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Biotech is key to sustainable domestic production of high-value materials

CHANGE IS HERE

Leaders push new model to transform the Army's technological foundations

OUR NATIONAL INSURANCE POLICY

Ensuring the organic industrial base can meet the needs of the future force

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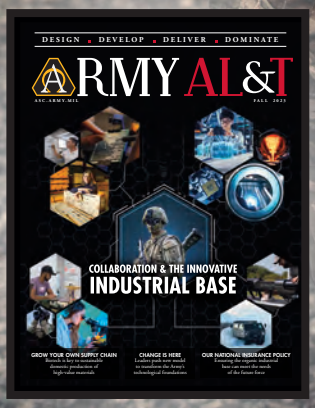
FROM THE AAE

COLLABORATION AND THE INNOVATIVE INDUSTRIAL BASE



ON THE COVER

In this issue, we explore the collaboration between the Army and its industrial base partners. This collaboration plays a crucial role in developing advanced technologies and equipment quickly and efficiently to enhance Soldier readiness and national defense capabilities.

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ARMY AL&T

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FEATURE ARTICLES

COMMENTARY

WORKFORCE

From the Editor-in-Chief

It is a mainstay, a bromide of science fiction and movies: the lone inventor. Take one of the most recent solo scientists of sci-fi fame, Tony Stark, better known as "Iron Man." Sure, he has a giant defense firm in the background making something, but the endless power supply, the super suit, flying … Tony is the sole inventor, he does that all alone. It's common in the movies, but not reality. A better analogy from moviedom for how things really work is the current blockbuster "Oppenheimer" (no, sorry, not Barbie). In Oppenheimer, a huge team of scientists work around the country, on different projects, toward the creation of an atomic bomb, culminating in the first nuclear detonation in history, known as the Trinity test, on July 16, 1945. It showed the innovation of America's industrial base in creating the products, the vast cooperation between industry and government needed to make it possible and the Army overseeing the operation to make it happen.

The effects of this single event on acquisition principles, and World War II overall, can be seen in today's U.S. national security enterprise and the symbiotic relationship between the Army and the nation's industrial base. The Army of today, as well as the Army of 2030 and beyond, all depend upon the quality, strength and speed of the industrial base to produce and collaborate. Productive partnerships between industry (large and small), the Army staff, other services, academia, allies and partners must be cultivated. The most recent example of the effectiveness and importance of a robust relationship between all parties is the continuing support that America is able to provide to Ukraine in its ongoing war with Russia, as featured in our summer special edition, "Army Acquisition Support to Ukraine." Army acquisition, at the direction of the Honorable Douglas R. Bush, assistant secretary of the Army for acquisition, logistics and technology (ASA(ALT)), is not only able to supply Ukraine with additional artillery, munitions, body armor, night vision devices, tanks (coming soon) and thousands of wheeled and tracked vehicles, but can do so while simultaneously accelerating arms production output, restocking supplies and staying on track across more than 500 acquisition programs, with 30 programs in the middle tier of acquisition (to rapidly develop fieldable prototypes), 24 in the rapid prototyping phase, six rapid fielding initiatives and several new software acquisition programs in planning and execution phase. Phew!

It's a massive effort with extraordinary results. How is this possible? By keeping the industrial base "warm," fostering partnerships with academia and industry, the use of congressionally approved acquisition "pathways" (middle tier of acquisition, software, etc.) to rapidly develop fieldable prototypes, xTech competitions to connect small businesses with the U.S. Army to spur innovation—essentially, by collaborating with an innovative industrial base, the theme of this issue.

Email Nelson McCouch III
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Read all about great examples of collaboration and innovation in the Joint Program Executive Office for Chemical, Biological, Radiological and Nuclear Defense's "Fail Forward and Pivot" story, Page 68. This program involves private industry, DOD, the U.S. Food and Drug Administration, Health and Human Services, the U.S. Agency for International Development and the Army Corps of Engineers, just to name a few! Learn how the Vaccine Acceleration by Modular Progression program was designed to accelerate the delivery of interim and full capabilities against priority "viral" threats and enhance the warfighter's biological body armor.

