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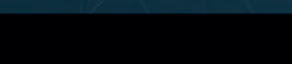
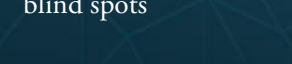
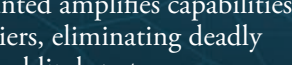
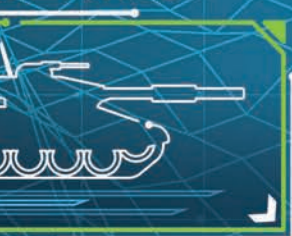
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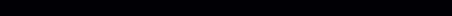
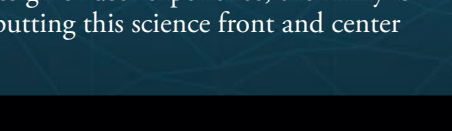
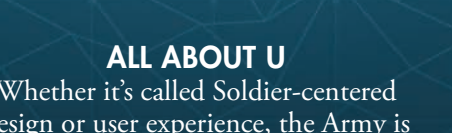


ENABLING MODERNIZATION

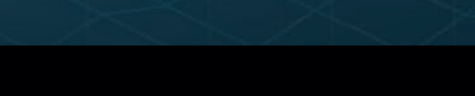
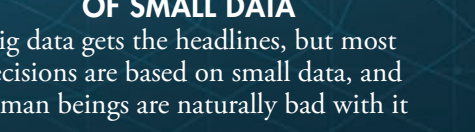
Next Generation
Combat Vehicle



Soldier Lethality



Long Range
Precision Fires



MOUNT UP

IVAS Mounted amplifies capabilities for Soldiers, eliminating deadly blind spots

ALL ABOUT U

Whether it's called Soldier-centered design or user experience, the Army is putting this science front and center

THE OVERSIZED POWER OF SMALL DATA

Big data gets the headlines, but most decisions are based on small data, and human beings are naturally bad with it

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FROM THE AAE

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Meeting our mission to develop, acquire and deliver needed capability to our Soldiers

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Enabling modernization—sometimes we're our own worst enemy in creating an environment that fosters it. Policies, rules, regulations, organization structures, current technology, costs and politics all play a role in hampering modernization efforts. It's our job as acquisition professionals to identify the impediments and clear the way for the future of Army modernization.

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From the Editor-in-Chief

Enabling modernization ... why wouldn't you? By our very nature, humans react to stimuli. Heat, cold and pain have led us to develop complex immune systems, to be sensitive to what can hurt us and, most importantly, taught us how to adapt to the environment in order to survive. This "Maslow's hierarchy of needs" approach to life is what led us from living in caves to creating the technological wonders that are today's cities (OK, some need work still). Today is better than yesterday, and tomorrow will be even better than today.

Like the basic human reaction to stimuli, modernization is the military's reaction to external threats. It is our ability to collaborate, adapt to the current environment and neutralize threats that creates the next generation of materiel. And it will create a future of modernization that cements the United States' technological superiority once again. However, sometimes we are our own worst enemy in creating the environment, the processes that encourage or even enable modernization. Policies, rules, regulations, organization structures, current technology, costs and politics all have a role to play in thwarting modernization efforts. Insofar as it's within our power, it's our job as acquisition professionals to identify them and clear the way for the future.

Don't get me wrong, the U.S. military has the most technologically advanced force on Earth. In the issue before last, the previous Army acquisition executive, Dr. Bruce D. Jette, recited numerous examples of great accomplishments in improving and modernizing the force. Among them:

- An Extended Range Cannon Artillery system projectile, which has more than twice the current range.
- The Joint Light Tactical Vehicle program, which entered full-rate production—the first vehicle purpose-built for modern battlefield networks.
- The Mounted Assured Position, Navigation and Timing System, fielded for GPS-degraded or GPS-denied environments.
- Fielding of 24 Enhanced Medium Altitude Reconnaissance and Surveillance System aircraft, which will provide a persistent capability to detect, locate, classify, identify and track targets.
- Development of the Persistent Cyber Training Environment system, which will support real-world defensive

missions across boundaries and networks.

- The Armored Multi-Purpose Vehicle, with improved survivability and force protection, is nearing production and will incorporate future technologies.

But, keeping up the modernization momentum, now that's the trick! Never rest on your laurels, as they say. In that regard, this issue explores how the various program executive offices, which turn requirements into reality, are maintaining the modernization drumbeat.

For example, meet Maj. Kevin Smith, team leader for installing the Integrated Visual Augmentation System, or IVAS, on a mounted platform. His team and Soldiers from 1-2 Stryker Brigade Combat Team and 3rd Infantry Division joined together to integrate the technology, initially designed for dismounted Soldiers, onto larger platforms. Can't ship your Army halfway around the world to conduct war games? No problem. Enabling U.S. allies across the globe to conduct the most realistic training possible is the job of the International Program Office at the Program Executive Office for Simulation, Training and Instrumentation. Working through security assistance and foreign military sales, this tiny office gets big results by bolstering alliances. By providing state-of-the-art training systems and sustainment services, this organization allows allies to train on the same equipment as their U.S. counterparts and know how to fight as a team when the call comes. Related to that effort, learn how the Army is phasing out its legacy training simulators in favor of the Synthetic Training Environment, or STE. With collective, multi-echelon training and mission rehearsal capability, the STE will bring together live, virtual and gaming environments into a single platform.

If you have comments, story ideas or a story you would like to submit, please contact us at ArmyALT@mail.mil. We look forward to hearing from you.



Email Nelson McCouch III
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Nelson McCouch III
Editor-in-Chief



WORKING TOGETHER, GETTING RESULTS

A U.S. Army Aeromedical Research Laboratory flight paramedic tests new items in a space utilization study at the School of Aviation Medicine's DUSTOFF training complex at Fort Rucker, Alabama. (Photo by Scott C Childress, U.S. Army Medical Research and Development Command)

FROM THE ARMY
ACQUISITION EXECUTIVE
DOUGLAS R. BUSH (ACTING)



ENABLING MODERNIZATION

Army acquisition is meeting our mission to develop, acquire and deliver needed capability to our Soldiers.

“Seeing our modernization programs through successfully will remain a top priority so that the Army is ready to meet future challenges.”

—Honorable Christine E. Wormouth
Secretary of the Army

The theme of this issue, “Enabling Modernization,” is an especially timely one as I write my introductory column for this award-winning publication. We have a lot going on in the Army acquisition, logistics and technology community, and I am continually impressed by the dedication and resilience of the more than 43,000 professionals who make up our workforce. Even in the midst of a global pandemic, this team kept adapting, moving forward and getting the job done. I see the results firsthand, and I am proud to acknowledge that in nearly every case our programs are on time and on schedule. This, of course, means that we are meeting our mission to develop, acquire and deliver needed capability to the Army and our Soldiers.

In this context of enabling modernization, it is important to remember that we are one entity in the greater Army modernization enterprise. Modernization, it is often said, is a team sport. It takes the entire team working together to succeed. In the last few months, I’ve had the opportunity to visit many of our program executive offices (PEOs) for equipment updates, overviews and demonstrations. I learned of their good working relationships with the Army Futures Command’s (AFC) cross-functional teams, and saw the results of their



ONE GOAL

“We all share the same goal—to provide our men and women in uniform with the best equipment possible.” (Photo by Pfc. Joshua Taeckens, U.S. Army South)

efforts. I traveled to Austin, Texas, to meet one-on-one with Gen. John M. Murray, AFC’s commander, and to get acquainted with his team. Murray and I collaborate closely, and we recently testified to both the Senate and House armed services committees on the fiscal year 2022 budget and Army modernization. I also visited several of our organizations in Huntsville, Alabama, and met with Gen. Edward E. Daly, commanding general of the U.S. Army Materiel Command (AMC), another vital member of the Army modernization enterprise. We, too, engage frequently on a

number of areas of interest, including one of AMC’s major subordinate commands, the Army Contracting Command, which is absolutely indispensable to our work in acquisition.

My emphasis, and this is something I often tell my team, is on cooperation, coordination and unity of effort. While there are many people and organizations involved in Army modernization, we all share the same goal—to provide our men and women in uniform with the best equipment possible in the event that our

Army, on behalf of the nation, has to go to war. In the meantime, our plan is to provide capability that is so intimidating that we are able to deter conflict in the first place.


Let me share with you a couple of early observations. First, the Army has struggled at times in the past with developing requirements that were realistic to achieve within the funding and modernization timelines the Army was given. As a result, acquisition programs sometimes suffered. Another observation is that the Army, in the past, was inconsistent with its priorities—changing too often and, in some cases, when real progress had begun. On these two fronts, now that I am inside the Army, I see cause for optimism.

On the first issue regarding requirements, I'm deep into the programs and seeing things at work. From my vantage point, the requirements the acquisition community are getting from the Army (AFC and others) are achievable, thought-through, and are informed by Soldier feedback, experimentation and demonstrations. These are the things we need to do to get requirements that we can work with industry to achieve. I see great progress in this area.

Secondly, the Army priorities—the Big Six or 31+4—have actually received very consistent and strong support from Army leadership over many years now, which is critical and will continue to be critical in getting and retaining the resources we

need to get these systems fielded. Consistency of priorities is also good for our industry partners, so that their work on research and development meets up with our needs.

These three overall factors—teamwork across the Army, solid requirements and consistent priorities—make me optimistic that the Army can achieve its ambitious goal of across-the-board modernization for the first time in almost 40 years.

It is important to remember that in combat, the Army fights as a team. It should be no different within the Army modernization enterprise. 

TEAM EFFORT

The U.S. Army Aeromedical Research Laboratory (USAARL) conducted Medical Hands-free Unified Broadcast airworthiness and aeromedical certification testing on the UH-60L and HH-60M Black Hawk helicopters. This testing was a multi-organization effort involving PEO Aviation, U.S. Army Medical Materiel Development Activity, School of Army Aviation Medicine, Sierra Nevada Corp. and USAARL. (Photo by Scott C Childress, U.S. Army Medical Research and Development Command)





VISUAL TRIUMPH

IVAS will change the way Soldiers fight and win, effectively eliminating the blind spots that can make it so dangerous to dismount from an armored vehicle. (Photos by Courtney E. Bacon, PEO Soldier)

MOUNT UP

IVAS Mounted amplifies capabilities for Soldiers, eliminating deadly blind spots.

by Courtney E. Bacon

The Army is looking to apply the critical new capabilities of the Integrated Visual Augmentation System (IVAS) to mounted platforms in an effort to amplify the combat advantage that the system delivers to a single dismounted Soldier.

Maj. Kevin Smith is the IVAS team member responsible for platform integration, out of the U.S. Army Combat Capabilities and Development Command C5ISR Center's Night Vision and Electronic Sensors Directorate. He led a platform integration event in January at Joint Base Lewis-McChord, Washington.

"Up until this point, IVAS has really been focused on the dismounted Soldiers and getting that fighting goggle right," said Smith. "So in parallel, we in the Night Vision Electronic Sensors Directorate have been working to build in applications to leverage both new and existing sensors on the vehicles to give the Soldier not just enhanced visual situational awareness, but also C2 [command and control] situational awareness while they're inside of a platform or vehicle."

Soldiers from 1-2 Stryker Brigade Combat Team (1-2 SBCT) and 3rd Infantry Division joined the cross-enterprise Team IVAS at Joint Base Lewis-McChord to learn the breadth of the IVAS capability set and to provide feedback on what would be the most operationally effective application as the technology integrates onto larger platforms.

Soldiers in armored vehicles like the Bradley or Stryker can't consistently maintain visual situational awareness of their position in relation to external forces or targets on the battlefield. Because IVAS uses sensors to enhance natural information visibility and processing, the integrated IVAS

team is working to tackle how to best use those sensors to provide a real-time external view of physical surroundings to Soldiers in the back of closed and often moving vehicles.

"In the past, as the Soldier in the back who's going to actually be dismounting on the objective, you may have a single screen to look at that can maybe toggle between the driver's view or the commander's view, or the gunner's view, or perhaps you're looking through periscope blocks or asking the crew themselves what is actually happening around you," said Sgt. 1st Class Joshua Braly of the Soldier Lethality Cross-Functional Team. "But overall, when you are buttoned up in the back of a platform, you have very limited situational awareness to what you're walking into."

Beyond addressing the original problem set for the dismounted warfighter, the Army is looking to apply IVAS to these capability gaps of the mounted force in order to allow Soldiers to maintain both command and control and visual situational awareness seamlessly across Army platforms.

SOLDIER EXPERIENCE

"I struggled when I was a squad leader getting out of the bay, not knowing where I was because we get dropped at different spots in the op order," said Sgt. John Martin, Bradley master gunner from 3rd Infantry Division. "Not having information on the ground was definitely a challenge that tripped us up."

The squads took turns in the Stryker and Bradley vehicles, testing each camera view and function, power management, communications and the ease of mounting and dismounting with the IVAS. The Soldiers quickly saw that the capabilities being developed for dismounted Soldiers

WHAT'S AN IVAS?

The Integrated Visual Augmentation System (IVAS) provides a single platform that allows the Soldier to fight, rehearse and train at the point of need. The Army's PEO Soldier and the Soldier Lethality Cross-Functional Team are working together to develop IVAS as a response to an erosion in close combat capability identified in the 2018 National Defense Strategy through unique other-transaction authority and middle-tier acquisition contracting pathways for its rapid execution.

The core IVAS hardware is made up of the Heads-Up Display (HUD) goggle, body-borne computer puck, radio and conformal wearable battery. This hardware leverages high-resolution tactical mixed reality to deliver a suite of in-HUD capabilities including advanced planning, navigation and after action review.

IVAS also enables a suite of additional capabilities, including networked information-sharing via advanced tactical cloud services such as rapid target acquisition and blue-force tracking, the tactical cloud package that extends network delivery to the point of need, and training via an augmented reality environment that enables iterative rehearsals before enemy engagement. The project's Soldier performance metrics tools and Adaptive Squad Architecture technical equipment information also work to optimize squad performance and equipment to deliver the increased lethality, mobility and situational awareness necessary to achieve overmatch against current and future adversaries in any domain.

On March 26, the U.S. Army awarded Microsoft Corp. a fixed-price production agreement to manufacture IVAS and transition the program to production and rapid fielding.

—COURTNEY E. BACON

“IVAS is more than just a goggle, it's changing the way we fight.”



MOUNTED SIGHT

Soldiers don the IVAS Capability Set 3 hardware while mounted in a Stryker at Joint Base Lewis-McChord. The Night Vision and Electronic Sensors Directorate is working to build in applications on the IVAS that use both new and existing sensors on vehicles to give Soldiers enhanced visual and command and control situational awareness while they're inside a vehicle.

via IVAS are amplified by integrating the system into platforms using world view, 360-degree and see capabilities that leverage the view of external sensors to be transmitted to the Heads-Up Display (HUD) of each individual Soldier.

“There’s always a line between the squads and the tracks, and having this equipment is going to help tie them in so the dismounts in the back can see the actual optics of the vehicle itself and then they can seamlessly work with the crew because everyone can see around the vehicle without actually having to step outside of it,” said Martin. “It has countless uses like land navigation, being able to track things while on the battlefield, moving through urban complexes, moving through open terrain.”

Each Soldier with IVAS can “see through” the vehicle’s body to what its external sensors are feeding into the individual HUDs, as if the vehicle has invisible armor. Soldiers with the SBCT understood the implications for not only command and control, situational awareness management and safety, but also the over-all lethality of the force.

“This changes how we operate, honestly,” said Sgt. Philip Bartel with 1-2 SBCT. “Now, guys aren't hanging out of vehicles in dangerous situations trying to get views on what's going on. Leadership will be able to maneuver their elements and get view-on-target without having to leave the safety of their armored

vehicles. Maneuvering elements with that kind of information will minimize casualties and will overall drastically change how we operate and increase our effectiveness on the battlefield.”

“The fact that we are going to be more lethal on the ground, the fact that we won’t be losing as many guys because everyone can see and track the same information—the capabilities and possibilities and implications of this technology are endless,” added Martin.

SOLDIER-CENTERED DESIGN

Soldier-centered design is a driving principle of IVAS technology development. It calls for the Soldier and squad to be understood and developed as a comprehensive weapon system, and it prioritizes Soldier feedback throughout development. By addressing operational capability gaps with a holistic view, it allows the physical interface and load requirements of Soldier kit to be better managed and balanced while integrating leap-ahead technology to increase lethality on the battlefield.

“Right now the technology is in prototype phase, so we’re getting some really good feedback from actual Soldiers here on the ground today, that we can take back and make some critical improvements with, which is awesome,” said Smith. “The reason why we do this is because these requirements need to be generated from the bottom up, not from the top down. So enlisting Soldier feedback is really important to us, so that we understand what they need and what their requirements are.”

The program is revolutionizing the way that acquisition requirements are generated. Though engineers and industry experts have always been dedicated to develop effective products to meet Soldier needs through requirements, best practices have now shown that requirements should be developed hand in hand with and by the user.

“Whereas before, requirements were generated—in my opinion—inside of silos, we really need the Soldier’s feedback in order to generate a proper requirement that’s best for the Soldier. Period,” said Braly. “It’s really important, because we can’t build something that Soldiers are not going to use. We have to get that feedback from Soldiers, listen to Soldiers and implement that feedback. Then it becomes a better product for the Soldier, and they’re going to want to use it. If they don’t want to use it, they won’t, and it’s all for nothing.”

FUTURE OF IVAS

The event was another step toward developing IVAS, which was recently approved to move from rapid prototyping to production

and rapid fielding in an effort to deliver next-generation capabilities to the close combat force in line with the accelerated pace in which the battlefield and technology continue to change.

“This is something that none of us imagined we would see in our careers,” said Martin. “It’s futuristic technology that we’ve all talked about and seen in movies and video games, but it’s something that we never imagined we would have the chance to fight with. It’s definitely technology that we are really excited to use as soon as they can get it to us.”

“IVAS is more than just a goggle, it’s changing the way we fight,” added Smith.

For more information, go to peosoldier.com or @PEOSoldier on social media.

COURTNEY E. BACON is a public affairs specialist providing PEO Soldier PM IVAS contract support on behalf of TMGL LLC. She has a B.S. in biology from George Mason University and is working toward a master’s degree in biodefense and international security from George Mason’s Schar School of Policy and Government. She previously worked in communications and public affairs for the Defense Information Systems Agency.



ELIMINATE CONFUSION

“I struggled when I was a squad leader getting out of the bay, not knowing where I was because we get dropped at different spots in the op order,” said Martin. The IVAS capability will help enhance overall situational awareness.

PRECISION DATA

The TESS is a laser-based system used in live simulation training. It calculates the pilot's timing, accuracy, the target's movement, armor and other data to produce scientifically precise hit-kill probabilities. (Photo by Gertrud Zach, Training Support Activity Europe)



YOU CAN RELY ON THE TESS

As the Army focuses on modernizing its training capability, a simulation system provides allies with the most realistic experience outside of combat.

by Adriane Elliot

“We don’t rise to the level of our expectations; we fall to the level of our training.”

—Archilochus, Greek poet

A small first floor office in Orlando, Florida, is helping U.S. allies across the globe conduct the most realistic training possible outside of a battlefield.

The International Program Office (IPO) at the Program Executive Office for Simulation, Training and Instrumentation (PEO STRI) provides partner nations with training systems and training and sustainment services that strengthen both foreign allies and U.S. and coalition forces. The tiny office accomplishes this through one of the nation’s most vital foreign policy tools—security assistance and foreign military sales (FMS).

“Bolstering alliances and attracting new partners is a critical element of our national defense strategy, and that’s why our nation’s leaders continue to reinforce alliances as a priority,” said Dale Whittaker, the director of PEO STRI’s IPO. “They know, and everyone should know, that America’s allies and partners are critical to deter war and, if necessary, fight and win war.”

Whittaker said the manifold benefits of allied cooperation include everything from increased interoperability on the battlefield to partner agreements that enable freedom of movement and maneuver across the globe.

“U.S. forces are simply not able to go uninvited into other countries and use their ports, roads, airfields and airspace. But all of that infrastructure is necessary to quickly move troops and equipment to the frontlines when necessary.”





NEXT BEST THING

TESS can provide “the very best training that is humanly possible outside of an actual battlefield,” Lujan said. (Photo by Gertrud Zach, Training Support Activity Europe)

“And that’s where you can really see the significance of America’s security assistance mission, and specifically the relationship-building that results from FMS,” Whittaker said. “Thanks to these relationships, we’ve already been training on the same equipment with our allies, so we’ve trained together and we know how to fight together. We already have prepositioned stock and country-to-country agreements in place that allow us to quickly maneuver both troops and combat-ready equipment and materiel across foreign terrain. Everything is already in place when we need it.”

STRONG ALLIES ARE GOOD DEFENSE

But there’s more to foreign policy and global security than warfighting, notes Whittaker. “There are a host of other

threats we tackle alongside our allies through the use of security assistance.”

U.S. Secretary of State Antony Blinken echoed this sentiment in March, during his first visit to NATO Headquarters in Brussels.

“Americans look at the threats we face—like climate change, the COVID-19 pandemic, economic inequality, an increasingly assertive China—and they know that the United States is much better off tackling them with partners, rather than trying to do it alone. And all our allies can say the same,” he said.

During his remarks, Blinken referenced a recent Chicago Council on Global Affairs poll that states that nine in 10 Americans

believe that maintaining alliances is the most effective way to achieve U.S. foreign policy goals.

“Nine in 10. It’s not hard to see why,” said Blinken. “There’s a reason a vast majority of Americans support U.S. alliances, even if they’re divided along party lines on many other issues.

“It’s the same reason why Republicans and Democrats in Congress have consistently reassured our allies that our commitments are resolute. It’s because we see our alliances not as burdens, but as a way to get help from others in shaping a world that reflects our interests and our values.”

Whittaker said PEO STRI IPO is helping shape the world as the office manages 412 foreign military sales cases totaling \$3.7 billion in more than 67 partner nations.

FMS provisions by PEO STRI IPO cover everything from training aids and devices to simulators and simulation systems for helicopters, tanks and combat vehicles. One of the many training products designed to bolster partner nations is the Tactical Engagement Simulation System (TESS). TESS is a standalone system that can be installed on multiple platforms—tanks, vehicles and aircraft.

Theodore Lujan, assistant program manager for FMS at the PEO STRI IPO, has close oversight of TESS and specializes in its use on the main platform: aircraft. “The TESS is a state-of-the-art system stimulated by lasers that replicate an aircraft receiving fire, and returning fire.” He called it an unusually realistic and immersive training experience, “probably as close as you’ll get to combat without being in combat.”

This is important, said Lujan, because the more realistic the training provided before



STRENGTHENING ALLIANCES

An FMS case might include the sale of an aircraft and the TESS to enable realistic training, enabling our allies to be successful. (Photo by Gertrud Zach, Training Support Activity Europe)

deployments, the fewer casualties you can expect to see during operations.

“What the military knows about realism in training is that when you place individuals under sudden, life-threatening stress, they are likely to react based on past experiences and less on conscious thought,” said Lujan, who oversees the TESS inclusion for the Army’s FMS program. “The

expectation is that when trainees are making the appropriate split-second decisions during hyper-realistic training, it will become second nature.

“These learned behaviors during training will take precedence over any previously learned or incorrect behaviors. Alone, that is a spectacular phenomenon,” said Lujan. “When you consider it in the context of air

combat and other real-world operations, it can be the difference between life and death.”

ALMOST LIKE THE REAL THING

If the laser-enabled TESS sounds like the Multiple Integrated Laser Engagement System (MILES) gear, Lujan said, “Not hardly.” An ex-Army Ranger, Lujan spent

a decade working for the U.S. military in Eastern Europe, providing allies with training simulation through MILES.

U.S. Soldiers began training in MILES gear as early as the late 1970s. The militarized version of laser tag, training in MILES gear involved a laser module mounted to the barrel of a real weapon, a blank-firing adaptor for the weapon, and an integrated receiver with sensors on the helmet and the load-bearing vest of Soldiers. When a Soldier fired a blank shot, a laser sent a coded burst in the direction of the aimed shot. If the shot was accurate and the receiver of another Soldier sensed the burst, that Soldier was “hit” and his gear made a beeping sound to let him know he was “dead.”

“If you take that type of war gaming up another 10 notches,” Lujan said, “you have the TESS. It’s like MILES gear ... on steroids. Those who trained on MILES gear decades ago might find this new technology hard to imagine.”

Once installed on an aircraft, TESS takes into consideration the munitions, Hellfire missiles or machine gun, and uses lasers that fire the appropriate capability based on the munition signal given by the pilot. Simultaneously, TESS calculates the pilot’s timing, accuracy, the target’s movement, armor and other data to produce scientifically precise hit-kill probabilities, including the number of wounded, killed, demobilized personnel and equipment. In other words, the TESS software



REAL-TIME COMMUNICATIONS

TESS software system transmits player and event data in real time for tracking and recording—it bookmarks “teaching points” for after-action review, provides tactical audio communications recorded with video, and enables gunnery training without firing live ammunition. (Photo courtesy of PEO STRI)

determines whether a target was hit or the number of casualties.

Its software system transmits player and event data in real time for tracking and recording. Other features include its ability to bookmark exercise “teaching points” for after-action review playback, tactical audio communications recorded with video, mobile home station training capability and a tailorable opposing force. It also enables gunnery training without firing live ammunition.

“At a quarter-million dollars per Hellfire missile, the system has proven its cost efficiency,” said Lujan.

But this next-level realistic capability is not isolated to the IPO, he said. Realistic training is a key component of the Army’s modernization initiatives, and the U.S is working feverishly to build the Army’s most advanced training capability to date—the Synthetic Training Environment.

PEO STRI has a particular stake in the process and is working closely with Army Futures Command, industry and academia to build the massive true-to-life, next-generation training environment.

TESS, on a much smaller scale, is used to ensure allied nations can also experience “the very best training that is humanly

“Thanks to these relationships, we’ve already been training on the same equipment with our allies, so we’ve trained together and we know how to fight together.”



MULTIPLE PLATFORMS

TESS can be installed on several platforms, including tanks, but its main platform is an aircraft. (Photo courtesy of PEO STRI)

possible outside of an actual battlefield.” Lujan said TESS is included in FMS cases via the total package approach, which allows the U.S. to provide not only the major weapon system, but also materiel and services the partner nation will need to sustain the system.

CONCLUSION

A typical FMS case might include the sale of the aircraft, and also TESS to enable realistic training, in-country field service reps to provide training and logistic support, spare parts, maintenance support, manuals and technical documentation—“everything our allies need to be successful,” explained Lujan.

Lujan said he and his team from the small International Program Office in central Florida stay focused on the success of partner nations. “Strong allies make strong alliances,” he said. “And that is the importance of empowering our allies. We are proud to partner with them and ensure they can defend their own borders and protect their citizens, but we are also ensuring they can provide the support the U.S. and coalition forces need against shared threats.”

Lujan said no one knows for sure exactly when and where the next battlefield will be, “but the U.S. Army is doing everything in its power to ensure [that] not only U.S. forces are ready, but so are our allies.”

For more information on how PEO STRI develops, delivers and sustains training, testing and information operations capabilities to U.S. and partner nations, go to <https://www.peostri.army.mil>.

ADRIANE ELLIOT has served as a journalist, editor and public affairs specialist for the U.S. Army for more than 24 years, both on and off active duty in the U.S., Europe, Asia and the Middle East. Before beginning her military public affairs career, she served as a freelance reporter and columnist for the New Bern Sun Journal tri-county newspaper in New Bern, N.C. She also served as director of public affairs for the Area Support Group – Afghanistan during a yearlong deployment in support of Operation Freedom’s Sentinel and the NATO-led Resolute Support Mission. She is the recipient of multiple military and national civilian journalism competition awards.

TRAINING ON THE HORIZON

The Army's Synthetic Training Environment (STE) will improve Soldier lethality and survivability by creating more efficient and more realistic simulator training. (Image by Getty Images, darekm101)



GAME ON

| The Synthetic Training Environment will provide a high-tech training solution for the Army.

by Maj. Lendrick James

What do pilots, tank operators and combat medics have in common? They all spend time training in a simulator. Today, the Army is phasing out many of its legacy training simulators to make way for the next big thing in vehicle and aircraft training simulators—the Synthetic Training Environment. But the move will leave units without a virtual collective training capability until it is ready for primetime in fiscal year 2027.

Synthetic Training Environment (STE) simulators will significantly improve upon the Army’s current Aviation Combined Arms Tactical Trainer and Close Combat Tactical Trainer suite of collective training simulators. It will provide a collective, multi-echelon training and mission rehearsal capability for the operational, institutional and self-development training domains. STE will bring together live, virtual and gaming constructive training environments into a single training environment for the Army, and will provide training capabilities to ground, dismounted and aerial platforms and command posts in garrison or in-the-field training.

WHAT IS GFT?

Video game play has become a prevalent part of American culture. A gamer will spend an average of 10,000 hours gaming before age 21, according to a 2015 study from the Proceedings of the Royal Society B on habitual action video game play. Game-based learning can be used to train cognitive aspects of specific tasks, and it has been linked to improving attention skills and brain processing functions. These benefits, along with the familiarity of the medium, have, in part, inspired the adoption of games for serious military training purposes. The Product Manager for Common Synthetic Environment, within the Program

Executive Office for Simulation, Training and Instrumentation (PEO STRI), partnered with Bohemia Interactive Simulations (BISim), a global software company at the forefront of simulation training solutions, to use gaming software known as Virtual Battlespace 3 (VBS3) to train Soldiers.

VBS3 is a fully interactive, three-dimensional, PC-based operational environment for military training. It offers both virtual and constructive interfaces into high-fidelity worlds of unparalleled realism. The system can be used for individual and collective training to enhance the “crawl, walk” phases of unit training. Units can use the system to develop, rehearse and refine unit standard operating procedures. VBS3 supports rapid, real-world terrain development and can be accessed via worldwide digital training facilities and on deployed digital training campuses.

Games for Training (GFT) is an Army program of record that consist of high-powered Windows-based laptops or desktop computers. It is compatible with commercial hardware devices including a large variety of displays and input devices. The GFT hardware suite is used to run and support VBS3 simulation software. This creates a robust training and mission rehearsal capability that prepares Soldiers and leaders for military operations in support of Force 2025 and beyond.

The GFT gaming application satisfies the Army’s educational requirements in the operational, institutional and self-development training domains with low-overhead, flexible and persistent training capabilities on geo-specific and geo-typical terrain relevant to all military platforms and weapons systems. Gaming provides comprehensive training for platoon and below formations and a training



POWER STEERING

Spc. Tori Guthridge, a human resources specialist, uses the Virtual Battle Simulation software in August 2020 to simulate driving a tactical vehicle, using the attached steering wheel and dashboard to manipulate the virtual training at the West Los Angeles U.S. Army Reserve Center. (Photo by Capt. Fernando Ochoa, 311th Expeditionary Sustainment Command)



A PRACTICAL HOBBY

Video games are a convenient form of entertainment for Soldiers who are frequently away from home for training, deployments or temporary duty—and sometimes, they are as practical as they are entertaining. Sgt. David Ose played an online game called “War Thunder” with other Soldiers from his troop to help maintain readiness while social distancing in April 2020. (Photo by Capt. Mike Manougian)

capability for higher echelon units and staffs using tactical exercises without troops and for company and battalion headquarters exercise simulation. All GFT applications are tested and accredited to train specific doctrinal tasks.

