’s Weapon Systems handbook for six years.*

# PICTURE THIS

A creative contracting solution helps DOD catalog mountains of still and motion imagery

*by Ms. Margaret C. Roth and Mr. Steve Stark*

Many of us have hundreds or even thousands of images that we have every intention, someday and time permitting, of sorting, naming and putting to good use on a social media site, as computer “wallpaper” or in an old-fashioned album. But even just changing a file name from “image.jpg” to, for example, “Hilton Head Sunrise.jpg,” takes time. Identifying, tagging and cataloging every photo can add up to a part-time job for even the casual photographer.

Let’s say a photo you took of a sunrise and palm tree at Hilton Head, SC, is on your computer’s desktop as wallpaper. Someone wants to know who took it and where. You might be able to tell them, “Oh, I took that on a beach during our vacation on Hilton Head in 2003.” But the other 100 or more photos taken on that vacation might not be so striking—so they sit in digital limbo until you do something with them.

But what if you’re the Defense Imagery Management Operations Center (DIMOC) of the Defense Media Activity (DMA), which supports DOD and other U.S. government communication and operational missions? What if your job is to make sure that uncounted thousands of military-related images from myriad sources don’t sit in digital limbo but are online and accessible for use? DIMOC is DOD’s central repository for visual imagery.

It exists to preserve visual records—both “born digital” and digitized physical media, still and motion—first for DOD and then for other agencies and members of the public, said Mike Edrington, DIMOC director.

DIMOC’s job is to catalog and archive the images and make it possible for the government and the public to find and retrieve them. Accurate searching for images, such as on [www.DefenseImagery.mil](http://www.DefenseImagery.mil), requires that each one be tagged with metadata. So, going back to that photo from Hilton Head, each bit of information—beach, sunrise, palm tree, 2003—is potential metadata with which to tag the image and make it easier to discover in a search.

DIMOC is employing a novel contracting approach to tackle the massive job of digitizing, cataloging and making accessible an archive that includes wartime footage and photographs of personnel and military equipment, World War II audio communications and instructional military videos. The contract, the first of its kind in DOD, uses a private company to digitize the images. In exchange, the contractor has a limited period of exclusivity during which it can charge non-DOD users a fair-market fee to access the images, which users will be able to search, preview and download on [www.DefenseImagery.mil](http://www.DefenseImagery.mil). However, DOD personnel can





### TREASURE TROVE

The Defense Media Records Center (DMRC) in Riverside, CA, is four stories high and about half the size of a football field, with 6,438 storage bins. It holds motion picture, video and still media from all branches of the military. The environmentally controlled, self-contained facility uses a state-of-the-art, robotic track-guided automated storage and retrieval system; this photo was taken with the camera mounted on the robotic arm. (DOD photo by Lance Cheung)





#### UNDER INTERROGATION

SGT Fernando Diaz, a combat medic assigned to the 568th Medical Company (Ground Ambulance) based at Camp Humphreys, South Korea, participates in a mock interrogation by opposition forces as a part of the 2012 Pacific Regional Medical Command Best Medic Competition Aug. 30, 2012, at Schofield Barracks, HI. DIMOC's mission is to collect all military photos for use by the government and the public, regardless of current historical value because such perceptions change over time. (U.S. Air Force photo by TSgt Michael R. Holzworth)

access and download the images for free through a secure website.

#### MANY IMAGES, MANY SOURCES

Not only does DIMOC receive images daily or even hourly through the Joint Combat Camera Center (JCCC) and through the Defense Video and Imagery Distribution System (DVIDS), there is also the occasional, unexpected delivery of a semi-trailer at DIMOC's climate-controlled Defense Media Records Center at March Air Reserve Base in Riverside, CA. One such delivery contained 45 pallets of physical media. Another call led to more than 3,000 collodian glass plates at the Norfolk Naval Shipyard,

VA, where DIMOC provided an archival assessment for safe handling of hazardous materials and coordinated digitization for DOD and eventual transfer to the National Archives.

The images are often found in obscure places on bases as they close down or as offices move, Edrington said during a recent interview at DMA headquarters on Fort Meade, MD. "We get a base that [realigns or closes], or somebody finds something and it shows up at Riverside on the docks, a pallet that says 'box of stuff' on it." So, in addition to its digital archive, the agency has a massive amount of images on physical, analog media that range from photographic negatives and

slides to films and videotape with formats such as VHS, Betamax and Hi-8. That material is deteriorating faster than DIMOC can offer it to the National Archives, and getting it into a digital form is the way to preserve it, Edrington said. In addition, DIMOC's Riverside facility is running out of space, he said.

#### 'MOTHER OF INVENTION'

DIMOC's mission is not a small one. But neither the organization nor its \$6.1 million annual budget is particularly large. So, in 2010, when DMA surveyed the backlog of analog images and what it would take to digitize, catalog and store that cache, the organization came up with an estimated cost of at least \$25 million



and up to \$2.5 billion over a three- to five-year period—reasonable in terms of market rates, but entirely out of the reach of DIMOC’s budget.

In the search for a solution to the backlog, Julia Hickey, the strategic archivist for DIMOC and DMA, came across a 2008 contract between the National Archives and Records Administration (NARA) and Ancestry.com that enabled Ancestry.com to use material from NARA in exchange for archiving and cataloging the information. The multiyear, no-cost contract permits Ancestry.com to charge a fee for access to certain federal records in exchange for digitizing, categorizing and storing those records.

Hickey presented this model to DIMOC’s leadership. Instead of a more traditional contract with a company digitizing the images and DIMOC hosting the vast trove—neither of which DIMOC could afford to do—the organization would look for a company that would not just digitize the work, but host it as well. “We don’t have \$25 million, much less \$2.5 billion” to digitize and host DIMOC’s imagery, currently estimated at up to 13-15 petabytes’ worth, Edrington said. “Lack of funds is the mother of invention.”

After working the idea through DMA’s general counsel, the contracting office and other DOD legal channels, DIMOC sponsored two industry days to gauge interest and to validate its expectations of cost and viability. The result was a five-year, \$5 million contract awarded to T3Media Inc. in August 2013 to digitize, store and provide access to DOD’s archive of visual information. T3Media is an imagery company based in Denver, CO, that, according to its website, “offers cloud-based storage, access and licensing for enterprise-scale video libraries.”



#### LIGHTNING STRIKE

U.S. Marines with 3rd Battalion, 11th Marine Regiment fire M777A2 Lightweight Howitzers during combined arms exercise Steel Knight on Marine Corps Air Ground Combat Center Twentynine Palms, CA, Dec. 11, 2012. All of the images that DIMOC receives must be tagged with metadata, such as unit name and type of weapon system, that will help make them discoverable in a public search. (U.S. Marine Corps photo by LCpl Jason Morrison)



#### NIGHT FLIGHT

A U.S. Air Force B-1B Lancer takes off toward the Las Vegas Strip during exercise Green Flag at Nellis AFB, NV, Oct. 30, 2012. The aircraft is assigned to the 28th Bomb Wing at Dyess AFB, TX. Photos such as this represent the intersection of military and civilian content in DIMOC’s huge collection of imagery. (U.S. Air Force photo by Val Gempis)





## HOME TO HISTORY

DMRC stores imagery from the military services both before and after digitization. Eventually, the images are transferred to NARA. The center has been known to receive truckloads of imagery without notice. Even so, DIMOC wants the images because they represent the history of the U.S. armed forces, and while some have little historical significance, others may prove to be an unknown treasure. (DOD photo by Steve McGill)

T3Media “works with the world’s leading video libraries, including Discovery, Paramount Pictures, Sony Pictures Entertainment, National Geographic, The New York Times, and the NCAA,” the website says.

The contract calls for T3Media to digitize DIMOC’s massive troves of analog imagery. Then T3Media can recoup that investment by marketing the images for public use. Once T3’s public revenue exceeds direct costs, the government will receive credit toward additional media services. The new contract’s period of performance is five years, at a fraction of the government’s original cost estimate.

DIMOC is leveraging the company’s T3 Library Manager solution to provide online access to more than 2 million unclassified and released DOD assets including video, audio, photographs and documents. As content is digitized, T3Media is adding the DOD archive to its footage licensing site, [www.t3licensing.com](http://www.t3licensing.com), where customers can find and purchase access to imagery.

“This is a true partnership,” Edrington said. “It’s really in our interest that T3 succeeds.” For T3Media, the partnership is unique in two ways, said Frank Cardello, the company’s general manager for platform services. “This is the first government

agency partner for us,” he said. “Second, this is the first time we’ve had a single partner with many different types of assets (such as motion footage, photos, audio, etc.). While we have seen them all before, ingesting all types within a single relationship is new.”

Working for a government client brings new experiences, such as managing non-released material, and the associated learning curves, Cardello said. “We have worked hard to create a system of checks and balances around pre-inspection and throughput inspection of the content we ingest,” he said. Other new areas for the company are working with legacy media





#### ARCHIVIST'S WORK

Steve McGill and April Alexander, multimedia managers for DMRC review slides, negatives and prints May 21 while preparing them for transfer to T3Media Inc. for digitization. DIMOC's novel contract with T3Media allows for the images to be digitized and thus preserved at a fraction of what it would cost under a conventionally structured contract. (DOD photo by Val Gempis)

formats and coordinating with the multiple government facilities involved in the digitization project, which “has emphasized our need for laser focus regarding consistent communication across teams,” Cardello said. “We’re actively engaged at all levels across both organizations, and this has helped us remain on schedule.”

Generally, analog assets are digitized according to need, Hickey said. Assets that are deteriorating or contain potentially hazardous materials (like the collodion plates) move to the front of the line. Occasionally, she added, a customer will request content, and “we will adjust our digitization efforts to accommodate their requirement. We have yet to see a large volume be requested, so this on-demand process for digitization only changes our priority within a few media items.”

#### VAST CUSTOMER BASE

DIMOC's customer base for imagery stretches from government agencies that want to celebrate an anniversary or holiday with, for example, a series of photographs illustrating the history of Veterans Day, to Hollywood, which might want high-quality military footage to use in major motion pictures such as “Transformers,” to individual citizens who might want a copy of a photo that has meaning to them. DIMOC also shares the images in its digital holdings with the National Archives. Digital files that DIMOC receives from T3's digitization will go forward to NARA for its use and for the preservation of DOD's history for the American people.

There are two kinds of value in the imagery. For the archivist, Hickey said, the value is

historical. For the contractor, T3Media, the value is money. Based on Hollywood trends, the archivist and the contractor can predict, to some extent, what kind of revenue-generating content might soon be in demand and adjust workload priorities accordingly. It is a constant balancing act, and sometimes the government's priorities and T3Media's are not the same.

“If there's a big anniversary coming up, we need to feature that for DOD themes and messages,” said Hickey. “Chances are T3 is going to find value in that, too”—for example, media interest in video of a historic invasion. “So that's a mutual topic, whereas [say] we're getting a new secretary of defense. Is T3 really going to find value in the light box or the collections we're going to put together of all the previous secretaries of defense? Probably not.”



#### REEL LIFE

Justin Kenward and Linda DeLatore inspect, clean and pack motion picture film May 21 at DMRC for transfer to T3Media Inc. for digitization. Kenward and DeLatore, contractors with Taft Broadcasting LLC, are part of the team that sorts and catalogs images before they are digitized. (DOD photo by Steve McGill)

Besides the immediate value of having the company digitize DIMOC's vast amounts of media, its development of new capabilities will also benefit the government over time. "Every time T3Media enhances their delivery platform for another customer like Paramount or MGM or NCAA, we are the beneficiary of that change, that update, that refresh," said COL Bernard F. Koelsch, director of defense visual information for DMA and DOD.

Still, "The greatest benefit of this contracting approach is enabling access to all types of media that would have otherwise been locked away and, in the case of aging files, potentially lost forever," Cardello said.

"There's a lot of history," Edrington said. "It's not just celebrities such as Elvis Presley ... we've got that kind of stuff. But more importantly, we've got Soldiers, Sailors, Airmen and Marines doing what they do—this is for future use by our children."

DIMOC continues to receive new images from DOD offices, by choice. "We want the material. If they find it, we want it," Edrington said.

*To arrange for images to go to DIMOC, DOD personnel can contact DIMOC customer service at [askdimoc@dma.mil](mailto:askdimoc@dma.mil) or 888-PH-DIMOC (743-4662).*

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*MS. MARGARET C. ROTH is the senior editor of Army AL&T magazine. She has more than a decade of experience in writing about the Army and more than three decades' experience in journalism and public relations. Roth is a MG Keith L. Ware Public Affairs Award winner. She is also a co-author of the book "Operation Just Cause: The Storming of Panama." She holds a B.A. in Russian language and linguistics from the University of Virginia.*

*MR. STEVE STARK provides contracting support to USAASC for SAIC. 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 Soldier Portfolio and edited the Army's Weapon Systems handbook for six years.*



# A Balance of Balancing Acts

Faced with a vast trove of images, Defense Imagery Management Operations Center (DIMOC) Archivist Julia Hickey's job revolves around two questions: Where to begin, and where to stop.

Hickey's work of making images easy to find is a balance of balancing acts. From the archivist's perspective, there are lots of different ways to look at that imagery—which is not only both motion and still, “born digital” and physical, but is also in a number of different formats. There is also audio, which can include radio broadcasts.

A still image could be in physical or digital form, and of various sizes, black and white, color, etc. Still imagery can also include graphic work—such as a magazine layout—and more traditional artwork, such as the canvases found in a museum, Hickey said. Motion media can come in physical and digital form and can include any number of formats, including motion picture film in 35 mm, 16 mm, 8 mm, etc. And then there are sound recordings, both physical and digital—again, such as radio broadcasts—in myriad formats as well.

A strategic archivist like Hickey has to weigh different kinds of value—historical and otherwise—and the time sensitivity of potentially deteriorating assets, among other criteria.



## THE ARCHIVIST

Julia Hickey, strategic archivist at DIMOC, is responsible for prioritizing which imagery gets digitized—and therefore preserved—first. Imagery that is in danger of being lost forever because of the instability of the format receives top priority. “Digitization is the ultimate preservation objective that we can accomplish,” she said. (DOD photo by TSgt Jamie Powell)

## SEEING IN MANY DIMENSIONS

Part of DIMOC's job is to go through all of its digital and digitized images and tag them with descriptive metadata so that users can find and use the images.

For example, said Hickey, the 3,000 digitized collodion glass plates that DIMOC

received from the Norfolk Naval Shipyard, VA, appear to document construction. “These are likely glass plates that were taken to document the contractor's work during construction to ensure that the shipyard was getting the services they needed. So we can go back into the contracting files” and do other research, she said, “then pull out what's significant—what's significant for Norfolk,



#### EAGLE FIRE

An F-15E Strike Eagle aircraft from the 391st Expeditionary Fighter Squadron, Bagram Air Base, Afghanistan, deploys heat decoys during a combat patrol over Afghanistan Dec. 15, 2008. A caption, such as this one, may already be available when imagery is born digital. Captioning imagery from earlier eras after digitizing it can require research into multiple aspects of an image's content. (DOD photo by SSgt Aaron Allmon, U.S. Air Force)

what's significant for the Naval Shipyard, what's significant for the buildings, because the shipyard is part of a historic preservation site." Nearly every one of the buildings that were documented in the glass plates is in the National Register of Historic Places, she noted.

That kind of research takes time, as well as archivists who know how to do it. There are many possible audiences for the images, and the archivist has to consider those different dimensions, not just researching to identify a street address, Hickey said.

To continue the example of the collodion glass plates, "What type of workers were they using, because this was the

Jim Crow law era?" (From the 1880s into the 1960s, most states enforced segregation through "Jim Crow" laws, named after a black character in minstrel shows. The laws authorized states and cities to impose legal punishments on people for consorting with members of another race in various environments.) "Some of those workers are in the picture. So there's any number of degrees of history you can go through, and it depends on how you want to describe it, which creates access points for those varying audiences," Hickey said.

"At the end of the day, the image is owned by DOD. But it's not just significant for the department—there's also a social history, there's a political history, there's civil

rights history, too," Hickey said. To make each image discoverable by any interested customer, the descriptive metadata have to include the full variety of tags.

The more detail an image's metadata has, the more accurate the search results. For example, a search for the word "bag" on Amazon.com produces more than 6.7 million results. Add to that search the words "women's" and "leather" and the search results narrow to 858,611 results. Add the color "taupe," and 6,295 items appear.

That's because of a taxonomy, or organizational structure, of what Hickey calls "controlled vocabulary," which is another way of saying keywords. That controlled



vocabulary makes it much easier for users to find the content they want.

DIMOC uses that controlled vocabulary describing the imagery to make it possible to locate it in the database, with the ultimate job of making content accessible after T3Media Inc. has digitized and stored it. Controlled vocabulary keywords start at the very top of a taxonomy tree—people, places, things, activities and events. “Under things, there are equipment and platforms, as two examples,” Hickey said. “Under platform, you have air, land and sea. Under air, you’re going to have fixed-wing and rotary-wing and unmanned aircraft. This hierarchical organization of the imagery effectively increases the search-ability or the access points to find and use our content. Standardizing the terminology and overall metadata is an equation that results in increased access to content.”

### **DIGITIZATION = PRESERVATION**

Another job for the archivist, Hickey said, is to balance preservation and accessibility when prioritizing media for digitizing and then tagging. “Sometimes making something accessible is preserving it,” she said. “Digitization is the ultimate preservation objective that we can accomplish.”

For example, she continued, a 16 mm film might have “vinegar syndrome,” which is a chemical reaction that doesn’t include vinegar but smells like it. “It’s a process of deterioration,” she said. Also, deteriorating items sometimes contain hazardous materials, such as mercury. Those move to the head of the line for digitization.

“But when you have a film that’s begun to deteriorate, ... you can only hope to slow it down.” Ideally, Hickey continued, “you’d digitize it as soon as possible.” Although they are carefully stored, these physical media items won’t, as Hickey



### **BORN ANALOG**

Matt West, an encoding specialist for T3Media Inc., works with the System for the Automated Migration of Media Archives May 21 at the DMRC. Once media is digitized, it can be captioned and tagged to make it discoverable by searchers, a process that often requires research. (DOD photo by Steve McGill)

put it, “last for all of eternity. To use an extreme example, we may only get one chance to play back a videotape due to deterioration. The digital file created from this last viewing is the preservation of the content. The physical medium might be lost, but the content saved.”

### **FORMAT = COLLECTION**

“Our collection’s pretty stable,” said Hickey, “and that is a credit to the services and how they stored it at our storage facility,” the Defense Media Records Center in Riverside, CA. That stability allows for prioritization to be “more collection-based or content-driven than format-based, and you ride the balance between those,” she said.

“By and large, right now at the beginning of the contract, we are digitizing by format,” Hickey said. Oddly enough, format

also equates to collection, because a particular format most often comes from a particular era. So World War II imagery or audio is likely to be in a different format from material originating in the Korean or Vietnam era.

“For example,” she said, “Let’s say you have all of this World War II material. That would be really great to have [digitized], because people probably haven’t seen it for a long time. But you have to weigh that against what the contractor can handle, because World War II content is going to be in myriad legacy formats that may or may not take longer or extra processing.” It’s much more expensive, for example, to digitize a 16 mm movie in terms of both money and manpower. And so far, the contractor, T3Media Inc., has been “phenomenal” in doing so, Hickey said.



#### DAWN PATROL

A UH-60L Black Hawk flown by Soldiers of the 1st General Support Aviation Battalion, 171st Aviation Regiment takes off at Fairfield, UT, June 20, 2012. The Soldiers were conducting practice jumps in preparation for a future exercise, a detail that may have required some research to establish because it is not necessarily apparent in the image itself. (U.S. Air Force photo by A1C Allen Stokes)

#### ASSIGNING THE WORKLOAD

DIMOC has a total of 51 of military and government civilians, along with some contractor support, to do both the operational and archival missions. About 20 people are caption-editing on a daily basis and are assigning keywords. Each one of them is responsible for caption-editing approximately 75 images a day. But their work does not include defining the images' historical context. This is where the archivist enters the picture of imagery management.

DIMOC's "born digital" content consists of about 1.7 million items at the moment, and it is growing. DIMOC also has about

1.4 million items of physical media that need to be digitized and tagged. "We're not going to caption-edit items until they get into digital form," Hickey said. "It is easier to manage content in a digital form and on a platform that provides access and ease of use."

As to the question of where to stop, there may not be such a clear endpoint. "There will always be a need for collection, preservation and access to this imagery," Hickey said.

—MR. STEVE STARK



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# *Many* TASKS, *ONE* TOOL

PM CCS seeks maximum efficiency, affordability  
with consolidated contractor logistics support

*by Mr. Raymond W. Chin and COL Richard J. Hornstein*

As materiel developers, acquisition program executive officers (PEOs) and project managers (PMs) must consider all aspects of doctrine, organization, training, materiel, leadership, personnel and facilities (DOTMLPF) before the Army enterprise can fully institutionalize a capability. Over the past 12-plus years of combat operations in Iraq and Afghanistan, the Army has successfully developed materiel solutions and pushed them out to the force, using agile acquisition processes to meet the needs of combatant commanders. However, the full set of DOTMLPF considerations often failed to align with the deployment of the “M”—materiel—and PMs became responsible for addressing these shortfalls.

As a result, PMs used many different strategies in their approach to the requirements for new equipment training, fielding and life-cycle

support of new capabilities that successfully addressed logistic support. Nevertheless, not all of these strategies were synchronized for maximum affordability and efficiency.

Now, PEO Ammunition’s PM Close Combat Systems (CCS) has implemented a holistic approach to logistic support that seeks to maximize efficiencies from a contractual standpoint. Our approach has resulted in a logistic construct of consolidated support for a large portfolio of capabilities, providing world-class support in any environment while harvesting a total cost avoidance of \$3 million in FY13 and 14.

## **MULTIPLE CONTRACTS**

There were multiple contracts in support of PM CCS products in Iraq, Afghanistan and Kuwait, with numerous support efforts awarded in FY11. Several awards were made directly to the original equipment







#### LIFESAVING LOGISTICS

SSG Carlos Fastin, center, and 1LT Tyler Smith, left, inventory mine detectors Oct. 2, 2013, in Mazare Sharif, Afghanistan, before shipping them out for redistribution through the Army's supply system. The consolidation of contractual support for a large portfolio of capabilities managed by PEO Ammunition's PM CCS has resulted in a new, improved logistic construct and a total cost avoidance of \$3 million in FY13 and 14. (U.S. Army photo by 1LT Matthew Powell)

manufacturers (OEMs), while others used the omnibus contracts of the U.S. Army Communications-Electronics Command or the U.S. Army TACOM Life Cycle Management Command for competed task order support. The task orders ended in a staggered timeframe over multiple contracts.

The family of PM CCS products includes a wide variety of innovative systems, such as the Spider M7 Networked Munitions System, which provides munitions field

effectiveness equivalent to the capabilities provided by antipersonnel land mines without the life-threatening risks that persist after hostilities end; Husky Mounted Detection System (HMDS), a ground-penetrating radar capability that detects buried objects that otherwise may not be found by the naked eye; and joint urgent operational need statements for handheld devices used by dismounted Soldiers to detect buried objects, such as Minehound, Gizmo, Ceia and Detector Special Purpose No. 27.

#### CONSOLIDATED STRATEGY

In the first year of the planned contract award, rather than exercise the next order or option under the existing contract(s), PM CCS leadership decided to place all theater support on a new PM CCS Consolidated Contractor Logistics Support (CLS) contract. PM CCS published a sources sought notice on **FedBizOpps.gov**, seeking engineering, technical and support services for the entire array of PM CCS systems currently deployed in Iraq, Afghanistan and



### CLEARING THE WAY

SPC Ryan Barber, a combat engineer with Brigade Special Troops Battalion, 4th Brigade Combat Team, 10th Mountain Division, operates a vehicle-mounted mine detector during a combined arms route clearance mission in Kunar province, Afghanistan, Oct. 15, 2013. PM CCS' portfolio includes a full spectrum of countermine and explosive ordnance disposal solutions for vehicle, handheld and robotic applications. (U.S. Army National Guard photo by SSG Jerry Saslav, 129th Mobile Public Affairs Detachment)

Kuwait. The capabilities sought included system integration and installation, studies and analysis, logistics support, training, maintenance and repair, materiel supply support, and warehouse support and receiving.

PM CCS completed a market research evaluation report in accordance with Federal Acquisition Regulation Part 10. A total of 12 U.S. companies, five small and seven large businesses, responded to the market survey. Of the respondents, all the large businesses and most of the small business demonstrated their capability to perform the effort.

### WEIGHING THE ALTERNATIVES

PM CCS considered, but rejected, several alternative contracting approaches involving a lesser degree of consolidation. Obtaining CLS from the OEM was an option but would have required separate

solicitations and awards, similar to the approach currently deployed.

Another alternative was to award task orders against existing omnibus service contract vehicles awarded by other Army or government agencies. This alternative would have performance advantages because of continuity and use of an already well-established logistic network in theater. However, the agencies managing contracts did not necessarily consider PM CCS' contract actions a high priority, thus creating the risk of significant delays in award of task orders and corresponding disruptions in support services. PM CCS decided to issue one solicitation based on results of the market research, with the intent to fully consolidate the logistics for theater and continental United States (CONUS) support.

The PM CCS team recognized that the administrative cost of consolidating

efforts into one firm, fixed-price (FFP) contract would yield administrative savings over managing numerous contracts and would free resources to award other requirements for the government. Over time, the various field service representatives (FSRs) were no longer specialized in their respective OEM equipment and could not perform work on other items. Under the original contract structure, schedule risks increased when a small number of FSRs were responsible solely for a single item, as they were based at one or two places in theater, and often their support was required in other locations or at remote forward operating bases (FOBs). The transportation required to relocate them could delay support, directly affecting equipment readiness.