Next, many ideas die on the vine due to administrative obstacles, often referred to as the valley of death. Learn how ASA(ALT)'s own Army Small Business Innovation Research (SBIR) CATALYST program incentivizes collaboration with industry to overcome transition barriers and build the Army of 2030 in "Overcoming the Valley of Death," Page 20.

And finally, almost everything nowadays has a cyber component. But what does the future hold? As the risk of cyberattacks increases and other capabilities come online, the Army is working with academia to address these and other emerging technology threats through the Army's Pathfinder Program. The Army is encouraging college students to pursue federal careers in cybersecurity and emerging technology fields, as examined in "Defeating the Online Enemy," Page 52. It's worth a read.

These and many other interesting articles await you in this issue, as well as extended content on our website and social media sites. I encourage you to explore them all at **www.asc.army.mil**. As always, if you have an idea for a story, have written one yourself or just want to comment, I encourage you to contact us at **armyalt@army.mil**. We look forward to hearing from you.

Nelson McCouch III
Editor-in-Chief

PATRIOT ON POINT

Sgt. Qyson Legette, a Patriot launching station operator with the 38th Air Defense Artillery Brigade, stands near a recently launched MIM-104 Patriot launcher at Palau's Roman Tmetuchl International Airport in July 2023. The U.S. government has so far given six Patriot launchers to Ukraine under the Presidential Drawdown Authority. (Photo by Maj. Trevor Wild, 38th Air Defense Artillery Brigade)

COLLABORATION AND THE INNOVATIVE INDUSTRIAL BASE

"We must be the great arsenal of democracy."

—President Franklin D. Roosevelt, Dec. 29, 1940

The critical role the United States played in supplying military aid—including ammunition, weapons and other equipment—for our allies and partners in World War II mirrors, in important ways, our vital role today in support of Ukraine. Then, a fledgling domestic defense industrial base grew to become the arsenal of democracy that the world relied upon. Today, it continues to equip our warfighters with sophisticated, game-changing technology and supports an increasing demand for weapons and equipment from our international partners.

Our enduring partnership with industry is a primary reason why the United States Army is the greatest land power on Earth. Our industry partners are with us every step of the way as we provide support to Ukraine and continue to progress through our greatest transformation in almost half a century. In doing so, we are paying close attention to the characteristics of modern warfare as they unfold in Ukraine, and incorporating those lessons into new doctrine, training and materiel.

The Army remains committed to our six modernization priorities—long-range precision fires, next-generation combat vehicles, future vertical lift, the network, air and missile defense and Soldier lethality. We in acquisition continue to collaborate closely with Army stakeholders, our sister services, Congress and our industrial base partners to find innovative solutions to our challenges. Fortunately, this increased communication and collaboration has led to remarkable success and momentum in our modernization program.

MODES OF MODERNIZATION

The M10 Booker Combat Vehicle, which we unveiled and named at the 248th anniversary of the United States Army in June, is the first major new combat vehicle in two decades that, most notably, went from program start to low-rate initial production in just four years. The M10 Booker is the model representation of our focus on responsible

speed in Army acquisition. The Armored Multi-Purpose Vehicle has entered full-rate production and will replace the 1960s-era M113 family of vehicles. Our Infantry Squad Vehicle transitioned to full-rate production in March, representing a major milestone in "motorizing" infantry brigade combat teams and security force assistance brigades, as well as Army Ranger units. In the area of software, our Integrated Battle Command System is now in full-rate production. This air and missile defense system links Army and joint sensors to shooters in one command-and-control network.

With our recent XM30 Mechanized Infantry Combat Vehicle and Future Long Range Assault Aircraft contract awards, we placed emphasis on the importance of competition for a healthy industrial base, driving greater technological innovation and ingenuity in the defense sector. Additionally, competition through increased engagement with startups and small, entrepreneurial companies, such as those participating in the Army's xTechSearch program, helps us uncover transformative technology solutions to solve Army problems.

Reform initiatives granted by Congress allow the Army to streamline and gain efficiencies in acquisition. The Army is using the middle tier of acquisition pathway to enable a "try before we buy" framework that reduces risk, reduces cost and accelerates capability development and deployment. The Army currently has 31

READY FOR COMBAT

The M10 Booker Combat Vehicle proudly displays its namesake on the gun tube during the Army Birthday Festival at the National Museum of the U.S. Army in June 2023. The Booker is the first major new combat vehicle in two decades that, most notably, went from program start to low-rate initial production in just four years. (Photo by Bernardo Fuller, U.S. Army Multimedia and Visual Information Division)

Our enduring partnership with industry is a primary reason why the United States Army is the greatest land power on Earth.

programs in this pathway to accelerate select Army modernization priorities such as Lower Tier Air and Missile Defense Sensor, Next Generation Squad Weapon, Precision Strike Missile and Indirect Fire Protection Capability Increment 2.