VIRTUAL SUITES

The requirement for GFT dates to 2005, with the debut of Virtual Battlespace 2. The U.S. Army Training and Doctrine Command Capabilities Manager Gaming, National Simulation Center at Fort Leavenworth, Kansas, identified a capability gap: There was a need to augment and improve individual, collective and multi-echelon training that could fill training capability gaps caused by limited resources, availability, capability of training aids, devices, simulators and simulations and live training opportunities.

Since then, the Army has collaborated with BISim to expand the capability to meet user requirements. To achieve maximum training, VBS3 is fully networked and enables Soldiers to train on more than 100 accredited combined arms training tasks, from individual to collective, such as:

- Mission rehearsal or action officer familiarization.
- Convoy training, including integration of virtual reality technology.
- Improvised explosive device defeat.
- Analysis of options (decision support).
- Mission simulation.
- Vehicle checkpoints and area control.
- Cultural awareness training.
- Weapon (or platform) familiarization or experimentation.
- Training in urban environments.

The Army GFT program currently provides VBS3 software and computer hardware capability to 119 suites and 76 sites across the globe. A suite is a flexible kit containing 52 laptops and the associated hardware, down to cables, projectors and mouse pads. Site locations range from Schofield Barracks, Hawaii, to Fort Dix, New Jersey.

BRIDGING THE GAP

Until STE has fully fielded a replacement solution for legacy systems, GFT will bridge the synthetic environment gap for users. The GFT bridging strategy focuses on upgrading the computer hardware to provide STE-ready capability. The upgraded hardware is considered STE-ready because it has more powerful



COLORADO CONVOY

Soldiers conducted convoy operations training in February 2020 at the Virtual Battlespace 3 (VBS3) simulators on Fort Carson, Colorado. VBS3 provides a visually rich gaming environment with flexible scenarios and multiple terrain options. The VBS3 is a three-dimensional, first-person tactical training simulation program. (Photo by Sgt. James Geelen, 4th Sustainment Brigade Public Affairs Office)

computing and graphics rendering. The GFT suites will continue to use VBS3 until the STE software is available, at which point the new capability will be installed across the force.

The GFT hardware upgrade strategy will facilitate two important outcomes. First, replacing and upgrading aging GFT hardware now allows the current VBS3 gaming application to continue to provide critical training capabilities until the higher fidelity and more realistic STE capability comes online and is fully available. Second, the upgraded GFT hardware will have sufficient compute and rendering capability to support a software only drop-in of the future STE gaming application when it is brought into the force starting in late 2021 and completed in 2024. Should there be any delays in bringing the STE gaming application to the full Army force, VBS3 can continue to act as a training capability bridge until STE is fully available. In effect, the GFT hardware solution provides Soldiers with a current training platform that is STE-ready and will allow training to leverage the next generation of virtual terrain, realistic, detailed graphics and high levels of scalability to more closely replicate current operating environment conditions.

CONCLUSION

U.S. Army Gen. Douglas MacArthur said, “In no other profession are the penalties for employing untrained personnel so appalling or as irrevocable as in the military.” GFT allows our Soldiers to fight thousands of battles before stepping foot on the battlefield. It allows the creation of virtually any scenario to support Army collective tasks. This is the most powerful aspect of the virtual battlespace. The updated GFT STE-ready computer hardware could also provide an added advantage of receiving early user assessment and feedback as the Army continues to improve STE capabilities.

For more information, contact <https://www.peostri.army.mil/public-affairs-office>.

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GAME TIME

Virtual Battle Simulator 3 (VBS) is a combat training simulator used for training Soldiers on tasks such as reacting to fire, casualty rescue and convoy movements. (Photo by Pfc. Luke Baker, 982nd Signal Company (Combat Camera) (Airborne))

TESTING HEATS UP

After conducting cold-weather tests in Alaska, the IVAS team headed to Puerto Rico for testing in a tropical environment. (Photo by Courtney E. Bacon, PEO Soldier)



A DAY IN THE SUN

Fresh from its cold-weather test in Alaska, IVAS shakes off the frost for a tropical trial run with Army Rangers.

by Courtney E. Bacon

From negative 30 degrees Fahrenheit to over 90, the Integrated Visual Augmentation System (IVAS) was tested in back-to-back extreme weather test events this spring led by Program Executive Office (PEO) Soldier's Project Manager IVAS. After its time at the Cold Region Test Center in Alaska, the system was tested by 3rd Battalion, 75th Ranger Regiment at Camp Santiago's Joint Readiness Training Center in Puerto Rico.

This was the first time that a platoon from a Ranger regiment had put IVAS through its paces and tested how the goggle increases situational awareness during land navigation, rapid target acquisition and full mission exercises.

"In my opinion, no one in the Army trains harder than we do," said Brian Hayman, platoon sergeant for the 3rd Battalion, 75th Ranger Regiment. "If a unit is going to fully put this system to test, whether it's good or bad, it's going to be the guys out here."

Hayman explained why his Soldiers were selected for this task. "The Ranger Regiment has a unique mission mindset where our guys, from skill level one all the way up to our senior enlisted, have been trained by the best of the best," he said. "Our squad leaders have countless deployments overseas and they were trained by guys who have countless deployments overseas, and all that wealth of knowledge trickles down."

EASY LAND NAVIGATION

The Rangers tested land navigation, rapid target acquisition and after-action-review capabilities in progressive exercises that culminated in a movement-to-contact event and a platoon raid. The land navigation feature stood out as a favorite capability among the group.



GET TO THE POINT

IVAS eliminates the need to manually plot points on a map for land navigation. “With just the push of a button, you have an arrow that’s in the bottom of your screen and you walk the arrow to your point, so there’s no accidentally drifting left or right.” (Photo by Pvt. Daniel Proper, 25th Infantry Division)

“Traditionally, you have five points and you’re taking the time to hand-plot them on a map,” said Hayman. “A lot of guys make mistakes plotting on a map. With IVAS, the mistakes are taken away by just inputting the 10-digit grid into the system and then the programmed route populates in front of you. You never have to stop to do a map check or anything like that because, with just the push of a button, you have an arrow that’s in the bottom of your screen and you walk the arrow to your point, so there’s no accidentally drifting left or right. You never use a compass, and even if you need one, you look up and it’s in the top of the band. That’s what helped me a lot, overall.”

With intuitive access to navigation tools preventing the need to stop and fumble with a compass to discreetly reevaluate their location in the dark, the Rangers executed the land navigation course significantly faster than the Army requires for a traditional five-point course.

“The Army standard is to find four out of five points in five hours,” said Hayman. “I believe last night almost 90 percent of the guys had five points within an hour, hour and 15 minutes max.”

“The land navigation last night was too easy,” said squad leader Staff Sgt. Jake Croxdale. “It was super intuitive to navigate with the guide arrow, because I would just click where I wanted to go, the arrow popped up and I moved out. Being able to access a map by hitting just one button instead of having to look down at a phone or paper allowed me to not stop as much as I normally would, and ultimately execute faster.”

The IVAS heads-up display provides map, compass and navigation tools at the click of a button, not only for individual Soldiers, but it also enables the interconnected communication necessary to plan, build, share and execute routes across team-, squad- and platoon-level elements.

“Land navigation was easy, but so was making the route and sharing it with my guys,” said Croxdale. “I created a route and blasted it out and it worked super quickly. We’ve had problems with other products where the connectivity was not as good, but as soon as I sent it to them they had it and we were able to move out.”

While executing the shared route, each Soldier could also see where the others were within their selected element. The ability to see the location of other Soldiers during the land navigation was a benefit

praised by every level of leadership on the ground executing test operations, from the platoon leader to the platoon sergeant to squad leaders.

“I have command-and-control aspects in my job as platoon leader, so the icons on the map of where everyone’s located on the battlefield at any given point in time is super beneficial for me,” said 1st Lt. Luke Huen. “Instead of having to relay to a person to get their exact location, which might change in a matter of seconds, I can just hit a button and I know exactly where they are. It takes away all the guesswork. I think that’s by far the best feature.”

Huen recognized the information visibility as an advantage at his operational level, and the platoon sergeant and squad leaders echoed his sentiment as well.

“The good thing about being able to see where everybody is located is that you know where your front line trace is,” said Hayman. “If I’m running a support by fire berm and maneuvering two assault squads, especially in thick vegetation like we were last night, I can look on my map and see and then give more accurate commands off of that. I always know where all my guys are.”

Croxdale added that the situational awareness provided by IVAS allowed him to track accurately all eight members of his squad in real time so he knew exactly where each member of his formation was, with just the scroll of a cursor. He explained that their current tools are not carried by everyone in the squad, so the increased visibility allowed him to make more informed tactical decisions as a leader.

AFTER-ACTION REVIEW

The Rangers were also briefly shown the after-action review feature of the IVAS

suite of capabilities. It gives a detailed virtual “play back” of the executed scenario to use as a review tool during both training drills and missions.

“It’s just like watching tape, growing up playing football,” said Croxdale. “You can see where the mistakes were made. I can replay it, see what everyone was doing and be like, ‘Hey, your dispersion wasn’t very good at this point in this situation,’ and if they come back and question it, I have the tapes to back it up.”

“It could be useful, especially if you get into something where there was literal fire and maneuver,” added Croxdale. “Not even just looking at walking and dispersion, but to [review] a fire and maneuver, that is definitely value added.”

TEAM AND NATIONAL GUARD SUPPORT

The 75th Rangers provided thorough and honest feedback on the fourth IVAS capability set, but the test could not have been executed without support from the Army test community and Army National Guard (ARNG).

“IVAS is an important system for the Army,” said Col. Ben Patrick McFall, commander of Yuma Proving Ground, Arizona. “But what I think is really important is the relationships between the PEOs, PMs [program managers] and ATEC [Army Test and Evaluation Command] test community.”

“What is really important is the partnership that we have that allows us all to work



CROWD CONTROL

Leaders can maintain better awareness and control of Soldiers in the field through the IVAS heads-up display. “Instead of having to relay to a person to get their exact location, which might change in a matter of seconds, I can just hit a button and I know exactly where they are.” (Photos by Courtney E. Bacon, PEO Soldier)

together with the sole interest of supporting the warfighter, so we find any failure points before they do downrange,” McFall added. “We are also incredibly thankful to the Puerto Rico National Guard for support to this effort.”

The 191st Regional Support Group of the Puerto Rico Army National Guard stepped up to provide logistical and installation support to the IVAS test event at Joint Readiness Training Center. The Guard team, led by Capt. Noelia Roldan of the 292nd Combat Sustainment

Support Battalion, remained flexible and accommodated changes, proving the team and the installation to be an ideally located asset to the Army test community.

Sgt. 1st Class Joshua Braly, who currently serves on the Soldier Lethality Cross-Functional Team, said he helped to facilitate ARNG support because he has personal ties to the Guard.

“I am also a Georgia Guardsman,” said Braly. “IVAS is being designed for the close combat force and the Army National Guard is a large part of that, which is why I am involved.”

Because of his connection to the Guard, Braly knew that they could deliver flexible and invaluable support that other locations could not.

“The thought process behind the IVAS system is incredible. It blows my mind that we’re in a day and age where the system even exists.”



EYES ON THE FUTURE

A Ranger from 3rd Battalion, 75th Ranger Regiment executes a live fire exercise with the IVAS Capability Set 4 during tropical weather testing in Camp Santiago, Puerto Rico, in March. (Photo by Courtney E. Bacon, PEO Soldier)

“Given challenges we faced with COVID restrictions of movement, our usual avenues of approach for assessing this type of equipment in Panama, Suriname, Hawaii, Guam and other tropics region test centers were more challenging,” said Braly. “We reached out to the Puerto Rico National Guard and they eagerly accepted. Not only that, but they put Soldiers on orders to provide dedicated training area, range and logistical support to our effort.”

In fact, IVAS has leveraged National Guard installation and personnel support throughout many of its previous test events as well. Besides the tropics testing event in Puerto Rico, the Guard supported multiple large IVAS Soldier touchpoint events at Fort Pickett, Virginia, over the past two years; the aviation platform integration held at Redstone Testing Center in Huntsville, Alabama, using National Guard aircraft; and Vehicle User Study 3

that will be held at Camp Roberts, California, in September. Each of these events assess key areas necessary to further the development of IVAS for future testing, integration and fielding.

“The National Guard has been instrumental in support of the assessment and testing phase for this Army signature effort,” said Braly. “The flexibility of ARNG facilities and support of personnel and equipment will continue to enable timely and constructive testing necessary to further the development of IVAS, as well as other Army modernization efforts.”

CONCLUSION

The IVAS tropics weather test was executed by 3rd Battalion, 75th Ranger Regiment and supported by the Puerto Rico National Guard. Without the involvement of either IVAS team partner, the test would not have been as impactful.

“The IVAS test team has been beyond impressed with the professionalism and quality of feedback provided [by] the Rangers,” said Susan Fung, deputy technology director for Project Manager IVAS. She assured them, “Your feedback has been invaluable. We’ve been providing daily updates to the team back at the office and are definitely taking the details of your feedback and are working to incorporate them.”

The Rangers provided honest and realistic feedback based on their years of operational experience and deployments, and can see the overall potential for the IVAS technology.

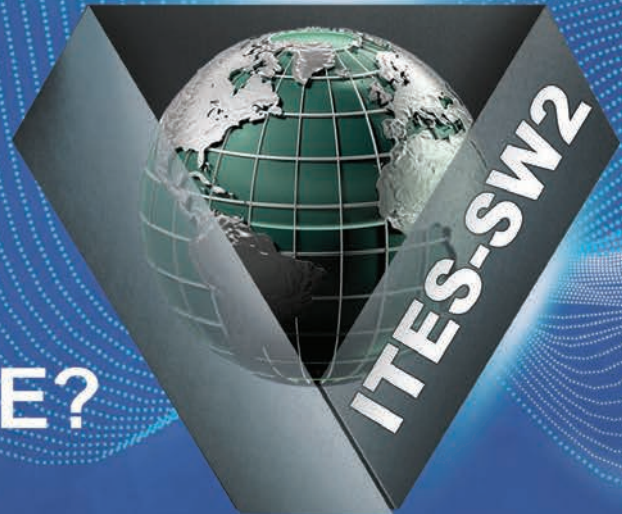
“The potential for this is unbounded, the ceiling is super high for it,” said Huen. “All these guys know that like in the next five, 10, 15 years we can see that this could be extremely useful, especially in what we do.”

“The thought process behind the IVAS system is incredible,” said Hayman. “It blows my mind that we’re in a day and age where the system even exists.”

For more information go to peosoldier.com or @PEOSoldier on social media.

COURTNEY E. BACON is a public affairs specialist providing PEO Soldier PM IVAS contract support on behalf of TMGL LLC. She has a B.S. in biology from George Mason University and is working toward a master’s degree in biodefense and international security from George Mason’s Schar School of Policy and Government. She previously worked in communications and public affairs for the Defense Information Systems Agency.

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U.S. ARMY

DR SKO MAKES



AWAITING SHIPMENT

DR SKOs awaiting shipment in a contractor facility. (Photo by JPEO-CBRND)

VIRTUAL HOUSE CALLS

Virtual training concept offers users a realistic feel and sense of the product, saves costs from consumables and system damage risk, and benefits remote employees as well.

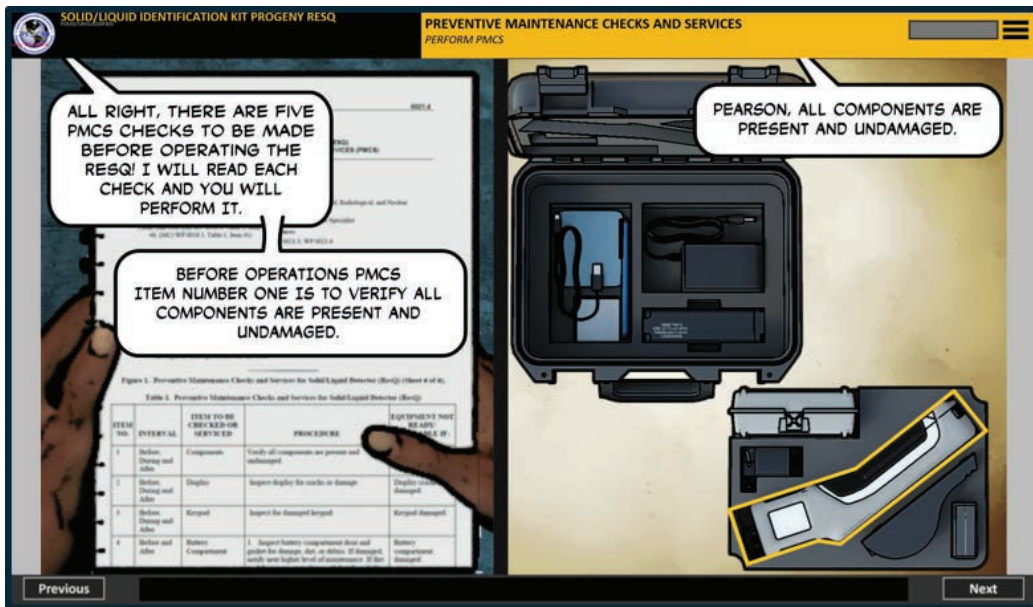
*by Lt. Col. Alan Stephens, Maj. Kim Janicek,
Philip Harman and Edward Conley*

One of the trickier aspects of training military personnel to use protection and identification equipment against deadly weapons is the ability to train without using the capability. When you're the Dismounted Reconnaissance Sets Kits and Outfits (DR SKO) product office and your business is chemical and biological defense, you have to get creative, particularly during a pandemic.

DR SKO, which rhymes with low and is pronounced "Doctor Sko," resides within the Joint Project Manager for Chemical, Biological, Radiological and Nuclear (CBRN) Sensors at the Joint Program Executive Office for Chemical, Biological, Radiological and Nuclear Defense (JPEO-CBRND).

DR SKO is a system of sensors and protective equipment that is a CBRN-defense toolbox packaged in a beige cargo container the size of a backyard shed. It's a suite of highly technical and expensive commercial off-the-shelf instrumentation and protective equipment. It provides specific feedback to the operator based on the threat, covering the gamut of biological threats, toxic chemicals, chemicals covered in the Chemical Warfare Convention, and nontraditional threats like the powerful synthetic opioid fentanyl.

The detector equipment is particularly expensive because of the complexity of the electronics within each of the devices, and



PREVENTIVE MAINTENANCE

Interactive multimedia instruction on a Rigaku Progeny ResQ handheld analyzer for an individual to conduct preventative maintenance checks and services. (Photo by JPEO-CBRND)

the quantity of different devices required to conduct CBRN sensitive site assessment missions across the full range of military operations. An additional complexity to the DR SKO portfolio is that it is delivered to all four services with 10 tailored configurations specific to their user and mission.

As you can imagine, it is nearly impossible to train real-world-relevant chemical and biological warfare threats with a real chemical and biological agent. It is both exceedingly dangerous and cost prohibitive. Instead, training teams design

scenarios that look like real-world events and interject to the operator what their device feedback “should” look like.

Picture this: You're rehearsing in a warehouse with all of your gear, and you come across some basic high school chemistry laboratory equipment. Your trainer now leans over to you and says, “Now your Joint Chemical Agent Detector is alarming for an overload condition of sulfur mustard”—hard to train when you're responding to an instructor's commands versus the actual device showing the actual alarm. Although training challenges are not new to the DR SKO team, the travel restrictions imposed under COVID-19's deadly grip offered opportunity to win broader support to execute plans that may not have been possible otherwise.

SWEET NEW SUITE

The team, in coordination with the U.S. Army Combat Capabilities Development

COVID-19 and these initial fielding events paved the way for DR SKO to accept the unique opportunity to continue fielding virtually.



A CBRN-DEFENSE TOOLBOX

DR SKO, packaged in a cargo container the size of a backyard shed, provides specific feedback to the operator based on the threat, including biological threats, toxic chemicals, chemicals covered in the Chemical Warfare Convention, and nontraditional threats like the powerful synthetic opioid fentanyl. (Photo by JPEO-CBRND)

Command's Aviation & Missile Center, turned to two separate breakthroughs: proliferation of mobile device capabilities and 3D-printing technologies, resulting in the creation of the DR SKO Mobile Synthetic Training Suite (DMSTS).

The combination of these technologies enables warfighters to train using 3D-fabricated proxy detector devices in real-world environments and experience the same feedback as though they were using the real device. The haptic feedback and visual feel of the response is just like the real device. The trainers are able to use Bluetooth beacon technology to provide a more realistic detection signal to the devices in lieu of having the training personnel verbally indicate an "alarm," further enhancing training realism.

Now, instead of your trainer telling you that your Joint Chemical Agent Detector is overloaded with sulfur mustard, you see and hear a proxy device alarming to sulfur mustard because the Bluetooth beacon is broadcasting itself as "sulfur mustard" and you are in range of its signal.

Months before the pandemic crippled the country, the DMSTS capability was already working its way through acquisition program hurdles. The purpose was to reduce the warfighter's cost to train on the equipment. However, the biggest challenge was convincing a service to participate in this grand experiment because, as an enterprise, no one had ever attempted to conduct materiel fielding and training completely remotely.



AT THE READY

An Army explosive ordnance disposal technician trains for an operation in a potentially radiologically contaminated environment while holding a 3D-printed FLIR Identifinder R-400 equipped with an Android phone running the DR SKO Devices application. (Photo by JPEO-CBRND)

It's a suite of highly technical and expensive commercial off-the-shelf instrumentation and protective equipment.

The U.S. Air Force was a logical choice because its kit configuration is the least complex, it could prove out the concepts, and it could provide good feedback. Air Force user representatives accepted the opportunity to be on the cutting edge of this training and allowed the DR SKO team to pilot the new virtual training efforts with two days of inventory and handoff and three days of new equipment training, which was all conducted virtually.

VIRTUAL PRIME TIME

Although the ability to train more cheaply and more frequently is being realized, there are greater opportunities for this virtual ability as well. These opportunities did not become apparent until the COVID-19 pandemic shut down travel for new equipment training. Many assumed that the travel restrictions would gradually relax, but the restrictions remained an ongoing coordination issue.

The pandemic halted travel to fielding and training events from March 2020 through July 2020, and halted again in January 2021. Fielding schedules quickly became unachievable, and operational capability delivery goals risked not being met. The DR SKO team, in collaboration with the fielding team—collocated within JPM CBRN Sensors—initiated a review of fielding and training plans to identify the key elements required to develop and implement virtual plans.

Fielding events are complex, requiring significant coordination and planning. They also encompass transfer of property from the program office to the unit responsible for performing the mission. The new equipment and the doctrine and tactics training also can be complex. The team's partners at TACOM Total Package Fielding helped develop the virtual property and inventory management aspects,

to ensure all property was transferred in accordance with current regulations. The training team updated lesson plans to be more amenable to the virtual environment and forged the way to use virtual classrooms in this new collaboration environment.

Having a solid plan was only part of the solution. The execution also required resolve and finesse. The first site selected by the USAF to pilot this virtual training was in Guam. The equipment was already in place, as it had been shipped for in-person training that was canceled because of the COVID-19 travel restrictions. With a 15-hour time difference, it was not an easy first challenge for virtual training, but the team successfully coordinated and executed training while accommodating the massive time difference. The team also gathered lessons learned, which were implemented in the next two events,



INTERACTIVE INSTRUCTION

Interactive multimedia instruction on a Rigaku Progeny ResQ handheld analyzer training a Soldier how to properly scan material and view subsequent scan results. (Photo by JPEO-CBRND)

An additional complexity to the DR SKO portfolio is that it is delivered to all four services with 10 tailored configurations specific to their user and mission.

executed in Germany. The lessons were then formalized into part of the virtual training plan.

COVID-19 and these initial fielding events paved the way for DR SKO to accept the unique opportunity to continue fielding virtually, and gain back some lost schedule stolen by earlier travel restrictions. Some sites may still require in-person fielding because of possible operational tempo or technology concerns. One of the key lessons learned was that the personnel receiving the training would benefit from additional detection devices for the hands-on portions of the training.

Additionally, the team demonstrated the DMSTS to both the U.S. Marine Corps and U.S. Army CBRN School, which highlighted its improvement to training realism during situational training exercises, its ease of use, and the savings that will be achieved. The two communities are investigating how to formally integrate the capability into their institutional training plans. The training teams for DR SKO are planning to integrate the DMSTS to augment their training for the services, including procuring additional DMSTS to send forward as part of virtual training and fielding. The program office is currently coordinating with the PEO for Simulation, Training and Instrumentation (STRI) to ensure the DMSTS is available at the unit level and sustainable.

CONCLUSION

With continued success, the DR SKO team is exploring methods to conduct virtual fielding for the other services. As a result of the resolve and ingenuity of hard-working Soldiers and civilians of the JPEO-CBRND, the DR SKO team made three units operationally ready for their missions. They continue to overcome the challenges imposed by the pandemic environment, while also accelerating operational readiness for all users who were delayed gaining the DR SKO because of the pandemic.

As a bonus, the transition to virtual training significantly reduces the risk of COVID infection, which tends to spread with travel. The tireless efforts of the combined JPEO team ensure that

warfighters from all services are operationally ready to conduct their CBRN defense missions.

For more information, go to <https://asc.army.mil/web/portfolio-item/cbd-cbrn-dr-sko/>.

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SLEEK AUTOMATION

The Army's new manufacturing capability will produce the 6.8 mm next-generation family of ammunition without affecting Lake City's ability to deliver legacy 5.56 mm, 7.62 mm and .50-caliber ammunition. (Photo courtesy of Lake City Army Ammunition Plant)

EXTREME MAKEOVER

Next Generation Squad Weapon ammunition need provides an opportunity to modernize Lake City Army Ammunition Plant.

by Maj. Jamie Michel

Among the Army's modernization efforts is the Next Generation Squad Weapon (NGSW), which is scheduled to begin fielding in fiscal year 2022. The 6.8 mm small caliber ammunition will be produced at the Lake City Army Ammunition Plant. The challenge will be to quickly add new manufacturing capabilities—a new caliber of ammunition with unique shell case technology different than the traditional brass cases manufactured at Lake City for the last 75 years—without disrupting current deliveries.

MODERNIZING A VINTAGE AIRPLANE IN FLIGHT

Lake City, a 1940s era government-owned, contractor-operated manufacturing facility in Independence, Missouri, is the only such plant that produces small arms ammunition. The Army will be adding new capability to manufacture the 6.8 mm next-generation family of ammunition without affecting the plant's ability to deliver legacy 5.56 mm, 7.62 mm and .50-caliber ammunition to the Army, Navy, Marine Corps, Air Force and Coast Guard. There are numerous manufacturing process improvement opportunities when moving toward a modern manufacturing facility. Although the facility has recently undergone some equipment modernization, those investments were focused on maintaining legacy manufacturing facilities and processes to maintain readiness. To prepare for the new 6.8 mm next-generation ammunition, the Army will focus on a cutting-edge, system-level solution with emphasis on affordability, sustainability, flexibility and safety.

Modernizing its ammunition manufacturing facility will position Lake City to meet enduring requirements well into the future. The facility and manufacturing systems will be flexible and modular to promote transitioning new technologies and products into production, as well as potential to surge capacity as required. Industry best practices will increase safety and resilience, as mass energetics (explosive materials used for manufacturing bullet primers and propellant) will be separated from people and critical infrastructure by way of efficient and safe delivery systems. Modern energetic delivery systems reduce, and in some cases eliminate, the possibility of explosion and minimize the risk of fire.

CULTURAL CHANGE IN MANUFACTURING

Next-generation ammunition will consist of bullets that increase ballistic and terminal performance while incorporating lightweight case technologies. The bullet and case technologies currently in testing use polymers or combinations of brass and stainless steel that have never before been mass produced. The lightweight technologies will minimize additional weight associated with legacy ammunition, but the existing Lake City manufacturing systems are not yet capable of manufacturing these new cases.

Most manufacturing processes at Lake City were developed before World War II, and well before the proliferation of computers and the internet. Much of the current manufacturing equipment uses mechanically controlled processes, requiring deliberate re-engineering to adjust; a common manufacturing technology used in the 1940s when Lake City was established. Computers (programmable logic controllers) control modern manufacturing systems and are networked to enable statistical process control. Currently, “touch labor”— i.e., a Lake City employee—distributes propellant to the equipment that loads the projectiles into cases. Employees manually pour gunpowder down chutes that lead to the equipment that assembles bullets.

Modernization will remove that touch labor from many processes and operations, thus reducing risk.

Delivering modern ammunition technologies will require a culture that embraces modernization and cutting-edge technologies, especially as we scale up production to the requisite volumes.

Other industries are far ahead of us when comparing manufacturing technologies, process efficiencies and safety. As we prepare to design a new facility, we are confronted with a long list of stringent regulations specific to establishing manufacturing capabilities on government installations, in addition to all industry standards. But if we are to align with industry, then we must capitalize on modern processes and infrastructure and when appropriate, challenge specific regulations that impede our ability to leverage industry best practices that are safe and efficient, and that contribute to manufacturing a quality product.

THE GOCO RELATIONSHIP

Government-owned, contractor-operated (GOCO) facilities were established to reduce supply chain risk and ensure critical ammunition is available in times of need. GOCOs are owned or leased by the government and operated by industry partners, resulting in reduced cost and risk for the government. GOCOs usually have significant capacity for production that industry is unwilling to maintain given historic fluctuations in demand. For example, in fiscal year 2000, the requirement for small caliber ammunition was approximately 275 million rounds, which increased by one billion in 2002 to support the wars in Iraq and Afghanistan; a fluctuation so sudden and significant that industry was not able to meet the requirement within capacity and time constraints.



NEW CARTRIDGES

The cartridges to be manufactured at Lake City are the hybrid brass and stainless steel, and the plastic injection molded and cased telescoped version. They are different from the traditional brass cases used in 5.56 mm, 7.62 mm and .50-caliber applications. (Image courtesy of Project Manager Maneuver Ammunition Systems)

MANUFACTURING TECHNOLOGY OPPORTUNITIES

As we prepare for NGSW ammunition production, we have a unique opportunity to serve as a model for modernization across the spectrum of government-owned, contractor-operated ammunition manufacturing facilities. Some of the specific manufacturing processes and technologies we will implement are manufacturing process controls enabling greater flexibility within manufacturing processes.