Having a single contractor supporting all of PM CCS' family of products eliminated this problem: FSRs are now required to be cross-trained and able to support multiple end items. In addition, as they are located at multiple FOBs in theater, prioritization of FSR placement can minimize transportation issues. There is now a baseline of knowledge for all supported systems for FSRs, providing the flexibility to meet a wide array of demands. And, since FSRs have to be able to train, install and repair multiple systems, they, too, needed training and certification on all the systems covered under our contract.

### EXECUTING THE CONTRACT

The basic contract was awarded as an indefinite delivery/indefinite quantity (IDIQ) instrument with FFP task orders. It includes a base year and two additional ordering periods during which task orders can be placed on contract. The maximum contract value is \$85 million. PM CCS awarded the first task order using FY13 operation and maintenance funding in support of theater operations,





### BIG-PICTURE SOLUTION

SGT Kenton D. Smith, a combat engineer with 4th Brigade Special Troops Battalion, 4th Brigade Combat Team, 101st Airborne Division (Air Assault) (4-101 ABN), checks the progress of vehicles during a route clearance patrol Aug. 14, 2013, in Khost province, Afghanistan. The family of PM CCS products includes a wide variety of innovative systems used in missions such as this one. (U.S. Army photo by SGT Justin A. Moeller, 4-101 ABN)

followed by task orders for CONUS and OCONUS support as well as for the U.S. Marine Corps-owned HMDS.

One of the major challenges that PM CCS faced in awarding the theater support task order was obtaining the Government Furnished Life Support Validation Request and Approval Form from the operational contract support drawdown cell and the base operating support – integrator/garrison commander for each FOB to obtain the theater business clearance request from U.S. Army

Materiel Command. It took almost two months to obtain approval from all six FOBs where PM CCS' requirement was to be located, because of changes in approving personnel. However, commanders willingly supported the request, knowing that embedded support was a combat multiplier.

Another challenge was the incremental drawdown in equipment and military personnel in theater. To align with the drawdown plan for contractor personnel as approved by the assistant secretary

of the Army for acquisition, logistics and technology, it was necessary to adjust the workforce several times in conjunction with the plan.

Despite these challenges, the PM CCS team managed to maintain an operational availability of more than 97 percent for all HMDS while staying ahead of the curve in de-installing systems and drawing down equipment and personnel. The team also managed to recover more than \$4.4 million worth of equipment by checking retrograde sort yards, Defense Logistics





### COUNTER-IED MISSION

SSG Kyle R. Petko, uses a VMC-1 Gizmo metal detector to scan for improvised explosive devices (IEDs) during a route clearance patrol Aug. 14, 2013, in Khost province, Afghanistan. Over the past 12-plus years of combat operations in Iraq and Afghanistan, the Army has successfully developed and delivered to the force a wide variety of materiel solutions to meet counter-IED requirements. (U.S. Army photo by SGT Justin A. Moeller, 4-101 ABN)

Agency Disposition Services yards, ammunition supply points, and contractor and unit vehicle and equipment yards.

An additional task order provided system integration and installation, fielding, retrograde support, transportation, training, documentation updates, customer support, inspection and maintenance (repair, rebuilding, parts replacement and troubleshooting) as applied to hardware, software, firmware and logistics support. It also covered associated support tasks such as program management, administrative support, inventory management,

quality management, and interface with other government and contractor personnel. This task order further supports the vast array of PM CCS products, including those in theater.

The major challenge with this task order was putting together all the various PM CCS product fielding schedules to determine the proper level of manpower needed to support it. These included the training schedule at the U.S. Army Maneuver Support Center of Excellence and the support schedules for the National Training Center and Joint Readiness Training Center.

The Army is not the only service to benefit from the PM CCS contract. The Marine Corps gets its CLS support in theater through the PM CCS task order as well as having its own task order to provide installation, inspection and maintenance, and training support for its HMDS. The major difference for the Marines was the locations where they needed support.

### CONCLUSION

Not only has the successful implementation of the CLS concept resulted in a \$3 million cost avoidance for FY13 and





#### SPIDER SENSE

Paratroopers with Brigade Special Troops Battalion, 173rd Infantry Brigade Combat Team (Airborne) participate in new equipment training of the Spider Networked Munitions System March 11 at Caserma Del Din, Vicenza, Italy. Spider, a man-in-the-loop system incorporating sensors, communications and munitions for small unit force protection, is among the numerous systems for which the consolidated logistic contract supports training, fielding and life-cycle support. (Photo by Paolo Bovo, Training Support Activity Europe)

14, but most importantly, it has also improved supportability for the CCS portfolio across the services and is now a PEO standard for providing enduring program support.

Whether the requirement exists at a remote outpost in Afghanistan, or the need for training arises at a mission readiness exercise or in support to our joint partners, the IDIQ consolidated support strategy remains an effective, efficient method to provide the full spectrum of logistic support. Additionally, it allows the PEO and

PM the flexibility to surge and respond to the operational and peacetime sustainment needs of our customers.

For more information, go to the PM CCS website at <http://ccsweb.pica.army.mil> or call PM CCS at 973-724-4120.

*MR. RAYMOND W. CHIN is the chief integrated logistics officer for PM CCS, Picatinny Arsenal, NJ. He holds a B.S. in aerospace engineering from NYU Polytechnic School of Engineering. Chin is*

*Level III certified in logistics, program management and engineering and is a member of the U.S. Army Acquisition Corps.*

*COL RICHARD J. HORNSTEIN is the project manager for CCS. He holds an M.S. in acquisition and management from the Florida Institute of Technology, a Master of Strategic Studies from the U.S. Army War College and a B.A. in history from the University of Rhode Island. His operational background includes a breadth of command and staff assignments in the United States, Europe and abroad.*

# Mixing *it* UP

Hilton Worldwide meets the challenges of training a global workforce with a ‘blended solution’



*For many years now, Soldiers have had intensive on-the-job training in the combat environments of Southwest Asia. As the U.S. presence there winds down, the Army needs innovative ways to keep its Soldiers trained and ready for future conflicts and contingencies, even as budgets are slated to decline.*

*Of course, the Army is not the only organization that must adapt to changing circumstances. The hotel industry also faces challenges: trying to do more with tighter budgets, greater competition, and customers who are better-informed and more demanding than in the past. Hilton Worldwide is certainly one of the farthest-reaching hospitality companies, with roughly 300,000 team members in more than 4,100 properties in 92 countries around the world working on tasks ranging from building and maintaining global reservation systems to managing individual properties to washing linens for more than 680,000 rooms, all to a very high standard.*

*Both Hilton Worldwide, a Fortune 500 company based in McLean, VA, and the Army have workforces that are dispersed geographically and represent a huge variety of skill sets, not to mention ethnicities; Hilton Worldwide’s team members speak more than 40 languages. Both organizations have employees and trainees who learn and communicate differently than earlier generations, given rapidly changing technology. Success for either group depends in large part on a commitment to work as a well-trained team and the sacrifice*

*of personal goals to achieve mission success. Hilton Worldwide has received global recognition for its learning and development efforts, most recently the Association for Talent Development BEST Award.*

*Army AL&T magazine was curious to find out how the company trains its employees successfully to meet the challenges that it faces. Kimo Kippen, chief learning officer and vice president of learning at Hilton Worldwide, answered our questions.*

*Kippen is also an adjunct professor at the Catholic University of America’s Metropolitan School of Professional Studies (MSPS), teaching the Human Resources Training and Development class for the master’s program in human resource management. He previously served as an executive-in-residence at MSPS and received the 2010 MSPS Faculty of the Year award. Kippen also served as chair of the Association for Talent Development in 2007.*

*Before joining Hilton Worldwide in June 2010, Kippen worked for Marriott International Inc. for 21 years, most recently as vice president of learning, responsible for the Learning Center of Excellence. He began his career in various food and beverage positions and subsequently moved into training roles. He holds an M.S. in career and human resource development from the Rochester Institute of Technology and a B.S. from the University of Hawaii, and is a graduate of the Gestalt Institute of Cleveland’s postgraduate program.*



**Army AL&T:** Describe your approach to training a workforce as broad as Hilton Worldwide's. What are the biggest challenges? How do you overcome them?

**Kippen:** At Hilton Worldwide, we have a highly distributed workforce spread out across 92 countries and territories around the world. This creates a number of challenges, from language and translation to time zone differences and cultural sensitivities. In addition, last year we announced Operation: Opportunity, which is our goal to hire 10,000 military veterans and military spouses over the next five years in the United States. As part of this commitment, we are focused on making training programs convenient for our military team members and veterans seeking employment.

To address these challenges, we offer a variety of different modes of learning that enable us to provide training programs designed to meet our team members' needs. For example, some training is instructor-led, while some is through e-learning, and other programs use Web-based simulation.

One of the biggest challenges we face at our hotels is helping team members find time to train away from the job. Through our strategically designed "bite-sized learnings," team members can advance their careers within their busy schedules. These learnings infuse pre-shift huddles and trainings into day-to-day job activities, which makes efficient use of the training time. Some examples of topics for these huddles include job skills refresh, guest service skills and reviewing customer service data. This approach allows for localized, customized and personalized training.

**Army AL&T:** Tell us about the Hilton Worldwide values. How do you go about

building and reinforcing those traits in a training program? Do you use incentives or requirements, for example, such as continuous learning points to encourage your employees to get additional training?

**Kippen:** Everything starts with our overall vision, mission, values and key strategic priorities. As an organization, we believe that our values are key to our position as a leader in the industry. The Hilton Worldwide values are: Hospitality (we're passionate about delivering exceptional guest experiences); Integrity (we do the right thing, all the time); Leadership (we're leaders in our industry and in our communities); Teamwork (we're team players in everything we do); Ownership (we're the owners of our actions and decisions); and Now (we operate with a sense of urgency and discipline). These values are infused throughout our learning programs and map directly to the customer-focused core competencies on

which our team members are measured: living the values, leadership, collaboration and judgment. We educate team members on this information during orientation so it becomes part of their DNA from the moment they walk in the door.

Our team members participate in the Hilton Worldwide performance management process, which guides them to develop their individual development plan and keeps them on a learning path that will be beneficial to their career. Further, through our Learning Management System, which we call HWU (Hilton Worldwide University), we can also assign specific content catered to individual team members' needs; we notify them by email as assignments are made. Finally, we have brand-specific and position-specific training programs that inform our team members about various trainings required for their particular jobs.



#### GLOBAL REACH

The Hilton Surfers Paradise on Surfers Paradise Beach in Queensland, Australia, is one of Hilton Worldwide's more than 4,100 properties. Technology is helping the company train its far-flung and diverse workforce wherever they are and whatever language they speak. (Photos courtesy of Hilton Worldwide)



#### THE FACE OF OPPORTUNITY

Rene Pinon, U.S. Navy veteran and director of catering and events, has built a long and satisfying career through Hilton Worldwide's performance management process. Hilton Worldwide's Operation: Opportunity aims to hire 10,000 military veterans and spouses in the United States over the next five years.

**Army AL&T:** How has your workforce changed over the past decade, and how have you adjusted your training approach as a result?

**Kippen:** As technology rapidly advances and we see the millennial generation continuing to enter the workforce, our team members seek greater access to automated, customized solutions. To keep up with the speed of information that these individuals are used to, we deliver short, bite-sized pieces of content that are available to them on demand through their laptop or mobile

device when and where they need it. The content is relevant, engaging and effective in a way that is easily digestible by team members seeking training on the go.

**Army AL&T:** Overall, what training systems, approaches or processes have you found to be the most successful? What are some of the mistakes you've made along the way, and how have you put into practice the lessons you've learned?

**Kippen:** My experience has been that blended solutions are the most successful.

People respond best to having options when it comes to learning. One of the biggest mistakes that we see in learning practices arises when one solution is forced on a broad audience. For example, many of our team members are very receptive to e-learning, but having an instructor-led course is crucial to helping those who might find e-learning challenging or impersonal to complete all of their requirements.

At Hilton Worldwide, executive support and alignment are crucial to the success of



our learning and development programs. I have the full support of our leaders, who are focused on sourcing, attracting, retaining and developing talented team members at every level of the organization. This support is critical, particularly with our global presence and plans for continued growth. We continue to be number one in rooms under construction in every major region of the world, according to Smith Travel Research (STR), with more than an 18 percent share of all rooms under construction globally. Today, we have 510 hotels and approximately 101,000 rooms under construction, soon to be added to our system. We have also maintained our number one pipeline ranking [representing all new supply, from rooms in preplanning to those under construction], according to STR, with 1,165 hotels and approximately 200,000 rooms in 76 countries and territories.

We have established global systems and processes, and raised the bar for performance management, succession planning, leadership development and learning. Our leaders are actively engaged in these development programs and committed to guiding future talent.

**Army AL&T:** Are there training-related innovations, either theoretical approaches or technological advances, that are of particular interest to Hilton Worldwide? Many corporations have used virtual simulators to train their staffs. Have you had success with such programs? If so, what products did you use? What factored into your decision to use a virtual training system?

**Kippen:** Technology is changing the way we deliver information to employees, and I'm happy to say that it's making trainings more convenient and enjoyable. I'm really excited about two technology



#### LEARNING SHOWCASE

The company recently held its first HWU Expo in McLean to showcase all the learning opportunities available to team members through HWU's five colleges. Team members learned about the offerings from each college directly from the deans, including the General Studies College, which is open to everyone and offers more than 2,000 courses. HWU enables Hilton Worldwide to offer training tailored to the needs of its team members.

solutions in particular: mobile learning simulations and virtual trainings for a completely virtual workforce.

We're testing a mobile solution, scheduled to be deployed this year, that brings selected team members together in a cohort to participate in a custom training offered through a mobile device and relevant to a specific position within the company.

Separately, we are piloting a virtual training solution that will serve team members who need to do their trainings remotely. Making our trainings available to deployed team members and recruitment candidates through virtual solutions is crucial to Operation: Opportunity and a top priority for our organization. We're exploring the ways we can expose potential team members

to some of our learning and development opportunities to help them fill skills gaps, work to become viable candidates and begin to learn about our Hilton Worldwide values.

**Army AL&T:** Do you use mobile apps in your training programs? If so, can you please tell us about them?

**Kippen:** We have started using mobile apps to make our training programs more convenient for team members. For example, we are rolling out mobile availability of HWU, so that team members can access trainings in our online education program from anywhere.

**Army AL&T:** What lessons have you learned from using those systems, and how did you incorporate those lessons into new programs?



### TRAINING BY MENTORING

More than 50 general managers (GMs) from Hilton, DoubleTree by Hilton and Embassy Suites gathered at the Hilton McLean Tysons Corner in McLean, VA, to display their commitment to “Travel with Purpose Tuesday” by mentoring students from Hospitality High School in Washington, DC. Students also toured the corporate offices and spent time with Hilton Worldwide executives Kimo Kippen, Brian Bensen and Rianna Lishrop to learn about trends in hospitality and polish their interview skills. Student mentoring has become an important part of Hilton’s GM training.

**Kippen:** One of the key lessons I’ve learned through my own experiences is that executive sponsorship and collaboration with key stakeholders (finance, legal, IT, etc.) are crucial. At Hilton Worldwide, we’re very fortunate to have a leadership team that is fully aligned with our training and development objectives, and we see that alignment filter down through all levels of the organization.

**Army AL&T:** What’s on the training horizon for Hilton? What aspects of your training programs will be different in five years?

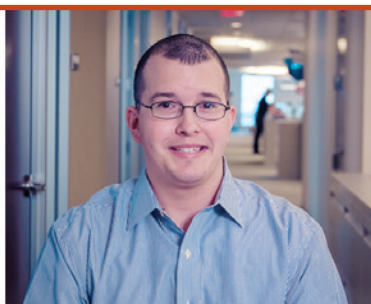
**Kippen:** We will continue to focus on management, supervisor and leadership development as well as big-system deployment training. We are also making great strides to create virtual team

member training for Hilton Reservations and Customer Care, as well as a number of other groups within our organization.

I think the biggest difference we will see five years from now will be in how team members access and engage in our training programs. As we increasingly integrate mobile technology into our offerings, we’ll see how team members respond differently to training programs when they can be completed anytime, anywhere.

**Army AL&T:** What possible parallels do you see between the lessons you’ve learned and the Army’s training of our country’s warfighters?





### AT YOUR SERVICE

Hilton Worldwide's roughly 300,000 team members work in 92 countries around the world in jobs as varied as building and maintaining global reservation systems, managing individual properties and washing linens. Training such a diverse workforce to the company's high standards is no easy feat, but technology and some creative learning concepts make it easier to reach all employees.

**Kippen:** Our team members, much like our nation's Soldiers, want to train constantly to improve their knowledge base and skill sets. The nature of war has changed, just as the nature of corporate America has evolved. Greater access to knowledge that is well-organized and relevant and communicated in a faster and more efficient capacity is attractive to both civilian and military counterparts.

**Army AL&T:** Is there anything else you'd like to add?

**Kippen:** I believe there is a strong alignment between military values and skills, and the skills and values our team members espouse at Hilton Worldwide. Our founder, Conrad Hilton, was a World War I veteran and laid the foundation for a legacy of hiring military veterans. We have found that veterans are a great fit for the dynamic, global and diverse environment of the hospitality industry, and are excited about our continued commitment to hiring them.

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# Dollars & \$ense

How the Army Acquisition Workforce  
is making Better Buying Power 2.0 work

*by Mr. Joseph M. Jefferson*

## **BBP 2.0 BASICS**

1. Achieve affordable programs.
2. Control costs throughout the product life cycle.
3. Incentivize productivity and innovation in industry and government.
4. Eliminate unproductive processes and bureaucracy.
5. Promote effective competition.
6. Improve tradecraft in acquisition of services.
7. Improve the professionalism of the total acquisition workforce.

For more information, go to  
<http://bbp.dau.mil/>.

*B*etter Buying Power (BBP) 2.0 is as much about people and processes as it is about the bottom line. Bottom-line savings and cost avoidance are certainly the ultimate goals, but at the heart of BBP 2.0 is a cultural change. Indeed, the Hon. Frank Kendall, undersecretary of defense for acquisition, technology and logistics, said at his official rollout of BBP 2.0 in April 2013, "People, to me, are central to this." Following are recent examples from Acquisition Workforce members not only of accomplishments in cost avoidance and savings, but also of changes they have made in how they do business in order to achieve the goals of BBP 2.0. At left are the seven focus areas of BBP 2.0.

## **COMBINING UPGRADES, EFFICIENCIES IN BLUE FORCE TRACKING TECHNOLOGY**

The program office that delivered the critical Force XXI Battle Command Brigade and Below/Blue Force Tracking (FBCB2/BFT) system for troops in Iraq and Afghanistan is delivering substantial cost reductions as it upgrades the technology for future operations.

The two-part system upgrade, known as Joint Capabilities Release (JCR) and Joint Battle Command – Platform (JBC-P), will serve as the principal mission command system for the Army and the U.S. Marine Corps (USMC) at the level of brigade and below. It comes as the Army advances the tactical network as its top modernization





#### MTS ON THE MOVE

A Soldier checks communications with his TOC using an MTS mobile unit. MTS, a mostly vehicle-based system that tracks combat support and combat service support vehicles to provide in-transit, near-real-time visibility of critical cargo, transitioned to the PM JBC-P family of systems, significantly increasing capabilities, reducing costs, streamlining processes and better aligning resources. (U.S. Army photo)

priority, fielding integrated capability sets that connect all echelons of the brigade combat team with mobile voice and data communications.

To deliver these savings, the project manager (PM) for JBC-P within the Program Executive Office Command, Control and Communications – Tactical (PEO C3T) relied on an organizational culture that stressed prudence, efficiency and challenging the status quo. Leveraging BBP principles, PM JBC-P is saving and

avoiding costs of more than \$244 million over the next several years by promoting competition and eliminating redundancies in Army systems.

PEO C3T began pursuing competitively awarded, fixed-price contracts a decade ago when first fielding FBCB2/BFT. In 2001, the PM thought the pricing of a hardware contract held by the lead systems integrator could be reduced, and decided to break out that portion and release a competitive contract for hardware.

That effort led to a new contract with a 50 percent drop in unit price. It also was the beginning of a culture change within the organization.

While all service providers had a shot in the competitive environment and all were treated equally, PM JBC-P, then known as PM FBCB2, decided to no longer accept the status quo. The program team understood that its future success depended on a shift in vision to challenge processes and seek efficiencies.

## FASTER TRACKING

The fleets of the 2nd Stryker Brigade Combat Team (BCT), 2nd Infantry Division (ID) and the 3rd Stryker BCT, 3rd ID, both based at Joint Base Lewis-McChord, WA, are converting from the line-of-sight, radio-based Enhanced Position Location Reporting System to the faster and more easily managed, satellite-based BFT 2 network. JCR, in turn, brings a faster BFT 2 satellite network, secure data encryption, USMC interoperability and improved chat messaging. (U.S. Army photo)



If a competitive market didn't exist, the team took the time to establish one. Where prudent, it also secured government purpose rights for software and technical data packages for hardware. As part of the process, the team used third parties to validate the government purpose rights and technical data packages so that when competitive contracts were released, they could effectively exercise the development rights.

A strategic step came in 2010, when the PM JBC-P team chose the U.S.

Army Aviation and Missile Research, Development and Engineering Center's Software Engineering Directorate to design the software upgrades for JBC-P, rather than selecting a contractor. It was a calculated risk, which produced \$64 million in cost avoidance and ensured future control of the capability. Now JBC-P is in Soldiers' hands for evaluation, has completed initial operational test and evaluation, and received production approval in December 2013, with fielding scheduled to begin in the second quarter of FY15.

During software development, PM JBC-P applied the tenets of BBP to acquire other system components, such as hardware and satellite airtime. The program office last year concluded three competitive contract efforts, resulting in significant cost reductions.

First, the PM held a full and open competition for procurement of the BFT system platform and tactical operations center (TOC) installation kits. This resulted in a reduction of more than 40 percent from the previous contract,



based on projected platform installations over the FY12-17 Program Objective Memorandum (POM).

Next, to purchase satellite airtime, PM JBC-P worked in concert with the Defense Information Systems Agency to take advantage of General Services Administration Schedule 70 processes and craft a performance-based requirement to enable bidders without BFT experience to compete. In addition, the PM surveyed the marketplace and crafted a performance work statement to best create competition while satisfying global operational requirements. This resulted in roughly a 25 percent reduction in the cost of satellite channels from the previous contract and \$86 million in projected cost avoidance over the FY13-19 POM.

The third contract, which was awarded in June 2013, leveraged full and open competition to satisfy multiple requirements for mounted computing components to enhance Soldiers' ability to plan, monitor and execute missions. Known as the Mounted Family of Computer Systems (MFoCS), this new capability allows multiple command, control, communications, computers, intelligence, surveillance and reconnaissance (C4ISR) programs and vehicle integrators to use common hardware components inside a vehicle and thus take advantage of economies of scale, simplified logistics, prequalified solutions and fully integrated components. The PM staffed the requirements across services and among PEOs to ensure that specific capabilities were met, while making significant reductions in size, weight and power use.

Not only does MFoCS satisfy JBC-P needs, it supports other C4ISR capabilities and software applications as well. An example of MFoCS component cost avoidance is that the average cost of a

complete JBC-P system dropped by more than 30 percent. If tallied over the current basis of issue plan, that represents an avoidance of more than \$161.5 million.

MFoCS will support PM JBC-P's Mounted Computing Environment (MCE), one of six approved computing environments that are part of the Army's Common Operating Environment. PM JBC-P's MCE will deliver a high-quality software development kit enabling programs to rapidly develop, test and field mission command capabilities.

The development of the MCE and MFoCS follows a series of other moves by PM JBC-P to reduce duplication

of system capability and create a more seamless user experience.

For example, the recent transition of the Movement Tracking System (MTS) into the PM JBC-P family of systems significantly increased capabilities while also reducing costs, streamlining processes and better aligning resources. MTS, a mostly vehicle-based system that tracks combat support and combat service support vehicles, uses a radio frequency identification capability to provide in-transit, near-real-time visibility of critical cargo. It previously was assigned to PEO Enterprise Information Systems.

By incorporating MTS in 2012, ahead of schedule, PM JBC-P immediately



#### LEATHERNECK TESTED

Marines from the 2nd Battalion, 8th Marine Regiment joined the Army's 2nd Brigade Combat Team, 1st Armored Division at Fort Bliss, TX, in the spring for Network Integration Evaluation 14.2. The FBCB2/BFT program office is delivering substantial cost reductions as it upgrades the technology for future operations. The two-part system upgrade, consisting of JCR and JBC-P, will serve as the principal mission command system for the Army and USMC at the level of brigade and below. (Photo by Nancy Jones-Bonbrest, PEO C3T)

## THE DEVELOPMENT OF THE MCE AND MFOCS FOLLOWS A SERIES OF OTHER MOVES BY PM JBC-P TO REDUCE DUPLICATION OF SYSTEM CAPABILITY AND CREATE A MORE SEAMLESS USER EXPERIENCE.

eliminated the need for separate program management elements such as contracts, satellite channels and operational costs. In FY12, the transition showed a cost avoidance of almost \$20 million; that figure is expected to exceed \$30 million per year through at least FY16 for a total cost avoidance of approximately \$152 million.

Even before the transition, the culture of efficiency at PM JBC-P set the stage for greatly improved capabilities at lower cost. Although MTS had separate software and hardware, it shared the same networking technology with FBCB2/BFT, and, after a 2006 Army memo directed the use of the FBCB2 product line software to replace the MTS software, PM JBC-P worked with MTS leaders to choose common hardware. Now, with the same network and hardware, they could complete the efficient integration leveraging the FBCB2 product line software to create JCR – Logistics. With this new capability, maneuver and logistics forces can share situational awareness and messaging, forming a complete operational picture. JCR – Logistics installation was completed on platforms in Afghanistan between October 2012 and March 2013.