Another important authority provided by Congress is the Software Acquisition Pathway used to facilitate rapid and iterative delivery of custom software capabilities to users, recognizing that technology development cycles occur more frequently in software systems. (For more about the software development cycle, read "Change is Here," on Page 44.) Eleven Army programs currently operate on this pathway, including Army Integrated Air and Missile Defense and the Robotic Combat Vehicle.

The Army also benefits from the expanded use of other-transaction authority (OTA) to streamline the acquisition of basic and advanced research activities, prototype projects and follow-on production efforts. In the 2022 fiscal year, the Army awarded more than 1,700 OTA agreements valued at $6.3 billion.

All these initiatives, when used alone or in combination, allow for better and faster modernization decisions.

WAKE-UP CALL

As we look to the future, Ukraine has been our wake-up call. Our industrial base is mobilized in a way we haven't seen in decades. Key U.S. Army systems committed to Ukraine under the Presidential Drawdown Authority alone include:

- Over 40,200 shoulder-fired rockets and missiles.
- 20 High Mobility Artillery Rocket Systems.
- Six Patriot launchers.
- 274 howitzers with over 1.3 million artillery rounds.
- Over 2,400 wheeled and tracked vehicles.
- Over 11,100 small arms weapons.
- Over 177 million small arms bullets.

Under the Ukraine Security Assistance Initiative:

- Two National Advanced Surface-to-Air Missile Systems (NASAMS) and six additional NASAMS with an estimated delivery in the first quarter of the 2025 fiscal year.
- Over 2,500 Humvees, Toyota ambulances and Mine-Resistant Ambush Protected vehicles.
- Ongoing deliveries for Switchblade and Puma Tactical Unmanned Aircraft Systems.
- Over 35,000 small arms and rocket launchers.
- Over 200 million rounds of ammunition.
- Ongoing deliveries for radios, tactical and medical equipment.
- Ongoing deliveries for 2 million rounds of 155 mm ammunition.
- 31 M1A1SA Abrams tanks to be delivered in the fall of 2023.

The United States also leads a coalition of more than 54 countries—from North America to Europe to the Indo-Pacific—providing additional military assistance to support Ukraine.

RETAINING A STRONG INDUSTRIAL BASE

We recognize the need to increase production capacity within our defense industrial base to not only ensure the health of domestic stockpiles, but to also support our allies in rebuilding their stockpiles of materiel sent in support of Ukraine. However, once the fighting stops, we must maintain our sense of urgency. Production lines must remain warm in order to address ongoing and emerging threats, especially in the Indo-Pacific.

President Franklin D. Roosevelt said, "Powerful enemies must be outfought and outproduced." A strong, secure and resilient defense industrial base is foundational to our continued military strength and our ongoing support to allies and partners.

THE FORGE: BEFORE

At Watervliet Arsenal, New York, a cannon tube is processed through the current rotary forge. Watervliet plans to replace the forge with a new, more capable forge in fiscal year 2026 as a part of a 15-year modernization plan. (Photo by Matthew Day, Watervliet Arsenal Public Affairs)

OUR NATIONAL INSURANCE POLICY

AMC is modernizing facilities, processes and the artisan workforce to ensure the Army's organic industrial base can meet the needs of the future force in a multidomain operations environment.

by Rich Martin, Col. USA (Ret.)

"The [organic industrial base] is our nation's national insurance policy, ready whenever we need it, and for more than a year it has been demonstrating its importance to the world."