We will implement computer-automated monitoring and on-the-fly fine tuning of manufacturing processes. This is an enormous leap in manufacturing capability from the current mechanically controlled bullet assembly machines. We will streamline the order fulfillment process to build

in scheduling efficiencies not currently realized at Lake City. Manufacturing systems will incorporate the latest generation of automation processes and systems for raw materials handling and delivery, as well as work in process and finished goods.

We will implement fully autonomous delivery and handling of all explosive materials, increasing workforce safety by separating mass explosives from people. New manufacturing systems will support iterative process improvements.

Most importantly, to tie all systems together, we will use open network architecture coupled with flexible systems to enable iteration and incorporation of

MECHANICAL MANUFACTURE

This is an example of the mechanically controlled bullet assembly machines currently in use at Lake City—legacy capabilities like this will be updated to accommodate new requirements. (Photo by of Lake City Army Ammunition Plant)



technologies in the future. When complete, this will be the most modern high-volume ammunition manufacturing facility in the world.

ACCELERATED FIELDING TO MEET ARMY MODERNIZATION PRIORITIES

Accelerated fielding drives a need to deliver next-generation ammunition and legacy ammunition simultaneously within the current facility and manufacturing capacity. This is our opportunity to challenge the culture and integrate modern manufacturing technologies in conjunction with ammunition development efforts. We are developing an interim production capability that will meet initial low-quantity ammunition delivery requirements. This will be a collaborative effort with industry partners to deliver the Army’s newest small-caliber ammunition. In concert with manufacturing industry experts, we will develop flexible manufacturing systems while leveraging opportunities to modernize existing equipment.

INFLUENCED BY DIVERSE INDUSTRIES

One of the most challenging events associated with high-volume production of a new technology is scaling up from prototyping to full-rate production. A great example of rapid scaling is Operation Warp Speed, the push to develop a vaccine for the coronavirus.

After identifying a viable vaccine, the greatest challenge for industry was the transition from research and development to production and distribution. There are many parallels, from raw material quality control to management of work in progress to

final production, packaging and distribution. One unique challenge in vaccine manufacturing is environmental control, a consideration when manufacturing polymer-cased ammunition, as well. Temperature needs to be maintained for raw material consistency and work in progress, and moisture may affect plastic molding and adhesive operations.

CONCLUSION

Lake City Army Ammunition Plant is critical to delivering small-caliber ammunition to warfighters and merits investment in modernization. The next-generation ammunition modernization project is our opportunity to add new manufacturing capabilities that rival industry efficiencies while delivering affordable, cutting-edge ammunition without disrupting the current state of manufacturing readiness.

For more information, go to the JEPO A&A website at <https://jpeoaa.army.mil/jpeoaa> or contact the JEPO A&A Public Affairs Office at (973) 724-2990.

MAJ. JAMIE MICHEL, a basic branch infantry officer, serves as the assistant product manager for Small Caliber Ammunition within Project Manager Maneuver Ammunition Systems and is the project lead for the Next Generation Small Caliber Ammunition transition to production. He holds an MBA from Rutgers University and a B.A. in political science from Sacred Heart University. He has been in the acquisition workforce for four years and is Level II certified in program management and contracting.

READY TO GO CO

Government-owned, contractor-operated (GOCO) Army ammunition plants serve a vital role in producing ammunition for the U.S. armed forces. Energetic and inert materiel components are produced at these plants, which also carry out the final assembly of complete rounds, such as artillery, bombs and small caliber ammunition. To assure the readiness of the joint force, it is necessary to modernize these valuable components of the defense industrial base. In addition to producing currently used ammunition items, the Army must also plan for the future, ensuring that the plants will be ready to support production of ammunition items now in development and testing.

The Army's Production Base Support (PBS) program funds modernization improvements, recapitalization projects and plant sustainment operations. The Joint Program Executive Office for Armaments and Ammunition (JPEO A&A) is designated as the Single Manager for Conventional Ammunition Executor, and it works with the military services, ammunition program managers and plant operators to identify plant requirements and prioritize modernization projects. Prioritizing uses a numerical scoring framework, including weighted criteria and considerations such as: 1) criticality of the requirement (including the facility's condition); 2) guidance from DOD leadership and Congress; and 3) a facility's ability and capacity to execute the work.

The weighted criteria aim to address key objectives like improving safety and environmental compliance, ensuring operational continuity, reducing plant operating costs and improving the quality of the work environment. Other key considerations include improving operating effectiveness; increasing efficiencies and, whenever possible, incorporating automation and robotic-type technologies, especially to restructure and upgrade hazardous operations that have historically been done by hand. Immediate safety and environmental compliance issues are considered "must-fund" projects and are prioritized above all others. Project ranking is a critical process to ensure that PBS funding is used in the most efficient way possible.

Following are the Army ammunition plants and current modernization initiatives.

Holston Army Ammunition Plant

Location: Kingsport, Tennessee

Contractor: BAE Systems

Key facts: Established in 1942, Holston Army Ammunition Plant covers 6,000 acres and employs 23 Army civilians. Holston is the major supplier of explosive materials to DOD. The facility has state-of-the-art equipment and capabilities for nitration chemistry, acid handling and recovery, and other chemical-processing operations.

Current significant projects funded through the PBS: Ongoing efforts to expand the capacity of explosives production. Expansion efforts include constructing new and upgrading existing production facilities, as well as the necessary expansion and upgrades to support infrastructure across the facility.

Radford Army Ammunition Plant

Location: Radford, Virginia

Contractor: BAE Systems

Key facts: Established in 1941, Radford Army Ammunition Plant covers 6,901 acres and employs one military member and 22 Army civilians. Radford manufactures a wide variety of propellants and propellant ingredients used in rocket manufacturing, and is a major supplier of propellants and energetics for DOD, providing over 5 million pounds of propellant and energetics in 2020 alone.

Current significant projects funded through PBS: Construction of a new nitrocellulose production facility. Nitrocellulose is a critical ingredient used in all propellant production.

Lake City Army Ammunition Plant

Location: Independence, Missouri

Contractor: Olin Winchester

Key facts: Established in 1941, Lake City Army Ammunition Plant covers 3,935 acres and employs one military member, 29 Army civilians and one JPEO A&A on-site civilian. Lake City, a main supplier of DOD small and medium caliber ammunition, produces over 1 billion small caliber rounds per year.

Current significant projects funded through PBS: Efforts are ongoing to improve the quality of the plant work

KEEP THE AMMO COMING

Modernization projects are underway at six government-owned, contractor-operated Army ammunition plants to expand capacity, upgrade production lines and make other improvements. A seventh plant is inactive. (Map by USAASC)



environment, which includes reducing repetitive motion, increasing the comfort of the work area, and reducing the need for personal protective equipment; and to prepare the facility for production of the new 6.8 mm ammunition, which directly supports the Army’s Cross-Functional Team for Soldier Lethality.

Iowa Army Ammunition Plant

Location: Middletown, Iowa

Contractor: American Ordnance (a Day & Zimmerman subsidiary)

Key facts: Established in 1941, Iowa Army Ammunition Plant covers 19,011 acres and employs one military member and 24 Army civilians. Iowa is a load-assemble-pack facility. Its production line includes artillery, grenades, tank ammunition and C4 demolition charges.

Current significant projects funded through PBS: Recent efforts include the design of a new artillery load-assemble-pack line, improving the facility’s energy efficiency, safety and infrastructure.

Scranton Army Ammunition Plant

Location: Scranton, Pennsylvania

Operator: General Dynamics

Key facts: Established in 1953, Scranton Army Ammunition Plant covers 15.3 acres and employs eight Army civilians. Scranton is a main manufacturer of large caliber metal projectiles and mortar projectiles for DOD.

Current significant projects funded through PBS: Recent projects at Scranton Army Ammunition Plant have focused on infrastructure improvements, while planned efforts will address improvements to the production areas and new XM series 155 mm projectiles.

Quad Cities Cartridge Case Facility

Location: Rock Island, Illinois

Operator: U.S. Navy

Key facts: Established in 2011, Quad Cities Cartridge Case Facility comprises 299 buildings and has a storage capacity of 170,000 square feet. Quad Cities manufactures large caliber steel and brass deep-drawn cartridge cases.

Current significant projects funded through PBS: Most of Quad Cities Cartridge Case Facility is considered “laid away,” which is the manner in which its capabilities are being preserved while it is an inactive facility.



COL. MARK R. TAYLOR

COMMAND/ORGANIZATION: Defensive Cyber Operations, Program Executive Office for Enterprise Information Systems

TITLE: Project manager

YEARS OF SERVICE IN WORKFORCE: 12

YEARS OF MILITARY SERVICE: 24

DAWIA CERTIFICATIONS: Level III in program management, Level I in information technology and in engineering

EDUCATION: MBA, George Washington University; Master of Strategic Studies, U.S. Army War College; Master of Public Administration, Strayer University; B.S. in environmental engineering, U.S. Military Academy at West Point

AWARDS: Bronze Star Medal, Defense Meritorious Service Medal (2nd award), Meritorious Service Medal (4th award), Army Commendation Medal (4th award), Army Achievement Medal (3rd award), Senior Army Aviator Badge, Army Basic Space Badge, Air Assault Badge, Army Parachutist Badge, Netherlands Parachutist Wings, and Army Staff Identification Badge

CLEAR LINES OF COMMUNICATION

Teenagers are notorious for making bad decisions. Until the frontal lobe of the brain reaches full maturity, in a person's mid- to late 20s, humans are prone to making impulsive choices, taking unnecessary risks and being particularly susceptible to peer pressure. So if, *hypothetically*, you were a teenage boy and your friend jumped off the roof of your house, splashing impressively into the swimming pool below, you might decide to follow suit. And if you misjudged the angle, you might fracture your neck in two places when you hit the water. And if you were worried about your parents' reaction, you might not mention that bit about the roof. You were just playing Marco Polo, after all. Hypothetically, of course. Not that Col. Mark Taylor knows anything about that. "My version of pre-Airborne school training, I guess," he joked. He's still thanking his very non-hypothetical lucky stars.

Thankfully, he had no lasting physical effects from the mishap, and would later be fully cleared to attend the U.S. Military Academy at West Point and eventually to become a Black Hawk pilot. But he did learn an important lesson. While he was still in 10th grade, recovering from his injuries and sporting a full halo brace, Taylor's parents got wind of the real story from another parent. When confronted with the truth, "I crumbled like a stale cracker," he said. "I like to say, that was the last time I lied to my parents." That importance of integrity and clear communication stuck with him, and he has prioritized those values throughout his career.

Today, Taylor is the project manager (PM) for Defensive Cyber Operations (DCO) at the Program Executive Office for Enterprise Information Systems (PEO EIS). "I am responsible for the delivery of innovative hardware and software defensive cyber solutions to defend the U.S. Army networks around the world," he said. Specifically, DCO protects against and responds to irregular network activity caused by cyber threats. Because of the time-sensitive and critical nature of its work, DCO is also the only Army program participating in a new DOD Budget Activity 08 (BA-08) software and digital technology pilot program for the 2021 fiscal year. BA-08 is a new pilot funding mechanism that allows the program to spend its funding for research, development, testing, procurement or operations and maintenance purposes. It aims to help program managers push capabilities through the acquisition process without artificial delays because of not having the right "color of money" (appropriation type).

"Many people are surprised at how quickly the environment changes in the cyber domain. In order to stay relevant, we need to be able to rapidly move through the acquisition process, to get the most advanced capabilities into our cyber warriors' hands quickly," Taylor said. "Acquisition can move quickly if all the stakeholders [i.e., PMs, users, contracting officers, testers, etc.]

are aligned and focused on the mission at hand.” Fortunately, he has the experience to support that effort. Before his arrival at PEO EIS, he served as the acting director of investments in the Army Budget Office (ABO), where he was responsible for the budgeting and execution of the Army’s \$34 billion research and development and procurement portfolio. “That experience in the Pentagon and the ABO helps inform how we execute our participation in the software pilot—now, I often look at things from a financial perspective, first.”

When he gives advice to junior acquisition personnel, however, it often involves the lesson he first learned as a teen. “Integrity is number one and communication is crucial,” he said. “In acquisition, we have to make every effort to make sure stakeholders are on the same sheet of music.” It makes sense for a former Black Hawk pilot to place a high value on communication—in the cockpit, after all, communication issues can be catastrophic. No matter the rank or position of the crew members on board, each has a vital part to play and they all must ensure communication is clear.

“Wherever we are in the Army, we are all trying to accomplish the same mission.”



BACK IN THE DAY

Taylor in a cockpit of a Black Hawk helicopter. (Photo courtesy of Col. Mark Taylor)

Never was this more evident to Taylor than when he served as company commander for Alpha Company, 12th Aviation Battalion at Fort Belvoir, Virginia. “Miscommunication can be deadly,” he said. “In the aviation community, we made a conscious effort to make sure the enlisted members knew they could speak to the pilots openly, because you don’t want any of that hesitation about ‘I don’t want to get yelled at for bringing that up.’ Translating this to acquisition, which is a totally different workforce, we have to understand that everybody’s opinion and knowledge has a role to play in accomplishing your mission. Your status should never mean that you can’t have a good opinion that should be listened to.”

“As an Army acquisition officer, there is no better feeling than having a capability that we helped to develop, produce and field make the critical difference on the 21st century battlefield for our joint

warfighters. Nothing beats working with our industry partners and teammates throughout the joint force to put the most technologically advanced tools in the hands of the warfighters to keep our nation safe.”

Ultimately, Taylor said that Army acquisition is a team sport and he’s fortunate to be a member. But he also encourages others to look at industry partners as teammates, too. “Wherever we are in the Army, we are all trying to accomplish the same mission—to keep our nation safe—and our industry partners are trying to accomplish that same goal.”

From helicopters to budgets, to advanced cyber technology, Taylor sees the value in teamwork and communication. “Even with the most complex and technical projects, this is still a human endeavor.”

—ELLEN SUMMEY



QUALITY ASSURED

JMC will maintain its core mission throughout the modernization process, ensuring quality munitions while building a better future. (Photo by Hayley Smith, Crane Army Ammunition Activity)

CONSTANT READINESS

JMC approach to modernization includes places, processes and people.

by Col. Gavin J. Gardner

As the U.S. Army Joint Munitions Command (JMC) adapts to maintain constant readiness in its mission to provide munitions to the joint forces, it recognizes that modernization is not a simple matter of ensuring that the military remains up to date in terms of war technology. It also must ensure modernization of its facilities, processes and workforce to respond to future needs. With these issues in mind, JMC's revised ammunition strategy drives to an end state of a 21st century organic industrial base—composed of resource providers, acquisition and sustainment planners, and manufacturing and maintenance performers—capable of sustaining fielded systems, maintaining pace with Army modernization efforts, and postured to surge in support of the wide-ranging, global scope of large-scale combat operations.

As Gen. Edward M. Daly, commander of Army Material Command (AMC) has emphasized, "The purpose of the ammunition organic industrial base is to support current munitions readiness, maintain surge capacity and capability, and modernize to support future weapons platforms."

According to Dr. Bruce D. Jette, former assistant secretary of the Army for acquisition, logistics and technology (ASA(ALT)), "The Army is eyeing a 15-year, \$16 billion strategy to automate and improve the military's ammunition manufacturing process." JMC, as the logistics integrator for life cycle management of ammunition, is collaborating with the Army, ASA(ALT), AMC and the Joint Program Executive Office for Armaments and Ammunition (JPEO A&A)—which leads the development, procurement and delivery of ammunition and armaments—on this path forward.

AMC's 15-year organic industrial base modernization strategy includes four key phases:

- Identification—Identify 21st century technology for the future organic industrial base.
- Evaluation—Evaluate how the new technology identified in the identification phase could potentially improve operations in the organic industrial base.
- Analysis—Determine the pros and cons of the new technology, develop a priority list of technology, create a sustainment plan and update area development plans.
- Execution—Implementation plan, project lists.

Taking its cues from the AMC strategy, JMC has developed a three-level transformation framework.

- Level 1—Codify core competencies (production, distribution, storage and demilitarization) by site.
- Level 2—Develop the transformation strategy, conduct workshops, develop projects and determine costs.
- Level 3—Establish time-phased project requirements, aligning ongoing projects with the transformation strategy on a site-by-site basis.

JMC’s improvements must align with the essential characteristics of a safe and modernized ammunition organic industrial base:

- A transformed workforce.
- A single point of failure mitigation.
- Robotics.
- Remote-operating capabilities.
- Prognostic and predictive maintenance.
- Artificial intelligence and machine learning.
- Multi-use production lines.
- Energy independence.
- Engaging with experts (industry, private sector, industrial engineers, etc.).

Modernization efforts could include:

- Automation.
- Maintenance analytics through equipment sensors.
- Upgraded plant layouts and design.
- Revalidating master plans.
- Updating area development plans with a focus on modernization.



ON TOUR

Chemical Materials Activity (CMA) Deputy Director Laurence G. Gottschalk briefs the author about the explosive destruction system during a tour of CMA in March. (Photo by Sarah Lobos, Army Chemical Materials Activity)

These efforts require us to look far into the future for what is needed to support JMC and the ammunition mission. The key is to target to specific requirements within the organic industrial base, and budget what is needed at our installations to create agile lines capable of adapting to meet the nation’s changing ammunition needs.

As Jette explained, “Funding for new facilities that are designed to embrace today’s technology will improve workforce safety. New infrastructure will enable environmental compliance, water-energy efficiency, conservation and resiliency and establish a more efficient and effective production capacity—resulting in a greater return on investment.”

TRANSFORMING THE BASE

To transform the ammunition organic industrial base in these areas, JMC used a pilot approach at McAlester Army Ammunition Plant in Oklahoma, with the objective of developing specific and

measurable elements to create a framework sites can use to modernize. The McAlester pilot took place between November 2020 and January 2021 and laid the groundwork for an evolving strategy that now includes the entire organic industrial base. JMC is in the process of making adjustments based on that data and rolling out the plan to the other installations. Future data will no doubt lead to further adjustments, allowing us to finalize and deliver a comprehensive, 15-year strategy by 2022.

Over the last several years, we have been developing a total requirement for the program objective memorandum laid out by fiscal years 2023-2027. It is driven by readiness and priorities, within the context of maintaining a safe work environment. Early efforts generally focused on current readiness and repairing or replacing needed infrastructure, while establishing some known required capabilities for the future (e.g. missile maintenance, demilitarization facilities and insertion of

new technology, including some automation). Use of modern equipment and robotics will drive safe and efficient production. Maximizing automation will reduce or eliminate touch time, safety hazards and travel time, enabling efficient and timely processes.

When modernizing equipment, it is important to incorporate cyber and physical security into the new facilities, rather than making these items an afterthought that requires additional money and retrofitting. Updates to facilities also must employ technology that optimizes the Logistics Modernization Program (LMP) and data analytics, enhances security, improves munitions accountability and protects materiel using updated temperature, humidity and ventilation controls.

For example, JMC is exploring machine learning and robotic process automation. Machine learning refers to systems that can be trained to learn from data to describe, diagnose, predict and remediate operational problems. Robotic process automation refers to next-level systems that learn from users. These software robots offload manual repetitive processes from human users to replicate actions and automate tasks. This reduces the need for manual data entry, thereby reducing data entry errors and freeing up users to work on higher value tasks. These requirements have been requested as part of the current facilities investment plan data call that includes billions of dollars in proposed funding for improvement of facilities.

JMC is pivoting to an unconstrained plan to transform the organic industrial base for the 21st century in support of a multidomain operations ready force, looking through the lens of transforming World War II facilities rather than repairing what already exists. To this end, JMC leaders are assessing the command's core competencies, integrating high-tech equipment and automation wherever feasible, while including divestiture of unneeded infrastructure. An important element of this is assessing how technology and automation lead to policy changes that enable flexibility and configuration of facilities such as explosives safety site planning: The risk management process that ensures the proper location and construction of ammunition and explosives facilities for the minimum risk to personnel, equipment and assets, while meeting mission requirements.

SHIPPING AND RECEIVING

In the areas of distribution and storage, JMC proposes modernization of shipping and receiving facilities, which will ensure speed of distribution for both routine and surge distribution requirements. Likewise, JMC managers are constantly conducting



PRODUCING WINNERS

A group of senior officials including Christopher Lowman, senior official performing the duties of the undersecretary of the Army and Gen. Joseph Martin, vice chief of staff of the U.S. Army, walk through the current nitrocellulose facility to better understand how the Radford Army Ammunition Plant is producing world-class products to help America win. (Photo by of JMC)



MAXIMIZING AUTOMATION

The group receives an overview on the benefits of modernization at the new nitrocellulose facility at the Radford Army Ammunition Plant in Virginia. Automation will reduce or eliminate travel time, touch time and safety hazards. (Photo by of JMC)

analysis, in coordination with JPEO partners, to determine how our current munitions inventory levels compare to future needs. Conducting this analysis enables our managers to determine and recommend to JPEO A&A the appropriate buy-to levels for each DOD Identification Code (DODIC). This analysis also takes into consideration all changes to transportation, movement, current production schedules and replacement DODICs that are projected to be accepted or fielded, as well as any minimum production rates. Using this analytical approach ensures that requirements are fully satisfied and critical capabilities are maintained within the organic industrial base.

This requires evolving transportation networks to support future material handling equipment for operations, including roads, rails and—where necessary—bridges and culverts. It is critical to establish multipurpose and multiuse facilities for shipping and receiving, while assuring that loading pads are properly sized and configured for safe, efficient and effective operations. This includes maintaining proper cover and lighting, as well as blocking and bracing support.

“New infrastructure will enable environmental compliance, water-energy efficiency, conservation and resiliency and establish a more efficient and effective production capacity—resulting in a greater return on investment.”

Storage plans must account for optimal size and configuration needed to support new weapons and emerging cross-functional team requirements, while maintaining a collective capacity configured for future munitions and weapons, with fewer facilities for efficient storage and loading for shipment. This includes demilitarization and divesture of outdated and underutilized structures and replacing them—where necessary—with updated, efficient and standardized facilities. One example is the fiscal year 2024 plan for the melt-pour facility at Iowa Army Ammunition Plant in Middletown, Iowa. The facility, which produces pressed or melt-poured warheads, takes up considerable space and does not conform to the most up-to-date designs. The melt-pour facility will be updated with new construction that meets the latest design criteria on a reduced footprint, improving both safety and efficiency.

JMC plans to consolidate and demolish unneeded and unused facilities while establishing flexible, unattended and environmentally responsible munitions demilitarization capabilities, to position the organic industrial base for optimal shape and size to meet future requirements. Currently, the ammunition organic industrial base contains 16 sites, compared with 70 facilities almost 80 years ago. The Army is closing two of these by 2023. One is a storage facility that has been inoperable for many years. Ideally, all construction and renovation efforts will result in long-term facilities designed to be used for the next 50 years without requiring continuous temporary fixes.



FUTURE VISION

JMC’s revised ammunition strategy will build a 21st century organic industrial base capable of sustaining fielded systems, maintaining pace with Army modernization efforts, and able to support the global scope of large-scale combat operations. (Graphic by Dori Whipple, JMC)

TAKING CARE OF PEOPLE

Throughout, JMC leadership recognizes the importance of taking care of people, acknowledging that our performance is optimized when we do that. Collectively, the changes we are talking about will lead to new technology, require changes to maintenance patterns and create a demand for high-level technical

skills within the workforce. More technology means hiring more tech-savvy people and an increased reliance on science, technology, engineering and mathematics (STEM) education. This requires assuring that there are resources to pursue more tech-specific training across the board and for the long term. Such training would be needed throughout the munitions life cycle and across all services, from design and production, through storage and handling (both in exercises and in the field), to demilitarization.

Future materiel needs, new weapons platforms and evolving technology will have a significant impact on JMC's production, distribution, storage and demilitarization missions. One example of emerging technology is the Extended Range Cannon Artillery, the self-propelled howitzer system with a longer range and higher rate of fire than we currently have.

As Daly explained, "JMC is producing the projectile at Scranton Army Ammunition Plant, and will then do the load, pack and assembly of the explosives and the rocket-assisted motor at Iowa Army Ammunition Plant. All other components are being manufactured by numerous commercial partners and we are planning organic industrial base investment to retool the line at Scranton Army Ammunition Plant to support full-rate production."

CONCLUSION

As technology and capabilities evolve, the various services will develop new munitions, and JMC will have a role in the life cycle of each item. Proper planning will ensure that JMC has the facilities, systems and workforce capable of managing those items in service to the future force.

According to Daly, "The sustainment warfighting function capabilities are appropriately focused on both current



LISTEN UP

The group listens to a presentation of how Radford currently produces lethality for America's warfighters. (Photo by of JMC)

readiness and future modernization. ... These capabilities will continue to ensure freedom of action, prolonged endurance and extended operational reach anywhere in the world."

JMC remains focused on its core mission requirements of production, distribution, storage and demilitarization, closely nested and synchronized with organic industrial base facility modernization. Key modernization initiatives driving these efforts include cross-functional team integration and transforming the organic industrial base. With proper, forward-thinking execution of these initiatives, JMC, in support of AMC, will develop a 21st century organic industrial base able to sustain readiness and support further modernization efforts, while postured to execute large-scale combat operations today, tomorrow and beyond.

For more information about the JMC, go to <https://www.jmc.army.mil>.

COL. GAVIN J. GARDNER has been commander of the Joint Munitions Command and Joint Munitions and Lethality Life Cycle Management Command since June 11, 2020. He is a third-generation Army brat and Army logistician. He holds an M.S. in science logistics management from the Florida Institute of Technology and an M.A. in national security and strategic studies from the U.S. Naval War College. He earned a three-year Army ROTC scholarship and is a Distinguished Military Graduate from the University of Georgia, with a BBA in production and operations management.



STRIKE A POSE

A Soldier from the 2-506, 101st Airborne Division dons the ENVG-B, Nett Warrior and FWS-I during a Soldier touchpoint event at Aberdeen Proving Ground, Maryland, in February. (Photo by Courtney E. Bacon, PEO Soldier)

OWNING THE NIGHT

ENVG-B technology, integrated with Nett Warrior and FWS-I, takes night vision to a new level.

by Courtney E. Bacon

Soldiers from the 101st Airborne Division spent three weeks this spring at Aberdeen Proving Ground, Maryland, learning and testing the Enhanced Night Vision Goggle – Binocular (ENVG-B) and its capabilities when integrated with Nett Warrior and the Family Weapon Sights – Individual (FWS-I) optic. The touchpoint test is a part of Program Executive Office (PEO) Soldier’s foundational Soldier-centered design philosophy, which prioritizes end-user feedback and alignment at every step of technology development across the PEO. Individually, the ENVG-B, Nett Warrior and FWS-I enable capabilities beyond what is standard in today’s battlespace.

“It is leaps and bounds ahead of what we have right now and what our enemies have right now,” said Spc. Timmy Ellis of the 2nd Battalion, 506 Infantry Regiment (2/506), 101st Airborne Division.

The ENVG-B is a helmet-mounted, dual-waveband goggle with industry-leading, fused white phosphor and thermal technologies. The night vision binocular delivers dual-tubes with improved image intensification, resolution and fused thermal overlay needed for unmatched visibility at night.

Sgt. William Williams of 2/506 was impressed by ENVG-B’s fused white phosphor and thermal technologies. “The white phosphor fused with the thermal overlay helps a lot as well,” he said. “The good thing about it is the mode that may work best for me may not work for one of my Soldiers. It has lots of settings to where they can adjust whether they want more white phosphor or more thermals, so in situations where you’re not getting a lot of ambient light, you can crank the thermal up and really see anything that picks up heat or puts off a heat signal.”

INTEGRATED TECHNOLOGIES

This ENVG-B capability set features more mode options, with the added ability to interface with Nett Warrior’s augmented reality tools and FWS-I optic that together deliver the situational awareness and lethality required for overmatch in any low-light environment.

“When you integrate those technologies, you’re going to increase situational awareness and also lethality at night,” said Maj. Bryan Kelso, assistant product manager for ENVG-B. “You get added capabilities such as rapid target acquisition, the ability to passively bring the weapon optic into the goggle, and also augmented reality when you bring in any of the icons displayed on the Soldier’s



CHECKING IN

A Soldier from the 2/506, 101st Airborne Division checks his Nett Warrior end user device during a full mission test at a Soldier touchpoint event at Aberdeen Proving Ground, Maryland, February. (Photo by Justin Sweet, PEO Soldier)

Nett Warrior end user device [EUD]. Those all feed straight into the ENVG-B goggles so the Soldiers don't have to open up their EUD and they can keep moving and seeing those graphical icons."

When the high-resolution ENVG-Bs are paired with a Nett Warrior device, the Android Tactical Assault Kit uses augmented reality applications to overlay map graphics and blue force tracking capabilities for increased situational awareness, communication and mission planning across day and night operations. Soldiers can also enter enemy icons on the EUD and share with others across their network.

"The Nett Warrior technology gives us a better understanding of what we're getting ready to go do, and helps us battle plan and track each other," said Williams.

The Nett Warrior feature not only enables increased situational awareness for the dismounted leader, but higher command

and control as well. Nett Warrior is equipped with a dual channel multi-band radio, which enables communication and data sharing on a much larger scale.

"These systems help make communication to leadership easier because sometimes things get hectic out there and I might stumble up, but now even if I can't talk at the moment I can hit a button and push everything that I have on my Nett Warrior out to my chain of command so they know exactly what I've got going on," said Williams.

"It also reduces the potential for fratricide issues and can help units link up with each other, especially if they need to remain in radio silence," added Kelso. "There is consistent visibility of where those blue forces are on the battlefield, and with its dynamic refresh rate feature, it refreshes more often based on the Soldier's movement. When identifying either potential or known enemies, that information can also

get fed through the unit and immediately populate the common operating picture to inform decision-makers at a higher level."

Not only does Nett Warrior deliver increased situational awareness and command-and-control communication, but it also enables more efficient mission planning and execution.

"Usually it takes hours or days to plan a mission once it comes down," said Ellis. "Then we sit down and build a sand table and they say, 'Hey, this is what we're doing,' so you don't really get to see that 3D aspect of it. Now, once we know we have to hit this village, we can get it planned out pretty quickly, push the mission package out to the other guys, and knock that mission out."

Mission planning with Nett Warrior is not only more efficient, but also more comprehensive. "When you mission plan with the Nett Warrior system, you can show that we're hitting this building here and then you can plan out, since we're hitting this building we can put up support by fire here, the weapons go here, and build from the same operating picture that everyone sees," Ellis said. "It's a really nice concept because everyone can see exactly the lay of the land and exactly what you're doing in advance, before even going in."

The FWS-I optic feeds the view of the weapon sight into the ENVG-B goggle display, allowing Soldiers to accurately identify and engage targets at increased ranges without physically being face to face and without the need for a laser.

"The FWS-I is mounted in front of the Soldier's day optic on their M4, which allows you to passively engage targets in a multitude of ranges, out to the max effective range of the weapon," said Kelso. "You can actually detect targets beyond

“It is leaps and bounds ahead of what we have right now and what our enemies have right now.”