The more than \$152 million in cost avoidance from the transition of the MTS program office into PM JBC-P also created an opportunity for new forward-looking efficiencies in product

support. PM JBC-P eliminated software tests and support for an evolving MTS baseline; it combined test, support and sustainment functions, which saved almost \$1.7 million per year. For units, this single software baseline allows users to migrate between systems without the burden of retraining.

PM JBC-P also realigned field support representatives (FSRs) and help desks for two systems, MTS and Tactical Ground Reporting (TIGR), which is now part of the JBC-P family. By transitioning the MTS system of using regionally based FSRs to PM JBC-P's system of dedicated FSRs who train and deploy with the brigade combat team, the number of FSRs was reduced. Additionally, the JBC-P fielding team expanded its mission to include installing the systems identified in the MTS basis of issue plan. The two alignments avoid costs of more than \$11 million per year.

PM JCB-P also eliminated a fully manned, 24/7 MTS network operations center and its contingency backup site, which were consolidated into the two existing government JBC-P sites that run 24/7. Likewise, the PM incorporated the 24/7 help desk for TIGR, eliminating the need for two contractor-owned help desks and a help desk for the Battle Command Support and Sustainment System. These efforts have avoided costs, including overhead costs and personnel, without affecting operations.

JCR and JBC-P both leverage existing hardware and other system components, saving significant taxpayer dollars. JCR, which the Army is fielding now, brings a faster BFT 2 satellite network, secure data encryption, USMC interoperability and improved chat messaging. Once fielded, JBC-P will add touch-to-zoom maps, drag-and-drop icons and a Google Earth-like interface. Through the BFT2 network, JCR and JBC-P enable beyond-line-of-sight communication among dismounted Soldiers, vehicles, aircraft and higher headquarters.

*For more information, go to <https://jbc-p.army.mil/jbcp/menu.cfm> (Common Access Card login required).*

### CONTRIBUTORS:

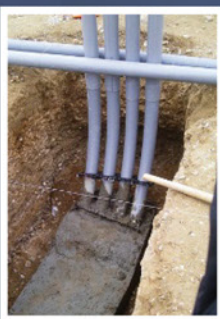
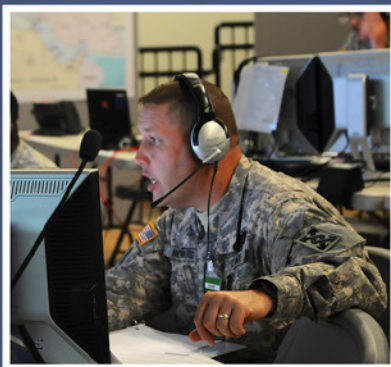
**COL Michael Thurston**, PM JBC-P; **LTC (now COL) Bryan “BJ” Stephens**, then-product manager (PdM) for Blue Force Tracking; now-retired **LTC Mark R. Daniels**, then-PdM JBC-P; and **Mr. James Steinberger**, chief, Business Management Division, PM JBC-P. In May 2014, PM JBC-P merged with PM Mission Command (MC). Thurston is now the PM MC.

*This article was condensed from the original version published in the September-October 2013 issue of Defense AT&L magazine at [http://www.dau.mil/publications/DefenseATL/DATLFiles/Sep-Oct2013/Thurston\\_et\\_al.pdf](http://www.dau.mil/publications/DefenseATL/DATLFiles/Sep-Oct2013/Thurston_et_al.pdf).*





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# The 'OTHER' Acquisition Phase

Focusing on better buying power and value engineering efforts

by LTC Elliott R. Caggins, Mr. Jason R. Middleton and MAJ Demond J. Merrick

The vast majority of the acquisition workforce has a great understanding of the life-cycle management process, including designing, developing, procuring, producing, fielding and sustaining military equipment. The defense acquisition life-cycle model goes into great detail on the operations and support phase, but it barely covers the cycle's end—divestiture. In fact, the Defense Acquisition University's life-cycle management chart simply lists divestiture as "disposal," even though it's much more than that.

With its focus on life-cycle phases from design to sustainment, formal acquisition training often neglects disposal, which is always a final option. Disposal is only a part of a larger function: divestiture, the transfer or disposal of interests. Divestiture encompasses a variety of opportunities and the possibility of finding value engineering (VE) and better buying power (BBP) savings normally identified in the operations and support phase, rather than waiting until after a system reaches the end of its useful life after many years, sometimes decades, of use.

The Mine Resistant Ambush Protected (MRAP) vehicle addressed the improvised explosive device threat in both Iraq

and Afghanistan. MRAP was a unique, rapid acquisition program that expedited many standard acquisition processes in order to produce more than 27,000 vehicles in fewer than five years for combat operations. Almost 22,000 MRAPs came to the Army. With the current contingency operations winding down and sustainment costs looming, the question remains: "What should be done with the remaining MRAP vehicles and associated equipment located all over the world?"

Recently, the Army validated a plan to keep 8,585 of the most effective MRAP variants while divesting the remaining assets. This Army decision led the product manager for MRAP vehicle systems (PdM MVS) within Program Executive Office Combat Support and Combat Service Support (PEO CS&CSS) to transition much of its focus from the production and deployment phase to operations and support for vehicles







#### WHAT NEXT?

Soldiers and civilian contractors review paperwork and prepare to conduct an ammunition abatement inspection on several MRAPs Oct. 12, 2013, at Camp John Pratt Redistribution Property Assistance Team yard, Afghanistan. Few of us think of how we will dispose of a recently purchased vehicle when it still has that "new car smell," but the Army must do so in order to save money and make wise acquisition decisions. (U.S. Army photo by SFC Timothy Lawn, 1st Theater Sustainment Command Public Affairs)

to be retained, and disposal and divestiture for the remainder.

#### THE DOCTRINE OF DISPOSAL

Regulations and doctrine go into great detail on disposal and how to demilitarize various types of equipment. These regulations consistently emphasize cost savings or avoidance through reuse, transfer, donation and sale. This point of emphasis led the MRAP team to focus

on divestiture and options for reuse, with the actual disposal becoming an absolute last choice. The reuse of vehicles, parts and equipment can be a creative and innovative way to save money for other programs and projects.

In April 2013, the Hon. Frank Kendall, undersecretary of defense for acquisition, technology and logistics, implemented the BBP 2.0 initiative, which emphasized

key acquisition principles, provided guidance on evolving best practices and outlined new approaches to continuous improvement in product and services acquisition.

In addition to BBP principles, the team got up to speed on a public law regarding VE, which mandates savings through analysis and pursuit of areas such as improved performance, reliability,

quality, safety and life-cycle costs. The MRAP team determined that the priority for this divestiture would be any and all BBP and VE savings opportunities available.

Recognizing the scope of divestiture, the product office redirected an assistant product manager (APM) team to provide consistent attention to MRAP-wide divestiture activities. This change of mission focused the team on exploring all possible options. The APM divestiture team came to realize that there were essentially five possible outcomes for all assets, including vehicles, parts and equipment. Each of these paths had its own advantages, savings opportunities and unique challenges.

### FIVE OUTCOMES FROM DIVESTITURE

1. Internal reuse has proven to be the best way to realize BBP and VE efforts that save and avoid costs to the Army. Our goal was to focus on the remaining parts, kits, vehicles and chassis while harvesting excess equipment for future use. For example, the Caiman program harvested blast mats and transferred them to APM MaxxPro for minor adjustments and reuse, resulting in a VE project of \$7.5 million. The RG-33 program reused approximately \$24 million in parts (engines, transmissions, fuel tanks and more) across many projects, saving those potential costs as well. Other efforts involved wheels and tires, Objective Gunner Protection Kits, blast seats, armor panels, powertrain and more, resulting in over \$50 million of additional savings.

2. External transfer has become a high priority, as it allows for local and domestic agencies to use vehicles that otherwise might go through demilitarization or disposal. The MRAP divestiture team has worked very closely with Defense



### LIFESAVER

In the Salang Pass of northeastern Afghanistan, Soldiers assigned to the 114th Transportation Company and 730th Transportation Company halt their May 10 convoy escort operation momentarily to refuel their vehicles, which included MRAPs. The vehicle has been a lifesaver in theater and was once one of DOD's highest-priority acquisition items. Almost 22,000 MRAPs came to the Army. Now, however, the Army plans to keep 8,585 of the most effective MRAP variants while divesting the remaining assets. (Photo by SFC Luis Saavedra, 10th Sustainment Brigade Public Affairs)

Logistics Agency Disposition Services (DLA/DS) and its Law Enforcement Support Office (LESO) to help police, fire rescue and response teams in acquire vehicles on long-term loans. The Caiman program, for example, is currently transferring approximately 400 vehicles to DLA/DS LESO through the summer of 2014. This will provide law enforcement agencies with new capabilities and save the government demilitarization or disposal, transportation and potential storage costs. Many parts and kits can be reused through this same process for excess defense articles.

3. Foreign military sales (FMS) are another way to ensure that equipment is put to good use while helping our military allies throughout the world. This process is often very cumbersome and

time-intensive, however, and requires interagency approvals. In the case of MRAPs, these assets have been held at depots both within and outside the continental United States while the U.S. Army Security Assistance Command (USASAC) and its Security Assistance Management Directorate focus on processing the transfers.

4. Long-term storage is a viable option in the right situation. FMS or external transfer transactions may take weeks, months or even years to come to fruition. In such cases, the best option is to take inventory, drain fluids or remove hazardous materials, and store the assets at a depot until the transaction can be finalized. The RG-33 vehicle platform went through a screening and review process for potential parts and equipment reuse



before sending a large number of vehicles to Sierra Army Depot, CA, to await potential FMS opportunities.

5. Demilitarization and disposal is the final available outcome when all other divestiture options have been exhausted and the assets are of no further use to the government. The vehicle or equipment should be disposed of in accordance with DOD 4160.21M, Defense Materiel Disposition Manual. In these cases, vehicles can be reused for range targets, but others will be disposed of at local, approved recycling centers near the original equipment manufacturer to avoid shipping and preparation costs. DLA/DS also has disposal sites across the globe that can assist in this function.

### KEYS TO SUCCESS

Over the past year, the MRAP team has learned a considerable amount about the divestiture process. We attribute our success to proactive efforts to coordinate activities across numerous stakeholders who might have an interest in various equipment. There are several systems to provide government screening of items, but interested agencies need to know where to look, when to look and what is available. Reuse can be challenging, but working with the right people can ease much of the learning curve.

It is also very important to understand and acknowledge that every program will be different. Many factors can drive cost, schedule and performance, such as contract actions, plant closures, foreign events and political pressure, all of which can result in unplanned decisions and actions.

Direct, open communication among stakeholders and establishing strong working relationships are vital to the success of a fleet divestiture. In dealing with several MRAP variants, weekly if not

daily communication has been a must with organizations such as HQDA, DLA/DS, the Integrated Logistics Support Center fleet management personnel of the U.S. Army TACOM Life Cycle Management Command, FMS and USASAC security offices, and many more. When the name of the game is cost savings or avoidance, the ability to effectively involve the enterprise increases the divestiture options exponentially.

In addition, legal, contracting, security management and public affairs teams must be part of the entire process to ensure that planning and actions are visible and clear. In the case of the Caiman fleet divestiture, the product office communicated with all of these offices during weekly conference calls and daily individual discussions to ensure the successful execution of divestiture processes within schedule constraints.

### CONCLUSION

PdM MVS has identified more than \$500 million of reuse and cost savings

or avoidance for the MRAP variants that the Army is currently divesting rather than retaining as part of its defined enduring requirement. These efforts were based on BBP and VE initiatives focused on reuse, shipping, storage and vehicle preparation costs.

The takeaway is that the divestiture process is not as simple as just demilitarization and disposal. It is a much more complex and program-specific process focusing on reutilization, reuse, recycling and cost savings or avoidance. Relationships must be established to link the entire organizational enterprise early in the process, as items are declared excess to the government. Working in a broader community drives the ability to focus on divestiture and not simply disposal. Creative, innovative and predictive thought and planning will allow an organization to excel in an atmosphere that most acquisition professionals will never see.



### EXTERNAL TRANSFER

This FBI MRAP exemplifies what law enforcement agencies can gain from the external transfer of military vehicles that might otherwise go through demilitarization or disposal. (Photo courtesy of FBI)



### FINISHING TOUCHES

A welder puts finishing touches on part of a MaxxPro Survivability Upgrade, which increases Soldier survivability in an improvised explosive device attack. As the Army removes certain MRAPs from duty, it is finding ways to reuse them in whole or in part. For example, Caiman blast mats have been reused in the MaxxPro. (Photo by Sharonda Pearson, 401st Army Field Support Brigade Public Affairs)

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

*LTC ELLIOTT R. CAGGINS serves as the PdM MVS in the Army Project Office (APO) MRAP at PEO CS&CSS, Warren, MI. He holds an MBA from the University of Louisville and a B.S. in public management from Austin Peay State University. He is Level III certified in program management and is a member of the U.S. Army Acquisition Corps (AAC).*

*MR. JASON R. MIDDLETON is the lead systems engineer for APM Divestiture, APO MRAP. He holds a B.S. in mechanical*

*engineering from Kettering University. He is Level III certified in program systems engineering, Level II certified in program management and Level I certified in production, quality and manufacturing, and is a member of the AAC.*

*MAJ DEMOND J. MERRICK is the APM for MRAP divestiture, APO MRAP. He holds an M.A. in security and organizational business management from Webster University and a B.A. in social work from Southern University at New Orleans. He is Level III certified in program management.*



# ARMY CHESS IT E-MART

Computer Hardware  
Enterprise Software and Solutions

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THE  
RIGHT  
MOVE

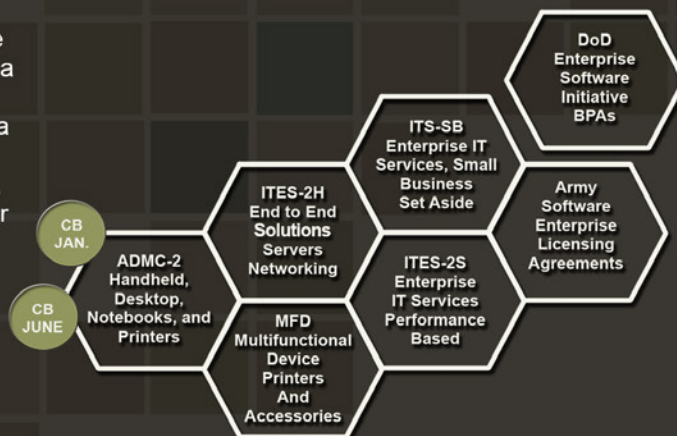


## The Army's designated primary source for commercial IT

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COMMENTARY

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

# PROMISES TO **KEEP**

Lasting bonds based on trust, respect  
and confidence are the foundation  
of the future



Ninety days have passed since I assumed my duties and responsibilities as the principal military deputy to the assistant secretary of the Army for acquisition, logistics and technology (ASA(ALT)) and the director of acquisition career management. I am humbled by this great honor, and especially appreciate the opportunity to serve again with the Hon. Heidi Shyu. I am also grateful for the ability to work with the first-rate professionals of the Army AL&T Workforce, whose dedication to duty and commitment to excellence are without equal.

Most recently, I served as the deputy commanding general of the Combined Security Transition Command – Afghanistan, working with our partners to enable Afghan-led security by the end of this year. One lasting impression of my time in theater is the outstanding level of support the Army acquisition community provides to members of our joint force. Our story is one of warfighter lives saved and missions accomplished because of the weapon systems and equipment, products and services that we deliver—in many cases urgently.

This experience, plus the lessons we learned during more than 12 years in two theaters, make one thing abundantly clear: Today's members of the Army Acquisition Corps and the entire Army AL&T Workforce are the





#### TRAINED TO WIN

Soldiers from 1st Battalion, 27th Infantry Regiment pull security during Decisive Action Rotation 14-07 at the National Training Center, Fort Irwin, CA, May 17. Exercises such as these, using equipment developed, procured and sustained by the AL&T Workforce, help make the U.S. Army the best-equipped and best-trained force on earth. (U.S. Army photo by SPC Stephen Solomon, Fort Irwin Operations Group)

most skilled in our history, and we are strengthened by our wide-ranging expertise and experience.

From analysts to contract specialists, testers and evaluators, life-cycle logisticians, information technology professionals, scientists and engineers, developers and program managers, business cost estimators and financial managers, and production, quality and manufacturing specialists, our dedicated professionals

execute diverse responsibilities on a daily basis. Most importantly, we meet our warfighters' needs—from Advanced Combat Helmets to unmanned aircraft systems to Stryker Double-V Hulls and more, including contracting for services on which our forces rely. In every program executive office (PEO) and across all portfolios, in several Army commands and organizations, there are hundreds of stories of innovative ways that we, in the Army Acquisition Corps and Army

AL&T Workforce, contribute directly to the success of our warfighters. We can be justifiably proud of these achievements.

#### ACQUISITION INSIGHTS

In many respects, returning to ASA(ALT) is a homecoming for me. I've spent a great part of my Army career in acquisition, having served as product manager for the Global Command and Control System – Army, project manager for network systems integration, deputy PEO



for integration, and joint PEO for the Joint Tactical Radio System.

What I discovered early on is that acquisition is unlike any other career field. We procure products for the United States Army that in some cases will be operated by our sons and daughters and probably even our granddaughters and grandsons. So it is important that we get it right. For this reason, let me share with you some of the lessons I've learned—in a few cases the hard way—about meeting the needs of our Soldiers.

- Keep in mind that the program you manage or support is an Army program. It does not belong to you. You are in charge of delivering a capability.
- Develop and maintain a close, personal relationship with the user. You cannot do this by email or fiat. Be engaged.
- Be the smartest person in the room when it comes to the program you manage. Articulate clearly how the needs of the Soldier are being met. Our job is to manage risk and understand the critical path of our programs in every respect, not just cost, schedule and performance.
- Honesty is important in every respect, whether the news is good or bad.
- Solve the problems you can and seek immediate help for those you cannot. Delay will not control nor improve the outcome.
- Know how to assess, identify and manage risks.
- Be creative and innovative in finding efficiencies.
- Know your contract, contracting officer and Defense Contract Management Agency representative, understand what the contractor is responsible for delivering, and provide feedback to the contractor.
- Recognize the talents of your team and leverage them.



### ENGINE OF VICTORY

Soldiers of the 1st Stryker Brigade Combat Team, 4th Infantry Division (1-4 ID) pull an engine from a Double-V-Hull Stryker, with instruction from contractors of General Dynamics Corp., May 5 during field-level maintenance new equipment training at Fort Carson, CO. Development and fielding of the Double-V-Hull Stryker has contributed directly to warfighters' success on the battlefield and is one of many accomplishments of which the AL&T Workforce can be proud. (U.S. Army photo by SPC William Howard, 1-4 ID Public Affairs)



### INDUSTRIAL BASE ACCESS

Jeff Hendriks at the Rock Island Arsenal Joint Manufacturing and Technology Center, IL, works on assembling the shelter for the latest M997A3 Ambulance in January, for fielding to Army National Guard units. The past 12-plus years of operations in two theaters have seen the Army develop solid relationships with its industrial base partners. (Photo by SFC Shannon M. Wright, U.S. Army Materiel Command)



- Always seek to improve yourself and the performance of those around you.
- Maintain and promote a positive organizational climate.
- Keep up with change. Remember that life is a continuous process of learning.

## CONCLUSION

Right now we are entering a period unlike any other in our history—simultaneously drawing down the force, reorganizing and preparing for the future while remaining engaged in nearly 150 countries, including Afghanistan. Some people will focus on uncertainty, but I believe our future is bright—primarily because of the tremendous talent within our workforce. Our imperative is to procure the needs of our warfighters and always support the fight.

In equipping the force in two theaters during the last decade, we brought enormous value to the warfighter. We developed solid relationships with our men and women in uniform and our industrial base partners. We formed lasting bonds based on trust, respect and confidence. These close working relationships don't just happen. We must maintain and leverage these bonds and competencies as we prepare for the future and its new challenges. I am confident that our dynamic workforce will capitalize on this opportunity and continue to provide our Soldiers with the world's finest equipment.

Every day, I remain mindful of the many sacrifices that you and your families make in keeping our Army the best-equipped and best-trained force on earth.

Thank you for your steadfast dedication and strong support for our Soldiers.



## CONTRACT CONTACTS

Melissa Garcia and SSG Elijah Felton discuss a contract at Fort Bliss, TX. Garcia is a contracting officer and Felton is a contracting specialist at the Mission and U.S. Army Installation Contracting Command (MICC) – Fort Bliss office. It is important for Army acquisition professionals to know their contracts, contracting officers and Defense Contract Management Agency representatives. (Photo by Ben Gonzales, MICC Public Affairs)



## NIE VETERAN

Network Integration Evaluation (NIE) 14.2, the seventh in the Army's series of semiannual field evaluations, focused on improving and simplifying the Army's networked capabilities before coming to a close May 22. Williamson is no stranger to the NIEs, having served as project manager for network systems integration, deputy PEO for integration, and joint PEO for the Joint Tactical Radio System. (Photo by Nancy Jones-Bonbrest, PEO Command, Control and Communications – Tactical)





### **SOLDIER-CENTERED**

Soldiers from 3rd Brigade, 2nd Infantry Division exit a combat vehicle demonstrator at Joint Base Lewis-McChord, WA, where they were working with Army researchers in September 2013 to test new technologies for future vehicle design. Just as the Army seeks to include Soldier feedback in systems design, its scientists and engineers are exploring ways to design training that recognizes and responds to individual Soldiers' performance in any conditions. (Photo by Scott Hansen, Northwest Guardian)



FROM THE DIRECTOR,  
U.S. ARMY RESEARCH, DEVELOPMENT  
AND ENGINEERING COMMAND  
MR. DALE A. ORMOND



# SHAPING SYSTEMS TO THE SOLDIER

Army needs more adaptive training to  
match the diversity of Soldiers, missions

**T**he way we train Soldiers to use equipment today derives from philosophies established when the Army needed to train millions of Soldiers on relatively simple pieces of gear. In addition, the Army needed to accomplish that training quickly, and to do that, we adapted the Soldier to the kit. This approach is standard in a way that neither Soldiers nor missions really are. As systems have grown more complex, training has as well.

The U.S. Army Research, Development and Engineering Command (RDECOM) is assessing training from a new perspective in the age of mass customization, 3-D printing and wearable computers, and we realize we must change our standardized approach, a vestige of the industrial age.

To meet Army Chief of Staff GEN Raymond T. Odierno's vision of "the most highly trained and professional land force in the world" will require a new paradigm for how we develop and field equipment. It will take across-the-board, revolutionary change to reach the future he describes.

## UNIFYING A PIECEMEAL APPROACH

Part of RDECOM's mission is to provide engineering services to program managers (PMs) seeking to modify fielded equipment. Soldiers have a long history of adapting equipment to better suit their own needs as well as those of their mission. RDECOM's Field Assistance in Science and Technology



advisers get firsthand feedback from the Soldiers on the modifications they have made to their equipment, as well as insight gained supporting units during exercises and on the battlefield. The engineering modifications happen officially at some cost to the program, and Soldiers' adaptations happen unofficially at some cost in battlefield risk. Neither is as efficient or ultimately as effective as we need it to be.

Training represents a cost that may not be as obvious as the costs of modifying a program. Training adapts Soldiers to their equipment. The process of doing that with hundreds of thousands of Soldiers requires a large training base—an expensive combination of facilities, people, time and money—and these

resources will become more scarce if current budget predictions hold. Soldiers begin their careers in the training base and revisit it throughout their careers. Training continues at the unit level as NCOs help junior Soldiers understand mission realities beyond the scope of expensive, standardized training.

The Army is taking advantage of technological advances to address these training costs. It is exploring the use of virtual environments, augmented-reality tools and gaming in lieu of conducting wide-scale realistic training events. RDECOM has developed a number of technologies to support this approach. Some are evolutionary, while others are revolutionary for a particular population or training scenario.

One such technology is the addition of 3-D vision and haptic feedback—using the sense of touch, as the controller in a race car video game does by buzzing or shaking when the player's car hits a wall or another car—to the robotic arm technology that Soldiers use to detect and neutralize explosive hazards in Afghanistan. RDECOM researchers and industry partners conducted an experiment at Fort Leonard Wood, MO, in which Soldiers training there showed a significant improvement in speed, accuracy and operator confidence when using the 3-D interface and force-feedback haptic response system versus the 2-D vision and “factory” robotic arms.

Using the haptic response system, the Soldier feels it through the controller when the virtual Army unit hits an improvised explosive device (IED). Instead of training the Soldier to adapt to the equipment, we need to build equipment that can adapt to Soldiers and the conditions in which they find themselves. We need systems designed from the ground up with input and feedback from our Soldiers—the Soldiers who will use these systems on the battlefields of tomorrow, and whose lives will depend on being able to operate them. Smart engineering and collaboration throughout the materiel development cycle can enable us to create such equipment and the best training systems to support it.



#### DIGGING TO THE FUTURE

In its research and development (R&D) of next-generation training tools, ARL's Simulation and Training Technology Center, working with Dignitas Technologies LLC, has designed a collective training system for construction and combat engineers who operate excavators and bulldozers. The dynamic-terrain system provides a realistic, immersive experience in which Soldiers learn about soil resistance when digging and plowing; moving objects such as boulders, steel pipes, logs and crates; and supporting the detection and defeat of improvised explosive devices. (Image courtesy of Dignitas Technologies LLC)

#### MOLDING DESIGN TO THE SOLDIER

Human systems integration and human factors engineering (HFE) hold the potential for these revolutionary gains. MANPRINT, for example, is the Army's implementation of human systems integration, under RDECOM's leadership. Its stated mission is to optimize total system performance, reduce life-cycle costs and minimize the risk of Soldier loss or injury by considering the impact





### PROGRAM PARTNERS

ARL's R&D efforts in dynamic-terrain simulation and training are benefiting programs of record such as OneSAF and Synthetic Environment Core, among others. (Image courtesy of Dignitas Technologies LLC)

of materiel design on Soldiers throughout system development. It does this by focusing on seven domains: manpower, personnel, training, HFE, system safety, health hazards and Soldier survivability.