—Gen. Charles Hamilton, commander of U.S. Army Materiel Command

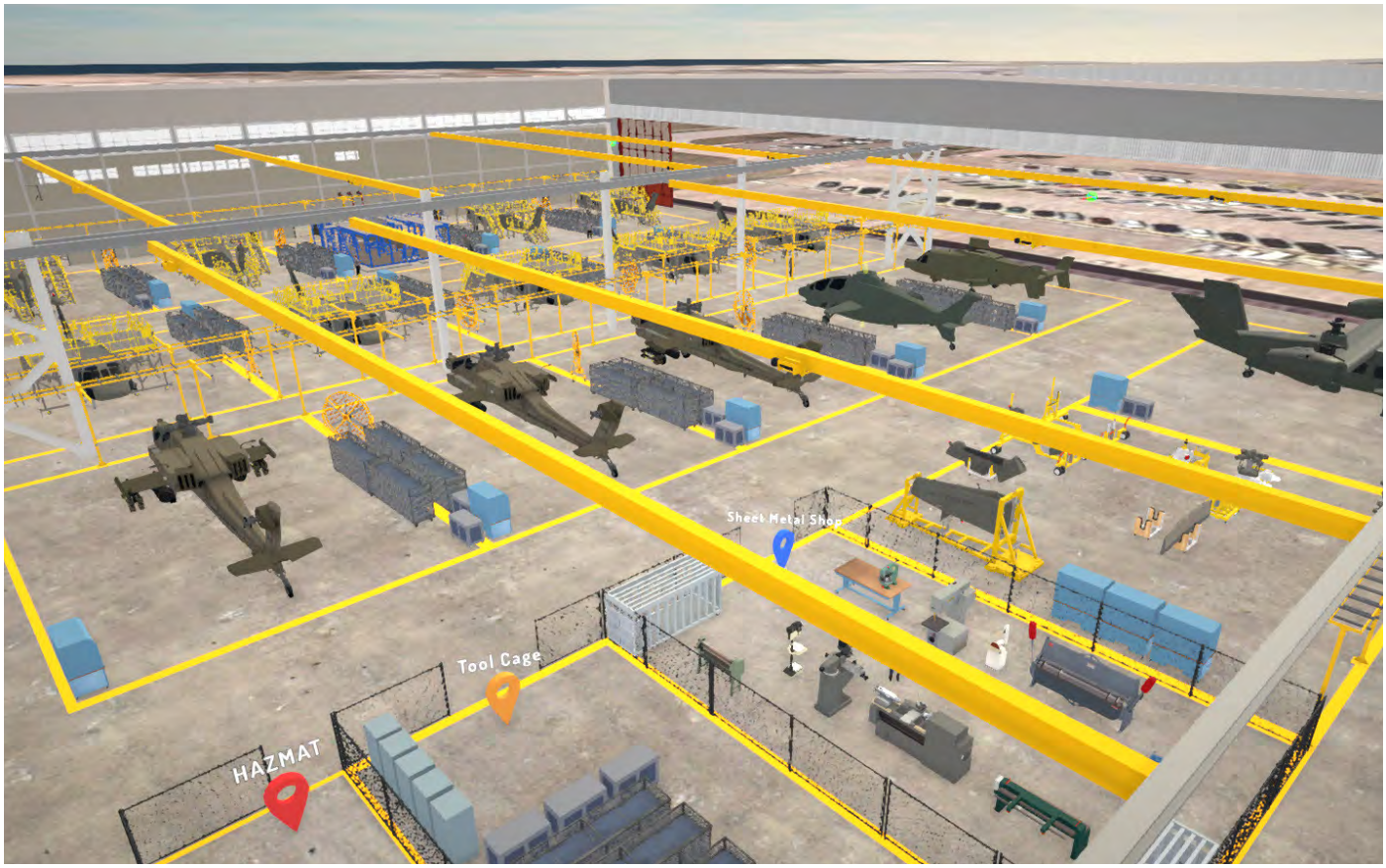
The Army's organic industrial base (OIB) comprises 23 arsenals, depots and ammunition plants that manufacture, reset and maintain Army equipment, providing critical support and sustainment to our warfighters. Like an insurance policy, the organic industrial base must be ready whenever the nation needs it. To ensure readiness, the Army is investing to meet the needs of the future force in a multidomain operations environment. The time to modernize is now, or we risk being late when called upon.

The Army, through Army Materiel Command (AMC), has embarked on a 15-year OIB Modernization Implementation Plan that will modernize facilities, processes and the artisan workforce, bringing in industry best practices, improving the human resource management structure and placing an emphasis on workforce skills and capabilities.