600 meters, so past where you could effectively engage with an M4.”

The increased range of the optic will allow targets to be identified at farther distances than ever before, and Rapid Target Acquisition technology provides the Soldier a passive solution to engage enemies. Picture in Picture and Full Weapon Sight modes allow the Soldier to accurately engage from behind cover and concealment.

“It’s pretty cool to be able to put my head down and engage targets without actually compromising cover,” said Williams. “I could stay completely behind cover, my eyes and head not even looking in the direction of the target, and utilize my FWS-I pumped into the ENVG-B and effectively engage my targets that way.”

Williams adds, “Another good thing about the FWS-I is that it eliminates us having to use a laser, which is a big thing because if we’re engaging with a near-peer because they will be able to tell where we’re at immediately if we’re using lasers.”

CONCLUSION

The integrated ENVG-B, Nett Warrior and FWS-I kit delivers the increased situational awareness, communication and lethality to save lives and ensure undeniable near peer overmatch.

“It has definitely grown on me,” said Williams. “At first I didn’t like it at all. I was like, just give me the NODs [night observation devices] and let’s go on, but it has grown on me and in certain situations, I think it can help save lives and win the fight.”

Nearly 5,000 ENVG-Bs have been fielded from the directed requirement thus far. Meanwhile, the ENVG-B program of record has entered low-rate production. Nett Warrior will be fielded to 3rd Infantry Brigade Combat Team, 25th Infantry Division in July 2021.

For more information go to peosoldier.com or @PEOSoldier on social media.

COURTNEY E. BACON is a public affairs specialist providing PEO Soldier PM IVAS contract support on behalf of TMGL LLC. She has a B.S. in biology from George Mason University and is working toward a master’s degree in biodefense and international security from George Mason’s Schar School of Policy and Government. She previously worked in communications and public affairs for the Defense Information Systems Agency.



EYES WIDE OPEN

The ENVG-B uses fused white phosphor and thermal technologies. It delivers dual-tubes with improved image intensification, resolution and fused thermal overlay for unmatched visibility at night. (Photo by Courtney E. Bacon, PEO Soldier)



SAFE TRAINING

Dr. Juanita Stewart and Catherine Dakin, both from the Office of the DASA (DE&C), take part in coursework during the beta session of the instructor-led training portion of the Army security cooperation enterprise course. (Photo by Cathy VanderMaarel, DASA (DE&C))

ENGAGING FOUR GENERATIONS OF WORKERS

New, immersive educational course teaches foreign military sales for the Army security assistance enterprise workforce.

by Leslie A. Gordnier and Cathy VanderMaarel

A new training course explores Army roles in foreign military sales and related functions while seeking to fit the requirements of the multigenerational workforce—which has many different traits, needs and learning styles—and to overcome traditional barriers to learning as well as those brought on by COVID-19 restrictions.

The Office of the Deputy Assistant Secretary of the Army for Defense Exports and Cooperation (DASA (DE&C)) Security Cooperation Workforce Development Team has been working with subject matter experts to provide interactive and collaborative training to the Army security assistance enterprise. While Defense Security Cooperation University courses provide information to assist all personnel in the joint environment, the new course specifically addresses the Army's roles.

The online portion of the course overcomes the generational and motivation hurdles by engaging and inspiring participants with topics relevant to everyday scenarios. It gives students the opportunity to immerse themselves in the subject matter, rather than only reading or following a slideshow.

The Army security assistance enterprise instructor-led training phase employs a unique strategy for educating the audience on the programs, processes and tools in export control and regulatory systems. The curriculum presents current policies and procedures to ensure participants understand—and are able to effectively implement—the many programs available to our foreign partners.



A TRIAL SIMULATION

David Williams, from the Office of the DASA (DE&C), and Melvin Porter, from the Security Assistance Training Field Activity, participate in a simulation portion of the beta session of the instructor-led training portion of the Army security cooperation enterprise course. (Photo by Cathy VanderMaarel, DASA (DE&C))

COMPUTER-BASED TRAINING

DASA (DE&C) wanted to ensure that before registering for an in-person course, cohorts were presented with basic knowledge of foreign military sales and procedures, the associated agencies and organizations involved, the varied Army lingo and a multitude of acronyms used throughout the enterprise. This spurred the development of the computer-based training portion of the course. The 90-minute session serves as a prerequisite to the five-day instructor-led phase and is

designed to provide foundational knowledge of the content.

The computer-based training modules were developed using HTML code, which provides a structure to take advantage of the breadth of web browser capabilities. Rather than a plain text document or the limited graphics capabilities of slideshows, HTML allows for embedded videos, click-through material presentation and other interactivity. Each module functions like a webpage with content distributed in

LOOKING BACK

The Security Cooperation Workforce Certification Program was featured in an issue of Army AL&T magazine in 2020; the article can be found at <https://go.usa.gov/x6RPd>. Be sure to check the updates to the program provided in a link on that page as well.

The online portion of the course overcomes the generational and motivation hurdles by engaging and inspiring participants with topics relevant to everyday scenarios.

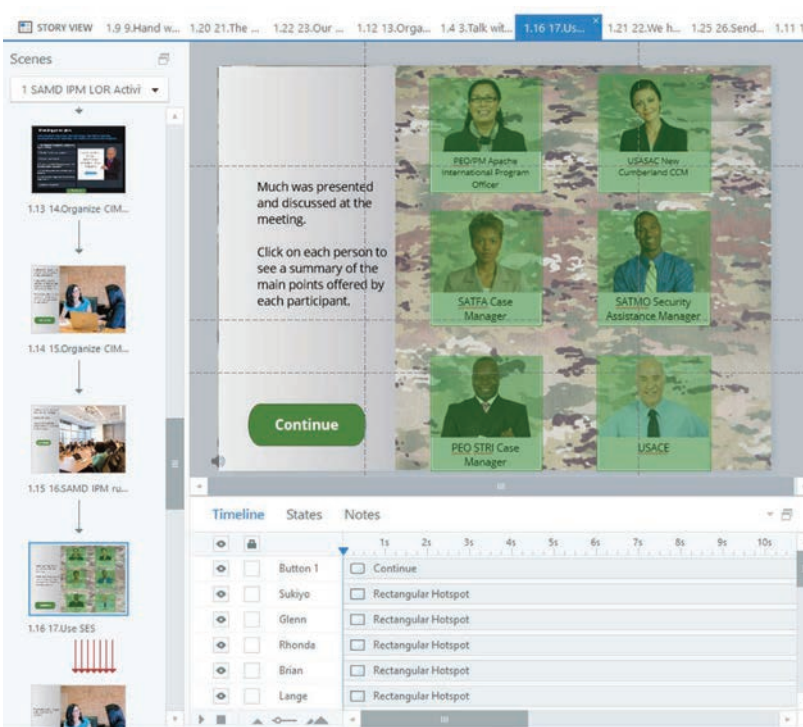
vertically oriented segments along the Y-axis of the page, as is expected by internet users. By longitudinally orienting content, designers were able to employ explorative learning models that can be navigated via scrolling to reduce the number of clicks required by the user.

An added benefit of HTML-based modules was the ability to design courseware that could operate on a wide range of devices, such as computers, phones and tablets. This flexibility improved user access to the training material and enabled low-cost tablets to be used in the instructor-led training phase, instead of more expensive laptops. Bringing personally managed technology to the classroom gives students of different generations the ability to explore on the device with which they're most comfortable.

The team applied three-step iterative prototyping to build, test and improve each lesson module to ensure the content was built properly. An interactive prototype was created first to demonstrate the general functionality and content flow of a single lesson. Once approved, the prototype was used as a model to develop an alpha version of the course, including a fully interactive module. As a final quality assurance step, the team delivered a content-complete beta version of the course for validation testing among a small cohort of representative users.

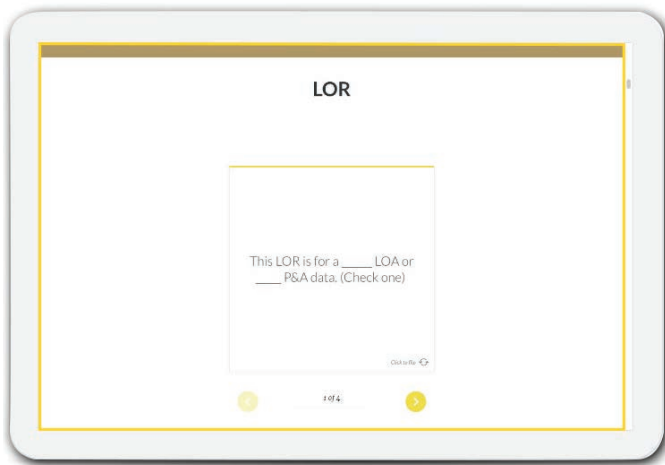
INSTRUCTOR-LED TRAINING

The Army provided to defense contractors the time and funding to conduct a thorough assessment of the material this course should provide. Fairchild Fisk Giroux LLC, the security assistance education and consulting firm selected to develop and lead the training, conducted several site visits and virtual meetings attended by dozens of personnel working throughout the Army security assistance enterprise. This included personnel at DASA (DE&C), U.S. Army Security Assistance Command, U.S. Army Aviation and Missile Command, U.S. Army Corps of Engineers, U.S. Army Training and Doctrine Command and individual enterprise organizations. In addition to detailed explanations



A CAST OF CHARACTERS

An interactive simulator allows students to choose which character they would like to click on to learn more information. This simulates the learning-by-doing instructional design technique for adult learners. (Image courtesy of DASA (DE&C))



IN YOUR OWN HANDS

Students can access the course on a number of devices, including tablets, smartphones and laptops. Shown here, an interactive flip card simulation makes use of the tactile nature of a tablet. (Image courtesy of DASA (DE&C))

for how the Army security cooperation process works, the Fairchild Fisk Giroux team gained insight on how critical it is, especially for new personnel, to gain an understanding of the roles of others in the enterprise.

Traditional training models—slideshow briefings, recitation and the like—are not reaching the training audience as effectively as they once did. Those models provide enormous amounts of content but fall short of delivering it seamlessly to audiences in the Information Age. The instructor-led course provides a new forum that brings experts on board and provides the most relevant information to the foreign military sales training audience. The course was designed to prevent cognitive overload when conducting facilitated instructional training with digital learning content. The content is deliberately delivered in smaller doses with only a few tasks required in each learning module

An added benefit of HTML-based modules was the ability to design courseware that could operate on a wide range of devices, such as computers, phones and tablets.

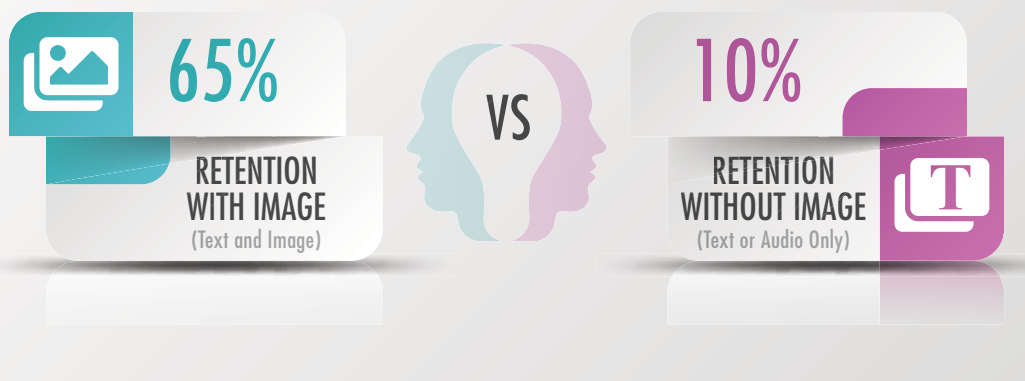
and continuously aligns with foreign military sales goals and objectives, rather than having all content provided before a final examination or simulation.

The security assistance enterprise instructor-led course pairs updated, complex content and expert resources to transform the topics of foreign military sales and processes into engaging, visually creative and exciting lessons. There is a strong focus on visual content to improve knowledge retention. According to research presented in the British Journal of Developmental Psychology article “The Development of

the Picture-Superiority Effect,” people only retain about 10 percent of information presented verbally. When they see an image, however, they remember up to 65 percent of the material. This phenomenon is called the pictorial superiority effect.

Adults learn best by doing. This course is fairly unique in the number of hands-on exercises and immersive experiences integrated with traditional instructor-led training. For example, there are a number of computer-based simulations in the course for students to complete, in which the student plays the role of a new country program manager. In that role, the student learns the responsibilities associated with that position; then through shadowing others in the Army security assistance enterprise, learns the duties of their respective positions. Students have said these are fun, engaging and effective learning experiences. “It’s nice to have an iPad assigned instead of a bunch of books, and to be able to take it with us at the end of the day,” said Dr. Juanita Stewart, DASA DE&C senior IT systems analyst lead and member of the beta testing session of the instructor-led training portion of the course. “It shows this course is up to date. Taking part in the [student-enacted] vignette helped me retain the information on how countries interact with each other in security assistance and cooperation.”

MEMORY RETENTION AFTER 72 HOURS



PICTURE PERFECT

The course was deliberately designed to prevent cognitive overload. The content is broken up into smaller doses, focusing on visual content, which improves knowledge retention by 65 percent. This is known as the pictorial superiority effect. (Illustration by USAASC)

The Army security assistance enterprise course adds an extra motivational touch to the training incentive, because experience has shown that when students receive



BETA TESTING

Elizabeth Wilson, DASA (DE&C), addresses the students in the beta session of the instructor-led training portion of the Army security cooperation enterprise course. (Photo by Cathy VanderMaarel, DASA (DE&C))

an official qualification or certificate at the end of a course, they become more engaged in the training and retain more of the content. Each phase of the course will count individually as continuing education credit for security cooperation workforce certification.

CONCLUSION

Upcoming iterations of the course will continue to develop and train members of the enterprise. DASA (DE&C) is on track to lead the development of future training, creating new courses to take on the complex and specific regulated procedures within the foreign military sales arena, to educate the Army workforce and ensure best practices are shared.

For more information, to register for a course or to learn how to bring Army security assistance enterprise training to a classroom near you, contact Leslie Gordnier at leslie.a.gordnier.civ@mail.mil.

LESLIE A. GORDNIER serves as the lead in Army security cooperation workforce development for security assistance enterprise training and has over 23 years in the joint service arena. She holds an Executive MBA from Auburn University Montgomery and a B.A. in history from Mount Saint Mary College. She serves concurrently as an Air Force Reservist in a special duty assignment as a first sergeant and is a two-time combat veteran and Bronze Star recipient.

CATHY VANDERMAAREL is a career Army public affairs civilian, having started in the field in 2003. She has served as a public affairs strategist at DASA (DE&C) since March 2020. She holds a Master of Public Administration from Norwich University and a B.A. in communications from the University of South Carolina. She has completed the training requirements for the Intermediate Level Security Cooperation Workforce Certification in the Security Cooperation Execution Support Area of Concentration.



KRISTINA KOCH

COMMAND/ORGANIZATION:

Joint Program Executive Office for Armaments and Ammunition, Project Manager Close Combat Systems

TITLE: Business management specialist

YEARS OF SERVICE IN WORKFORCE: 15

DAWIA CERTIFICATIONS: Level III in acquisition, Level I in program management, Army Acquisition Corps certification

EDUCATION: Master of Administrative Science, Fairleigh Dickinson University; B.A. in organizational communication with business management studies, Fairfield University

AWARDS: Supervisory Acquisition Manager, Annual Performance Awards

THE RIGHT STUFF

When something is right, you just *know* it. Kristina Koch knew, from the first time she kicked around a soccer ball with her father, that she had found her talent. “It was so natural to me,” she recalled. “I’ve always had a nose for the goal.” From that day on, ballet and gymnastics were relegated to a distant second, and soccer took precedence over any other sport. She played competitive soccer all through her school years, and also became an accomplished sprinter, running track for her high school in New Jersey. “Soccer was everything, in our family,” she said. Both her mother and father had emigrated to the U.S. in their teens—she from Portugal and he from Croatia—and they brought with them their European passion for the sport.

Koch continued playing recreational soccer throughout her college days, even taking on practice games and scrimmages with the Division 1 men’s soccer team at her university. And it was around that time she found another *right* in her life—the Army. “I started as a summer and winter hire at Picatinny Arsenal [New Jersey] when I was in college,” she said. “During the summer breaks, when all of your friends get to go to Aruba and all those fun places, my parents were like, ‘We can’t afford to send you on spring break, so we’re going to have you work somewhere.’” Her father knew someone with an open intern position, and he encouraged her to apply, saying she could help with marketing and make use of some of the business classes she had taken. “I didn’t really want to take the job, but I’m so glad I did. It was so much more than I thought it would be.” Over that summer, she developed a love for the Army. “I enjoyed learning about the different weapon systems and everything that Picatinny does for the Army. When I graduated, I knew I wanted to go back there,” and she has been at Picatinny Arsenal ever since. “I’m really grateful that my parents couldn’t send me off to an island.”

Today, Koch works under the Business Division as the lead procurement analyst for the Project Manager Close Combat Systems (PM CCS), Product Manager Terrain Shaping Obstacle (PDM TSO), within the Joint Program Executive Office for Armaments and Ammunition. In this role, she is responsible for generating acquisition and production documents, briefing her leaders on acquisition activities, facilitating acquisition-related meetings and interacting with technical teams supporting the complex PDM TSO. “PDM TSO is responsible for the development of the Army’s next generation of terrain shaping obstacle capabilities that protect Soldiers and enable friendly maneuver across multidomain-influenced battlefields,” she said. “Aligned with Army modernization priorities and an Army Futures Command-approved Terrain Shaping Modernization plan, I have led the acquisition process for the XM204, a research and development [other-transaction authority] effort and for the Standoff Activated Volcano Obstacle program, one of the Army’s first approved Section 804, Middle Tier Acquisition rapid prototyping and rapid fielding efforts.”



THE STANDOFF

It goes boom, but it all started with a contract. The Standoff Activated Volcano Obstacle program is one of the Army's first approved Middle Tier Acquisition rapid prototyping and rapid fielding efforts. (Photo by Staff Sgt. Richard Frost, Joint Multinational Readiness Center)

If she were queen of acquisition for a day, she said would bring some soccer skills to the fore, and teach acquisition to sprint toward the goal. "In my opinion, it takes too long to award contracts due to all the rules, regulations, restraints and the number of reviews involved for acquisition documents. I understand that certain regulations are needed, but the process should be more streamlined when possible—getting our warfighters new technologies to keep us ahead of our adversaries is critically

important." She would focus on removing unnecessary regulations and redundancies, as well as streamlining the review process.

But she's not waiting around for a crown—she's forging ahead with that goal in her day-to-day. "As an example, here at PM CCS, we recently reintroduced the 'signing party' concept for staffing key acquisition documents, such as the acquisition plan and justification and approval documents. Our team at PM-CCS pioneered an approach to accomplish this virtually as a result of COVID-19. This ensured that the documents were thoroughly reviewed by senior leaders, and reduced staffing time by over one month per document. The 'signing party' process is extremely effective at reducing review time and should be considered a mandatory requirement for certain contract awards."

Koch has learned many lessons during her time at Picatinny Arsenal, but she said there are two that stand out. First is the importance of honesty. "Throughout my career, I have given advice to junior acquisition personnel. I have told them that it's important to be honest with yourself and others. You will make mistakes along the way, and the key to mistakes is to learn from them and use them as lessons for future work." She said it's important to develop and maintain respect between employees and their supervisors, and that team members should always feel comfortable asking questions. "Keep the lines of communication open. Always inform your supervisor of how you're progressing and ask for regular feedback on your performance." The second lesson she shares with others is about efficient communication. "Without effective and efficient communication, the organization will not operate at an optimal level because mistakes will take longer to be fixed and bottlenecks will take longer to get cleared. Communication is something that I underestimated in the beginning of my career; however, now I realize it's critical for any functioning relationship, whether professional or personal."

When it's right, it's just *right*. And Koch knows she has found her professional home, as an Army civilian. "For me, the most satisfying part of being an Army acquisition employee is simply knowing that I'm part of the process that delivers world-class, close-combat military technology into our Soldiers' hands," she said. Being part of that larger mission, providing that competitive edge on the battlefield, Koch aims to "help bring Soldiers home safely and protect our great country, ensuring all of the freedoms that Americans enjoy today."

—ELLEN SUMMEY



VIRTUAL SOLUTIONS

Team No Sim, No Train—Ksenia Kerentseva, Vipin Verma and James Cook—from Arizona State University works with Airmen at Davis-Monthan Air Force Base in Tucson to improve training for maintenance personnel of the 355th Maintenance Group using virtual reality training software. (Photo by James Cook)

HACKING FOR DEFENSE *TURNS 5*

Defense innovation class started at Stanford has now spread to 47 U.S. universities, the U.K. and Australia.

by Michael Bold

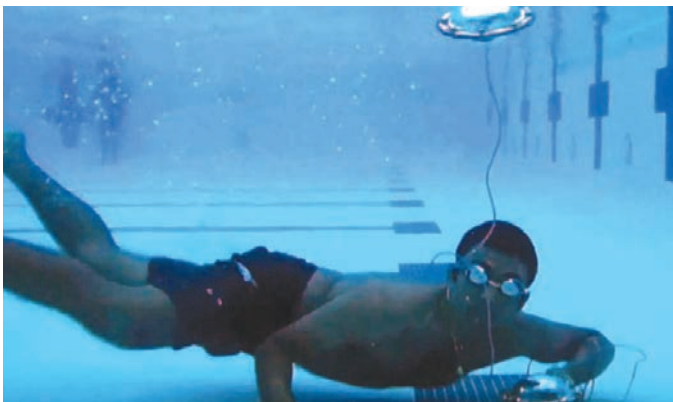
Pete Newell knew something was up when he looked around the Stanford University classroom being used for the first-ever Hacking for Defense class.

“When we taught the first class at Stanford we opened the door for anybody who wanted to come,” Newell, a retired Army colonel who spent the last several years of his career as director of the Army’s Rapid Equipping Force, told Army AL&T in an April interview. “We had 32 students, two teaching assistants and four instructors. So there were 38 of us. The room sat 90 people and it was standing room only.”

Stanford professors, venture capitalists, representatives from other universities, government experts and others had driven in from around Silicon Valley and had flown in from all over the country to witness the class, which unleashed teams of students on unclassified, real-world problems from DOD.

A lot has happened since that first Hacking for Defense class on April 4, 2016. The movement—started by Newell, CEO of BMNT Inc., a company that pairs Silicon Valley technical wizardry with defense and intelligence agencies; Steve Blank, a retired Silicon Valley “serial entrepreneur” and creator of the Lean Startup movement; and Joe Felter, a retired Army Special Forces colonel and co-founder of BMNT; assisted by Dr. Tom Byers, entrepreneurship professor at the Stanford School of Engineering—has since exploded:

- The course is currently being taught at 47 universities nationwide, including the U.S. Military Academy at West Point, the U.S. Air Force Academy, Defense Acquisition University and the Naval Postgraduate School.
- Hacking for Defense is a DOD program of record, funded by Congress.
- More than 2,000 students have completed the program, addressing more than 750 national security problems.
- Hacking for Defense has created a new platform for national service, engaging students in helping to keep the country safe and secure.
- It has directly led to the formation of 14 startups, including the satellite company Capella Space; the mobile training platform Learn to Win, which is changing how fighter pilots are trained; Anthro Energy, which developed a flexible nonflammable lithium ion battery being used by wearable electronics makers in straps or wristbands (and whose CEO was named to the Forbes 30 under 30); and Lumineye, which developed a device that helps first responders see through walls and which was the grand prize winner of xTechSearch 2.0, sponsored by the Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology.
- It's spawned a series of sister programs helping to address other real-world problems, including Hacking for Diplomacy, Hacking for Local, Hacking for Oceans and Hacking for Homeland Security, among others. In the United Kingdom, Hacking for MOD (Ministry of Defense) is being taught at seven universities. In Australia, Hacking for National Security was piloted at the University of New South Wales earlier this year.



TEST EARLY

A member of Team AquaLink conducts an underwater test on an experimental GPS buoy as part of the Hacking for Defense course at Stanford University. (Photo by Team AquaLink)

BIG HILL TO CLIMB

Newell had gone into the class just hoping they could attract enough students. “We thought we were just going to teach a class at Stanford,” he said. There was much more to it, including these challenges: “One is that we could convince the government to not just give up problems, but also participate in the class,” Newell said. “The second one was that we could convince Stanford to let us teach the class. And ... that we’re going to attract enough students to make it interesting. And at the same time build the network around them, which means we had to recruit mentors and we had to recruit advisers. So our expectation was that we would pull off a moderately successful class and that it would be something we repeated once a year.”

But Blank, ever the entrepreneur, had visions of much more. Blank’s Lean Startup methodology had revolutionized the way startups set up shop in Silicon Valley and beyond and had landed him on the cover of the Harvard Business Review. “On day one, my thinking was there’s no sense creating a new class if you’re not going to try to make it a national program,” Blank said in an April interview. “That was my idea from the get-go.”

His Lean Startup method boiled down to three basic steps:

- Articulate your hypotheses: What problem are you trying to solve? Who’s your customer? What solution do customers want to grab out of your hands?
- Get out of the building. Talk to at least 100 potential customers and stakeholders about your hypotheses. Have you identified the problem correctly? Can you validate your hypotheses?
- Build a minimum viable product (MVP)—the smallest thing that will get you the most learning at that point in time. It can be a wireframe, a PowerPoint, hardware, etc. Get customer feedback. If the feedback is good, refine and improve your MVP until it’s ready to roll out as a finished product. If it’s bad, figure out where you went wrong and then pivot. This way, if you’ve failed, you’ve failed early and inexpensively.

Blank had expertise turning his Lean methodology into a successful classroom experience. In 2011, he was asked by the National Science Foundation to find a way for its scientists to turn their research into viable commercial products. He developed the Innovation (I-Corps), which is now considered the standard for science commercialization in the U.S. and has been adopted by other government agencies including the National Institutes of Health. I-Corps teams have created more than 1,100 startup businesses.

“I realized I already had a class, so we didn’t have to create one from scratch,” Blank said. The difference was that in I-Corps the students brought their own problems to work on. In Hacking for Defense, DOD and the intelligence community would need to supply a list of problems that teams of students would pick from. So that was one challenge. What’s more, Blank was worried about how the class would be received at Stanford, where in the 1960s violent anti-Vietnam War protests forced the university to end all classified research.

“My worry was that we would throw a party and no guests would show up, or we’d throw a party and the guests would show up but not the caterer,” he said.

Everyone ended up making the party, and then some. As Hacking for Defense developed and spread to other universities, several truths began to emerge. Among them, Blank said, “is that you could quickly immerse non-military folks deeply into problem understanding, and then have them rapidly test different solutions. At the same time taking the sponsor for the ride, because almost always what we’ve discovered is the problem that is given is almost always a symptom of some other problem.”

“We thought we would teach the government how to better deliver problems and



IMMERSIVE EXPERIENCES

Members of Team 21st Century Frogman—from left, Andrew Sparks, Gerardo Rendon, Kelsey Schroeder and Priyanka Sekhar—took part in some aspects of Navy SEAL Basic Underwater Demolition training at Naval Amphibious Base Coronado, California, during their Hacking for Defense class at Stanford in spring 2017. Their problem was to create an algorithm and dashboard to predict safety risks and streamline real-time data entry during SEAL basic training. (Photo by Team 21st Century Frogman)

create a dialogue that was worthwhile,” Newell said. “We thought that the entrepreneurship component of the course would get students excited about learning build a company from an idea. This is real world and it’s real experience working with real people.”

Buy-in from the government side—and at a high level—was critical. “If there’s a challenge in scaling the course it has

been retaining the discipline around the problems,” said Newell. “There has to be a real problem, there has to be the problem owner and there has to be somebody who’s energized and passionate about solving the problem. There has to be a senior leader champion that has the resources and the authority to do something about it. It has to be important to the organization that is vested in the work being done by the class.”

“I was kind of confused as to why the military wanted a team of Georgetown students, none of whom had any military experience, to help solve a problem. I assumed that there was an Easy Button behind the scenes that the military could click anytime there was a problem. ... It became pretty clear early on that that was not the case.”



GET OUT OF THE CLASSROOM

Members of Team Spyglass—from left, Jose Gabriel Andrade, Katerina Sedova, Chloe Krawczyk and Max Weintraub—got hands-on M4 training at a shooting range at Fort Meade, Maryland, while working with members of the Asymmetric Warfare Group. (Photo courtesy of Katerina Sedova)

LIFE CHANGING

For many of the students it’s been a life-changing experience. Max Weintraub was a member of Team Spyglass at Georgetown University’s Hacking for Defense class in January 2017. Its mission was to help the Army Asymmetric Warfare Group find actionable intelligence from large amounts of social media data in order to identify immediate, localized threats to forces on the ground.

After getting his bachelor’s degree at the University of Arizona in creative writing and Italian, Weintraub went to graduate school at Georgetown to get an MBA and was looking to pivot into technology. “At

first I was kind of skeptical as to why the class even existed,” he said in an interview. “I had no real background in working with the military, so I was kind of confused as to why the military wanted a team of Georgetown students, none of whom had any military experience, to help solve a problem. I assumed that there was an Easy Button behind the scenes that the military could click anytime there was a problem. ... It became pretty clear early on that that was not the case. In fact, many of the types of problems that the military faces are things that, in essence, have been solved in the commercial sector, but for various reasons there’s not an effective analog for the military. What they were

really looking for was creative thinking from outside of the box to try to come up with novel concepts that could help them solve the problems that they were facing.”

A lack of military knowledge on the part of Weintraub’s Team Spyglass didn’t stop them from coming up with solutions. “I went from not knowing the difference between a company and a battalion to briefing Gen. [Paul M.] Nakasone at Cyber Command on the ideas that we developed over the course of a single semester.

“What it triggered for me was realizing that I have a passion for problem solving,” he said. Weintraub now works as a

program manager at the National Security Innovation Network, a DOD program office reporting to the undersecretary of defense for research and engineering through the Defense Innovation Unit. NSIN seeks to bring together defense, academic and entrepreneurial innovators to solve national security problems. Hacking for Defense is now an NSIN program, powered by BMNT and BMNT's nonprofit partner, the Common Mission Project.

TEACHING IN A PANDEMIC

As with everything else, the COVID-19 pandemic threw a monkey wrench into how Hacking for Defense was taught. "We were really concerned because our class is really built on getting students out of the classroom and talking to real people," said Newell.

There were positives and negatives from the restrictions brought on by quarantine and the move to virtual learning, Blank said. "The good news is you could do interviews even easier, and get to more people, higher-ranking people, without gatekeepers, via Zoom," he said. "And so access to people you needed to talk to was actually two to three times easier for students." The bad news was that students couldn't immerse themselves into the community they were trying to solve problems for. No becoming a qualified diver, no taking part of a Navy SEAL basic training course, no chance to don and move around in an explosive ordnance disposal suit, all of which have been part of various H4D classes. "And so students lost that," Blank said.