The Human Research and Engineering Directorate of the U.S. Army Research Laboratory (ARL) is the Army's lead agency for HFE. It has identified several key elements in the equipment design process that could help Army PMs build systems that adapt to Soldiers:

- Early support to analysis-of-alternatives study teams to ensure that they consider Soldier performance and make accommodations for the Soldier in the trade space when developers must
- decide which aspects of the design to trade for others—for example, trading usability features for such factors as weight, power draw or range.
- Early support to those designing and building equipment for the Army, support to conduct usability studies and access to Soldiers to obtain design input and feedback.
- Early specification of human performance and human-system interaction requirements and metrics so that vendors can meet them using Soldier-centered, iterative design.
- Equipment design that conforms to consistent user interface standards, and when inconsistent operation is required to ensure the survivability of friendly forces.

- Early support from Army human factors engineers who understand the entire suite of Soldier systems.

Among the systems to which the Army has successfully applied these HFE principles are the Joint Tactical Radio System (JTRS) Manpack radio, the JTRS Rifleman radio, the Enhanced Medium Altitude Reconnaissance and Surveillance System, display designs for aircraft hover control in degraded visual environments, the Joint Multi-Role Medium Class Aircraft and the Mobile Tower System.

For example, the Rifleman Radio usability studies, undertaken with the 2nd Brigade Combat Team, 1st Armored Division at Fort Bliss, TX, sought to understand how well the radio supports tactical operations through its user interface, specifically audio alerts, fit and physical design characteristics, among other factors. Infantry Soldiers conducted training drills including squad and platoon patrols, reacting to snipers and IEDs, and entering and clearing buildings. They used the radio under varying conditions: day and night; in urban, open, and mountainous terrain; while mobile and while stationary. Soldier feedback included “too easy” and “you could have handed it to us and we could have figured out how to use it without anybody saying anything.”

Soldier evaluations such as these show that further integrating the effective use of these HFE principles will revolutionize training. No longer will we think about teaching a system to a Soldier; instead, we will need to “teach the system” about the Soldier and train the two to work together as a team. Consistent interfaces mean that Soldiers will have a common operating picture that is portable between pieces of equipment, so that when they move to a new piece of equipment, they only need to spend a



### PERFORMANCE CHALLENGE

Michael Ploechl, right, of Osnabrueck University in Osnabrueck, Germany, demonstrates a brain-computer interface called RSVP-based Adaptive Virtual Environment with Neural-processing (RAVEN), with Jason Metcalfe of DCS Corp. observing Ploechl's task performance as he uses the response pad to indicate categories of images (threat or non-threat) while moving through a simulated urban environment. This particular study looks at how to use psychophysiological factors (such as electrical activity from the brain, heart, muscles and skin), behavioral factors (eye and face movements, and task performance) and subjective measures (questionnaires) to interpret and predict changes in emotional state during performance under changing levels of competitive stress and task difficulty. (Photo by Joyce M. Conant, ARL)

few hours familiarizing themselves with the buttonology of that new equipment. They can then spend more hands-on time learning how to use the equipment during tactical operations.

Even more exciting are the design possibilities our researchers are now beginning to visualize that blur the line between helping Soldiers in the field and moving training into the field with them. We may be able to design

systems that adapt to their users and help them maximize performance no matter the conditions. For example, a system could infer the Soldier's cognitive state—whether the Soldier in the fight is overwhelmed with visual or auditory stimuli, battlefield stress or injury. It might recognize whether the Soldier has forgotten how to use the system effectively. The system could determine if it could provide training on the battlefield that could help the Soldier

survive. If the user's learning curve is too steep, the system could infer that the Soldier is misinterpreting data or incorrectly managing the system, and provide corrective measures.

### CONCLUSION

The goal is to improve Soldiers' effectiveness and protection, so that when their lives and the lives of friendly forces depend on their making the correct decisions, whether from a drop-down menu,





### THREAT ENVIRONMENT

Using the RAVEN brain-computer interface, a research project ARL is pursuing under its Cognition and Neuroergonomics Collaborative Technology Alliance, the operator conducts a visual search while navigating within a virtual urban environment in the upper on-screen panel. A rapid stream of images (five per second) from the immediate surroundings requires the operator to identify any potential threats or targets, such as armed personnel, with a score assigned to each image according to his neural response. At this point, the operator is reviewing the three top-scoring images in the bottom on-screen panel. Looking ahead to the generation-after-next in Soldier training, ARL is exploring systems that adapt to their users and help them maximize performance no matter the conditions. (Photo by Ron Carty, ARL)

selecting the correct control to override or interrupting an automatic firing sequence, the right choice would be within the cognitive ability of the Soldier at that time.

Smart development and teamwork make it possible for us to reach this goal and, at the same time, possibly shrink the training base to give the Army a more favorable tooth-to-tail ratio as it retools itself for the future.

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*MR. DALE A. ORMOND, director of RDECOM since February 2012, holds an M.S. in environmental systems engineering from Clemson University and is a 1985 graduate of the U.S. Naval Academy. He is Level III certified in acquisition program management. He was selected for the Senior Executive Service in July 2004.*



## FIELD EXPEDIENT

# A LEG UP

Wounded warrior develops  
first-of-a-kind leg prosthesis

*by Mr. Steve Stark*

**F**or most people, the 21st birthday is life-changing in one sense only, and a trivial one at that—they can purchase alcohol. For Edward Lychik, who turned 21 on Sept. 30, 2011, while serving as an Army combat engineer in Afghanistan, that birthday was profoundly life-changing in more ways than one.

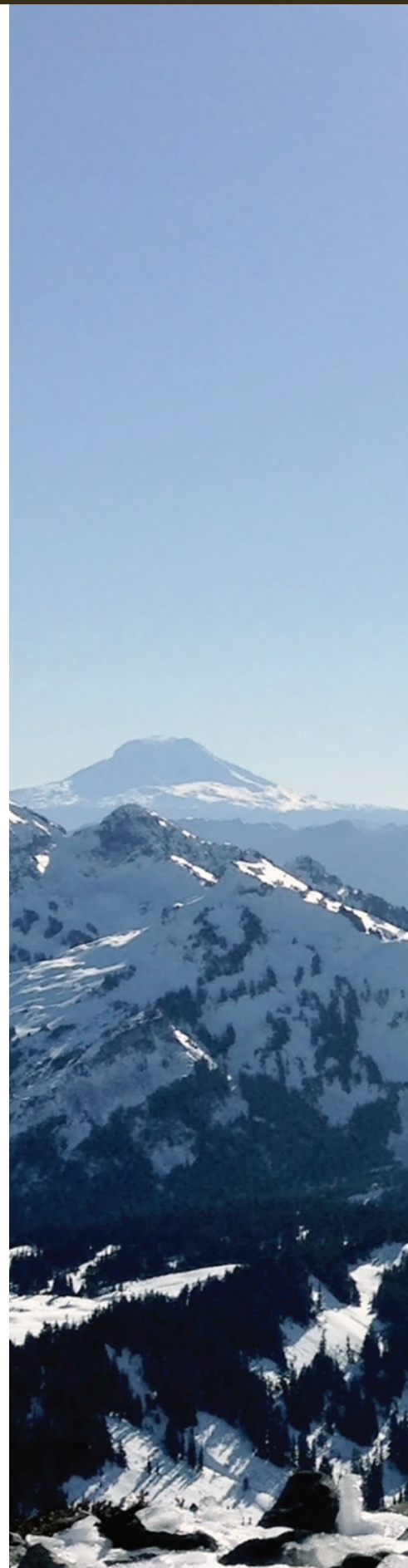
“We always like to say the combat engineers lead the way. We’re out there in the front, leading, driving five miles an hour and looking for bombs. Once I’d find something, we’d dig it up and go blow it up somewhere else,” he said. Lychik’s job as a specialist was to drive a Husky vehicle in the front of a convoy, using sensor panels to find improvised explosive devices (IEDs). Before the injury that cost him his leg, he had been “blown up” twice by IEDs.

On his 21st birthday, he got what was supposed to be easy duty—riding in a truck in the back of a convoy. “I was safe in the rear in the gunner’s hatch, and that’s when the recoilless rifle struck me—the bazooka rocket—and blew out most of my left leg and a part of my right,” Lychik said. “I thought I knew what was going on, but I couldn’t move my body, I couldn’t feel my body, and my adrenaline was up.” He reached down to feel his leg, but someone said, “You don’t want to do that,” and pulled his hand away.

### ASSESSING THE DAMAGE

When Bob Kuenzi (pronounced “Kinsey”) first met Lychik, the young Soldier was quiet and reserved. “I distinctly remember meeting him there because he was in a wheelchair, and he was wearing glasses and was kind of a skinny guy—not the kind of guy who you’d immediately think, ‘Athlete.’” First impressions can be deceiving.

At the time, Lychik was one of some 40 people waiting to be fitted for prostheses. It was in fall 2011, peak fighting season in Afghanistan and a very busy time at







### FROM VICTIM TO VICTORY

Lychik takes in the scenery last November near his home in Tacoma, WA. (Photo courtesy of Edward Lychik)







### GOOD TO GO

Lychik fist-bumps Juli Windsor at the start of the 2014 Boston Marathon on April 20. (Photo by Taylor Paige)



### EXPLOSIVE EXPERIENCE

Lychik stands with one of the Husky vehicles he drove while deployed as a combat engineer to Afghanistan, about a month before his injury. Before losing his left leg, Lychik had twice been hit by an IED while driving the Husky. (Photo courtesy of Edward Lychik)

the Center for the Intrepid in San Antonio, TX, where Kuenzi is a prosthetist. Lychik's needs were pretty straightforward, compared to some. Although he had lost his left leg and part of his right, the rest of him was intact and relatively uninjured. Kuenzi said that when he and physical therapist Alicia White met with Lychik, "He was pretty quiet, but he was able to interact."

As usual during the fitting process, Kuenzi went through a detailed assessment of Lychik's strength and range of motion, the condition of his joint and skin and any highly sensitive areas, and talked to Lychik about his goals and the hobbies he had before the injury.

In Kuenzi's experience, young men who come in for prostheses often tell him first that they want to get back on active duty, even if they've lost both legs and an arm. Lychik, however, "told me he wanted to run that first day."

Kuenzi had worked with some other patients with hip disarticulation injuries like Lychik's, in which the pelvis is still in place but the leg is completely gone, and they'd done well in demanding, on-their-feet jobs. But running?

Kuenzi did some research and found that some people with similar injuries decades earlier had been able to run a few steps, but nothing like the miles that Lychik hoped to cover. "Whereas if someone came in with a relatively uncomplicated below-the-knee amputation, I would say to them, 'Yeah. You should be able to run,' if only a mile or so."

### A VISION OF RUNNING

Some people might look at such a traumatic injury as the end of life as they knew it. Lychik came to see it as an obstacle to overcome.



He had been interested in running in middle school, but was so shy, “I was never involved in anything.” It wasn’t until he joined the Army that he really got into running. “I joined the military and there was a lot of self-discovery, I would say. Within the military, I started to grow myself internally, mentally, spiritually. And then the injury happened, and that was the biggest growth I ever had.”

After his injury, he was determined to get back to running. “I’m in the hospital bed, and I’ve got a limited mind-set, looking at the things that I can’t do. [But I thought,] I’m going to need to focus on what I can do.” From that bed, he said, he envisioned himself running. It was a full-fledged waking dream. “I was wearing this black hooded sweatshirt, and it was very foggy, and I was driven and I was focused. ... Before surgery, after surgery, I would wake up and I would go to sleep, and I always had that vision.”

He also had a vision for the prosthesis that would enable him to run, but first he had to walk. “Our first mission with Ed would be to get him walking, then get him independent-walking,” Kuenzi said. “Certainly, with a hip disarticulation amputation, if somebody can be a high-functioning walker, that’s a huge success.”

Hip disarticulation is “a high-level injury,” Kuenzi said. When a patient still has some femur and thigh left, it can provide not just a place to attach the prosthesis, but also the forward motion required for walking or running. Ed Lychik didn’t have that.

For the first few months at the Center for the Intrepid, Kuenzi and White worked on getting Lychik walking. That included “a high-tech, microprocessor-controlled knee and microprocessor-controlled hip and a good walking foot. He took right to it,” Kuenzi said. “He was walking



#### THE FINISH LINE

Lychik, shown after finishing the Boston Marathon in April, is the first known hip-disarticulation amputee to run in the event, and did so on a prosthetic leg he helped create. (Photo courtesy of Edward Lychik)

all over the hospital grounds. A lot of people would ride their chairs” for trips to lunch or elsewhere, but Lychik “was definitely going to use that prosthesis.”

But about six months into the process of trying to come up with a running prosthesis, Lychik began having problems

with his walking prosthesis. His body was changing because, unbeknownst to Kuenzi, Lychik had been working out all of the muscles that he thought would be necessary for him to run successfully.

“He was telling me more and more that he wanted to run,” Kuenzi said, adding



#### THE MUD LEG

An early iteration of Lychik's running leg, which he used in his first Tough Mudder. (Photo by Robert Kuenzi)

that Lychik kept asking, “When are we going to get this running prosthesis going?” Another thing he said was, ‘We need to find some materials you can get wet and muddy, because I’m going to be doing that kind of thing.’

“Once we got that new socket fitted,” Kuenzi continued, “the idea was to duplicate it and then start making a running prosthesis. It really came to a point in August 2012 that we got that socket working pretty well, and Ed was getting more and more intense about it. Finally it came out that he had a ‘Tough Mudder’ that he wanted to run that was in, like, the first weekend of October.”

***“I WASN’T JUST GOING OUT AND DOING ALL OF THESE EVENTS FOR MYSELF. I WANTED TO SHOW PEOPLE THAT IF SOMEBODY WITH ONE LEG, A HIP AMPUTEE, CAN GO OUT AND DO THIS, WHAT COULD A PERSON WITH TWO GOOD LEGS BE CAPABLE OF?”***

#### TOUGH MUD DEADLINE

For the uninitiated, a Tough Mudder is a 10- to 12-mile military-grade obstacle course based on a concept designed by the British Special Forces to test physical and mental strength. The race involves challenges such as running through a field with live wires, plunging into freezing water, climbing a half-pipe slicked with mud and grease and scaling an 8- to 12-foot wall.

Regardless of how feasible Kuenzi thought it would be, the race provided a deadline for the team to finish the running prosthesis. Lychik loved working with Kuenzi. “There’s a lot of people who only stick to what they know. They don’t like to go outside the box,” he said. Not so Kuenzi, who is himself an amputee, having lost part of a leg in a motorcycle accident when he was 19, which was why he became a prosthetist. Lychik had a table in Kuenzi’s office with parts and tools. “I had a lot of demands on myself and on him,” Lychik said. “We would stay late hours. If something didn’t work, we’d try different parts. It must’ve been exhausting for him.”

Theirs wasn’t just a professional relationship, Lychik said. “It was like I was working with a friend, too. I could talk to him and tell him how I was feeling, it wasn’t like there was anything I couldn’t say. ... And once you can connect with someone, you can combine a few like-minded people and create something really

amazing. A lot of times I get the credit for doing this, but without people like Bob and Alicia—there’s a whole mountain of people who were there to support me. It was a team effort.”

The first iteration of the new prosthesis, like the walking leg, had a hip and knee joint. With the prosthesis in place, Kuenzi and White hooked Lychik up in a harness that runs along a track of about 40 feet, part of the training apparatus for people learning to use leg prostheses. “He was able to do some running on that, but it was pretty obvious that that setup wasn’t going to work because it was too unstable” with the articulation of the knee and hip, Kuenzi said. “First we took the knee out and just made it a straight leg, and then eventually took the hip joint out, too, and bolted the pylon to the socket. That really looked kind of like a pogo stick, and functioned like one, too.”

It resulted in a gait that was almost stride-bounce-stride. “He’d have to swing it out to the side to clear the ground. And all this time he’s having to use his core muscles, his abdomen and his upper body to stabilize his trunk and move it, do a pelvic tilt every step.”

#### AMAZING PROGRESS

That’s why Lychik had been lifting weights. “What really amazed me about his progress was that within a week of getting this leg, he ran a mile in, like,



nine minutes. To me, that's unheard of. I asked him, and he said he'd been doing super sets—he'd trained himself with power-lifting strategies with his good leg, his torso and his arms. ... There was nobody here who was pushing him. He totally did it on his own, and he was ready." As far as anyone knows, Lychik is the first ever to run that kind of distance with his particular injury.

A few weeks later, when they were on the third or fourth version of the prosthesis, Lychik ran the Tough Mudder in the Texas hill country outside Austin. He was on a team with the Wounded Warrior Project, several of whom were amputees, and they helped one another over the obstacles, Kuenzi said.

The prosthetist drove out to see Lychik run in the 12-miler and took some tools with him in case the prosthesis needed tweaking. "It was very inspiring to watch, because I would have thought he would have run a couple miles, maybe, and I

kept expecting to see one of those golf carts come up with him in it. He disappeared for a while and I went over to another area, and when he came by, he was loping along, carrying the flag. He was jazzed. ... He finished it."

In April 2014, Lychik, now medically retired from the Army, competed in the Boston Marathon, finishing the race in 4:44:25. The News Tribune of Tacoma, WA, reported that Lychik ran with a team associated with the Martin W. Richard Charitable Foundation, formed to honor the 8-year-old boy killed in the 2013 marathon bombing. "I was running it for him," the newspaper quoted Lychik saying. "He doesn't have the opportunity, so I got to do it for him." On May 4, he finished the Tacoma City Marathon.

Read more here: <http://www.thenewstribune.com/2014/04/21/3159570/boston-crowds-roar-for-tacoma.html#storylink=cpy>

### COMMUNICATING SUCCESS

Shortly before the marathon, Lychik spoke with a group of middle-school kids in the Tacoma area. He wants to spread a message of positive thinking and is working on what he calls "my speech."

"The only person who can ever stop you is you. We put the limitations on ourselves. Right when I started to run, running 400 yards, a mile, two miles and then running another event, [I started to wonder], what else am I capable of doing? I wasn't just going out and doing all of these events for myself. I wanted to show people that if somebody with one leg, a hip amputee, can go out and do this, what could a person with two good legs be capable of? Not just running. What are they capable of if they really set their heart and mind to it and persevere?"

During the months Lychik was in rehab at the Center for the Intrepid, Kuenzi said he saw the Soldier grow tremendously. That happens to a lot of the guys who come through the center, he said. "When they come in, they're just a lump," having been through a tremendous amount of stress from their injuries and recovery. And by the time they leave, "You can see the change. They've got motivation, they're going to go to school. They're going to do something with their lives."

A year and a half after his life-changing injury, when Lychik was about to leave the military, he said, "I set out for a run in the evening, and I was wearing a black hooded sweatshirt and it was very foggy. I was determined, and I knew where I was going with my life. At that moment, I stopped, I had tears in my eyes. I realized that this was me living what I once saw, envisioned in the hospital, when I was trying to reach out for the impossible."

For more information, see Edward Lychik's blog at [edwardlychik.wordpress.com](http://edwardlychik.wordpress.com) or on Facebook at <https://www.facebook.com/edwardlychik>. For more information on the first-of-its-kind leg, contact Robert Kuenzi at [robert.s.kuenzi.ctr@mail.mil](mailto:robert.s.kuenzi.ctr@mail.mil) or 210-916-7740.



### FIRST OF MANY

Lychik runs in the Austin Marathon in February 2013, marking the first time a hip-disarticulation amputee had ever run a marathon. (Photo by Robert Kuenzi)

MR. STEVE STARK provides contracting support to the U.S. Army Acquisition Support Center for SAIC. 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 Soldier Portfolio and edited the Army's Weapon Systems handbook for six years.



# EXCHANGING PERSPECTIVES

Training with Industry program brings best practices from private sector to Army acquisition

*by Mr. Robert E. Coultas*

Sometimes the best way to further an Army acquisition career is to get out of the Army—but just briefly. The Training with Industry (TWI) program is helping Army acquisition officers do just that, providing competitively selected officers with extensive, hands-on exposure to managerial techniques and industrial procedures at 10 companies across the United States, including Amazon.com Inc., Intel Corp. and Coca-Cola Co.

“Performing well in your job and demonstrating you can do this consistently over time in all of your [acquisition] assignments will best posture an officer to progress,” said LTC Christopher Schneider, chief of the Acquisition Management Branch at U.S. Army Human Resources Command (HRC). Acquisition officers can receive training, experience and certification in five DOD acquisition career fields (ACFs), including program management; contracting; systems planning, research, development and engineering – science and technology management; information technology; and test and evaluation. The Army’s expectations for acquisition officers include developing

functional expertise in at least two ACFs and widening their individual experience and knowledge through various unique assignments.

TWI is just one of many dynamic training programs offered to acquisition officers. But unlike other career-broadening experiences, TWI completely integrates military officers into civilian corporations.

## AN ELITE OPPORTUNITY

TWI is a 10- to 12-month rotational opportunity for acquisition officers in grades O-4 and O-5 to work and train full time at top civilian companies, with the objective of bringing back the latest commercial business practices, organizational structures and cultures, technology development processes and corporate management techniques—then translating these into better Army acquisition outcomes in future assignments.

“This program is a tremendous opportunity to learn and incorporate best business practices from our industry partners,” said





#### FORWARD-THINKING

MAJ Jerry R. Mize discusses enabling technologies from industry partners with Martin T. Utzig, deputy commander of the 401st AFSB, at Bagram Airfield, Afghanistan, in January. Mize said his TWI assignment gave him valuable insights into the rapid fielding of products to forward-deployed Soldiers. (Photo courtesy of 401st AFSB Public Affairs)

Schneider. “Bringing different perspectives to the table when problem-solving or conducting acquisition planning is always a good thing for the Army.

“Selected officers are expected to represent the very best of the U.S. Army, and as a result the screening process is extensive and thorough. Only our highest-performing officers are selected for this program,” he said.

After their TWI assignment, officers are assigned a position validated from the Military Acquisition Position List. Some of the preferred assignments include contractor logistics support (CLS) product manager; CLS director or commander; product director; DOD, DA and assistant secretary of the Army for acquisition,

logistics and technology staff positions; Army systems coordinator; nominative acquisition program manager (APM); and special mission unit (SMU) – requirements, SMU – contracting and SMU – APM.

#### SELECTION PROCESS

After submitting the initial application, the TWI candidate consults with his or her assignment officer to discuss professional background and interests. Depending on the officer’s previous assignments and educational background, the acquisition officer may be a good match for more than one company.

“As an acquisition assignment officer, I am tasked with identifying and

developing talent,” said MAJ Cornelius Allen of HRC. “TWI is a very selective nominative position that we assign high-performing officers to as a broadening assignment. ... This exposure benefits the Army as officers incorporate industry best practices into DOD processes and the companies gain customer insight and valuable advice on the DOD acquisition process.”

Participating TWI companies also provide information on what backgrounds they are seeking—for example, an engineering degree, Lean Six Sigma training, an MBA or specific experience gained in past assignments. HRC’s Acquisition Management Branch conducts a review board to select an officer for each of the 10 positions available each year.



#### INSIDE INDUSTRY

TWI fellows meet Feb. 12 at the Microsoft Technology Center in Reston, VA, at the midpoint of their assignments to discuss progress, experiences, lessons learned and possible program improvements for future fellows. The fellows also took a tour of the center, which Microsoft, one of 10 companies involved in TWI, uses to provide customers with state-of-the-art business and technology solutions. (U.S. Army photo by Tara Clements)

***“THIS EXPOSURE BENEFITS THE ARMY AS OFFICERS INCORPORATE INDUSTRY BEST PRACTICES INTO DOD PROCESSES AND THE COMPANIES GAIN CUSTOMER INSIGHT AND VALUABLE ADVICE ON THE DOD ACQUISITION PROCESS.”***

The Army’s deputy director for acquisition career management approves the selections.

According to Scott Greene, chief of the Acquisition Education and Training Branch at the U.S. Army Acquisition Support Center (USAASC), there’s more “rigor” and a more challenging board process than in the past. “Two years ago, our selection rates were at 80-90 percent. Last year, they were at 50 percent. We expect this year to be in the 30-40 percent range, which is good. That means more people are applying for the positions, and it means that there’s more competition—and it means that the best officers are getting accepted.”

#### EYE ON THE PRIZE

Greene said the Army expects TWI officers to go to their companies with their acquisition backgrounds, learn as much as possible, contribute and cooperate as full team members at the companies, making TWI “hopefully one of their best assignments.” Then, he said, they are expected to bring some best practices back to the Army—not just for themselves but also for their leadership, peers and subordinates.

“They’re putting on their own acquisition hat and looking at how their [TWI] company does business in a different way, possibly more efficient, more effective—maybe not—and then taking a step back and looking at acquisition and how we can do things differently.”

Greene said that the TWI participant’s focus should be on immersion in the company’s culture and business practices. Participants should also dedicate themselves completely to their assigned projects. An officer considering the TWI assignment as a “break” from normal duties has the wrong attitude, he said. “If you’re coming into it with the mindset that it’s a relief and you’re [going] to have more free time or knock out a bunch of training, that’s not the intent. This is supposed to be not only your best assignment, but it’s supposed to be a very challenging one, too,” Greene said.

#### INDUSTRY LEADERS

Companies that partner with the Army in TWI are developers of innovative, cutting-edge technologies as well as established leaders in their respective fields. Those currently participating are Amazon, Boeing Co., Cisco Systems Inc., Coca-Cola, CSC, Airbus Group Inc., General Dynamics, Intel, Lockheed Martin Corp., and Microsoft Corp. The acquisition officers get a wide range of experience in their respective companies,





in contracting, logistics, program management and budgeting, among other fields. They also get a different perspective from the Army way of doing business.