NATIONAL PUBLIC SERVICE

One of the primary motivations at the start of Hacking for Defense was finding a way for students to serve their country in a nontraditional way. The idea of national public service has struck a chord both with students and universities.

"I'm not going to serve in the armed forces," Luke Truitt, a Hacking for Defense student at Duke University, said in a video produced by Duke on the H4D program. "Is there some way I can help? And I feel like this is one good step in that direction."

Universities were also interested in finding a way for students to serve the greater good. "Educators involved in teaching entrepreneurship ... kind of self-formed into a group of folks who were interested in using entrepreneurship as a platform for national public service," Newell said.

In coordination with Blank and Newell, the Common Mission Project convenes a twice-yearly Lean Innovation Educators Summit with entrepreneurs, professors and university leaders

"We thought we would teach the government how to better deliver problems and create a dialogue that was worthwhile."

from around the world to discuss not only how to best teach entrepreneurship and ideas about promoting entrepreneurship for social good, Newell said. "The first time we ran one I think we had about 90 educators from around the country. The last one we did was about two months ago, we had over 600 educators from 65 different countries join us." The next meeting, on June 3, focused on how to build back better after COVID, how to accelerate recovery and how to build more resilience into the economy. "All from the concept of building an H4D program at Stanford," Newell said.

"My motivation for Hacking for Defense was not only just the class, but for national service," Blank said. Ending the military draft in the 1970s and not replacing it with some sort of national service was a mistake, Blank believes. "We bought into a 40- to 50-year science experiment that says, 'What happens when you disconnect your population from having skin in the game in foreign policy?' and 'What happens when you remove any national unifying process where different cultures, opinions and classes have to physically work together?' The result has not been a good outcome for the country. What we've gotten are these narrow silos or virtual ones like Facebook, and they don't end up well.

"Hacking for Defense was our contribution to bring diverse teams back together to serve the nation."

For more information, contact the author at mbold@networkrunners.com.

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TOUCHING BASE

A Soldier dons the Integrated Visual Augmentation System Capability Set 3 at the Soldier Integration Facility at Fort Belvoir, Virginia, in January 2021. Getting feedback from a touchpoint like this one is key for equipment design. (Photo by Courtney E. Bacon, PEO Soldier)

ALL ABOUT *U*

Whether it's called Soldier-centered design, user experience, human factors engineering or human systems integration, the Army is putting this science front and center.

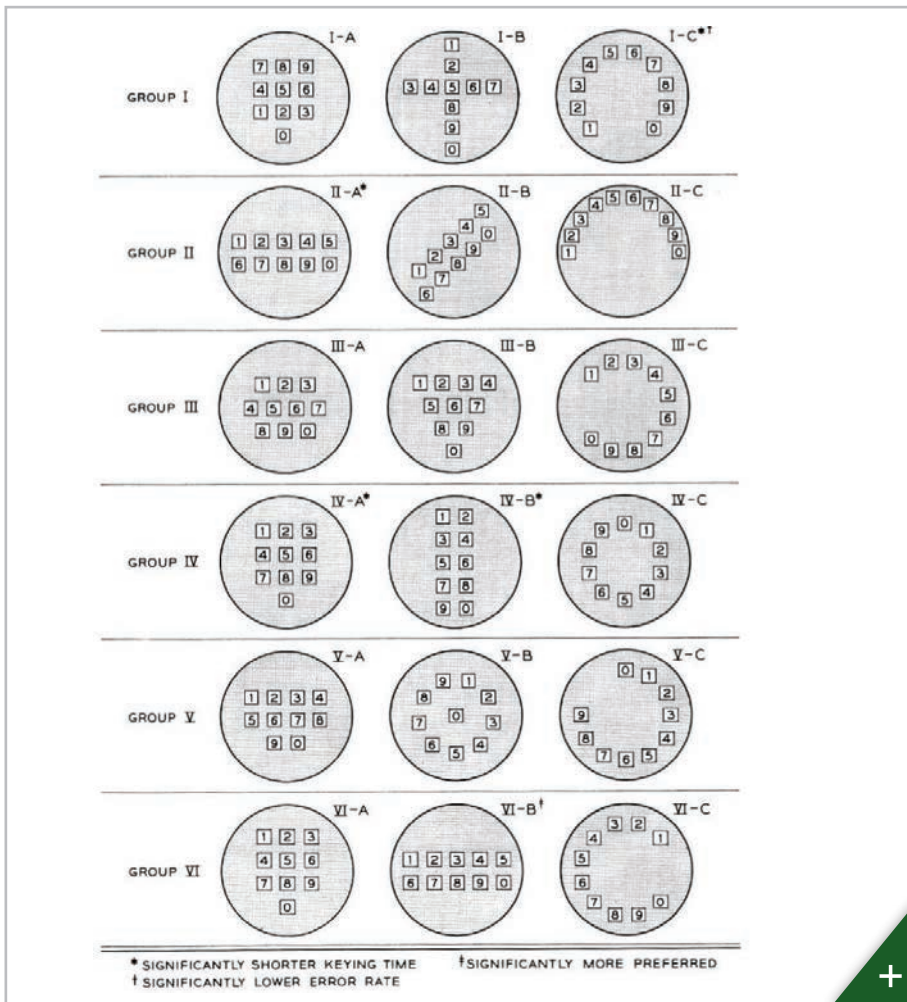
by Ellen Summey

Sometimes you just get really, really lucky. That was the case for hiring officials at Bell Telephone Laboratories in 1945, when they hired industrial psychologist John E. Karlin. Now widely considered the father of human factors engineering, he was then a newly minted Ph.D. studying sound and communication for the U.S. military during the final months of World War II. Karlin found fertile ground for his innovative ideas about product design at Bell, where he founded and led the nation's first human factors engineering department.

Rather than creating new products with the assumption that users would adapt to them as required, he and his team incorporated human capabilities and inclinations into the design of the products themselves. His most well-known project, the telephone touchpad, represents one of the earliest examples of human factors engineering—the now ubiquitous keypad's enduring use and universal adoption prove that Karlin got it right. That, however, was not a matter of luck. It was cold, hard science.

WHAT'S IN A NAME?

This field of work—the science of researching user capabilities, preferences and inclinations—is having a bit of an identity crisis today. What used to be called human factors engineering (HFE) now goes by several different names, including user experience (UX) design, human systems integration (HSI), Soldier-centered design (SCD) and several other related terms. Where does HFE end and UX begin? Is SCD just a rebranded version of HSI? It's hard to say. Though each distinct name invokes certain skill sets and areas of focus, their goals and methods have significant overlap among them. Think of these fields as siblings with different hobbies. They may function somewhat differently, but you can't deny the family resemblance.



HELLO, OPERATOR?

Bell Telephone Laboratories designed the modern telephone touchpad in the 1940 and '50s, through scientific testing and analysis. The idea for the touchpad, which would go on to replace the older rotary dialing interface, was modeled on the handheld calculator. Designers measured user preference, error rates and dialing speed on a wide array of distinct keypad designs. In the end, the clear winner was the so-called “three-by-three plus one” design most users recognize today. (Graphic by The Bell System Technical Journal, July 1960)

This collection of overlapping professions—the HSI family—centers on the research and design of a user’s interaction with a brand or product. Rather than luck, the profession emphasizes hands-on testing and direct observation to create optimal outcomes. Today, whether you are dialing a phone, buying a new iPad in the local

Apple Store, or any of a litany of other interactions with user experience-focused organizations, someone has painstakingly researched, designed and tested every facet of your experience. When they haven’t, you notice—like the webpage that won’t load on your preferred browser, the directional signage that makes no sense or the

phone menu that won’t let you speak to a real human, no matter how many numbers you try.

The language we use to talk about HSI varies widely across the Army and throughout private industry, and continues to change as practices and technologies change over time. According to Dr. Larry Shattuck, senior lecturer and director of the HSI program at the Naval Postgraduate School, the shifting terminology around the profession may have unintended consequences. “I think those are unfortunate ways of making people more confused,” he said. “We had HSI and now the Army’s working toward user-centered design or Soldier-centered design—which is kind of the same thing. But the DOD policies are written for HSI. When you talk about DODI [DOD Instruction] 5000.02 and other DAU [Defense Acquisition University] documentation, they all talk about HSI.” He said that the changes were undoubtedly made with good intentions, and likely because of the rising popularity of UX design, but may unintentionally create confusion or render policies and guidance less effective.

LET’S TALK TOUCHPOINTS

HSI is used widely throughout the Army acquisition enterprise, though it is now commonly called Soldier-centered design within the service. And, as it does with so many things, the Army has created its own name for the hands-on testing-and-observation events that are the hallmarks of every professional field in the HSI family—it calls them Soldier touchpoints. Over the last few years, acquisition professionals across the Army have been using Soldier touchpoints throughout the development of both hardware and software, and they say it has definite benefits.

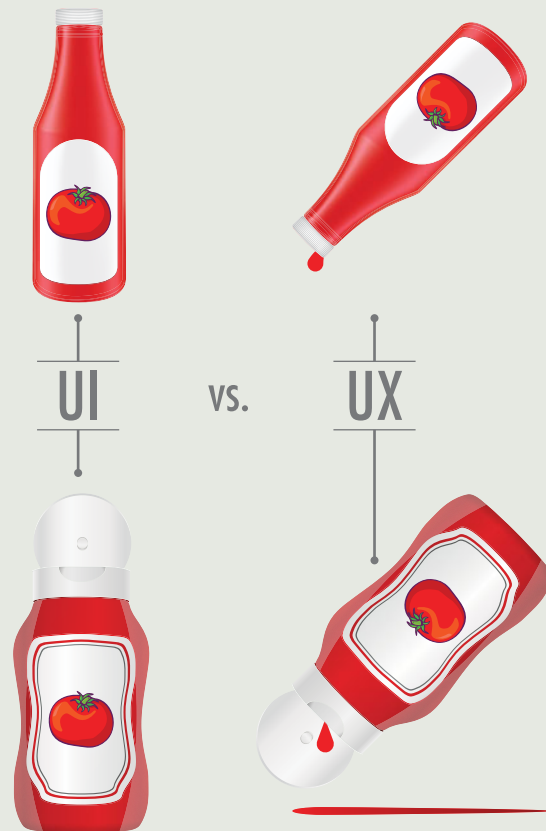
Cory Baron is the product director for Combat Terrain Information System at

THE MAIN SQUEEZE OF UX

Don Norman first used the term “user experience” (UX) design in the 1990s to describe the work he and his team were doing at Apple Computer. Norman had previously worked at Bell Communications Research, in a spinoff of Karlin’s original human factors engineering department. He recognized that the field had shifted its focus and techniques since the 1940s, and he coined the new term to reflect that change. UX has surged in popularity and is now commonly used in industry, but it is often conflated with user interface (UI) design, which is actually a subset of UX.

Everyone can relate to this example—putting ketchup from a new, glass bottle on your fries used to be a somewhat nerve-wracking ordeal. How quickly would it come out of the bottle? How many times should you whack the side? Or is it the bottom? Should the bottle be at an angle? Straight up and down? No one would argue that the old glass bottles weren’t attractive, but the new squeeze bottles created a drastic improvement to the user experience.

The user interface design centers on how a product will look and function, but the user experience design goes much further to encompass the problem that the product should solve for the user, how the product will be acquired and how it will be integrated into the user’s life. (Graphic by USAASC)



the Army Geospatial Center. He and his team have participated in large-scale user events like the Joint Warfighting Assessment 2019 at Yakima Training Center, Washington, to do formal user testing and observation on the ENFIRE tool suite, which is designed to streamline the gathering and processing of map information. “We did an appliqué [add-on] integration into the Stryker vehicle,” he said. The tool suite was connected to sensors on the Stryker to ingest and aggregate information about the terrain, essentially doing the job of a team of scouts. “It was sort of ‘smoke testing’ to get an idea of how interacting with the tools did or did not save time or optimize task completion for Soldiers,” he said.

“It’s a huge benefit to make sure you have that feedback built into the loop,” said Maj. Reginald Bennett, with the U.S. Army

Cyber Center of Excellence at Fort Gordon, Georgia. Bennett attended a recent test event at Aberdeen Proving Ground, Maryland, where he observed Soldiers testing the Dismounted Assured PNT System (DAPS) device. “DAPS is a GPS-type device that works with the Nett Warrior ensemble. It’s everything a Soldier would need to have assured PNT in a PNT-contested environment.” Bennett said that being able to observe Soldiers directly using the device was key to understanding any challenges or successes they had with the product. “We got a lot of really, really useful feedback. Getting that information early, before the Army starts making massive purchases, is a big deal.” Maj. David Picard, assistant program manager for DAPS at the Program Executive Office for Intelligence, Electronic Warfare and Sensors, agreed with Bennett. “I think that’s tremendously useful and



A TRADITION OF INNOVATION

The Army has fostered a culture of innovation throughout its history, working with innovators like Bell Labs and other industry partners. Bell's relay computer was used by both the Army and the Navy to perform complicated calculations about the projected path of an anti-aircraft shell. (Photo by Bell Telephone Magazine, Summer 1946)

tremendously wise, when it comes to building stuff for Soldiers.”

TRAINING MATTERS

Dr. Pam Savage-Knepshield is a research psychologist with the U.S. Army Combat Capabilities Development Command (DEVCOM) Data Analysis Center (DAC). She leads the human factors engineering and HSI efforts at the Program Executive Office for Command, Control and Communications – Tactical, and she said it's vitally important for HSI practitioners to have adequate training in the field.

DEVCOM Data Analysis Center's "human systems integration workforce possesses the expertise to design and conduct [Soldier touchpoints] as well as collect, analyze and report results," she said. Their skills include experimental design, human performance measurement, statistical analysis, and knowledge of user-interface and system-design principles for the specific domains in which they work. But that specialized knowledge is not available everywhere. "Even though there is greater emphasis on [Soldier touchpoints] across the Army, our experienced

workforce is not always tapped for their expertise. Personnel without the necessary skills may be designing and conducting [Soldier touchpoints]—with mixed results." Bennett put a fine point on the issue of mixed results, and the importance of careful and deliberate testing, saying, "If a mistake is made, potentially, the result is loss of life."

Army leaders have prioritized HSI through policy and official guidance, but there is still room for improvement. Shattuck said the Naval Postgraduate School offers

FIRING ON ALL CYLINDERS

POLICY

Policy that requires HSI be performed (not just considered) from the beginning of the acquisition process and top-level advocacy that promotes and supports HSI throughout the organization.

1

TRAINING AND EDUCATION PROGRAMS

Training and education programs that communicate the HSI body of knowledge to practitioners.

2

HIRING PRACTICES

Hiring practices that identify and select qualified people to practice HSI. Career paths that provide opportunities for growth and promotion.

3

RECOGNIZED CERTIFICATION

Recognized certification from Defense Acquisition University or another organization, to set and maintain standards for the practice of HSI.

4

FUNDING SOURCES

Funding sources for HSI activities, beyond those that are at the discretion of the program manager.

5

MORE PRACTITIONERS

More practitioners to give necessary coverage to acquisition programs.

6



three exceptional HSI programs, including a four-course certificate and a full HSI master's degree, but enrollment is down. "The reason this [HSI] program exists is due almost exclusively to the fact the Army wanted it," he said. There was strong participation in the first two cohorts, but Shattuck said attendance declined steeply after that because of a lack of funding. "It wasn't a lack of interest in the program, or issues with quality or anything like that. Every year, we hear from people who want to enroll, but their [organizations] don't have money in the training budget to pay the tuition."

Shattuck said that, whether practitioners are educated by NPS, Defense Acquisition University or any other entity, the most important thing is for the Army to formally implement training standards for the profession. We need "some sort of certification that says, 'This individual is qualified to do HSI,' and right now, that doesn't exist," he said. "No one would hire a systems engineer to do systems

HSI is used widely throughout the Army acquisition enterprise, though it is now commonly called Soldier-centered design within the service.

engineering on a program with just a sociology degree. That doesn't make sense. But we're willing to hire HSI people that have an electrical engineering degree or something like that. It doesn't make them bad people, it just makes them the wrong person for that job."

GETTING IT RIGHT

Shattuck said he sees a clear path to success for HSI within DOD and it involves six specific focus areas: funding, staffing, policy, certification standards, career paths and training. "If you put those things together, you'd have an incredible, knowledgeable, trained, professional workforce

to really make a difference—whether you call it SCD or HSI—that would result in a much better product for the warfighter," he said.

According to Shattuck, program managers often do not set aside sufficient budgets to incorporate HSI into the acquisition process. "If the program manager doesn't think that HSI or SCD is important enough, he or she doesn't throw money at it, and therefore nothing gets done. There's no forcing function to give money for an HSI practitioner."

That results in a sort of funding-relevance death spiral for HSI professionals in the Army, he said. Without the money, they don't have enough work, and without the work, they aren't able to demonstrate their relevance to the program manager. "The program manager needs to have a long view of the program. This program's going to be around—in the case of a new Bradley fighting vehicle replacement or the new

WISE DECISION

A Soldier from the 101st Airborne Division checks his Nett Warrior device during a full mission test event at a Soldier touchpoint at Aberdeen Proving Ground, Maryland, in February 2021. Touchpoints are tremendously useful and wise, when it comes to building stuff for Soldiers, Maj. David Picard said. (Photo by Justin Sweet, PEO Soldier)



POLICY IN PRACTICE

Army Regulation 602-2, “Human Systems Integration in the System Acquisition Process,” provides a comprehensive look at the branch’s approach to HSI.

“The Army’s HSI Program focuses on the integration of human considerations into the system acquisition process to enhance Soldier-system design, reduce life cycle ownership costs, improve safety and survivability, and optimize total system performance. HSI accomplishes this by ensuring that the human is fully and continuously considered as part of the total system in the development and/or acquisition of all systems. Human performance is a key factor in total system performance, and enhancements to human performance will contribute to enhanced total system performance and could help reduce life cycle ownership costs. It is imperative that a total HSI effort begins as early as possible in system acquisition and that user feedback is used to maximize the influence on system design.”

Future Vertical Lift helicopter system—it’s not just for the five or six years that it’s being built, but for the 30 years that program’s going to be around. Wouldn’t it make sense to invest in the HSI activities that are going to result in safety and longevity and health and force protection and training and all those kinds of things, for the overall health of the system?”

In addition to more funding, Shattuck said there is a shortage of personnel. “When it comes to acquisition professionals and engineers and logisticians and those folks, they get assigned to a program and they work on that program and it’s typically one program. But for an HSI practitioner, particularly if it’s an ACAT [acquisition category] III or ACAT II program, they may be split between three or four or more programs that they’re supposed to cover.” With such limited time and attention, Shattuck said it is even more challenging for those HSI professionals to make much of an impact on a program. “There are absolutely not enough HSI practitioners to go around, to be in the trenches, with all the people doing all the other acquisition and design and sharing work, preparing for milestone decisions and all that sort of stuff.”

One reason for the shortage: There is no clearly defined career path or job series for HSI in the Army. “If you’re trying to hire someone with an HSI background or an HSI degree, there’s no job series you can go to.” Shattuck explained. “The closest you get is an engineering psychologist, which is not the same thing, or just a psychologist or a general engineer. None of those come with the knowledge, skills and abilities that somebody with an HSI degree has. We don’t have the ability to hire them and there’s not a career path, either in the military at the O-3 to O-6 level, or in the civilian world at GS-7/9 up to GS-15.” Creating an appropriate job series and a relevant career path would be an important step to help identify, manage and track people with HSI expertise, he said.

CONCLUSION

Progress is being made. There are numerous examples of the growing role and recognition of HSI, UX and the entire group of related fields within the Army and DOD. Look at the training being provided by the Navy’s Centers for Adaptive Warfighting, the innovative work of the General Services Administration’s 18F office, or the creation of the Air Force Chief Experience Officer position. This isn’t your grandfather’s military anymore.

The Army has a long history of embracing and fostering innovation, working with industry leaders like John Karlin and Bell Labs to achieve its mission. Today, it is on the edge of another major advancement with the broad adoption of HSI practices, but Shattuck said it’s going to require strong leadership. “What would it look like if the senior leaders of AFC [Army Futures Command] stood up and said, ‘HSI is important to me, we will do HSI in every program, you will brief me about it every time there is a milestone decision, I want to hear and see what the status of HSI is,’ ?” he said.

When it comes to accomplishing its goals—from dominating the battlefield to supplying Soldiers with the best equipment and technology—the Army champions innovative thinking and strong leadership. It doesn’t just hope for a lucky break.

For more information about HSI policy, go to <https://ac.cto.mil/bsi/>. To learn about the HSI programs at NPS, go to: <https://nps.edu/web/or>.

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STEFFANI MCQUERREY

COMMAND/ORGANIZATION:

Program Executive Office for Intelligence,
Electronic Warfare and Sensors

TITLE: Procurement coordinator

YEARS OF SERVICE IN WORKFORCE: 10

DAWIA CERTIFICATIONS:

Level I in contracting

EDUCATION: B.A. in psychology,
Notre Dame of Maryland University

HOW CAN I HELP?

Steffani McQuerrey has built her career around a desire to help others—quite literally. Diagnosed with cancer as a teen, she observed the important and impactful work of hospital psychologists in the children’s ward. “When I was going through treatments, I learned that there is a job called ‘child life specialist,’ which is someone who works in the hospital, primarily in the wings where there are kids with life-threatening illnesses, and they offer activities as well as someone to talk to about what they’re experiencing, which is really important for kids.” She immediately felt drawn to that kind of work, and was inspired to use her experience to help others going through a difficult medical diagnosis. She entered college a short time later, majored in psychology, and then started an internship at a hospital during her senior year. But she quickly realized it wasn’t the right fit. “I just couldn’t be in the hospital again every day,” she said. “It just didn’t work for me, emotionally.”

So, she finished her degree and then started looking for a new career path. As a native of northeast Maryland and the daughter and granddaughter of Soldiers who had both been stationed at Aberdeen Proving Ground (APG), she already had lifelong ties to the Army. “My mom was born on APG,” she laughed. “My grandparents actually met at APG when my grandfather was stationed here, so it’s been home for our family since then.” McQuerrey had previously held a summer job as a contractor at Aberdeen, so she went back there. “I was working on a task order, doing mind-numbing data entry, to be completely honest,” she said. But that’s where she began to learn the fundamentals of government contracting and started to envision a new career for herself.

“I was trying to figure out at that time what I was going to do, and someone on my team handed me a copy of Contract Management magazine. They said, you know, ‘This is a growing industry, and you should look into it,’ and I did.” She would eventually move on to task order management and administration positions with the same company, where she also pursued training and certification. “I went back to school and took classes in government contracting and got certified by NCMA [the National Contract Management Association] in federal contract management,” she said. And the rest is history.

Today, McQuerrey works as a procurement coordinator for the Program Executive Office for Intelligence, Electronic Warfare and Sensors (PEO IEW&S) at APG. She primarily supports the Project Director for Sensors-Aerial Intelligence and the Project Manager for Electronic Warfare and Cyber. “I help them review documents, make sure that they are following the applicable federal and agency regulations—all that kind of fun stuff—to make sure that our PMs [project managers], PDMs

“I really just like being able to help people, and this job gives me the opportunity to do that day in and day out.”

[product managers], and product leads can get the contracts in place that they need, to deliver their products to the warfighter,” she said. “I really just like being able to help people, and this job gives me the opportunity to do that day in and day out, and also connect with people while I’m doing it. It’s an interesting and satisfying job.”

The most challenging thing about her job, she said, is finding a way to a “responsible yes.” “I heard once that people tend to think that in contracting our job is to tell everyone ‘No.’” But that couldn’t be farther from the truth, she said. “Because there are so many different products, and Army requirements often fluctuate and pivot to different priorities, there’s not a ‘one-size-fits-all’ solution for contracting.” McQuerrey said she has to be familiar with each of the PMs and their products, and understand what it is they’re trying to accomplish, in order to give them the best advice about how they can achieve their goals. “It takes the basic knowledge of what can we do, what can’t we do, and what may lie in the gray areas in between, where we can think outside the box and get creative,” she said. “It’s being aware of all the different regulations and statutes we have to follow, but still delivering the product we need to.”

If the goal is the “responsible yes,” McQuerrey said the key is active listening. “I have a tendency to want to immediately problem-solve, and my tendency when someone is speaking to me, especially at work, is to not necessarily listen deeply—my brain wants to come up with a response. I’m listening to respond, instead of listening to hear what someone is telling me.” She has learned that she has to make a conscious effort to practice active listening. “When I’m really hearing what their concern is, I’m better able to determine how I can be helpful to them, instead



MONSTER TIME

McQuerrey said she enjoyed spending time with her child, Abby, at an amusement park in Florida. (Photo courtesy of McQuerrey)

of only half listening while simultaneously trying to come up with a solution.” It’s something she tries to practice in her personal life, as well, with friends and family. “When they come to me, I have to ask, ‘Do you just need me to listen or do you want me to try to give you some advice?’ Depending on the answer, I can change the way that I listen.”

Since the start of the pandemic in early 2020, McQuerrey has focused on solutions of her own, as well. She is working remotely and balancing the demands of parenting her school-age daughter. “Right now, our life is pretty busy, you know. I’m working at home, she’s doing school at home, so that’s been a challenge, I think, but also one that we’ve figured out how to tackle successfully.” She has spent much of her free time reading, tending to her potted plants and doing yoga in her living room, and she has also taken up an old hobby—playing violin. “I played the violin from elementary through high school, and when I went to college I was in a chamber orchestra,” she said. Though she didn’t

have as much free time after becoming a parent, COVID-19 has provided ample opportunities to practice during the last year. “My daughter is 11 now, and she is very independent, and I just said, ‘You know what, I’m going to get that out and pick it back up.’”

Professionally, McQuerrey encourages others to make time for themselves and to focus on work-life balance. “All of our senior leadership, I think, is really supportive,” she said. “Having a balance in the work-life ratio is emphasized within the PEO IEW&S family. Taking care of yourself, taking care of each other—you know, it’s not just about our work products, they care about us as people as well.” That has always been the bottom line for McQuerrey, both personally and professionally. When presented with any kind of challenge, her first impulse is to listen carefully, assess the situation and then find a way to help.

—ELLEN SUMMEY



YOU'VE GOT A POINT

McGowan's company now builds and sells many different types of high-quality audio equipment. (Photo courtesy of PS Audio)

NOTIONS, S•)))UND AND UN SOUND

High-end stereo manufacturer PS Audio founder Paul McGowan stumbled upon the bliss of pure recorded sound while trying to do something else.

by Steve Stark

Talking to Paul McGowan, founder of PS Audio in Boulder, Colorado, and a former DJ and radio personality on Armed Forces Network in Germany during the Vietnam era, you quickly encounter facts that strain credulity—except that they're facts. The interviews with Elton John and Cat Stevens. The stereo shop inside of a waterbed store. The \$10,000 intended for a first-of-its-kind synthesizer that walked away in someone's pocket.

And then there's the story of how McGowan got into the stereo business by failing spectacularly at what he most wanted to do, which is where the \$10,000 comes in.

Today, McGowan doesn't sound like a man who's lost a great deal, some of it foolishly, but it's clear that the central passion in his life—music—has brought him to where he ought to be. Almost in spite of himself.

Back in the early 1970s, when McGowan got out of the Army, the former Signal Corpsman had a dream and a plan. While stationed in Munich and working for Armed Forces Network (AFN) Radio, McGowan had gone to an Emerson, Lake and Palmer concert and fallen in love. He'd always been interested in electronics, he said, but that ELP performance was life-changing for him.



CAN YOU HEAR THAT?

McGowan leads PS Audio with his intense focus on high-quality sound. He said he didn't always have the "golden ear," but developed the skill through practice. (Photo courtesy of PS Audio)

"That was the first time I had ever seen a Moog synthesizer. I was smitten," he said in an April interview with Army AL&T. "I knew how circuits worked. I knew how amplifiers worked. But I couldn't imagine for the life of me how this collection of wires, lights and things could make that sound. And I was just, I had to know."

For McGowan, that intersection of music and electronics was where he wanted to be. Whether that was DJing on the radio, building electronics or recording music, he learned, he said, "by the seat of my pants."

SYNTHETIC SOUND

These days, anyone can make a computer or smartphone play synthetic, digital music. You can play almost any instrument and create a virtual, digital orchestra on a personal computer. But that's digital. The Moog synthesizer was analog.

The original Moog synthesizer was invented in 1964 by Robert Moog, and it gained wide exposure with 1968's "Switched-On Bach," an album by Wendy Carlos. In McGowan's view, Moog's

synthesizer had one drawback. It didn't play chords. "If you go back to some of those older recordings, you'll notice that they play a one-note line. Edgar Winter's 'Frankenstein,' if you remember that." On the tune, Winter plays cascades of notes, but can only do so sequentially.

"I wanted to be the first in the world to design a polyphonic synthesizer where you could play all 10 notes at one time, actually, and no one had done that before."

This burning desire was prelude to a major fail. "If you could say anything about me, it's I'm one of those crazy diehard entrepreneurial guys who cannot imagine failing."

THE HINGE DECADE

The 1970s were a hinge decade in which vast troves of enabling technology developed during World War II and then the Cold War and the space program began to evolve into great inventions. The synthesizer can be seen as a metaphor for the vast changes that were taking place in society.

It was to this world in 1973 that Paul McGowan returned to civilian life from the Army, still wet behind the ears, almost self-destructively impulsive, but with big dreams. By his own admission, he had no business sense.

The Army had provided him with more than he might have liked to admit. In Germany, McGowan had met an American woman named Terri Douglas with whom he developed an intense bond. Heedless shenanigans in Munich landed him in a German jail and cost him his gig as a DJ at AFN, as well as a promising start to a career in music production. He got shipped back to Fort Benning, Georgia. Terri—not yet his wife; they were married in 1977—came back to the States with him. They drove from Georgia to California in a Volkswagen van on a trip that included biblical rain, a bizarre storm of white frogs and other craziness. Once in California, McGowan went to work as a DJ at a radio station that, as McGowan put it, was "broke." But not quite as broke as he was.

MAKE IT OR BREAK IT

With visions of greatness (or delusions of grandeur) dancing in his head, McGowan reasoned that to make his synthesizer polyphonic, he might need to build multiple synthesizers into one.

What he needed that he didn't have was money. With a business plan showing \$1 million (in 1974 money) in revenue the first year and a firm handshake, he went to the bank, looking for a loan.

But he had no product and no orders. McGowan was nothing if not persistent. “I went out and convinced a local supermarket magnate ... and his son to invest \$10,000.”

That’s nearly \$65,000 in today’s money.

His called his company “Infinitizer, for infinite synthesizer. ... I had actually reached out to Walter [now Wendy] Carlos, [who] did ‘Switched-On Bach,’ and [she] was going to be my first customer.”