Greene said that the current TWI program includes Amazon as a new industry participant, maintaining the practice of partnering with nondefense, outside-the-box, pioneering companies. “We found that nondefense companies seemed to resonate with our officers more than defense. These defense companies tend to mirror the government. And if we’re sending officers to train with industry to gain industry best practices, sending them to defense companies doesn’t seem to do that much.”

### VOICES OF EXPERIENCE

Today, alumni of the program continue to apply the knowledge and skills gained in TWI in their current acquisition leadership roles.

BG Robert L. Marion, program executive officer for aviation, called TWI “a really valuable experience for me. I didn’t immediately realize just how valuable the experience was at the time; I was too busy doing the best job I could do” at Lockheed Martin Space Systems Co. from mid-2001 to mid-2002. “Afterward, when I was back working on the government side within a project office, I began to fully see the impact of what I had learned, especially how our requests to industry affect and shape operations from their perspective,” Marion said.

LTC Christopher M. Ford, product manager for Terminal High Altitude Area Defense ground components in the Missile Defense Agency, said his TWI experience has numerous applications on a daily basis. “TWI broadened my knowledge and understanding of defense



### MISSION ESSENTIALS

During a simulated mission inside Lockheed Martin’s Combat Convoy Simulator, TWI fellow MAJ Jeff Ramsey, left, loads the M2 .50-caliber machine gun with guidance from Mike Behling, the company’s TWI liaison. (Photo by Gary Wilcox, Lockheed Martin Corp.)



### ADVANCING THE ART

BG Robert L. Marion, shown addressing a recent class at the Defense Acquisition University, found that upon returning to the Army after his TWI assignment with Lockheed Martin, he was able “to fully see the impact of what I had learned.” (Photo courtesy of Program Executive Office Aviation)



#### PANEL OF EXPERIENCE

Three Army officers who have been through the TWI program—COL Jay Ferreira, left, LTC Mark Henderson and LTC Joel Gegato—share their experiences with incoming fellows June 3 at the TWI orientation at Fort Belvoir, VA. Ferreira, who participated in TWI in 2012-13, worked with EADS North America, now Airbus. Henderson's TWI assignment was with Cisco, and Gegato's with Intel. The three offered tips to the new class of Acquisition Corps TWI fellows on how to embrace the TWI experience. (Photo by Catherine DeRan, USAASC)

contractor corporate processes, business decision methodology, corporate behavior and internal management challenges. Thanks to my TWI experience, I am better equipped to successfully coordinate with my industry counterparts to manage program risks within cost, schedule and technical parameters to deliver an overmatch defensive capability to the Soldier." Ford's TWI assignment was at EADS North America (now Airbus Group) from July 2011 to June 2012.

"My Training with Industry experience at Lockheed Martin gave me unique insight into the care and operations of products assembled and sent forward. While at Lockheed Martin, I witnessed the spectrum of operations from strategic to assembly-line procedures where I could see the care and complexities of rapidly fielding equipment," said MAJ Jerry R. Mize, deputy director of the Acquisition, Logistics and Technology Directorate, 402nd Army Field Support Brigade (AFSB) at Camp Arifjan, Kuwait. "After arrival to Kuwait, I more fully recognize the impact of partnering with industry and how industry is rolled into program manager operations in warfighter support," said Mize, whose TWI assignment ran from August 2012 to June 2013.

#### CONCLUSION

TWI continues to see growing interest and excitement about the program, Greene said. "We've gotten great feedback from the companies and officers who have participated in it, and we're looking to grow and possibly include piloting a noncommissioned officer, a contracting officer, at a new company as well as expanding potentially two to three slots for officers in the future. We just see this continuing to grow, because we've seen great value in it."

*For information on the TWI program and the companies involved, go to <http://asc.army.mil/web/career-development/programs/aac-training-with-industry>. To apply for TWI, contact your assignments officer. For other inquiries about TWI, contact Marti Giella at 703-805-2700 or [marti.a.giella.civ@mail.mil](mailto:marti.a.giella.civ@mail.mil); or Scott Greene at 703-805-1229 or [Scott.Greene4@us.army.mil](mailto:Scott.Greene4@us.army.mil).*

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*MR. ROBERT E. COULTAS is the Army AL&T magazine departments editor and an Access AL&T editor. He is a retired Army broadcaster with more than 40 years of combined experience in public affairs, journalism, broadcasting and advertising. He has won numerous Army Keith L. Ware Public Affairs Awards and is a DOD Thomas Jefferson Award recipient.*





# FAQs

What is the main purpose of the Training with Industry (TWI) program, from the Army's point of view?

**A.** TWI is intended to give acquisition officers the opportunity to actively experience industry best practices through a 12-month assignment with leading industry partners, to benchmark lessons learned and effect positive change in the Army Acquisition Corps.

If I want to work for a company that is not listed under participating companies, can I still go to work for them?

**A.** If you're interested in participating at a company that is not listed, please email Marti Giella at **Marti.A.Giella.civ@mail.mil**. However, we may not be able to honor your request.

How do I apply for TWI?

**A.** Contact your assignment officer if you are interested in participating in TWI. For more information, you can also visit the Acquisition Management Branch website, **<https://www.hrc.army.mil/Officer/Advanced%20Education%20Programs%20AEP>**.

Will I have to travel during my time in the program?

**A.** Depending on the company you are assigned to, travel may be required.

If I'm in the program, what do I do if I have an ethics question?

**A.** The TWI project manager will put you in touch with the legal team that is knowledgeable about the program.

How do I develop my training objectives?

**A.** You will work with the company sponsor to develop initial training objectives. You may also find it helpful to talk to the previous TWI officer at that company.

What does it take to be successful in the program?

**A.** You should be proactive and flexible while participating in this program. The U.S. Army Acquisition Support Center (USAASC) will assist as needed in making your program a success. There will be an orientation before you start in the program as well as a midpoint meeting, which gives participants the opportunity to collaborate and share. Because we believe that it is important for participants to cross-collaborate and share ideas, we plan quarterly conference calls as well.

What is the biggest expectation that USAASC has of my participation in TWI?

**A.** To leave the program thinking it's the best program you could have participated in and bring back to the Army a new, innovative perspective on how to approach acquisition.

## TWI PROFILE: **LTC WAYNE HIATT, MICROSOFT CORP.**

### **MOVING AT THE SPEED OF MICROSOFT**

*After nearly a decade* in the Acquisition Corps and more than 25 years in the Army, LTC Wayne Hiatt jumped at the opportunity to work in Training with Industry (TWI). “Ever since I was a second lieutenant, I was interested in applying,” Hiatt said. “I liked the business side of the Army, and I’ve been loving it for the last nine years.”

Hiatt has defined his career by trying to learn as much as he possibly can in each assignment. “Most people in the Acquisition Corps spend all their jobs single-tracked. I’m kind of like a mutt. I’ve probably done every acquisition job you can possibly do.”

“He landed with a good group in contracts” at Microsoft, said Pat Brady, the company’s lead for TWI. “They’ve absolutely loved having him onboard.” Working with that group, Hiatt said, has had a double benefit, because his day-to-day manager at Microsoft, MG Brian I. Geehan (U.S. Army, Ret.), was once his commanding general. “I am with the guy who was in charge of the Transportation Corps when I was a captain. When I was a commander in Iraq in 2003, he was the commanding general of the Transportation Corps. Now he’s retired military, and it’s been great. Not only am I getting Training with Industry experience, I’ve been getting mentored on military stuff.”

It was Geehan, then retired for almost six years, who presided over Hiatt’s promotion ceremony to lieutenant colonel in September 2013, three months into his stint in TWI.

#### **SOFTENING THE SHOCK**

Microsoft has made a point of recruiting veterans and retired military. The company takes part in TWI, the Secretary of Defense Corporate Fellowship and Air Force Education with Industry programs and has a recruiting program at Joint Base Lewis-McChord, WA, that it is expanding to the East Coast. The program consists of 16 weeks of training on all Microsoft platforms for military members who will be separating from the service. Many who complete the program go to work at Microsoft when they finish the course, Brady said.

Military men and women have gotten such good reviews, Brady said, that “I’m actually getting calls, ‘Can I get one?’”

That presence of veterans and retired military at Microsoft helped reduce the culture shock of going from uniform to suit, Hiatt said. Still, he was surprised by differences between the ways that the Army and Microsoft do things. The first thing that struck him was how lean the company is. “In the Army, the higher your rank, the higher your command, the larger your staff is. If you’re a lieutenant colonel in the Acquisition Corps and you’re a product manager, you’re going to have anywhere from 50 to maybe 100 people working for you—military, civilian and contractor. At Microsoft, they eliminate all that. Brian Geehan is in charge of all the DOD delivery, and he might just have two or three people and just him, compared with a couple hundred when he was a general,” Hiatt said.

#### **‘IT’S A LOT MESSIER’**

The next thing that surprised him was the passion of Microsoft employees for their work. “Passion is actually one of Microsoft’s values,” he said. “If somebody doesn’t like their job, they encourage people to position themselves in a job they’re passionate about. If you’re not passionate, they really don’t want you. Within Microsoft, they hire and fire at will. I really believe that everyone is passionate about what they do, especially the people who support the Department of Defense. It’s not just making money. A lot of them are veterans or retired military, and they really believe in Microsoft and what they can do for DOD.”

The “other side of the fence” in contracting also surprised him, Hiatt said. The Army will generally have one contract to manage for a given product, but on the industry side, “They have subcontractors, agreements and partnerships with other corporations, small businesses and things like that. I actually learned almost everything that you could possibly know about how Microsoft manages contracts, how they operate, from hands-on training. It’s pretty complicated and a lot different from government contracting. It’s a lot messier.”

Another thing Hiatt found surprising was the lack of email. “People at Microsoft communicate a lot more efficiently. I’m used to email. I come from a military where your boss sends you an email and if you don’t respond, he’s all over you.” Hiatt said that he understands the security issues that come with any





#### ARMY FIRST

Hiatt advised those considering the TWI program to remember at all times that, while they may be wearing civilian clothes during the TWI assignment, they are Army acquisition officers and represent the Army and the Acquisition Corps to their civilian co-workers, many of whom may know nothing about either institution. (U.S. Army photo)

communication tool—“We have national security to think about”—but that it was refreshing to see the efficiency gained through the use of tools like Microsoft’s Lync for online meetings.

“I can set up a meeting with anybody I need to, anywhere in the world, and [the tool] shows their schedule and tells you what the best time is to get everybody together, and then everybody’s connected instantly. It’s kind of like DCO [Defense Connect Online], but more advanced, more clear and faster.”

All of the “toys” Microsoft employees use—smartphone, laptop, Surface tablet—“all of that’s connected, so at any time, no matter where you are, unlike [with] our BlackBerrys, you can do Lync meetings on your cellphone anywhere in the world.”

#### DON’T FORGET YOU’RE ARMY

For Hiatt, the most important things he would tell people thinking about TWI—other than to do it as soon as you can—is “have a positive attitude, be a sponge and don’t forget you represent the Army.”

“Just because you’re away from the military and wearing civilian clothes and blending into the environment, whatever you say and do,” don’t forget you’re Army, Hiatt said. “The people who come in contact with you might not know anything about the Acquisition Corps, so everything you say and do will be a reflection on the Acquisition Corps. I’ve been very careful about what I say or do, keeping that at the back of my mind.”

—MR. STEVE STARK

## TWI PROFILE: **MAJ JEFFERY RAMSEY, LOCKHEED MARTIN CORP.**

### EXPLORING THE 'OTHER SIDE'

*As an Army acquisition officer* working in ground robotics, MAJ Jeffery Ramsey knew the importance of requirements, those many details that determine what a contractor must deliver. He just didn't fully understand the concept until he spent 10 months working at Lockheed Martin as a Training with Industry (TWI) officer.

Ramsey, whose TWI assignment began in late July 2013 at Lockheed Martin's Training and Logistics Solutions line of business in Orlando, FL, saw how quickly requirements can change, and how significant the effects of a small change can be. It was the most momentous of many lessons he learned during his TWI assignment, which introduced him to areas of program management and contracting that otherwise he'd never have seen from an industry perspective, he said. At the same time, he had to navigate the many differences that separated him as an active-duty military officer from his industry co-workers.

For Ramsey and his Lockheed Martin host, retired Air Force acquisition officer Mike Behling, the breadth and depth of his TWI experience at Lockheed Martin underscored the potential value of the program and the need for TWI officers to prepare themselves to fully exploit that potential.

#### CULTURE SHIFT, NOT SHOCK

Ramsey was working in the ground robotics program at the U.S. Army Tank Automotive Research, Development and Engineering Center (TARDEC) when he applied to the TWI program. "I wanted to do something a little different, something a little more challenging ... see what it's like on the other side of the fence, with the defense contractors," he said. At TARDEC, he had filled a number of roles: military adviser, program manager and systems engineering adviser.

The corporate world did not seem the least bit daunting. In fact, the corporate culture at Lockheed Martin did not require much of an adjustment from Ramsey, who said he experienced far greater culture shock when he moved from the Signal Corps to the "more laid-back, more civilianized" Acquisition Corps in 2010.

Ramsey wasted no time in laying the groundwork for his 10 months at Lockheed Martin. Behling presented him with a wealth of opportunities, including classes for the company's program managers, and Ramsey developed his training plan. "You can change it, because nothing's written in stone," he said. "But it's up to you to put it on paper."

#### CORPORATE CLIMATE

Two things soon became clear to Ramsey about the culture at Lockheed Martin. One was that because he is an Army officer, there were limits to his involvement in the company's day-to-day business dealings, some borne of ethical concerns and some of unfamiliarity. The other was that while the Army and industry share a commitment to serving the Soldier, the Army's regular funding means that it has less concern for the bottom line than companies competing to earn government contracts.

Ramsey learned from day to day what he was able to do, ethically speaking, as an Army officer working in industry. "I probably could do a white paper, for example," he said. But it would not have been appropriate to call a U.S. government office and ask for information to help Lockheed Martin develop a business proposal for a client. The solution was simple, Ramsey said: The company took care of getting any necessary information from the government to preclude any conflicts of interest. "They were real adaptive to me, so I know they understand completely. Ethics is one of Lockheed Martin's strongest values," he said.

On another occasion, early in his assignment, Ramsey met with resistance when he asked for information on the number of people involved in developing a business proposal. Again, the solution was simple: Behling spoke with the program office to let them know that Ramsey was working with Lockheed Martin and had a legitimate need for the numbers.

"At first they're cautious," Behling said of Lockheed Martin's employees, "because we're always worried about opening up our industry and secrets. They're also used to, 'I deal with an Army officer a certain way because they're our government customer.' So at first that happens. And that breaks down," he said.





TWI “is good for breaking down communication barriers between government and industry.”

What will never break down, however, is the reality that industry must make a profit to continue operating and providing services to the government, whereas Army policy- and decision-making are driven by available public funding, matched against mission requirements.

### REQUIREMENTS EYE-OPENER

It was at the nitty-gritty level that Ramsey found the most fertile ground for learning at Lockheed Martin. “I’d worked with requirements before in the military, but I didn’t really understand them,” Ramsey said. “Everything pretty much stems from requirements, and you kind of know that when you’re on the Army side, but I got to see it from a different perspective ... how if you’re not careful, those requirements can get out of control. ... I didn’t look at it like this before.”

Each requirements change translates to a specific course of action. Specifically, Ramsey saw how many hours and how much money a seemingly minor design change could cost when a key player in an Army program management office requested the change after the requirements had been thoroughly discussed and the issues resolved. “I couldn’t believe the Army was making a real small change to what was already agreed upon [and] that really wouldn’t affect the design but was going to change the cost.

“Requirements can change, and will change, over time,” and the program managers for the Army and Lockheed Martin worked through the design change, Ramsey said. “But if you’ve got requirements that you and the customer agreed to ... you don’t go back and waste man-hours and people.”



### WALKING HIM THROUGH

Ramsey, left, and Behling discuss live, virtual and constructive training between meetings at Lockheed Martin’s Orlando facility. (Photo by Gary Wilcox, Lockheed Martin Corp.)

### BUILDING BLOCKS

Ramsey and Behling developed a give-and-take that both said made the TWI experience more fruitful. For Behling, who joined Lockheed Martin in 2009 just after retiring from the Air Force, the TWI program was a new assignment, and Ramsey his first TWI officer.

“When you have somebody here, in house, you’re seeing the face, you’re seeing somebody daily. You build a different kind of relationship. Jeff and I, we have very open discussions. We’ll have teleconferences with government, and I’ll just look over at Jeff: ‘You understand, you see what’s going on here. We’ve got to do this better.’

Ramsey “shadowed” Behling for much of his TWI assignment, but did not remain in the shadows, which underscores a key point of advice from Ramsey and Behling for acquisition officers entering the TWI program: Don’t sit on the sidelines.

“It’s not a classroom environment,” Behling said. “You’re not coming in here to sit and watch. You’re coming in here to work. The first thing I would tell them is, do a little homework. Come to the

assignment with a list of things you want to work on, a list of government-industry issues to resolve.”

Ramsey agreed. “Do what you can do, what they’ll allow you to do, and just absorb all that information, and go out there and do it!” he said.

Ramsey, who marked 20 years of Army service in February, plans to stay in as long as he can, beyond just the additional three-year service obligation that comes with a TWI assignment. He is confident that his TWI experience will help, starting with his follow-on assignment in contracting.

“I think it gives me a new perspective on how the defense contractor thinks. ... It will help just because I can see how they put together their proposals ... how they answer those questions that the Department of the Army is looking for. So when I write the statement of work as the contracting officer, I can better put it in plain English for them to understand as well as me.”

—MS. MARGARET C. ROTH

## TWI PROFILE: **LTC JOEL GEGATO, INTEL CORP.**

### ***'TRAINING,' NOT LEADING***

*For LTC Joel Gegato*, who worked with Intel through the Training with Industry (TWI) program, the key word for anyone participating in TWI is training. “When you come here,” he said, “Don’t have a sense that you’re here to lead. Come here to learn, come here to gain knowledge and experience.” For him, that’s the heart of the TWI experience: “Come here to follow first. Get as much experience and training as possible first.”

A graduate of The Citadel with 17 years of Army service and experience in acquisition, program management and contracting, Gegato said he was pretty confident that he could handle anything that industry threw at him, although, strictly speaking, Intel isn’t the defense industry.

During three deployments, he’d worked with a lot of contractors, many of them retired military or veterans and many who had worked in the defense industry for a long time. But one of the reasons Gegato wanted to apply to TWI was to be out of uniform, to have a completely different experience. What he got was “a curveball. My coordinator called me and told me, ‘I’m going to put you in an environment that you’re totally not familiar with.’” According to Gegato, his coordinator said, “How would you like to do EHS?”—to which Gegato replied, “What’s EHS?”

### **SCHOOLED IN SAFETY**

So began Gegato’s work in environmental health and safety. One of the first things he did, according to Intel’s Jim Smoltz, who provided guidance and assistance to Gegato, was complete Intel’s Occupational Health and Safety Administration (OSHA) 30 training, a 30-hour program designed to familiarize participants with OSHA regulations relating to the construction industry. This “helped Joel to gain the knowledge and experience needed to perform safety audits on our construction projects here at the Intel Ronler Acres Campus in Hillsboro, OR,” Smoltz said.

“Joel spends the majority of his time in the field on our construction projects, helping to coach, in the arena of safety, the contractors performing work,” Smoltz continued during an



### **CONTRACTING CONNECTION**

While Gegato said he was surprised to learn that he would be working in the field of EHS, he saw a connection between his EHS auditing at Intel and his prior experience in contract auditing at the Defense Contract Management Agency. (Photos courtesy of LTC Joel Gegato)

interview in April. “This ultimately leads to lower risk of injuries occurring on our projects, which in turn is good for the contractors and Intel.”

At the start, Gegato didn’t know a lot about OSHA, but he saw similarities to contracting, particularly in the area of audits. The experience was eye-opening for him. “In a program management world, we don’t see how many people get hurt, how many people get injured. We just see the product and how it’s built,” he said. The interactions that acquisition personnel have, he added, tend to focus exclusively on the product: “‘Brief us on the product, brief us on how it’s being built, brief us on the standard, brief us on the cost and how it meets the operational requirement.’”



The world of EHS showed him how things happen to the people who are building the products—and that, in the same way that one might look for ways to streamline a process, it is necessary to look for ways to avoid injury. Gegato said he was surprised at the level of detail that EHS people go into. And he found that level of detail to be pervasive at Intel, where the main product, microprocessors, is very small and very complicated.

“It [the job] deals a lot with OSHA,” Gegato said. “You’re dealing with a lot of federal and state regulations. It’s not contracting per se, but it’s auditing, which I’ve done a lot when I was with the Defense Contract Management Agency. You audit based on contracting. So I said, ‘Hey, that’s something I can do.’”

### AN ‘OPEN DOOR’

It was during his third deployment, in Afghanistan, that Gegato decided to apply for TWI. He felt that his career was getting stale and he wanted a change of scenery, but the news of his acceptance didn’t inspire a sense of celebration. He looked at it more as another PCS, a permanent change of station.

How different it would be didn’t really sink in until he got to Intel. “When I came here, I was welcomed with open arms. I got invited to participate in their functions.” There was never a sense of being treated like an outsider, he said. “Automatically, I became a member of the team.”

But he had a lot to learn. For one thing, management in industry is vastly different from management in the Army. “There’s management here, you know who the bosses are,” Gegato said, “but you get the sense that everything here is open-door. There are no offices here. Supervisors, directors, even vice

presidents—everyone works in a cubicle here. And it seems like everyone here is an equal.” That, he said, would never work in the Army.

Intel likes having Army officers on the team, Smoltz said. “Since the people who work with Joel know he’s with the Army, they presume he’s disciplined, regimented and very reliable,” Smoltz said. “This presumption is accurate. We’ve had several Army officers ... and we’ve always been able to rely on them for strong performance. Knowing this only strengthens the trust we have that future officers will perform well.”

In retrospect, Gegato said he thinks the TWI program would be as valuable, if not more so, to younger officers with less

time in acquisition. He thinks his experience with TWI, which has given him a fuller picture of contracting, will help him not only with the rest of his Army career, but also when he decides to retire.

Smoltz said he’d recommend that officers “jump at such an opportunity that offers the ability to work in a large corporation in areas that are challenging.” Such experience, he continued, can be very rewarding, given the TWI participants’ “ability to work with very smart and driven individuals and perform duties that most likely are completely outside of their current area of expertise.”

—MR. STEVE STARK



### A NEW CREDENTIAL

As a TWI officer at Intel, Gegato had responsibility for performing safety audits on construction projects at the Intel Ronler Acres Campus in Oregon. He helped coach contractors for Intel in matters of safety.

## TWI PROFILE: **MAJ ANTHONY LEACH, AIRBUS GROUP INC.**

### *OFF TO SEE HOW 'THE WIZARD' WORKS*

**MAJ Anthony Leach** approached his rotation in Training with Industry (TWI), working with Airbus in Huntsville, AL, with “The Wizard of Oz” in mind. He wanted to “to see behind the curtain, to see how ‘the wizard’—our industry partners—operated. I wanted to learn if there were any differences to their methods of doing business versus the government’s.” He got that look.

Indeed, Leach was surprised that, while “there were many similarities with the Army” in the operations of Airbus Defence and Space, what seemed simple on the government side was significantly more complex on the contractor side. “The biggest difference I noticed was [that] when the government asks the contractor to modify something, whether [it is] hardware or contractual, it is not as easy as I assumed.”

His assumption had been that the government would “just ask the grand wizard, and [the modification] happened as long as there was money.” But what was a “so-called ‘simple modification’” from the Army’s point of view was a bit more complex for the contractor.

#### **A NEW LANGUAGE**

“It takes, I would guess, four to six months to gain a feel for the difference between how government operates and how industry operates,” said John Burke, Leach’s TWI liaison at Airbus. Burke, former project manager for unmanned aircraft systems, retired from the Army in 2007. “An officer will continue for a while to try to reconcile if Task A in industry is just like Task A in the government, and then they realize it may have the same task name, but definition and approach are quite a bit different,” Burke said.

It was Burke’s experience in Army acquisition that prompted him to establish the TWI program at Airbus Defence and Space. Leach was the company’s fourth TWI officer. “My experience in the Army is that missions are defined by task and purpose,” Burke said. “That’s how commanders state a mission: Here’s the task, and here’s the purpose. In industry, once you have a task and purpose, you convert that into specifications, schedules, pricing and eventually a contract to execute. And I think the one big difference is how you assess and define risk between the government and the industry side.”

With these differences in execution and the complexities of each business group, Leach found that integrating himself into the inner workings of the company would take more than the year that the TWI program allowed. But the leadership and the integration processes within Airbus Defence and Space made adapting to the corporate culture seamless, Leach said. “When you’ve worked in the acquisition workforce, there’s a lot of interaction with your industry partners. The toughest part was trying to figure out what to wear to work every day,” he said.

#### **EXPERIENCE IT ALL**

Leach said he went to Airbus with “a plan to rotate to each business area of the company. I wanted to see how each operated. I expected to see and receive some great leadership, and that’s what I saw during my tenure.”

“Every one of our TWI officers has a portfolio of projects that they work,” said Burke. In addition, TWI officers rotate through different functional areas at Airbus. “When they leave the TWI program the following summer, they’ve had exposure to logistics and engineering, production, scheduling and planning, finishing with finance and contracts.

“Two of our TWI officers were degreed engineers ... and we had both of those officers work some urgent and important engineering issues. One of the officers was an expert in program planning and control, and he focused on program planning and control and program analysis. We had another officer who was an expert in strategic communications and strategic program definition, which were essential for a project for us.” Leach, a career logistician with a contracting background, worked directly with the logistics chief and, without representing Airbus on any business transactions, had input into managing the turn time for a time-and-materials contract, Burke said.

#### **CLOSE TO THE ACTION**

When Leach applied for TWI, Airbus was still EADS – North America (EADS-NA). EADS had been in talks about merging with BAE Systems, one of its major shareholders. But that plan was scuttled, and two other major EADS shareholders, DaimlerChrysler Aerospace AG and Lagardère, sold their shares.





### A GOOD GROUNDING

When Leach, right, applied to the TWI program, he wanted to know “if there were any differences to [industry’s] methods of doing business versus the government’s.” Indeed, there are, as Leach learned during a year at Airbus as a TWI officer, with guidance and support from Burke, left, a retired Army acquisition officer who established the TWI program at the company. (Photo by Melissa Johnson, Airbus Group)

EADS Group underwent a reorganization as it became Airbus.

Leach got a front-row seat.

“As EADS-NA transitioned to Airbus Defence and Space,” he said, “I saw management juggling glass balls. From my perspective, they wanted to see that the customer was taken care of, who they would be reporting to and how they would keep their employees updated on changes that were fluid.”

He also saw “supply chain management in action” when an aviation safety bulletin was issued, identifying a fault with a product. “From the time the fault was identified to the time to repair, [the response] was nothing less than outstanding,” he said. “I saw parts fabricated, ordered and shipped to the customer in a matter of days.” The thing that most impressed him in that, he said, was “the experience level and dedication of the employees.”

The appreciation is mutual, Burke said. While about 50 percent of the company’s employees are military veterans, “there are still employees who don’t have a day-to-day exposure to the military,” he said. The TWI program “gives them a chance to really work with a field-grade officer

and understand how they think and their values, and I think they enjoy that direct, personal interaction.”

They can watch how each officer applies specific skills to specific projects, and “they enjoy the opportunity to work with seasoned professionals from different organizations,” Burke said. The TWI officers, for their part, “tend to be very focused, [but] they’re flexible and assertive. Most of them enjoy the opportunity to sort of teach and train,” he said.

### MAINTAIN FOCUS

For Leach, “You must have a focus” to succeed in TWI. “Things are constantly evolving around you, but insist on being pulled into the inner circle,” he said. “You will have to understand that there will be friction points between the government and the contractor. You should gain an understanding by talking [friction points] over with the integrated process team lead,” and learn “how to mitigate the friction, from [both] a government and commercial standpoint.”

The best aspect of the program, he said, is that “it is a great opportunity to see the business practices of your industry partners. Come into the position and ask to be treated as a new hire,” he continued. “Ask to be trained in a position, but go

to all the different business meetings in order to see what’s going on in the company. Travel with the program manager or vice president whenever possible in order to gain knowledge of the overall corporate structure and vision.”

The TWI experience “will give you a perspective that you can’t get anywhere else, unless you happened to work for industry before you joined the Army, which in most cases is highly unlikely,” Burke noted.

As to the most valuable and most challenging aspects of his TWI experience, Leach said, “Most valuable: As a leader, continue to surround myself with smart people. This will not only ensure the program’s success, but also the success of the employees around me. Most challenging: Know my contract and stick to the terms and conditions of it.”

Ultimately, Leach said, whether he ends up as a program manager or director of contracting, TWI will benefit his career. “I hope to lessen the frustrations on [both] the government and industry sides of the table. Sometimes this business seems to be a bit dicey, but establishing a great rapport across the table can go a long way.”

—**MS. MARGARET C. ROTH**  
and **MR. STEVE STARK**

## TWI PROFILE: **LTC MARK HENDERSON, CISCO SYSTEMS INC.**

### **IT'S ALL ABOUT RELATIONSHIPS**

*It's a basic premise*—common sense really, but more easily said than done—that cultivating relationships is a learned skill, not an innate one. Some of the most successful professionals hone their people skills because they keenly understand that their success relies on the team. In the Army, leader development programs focus heavily on team building.

For LTC Mark Henderson, the Training with Industry (TWI) program was an opportunity to develop his people skills and learn to build relationships while immersed in a completely different, almost foreign culture. For those who make the most of the TWI opportunity, the payoff is invaluable experience that can't be “learned from a book,” said Henderson.

“One of the most valuable experiences I will take away from this program is the reaffirmation of the value of both people and strong professional relationships. Working together in a proactive and positive manner really does make a difference.”

#### **AN EYE-OPENING EXPERIENCE, DOWN TO THE SHOES**

“A year is enough to scratch the surface—I wish it were more, but a year will do,” Henderson said.

Before his TWI rotation at Cisco Systems in Herndon, VA, Henderson had also served as an officer and an enlisted Soldier through overseas deployments, earning two Bronze Star medals along with other awards and recognition from the Army's most senior leaders. He is no stranger to the importance of relationships and working with teams, but his year at Cisco was eye-opening—not just for him but his new colleagues as well, he said.

“I wanted to experience what it was like to walk a mile in the shoes of industry, get a feel for Cisco's business and strategy in several areas and better understand their culture.”

Cultural differences from clothes to language were quickly apparent to Henderson when he started his fellowship last summer. “One of the first things I realized was that I needed to update my wardrobe with appropriate civilian business attire.”

With time and updated attire, and resisting the urge to speak in military jargon, he adjusted to Cisco's highly mobile and distributed workforce and realized his expectations.

#### **FINDING SIMILARITIES IN THE DIFFERENCES**

Henderson noticed many similarities between the military and Cisco, including ways to motivate and incentivize employees and the never-ending need for good staff work, in addition to the importance of professional relationships. Dedication to the mission, a strong work ethic and strong organizational culture were other key similarities.

“As much as it is true in the military, it is also true in business: Organizations are made up of hardworking and dedicated professionals,” he said.

“We get the best and the brightest in this program, and the best part of it is, they're human. They're all different, they all come with different personalities, and they all come with different ideas in their approaches to business,” said Jim Lien, who is responsible for Cisco's TWI program in addition to all the service delivery that Cisco does for the Army,

“That's good for our folks inside the industry world, the vendor world to see as well, that they're just quality folks, hardworking, they put their noses down just like everybody else when the time comes. And when folks on this side of the world see that quality, it just reinforces how important it is that we do the right things for [Soldiers], that we give them the best capability that supports them and helps them come home,” Lien said.

Henderson also experienced differences between the military and corporate worlds, including the culture of fluidity in Cisco's workplace, the pervasive availability of technology down to the average employee and the company's focus on generating revenue.

“Cisco's business strategy and alignment of resources to manage customers and seize opportunities are impressive,” Henderson said. One thing he found surprising was how in tune Cisco



employees are with their customer base, whether government or commercial.

“Cisco does a great job of keeping up with their customers and each other by fully leveraging cutting-edge technology.” The technology far surpasses what the average government employee has, Henderson said. With a laptop and a few clicks, a Cisco employee can conduct a WebEx meeting with multiple people around the world at a moment’s notice.

“With a very mobile workforce, and having those capabilities at their disposal at an office, at home or even at Starbucks, they can jump in and engage the customer. It’s different than having a personal phone, a government BlackBerry and computer,” Henderson said. “You don’t have to fight over that one VTC room.”

Nor are Cisco employees bound to a traditional brick-and-mortar office and a 9-to-5 job, Henderson said. “They have a lot of flexibility to manage their own time to accomplish the mission.”

### A YEAR ON—NOT A YEAR OFF

Value-added is a term the Army is used to, but for Henderson, it was an essential characteristic at Cisco. “The culture is designed for self-starters, [people who are] very good at managing their own time and jumping in where they think they can add value to the team, the task at hand and the mission.”

Lien agreed, saying that the TWI program itself adds value by developing leaders in addition to building bridges between the Army and industry. “From my perspective, companies do a great job at developing managers,” Lien said. “They don’t focus on the leadership aspect as much. So I think [TWI officers] bring an enormous amount of leadership to the table.”

For Henderson, the TWI assignment underscored that hard work, patience, flexibility, strong people skills and a lot of personal initiative are keys to succeeding. Lien noted that Henderson “demonstrated constant professionalism, flexibility, adaptability and willingness to learn. He fully integrated himself into the Cisco team and did not wait to be told what to do. He simply jumped in and did it. That is what is expected here at Cisco, and he learned it quickly.”

Henderson’s follow-on assignment is in the Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology, after which he is slated to take command of the Warfighter Information Network – Tactical Increment 1.

“I think that the TWI program will assist me in my career in a variety of ways. I have a better understanding about the corporate world and what motivates its employees. I have seen new concepts in cutting-edge technology as well as

business strategy. I have learned to work through issues and solve problems in a highly fluid, distributed and mobile environment and, most of all, I have walked a mile in the shoes of our industry partners while building many long-term relationships in the process.”

What does this mean for those considering TWI? Henderson’s message is clear: “If you have a lot of personal initiative, are a self-starter, truly understand that to think outside the box means to get outside of it first, and believe that to ‘add value’ means to do more than just show up ... then run, don’t walk to your closest branch manager or TWI program representative and see if your personal timeline and file support it.

“This once-in-a-career assignment just prior to taking command was a no-brainer, and it proved to be a remarkable experience.”

—MS. TARA CLEMENTS



### SYSTEMS GO

Henderson found that his year as a TWI fellow at Cisco Systems gave him the immersive, eye-opening experience he was looking for in industry. (Photo courtesy of Cisco Systems Inc.)

## TWI PROFILE: **LTC DOUGLAS TWITTY, COCA-COLA CO.**

### TAKE OWNERSHIP, ADD VALUE

*Two things surprised LTC Douglas Twitty* when he went to work with Coca-Cola Refreshments through the Training with Industry (TWI) program.

The first was the speed of change. Because the company is in such a competitive industry, he said, things happen very fast. For some changes, we “did not always have the opportunity to determine if they were successful before additional changes were made,” he said. “That’s totally different from how the Army operates. We have systems in place, and those systems are in place for a long period of time.”

The other thing that surprised him, he said, was that the company very quickly asked him to be a leader. “Adjusting to the commercial environment wasn’t hard,” he said, “because the experiences that the Army has given me over the years—take ownership when in charge and be an added value in every situation—applied to me when I came here to Coca-Cola.”

Still, it surprised him that Coca-Cola had the “willingness to put me in the lead on projects and, based on those findings [in the projects], it could affect their sales, their customer service and their profits. But as I look back on it, it just shows me how much confidence Coca-Cola has in Army leadership experience to make a direct decision for the company.”

### TAPPING ARMY SKILLS

That experience is important to Coca-Cola, Twitty said. “There are managers who request me by name, just because of that Army experience,” adding that the reception he received at Coca-Cola was “fabulous, really second-to-none.”

Jerome Richard, manager of Coca-Cola Refreshments Talent Acquisition Program, shed some light on why that is. “Military servicemen and women bring strong leadership skills, commitment and can-do attitudes to their jobs every day,” he said. “It’s inspiring and motivating to other team members and encourages everyone to perform at their best.”

Coca-Cola’s support for the U.S. military dates to 1941, Richard noted, when former President Robert Woodruff committed to



### A STUDY IN LEADERSHIP

During his TWI assignment at Coca-Cola Refreshments, Twitty was able to observe similarities and differences between the company and the military in how leadership works and careers advance. (Photo courtesy of LTC Douglas Twitty)

see that every man in uniform got a bottle of Coca-Cola for five cents, wherever he was and whatever it cost the company.

Coca-Cola “remains focused on implementing enhanced programs to recruit, retain and develop our nation’s heroes,” Richard said. “By participating in the TWI program, we’re able to do just that—and benchmark our organization against the Army’s performance standards. The program also gives us a better understanding of Army officers’ skill sets that are transferable to the civilian business environment.”

Twitty received Lean Six Sigma Green Belt training for four weeks leading up to his first project, learning “their process for a project. Coca-Cola has this DMAIC process—define,





measure, analyze, improve and control—and every project goes through these five phases.” Given the time he had at Coca-Cola, Twitty said he was able to go through training only on the first three phases. After those first three, he said in April, “Someone within the company will take over and complete the project.”

He added that Green Belt certification with Coca-Cola requires completing two projects and because he was at the company for only a year, “it just wasn’t feasible. Usually it takes anywhere from six months to a year to complete a project.”

#### **A DIFFERENT APPROACH TO ADVANCEMENT**

For Twitty, one of the major differences between the Army and Coca-Cola is how the individual can advance. At Coca-Cola, that process is very much self-guided and depends on career goals, which contrasts starkly with the way advancement happens in the military. “For every rank, for every leadership position” in the military, Twitty said, “there’s a development program and responsibility that the individual must accomplish before they can go to the next leadership position.”

Such was the case with Twitty when he advanced from lieutenant to captain to major to his current rank. At Coca-Cola, Twitty said, people might benefit from some aspects of that structure, but he believes that the Army’s structure as a whole really wouldn’t work in industry.

“For me, personally,” Twitty said, “leadership is positive action, in whatever way you get the positive results you want.”

#### **BE OPEN TO OPPORTUNITY**

Twitty applied for TWI, he said, because “I wanted to broaden my experience. I didn’t want to stagnate.” For acquisition



**MILITARY SERVICEMEN AND WOMEN BRING STRONG LEADERSHIP SKILLS, COMMITMENT AND CAN-DO ATTITUDES TO THEIR JOBS EVERY DAY. IT’S INSPIRING AND MOTIVATING TO OTHER TEAM MEMBERS AND ENCOURAGES EVERYONE TO PERFORM AT THEIR BEST.**



professionals who are thinking about applying to TWI, Twitty said, “It’s a great opportunity where you can implement things that you can take back to your next assignment.”

From Coca-Cola’s perspective, Richard said potential applicants should “be open to the opportunity and explore the TWI program. TWI provides you with a great perspective on how the private sector addresses challenges similar to what you face in the Army. The program also exposes you to career options to consider after your Army service.”

Twitty said that TWI “is a great experience.” He recommends that acquisition

officers applying to the program “make sure that TWI supports their training progression timeline.” Also, he said, selected participants “need to develop their own training objectives. They need to remember that this is their own experience. Everyone has different skill sets and different expectations when they come to this program.”

“You’re leaving the acquisition branch for a year, and you’re never going to get that time back, so that individual needs to be well-developed as an acquisition officer.”

—MR. STEVE STARK

## TWI PROFILE: **LTC PRESTON HAYWARD, GENERAL DYNAMICS LAND SYSTEMS**

### MYTH VS. EXPERIENCE

As an Army acquisition officer, LTC Preston Hayward had heard a lot of conversations comparing government and industry: Who works harder? Who works better? How much of a factor is job security?

He wanted to see for himself, and the Training with Industry (TWI) program gave him that opportunity at General Dynamics Land Systems (GDLS) in Sterling Heights, MI, just north of the Detroit suburb of Warren, where Hayward was an assistant product manager (APM) for the Stryker Engineering Change Proposal (ECP) program at U.S. Army TACOM Life Cycle Management Command before his TWI tour.

The TWI program gave him many opportunities, he said—“to see major milestone events; participate in solicitations and solicitation builds; dispel myths”—within the ethical boundaries of being an Army officer in an industry setting. “This position has allowed me to really see the interaction” between government and industry and within industry, “and so much of what we do is about the interaction between people.”



#### TOP-DOWN VIEW

Hayward, left, and Paulson examine the component capabilities of the Abrams main battle tank. GDLS builds the Abrams, the Stryker wheeled combat vehicle and the Marines' Light Armored Vehicle. Hayward spent four months in the Abrams ECP1 program and four months in the company's supply chain management section. (Photo courtesy of General Dynamics Land Systems)

“We think it’s a win-win for both the officer and the company,” said John “JP” Paulson, senior director for engineering design and technology at GDLS and the company’s TWI liaison. “The officer gets exposed to the disciplined systems engineering process and the programs’ project management processes, as well as understanding the interdependencies between engineering, supply chain management, the production and sustainment service, and how we kind of build and field vehicles. And the company, on the other hand, is exposed on a daily basis to a motivated field-grade officer with some acquisition experience.”

While the TWI officer learns about the inner workings of GDLS and the impacts of Army decisions and requirements on industry, GDLS employees learn about the military decision-making process and current concerns, said Paulson, a retired Army lieutenant colonel. “And I think that’s good for the entire acquisition process.”

#### LEARNING THE ROPES

GDLS builds the Abrams main battle tank, the Stryker wheeled combat vehicle and the Light Armored Vehicle used by the U.S. Marine Corps, among other vehicles.

Hayward spent his first four months at GDLS in the Abrams ECP1 program, and the next four months in the company’s supply chain management section. He finished up the 12-month assignment in the production, design and support area, with the people who manufacture and field the vehicles.

This plan of rotation is typical for TWI officers at GDLS, Paulson said, with modifications tailored to the officer’s background, interests and goals. Hayward, for instance, did not work in the Stryker program at GDLS because that could have raised conflicts of interest. “We give them the full gamut of what we do in industry. And if they’re engineers, I’ll stick them in engineering for a little while as well,” Paulson said.

The learning curve within the Abrams ECP1 program was steep but surmountable, Hayward said, once he got to know who did what and the details of the program. “Probably within the first 60 days, I was pretty well integrated.”





In a broader sense, it helped that the organizational structure at GDLS is similar to the Army's in a number of respects, Hayward said—hierarchical, using integrated product teams and with similar ways of strategizing. On the other hand, Hayward said, a TWI officer also benefits from being assigned to a company that works quite differently from the Army, and can then take those new approaches back to the military.

A major focus in Hayward's day-to-day work at GDLS was solving problems at the plants or with the vehicles in the field. "It's a very similar mentality like we're going to the battlefield, although I'm not a combat arms officer: 'What's the mission? We've got to complete the mission.' It's the same with sales: General Dynamics lives and dies by their sales; it doesn't matter which division. So problem resolution is a high priority. And General Dynamics has got a great group of engineers who jump right into the problem and the root-cause analysis and figure out a solution, much like we on the government side do."

For Hayward, the single most valuable learning experience in his TWI tour was itself a lesson in problem-solving. Working on the Abrams ECP1 project, he was the project lead for a change in vibration specifications requested by the U.S. government. That meant Hayward was responsible for setting up the team, testing and a lot of coordinating. Ultimately, however, the government canceled the modification because of the impact it would have had on the entire system.

It may seem to have been all in a day's work, but to Hayward it was a lesson learned the hard way. "We as a team became so obsessed with the testing and how it would impact one portion of the vehicle and not the entire system."

He also has developed a better understanding of profit, which, in his experience as an APM, is a much-misunderstood concept, he said. "There has to be a greater understanding of profit." Companies use some of their profits to conduct independent research and development, which leads to solutions, and one of the focus areas of DOD's Better Buying Power initiatives is incentivizing productivity and innovation in industry and government, Hayward noted. He is concerned that misconceptions on the government side have "poisoned the well," i.e., adversely affected relationships with industry. Now, he said, he asks himself, "What do I, as a future acquisition leader, need to do to change that?"

### OPEN COMMUNICATION

Probably the biggest surprise in Hayward's TWI experience was "people's willingness to tell me their story—once I let them know who I am, because I would never misrepresent myself—and about what they do."

For the employees, Paulson said, having a TWI officer in their midst is a prime opportunity to learn more about their number one customer, the Soldier. "Our employees take great pride in the fact that we build combat vehicles that save Soldiers' and Marines' lives. ... And we've got a lot of military retirees and folks who have served in the military around here."

"But the fact that we've got a field-grade officer working side by side with us in an informal setting kind of gives them the opportunity to find out more about military life, what's important to them and how we can do better. It's a real morale-booster."

In the process, Hayward's co-workers at GDLS have learned more about the government's priorities. "People say,

explain why the government is requiring us to do X, Y and Z. How important, for instance, is the integrated master schedule?" Hayward said. His response: "As a program manager, you go to your integrated master schedule, and it lays out all the events. And the U.S. government has to have ... something that explains in detail what the OEM [original equipment manufacturer] is going to do and how they're going to accomplish it, because that's how they're measured."

### WORDS OF ADVICE

Asked what advice he had for Army acquisition officers considering TWI, Hayward said, "take advantage of the opportunity," with its "great challenges and great potential for success ... on both sides. It allows you to dispel the myths about military and government workers and at the same time, when you go back to working with the U.S. government, you're able to dispel the myths about OEMs."

Paulson's advice? TWI officers "ought to do some research on the company they're going to, and then they need to think about what they know or don't know about industry and industry processes, and figure out what they'd like to learn. Create a plan for what they want to accomplish during their tour, based on their past experience and their future job assignment, work that plan out with the industry sponsor and stick with that plan."

In sum, Hayward said, to achieve the full potential of TWI requires "a willingness to learn; curiosity on how a major manufacturer accomplishes their goals; and a willingness to stick your nose in and ask questions and realize you're probably not going to be the smartest guy in the room by far." In the end, "it's what you make of it in the areas you're interested in."

—MS. MARGARET C. ROTH

## TWI PROFILE: **MAJ SCOTT SHAFFER, CISCO SYSTEMS INC.**

### *A NEW LENS ON PROGRAM MANAGEMENT*

Having served as an assistant product manager in Army electronic warfare, MAJ Scott Shaffer was well aware that there was a lot more for him to learn about Army program management. So he set his sights on the Training with Industry (TWI) program and an assignment with Cisco Systems.

“I wanted an upper-level management experience while focusing on what I do in the Army, which is program management,” said Shaffer, who previously worked in Program Executive Office Intelligence, Electronic Warfare and Sensors. But “program management” means a lot of things. “Industry defines ‘program manager’ differently from what the Army considers a program manager,” he said.

Shaffer wanted to look outside that Army box. He wanted to experience a broad range of industry managerial techniques and best business practices, while also gaining a better understanding

of the relationship between Cisco and the Army Acquisition Corps. So he applied for, and received, a TWI assignment at Cisco’s Herndon, VA, office. Shaffer’s work at Cisco centered on a program management office (PMO), where he participated in managing resources, schedules and performance for Cisco task orders. He also branched out from the PMO into other areas, such as budgeting and funding, corporate strategy and culture, forecasting investments, risk management and cybersecurity.

The experience has been illuminating, not just for Shaffer but also for his Cisco host and co-workers.

“Probably the biggest thing [for me] is an out-of-box-thinking type of experience ... usually I’m on the government side, [where we are] signing the contracts, providing the funding, saying this is how I want things done, and then industry responds. And the part that I wanted to take a little further ... is how they [industry] manage it.”

Industry has a similar curiosity about the Army, said Jim Lien, who is responsible for Cisco’s TWI program in addition to all the service delivery that Cisco does for the Army. “Acquisition oftentimes seems like a mystery to the folks on the outside: What do we do? How do we do it? How do we do it better?”

### **AWARENESS COUNTS**

Shaffer found many similarities in program management practices between the Army and Cisco, albeit each with its own standard operating procedures. And, not surprisingly, the true measure of success is satisfying the customer’s or Soldiers’ requirements, what Cisco accounts for in “customer satisfaction ratings.” Both organizations “are trying to build stuff for the customer and make them happy,” Shaffer said.

Cisco as a whole, however, presented Shaffer with a different way of doing business than he was used to in the Army.

It wasn’t that everyone wore civilian clothes—he was used to that, having transitioned from the Signal Corps to the Acquisition Corps, in which working with Army civilians and contractors is the norm, not the exception. It was the fluidity of



### **DUTY STATION**

Both the work environment at Cisco Systems, with its array of highly mobile technology for getting the job done, and the organization itself, with sometimes indirect lines of responsibility, were notably different from what Shaffer is used to in the Army. But he observed many fundamental similarities in program management practices, along with a shared commitment to satisfying the customer’s or Soldiers’ requirements. (Photos by Maggie Shaffer, Cisco Systems Inc.)





the work environment. “They give you all the tools you need at your fingertips. So basically you have access to all the Cisco resources that any other employee would have, and you can access it all through your computer,” Shaffer said.

The organization itself also seemed very fluid. “In the Army, there’s a clear, direct line of communication and command. At Cisco, it’s not so clear. There are managers and administrators, but there are a lot of dotted lines ... people work for this person and that person and that person.”

Shaffer was particularly surprised by the degree of awareness of the military customer among Cisco employees. “I learned how important it is for industry to understand and know their customers at a very [granular] level ... it helps them look out over the future, see where they’re going and where they’re not going. They are very aware.”

Lien, a retired Army colonel, said that Cisco maintains close ties to the military on a number of fronts—hiring, cards and care packages and wounded warrior support, to name a few—and that the TWI program strengthens those ties. “From a company perspective, one of the biggest things that our company gets out of it is a deeper appreciation for our veterans. ... Folks who work with these young men and women really get a great appreciation for the quality of the Soldiers we have in the Army today.” As a result of TWI, he said, “there’s a better understanding of the Army, especially the Acquisition Corps.”

### ENDURING PERSPECTIVES

By the end of his TWI assignment at Cisco, Shaffer said, he had gained what he sought, which was to “share as much as we can and learn from each other in the short time we have,” within the ethical



#### BUSINESS CASUAL, WITH SERIOUS INTENT

Shaffer wanted to look outside the Army box and experience a broad range of industry managerial techniques and best business practices during his TWI assignment at Cisco. He got what he was seeking, and more.

limitations of an Army officer working closely with industry.

Lien described the interaction this way: “We’re working on a particular project or having a discussion, and there’s a challenge: ‘Well, here’s the approach we would take to solve this particular challenge in the Army.’ ‘On the other hand, here’s the approach we take inside the industry space.’ ... They’re looking at it from their foxhole, we’re looking at it from ours, and when you bring that above ground, everybody’s looking at the same problem with a different set of eyes, and they learn from each other. And that is the biggest and the best thing about this program.”

Shaffer wasn’t sure how what he learned would benefit him in his future Army assignments, but he had no doubt that it will. “The truth is that when I use my [TWI] experience, those moments, I’ll know it when they come up ... and then a light bulb will click on and I’ll think, great! That’s where I saw this. This might work here.”