McGowan had written a long letter to Carlos, including a detailed sketch of his plan for the Infinitizer. Carlos surprised him with a thoughtful reply that included suggestions for improvements. McGowan was probably one of the few people in the world who understood how painstaking and tedious the creation of “Switched-On Bach” had been, because the Moog wasn’t polyphonic. He understood the thousands of hours that Carlos would have had to spend layering track upon track to achieve the sound.

“With \$10,000 in my back pocket,” and no business sense, McGowan “went to a local subcontractor and handed him the entire amount.” That turned out to be one of the worst—or best, depending on the viewpoint—decisions he ever made. The contractor ran off with the money within six months. “It was gone and we were out of business. And that happened pretty quick.”

It was a painful education, and it was hardly inevitable in the early 1970s that McGowan would land on his feet and continue his quest to fuse music and electronics. Indeed, McGowan’s dream and his company were in serious trouble.

“Knowledge is essential, but sometimes, so are ignorance and gut instinct,” he wrote in “99% True,” his 2019 memoir.

THE PREAMP SERENDIPITY

“I was supporting myself and my wife, Terri, as a disc jockey at a local radio station,” he said. His “fledgling business wasn’t doing too good at building synthesizers,” but the manager of the station needed new phono preamps.

Phono preamps serve two functions. One is to amplify the small, tinny sound created by the vibrations of the phono stylus in the grooves of the LP. The other is to address the RIAA (Recording Industry Association of America) curve.

The RIAA curve, McGowan said, is part of the reason the LP has its name. “The lower the frequency cut into a record, the wider

the groove on the vinyl. In order to save room enabling longer play, during the disc-mastering process the low frequencies are severely reduced while the high frequency levels are exaggerated. When you play back the vinyl, these frequency differences must be reversed so that it [the recording] sounds correct.”

Without a good preamp, the station would broadcast unpleasant noise to its listeners.

At this point, Infinitizer hadn’t yet gone belly-up, but things were not looking good.

The station manager told McGowan, “‘If you build that for us, I’ll pay for it.’ So, I went out and figured out how to build a phono preamp.” He had no tools other than books and a soldering iron. Neither did he have any way of measuring how good his phono preamp’s sound was. He went to one of the radio station’s sponsors and to see if he could test it on the sponsor’s equipment.

This was the guy with the stereo store within the waterbed store, McGowan said.

The sponsor said, “I’m not letting you hook that thing up to any of my expensive stereo equipment.’” Instead, the sponsor said to talk to his waterbed installer, Stan Warren. “So, he introduced me to Stan. I went to Stan’s house. We played it.” Stan liked it a



MIC CHECK

During his time in the service, McGowan worked as a DJ for AFN Radio in Germany. (Photo courtesy of Paul McGowan)

lot. “He said, ‘This sounds remarkable.’ I said, ‘OK, great.’ And I was thrilled because that meant the radio station would be happy.”

Stan Warren was an audiophile, except, at the time, McGowan had no idea what an audiophile was. He lived in “a little shack in Orcutt, California, and the floor was wooden and kind of bouncy. He had literally drilled four holes through his living room floor and put four stakes into the earth below it and built a table that his turntable could sit on so that you wouldn't have any rumble when you were walking.”

Warren came by McGowan's house and, impressed with the sound of the preamps, told McGowan that he wanted to give him \$500 for half of the company. McGowan had just lost his Infitizer company and gone through bankruptcy a month or two before, and was confused. Warren said, “‘No. The stereo company. We're going to call it Paul and Stan Audio.’ And I said, ‘Who are we going to sell them to?’ and he goes, ‘Audiophiles.’ ”

And thus was PS Audio born.

LAST CENTURY'S STARTUP

In an era when there was no such thing as a website or a Best Buy or Amazon.com, how did an enterprising startup gain traction for its product? From the start, McGowan and Warren knew their customer. He was a man. Maybe older. He had discretionary income. He was as obsessed with music and sound as were Paul and Stan. He was maybe also the kind of audio snob who worked at a stereo store and would never have allowed the product in the store. “We never had any dealers. Dealers didn't want to pay any attention to us. I mean, if you think they were snobs, think about us walking in with a little tiny homemade box that we were trying to sell for \$60.” Actually, \$59.95, or nearly \$400 in today's dollars. “And they would look at us and go, ‘You're out of your freakin' mind. Get out.’ ”

They went “factory direct” to their customers. One audio magazine allowed them to place an ad on credit. Their ad read, “Rediscover your records” for \$59.95. They guaranteed that customers could hook their preamp up to their system and it would blow them away. “If you don't [like it], send it back, and we'll give you your money back, guaranteed.” All a potential customer got was an address.

“At first, there were just inquiries,” McGowan said. PS Audio had no brochure, so they just wrote back hundreds of replies. “And before you know it, people started sending \$59.95 checks in. We took that money and went out and bought parts and hand-built



CHIP OFF THE OLD BLOCK

McGowan got his love of electronics from his father, Don. (Photo courtesy of Paul McGowan)

every one of those things ourselves. And just drip by drip, slowly but surely, we built the business, literally, by hand. I mean we did everything. We stuffed the PC [printed circuit] boards, we silkscreened the chassis. We bent the metal, we cut the metal, we punched it.” PS Audio components, nearly 50 years later, retain that original look.

TASTES EVOLVE

At first, Warren was the audiophile and McGowan was the entrepreneur and electronics-builder. As McGowan learned more and more about reproducing recorded sound, Warren learned more and more about circuits.

“Stan was our listener. He was amazing. He could just say, ‘Nope, that's—I can hear that that cymbal's off,’” McGowan said. “I couldn't hear any of it. So it took it took me a good six months of daily listening and being tutored till I finally went, ‘Oh, of course,’ and then I finally became a ‘golden ear.’ ”

As McGowan learned more, his focus shifted away from the creation of sound via electronic wizardry and flashing lights to reproducing sound at the highest possible fidelity.

McGowan compared learning to understand and appreciate the sound of a high-quality stereo system to learning to appreciate

fine wine or fine food. Some of the skill is innate, and whatever isn't can be acquired if the listener puts in the effort.

McGowan said that the two biggest things in listening to recorded music are tonal balance and imaging. Some people are more sensitive to the tonal balance of recorded music. Most people, he said, are very sensitive to imaging. That "image," which is imaginary in the most literal way, is something that most listeners are not likely to get while listening to streaming audio on smart speakers and over earphones or earbuds.

"If you were to walk into our listening room [at PS Audio] today, and I sat you down and put on something, the first thing that you'd probably notice that you've not heard before ... none of the sound comes from the speakers." The speakers in the listening room, he said, are "seven-and-a-half-foot-tall towers in front of you, and yet no sound is coming from them. And the idea of a great stereo is this imaginary soundstage where you can literally hear that, well, that guy's about there, and the other one's just to his left about over there. But [the speakers] actually sound like people playing in the room."

This image of the music being played over "these big-ass speakers" is not something that you get with headphones on. "You have to hear it on a properly set up pair of speakers."

This is all imaginary. It's your brain taking stereo sound heard by your two ears and interpreting it. "The soundstage is 10 feet deep and it's 20 feet wide, approximately. And then I put on another piece of gear and, all of a sudden, the soundstage shrinks, the actual size of this image that you're getting literally shrinks, or the musicians seem bunched together, as opposed to spread apart."

That is only part of the magic that McGowan loves about high-end stereo equipment. One thing it cannot and may never do is have the same fullness and presence as live music. You can tell live music, anyone can, regardless of the source, "even someone strumming a guitar," McGowan said. "Or I can be walking down the street and somebody is playing a piano in their house, or even an electric guitar. And I can tell."

A DIFFERENT LEVEL OF QUALITY

Back in the day when McGowan's former partner was selling stereos out of a waterbed store, the quality of most stereo equipment wasn't as good as it might have been. McGowan said the manufacturers didn't know sound but they did know their customers. McIntosh, the venerable high-end audio company, never had very good sound, he said.

"If you could say anything about me, it's I'm one of those crazy diehard entrepreneurial guys who cannot imagine failing."

But he gives McIntosh credit for knowing its audience. "They're a company that puts bling first. And they really understand who their market is." That said, however, "They put very little effort into how it sounds."

If you go back to that serendipitous phono preamp that McGowan built for the radio station, and think about what it was

doing—or, actually, undoing—you start to get a glimmer of what McGowan and his audiophile brethren are on about. If you want the music to sound like the best version of what was recorded, then the sound of all of the manipulation that's done between then and the eventual listener must be transparent and disappear. That's what PS Audio does.

When CDs came onto the scene, he said, they didn't sound very good, but that was because "a company like Sony that doesn't care about sound made it, and Philips."

PS Audio embraced it. "It sounded like crap ... compared to vinyl, but I knew, technically, that that was just because it was in its infancy." Indeed, PS Audio was one of the first companies to look for the pure heart of CD—it took out the factory electronics of a Philips Magnavox CD player and replaced them with audiophile electronics. Current PS Audio gear builds from that legacy of trying to create the purest audio. The prices of PS Audio gear reflect the high end. They sell an amplifier called Sprout that doesn't top \$1,000, but the price of the rest of their gear could buy you a respectable used car.

Their customers are, like McGowan, audiophiles. In a sense, it's a demographic that never really changes. PS Audio's customers are somebody's dad. Maybe granddad. "Our median age is probably 55 to 60," he said. "The question every few years comes up, well, what's going to happen to your audience when we all die, because we're all old guys?"

The brand is such that "you get to a point where a small percentage of people have enough disposable income that they can start playing with their hobbies. And a small percentage want something better. You see it in wine, cars, photography, and audio's no different."



BACK IN THE SADDLE

McGowan now leads the company he founded in 1973, having left to pursue another opportunity in 1990, and then returning to PS Audio in 1997. (Photo courtesy of PS Audio)

He summed it up as that “38 or 40-until-you-die kind of demographic.”

A DEPARTURE AND A RETURN

Stan Warren, the S in PS Audio, left the company in the 1980s to form his own company to compete with PS Audio. He hasn't spoken to McGowan in years.

In 1990, McGowan left the company to join Arnie Nudell in founding Genesis Loudspeakers. PS Audio did OK for a time, but in 1997, it was clear that the company was foundering in a competitive market. McGowan bought the name back and decided to run it himself.

Never short of ideas, he had a just-maybe crazy idea for clean power—not in the sense of green, eco-friendly power, but in the sense of power that wouldn't muddy sound. If a stereo playing great music at the highest quality is a recipe, clean power is one of

the most important ingredients, and one of the ingredients that has to disappear in the delivery of sound to the listener.

Today, sound quality is McGowan's singular focus. When he rescued his former company after buying back the name of PS Audio in 1997, he intended to keep it small. Just a mom-and-pop shop. Today, the company employs 53 people and, in addition to its electronic equipment and the Octave record label, PS Audio has a magazine called Copper, a new recording studio for Octave and, as is always the case with McGowan, wild and just-maybe-achievable dreams.

AN ARTIST

Had he taken a path that was a little more straight and narrow, McGowan might have ended up in another, perhaps related, line of work. McGowan's entrepreneurial drive came from his father. The older man was a big influence on him as much for what he did as a family man as for what he didn't or couldn't do

ROADS LESS TRAVELED

If the PS Audio gig doesn't work out, McGowan could always get back into business as his alter ego Woody Short. Back when he was the program director for the local rock-and-roll station, before PS Audio became his bread and butter, the owner of that station also owned an AM station with a country and western format.

McGowan agreed to do a talk program—this was long before radical rightwing talk radio came to rule the AM radio waves. “I won't bore you with the whole story but it got pretty crazy. It was a very conservative town and I am not a very conservative person.” A call-in show without callers wasn't going to last, he reasoned. McGowan, as Woody Short, would espouse views antithetical to those of the listeners just to wind them up, “and people would call up and pray for my soul and they would yell at me.”

Once, in a shop, he overheard folks talking about his show. “I said, ‘So you listen to that Woody Short guy?’ and they said ‘I hate that [so and so]. If he ever walked into my store, I'd shoot him.’” McGowan asked, “‘If you dislike the show so much, why do you listen?’ He goes, ‘I wouldn't miss it for the world. I gotta know what he's doing. That guy is destroying our community.’”

There was money in it. But McGowan's sights were elsewhere. “As an entrepreneur you do what you've got to

do,” he said. There were other directions his life could have taken, as well.

He had a buddy during his AFN days in Germany named Giorgio Moroder, a musician, producer and “a big synthesizer guy,” which is how McGowan had got to know him.

Moroder had a studio called Musicland where most rock luminaries of the era recorded albums—Queen, Led Zeppelin and the Rolling Stones among them.

At that time, Moroder had a side business that he was trying to get out of, McGowan said. He recorded German-language versions of popular music for radio play in Germany. McGowan and Terri were going to take that over from Moroder.

Instead of taking over Moroder's business, McGowan, undisciplined and impulsive, disastrously bungled that opportunity. After a blowup with his superior officer, within 24 hours he was on his way back to Fort Benning, Georgia, “and my life was over.” Except, of course, his life was really just starting. (For the full scoop on that bit of McGowan short-sightedness, his memoir has all the sordid details.)

—STEVE STARK

professionally. He was a salesman, something he hated. “He was an artist, a sculptor and a painter, but he just couldn't support his family doing that,” McGowan said. His sense of frustration as McGowan grew up was responsible for McGowan's stubborn unwillingness to settle.

“I determined from that experience with my father that I would never do something that I didn't want to do unless it was in the service of getting to something else,” he said.

All of the steps and missteps in his career were in the end all stepping stones to his dream of a remarkable sound, recorded music with presence, image, a force of nature reproduced that can sweep you in and keep you within its dream.

Now, with PS Audio, McGowan is himself an artist—a sculptor and painter of sound, and absolutely in his element.

For more information on McGowan's company, go to PSAudio.com. For more information on his personal life, go to paulmcgowan.com.

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THE OVERSIZED POWER

Image by Getty Images.



OF SMALL DATA

Big data gets the headlines, but most decisions are based on small data, and human beings are naturally bad with it.

by Jason Martin

The Army's ability to generate data from many sources is world class. However, my experience is that the Army isn't doing the best job in creating the right data and turning it into the information decision-makers need most. The reason is simple. As a whole, we have failed to recognize a weakness scientists have shown that almost everyone has, and to use the statistical methods that improve our abilities to create and use small data.

Small data is the basis for many, if not most, of our acquisition decisions. There is no set definition for it, but it answers specific questions. It is gathered from planned experiments and tests (I'll use these words interchangeably) such as laboratory bench experiments, system-level field tests, simulations, the list goes on. Small data can consist of fewer than 10 to hundreds, and possibly thousands, of data points depending on the situation. When we consider all of the decisions we make based on small data—from basic research to making design tradeoffs to system fielding and sustainment and everything in between—it isn't a stretch to think that the Army makes hundreds or even thousands of decisions involving small data every day.

Big data is a popular topic, and for good reason. The Army is putting significant emphasis on improving our ability to use it. To demonstrate why we must also focus on our abilities to work with small data, consider an unmanned aerial system that autonomously detects hostile forces. The system likely would be developed using big data in the form of pictures or videos to train the system to distinguish between civilians, friendly forces and hostile forces. But when it comes time to evaluate how well the system works and to make fielding

decisions, small data from developmental and operational tests most likely will be used. Small data probably would be used in designing the system, as well. Both big and small data are important.

THE BEST LAID PLANS...

Here’s a real-world example demonstrating the challenges of small data and what can happen if we don’t understand it. I worked on a test in which we measured whether a vehicle could avoid detection by a sensor. If it did, then we recorded a success. If not, a failure.

During the test, we systematically controlled five variables to determine their effect on the ability of the vehicle to avoid detection. The variables included distance from sensor to the vehicle, speed of the vehicle, the aspect of the vehicle relative to the sensor, etc.

The test plan we developed involved a few hundred data points that would enable us to learn not only the effects of the five variables, but also effects of all two-way combinations of the five variables. For example, we didn’t just want to understand how distance affected detection; we wanted to understand how the effect of distance changed as speed changed.

This is one of the underappreciated challenges of small data. The effects of combinations of variables are often important, and likely will become even more important as the systems we develop become more complex. Experiments must be planned appropriately to ensure we are able to understand these combinations, or interactions.

While it may take a little time to grasp the concept of an interaction fully (it did for me), they are very common. If you’re familiar with baking, you know that, to a point, adding salt can enhance other

flavors. This is an example of an interaction between salt and another ingredient; the effects of another ingredient on flavor depend on how much salt is added. More generally, in a scientific formula, every time you see two or more values multiplied or divided, that’s an interaction. Though common, interactions often are not considered when planning a test and analyzing data, and we learn less than we can if they are considered.

We tend to think that small amounts of data tell us more about future events than they do.

...CAN GO AWRY

After the test was complete, I was told that our original plan was modified midway through the test. An operator made an error when executing a move to avoid the sensor, and the vehicle avoided detection (a success) when it wasn’t expected to. So the same “error” was tried again, and the result was another success. After a dozen or more trials with the same “error,” there were more successes than experts expected, so they concluded that the change most likely improved the ability of the object to avoid detection. This was the first mistake.

The rest of the test was altered to include the change with the expectation of more thoroughly demonstrating an important improvement. While changing a test is frequently necessary, engineers made a

second mistake in the way the test was modified.

Unfortunately, the two mistakes prevented us from understanding whether the “error” was actually an improvement and, worse, from understanding the effects of the original five variables, the original goal of the test. I should mention that the engineers who made these mistakes are excellent engineers, among the best in their field. If they can make these mistakes, any of us can.

WHAT HAPPENED?

How could so much go wrong when some excellent engineers made a seemingly simple change to a test? Working with small data has challenges that are often underappreciated, and the testers weren’t aware of two common challenges and how to address them. It is important to point out that while this example involves modifying a test, these challenges are equally relevant when initially planning a test and the same mistakes are often made at that time.

The first challenge is knowing how much data is necessary to make a decision. Though we can’t know for sure for reasons that will be explained below, it appears the unexpected successes were not a result of the “error,” but just random occurrences. This is the same kind of randomness that allows you to get eight heads when you toss a coin 10 times and then get four heads in the next 10 tosses. It was as if the vehicle went on a lucky streak and avoided the sensor more times than expected, but the streak was mistakenly attributed to the “error.” The decision to change the test was made without enough data to distinguish a lucky streak from something meaningful. To avoid such mistakes we have to collect enough data (but not too much, that’s overly costly) to allow us to determine with acceptable risk whether something

happens for an identifiable reason or just randomly.

The second challenge is planning or modifying a test in a way that allows us to understand clearly the effect of each variable on the result we are measuring. We wanted to understand how five variables, including their two-way interactions, affected the ability of a vehicle to avoid a sensor. In the middle of the test, we added the goal of understanding whether the “error” improved this ability.

While it is sometimes necessary to modify a test, this one was changed in a way that confounded the “error” with some of the other controlled variables, so we couldn’t tell what variables actually affected the vehicle’s ability to avoid detection. The people who made the change had no idea this had happened. The sidebar on Page 88, “Unforced Error,” provides a simple example to explain what happens when a test is designed or modified incorrectly.

A SYSTEMIC PROBLEM

Small data decisions are difficult for nearly everyone. In his book “Thinking, Fast and Slow,” Nobel Prize laureate, psychologist and behavioral economist Daniel Kahneman discusses the weakness humans have in our intuition about small data. We tend to think that small amounts of data tell us more about future events than they do. This appears to be what happened when engineers believed the “error” had an impact of the ability of the vehicle to avoid the sensor. Intuitions about the meaning of the data they collected failed them, and they didn’t know the statistical methods that would help them avoid the mistake.

The engineers made mistakes when modifying the test because they didn’t understand the necessity or the use of statistical methods, known as design of



TURBO TESTING

How much data is enough? That’s one of the first questions answered by test designers for the Infantry Squad Vehicle, currently being evaluated at U.S. Army Yuma Proving Ground, Arizona. Powered by a 2.8-liter turbo diesel engine with a six-speed automatic transmission, the four-wheel-drive vehicle carries up to nine Soldiers and their gear. (Photo by Mark Schauer, U.S. Army Yuma Proving Ground)

experiments, that were needed to modify (and initially create) the test correctly. They neither realized the need nor knew how to make sure Bert and Ernie push from adjacent sides of the box.

The mistakes happened because, through no fault of their own, some excellent engineers did not understand a few fundamental statistical concepts.

It is tempting to think that engineers and scientists who are good with numbers are also naturally good at collecting and analyzing data. This is not true. Creating the right data to help answer a question and analyzing it in the most informative way requires an understanding of statistical methods that allow us to deal effectively with randomness and uncertainty. Intuition is completely insufficient.

While the Army certainly has individuals and groups with expertise in working with small data, mistakes with small data are systemic and partly a result of deficiencies in engineering and scientific curriculums. Most college graduates in sciences and engineering arrive in the workforce with an understanding of equations and theories, but with limited skills to deal with the random variability inherent in the real world. Statistical methods allow us to cope with this variability when deciding what data to create, when analyzing the data to develop useful information and when making decisions. Even those with academic training often struggle with practical application for complex military applications. Though available, few people receive on-the-job training in effective use of statistical methods.

This lack of statistical knowledge has important consequences. Without using statistical methods to plan an experiment, it is more likely to provide too much data (overly costly), to provide too little data (not enough data to answer questions accurately) or to have little hope of providing data needed to answer the questions of interest. The latter was what happened when the test was modified in the sensor example above. A thorough explanation of these points may be useful, but would also be a bit much to cover in this article. Suffice it to say that if people plan an experiment by thinking of interesting things to do, without using statistical methods to create and evaluate the plan, it's easy to unknowingly make a mistake. Using design of experiments helps us leverage our knowledge to avoid these mistakes.

Once data is collected from a well-designed experiment, we should use statistical methods such as regression analysis to understand how the variables we controlled in our experiment (and sometimes those we didn't) affect the results we measured. Where our intuition often fails us, statistical analysis allows us to understand better whether changes in our data were caused by changes to the controlled variables or by randomness. Furthermore, we can understand the uncertainty in our conclusions. Understanding our uncertainty is crucial to making decisions that appropriately consider risk. Without considering the uncertainty, it would be difficult to make good decisions that rely on knowing how hard Bert and Ernie are pushing the box. Just knowing the average values (the black dots) isn't enough. We must consider the uncertainty because it is directly related to the risk of a wrong decision.

Without appropriate statistical methods, it's easy to plan an experiment, execute it,

UNFORCED ERROR

Say Bert and Ernie are working together to push a heavy box on a dolly across the floor. (See Figure 1.) You want to conduct an experiment to estimate, on average, how hard each of them pushes. The dolly moves easily in all directions. You will measure how far the box moves in five seconds to determine how hard each of them is pushing. Bert and Ernie represent the variables we control in any experiment. Since neither Bert nor Ernie will push exactly the same way each time, you will ask them to do this several times to avoid making your conclusion based on an unusual data point.

If Bert and Ernie push on the same side of the box (in the same direction at the same spot) as shown in the right side of Figure 1, there's no way to know how hard each one is pushing. This is a worst-case scenario, and sometimes occurs when people don't use statistical methods to design experiments. If this happens, you can know how hard they pushed together, but there is no way to understand their individual contributions. Their effects are confounded. This is what happened in our sensor test. Because of the way the test was changed, it was as if the error and some of the other variables that we controlled were pushing from nearly the same side of the box, and it kept us from understanding how each of variable affected the result.

The middle picture shows our goal when designing an experiment. Because Bert and Ernie are on adjacent sides of the box (pushing perpendicular to each other), it is easy to tell how hard each one is pushing.

When planning or modifying an experiment, our goal is to plan it so that the variables we are controlling mimic Bert and Ernie pushing on adjacent sides of the box. This allows us to understand—accurately—how each variable we control affects the result we measure.

When we plan a test by thinking of interesting things to try, but without using appropriate statistical methods, the results are often somewhere in between the best and worst case scenarios. The effect is that we don't understand the effects of variables as well as we could. With several variables, this can easily become a big problem.

WHAT'S THE DAMAGE?

The two mistakes in the sensor test have different consequences. First, by not knowing how much data was needed to determine whether the error improved the vehicle's ability to avoid detection, it is possible that the test was modified unnecessarily. However, modifying the test incorrectly was the biggest mistake—it resulted in a less accurate understanding of the effect each variable had on the ability of the vehicle to avoid the sensor.

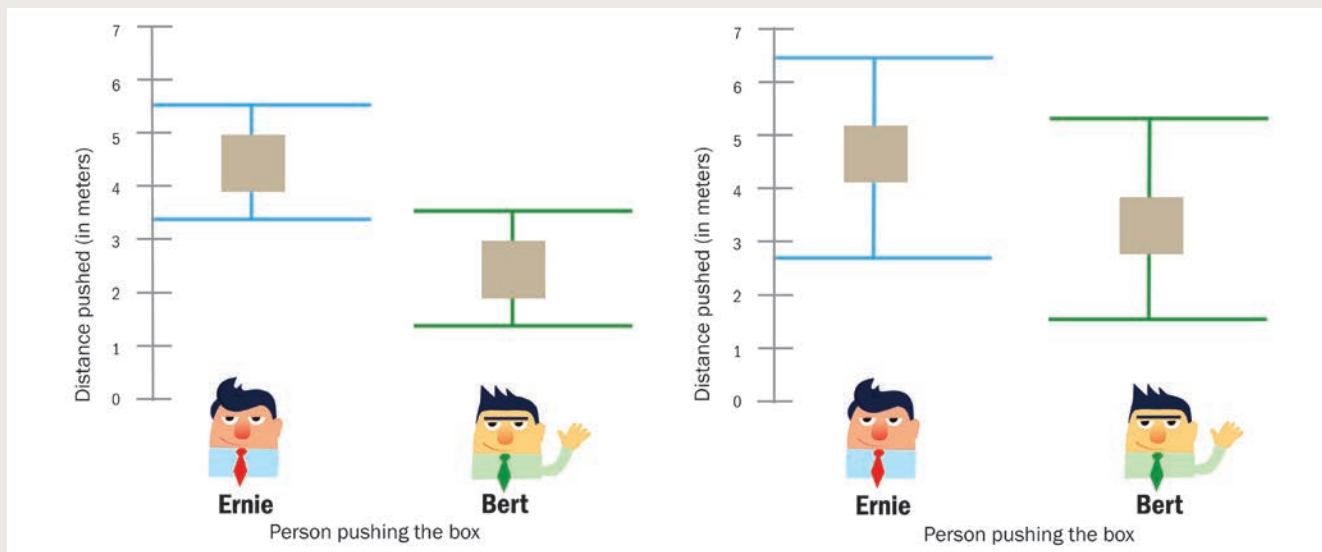
FIGURE 1



OBJECT IN MOTION

If Bert and Ernie were pushing a box at the same time, how could you tell who was pushing harder? If they were on adjacent sides of the box, as shown in the middle example, it would be easy to tell how hard each one was pushing. (Graphic by USAASC)

FIGURE 2



REDUCING UNCERTAINTY

The plot on the left shows the results of a well-designed experiment. In the example on the right, the two results have considerable uncertainty. While the squares are in similar places in both examples, the possible range is much larger on the right. These ranges represent the uncertainty about how far Bert and Ernie push the box on average. (Graphic by USAASC)

To see the consequences of incorrectly changing the test, it is useful to look at the results of data analysis. Often the most informative way to analyze data is with some kind of statistical analysis. Regression analysis of the Bert and Ernie experiment created the two plots in Figure 2.

The plots show the results of analysis for two experiments. The plot on the left is from analysis of a well-designed experiment and on the right from a poorly designed experiment. The black dots represent the estimated or most likely value of the average distance that Bert and Ernie push the box. Notice that the black dots

continued on page 90

are in similar places on both plots, meaning that the estimated values are similar from both the good and bad experiments.

Values within the ranges of the bars are those that are reasonably believable based on the data. These ranges represent the uncertainty in our conclusions regarding how far Bert and Ernie push the box on average. Notice there is much more uncertainty in the plot on the right from the poorly designed experiment. Using the plot from the well-designed experiment on the left, we can conclude with little risk that Ernie is pushing harder than Bert.

This increase in uncertainty is a result of the ways the tests were planned. The increase is moderate compared to what can easily occur. Because of the increased uncertainty, there will be more risk involved for any decision that depends on understanding how hard each of them pushes.

In the sensor example, the way the test was modified caused uncertainty to increase so much that we could not form any meaningful conclusions about how the error or several of the other test variables affected the ability of the vehicle to avoid the sensor.

Changing the sensor test appears to have been unwarranted, and the way it was changed increased the uncertainty in our conclusions to the extent that they were not useful.

—JASON MARTIN

analyze the data, report results and make a decision without ever knowing mistakes were made. Such decisions are built on a house of cards that can be costly in terms of dollars, time or even lives.

A SYSTEMIC SOLUTION

The hole in our small data capabilities also presents a tremendous opportunity. For each of the thousands of small data decisions we make, we can learn to use statistical methods that help ensure that we 1) spend appropriate resources to collect the right amount of data, 2) collect the right data to most fully answer our questions and 3) perform analysis that most accurately quantifies what we believe in a way that communicates the uncertainty in conclusions. This will fundamentally change our abilities to most effectively use resources and take calculated risks.

QUESTIONS FOR LEADERSHIP

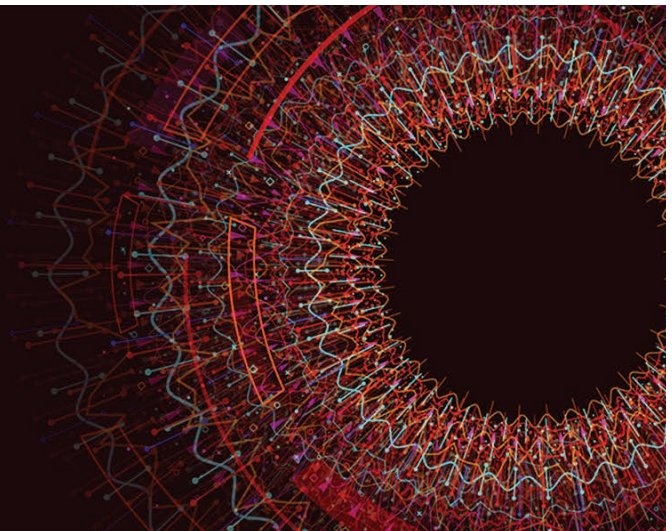
I know from experience that widespread adoption of the statistical methods we need is not likely to happen without strong leadership. Decision-makers must encourage it by asking the right questions and insisting that we use rigorous statistical processes to create and analyze data. We need leaders and decision-makers to know which questions to ask and how to recognize an adequate answer.

Here are examples of some important questions and information we should always know. The answers should be based on rigorous statistical methods, not opinions.

- Is that test the right size? Do we need more or fewer test runs? What assumptions were made to determine the size of the test and why? Please show me the (simple) results of calculations that support the plan.