Likewise, he said, he cannot be sure how the TWI assignment will help his career overall. “I can’t speak for my superiors, whoever I’ll be working for in the future, but I would hope they will see it as a positive thing, looking back at my experience and saying, ‘Hey, this guy has something new and different to contribute.’ ”

Speaking from his own experience as a TWI participant in the Army and now Cisco’s TWI program manager, Lien said the participants in the Army program would benefit greatly from knowing earlier in their TWI assignment what their follow-on assignment will be.

“Branch needs to determine what the follow-on assignments of these officers are so that we can better develop a program that prepares them for that assignment. When I went through [TWI], I knew where I was going before I accepted the assignment,” he said. Lien’s TWI rotation was with the Air Force, working with single-channel satellites at Offutt AFB, NB, after which he was assigned to the satellite division of the J-6 on the Joint Staff. “Today, depending on which branch, it’s about six months into the [TWI] assignment before they start locking them down ... you only get six months really focused on what you’re going to be doing in your follow-on assignment, as opposed to having a whole year.”

The timing notwithstanding, Shaffer’s advice for anyone considering TWI was: “If you can fit it into your timeline, do it. Be open-minded” and “know your career field before you show up. You’ve got to be able to think outside the box,” he advised. “You’ve got to be willing to adjust and look at things differently.”

—MS. MARGARET C. ROTH

## TWI PROFILE: **MAJ KARLETON DEMPSEY, CSC**

### *FROM SECURING THE AIR TO ACQUIRING THE GOODS*

*When it came time* for then-CPT Karleton Dempsey, senior air defense artillery (ADA) officer, to choose a functional area for his career, he saw “the writing on the wall.”

He wanted a challenging career path but was uncertain what he could do with an ADA background after he left the Army. After researching the Army’s various functional areas, Dempsey finally found the right fit.

“I heard a lot of good things about the Acquisition Corps, and as I read up on it more and more, I knew that acquisition was really what I wanted to do because of the challenge I believed it would bring,” he said. “Being able to be at the forefront of designing the goods and materials that support our troops very much appealed to me, and I heard that the acquisition career field held great potential for transitioning into a civilian job once I retired.”

Dempsey was deployed to Iraq as a Patriot battery commander out of Fort Bragg, NC, when he got the word that the Army had accepted him into the Acquisition Corps. “We were actually doing a detainee operations mission over in Iraq when I found out, and that was good news.”

After redeploying in June 2009, Dempsey was ready to face the acquisition challenge. “That September I went to the Army Acquisition Basic Course, and the rest is history.”

#### **A NEW CULTURE TO LEARN**

Dempsey’s first acquisition assignment was with the U.S. Army Intelligence and Security Command (INSCOM), where he had his first experience working with civilians, which later helped him adjust to working with civilians in corporate America through Training with Industry (TWI).

“It was a culture shock at first, and then I got used to it. INSCOM was the first time I was in an environment that was dominated by civilians. The military culture I had known for 10 years (early morning physical training, and working from 9-6) was unfamiliar to most of the people there. When I arrived at CSC, it was a similar culture, so it wasn’t a big sea change for me. I really felt comfortable.”



#### **NOT YOUR TYPICAL ASSIGNMENT**

Working with CSC, formerly known as Computer Sciences Corp., at its Falls Church, VA, campus gave Dempsey a perspective on industry that he never would have gotten without participating in the TWI program. (Photos courtesy of CSC)



Dempsey, now a major, was serving in Korea as the branch chief attached to the 411th Contract Support Brigade when he got the nod for the TWI program and his assignment as a program specialist with CSC.

“I went into it with my eyes wide open, thinking it would be a real good opportunity ... an attitude of, ‘Hey, this is what I want to do when I get in and see how the civilian world works.’ ”

Doug Robinson, CSC’s TWI lead, said employees have gained an appreciation for the Army’s challenges and acquisition capability. They have great respect for Soldiers, he said, although many of them have not served in the military.

“The TWI program allows them to engage with a critical Army leader, and actually put a face on whom they support and gain a new perspective on how to better provide that support. CSC employees are truly honored to have an Army officer work with them.”

### A DIFFERENT APPROACH

Dempsey said he learned through TWI how the Army can do better when it comes to conducting business with industry.

“Sometimes, government can really struggle creativity by reluctance to share the full information with prospective contractors. I think we can do a better job at disseminating information so that contractors who have spent, in some cases, millions of dollars preparing a proposal can feel confident they know exactly what the government is proposing and therefore can provide the best possible product to our Soldiers,” he said. “I think it all begins with the training of our resource managers and contracting officer’s representatives. If they are well-versed in the contract details, then they



### A SHARED APPRECIATION

Dempsey chats with Robinson in Robinson’s office at CSC. Robinson knows a thing or two about acquisition, having retired from the Army Jan. 1, 2009, as a major general. His last assignment was as commanding general of the U.S. Army Research, Development and Engineering Command.

can provide the contracting officers with the proper resources to ensure that contractors are comfortable with product development. This way, we’re not tying these guys’ hands behind their backs, and we’re better preparing them so that we’re not wasting their time and not wasting our money.”

According to Dempsey, working with private industry takes a certain amount of flexibility. “You have to be willing to actively listen to the people in the company. They really want to help and they’re willing to listen to you, but you have to offer some creative ideas, because it helps them get the bigger picture and gain a unique perspective so that they can do things better.”

Dempsey recommends TWI for any acquisition officer who is serious about enhancing his or her career.

TWI “is an excellent program, and I wish more officers would apply for it. I think there is a stigma out there among the officers that this program is seen as being like ‘taking a knee’ and not built for their careers.” On the contrary, Dempsey said, “this is an excellent opportunity for an officer to see the other side of the coin. It gives you a unique perspective of how [industry] operations work, and it’s great networking. You just can’t put a price on the value of this program. I hope that the Army will expand the number of slots.”

—MR. ROBERT E. COULTAS

## TWI PROFILE: **MAJ ROD W. SECOR, BOEING CO.**

### EXPECTATIONS EXCEEDED

**“Don’t walk”—**run to accept that TWI opportunity!” said MAJ Rod W. Secor.

Secor, who applied to the Training with Industry (TWI) program from his job as an assistant program manager (APM) in Program Executive Office (PEO) Aviation, started his 11-month TWI assignment in June 2013 with Boeing in Huntsville, AL. The assignment “absolutely exceeded” his expectations, he said.

“I went in with an open mind. I had meetings with the outgoing [Boeing] TWI officer and got a general idea of what the job would be like. Boeing allows you work in many areas, so I had many job titles. My favorite area was working with the Boeing Space Launch system. It’s not very often you get to see the future of space travel.”

Secor picked up some business practices from Boeing’s information technology (IT) area that he intends to share when he returns to his acquisition duties.

“I would like to bring several capabilities of Boeing’s IT systems to a government office. I didn’t realize how far behind the government is on IT implementation. Program leadership [in government] needs to start establishing what capabilities they need versus being told the limitations by the IT offices.”

#### THE ‘INVISIBLE HAND’

Secor said the single most valuable piece of information he learned during his TWI rotation with Boeing was the importance of the “invisible hand” in all business areas.

The “invisible hand” is a metaphor that economist Adam Smith used in his 1776 book “An Inquiry in to the Nature and Causes of the Wealth of Nations” to describe the self-regulating behavior of the marketplace. In a free market, Smith theorized, competition between buyers and sellers ensures that goods and services are produced at the lowest cost. Government regulation isn’t needed, because the “invisible hand” of competition guides market participants to trade in the most mutually beneficial manner.

For Secor, the “invisible hand” underscores that “if your organization is focused on cost reductions and efficiency, you have a strong chance of success,” he said. Specifically, competition between buyers and sellers supports the profit motive to produce improved products at lower costs.

#### RELAX AND OBSERVE

Secor experienced some cultural differences at Boeing compared with what he was used to in the Army, but he took those in stride by being “flexible, with the right mindset.”

“I have experience working in a defense program office, but the daily nuances of the [Boeing] workplace had some differences. I just tried to relax and examine their entire process. Suddenly working in a different environment from the last 16 years can really challenge you.”

In the larger aspects of conducting business, however, Secor found Boeing employees to be remarkably in harmony with their customers.

“I was really surprised at how in sync Boeing is with the Defense Department. They followed and analyzed program funding, long-term vision and the political climate. Sometimes they would know about program changes or issues before their customers.”

Secor found that industry and government programs share a focus on cost, schedule and performance, but that the government could learn a lot from industry’s profit mentality.

“The difference you see in the defense industry is the complete dedication to the bottom line. Boeing continually re-evaluates all areas for efficiency. Boeing employees understand they are expected to deliver a certain level of value added, or changes will follow,” Secor said.

#### ‘A TRUE WIN-WIN’

Vivian Harris, Boeing’s TWI lead, said the company has been able to work with some “outstanding Army officers” over the years.





#### KNOWLEDGE EXCHANGE

Secor, left, works with Raymond Daves, an engineer in Boeing systems engineering, during his TWI assignment. Formerly an APM in PEO Aviation, Secor spent 11 months with Boeing in Huntsville, AL, through the TWI program. Most noteworthy for him were his work with the Boeing Space Launch system and the close relationships Boeing employees have with their clients. (Photo by Eric Shindelbower, Boeing Co.)

“Boeing has gained some invaluable knowledge from TWI participants providing an Army perspective of how they view us as strategic partners while simultaneously seeing our business practices that provide them with the best products and capabilities,” she said. “The employees appreciate the opportunity of having an Army officer within the group. It gives them the chance to share their knowledge and demonstrate their skills, which go into designing and developing the best product for the Army.”

Secor, whose next acquisition assignment is with the U.S. Army Maneuver Center of Excellence at Fort Benning, GA, said

he would leave Boeing with a long-lasting impression of his TWI experience.

“It’s a fantastic career-enhancing opportunity that comes to a very few, and its impact will stay with you throughout your Army career and your life,” he said. “It’s a true win-win that provides experience and perspective not widely available in officer development programs.”

—MR. ROBERT E. COULTAS

# SPOTLIGHT

## MR. PHIL DAVIS

*by Ms. Margaret C. Roth*

Phil Davis, 33, was a college student selling refrigerators for Sears in Oviedo, FL, and looking ahead to a career in law or business when the contracting career path opened up to him. One of his customers happened to be Kim Denver, then director of contracts at Program Executive Office Simulation, Training and Instrumentation (PEO STRI) and later deputy assistant secretary of the Army for procurement.

“He showed me his Army card and said ‘Hey, give me a call,’ after I sold him the refrigerator,” Davis recalls. “I kind of looked at it like, yeah, I’m not going to call this guy. Well, he ended up calling me back and saying, ‘I’m looking for interns. I want you to come in for an interview.’”

“First, he said, ‘Why didn’t you call me back?’” Davis laughed. “And he convinced me to come in for an interview. And when he started talking to me about what he actually did, I was interested.” Davis was a prelaw student with a minor in business at the University of Central Florida (UCF). “I had that prelaw background, I had a business minor, and [contracting] seemed to me to be very similar to what I was doing already with respect to my college career.” Plus, Denver said the Army might also be able to fund an MBA degree. “He pretty much hooked me,” Davis said.

### A GO-TO GUY

Davis started at PEO STRI in January 2005 as an intern in the Student Career Experience Program. While working full time, he completed his undergraduate degree that spring and continued at UCF to receive an MBA, which the Army paid for, true to Denver’s word.

In his nearly 10 years at PEO STRI, Davis has become the go-to guy in contract administration for matters concerning source selection. “Any new acquisition that comes up, that’s kind of

been my area of expertise.” That, he said, is reward in itself, considering that the end product can save Soldiers’ lives.

Not that Davis himself ever was a Soldier. He has never served in the military, nor has anyone in his immediate family, although various members of his extended family have served. The same is true of many of his civilian colleagues at PEO STRI, which made their passion and dedication all the more surprising to Davis when he began working there.

“Before I started working here, I probably had the impression that civilian people, they’re probably going to go home and they’re not going to take this home with them. What I’ve learned is, that’s not the case. They care just as much as our colonels down the hall.” They share an understanding, Davis said, that “if we don’t get this on contract, Soldiers are going to perish.”

In recognition of his hard work, Davis received the high honor of being named PEO STRI’s 2013 Acquisition Person of the Year. The citation noted “his top-notch contracting support to the Combat Training Center – Instrumentation System [CTC-IS] program, as well as to the foreign military sales [FMS] case for the Egyptian Armed Forces Combat Training Center.”

Currently he’s the lead contract specialist in support of the \$4 billion recompetes for the Warfighter Field Operations Customer Support (FOCUS) contract, assigned to the project manager (PM) for field operations and support. Warfighter FOCUS, with a 10-year term and a ceiling of \$11.2 billion, “pretty much does the sustainment for our entire portfolio here at PEO STRI with respect to our simulators,” Davis explained.

His work on Warfighter FOCUS involves market research on different types of contracts and researching PEO STRI’s



acquisition strategy, including getting feedback from industry. Warfighter FOCUS has high visibility, requiring approval from the Office of the Secretary of Defense. So the pressure is on—and he could not be happier. “I like to take on new challenges,” said Davis, who volunteered for the effort.

## TENSIONS IN EGYPT

It was the FMS contract for the Egyptian Armed Forces Combat Training Center – Increment 3 program that Davis considers his most challenging assignment so far as an Army civilian. “I was brought in shortly after the contract was awarded at a tumultuous time. It was the early stages of the design review, and the customer, the Government of Egypt (GoE), had some reservations about the design. There was a lot of uneasiness between the customer, PEO STRI and the contractor.”

Davis flew to Cairo in February 2012 during the Arab Spring, despite a travel alert stemming from the ongoing social unrest. There he met with high-level officials, including a general and several colonels, to alleviate some of their concerns. At the same time, PEO STRI was in the pre-solicitation stages of the CTC-IS acquisition, “so I was juggling that acquisition while working the Egypt FMS contract,” Davis said.

And his New England Patriots were headed for the Super Bowl. Davis, who grew up in Keene, NH, and counts himself as “a big Pats fan,” got to see the game, but just barely—from his hotel room in Cairo, on his laptop. The hotel employee at the front desk had no idea what “Super Bowl” was.

Unfortunately for Davis, the New York Giants beat the Patriots, 21-17. But the PEO STRI team settled the contract



## TALENT RECOGNIZED

Davis receives PEO STRI’s 2013 Acquisition Person of the Year award from Dr. Jim Blake, then the program executive officer. The award citation noted his support for the CTC-IS program and his work on the FMS case for the Egyptian Armed Forces Combat Training Center. (Photos courtesy of Phil Davis)



## FAR AFIELD

Davis’ work on PEO STRI’s FMS contract for the Egyptian Armed Forces Combat Training Center, which he considers his most challenging assignment so far, took him to Cairo in early 2012.

issues in dispute for the Fixed/Mobile Instrumentation System training range program, he said. “Ultimately, we were able to negotiate the design changes requested by GoE and come to an agreement that was amenable to all parties involved.”

## ESSENTIAL SKILLS

The entire experience underscored three traits that Davis believes contracting specialists must have to succeed: adaptability, critical-thinking skills and a thick skin.

“Every day I come to work, I feel like there’s either a new fire to put out or there’s a new challenge; something happened in the contract that is making us reverse direction, we lost funding. ... Things are constantly changing,” he said. “That’s the exciting part about the job, the change, and adaptability’s a skill you need in order to be able to roll with it.”

Critical thinking and problem-solving, too, “are just paramount in this job because it’s not always going to be written in stone. It’s not always going to be in regulations,” Davis said. “Interpretation is something we have to do every day. The FAR [Federal Acquisition Regulation] sometimes is black and white, and sometimes it isn’t. We have to be able to read between the



## ACHIEVING BALANCE

Davis and his fiancée, Georgina Guerzon, will be married in October. He is grateful for the quality of life that his acquisition career provides, as well as the opportunity it gives him to provide U.S. Soldiers with the capabilities they need.

lines and determine intent, and be very analytical about it.”

Problem-solving goes hand in hand with personal initiative, Davis noted. For a contracting specialist, he said, the best advice he can offer is not to “expect someone to solve a problem for you. Define the problem, research it and come to the table with recommended courses of action for a potential solution.”

The third main ingredient for success, Davis said, is “a thick skin, man.” Contracting specialists “are generally the whipping boys of the acquisition community. ... So whenever you get it on contract is never soon enough, essentially. We understand that.

“Regardless of how long the acquisition was on the PM side, once they get it to us, they’re expecting to get it on contract really quick. Sometimes tensions run high, and sometimes people think that we’re kind of slowing down the process.” But, he continued, “that’s not what we’re trying to do. We’re just trying to make sure we do the right thing, not only for the Soldier but for the taxpayer.”

## EXPERIENCE TOPS ALL

Only experience can produce a thick skin, Davis said. That means having worked through a variety of situations and “understanding what priorities are,



## SEE THE CTC

Davis and Chad Thomas, an information assurance engineer for PEO STRI’s PM for training devices, tour the NTC at Fort Irwin, CA. One of Davis’ proudest achievements during his 10-year career is his work on a contract to upgrade communication instrumentation at NTC and the JRTC at Fort Polk, LA.



understanding when something needs to be awarded and asking those specific questions and when something needs to be fielded, as opposed to just having a knee-jerk reaction and saying, ‘Oh, this has to happen right away.’ ... You’re only going to learn about that through experience.”

Davis’ experience covers a broad spectrum. He may serve as business adviser, contract administrator, lead negotiator, market researcher, proposal evaluator ... the list goes on. He praised the Defense Acquisition University’s curriculum and said his Army Lean Six Sigma Black Belt training was particularly valuable in strengthening critical-thinking and problem-solving skills, but “I’d have to say on-the-job training is still the best way to learn this craft.”

That training would not be possible without good leadership, and Davis expressed gratitude to his superiors for the guidance they have given him. “All of my procuring

contracting officers and division chiefs during my time at PEO STRI have been exceptional mentors and friends,” he said.

### SEEING IT THROUGH

Of all his on-the-job achievements as a DA civilian, he is most proud of the CTC-IS award. The six-year, \$150 million contract, awarded in November 2012, will allow for the lease of commercial Long Term Evolution cell phone network technology to upgrade the aging instrumentation at the National Training Center (NTC) at Fort Irwin, CA, and the Joint Readiness Training Center (JRTC) at Fort Polk, LA. The existing technology was becoming obsolete and created difficulties for the Army in adapting to emerging requirements, Davis said.

“I take the most pride in this effort because it was a highly complex acquisition with a lot of visibility and a demanding customer (NTC, JRTC), and we were able to make an award ahead of schedule and without a protest. The effort from market research

to award took over two years,” Davis said, but when they saw “the fruits of our labor, it was truly rewarding.”

His ultimate professional goal is “to award a contract for a major defense acquisition program as a procuring contracting officer and be able to see that program in action on the battlefield.”

Looking back to the day when he was headed toward a career in law or business, Davis is satisfied—relieved, even—that he chose the Army instead. It’s not just that the schedule is saner, leaving him time to take part in intramural football, basketball, softball and soccer teams against area Navy workers. Nor that he has time for a family life, starting with his wedding in October.

“I believe my job actually means something. I’m not just trying to turn a profit for a firm,” he said. “What I do every day actually puts capability in the hands of our Soldiers.

“A lot of my friends are in sales, and they’re always under pressure to sell something that, in some instances, they understand somebody doesn’t need. Every day I go to work, I know that what I’m trying to buy, someone actually needs it ... to save their life.”

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*MS. MARGARET C. ROTH is the senior editor of Army AL&T magazine. She has more than a decade of experience in writing about the Army and more than three decades’ experience in journalism and public relations. Roth is a MG Keith L. Ware Public Affairs Award winner. She is also a co-author of the book “Operation Just Cause: The Storming of Panama.” She holds a B.A. in Russian language and linguistics from the University of Virginia.*



### SET, HIKE

Davis waits for the snap at the line of scrimmage during an intramural football game against a local Navy team. Although demanding and dynamic, his Army acquisition career affords him time for activities like this one.

# FACES — of the — FORCE

SFC Aaron Welch and SSG Seth Spang, M2010 early adopters, help with the last system off the line

**I**n the summer of 2011, SFC Aaron Welch's sniper teams employed their new M2010 Enhanced Sniper Rifles (ESRs) to provide relief for recovery operations at a Chinook crash site that had claimed the lives of some of America's finest warriors. From his mountain overwatch position, Welch and teammate SSG Seth Spang brought down deadly, accurate fire on enemy combatants looking to disrupt the mission: bring home Americans who had made the ultimate sacrifice for their country.

This April, Welch found himself alongside fellow snipers putting the finishing touches on the last M2010 to come off the Remington Defense production line. Welch and Spang were joined by SFC Chuck Ledbetter, who teaches long-range shooting in the special operations forces community. The Soldiers were participating in a ceremony designed to mark the completion of M2010 production and to recognize those who had wielded it in support of U.S. troops. The newest .300 WinMag M2010 ESR is now among the 2,520 systems built to replace the 7.62 mm M24 Sniper Weapon Systems, which first became part of the Army's and special operations forces' suite of precision weapon systems in 1986.

The M2010 originated from an urgent request from units operating in Afghanistan. To be more effective in the ridgeline-to-ridgeline fight,



**THE M2010  
CHANGED THE  
WHOLE WAY  
WE OPERATED.  
WE WERE  
ABLE TO  
CONTROL THE  
BATTLEFIELD  
LIKE NEVER  
BEFORE.**







### LAST OF A LINE

Representatives from Program Executive Office (PEO) Soldier join Army snipers to help assemble the last M2010 ESR. Pictured from left are SFC Jason Dorwart, CSM Doug Maddi, Spang, Welch, and COL Scott Armstrong. (Photo courtesy of PEO Soldier)



snipers requested a system with a longer effective range than the M110 and M24 systems they had deployed with. The Army determined that it could provide a solution quickly by rechambering the 7.62 mm M24's long-action receivers for .300 WinMag while also building a fully modern chassis around the receiver. The resulting system provided operators with a 50 percent increase in effective range and a more precise firing capability.

The Army fielded the M2010 and provided new equipment training (NET) for all Army sniper teams operating

in Afghanistan by June 2011, in time for the Taliban's summer offensive. By September 2012, the Army had fielded more than 1,400 systems as part of an urgent material release.

Spang was in one of the first units to receive the M2010 in Afghanistan in 2011. After a three-day NET session, he put the new capability to work quickly in support of the unit while instructing other unit members who also needed to be trained quickly on employing the system. "After our training on the M2010, we were so much more of a lethal force," Spang said.

Welch was responsible for emplacing sniper teams on the battlefield where they could be most effective. The M2010 enabled him to emplace his teams at higher elevations to cover greater expanses without feeling as though the teams were "on top" of the objective. Multiple sniper teams could cover the same piece of ground from multiple angles to ensure the greatest security and support for friendly forces.

"The M2010 changed the whole way we operated," said Welch. "We were able to control the battlefield like never before."



## CAREER CORNER

### USAASC PERSPECTIVE

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

## *Managing the* **TALENT** OF ARMY ACQUISITION'S FINEST

**T**alent management is more than human resources (HR); it's a set of integrated HR processes with the ultimate and ongoing goal of creating and sustaining an inclusive, diverse and high-performing organization. Talent management (TM) thus prepares that organization to meet strategic and operational organizational goals and objectives. That's precisely why the U.S. Army Acquisition Support Center (USAASC) Army Director for Acquisition Career Management (DACM) Office maintains a philosophy of putting people first to ensure that Army acquisition TM provides the workforce with the best opportunities, education and leadership development to build a successful career "from hire to retire."

Enhancing civilian and military TM is one of the initiatives that LTG Michael E. Williamson—our new principal military deputy to the assistant secretary of the Army for acquisition, logistics and technology, as well as our DACM—believes can make a big difference for the future of the Army Acquisition Corps (AAC) in terms of career progression, productivity and



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

leader development. The Army DACM is responsible for approximately 39,000 acquisition civilian and military professionals. Pursuant to the Defense Acquisition Workforce Improvement Act, the USAASC Army DACM Office manages and monitors the entire life cycle of this Army Acquisition Workforce.

### **HIRE-TO-RETIRE TM**

Traditionally, the military has the career development and leadership model figured out for our officers and NCOs. The structure of a military career is laid out very well with regard to the sequence

of positions, training requirements and leadership development to get to the next level. On the civilian side, that model has developed over time and is a little less structured. The Army's Civilian Education System starts to address the development of civilian leaders, but we in the acquisition community are taking it a step further, putting particular emphasis on developing our civilian acquisition talent, fostering growth and posturing personnel for success. We can capitalize on military success in this area and expand it to our civilians.

TM covers all facets of ensuring that we select the right people, at the right time and in the right positions when hiring Army acquisition civilians and accessing military members into the Army Acquisition Workforce. Providing these professionals the right types of developmental experiences, training, education and mentoring will create a true professional, which will benefit the AAC over the course of many years.

To have a successful TM program, an organization must provide its workforce





with the proper tools. The USAASC Army DACM Office has tools in place to help military and civilian leaders develop the acquisition workforce. But these tools must be integrated into a cohesive plan with strategic messaging among supervisors and acquisition personnel. We are working to ensure this synergy as part of our TM concept.

As the Army DACM Office, we offer educational, training and leadership development programs for acquisition professionals at every career level, from those at the initial entry point to the up-and-coming, fast-moving development journeymen to strategic leaders to Senior Executive Service members. These programs include internships, the Competitive Development Group/Army Acquisition Fellowship, the Acquisition Leadership Challenge Program (Levels B, I and II), Defense Acquisition University Senior Service College Fellowship (SSCF) and the Executive Leadership Program. The idea is that these programs will enhance the individual's acquisition career progression and simultaneously bring a bountiful return on the "people" investment for the future of Army acquisition.

Another aspect of TM is targeting programs and resources toward specific acquisition capability sets and gaps. Our Human Capital Strategic Plan for Army Acquisition identifies critical skill sets; our attrition analysis helps us target population sets to ensure proper recruitment and retention planning—so, for example, if we have trouble providing contracting or science, technology, engineering and math capabilities, we target some programs specifically to those areas.