EXPANDING THE CIRCLE

Small data is the basis for many, if not most, acquisition decisions. The Naval Postgraduate School recognizes the importance of data science education for DOD, and it has launched an interdisciplinary Data Science and Analytics Group, which will provide better education, research programs and advisory services to DOD. (Photo by Matthew Schehl, Naval Postgraduate School)



- Exactly what do I expect to learn from this test and how much uncertainty can I expect to face when making a decision based on it?
- How do I know that we can understand the effect of every variable in the test on the outcome? Will I be able to understand how the effect of one variable changes as another variable changes? If not, why don't we think that is important to know?
- How much uncertainty is there in the conclusions you have provided? (The answer should be quantitative, not just an opinion. For example, "We think the answer is 4, but statistical analysis indicates the answer is between 3 and 5 with 95 percent confidence.")

These questions are straightforward; any good test plan and resulting data analysis addresses them. Understanding the high-level statistical concepts needed to ask them and to assess answers does not require in-depth knowledge of statistics. Anyone can learn with a reasonable amount of training. Asking these questions will encourage due diligence from those collecting data, performing analysis and creating information used to make decisions.

Providing appropriate answers to the questions above will certainly require more statistical knowledge than asking them and recognizing an adequate answer. Will this require everyone working with data to become a statistician? Not at all, but it is necessary that those planning experiments and analyzing data have an understanding of design of experiments and statistical analysis and know when to call someone more knowledgeable. Just as nearly everyone needs to understand Microsoft Excel or PowerPoint at an appropriate level to do a job, nearly everyone should understand statistical concepts at an appropriate

level. Otherwise, we are expecting people to manage risk without the skills needed to understand and cope with the uncertainty that causes the risk.

Fortunately, there are already small groups in the Army, throughout DOD and in private industry that have in-depth knowledge of applying statistical methods to the development of military systems. Some have developed extensive training. We have a small but very capable base to grow from. In addition, commercial and free software tools have seen significant increases in capabilities over the last decade. Finally, while in-person training is often more effective, we have learned to work and train remotely over the past year, and training can be done more efficiently than ever. Everything is in place to make the needed improvements in our capabilities to plan tests, analyze data and create the information needed to best support decision-makers. We just need leaders to help us focus.

CONCLUSION

Though we have pockets of excellence, the Army has a systemic weakness in its ability to efficiently create small data and turn it into the most useful information for decision-makers. By recognizing and understanding this weakness, we create an opportunity to fundamentally change our ability to develop military systems. For every decision based on small data,

If people plan an experiment by thinking of interesting things to do, without using statistical methods to create and evaluate the plan, it's easy to unknowingly make a mistake.

our goal must be to create the information needed using the right statistical methods.

This will only happen if leaders make an effort to truly understand our current weaknesses, recognize the opportunity and begin to lead the change. Our ability to maintain military superiority may depend on it. For a given amount of resources, there is a significant risk we will achieve less than those who effectively apply statistical methods to small data, because day in and day out, they will make better decisions, both small and large. It will take time to develop the capabilities we need, but all of the necessary pieces are in place to begin to improve. To maintain our position as the world's most powerful military, we need leadership to help us get started.

For more information on application of statistical methods to planning experiments, conducting appropriate analyses and providing the most useful information to decision makers, go to www.testscience.org.

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Images by Getty Images.

THE MODERN PERSPECTIVE

Don't bury your head in the sand—try out your “modern eyes” to modernize the Army.

by Elizabeth Chirico

Four years ago, I sat at a large table playing cards with several close friends. It was springtime and the topic of filing taxes came up in conversation. Everyone dreaded the thought: confusing forms, the ongoing debate on whether it was better to receive a refund or to owe more tax, ever-changing laws, regulations and policies, shifting income brackets, standard vs. itemized deductions, and eligibility for tax breaks.

Why did taxes have to be such a pain? As we commiserated, I made the comment that it was so much easier to do taxes through an automated software program like Turbo Tax, than to complete them manually by hand. There was a long silence in our usually vivacious group of friends as all eyes fixed on me.

“Wait. Liz, do you mean to say that you did your own taxes by hand before?” they collectively asked me.

“Yes...” I said cautiously. “Didn’t everyone do their taxes by hand at some point?”

Everyone immediately burst out laughing and exclaimed almost in unison, “*What?*”

ADAPTABILITY

Yes. It was true. I used an actual pencil with eraser, hard copy tax forms and massive 1090 federal and state newspaper-print tax booklets to complete my taxes and physically mailed them in to the IRS. There was only one reason I kept doing my taxes that way: because it was comfortable and familiar to me. The process was time-consuming, arduous and frustrating, but I thought it was just a necessary part of life that everyone had to endure. As a creature of habit, comfortable with my established, though less-than-efficient way of doing things, I resisted the convenience of using an automated tax program for several years.

Just over six years ago, when I finally decided to give an automated tax program a try, I was so impressed by its speed, accuracy and efficiency that I vowed never to do taxes by hand again! I chose to let go of the familiar way of doing my taxes manually (even though it was objectively an unpleasant task that I dreaded) and allowed myself to try a new way of doing things that resulted in an even better and more accurate product. I cannot imagine completing—and now never want to complete—my taxes by hand again.

As humans, it's tough for us to adapt to change, even when changes are neutral or helpful. Change still represents something new or different for us to adjust to that requires focus, energy and detachment from our previous ways of doing things. My resistance to using an automated tax program for several years came from within, fueled by my attachment to the comfortable “way I always did things.”

A CHANGED MINDSET

Enacting and embracing modernization efforts across the federal government requires first personal, then practical and eventually institutional mindset changes. The Army will have limited success instituting modernization on a broad scale if no one actively chooses to use the new business tools and modernized systems that the Army develops, designs and deploys. For business process modernization to be effective, it requires each of us, on a personal level, to trust technology to access important data, complete functions, roles or processes that we used to perform manually, combat our natural resistance to change, and cede our sense of personal pride to technology (OK, maybe this software program can actually work more accurately or faster than I can.)

In January 2020, my team (the Acquisition Innovation through Technology team, Future Operations at the Office of the Deputy Assistant Secretary of the Army for Procurement) developed and deployed the Determination of Responsibility Assistant bot, a tool that completes a manual data look-up process and report in five minutes—a process that, without the bot, takes users up to an hour to complete manually. We wrote about it in the Winter 2020 issue of Army AL&T.

Some users adopted the tool immediately and used it regularly, while others were skeptical and resisted using the tool—even though Army policy mandated its use. Some users wanted to know exactly how the tool worked (we walked them through the process); others wanted to know what they should do if or when the tool was not working properly one day (let us know so we can fix it). Over time, through proactive engagement with 8,000 Army users (and eventually thousands more Air Force and



SLOW AND STEADY

You can still file your taxes by hand, but why would you want to? Online e-filing software has made the once arduous process much simpler and faster.



THE BAD OLD DAYS

By allowing technology to take over some important but tedious administrative tasks, Army employees modernize by improving processes one at a time—enabling change by embracing it.

Navy users, too), consistent messaging and transparent communication, we assuaged concerns and users learned to consistently trust the tool and the results it produces.

Building on our users' trust, our team, now 11 strong and made up of individuals from across the Army contracting enterprise, is working to deliver a variety of new solutions using intelligent automation technologies designed to streamline and modernize existing acquisition business systems and processes. Some focus areas include streamlining the acquisition requirements process, unlocking key pricing insights, tracking government furnished property, using artificial intelligence and machine learning to better analyze Army contract transactional data and execute better market research, among many others.

Combined, these efforts, once fully developed and deployed, will produce extraordinary changes with massive impacts across the Army enterprise. Our goal for these solutions is, once mature, to work as seamlessly as technologies that have embedded themselves into our modern lives today do, like doing sums using a calculator, or navigating using GPS. Wide-reaching changes to established processes, systems or ways of doing business, brings the necessity for all of us to learn about, adopt, try out and eventually trust new ways of doing things.

CONCLUSION

There are several ongoing formal efforts to modernize legacy systems, processes and functions across the federal government. Process modernization in its many forms offers a variety of key benefits: streamlined processes, improved data transparency, enhanced security and accuracy, reduced time spent on administrative tasks, fewer administrative errors, increases in compliance, lower operating costs and faster



IN THE FAST LANE

Business process modernization will only be effective if Army personnel trust technology to access important data and complete functions, roles or processes that were traditionally performed manually.

access to accurate, timely information to name a few.

With those outcomes in mind, each of us plays a crucial role in adopting modernization. By setting aside our personal attachment to the way we've always done things or our familiarity with one process, and allowing technology to take over some of the important but tedious administrative tasks, we modernize by improving processes one at a time, enabling change by embracing it. As we move forward, we just might find ourselves with better work products, more time to solve other critical problems and a good opportunity to

laugh about "the old days" when we used to complete an arduous process manually.

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LOOKING BACK, MOVING ON



After 35 years as an Army civilian and 16 years as director of USAASC, it's time to say goodbye.

As the saying goes: “All good things must come to an end.” And so it is with my career as an Army civilian. This will be my final column as the Director of the United States Army Acquisition Support Center (USAASC) and the Director of Acquisition Career Management (DACM). I’m retiring. After more than 35 years of public service essentially all working for the Army, it’s time to move on to the next chapter of my life.

That next chapter will include many things that I can think of and many that will come along. I will try to spend time supporting several friends who have small businesses that occasionally need help here and there. I’m going to golf and garden a lot more. I definitely plan to be more active and physically fit. I’ll do some reading for pleasure again. My wife and I will do a lot more traveling. And when we get back from those trips, I have lots of projects around the house to keep me busy.

In 1997, after 11 years working as an engineer in both the Research, Development and Engineering Centers (RDECs) and in a program manager shop—work that I truly enjoyed and that I knew I was good at—I moved to a staff position at Headquarters, Department of the Army, in the Office of the Secretary of the Army for Research Development and Acquisition, SARDA, the predecessor organization to the Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASA(ALT)). That was my first assignment as a member of the Competitive Development Group, a program we still have today that is now known as the Competitive Development Group/Army Acquisition Fellowship.

I've always believed that if you're ever lucky enough to get into a leadership position, you need to be smart enough and secure enough to surround yourself with the best and brightest people possible.

My motivation in leaving hard-core engineering behind and moving into staff work was a desire to pursue an opportunity to do something different and to learn at a higher level about how the Army runs. I felt it was also important to bring a field perspective to the headquarters. Staff work requires a different set of skills—I thought I was well suited to it and I wanted to give it a try.

The rewards are very different. Project engineering allows you to see the fruits of your labor. You can see the work you did in the lab, and it culminates in a product that gets tested and eventually fielded. Staff work isn't as immediately rewarding. When you come through the staff you have to take a broader approach, both to understanding the problems you're trying to solve and to understanding the value that you add to the total system. But you get a chance to work on many different things and at a much higher level. Gratification comes much more slowly, but more broadly. Not getting that real-time satisfaction of results isn't for everyone.

Our goal at USAASC and mine as the DACM is to help the members of the Army Acquisition Workforce become the most competent, well-trained and motivated professionals possible. In my role, I've had a chance to influence tens of thousands of lives and careers. That's something I look back on fondly; I've been able to make a difference for individual professionals and that will always be the great highlight of my career. I've tried to go about it in the most thoughtful way possible, recognizing that you have to weigh many more factors when you're in the people business, which includes policies, procedures, programs and individual accomplishments. And we've also recognized that decisions we make can have long-lasting impacts, generating second- and third- and fourth-order effects.



PARTY ON

Spisak poses with Dewight Wills, USAASC facilities and supply manager, left, and John Kelly, DACM senior strategic planner, at the holiday party in 2014. (Photos by USAASC)



ALL HANDS

Nelson McCouch, USAASC G2-6 division chief, center, and other members of the audience listened as Spisak's spoke during regular USAASC all-hands meetings, this one in 2017.



RECOGNITION

Spisak's all-hands meetings included recognition and hails and farewells. Keith Butler, G2-6 communications branch chief at USAASC, received a service award.



RETIRING BUT NEVER SHY

After 35 years of public service, Spisak is retiring. He looks forward to more golfing and time with his wife.

It takes a long time to see the results of career development efforts. You don't get to see how some of your efforts have made a difference until they've been in place for a few years. Or sometimes, it takes a few years to realize something doesn't work the way you'd expected it would. And then you have to regroup and try again.

Here's an example: When I became the USAASC director in 2005, we looked at how many in the workforce had completed their required Defense Acquisition Workforce Improvement Act certification training. In some Army acquisition communities the certification rates were in the high 30 percent range. That had to improve.

We realized we had to get back to basics. First and foremost, we needed to clean up our data. We introduced a number of processes and methodologies to not only ensure we were using accurate data, but to clean up the data that we had. We had to ensure we knew what we knew, not what we thought we knew. There's an old adage: "What gets measured gets done." It wasn't until the team and I put a lot of focused effort on creating that measurement—and then reporting that data to the whole community in a transparent way—that things really started to change dramatically. No senior leader of any acquisition organization wants to look at that report and say, "Oh, I'm in last place."

We went from high 30s percentages into the 60s in just a short couple of years, and now we're well into the upper 90s. It became a point of emphasis throughout the organizations within the acquisition community that things like certifications, individual development plans, continuous learning points, senior rater potential evaluations and other tools were important to building a more professional workforce. And our partners in the acquisition community, our organizational points of contact and senior leaders were all instrumental in moving the needle of our progress. Partners and stakeholders were the critical component because the whole team knew that not every process or solution would work

We have used our experience and our creativity to find incredible innovative solutions of some of our most difficult problems.



PEOPLE ABOVE ALL

Spisak believes leaders should surround themselves with the best and brightest people possible.

in every organization. Some of our partners said, “I know what you’re trying to accomplish, but here’s what’s going on in my organization. What can we do to solve this problem?” Dialogue and communication allowed us to build a coalition of the willing. When we come together as a community, we’ve been able to achieve tremendous things, from our Human Capital Strategic Plan to our training and development programs, to the establishment of the Army Acquisition Center of Excellence in Huntsville, Alabama.

In a career like mine, there are so many people who have had a direct impact on my professional, personal and

organizational successes. So many supervisors and coworkers, all of the ASA(ALT)s, the principle military deputies and the program executive officers. And I’m grateful to all of them.

But I’m especially grateful to those who have worked at USAASC and in the DACM Office. I’ve always believed that if you’re ever lucky enough to get into a leadership position, you need to be smart enough and secure enough to surround yourself with the best and brightest people possible. If you bring in a smart, diverse team, you can accomplish great things. And my colleagues and teammates have been incredible!

I apologize in advance, because I know I’m going to leave out some of the names of those who have earned my special thanks. But I’d like to call out all the deputies I’ve had first. Not many people want to listen to the director’s problems, but at least my deputy (currently Col. Ralph Borja) always served as a great sounding board and really made the job easier. And in spite of me, some have gone on to become general officers and members of the Senior Executive Service. I also have to thank everyone in the front office staff roles, as they all know how difficult it is to put up with me every day. One person in particular who I need to mention by name and I still get to work with is Brian Winters. Anyone who knows



MANY THANKS

With former ASA(ALT) Dr. Bruce D. Jette. Spisak said “thanks to all those senior leaders who have given me and the team the trust and latitude to do what’s right for the acquisition community and professionals.”

him and his work ethic can’t say anything negative about him. He has been there for me for most of the ride and I can’t thank him enough. There have been a lot of great teammates along the way, both in the Army and our sister services, who have made a huge difference and always tried to put others first: Joan Sable, Larry Israel, Andy Clements, Bill Boruff, Jack Kendall, Steve Karl, Kelly Terry, Tammy Hughes, Karl Donerson, Dewight Wills and Anita Odom to name a few. And I have to say thanks to all those senior leaders who have given me and the team the trust and latitude to do what’s right for the acquisition

I’ve been able to make a difference for individual professionals and that will always be the great highlight of my career.

community and professionals. Retired Lt. Gen. Joe Yakovac, who gave me my first big break, and the Hon. Claude M. Bolton Jr. are by far the most important to mention.

I’ve been gratified to watch the transformation of not just the Army, but also the Army acquisition community, over the course of my career. I have seen a tremendous shift. When I started in this business it was such a compliance culture. When it came to the laws and the regulations and the policies and the rules, there was a sense of, if there’s not somewhere in there that says you’re allowed to do something, then you’re not allowed to do it. Today we’ve turned that on its head. Unless the rules say you can’t do it, then there’s an opportunity to try something creative and innovative. And if it works, great. If it doesn’t, try something else. We have used our experience and our creativity to find incredible innovative solutions of some of our most difficult problems.

While I’m quite sentimental about the idea of leaving an organization I’ve been in charge of for a long time and retiring

after 35 years, I’m also quite hopeful. I see a bright future for USAASC, the DACM Office and the acquisition community, because I truly believe that people are looking at problems the way we need to.

We recognize this fast-changing environment with near-peer competitors. We can’t be complacent with solving problems in the same old way. We have to be cognizant that tough problems require unique and creative solutions. So while it’s going to continue to be a challenging environment, I’m very optimistic that the Army and the acquisition community are ready to work together, face the challenges and problems, and solve them and operate well in that environment. I’m also quite comfortable knowing that the organization that I’m going to leave behind, the U.S. Army Acquisition Support Center is ready to tackle those challenges. I can’t say I’ll miss the everyday work and grind, but I will miss being a part of the U.S. Army and the great men and women who I’ve had the privilege to work with along the way, so many wonderful and dedicated Soldiers, civilians and industry partners. My thanks to you all. 🙏🙏

AWARD NOMINATIONS THAT SLAY

Everything you need to know about writing award nominations that win.

by Ellen Summey

It's a familiar scenario in most Army workplaces as awards season approaches. "Hey, here's a stack of paperwork. Can you put together an award nomination for 'Maj. Megan Murphy' by tomorrow?" (Names changed to protect the innocent.) Certainly, you *can*, but we all know Maj. Murphy deserves better than a last-minute effort.

One reason why award nominations are sometimes neglected until right before the deadline—writing them can be daunting! There are so many questions. "Where do I start? Which details should I include in this tiny little text box? What if I don't do a good job and the person doesn't win?" The pressure.

Well, worry no more. Here are some tried-and-true guidelines for writing *great* award nominations.

READ THE RULES

First—and we cannot emphasize this enough—read the rules. Every award has different nomination guidelines, categories, criteria and qualifications. Writing an award nomination without understanding the rules is a bit like taking an exam without ever going to class—you *might* pass, but it's not the smartest approach. Pay particular attention to the required length, format, eligibility standards and any other details provided. When writing the nomination, you can refer to those guidelines to help keep yourself on track.

PLAN AHEAD

Many award packages require supporting documentation of some type, or coordination between multiple offices. Give yourself plenty of time to gather the needed materials, write a draft, solicit input from others, and then edit as necessary. And always keep an eye on the award announcement page for any potential changes to the due date, requirements, etc.

BE SPECIFIC

In award nominations, generalizations are not your friend. Try to be as precise as possible. “Maj. Murphy accomplished this goal faster and cheaper than anyone else” doesn’t say much. How much faster? How much cheaper? How did she do that? What was the impact? Why does this matter?

It would be more powerful to say—for example—“Maj. Murphy independently designed and built a functioning, miniature reconnaissance drone in three weeks, for a total cost of \$25. All other attempts took a minimum of six months (some, up to three years) and cost between \$7 million and \$1.5 billion per unit. Through her ingenuity and commitment, Murphy has created a 1,000

percent cost savings for the Army and has established a new fabrication process that is 30 times faster and will directly result in lives saved on the battlefield.”

ABOVE AND BEYOND

Take a look at these three scenarios and then decide which one is most deserving of an award. Ready?

1. Sally has done a great job at work this year, meeting 100 percent of her goals and gaining rave reviews from her colleagues.
2. Dan completed a big project on time and on budget, delivering an important new tool to Soldiers and attracting the attention of Army senior leaders.
3. Maj. Murphy successfully managed user testing for the Army’s hypersonic unmanned aerial vehicle (her normal job), and she also completed a voluntary six-month assignment as chief of engineering for Agency XYZ (not her job).

OK, that was too easy. The point here is that most award nominations should focus on how the person went *above and beyond*



Image by Getty Images.

Writing an award nomination without understanding the rules is a bit like taking an exam without ever going to class—you might pass, but it’s not the smartest approach.

their job description. A strong nomination should show that, not only did they do their job well, but they even did *more*.

USE STAR POWER

Who will be listed as the main nominator on the packet? This is an important way to add credibility to the things you say in the write-up itself. Starting with your immediate leader, begin asking the question and working your way up the chain of command. “Who should be the nominator for Maj. Murphy?” If your boss suggests the commander, then find out what the commander thinks. He or she might suggest a general officer or senior executive, and reach out to that person to ask. In general, having a more senior person in the signature block will strengthen your nomination packet.

However, there is one big, HUGE caveat to this. Never, never list someone—whether a two-star or a captain—unless they agree to it ahead of time. What you *don’t* want is for the judging panel to call the person listed in the nominator block and surprise them with the news. “I’m sorry, who? I don’t even *know* a Maj. Murphy.”

LIMIT JARGON

The Army has a love-love relationship with jargon, but it’s not the best option for writing award nominations. This is especially true for industry awards. Federal 100 award winners, for example, are selected

by a panel of distinguished judges who may not be as familiar with some terms. Best not to make them wade through acronyms and shop talk. “The ASA(ALT) G-1 NCO transitioned to the 51C MOS, attained DAWIA Level II certification in PQM and excelled in the DAU ACQ 0500 VILT course.” Clear as mud, right? Right.

This can be tricky, because acronyms are often the shortest way to get your message across, and space in award nominations is typically limited. Try to think about the simplest way to describe the person’s achievements, with no acronyms or jargon, and start from there. It’s important to make the write-up concise and understandable for anyone who reads it.

KNOW YOUR AUDIENCE

Who is going to be reading your nomination? Is it going to a board of Army officers? An internal group within your agency or organization? Perhaps a panel of industry experts? When writing a nomination, always keep your audience in mind. Use language that they understand and consider their priorities and experiences when listing achievements and accolades.

For example, a group of Army acquisition officers might not understand Maj. Murphy’s experimental testing methods for hypersonic flight, but they would readily grasp the value of her Defense Acquisition Workforce Improvement Act

(DAWIA) Level III certifications and her selection to lead Product Manager Flying Widgets. Make sure you are speaking the same language as your audience.

PULL THE PLATITUDES

“Maj. Murphy is a real tip-of-the-spear Soldier, go-getter and disruptor who shakes things up and gets the job done.” What does this mean, exactly—she has a good work ethic? Unfortunately for Maj. Murphy, there is not a lot of “there” there. We want the good major to be recognized for her outstanding work, so don’t waste valuable space on this kind of fluff. A little bit goes a long way.

With these tips in hand, go write some great nominations! Maj. Murphy is counting on you.

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WHO NEEDS AN OFFICE ANYWAY?

Over a year into quarantine-imposed telework, a vision of the future office begins to emerge.

by Jacqueline M. Hames

After more than a year of working from home, we've hit an equilibrium. Sure, there are bad days where the technology isn't working, the pets are feeling particularly needy, the kids are stir crazy—the *adults* are stir crazy—but otherwise we have it figured out. Some might even say they have become more productive, now. It's the new normal.

But as with anything in life, the moment you get used to a particular situation, it changes again. The COVID-19 quarantine is no different. The more vaccinations administered, the more businesses are opening, the more people are returning to life out in public. The question many are asking now is: When do we go back to the office?

A TRICKY QUESTION

At this writing, the answer to the question of “when” is nebulous, at best. Many things will contribute to the Army workforce's return to the office plans, said Yolanda Compton, G-1 civilian human resources branch chief at the U.S. Army Acquisition Support Center (USAASC). Returning to the office is a complex, nuanced endeavor that encompasses a range of factors, from scientific findings on the COVID-19 vaccine to the preference of an individual employee. Compton attended the U.S. Army Manpower and Reserve Affairs

Virtual Work Option Meeting on April 20, along with human resource representatives from all across the Army, to explore all those potential factors. The meeting “was a think tank for various Army commands at various levels. What they were looking at was the reentry plan and how telework was going to play a permanent role in that,” she said. The Army won’t implement any new telework policies before DOD provides guidance in accordance with the Office of Personnel Management, she explained, but the existing policies cover most of the current needs.

“Right now, Army’s telework policies mirror what DOD’s telework policy says, and it’s very loose fitted, for the purpose of allowing various commands and departments to take it, tailor it down, and make it fit according to what their mission is really going to entail,” Compton said. That means that organizational directors or commanders can implement telework guidance at their discretion and tailor it to their mission needs—particularly during a return to the office transition period.

DEVIL IN THE DETAILS

Under current policies, there are two major categories of telework: regular, recurring telework, which occurs as part of a regular schedule, and situational telework, which isn’t scheduled and is approved on a case-by-case basis, Compton explained. All other types of telework are subcategories of the former. The nuances within these subcategories are what people will need to be aware of as organizations decide what the office reentry plan will look like, Compton said. It’s important to remember: “You’re paid according to where you work, not where you live,” she said.

For example, many people are interested in the idea of *remote* telework—a flexible work arrangement in which an employee works most or all of the time from a different geographic area than the duty location. In remote telework, the policy states that an employee should go into the office two times a pay period, Compton explained. Because of that, the employee is still eligible for the locality pay at that duty location. If the employee is not required to come into the office twice a pay period, but is still required to report to an alternate designated duty location within the locality region—like the National Capital Region—the employee is still eligible for locality pay within that region.

While not as likely, if the employee’s work agreement does not require them to report to the office or other alternate sites within the duty station’s locality region twice a pay period, he or she is no longer eligible for locality pay in that region. If this situation is approved, the duty station and the worksite become one and the employee is eligible for locality pay in the applicable region.



PRACTICE MAKES PERFECT

Don Monk, a project management specialist with Huntsville Center's Medical Outfitting and Transition Division, is delivering the program from his home office in Birmingham, Alabama. Monk has been teleworking regularly for years and has a set routine. (Photo by William Farrow, U.S. Army Engineering Support Center, Huntsville)

Required trips to the main worksite are considered official business and the employee can receive travel reimbursement. In other words, if your duty location is on Fort Belvoir, Virginia, but you’ve moved, with supervisory approval, to Atlanta, and don’t plan to come into the office twice a pay period, you will receive locality pay for the Atlanta region as well as be reimbursed for travel if you are required to come to Fort Belvoir once a quarter.

BIG PICTURE

Currently, about 97 percent of the Army’s civilian workforce is teleworking, and “there are some cost savings that [the Army] is celebrating,” Compton said. The Army is saving money on the lights being off, on water bills from lack of use, on heating and cooling offices—all kinds of things. If telework is incorporated permanently into a return-to-the-office plan, the Army can continue these savings through personnel “hoteling”—many people sharing one desk space on a rotation. Using office space this way will also allow for proper social distancing until COVID-19 restrictions ease.

“The Army is also looking at this initiative as an excellent way of retaining highly skilled professionals,” Compton said. A large part of the workforce is eligible for retirement, and there is a concern

that when people return to the office there will be a mass exodus, she said. Employees near retirement have grown accustomed to sustained telework over the last year or so, “and would rather just retire than to endure the pains of commuting, mass transit, and not to mention, wearing dress shoes again,” she said. The Army hopes that telework flexibilities will help retain its highly skilled workforce and allow for a successful transition of skills and knowledge.

The Army is also analyzing which positions may be reclassified as exclusively virtual and how best to do that, Compton said. Discussions during the Virtual Work Option Meeting covered various topics, including how to deal with conduct and performance issues in a remote telework environment. “Other topics were relative to natural attrition. [The Army] is looking at what effect virtual work programs will have on normal workforce transitions.

Sometimes people vacate positions because seasons in life change, i.e., your military husband has to [move]—but now he [moves] and you get to keep your job; what happens then regarding the natural turnover? We want to minimize the loss of talents and skills; however, we also do not want to block opportunities for new thought and innovation.”

One thing the Army is not currently considering is allowing a domestic employee to remotely telework from overseas, she said. So if you thought about moving to the Greek Isles—or your spouse was assigned there—and you want to keep your stateside job through telework, think again. That’s not currently on the table.

One thing will likely remain the same, even if there are new telework policies in the future: “The decisions remain with organizational leaders. Army elects to allow commanders, principal officials

and directors to retain the autonomy to manage the workforce under their purview,” Compton said. “If their mission is such that they are working directly with the warfighter, 100 percent of their people might have to be in the office.” In other words, telework won’t be driven by a minimum or maximum percentage of participating employees, but rather by what that commander or director knows the workforce needs to get the job done, she explained. The new-normal Army office spaces will be likely be a hybrid of on-site work and telework.

WHAT ABOUT USAASC?

At the time of this writing, there was no change in the return-to-the-office status at headquarters USAASC—everything remained status quo. “We need to proceed cautiously,” Compton said, and do our due diligence as a workforce. That means fully vaccinated individuals—doses one and two for two-dose vaccines—can do most of the things they did prior to the pandemic without a mask or physical distancing, unless otherwise mandated, like in a work environment. Unvaccinated or half-vaccinated individuals should continue to wear masks and socially distance.

Craig Spisak, director of USAASC, is also considering official guidelines from the CDC about vaccinations and their efficacy over an extended period. For example, can you be fully vaccinated and still carry COVID-19 asymptotically? “There are just so many unknown variables, and I appreciate the fact that he [Spisak] is proceeding with caution [and] with the care of the organization at the forefront,” Compton said. She also cautions that, though USAASC is essentially teleworking until told otherwise, things could change rapidly based on leadership decisions and scientific guidelines.

NEED TO KNOW MORE ABOUT CURRENT TELEWORK POLICIES? CHECK OUT THESE HELPFUL RESOURCES:

- **Office of Personnel Management Telework Guide:** <https://go.usa.gov/xH6jw>
- **Travel guidance:** <https://go.usa.gov/xH6j7>
- **Locality pay charts:** <https://go.usa.gov/xH6jA>
- **Determining an Employee’s official worksite:** <https://www.law.cornell.edu/cfr/text/5/531.605>
- **U.S. General Services Administration Handbook for Relocating Federal Employees:** <https://go.usa.gov/xH6jH>
- **U.S. Equal Opportunity Commission on Telework and Work at Home:** www.eeoc.gov/facts/telework.html



A SHOT IN THE ARM

Spc. Cassandra Acosta, a combat medic at Fort Stewart, Georgia, administers a COVID vaccine to a patient in a community vaccination event in April. Vaccinations are an important part of the Army’s plans to bring employees back to the office. (Photo by Spc. Robert Wormley, III/50th Public Affairs Detachment)

CONCLUSION

The pandemic has proven that the old government philosophy of “if I cannot see you, you are not working” is grossly wrong, Compton said. If leaders encounter conduct or performance issues, they should deal with them head on, in much the same way they would if face-to-face and on an individual basis. She recommends that Army leaders become fully knowledgeable on the overall benefits of virtual work options.

No matter what happens, it appears the Army will be embracing telework more fully in the future—so if you’ve been eyeballing a new desk or chair for the home office, go ahead and get it.

JACQUELINE M. HAMES is a writer and editor with Army AL&T magazine. She holds a B.A. in creative writing from Christopher Newport University. She has more than 10 years of experience writing and editing news and feature articles for publication.



DOUBLE DUTY

For working parents around the globe, especially women, COVID-19 has presented difficult challenges as schools and day care centers closed or limited their services. Army Child Development Centers have not yet returned to full operating capacity. (Photo by Airman 1st Class Abbey Rieves, 17th Training Wing Public Affairs)



MATT GOHIL

COMMAND/ORGANIZATION: Program Executive Office for Enterprise Information Systems, Army Data and Analytics Platforms

TITLE: Product Lead, Army Enterprise Systems Integration Program Hub

YEARS OF SERVICE IN WORK-FORCE: 10 years

AAW/DAWIA CERTIFICATIONS: Level III in program management

EDUCATION: Harvard Senior Fellowship certificate program graduate; Master's degree in business administration and finance, University of Maryland; B.S. in computer science and aerospace engineering, University of Maryland; Army Lean Six Sigma Master Black Belt

OFF THE BEATEN PATH

Talking with Matt Gohil, you can still hear the traces of a London accent, though he's been in the U.S. since he was a teen. The soft R and the ever-so-slightly stretched O in "portal" or "course," or the long E in "been," are just about the only giveaways. You could be forgiven for missing it altogether—after all, who would expect to find a Brit working in product management for the U.S. Army? Gohil, who was born and raised in London, first came to the U.S. to visit family at age 16. "My dad encouraged me to see some of the country while I was here, so I backpacked from Toronto to Miami," he recalled. He made the eight-week journey primarily via Greyhound bus. "I went from city to city to city, along the entire Eastern seaboard—and I absolutely fell in love with the country."

When he returned to London, Gohil told his father that he wanted to build his life in the U.S. "I told my dad, 'I see my future over there.'" Despite encountering some initial reluctance, Gohil started formulating a plan. He earned a scholarship at the University of Maryland, where he studied computer science and aerospace engineering. After several years in private industry, he began a pivotal six-month consulting job at the Program Executive Office for Enterprise Information Systems (PEO EIS). "That was kind of my first taste of the Army, and I think the passion grew from there," he said. Twelve years later, Gohil is still at PEO EIS. "I've seen five PEOs come and go, and seen the leadership continually evolve the organization, and take on new challenges, and I'm still excited about being here. This is a phenomenal organization to be part of."

Today, he is the newly minted product lead for Army Enterprise Systems Integration Program (AESIP) Hub, within the Army Data and Analytics Platforms program. "I am responsible for the life cycle management of cost, schedule and performance for what I describe as the three main spokes of AESIP Hub—master data management, enterprise hub services, business intelligence and business warehouse, and other operational projects to increase efficiencies within AESIP Hub." The work is all about data accessibility and visibility for the Army, to allow Army leaders to make strategic decisions based on accurate data, and Gohil said he feels fortunate to be involved. "It's nice because you're in the forefront of a mission that is becoming more and more critical, as people come to realize that the Army needs to be able to 'see' itself. We are a part of providing that capability—the fully integrated data services and applications, and visualization and analytics tools to facilitate fact-based and resource-informed decision-making for everyone, from senior Army leaders to Soldiers in the field."

As almost any high-performing Army civilian will attest, there are sometimes frustrations in the work, and there are often opportunities to return to private industry. But Gohil said there's one primary thing that has always kept him here: "The people." Throughout his time at PEO EIS, he said he has seen a dedication to the mission, and a commitment to serving Soldiers. "I feel very blessed that, in my entire time with the Army, I've worked with phenomenal mentors, leaders



TRANSITION OF POWER

Gohil, right, accepted the charter for Product Lead AESIP Hub from Nancy Richardson in a virtual ceremony hosted by Program Manager Army Data and Analytics Platforms (ARDAP) Col. Rob Wolfe on Nov. 4, 2020. (Photo courtesy of PEO EIS)

and peers,” he said. “And I think that is the key to our ability to deliver capabilities—some of them are very hard. The work is challenging and it’s not always clear-cut, but I’ve never seen us say ‘no.’ We always try to forge ahead to create a capability that the Soldier can use, and that’s what resonates with me the most.”

And despite his 12-year tenure at PEO EIS, Gohil said he’s still constantly learning. “People think that being a product lead means you have (most of) the answers. But every day there is something new to learn about the infinite world of data and data management, as well as how our system interacts with our trading partners and how we ensure that the user experience is optimal,” he said. “Success in this role

hinges on my consistent ability and willingness to learn new and different things that create the ‘big picture’ of Army data and how to use it in the best ways.”

When he gives advice to junior acquisition teammates, he encourages them to keep learning, as well. “You’re here to learn about acquisition and not the technical side of what we deliver. Remember to focus on cost, schedule and performance rather than the technical details of the solution like infrastructure and data management, even though it’s hard not to get wrapped up in that. Stay in your lane to learn the business end of what we do. Understanding the technical stuff will naturally come along with it.” Gohil is also a big advocate for developmental

“Every day there is something new to learn about the infinite world of data and data management, as well as how our system interacts with our trading partners and how we ensure that the user experience is optimal.”

assignments, having first arrived at AESIP Hub for what was supposed to be a short-term role. “I absolutely recommend them! I also will say there is never a good time to leave a job you know and love in order to venture into the unknown of such an assignment—but take the chance. You never know whom you might meet and where it might take you.”

Perhaps it’s not surprising that a young man who backpacked through a foreign country as a teen would still urge others to venture off the beaten path, even if it’s a bit uncomfortable. Taking a chance on the unknown is kind of his trademark.

—ELLEN SUMMEY

LEAVING A MARK

Craig Spisak may be retiring, but his legacy at USAASC will live on.

by Margaret C. Roth

If you look at the myriad opportunities for professional growth that the U.S. Army Acquisition Support Center (USAASC) offers to the acquisition workforce, only two predate the tenure of Craig Spisak as USAASC director: tuition assistance and the Competitive Development Group, to which Spisak was a member of the original (1997) cohort. That's the size stamp Spisak leaves on USAASC as he prepares to retire at the end of July.

Spisak “has turned many of the [principal military deputy’s] great ideas into reality,” said Lt. Gen. Robert L. Marion, principal military deputy (PMILDEP) to the assistant secretary of the Army for acquisition, logistics and technology (ASA(ALT)). Marion listed as examples the creation of civilian product director positions, enhanced command preparation, and development of new curriculum at the Naval Postgraduate School. In the ASA(ALT) hierarchy, the PMILDEP is the primary point of contact for USAASC’s director, since both have specific responsibility for managing acquisition careers.

Dr. Bruce D. Jette, the ASA(ALT) from January 2018 to January 2021, relied heavily on Spisak to execute his ideas for officer development. One of Jette’s top priorities was to put together a program management career path to a master’s or doctorate in the sciences; acquisition programs have relied too much on readily available business expertise, when some sorely need scientific leadership. Retired Lt. Gen. Paul A. Ostrowski, the PMILDEP at the time, was instrumental in developing the program, which Marion now spearheads. “None of that gets done without Craig’s personal involvement,” Jette said.

REMARKABLE SERVICE

Spisak delivered comments to members of the Army Acquisition Workforce (AAW) at the AAW Summit in September 2017.



It's important to remember that, as Jette put it, the director of acquisition career management (DACM) "really doesn't own everything," meaning that the personnel management actions Spisak generated required the approval of U.S. Army Human Resources Command and various selection boards, whose members may or may not appreciate the particular needs and requirements of an acquisition officer. "He's done a great deal to try to keep all of that in play and balanced," Jette said. "He's a smart guy, he understands the environment and the people. And he goes and makes stuff happen."

"Everything we're doing today—Senior Service College Fellowship, Human Capital Strategic Plan, Naval Postgraduate School curriculum, Inspiring and Developing Excellence in Acquisition Leaders—these are all efforts that have been birthed during his tenure," said Brian Winters, chief of proponenty and analysis at USAASC. "Even with the existing programs in his tenure, he's been a part of making them better aligned to acquisition objectives and keeping them current as the workforce changes, as a mission changes."

How did Spisak accomplish so much?

With a talented, highly motivated team, a focus on the mission and a style uniquely his own.

TAKE THE MISSION AND RUN

An engineer by training, Spisak has an instinct for taking things apart that left many in awe, and a memory that instilled caution in those who worked with him.

"He can walk into any room, understand the atmospherics in a room, understand who is in a room, and has the [sense] to be able to explain or articulate a position on any given matter in a coherent, clean and easy-to-understand way," said Ostrowski. "Craig literally knew everything there was with respect to things that we asked him to do—the roles that we asked him to play, and the mission sets that we provided."

When asked, Spisak invariably said yes, Ostrowski said. "Craig is the kind of person that would never turn down a challenge or



TAKE NOTE

Spisak was focused at the 2017 Army Acquisition Workforce summit. (Photos by USAASC)

an opportunity. No matter what we asked him to do, whether it was in his lane or not, he offered solutions that got to yes.”

With mission in hand, Spisak delegated the execution to members of the staff, said Tom Evans, former Workforce Management Division chief, who first came to USAASC in 2000. “He’d give you a mission, and he normally would not go to any lengths to micromanage you, unless he thought you needed it. If I needed guidance, I could walk into his office and get it. Otherwise, he’d let me run my organization the way I wanted to and supported me when I needed it.

“You can’t be everywhere all the time. And if you’re doing *their* jobs, it’s impossible for you to do yours, and Craig understood that very early. A lot of people don’t learn that skill.”

Spisak put himself in a position to absorb the turbulence of the Pentagon airspace in the course of providing support to nine ASA(ALT)s. “It is very difficult to go through the transitions of those commands and hierarchy, and he protected us,” Evans said. “Craig acted as a filter from what I call the ‘good idea fairies.’ He had the ability to limit, and understood how to deal with higher leadership to explain the possibilities of success and failure.”

BUILDING ACQUISITION PROFESSIONALS

Spisak took pains to look after the personal and career goals, wants and needs of USAASC staff members—an aspect of leadership that was invaluable to those who benefitted from it.

“When he says if you want some career advice come see him, not enough people do it,” said Scott Greene, chief of the Strategy and Communications Division at USAASC.

Greene took advantage of Spisak’s open door to review his career path with Spisak once a year or so. It was time well spent, he said. “Trusting in me, believing in me, developing me—really making that a point of, you know, supporting anything I wanted to do to build myself—really empowered me,” he said. “He would give you that honest feedback [on] strengths and areas to improve on, and I always found good value in that.”

Over time, the relationship opened opportunities for Greene to be Spisak’s right-hand man on major initiatives such as the establishment of a new acquisition curriculum at the Naval Postgraduate School, which meant traveling to Monterey, California, with Spisak. “That was really great, you know, personally and professionally. Getting to engage with the students out there was very cool,” as was meeting a lot of military senior leaders there.

The experience showed Greene a different side of Spisak than the leader USAASC was accustomed to seeing at all-hands meetings or giving a presentation. “He really is a genuinely fun, good, nice guy that really does care about his people,” Greene said. “He’s very in tune with his emotions. He’s actually a very sensitive guy, [and] he valued all of his employees.”

Spisak often said he made a practice of surrounding himself with people smarter than him. “I don’t think that’s the case, because he is very smart. But he does want to surround himself [with] people who are passionate and know what they’re doing,” said Greene.

“He has to ensure that his staff is incredibly responsive. And I think we’ve done a great job in helping him with that. He allows us to bring him visions of, ‘Hey, here’s where we think we should go.’ And then he enhances them.”

TOTAL RECALL

To brief an issue for Spisak was to step into a challenging world with a master of information and delivery.

“His recall capability was just off the charts,” said Evans, who cautioned his staff that what they briefed to Spisak “had better be right, because he’ll remember exactly what you said to him.”

Another gift Spisak brought to his briefings was that “he could talk to anyone, anytime,” said Joan Sable, former deputy director of acquisition career management.” He was so good on his

feet. He could wrap up [an issue] in a pretty bow, and it would be very succinct and very informed. And he had all the knowledge. There were times ... he would surprise me and have it all figured out.”

Both Evans and Sable looked back on their sometimes contentious exchanges with Spisak with an ironic chuckle. “You know, everything wasn’t agreed. We used to have some interesting discussions,” Evans said. “But I never felt he didn’t listen to my argument. He may not agree with it, but he at least listened.

“You had to be convinced that what you were doing was right. And then he listened. He expected you to know your job.”

Sable had a similar experience. “I definitely had challenges working with him, for him. But he definitely supported us. You had to have your ducks in a row, you know, or else he’d kind of shoot it down and you never got past go.”

In policy discussions, “He wasn’t afraid to challenge you,” said retired Lt. Gen. N. Ross Thompson III, who served as PMILDEP from November 2006 to January 2010. “If you would come in with something and you’d push and push and push and say, ‘I’d like to do it this way,’ he’d give you the reasons why maybe that wasn’t such a good idea. But in the end, you know, we always came up with what we thought was the best course of action, and that wasn’t my way or his way, it was the collective back and forth.”

LASTING LEGACY

Spisak’s commitment to finding the best data and technology to support USAASC’s work put the organization in the acquisition spotlight. “All the other services would look at the Army and say, ‘Wow, you’ve got a system where you can pull up information and look at people’s profiles

over the years, you can look at the training over the years.’ A lot of the services tried to replicate what we were doing,” said Sable.

It was gratifying to see, she said. “Craig and I would attend DOD-level meetings with the acquisition leadership. And there we got a lot of kudos for having everything automated very early on. We had a one-page record brief that mirrored what the Army officer record brief looks like and the enlisted record brief. That was huge.”

Sable credits Spisak for bringing that to fruition. “That enabled us to be a better office for the acquisition workforce. Because we could pull up all kinds of information, and then we could do analysis of the data to determine the path forward: Where we are now? Where do we need to go?”

That’s how the Human Capital Strategic Plan came about, Sable said: “Let’s try to

“He’s a smart guy, he understands the environment and the people. And he goes and makes stuff happen.”

have a five-year plan that gives us some direction on what to do for the workforce. Do they need to be more educated? Do we need more diversity? There’s just all kinds of things, and we were able to have all that data at our fingertips when we went to those high-level meetings. And we’ve really made a name for ourselves. And I believe Craig was the one responsible for making that happen.”



HUMOROUS APPROACH

Spisak shared a laugh with teammates while presenting certificates to members of the workforce during a USAASC all-hands meeting June 18, 2018.

Another USAASC initiative that got the attention of DOD-level leadership and recognition from across DOD was legislation, incorporated in the National Defense Authorization Act, to improve the acquisition workforce. “So we participated in human capital forums to identify the challenges and how can we legislatively address one,” Sable said, who provided assistance in writing it. The result was a body of legislation addressing, among other things, recruiting and hiring. “We had expedited hiring authority and direct hiring authority to bring on the kind of talent we needed in the workforce. We were at the cutting edge.”

WORK-LIFE BALANCE

Spisak also saw a need to lead management practices in the area of balancing work and home lives.

Way before the COVID-19 pandemic forced most employees to telework in both the public and private sectors, Spisak was willing to provide USAASC staff members flexibility in their hours to accommodate situations at home that required their attention.

His openness allowed Kelly Terry to put her daughter’s medical needs first from the time she was diagnosed with cancer in 2007, through a period of remission, to her passing in 2013.

“The organization was so incredibly accommodating to me,” said Terry, then a USAASC regional director based at Picatinny Arsenal, New Jersey.

“I literally walked into work one day, I got the call from her day care [that she was sick] and didn’t come back for seven months,” said Terry. Spisak, Terry’s supervisors and colleagues “worked together to ensure the mission didn’t become impeded.”



A VERSATILE LEADER

Joan Sable received the Commanders Award for Civilian Service at the October 2014 USAASC all-hands meeting. Of Spisak, she said, “He could talk to anyone, anytime.”

“The way they treated me, checked in on me, checked in on my family, was amazing. And they were very cognizant of the fact that even [when] she had no evidence of disease, we still were getting treatment,” which required out-of-state travel.

“[Spisak] and his senior leadership allowed me the flexibilities to focus on my daughter and my son,” she said.

“I am forever grateful for his leadership style. And the folks that he selects to be under him sharing, you know, that same thing, that mission is just one piece of who we are. And if we work together, we can still get it all done, no matter what’s going on. He understood the importance of taking care of people.”

LOOKING FORWARD

What happens when Spisak has cleared out his office and his day-to-day priorities center not on the care and development of the organization and its individual members’ needs and responsibilities, but on what he’s going to accomplish first around the house? That remains to be

seen, but one thing is certain—whether he’s focused on hobbies, home improvement projects, or anything else, he will be sorely missed at USAASC.

Spisak “is the glue, quite frankly, that held that organization together,” Ostrowski said. “And he walks away with a ton of experience. And he knows roles [and where all the] skeletons are buried. He’s been there a long time, and he will be absolutely missed. Because you can’t replace that experience overnight. [There’s] just no way.”

MARGARET C. ROTH is an 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 and 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.



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ON THE MOVE



DEPUTY ASSISTANT SECRETARY OF THE ARMY (RESEARCH AND TECHNOLOGY)

1: ARMY CHIEF SCIENTIST HONORED AT RETIREMENT

Dr. Philip Perconti, former deputy assistant secretary of the Army research and technology (DASA (R&T)) and Army chief scientist, was honored for his 40 years of federal service during a May 27 retirement ceremony led by **Douglas R. Bush**, acting assistant secretary of the Army acquisition, logistics and technology (ASA(ALT)). “You need to know your craft. You need to be the best at your craft that you can possibly be. And when that happens, you wind up in an organization that is an extraordinarily fun place to be,” Perconti said.

“Forty-one years total. Six in the Navy serving in the Pacific on destroyers at the height of the Cold War. But then, of course, to our huge benefit after that, 35 years with the U.S. Army as a scientist,” said Bush. “Some people talk about what service means, this is what it looks like.”

As the DASA(R&T), Perconti worked to improve collaboration across the science and

technology community, industry partners, program executive offices and the operational Army, and speeding technology-enabled capabilities to the warfighter. He also established the essential research areas (now essential research programs), which set the course for addressing the most important essential research that the Army Research Laboratory must do for the Army. Perconti led one of the Long Range Research Development and Planning Program Ground Combat groups alongside other DOD and intelligence community leaders to conceive emerging new technologies and capabilities that offset near-peer threat advances. This work led to the refocusing of nearly \$1 billion in Army science and technology funding from legacy programs to transform the Army science and technology enterprise.

For his contributions in solving some of the toughest technology problems for the Army and playing a vital role in safeguarding our nation, Perconti received several awards, commendations and farewell gifts including the prestigious Distinguished Civilian Service Medal.

JOINT PROGRAM EXECUTIVE OFFICE FOR CHEMICAL, BIOLOGICAL, RADIOLOGICAL AND NUCLEAR DEFENSE

2: CHANGE OF CHARTER FOR JPEO-CBRND

Douglas Bryce, left, passed the colors of the Joint Program Executive Office for Chemical, Biological, Radiological and Nuclear Defense (JPEO-CBRND) to **Dr. Bruce D. Jette**, then assistant secretary of the Army for acquisition, logistics and technology, during a change of charter and retirement ceremony Dec. 11 at Aberdeen Proving Ground, Mary-

land. Bryce retired after more than 28 years of civilian service and served as the JPEO since October 2015. He was the deputy JPEO for the 10 preceding years and served 20 years in the U.S. Marine Corps before entering civilian service, retiring as a chief warrant officer 3. Bryce was sworn into the Senior Executive Service in May 2010.

During the retirement ceremony, Jette presented Bryce with the Presidential Certificate of Appreciation, the Secretary of the Army’s Distinguished Service Medal, the Chief of Chemical’s Medal of Order, and the acceptance into the American Chemical Corps’ Order of the Dragon – Ancient Order.

Dr. Jason Roos, right, received the colors of the JPEO-CBRND and commenced duty as the new executive during the change of charter ceremony, hosted by Jette. Roos previously served as the deputy JPEO, the director of the Biosurveillance Management Office and the lead for the Joint Product Management Office for Biosurveillance–Provisional. He was sworn into the Senior Executive Service in November 2017. (Photos by JPEO-CBRND)





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PROGRAM EXECUTIVE OFFICE FOR AVIATION

3: MEDAGLIA HONORED AT PROMOTION TO COL.

Col. Danielle Medaglia recited the oath of office during a Jan. 29 ceremony celebrating her promotion to the rank of colonel at the Program Executive Office (PEO) for Aviation campus at Redstone Arsenal, Alabama. Medaglia previously served as the product manager for the CH-47F Block I program from 2017 to 2020 at PEO Aviation and recently attended the Senior Service College in Montgomery, Alabama. (Photo by Michelle Miller, PEO Aviation)



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4: PRODUCT DIRECTOR PROMOTION

Col. Tim McDonald, left, project manager for the Multinational Aviation Special Project Office (MASPO), administered the oath of office to **Lt. Col. Tom Brewington** during his promotion March 12 to the rank of lieutenant colonel in Huntsville, Alabama. Brewington serves as the product director for the MASPO Scout/Attack Product Office, where he is responsible for more than 25 foreign military sales cases supporting a diverse fleet of 12 aircraft types in over 20 partner nations. Brewington was commissioned as an aviation officer in 2004 and joined the Army Acquisition Corps in 2013. (Photo by Monica Ludwig, PEO Aviation)

PROGRAM EXECUTIVE OFFICE FOR COMMAND, CONTROL, COMMUNICATIONS – TACTICAL

5: CPI2 WELCOMES NEW PRODUCT MANAGER

Lt. Col. Jeremy J. Rogers, right, assumed the charter for Product Manager Command Post Integrated Infrastructure (PDM CPI2) in a ceremony held Feb. 10 at Aberdeen Proving Ground, Maryland. The ceremony was hosted by **Matt Maier**, left, Project Manager for Interoperability, Integration and Services, within the Program Executive Office for Command, Control, Communications – Tactical (PEO C3T). Rogers most recently served as executive officer for the commanding general, U.S. Army Combat Capabilities Development Command. As product manager, Rogers will lead the CPI2 program, a top Army network modernization. (Photo by Ryan Myers, PEO C3T)



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6: ZURKOWSKY CELEBRATES PROMOTION TO LT. COL.

Deputy Product Lead Common Hardware Systems **Lt. Col. Walter L. Zurkowsky** was promoted to his current rank in a March 1 ceremony hosted by Program Executive Officer **Brig. Gen. Robert M. Collins**. Zurkowsky earned his commission in 2005 and joined the Army Acquisition Corps in 2014. Following his initial training, he was assigned to the 915th Contracting Battalion in Baltimore, Maryland. He served as a contract specialist at Aber-

deen Proving Ground and deployed in support of Regional Contracting Command – Kuwait. From March 2018 to April 2020, he assumed the duties of assistant product manager, Power Projection Enablers Pacific. Zurkowsky joined PEO C3T in April 2020 as Sustainment Tactical Network assistant product manager until January 2021, when he became deputy product lead for Common Hardware Systems within the Project Manager Interoperability, Integration and Services. (Photo by Ryan Myers, PEO C3T)



PROGRAM EXECUTIVE OFFICE FOR COMBAT SUPPORT AND COMBAT SERVICE SUPPORT

1: PEO RETURNS TO DASA AL&P

Timothy G. Goddette departed the Program Executive Office for Combat Support and Combat Service Support (PEO CS&CSS) in May for a second stint as the deputy assistant secretary of the Army for acquisition, logistics and policy, a billet he previously held before his selection as PEO CS&CSS. Acting Assistant Secretary of the Army for Acquisition, Logistics and Technology **Douglas R. Bush** officiated the hybrid virtual and in-person ceremony May 4.

Goddette began his tenure as PEO in February 2018. During his tenure, the organization fielded nearly 60,000 equipment items at home and abroad, for all Army components, U.S. armed services and multiple foreign partners, while effectively managing development and production actions for approximately 150 actively-managed programs and troubleshooting obsolescence issues for roughly 100 more programs in sustainment.

Andrew “Andy” DiMarco, the deputy PEO, will serve as acting PEO CS&CSS until the Army selects Goddette’s permanent replacement.



PROGRAM EXECUTIVE OFFICE FOR ENTERPRISE INFORMATION SYSTEMS

2: ATIS PM HONORED AT RETIREMENT

The Program Executive Office for Enterprise Information Systems (PEO EIS) Army Training Information System (ATIS) product office in Newport News, Virginia, held a retirement ceremony April 29 for **Lt. Col. Jim Lee**. Lee, who had served as ATIS product manager since July 2018, had a 25-year Army career and was a member of the Army Acquisition Corps since 2005. As the ATIS product manager, Lee oversaw the Army’s acquisition and fielding of a one-stop training solution for military and civilian personnel, and helped support the ATIS product office’s migration to PEO EIS’s Army Data and Analytics Platforms portfolio.



3: ASSUMPTION OF CHARTER AT EBS-C

Jeannie Winchester assumed the charter for the PEO EIS Enterprise Business Systems – Convergence (EBS-C) product office in a virtual ceremony on Feb. 3. As product lead for EBS-C—part of PEO EIS’s Army Data and Analytics Platforms portfolio—Winchester will oversee the office charged with the creation of the acquisition strategy, as well as development and deployment, of the Army’s modernized and converged enterprise resource planning system. Winchester, who previously served as product director for the General Fund Enterprise Business System – Sensitive Activities program, has more than 25 years of experience in information technology and Army acquisition.

U.S. ARMY COMBAT CAPABILITIES DEVELOPMENT COMMAND

4: RETIREMENT CAPS 33-YEAR CAREER FOR DEVCOM COMMANDER

Maj. Gen. John George, right, turned over command of the U.S. Army Combat Capabilities Development Command (DEVCOM) and capped his 33-year Army career in a May 7 ceremony at Aberdeen Proving Ground, Maryland. **Gen. John Murray**, left, commanding general of the Army Futures Command, presided over the ceremony that featured both in-person and virtual audiences. **John T. Willison**, deputy to the commanding general, assumed leadership of the command until the arrival of **Brig. Gen. Edmond “Miles” Brown**, who was recently named the next DEVCOM commander.



George’s tenure with DEVCOM began in November 2019, a few months before the COVID-19 pandemic began. In response to the pandemic, DEVCOM released a future-of-work concept paper to its more than 27,000 Soldiers, civilians and contractors, embracing remote work, flexible work schedules and innovative hiring practices. The command, which comprises eight reporting units and three regionally aligned international elements, is the Army’s largest technology developer.



"I was proud to join your team 18 months ago. And I am even more proud today to have served alongside each of you," George said. "Your commitment to giving our warfighters not only what they need, but what they didn't even know was possible, is unparalleled."

5: DEVCOM CSM RETIRES AFTER 30 YEARS OF SERVICE

Maj. Gen. John A. George, left, then commanding general of the U.S. Army Combat Capabilities Development Command (DEVCOM), presented **Command Sgt. Maj. Jon R. Stanley**, right, with a Le-

gion of Merit award at Stanley's retirement ceremony on March 26 at Aberdeen Proving Ground. After 30 years of service, Stanley retired from the Army and his role as command sergeant major for DEVCOM. Stanley was the first command sergeant major of DEVCOM, which was known as the Research, Development and Engineering Command (RDECOM) before the transition into the Army Futures Command in 2019. Before that, Stanley had been the RDECOM command sergeant major since September 2018. He was previously the command sergeant major at the Maneuver Support Center for Excellence at Fort Leonard Wood, Missouri. (Photo by Conrad Johnson, DEVCOM)



U.S. ARMY SECURITY ASSISTANCE COMMAND

6: USASAC WELCOMES NEW CG

The U.S. Army Security Assistance Command (USASAC) has a new commanding general. **Brig. Gen. Garrick Harmon**, left, assumed command of USASAC during a ceremony on May 17 on the parade field outside USASAC headquarters at Redstone Arsenal, Alabama. **Gen. Ed Daly**, center right, commanding general of Army Materiel Command, presided over the ceremony, which signaled the departure of the outgoing commander, **Brig. Gen. Doug Lowrey**, far right. USA-SAC **Command Sgt. Maj. Sean Rice**, center left, participated in the ceremony.

Lowrey will assume command of the Mission and Installation Contracting Command at Joint

Base San Antonio-Fort Sam Houston, Texas. An Oklahoma native of Cherokee descent, Lowrey has the distinction of being the only Native American general officer on active duty. He can trace his roots back to Maj. George “Rising Fawn” Lowrey, an assistant principal chief of the Cherokee Nation in the mid-1800s.

Harmon’s previous assignment was as the deputy director for Strategy, Plans and Policy at the Office of the Deputy Chief of Staff, G-3/5/7, Department of the Army headquarters. A native of Hutchinson, Kansas, he graduated from the United States Military Academy at West Point in 1992 and was commissioned as a second lieutenant in field artillery. Before his G-3/5/7 assignment, he served as the senior defense official and defense attaché at the U.S. Embassy in Moscow. (Photo by Kimberley Capeheart, USASAC)

1: SATMO CSM CELEBRATES RETIREMENT

The U.S. Army Security Assistance Training Management Organization (SATMO) bid farewell to **Command Sgt. Maj. Brad Owens** during a May 7 ceremony at the organization’s headquarters at Fort Bragg, North Carolina. **Brig. Gen. Douglas Lowrey** officiated the change of responsibility ceremony in which Owens handed the reins to **Command Sgt. Maj. Tom Dow**.

Owens, who had served as SATMO’s senior enlisted advisor since October 2018, retired with 28 years of service. He described his tenure there as one of the most satisfying of his career, saying it gave him “an extensive ability to influence and shape the future of Soldiers, U.S. allies and the Army.”

Dow previously served as the Task Force 1 command sergeant major for the Joint Readiness Training Center at Fort Polk, Louisiana. “SATMO is composed of world-class professional Soldiers, DA civilians and contractors,” he said. “They are an absolutely impressive team of teams that exceeds expectations, and they are what makes this organization critically and strategically impactful in the current and future operating environment.”



2: SATMO COMMANDER RELINQUISHES COMMAND

Col. Scott J. Malone, right, the outgoing SATMO commander, passed the command colors to **Brig. Gen. Douglas Lowrey**, then commanding general of USASAC, at a relinquishment of command ceremony May 7 at Fort Bragg, North Carolina. **Command Sgt. Maj. Tom Dow** stands behind interim commander **Lt. Col Alex Duran**, left. Duran will lead the organization until the incoming commander, **Col. Andrew Clark**, arrives later this year. (Photo by Tim Hanson, USASAC)

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“In this context of enabling modernization, it is important to remember that we are one entity in the greater Army modernization enterprise. Modernization, it is often said, is a team sport. It takes the entire team working together to succeed.”

Mr. Douglas R. Bush

*Assistant Secretary of the Army for Acquisition,
Logistics and Technology ASA(ALT)(Acting)*

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