With the creation of the Section 852 Defense Acquisition Workforce Development Fund in the National Defense



#### PEOPLE FIRST

TM covers all facets of ensuring that Army acquisition selects the right people, at the right time and in the right positions, and in particular includes training and developing civilians for acquisition leadership positions that will be critical to the Army of the future. (SOURCE: Liubomyr Feschyn/iStock/Thinkstock)

Authorization Act for Fiscal Year 2008, we have another great tool with which we can create pilot opportunities to test education, training and leadership development programs to determine their long-term viability. Our ultimate goal is to gear our acquisition education, training and leadership development programs and our precious resources to the most critical needs and ensure that the personnel who show outstanding performance, leadership potential and a promising future are poised for success.

#### PILOT PROGRAM

One of our ongoing challenges is getting our best and brightest civilians to compete for our Centralized Selection List (CSL) project and product manager

senior positions. With this challenge in mind, the USAASC Army DACM Office is launching a project/product director (PD) pilot program to capitalize on managing the great talent of our program management (PM) population. The purpose is to ensure that they gain core competencies in cost, schedule and performance as well as leadership skills to prepare them for future higher-level CSL PM positions.

We have to find creative ways to incentivize and capitalize on the talent of this high-performing PM population. With our workforce at only 5 percent military, the civilian talent pool offers the greatest resource for new product and project managers, which means we need

to continually and effectively manage and draw on that PM talent. Some of the concepts we're working on include establishing specific PD and PM positions with subsequent incentive and post-utilization opportunities, such as placement in our SSCF program, increased pay, and securing specific higher-level positions for those who compete for these jobs and perform well.

The selection process for this pilot will employ a competitive board, just like all of our other programs. The tentative plan is to have the CSL selection board choose candidates for the PD and PM positions at the same time they are determining the CSL PM positions. Using this approach, there are no essential differences between the central selections and the individuals who would compete on those boards. So an individual's status as a PD or the manager of a significant effort within our acquisition community would be the same. Ultimately, our TM concept must foster growth and posture high-performing, high-potential personnel for success.

### AUSTERE ENVIRONMENT

Fairly significant reductions in physical resources and manpower are likely across the Army, and acquisition will see its fair share. The best way to continue our work as a force multiplier

with low-density, high-impact capability to the Army, using fewer people to perform the mission, is to ensure that the people we do have are supremely qualified and uniquely capable, highly skilled acquisition professionals.

We also have to find ways to remind people that they are important and valuable, and encourage them to take on those tougher responsibilities, including recognizing their performance and rewarding them for their efforts. We have to tell our story and recognize people both inside the acquisition community and in front of the rest of the Army, so the broader community can see that we have highly talented professionals meeting technical and complex acquisition challenges on a regular basis.

Finally, an effective TM program gives us the greatest opportunity to have the right person doing the right thing, in the right job, at the right time. Our investment in a TM program pays considerable dividends, both in our people and in our ability to provide the greatest capability in acquisition to the Army. To reap those dividends, we must ensure that we identify and groom our best and brightest military and civilian acquisition professionals, as they will lead this acquisition community in the future.



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# ON THE MOVE

## MADDUX ASSUMES LEADERSHIP OF PEO STRI

Program Executive Office Simulation, Training and Instrumentation (PEO STRI) hosted a change-of-charter ceremony May 13 in Orlando, FL, as **Dr. James T. Blake** handed over responsibility to **MG Jonathan A. Maddux**, formerly the assistant military deputy to the assistant secretary of the Army for acquisition, logistics and technology (ASA(ALT)). Blake retired May 31 after 38 years of combined military and civilian service.



MG Jonathan A. Maddux, The Hon. Heidi Shyu, Dr. James T. Blake and SGM Alan D. Higgs  
(Photo by Doug Schaub, PEO STRI)

“Jim Blake has done an absolutely superb job of strengthening the link and solidifying the trust between PEO STRI and the forces we support,” said the **Hon. Heidi Shyu**, ASA(ALT), at the ceremony. She added that “Jon Maddux’s top-level knowledge of acquisition, coupled with his valuable experience, will enable him to continue PEO STRI’s tradition of strong and effective leadership.”

“The Army selected an outstanding individual to lead PEO STRI into the future, while taking our military’s simulation and training efforts to new heights,” Blake said of Maddux.

Blake became a member of the Senior Executive Service in March 2003 and subsequently served as the deputy program executive officer for STRI. In June 2005, he became PEO STRI’s first civilian leader with his appointment as the program executive officer, filling what previously had been a general officer billet.

“After 13 years in sustained conflict, the Army is in a period of transition,” Maddux said upon assuming responsibility of PEO STRI. “We’re transitioning from an Army of execution to an Army of preparation while migrating toward the future, which means we’re drawing down and scaling back, but sustaining the capabilities of a combat-seasoned force. PEO STRI will help achieve this goal of a leaner, more agile, more expeditionary force—while maintaining combat overmatch—in a heightened, fiscally responsible manner.”

Blake’s recognized expertise in acquisition management was the cornerstone of his civilian career. Before 2007, PEO STRI issued contracts under Navy contracting authority. In 2007, recognizing the additional demands being met by PEO STRI, the Army established contracting authority in Orlando and designated Blake as PEO STRI’s first head of contracting activity.

Understanding that training international security forces is a major component in helping partner nations defend themselves, PEO STRI, under Blake’s leadership, broadened the organization’s global outreach in providing training aids and simulations to U.S. coalition nations. Since 2007, foreign military sales increased from \$414 million to more than \$1.74 billion worth of training devices to 52 partner countries.

Before Maddux’s most recent assignment at ASA(ALT), he served nine months as the deputy commanding general (DCG) (support), Combined Security Transition Command – Afghanistan/NATO Training Mission – Afghanistan. Before his deployment, Maddux served as the program executive officer for ammunition for more than three years, leading the mission to develop and procure conventional and leap-ahead munitions to increase combat power for U.S. troops.

## AMCOM CHANGES COMMAND

U.S. Army Aviation and Missile Life Cycle Management Command (AMCOM), a major subordinate command of U.S. Army Materiel Command (AMC), hosted a change of command ceremony June 12 at Redstone Arsenal (RSA), AL, in which **MG Lynn A. Collyar** relinquished command to **MG James M. Richardson**. In a family-oriented ceremony hosted by **GEN Dennis L. Via**, commanding general (CG) of AMC, Richardson was joined by his wife, **BG(P) Laura J. Richardson**, the first female Army DCG of a maneuver division, and Collyar was joined by his wife, **COL Sarah Green**.

Richardson joins AMCOM after an assignment as the DCG, U.S. Forces Afghanistan and commander, U.S. National Support Element. He is a Master Army Aviator who has commanded at every level.

Collyar and Green retired on June 27 with a ceremony at RSA. **LTG Patricia E. McQuiston**, AMC DCG, and **LTG Flora D. Darpino**, U.S. Army judge advocate general, presided. Collyar and Green's retirements came after a combined 65 years of service.



MG Lynn A. Collyar



MG James M. Richardson



MG James M. Richardson

GEN Dennis L. Via

## CRAWFORD ASSUMES COMMAND OF CECOM

The U.S. Army Communications-Electronics Command (CECOM), a major subordinate command of AMC, hosted an assumption-of-command ceremony May 20 at Aberdeen Proving Ground, MD, for **BG(P) Bruce T. Crawford**. Crawford became the 14th CG of CECOM, which had been without a commander since December 2013. AMC CG **GEN Dennis L. Via** presided over the ceremony.

Crawford previously served as the J6, director of command, control, communications and computers/cyber and chief information officer, U.S. European Command. Before that, he served as CG of 5th Theater Signal Command, and G6, U.S. Army Europe in Wiesbaden, Germany.



BG(P) Bruce T. Crawford





MG Susan A. Davidson

### DAVIDSON TAKES REINS OF SDDC

Military Surface Deployment and Distribution Command (SDDC), a major subordinate command of AMC and the Army service component command to U.S. Transportation Command, hosted a change-of-command ceremony June 13 at Scott AFB, IL, with **MG Thomas J. Richardson** relinquishing command to then-BG(P), now **MG Susan A. Davidson**.

Davidson has held a wide variety of command and staff positions among her many previous assignments. She served as commander of then-SDDC's 599th Transportation Group, Schofield Barracks, HI, deploying to serve simultaneously as commander of the 595th Terminal Transportation Group in Kuwait for six months. Davidson has also served as SDDC's DCG. She most recently served as commander, Defense Logistics Agency – Distribution, New Cumberland, PA.

Richardson is retiring this summer with more than 34 years of military service.



MG James M. "Mark" McDonald and GEN Dennis L. Via

### USASAC WELCOMES NEW COMMANDER

U.S. Army Security Assistance Command (USASAC), a major subordinate command of AMC, held a change-of-command ceremony June 17 at Redstone Arsenal, AL, at which **MG Frank D. "Del" Turner III** relinquished command to incoming commander **MG James M. "Mark" McDonald**.

McDonald assumed command after serving as the CG of the U.S. Army Fires Center of Excellence and Fort Sill, OK.

Turner, who assumed command of USASAC in September 2011, retired after 37 years of military service. During his tenure at USASAC, he was instrumental in improving the efficiency of the foreign military sales (FMS) process and unifying the Army Security Assistance Enterprise (ASAE) through several initiatives. The total value of the FMS program is more than \$140 billion. AMC CG **GEN Dennis L. Via** presided over the retirement and change-of-command ceremonies.

## TACOM LIFE CYCLE MANAGEMENT COMMAND CHANGES LEADERS

The U.S. Army TACOM Life Cycle Management Command, a major subordinate command of AMC, hosted a change-of-command ceremony June 25 at Detroit Arsenal, MI, as **MG Michael J. Terry** relinquished command to **MG Gwendolyn Bingham**.

Bingham previously served as CG of the U.S. Army White Sands Missile Range in New Mexico. Terry will retire after 35 years of distinguished service during a ceremony scheduled for Aug. 15, hosted by the 13th Sustainment Command (Expeditionary) at Fort Hood, TX.



MG Michael J. Terry



MG Gwendolyn Bingham

## NEW PRODUCT MANAGER AT PEO SOLDIER

PEO Soldier's Product Manager Soldier Clothing and Individual Equipment (PdM SCIE), **LTC Eugene Wallace**, handed over the reins to **LTC John T. Bryan**, May 15 at the Fort Belvoir (VA) Officers' Club. **BG(P) Paul A. Ostrowski**, who presided over the ceremony, commended Wallace for overseeing the completion of several important projects, including the T-11 parachute, which descends more slowly and carries more weight than its predecessor, meaning significantly fewer parachute landing injuries.

Ostrowski noted that Bryan began his career as an enlisted infantryman in 1992. Bryan then attended Airborne School and was assigned to the 82nd Airborne Division. He worked his way up to platoon sergeant before attending Officer Candidate School in 1998 and earning the honor of Distinguished Military Graduate. Bryan served in the 101st Airborne Division, participated in Operation Iraqi Freedom and served as a tactical officer at the U.S. Military Academy at West Point, among other jobs. He earned qualifications in Airborne, Ranger, Pathfinder and Air Assault. Bryan's wife, Sherri, and two of his three children attended the ceremony.

Wallace, from Sumter, SC, thanked his team, attributing PdM SCIE's successes to its hard work. He also thanked his wife, Yolanda, for her support. She attended the ceremony along with one of their daughters. (Photos courtesy of PEO Soldier)



LTC Eugene Wallace, BG(P) Paul A. Ostrowski, LTC John T. Bryan



BG(P) Paul A. Ostrowski and LTC John T. Bryan





## CHANGE OF CHARTER AT PEO CS&CSS

**Kevin M. Fahey** stepped down as program executive officer for combat support and combat service support (PEO CS&CSS) March 27 and handed the reins to **Scott J. Davis**, who was selected for the Senior Executive Service in November 2005. Before assuming the PEO CS&CSS charter, he was PEO for ground combat systems. **LTG William N. Phillips** (USA, Ret.), at that time principal military deputy to the ASA(ALT), officiated at the change-of-charter ceremony at the Detroit Arsenal in Warren, MI, and presented the official charter to Davis. Fahey has moved on to become executive director for agile acquisition in the Office of the ASA(ALT), effective June 1. He was selected for the Senior Executive Service in February 2000. (Photos by Karen Nemeth, Detroit Arsenal)



Scott J. Davis and LTG William N. Phillips

**LTG William N. Phillips** (USA, Ret.), then principal military deputy to the ASA(ALT), presents the Meritorious Civilian Service Award to **Kevin M. Fahey**, recognizing his more than five years of service as PEO CS&CSS. Fahey relinquished leadership to **Scott J. Davis** at a ceremony at the Detroit Arsenal in Warren, MI, March 27.



LTG William N. Phillips and Kevin M. Fahey



LTC Tom T. Huff, COL James S. Romero and Edward J. Helms

## CHANGES OF CHARTER AT PEO MISSILES AND SPACE

**LTC Tom T. Huff**, left, relinquishes the charter of the Aviation Rockets and Small Guided Munitions Product Office to **Edward J. Helms**, right, with **COL James S. Romero**, project manager for Joint Attack Munition Systems, presiding over the ceremony June 19 at Redstone Arsenal, AL. Huff retired after 27 years of service. (Photo by Cathy Webster)

**LTC Ellsworth "Kenny" Johnson** relinquished the charter of the IBCS Integrated Fire Control Product Office to **LTC Kevin Moore**, with **COL Robert A. Rasch Jr.**, the project manager for integrated air and missile defense, presiding. Johnson is now at the Pentagon, serving as the executive officer to the principal deputy ASA(ALT).



Former SDDC commander **MG Thomas J. Richardson**, who relinquished command June 13 at Scott AFB, is retiring this summer with more than 34 years of military service. (U.S. Army photo)



**MG Frank D. "Del" Turner III**, former USASAC commander, has retired after 37 years of military service. During his tenure at USASAC, Turner improved the FMS process and unified the ASAE through several initiatives. (U.S. Army photo)



BG(P) Paul A. Ostrowski and LTC Kathy M. Brown

#### NEW PEO SOLDIER PRODUCT MANAGER

LTC Kathy M. Brown accepts the flag from BG(P) Paul A. Ostrowski, PEO Soldier, as she assumes the leadership of PdM Soldier Protective Equipment from LTC Frank J. Lozano, during a change-of-charter ceremony June 3 at the Fort Belvoir Officers' Club. (Photo courtesy of PEO Soldier)

#### GENERAL OFFICER ANNOUNCEMENTS

*The following officers were confirmed for promotion to major general by the U.S. Senate:*

- BG Bruce T. Crawford**, CG, CECOM.
- BG Susan A. Davidson**, CG, SDDC.
- BG Daniel P. Hughes**, PEO Command, Control and Communications – Tactical.
- BG Paul A. Ostrowski**, PEO Soldier.

*The following officers were confirmed for promotion to brigadier general by the U.S. Senate:*

- COL Patrick W. Burden**, Program Manager, General Fund Enterprise Business System.
- COL Brian P. Cummings**, Deputy PEO CS&CSS.
- COL Michael D. Hoskin**, Chief, Operational Contract Support and Services Division, J-4, Joint Staff.



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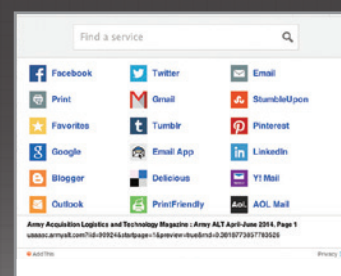
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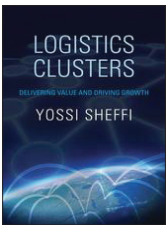


## OFF THE SHELF

### RECOMMENDED READING LIST

Army leaders have always encouraged their Soldiers to read. Even—and especially—in this age of information overload, the pursuit of knowledge through books is essential to develop a fuller understanding of acquisition, logistics and technology. In the words of GEN Raymond T. Odierno, chief of staff of the Army, “We can never spend too much time reading and

thinking about the Army profession and its interaction with the world at large. ... There is simply no better way to prepare for the future than a disciplined, focused commitment to a personal course of reading, study, thought, and reflection.” On that note, we publish “Off the Shelf” as a regular feature to bring you recommended reading from Army AL&T professionals.

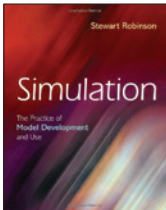


#### **LOGISTICS CLUSTERS: DELIVERING VALUE AND DRIVING GROWTH**

by Yossi Sheffi

(Cambridge, MA: MIT Press, 2014, 368 pages)

Why is Memphis home to hundreds of motor carrier terminals and distribution centers? Why does the tiny island nation of Singapore handle a fifth of the world’s maritime containers and half the world’s annual supply of crude oil? The answer is that these are logistics clusters—geographically concentrated sets of logistics-related business activities. In this book, supply chain management expert Sheffi explains why particular locales, such as Memphis, Singapore, Chicago, Rotterdam, Los Angeles and scores of other locations, have succeeded in developing such clusters while others have not. The book outlines how the characteristic “positive feedback loop” of such development works and what differentiates them from other industrial clusters. Logistics clusters add value by creating jobs in other industrial activities, and the author shows why distribution and value-added activities in logistics clusters are good for business—not just because of the services available, but also because the jobs they create cannot be outsourced. That is why numerous regional and central governments as well as scores of real estate developers are investing in the creation of logistics clusters.

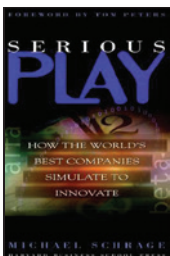


#### **SIMULATION: THE PRACTICE OF MODEL DEVELOPMENT AND USE (SECOND EDITION)**

by Stewart Robinson

(New York, NY: Palgrave MacMillan, 2014, 336 pages)

Simulation models enable the user to better understand and explore improvements to an operations system such as in manufacturing, service, transport or supply. They are a powerful management tool, providing a means to improve an organization’s efficiency and effectiveness as well as its products. Advances in software mean that simulation is not just accessible but also necessary for business. But simulating a model isn’t just about software; it’s about what goes into the model, the uncertainties and variables programmed in to test it. This book describes the steps involved in a simulation study, drawing together theoretical and practical perspectives. Having introduced the concept of simulation, the book covers how simulation works, what kind of software to choose, designing conceptual and computer models, and experimenting with them. It also covers verification and validation of the data generated. Two case study examples illustrate the principles described.



#### **SERIOUS PLAY: HOW THE WORLD’S BEST COMPANIES SIMULATE TO INNOVATE**

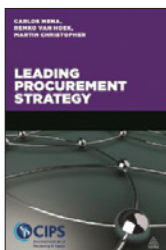
by Michael Schrage

(Cambridge, MA: Harvard Business Review Press, 1999, 272 pages)

Considered a landmark book written by a widely recognized expert on the relationship between technology and work, this volume argues that successful innovation demands more than a good strategic plan. It requires creative improvisation. Much of the “serious play” that leads to breakthrough innovations increasingly is linked to experiments with models, prototypes and simulations. As technology makes prototyping more cost-effective, serious play will soon be



at the heart of all innovation strategies, influencing how businesses define themselves and their markets. Schrage contends that the real value in building models comes less from the help they offer with troubleshooting and problem-solving than from the insights they reveal about the organization itself. Technological models can actually change people and their relationships, improving the way we communicate, collaborate, learn and innovate. The book provides real-world examples of how companies such as Walt Disney Co., Microsoft Corp., Boeing Co., IDEO and DaimlerChrysler AG use serious play with modeling technologies to facilitate the collaborative interactions that lead to innovation. A user's guide included with the book helps readers apply many of the innovation practices profiled throughout.

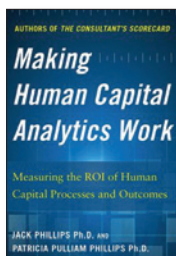


### LEADING PROCUREMENT STRATEGY

by Carlos Mena, Remko van Hoek and Martin Christopher

(Philadelphia, PA: Kogan Page Ltd., 2014, 240 pages)

The authors show how to unleash full business value through procurement. Their broad perspective of different industries, underpinning academic theory and short case studies help provide a clear understanding of procurement's impact on competitive advantage. Tackling the key issues that procurement practitioners encounter, the authors offer the knowledge to apply powerful and practical tools for managing procurement and supply. Their advice will make it easier to manage and mitigate risks in a supply chain and to appreciate the major issues affecting the procurement function.

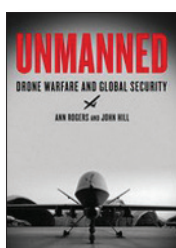


### MAKING HUMAN CAPITAL ANALYTICS WORK: MEASURING THE ROI OF HUMAN CAPITAL PROCESSES AND OUTCOMES

by Jack Phillips and Patricia Pulliam Phillips

(New York, NY: McGraw-Hill Professional Publishing, 2014, 256 pages)

Phillips and Phillips show how to use data to drive decisions and build support for the human resources (HR) function. They explain how to develop relationships among variables, predict the success of HR programs, determine the cost of intangibles that are hard to value, show the business value of particular HR programs, and calculate and forecast the return on investment (ROI) of various HR projects and programs. Jack Phillips, Ph.D., and Patricia Pulliam Phillips, Ph.D., are, respectively, the founder and the president and CEO of the ROI Institute, which has been evaluating training, HR, technology and quality programs and initiatives since 1992.



### UNMANNED: DRONE WARFARE AND GLOBAL SECURITY

by Ann Rogers and John Hill

(London: Pluto Press, 2014, 216 pages)

Drones have become the controversial new weapon for the U.S. military. This book details the causes and deadly consequences of this new development in warfare, and explores the implications for international law and global peace. Rogers and Hill argue that drones represent the first truly globalized technology of war. The book shows how unmanned systems are changing not simply how wars are fought, but the meaning of conflict itself. It describes how drone systems dissolve the conventional obstacles of time and space that traditionally have shaped conflict in the international system. It considers the possibility that these weapons will become normalized in global conflict, raising the specter of new, unpredictable and unaccountable forms of warfare.

*A wealth of suggested reading titles is in GEN Odierno's professional reading list, online at <http://www.history.army.mil/html/books/105/105-1-1/index.html>. Is there a book you'd like to recommend for this column? Send us an email at [armyalt@gmail.com](mailto:armyalt@gmail.com). Please include your name and daytime contact information.*

# THEN & NOW



1970  
& 2014

The objective of flight simulation has always been saving lives and money, and flight simulators have been around nearly as long as aircraft have. The reason is simple: Airplanes are expensive, and training with a real aircraft is a significantly dicier proposition than training on, say, a land vehicle. If the new pilot survived—not a given—the aircraft might not. But give a pilot-in-training the experience of flying and landing an aircraft in a penalty-free environment, and live training is much more likely to ensue—and to succeed.

Today's computing power provides flight simulators with vastly more capability since the 1920s, when Edwin Link, son of a piano and organ-maker, developed the Link Trainer using parts adapted from the family organ factory. The contrast makes the earliest simulators—from flightless planes to a half-barrel with a seat and poles that helpers could use to rock and pivot the barrel, thus “simulating” flight—seem laughable. (Link's system used pneumatics.) A March – April 1970 article in Army Research and Development magazine, the predecessor to Army AL&T, detailed plans for the Synthetic Flight Training System (SFTS) for the UH-1H Huey helicopter.

According to that article, the “SFTS will feature the latest state-of-the-art advances in hardware and incorporate the most

## ALL SYSTEMS GO

PEO STRI's AVCATT creates a virtual world that provides Soldiers the opportunity to “fly” a number of Army helicopters including the AH-64A Apache, OH-58D Kiowa Warrior, UH-60 Blackhawk, CH-47D Chinook and AH-64D Longbow. (U.S. Army photo by Doug Schaub)



modern training techniques, such as adaptive training, as part of its design concept.” Adaptive training was the big breakthrough in 1970. “In adaptive training,” the article continued, “the problems presented to a student vary as a function, usually, of his immediate past performance. While this is reasonably easy for a skillful teacher to accomplish in a tutorial situation (one instructor to one student), it becomes much more difficult as the student-to-teacher ratio increases.” It would not be long before instruction became automated.

In 1976, the Army introduced the second version of SFTS, developed to train Chinook and Cobra pilots. A March – April 1976 Army Research and Development magazine article described “dignitaries” as pleased with the new simulator. “Under development by the Army Training Device Agency, Orlando, FL [now part of Program Executive Office Simulation, Training and Instrumentation], the CH-47 simulator is the second element of the Synthetic Flight Training System, expected to achieve major savings in pilot training and fuel costs. A second system simulates the AH-1Q Cobra helicopter. Both include a computer complex, motion system, cockpits and visual systems.”

That's a long way from the early days of half a barrel with poles. But compare it to today's Aviation Combined Arms Tactical Trainer (AVCATT), which supports unit collective and combined arms training for the AH-64, UH-60, CH-47 and OH-58 aircraft, and SFTS seems rather quaint. AVCATT can train entire crews. The Non-Rated Crew Member Manned Module (NCM3), a subsystem of AVCATT, supports training of nonrated crew members in crew coordination, flight, aerial gunnery, hoist and slingload-related tasks.

It's not hard to imagine that 40 years hence, Soldiers accustomed to environments perhaps similar to that of the “Star Trek” Holo-deck will look back on AVCATT and its NCM3 with the same fondness as we have for the SFTS. But SFTS is not just a memory; it proved to be a critical building block in the Army's simulated training platform.

For more information on AVCATT, go to <http://www.peostri.army.mil/products/avcatt/>. For a historical tour of AL&T over the past 53 years, go to the Army AL&T magazine archives at <http://asc.army.mil/web/magazine/alt-magazine-archivel>.



# SO YOU THINK YOU CAN *WRITE*



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*The deadline for entries is September 15, 2014.*

For complete award details, go to <http://www.army.mil/asaalt>.

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*Chief Learning Officer  
and Vice President of Learning  
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