EFFORTS UNDERWAY

Over the past two years, AMC's organic industrial base modernization task force worked extensively with the assistant secretary of the Army for acquisition, logistics and technology (ASA(ALT)), and alongside partners in industry and academia, to develop and refine the organic industrial base modernization plan focusing investments on the most critical areas that will yield the right effects to ensure our facilities and workforce are ready to meet the needs of the joint force. The plan looks holistically across the OIB to incorporate emerging technologies into our facilities, from industrial operations to installation and cybersecurity, energy and power resilience, and more.

The end state is to sustain the artisan workforce, maintain pace with the Army's modernization of weapon systems and enable surge capacity for large-scale combat operations. The decisions we make today are setting the course for the organic industrial base over the next 40 to 50 years in support of the Army's modernization efforts. Examples include modernizing the powertrain facility at Corpus Christi Army Depot, Texas, to provide enduring platforms enabling support for Future Vertical Lift; ammunition plant production lines must now be prepared to produce the right size and scale of ammunition for the Next Generation Squad Weapon; and upgrading products at Red River Army Depot, Texas, to improve efficiency and reduce supply chain risks.



WAR GAME PLANNING

A hangar configuration and evaluation tool is demonstrated at the Organic Industrial Base Modernization War Game held June 13-15, 2023, at Redstone Arsenal, Alabama, in the Aviation and Missile Command headquarters. Similar to a simulation video game, the tool allows users to place aircraft, electrical drops, toolboxes and even personnel on the hangar floor to ensure adequate spacing and requirements needed to accommodate the enduring fleet, as well as future aviation assets. (Image provided by Michelle Gordon, U.S. Army Aviation and Missile Command)

As Gen. Charles Hamilton, commander of the Army Materiel Command, said, these modernization efforts are about taking the phrase "factory to foxhole" and flipping it to "foxhole to factory." This will allow the organic industrial base to provide precision sustainment and predictive logistics through data and information system technology, meaning that what happens on the battlefield can inform the factory and decisions made. So as rounds of ammunition are fired or repair parts are called for, the Army's arsenals, depots and ammunition plants will already be working on what the Soldier needs.

Modernization in the organic industrial base will be executed without sacrificing readiness. In fact, modernization is already underway. The organic industrial base showcased its criticality in sustaining operations in Eastern Europe, accelerating modernization efforts ahead of the plan's original fiscal year 2024 start date.

THE MODERNIZATION GAME PLAN

Over fiscal year 2023, the Army is investing more than $2.6 billion in organic industrial base modernization. In addition, DOD increased its investment in the Army's organic industrial base in the latest Program Decision Memorandum in fiscal years 2024 to 2028. This additional funding will help projects originally planned with a later start shift left, thus accelerating modernization objectives by roughly four years. The plan looks across the organic industrial base and synchronizes a cost-neutral investment of an estimated $18.1 billion in three phases:

- Build 21st century capability for the future (fiscal years 2024-28), such as integrating microelectronics processes at Tobyhanna Army Depot, Pennsylvania.
- Continue to build capabilities and attack vulnerabilities (fiscal years 2029-33), like modernizing pyrotechnic production at Crane Army Ammunition Activity, Indiana.
- Maintain and sustain organic industrial base investments (fiscal years 2034-38), which include enabling energy resilience with accredited micro-grids at Tooele Army Depot, Utah.

To operationalize the plan, AMC and ASA(ALT) conduct biannual OIB modernization wargames where stakeholders meet to synchronize and prioritize resources, looking at each of the prioritized efforts to evaluate what will be needed in terms of workforce, information technology and cyber, and energy consumption requirements, using the data-driven decision-making tool Vulcan.

These modernization efforts are about taking the phrase "factory to foxhole" and flipping it to "foxhole to factory."

Vulcan is a suite of tools that helps DOD adopt DevSecOps and Agile practices through project management, software development and IT infrastructure. New features and functionality are added routinely based on mission and need.

As the authoritative repository for Army organic industrial base modernization requirements and prioritization, Vulcan contains over 2,000 projects spanning 15 years and is critical as it provides the ability to see potential impacts on projects such as increase in material costs, project priority changes, global events and supply chain issues.

CONCLUSION

Readiness starts at home. The Army is investing in the organic industrial base to sustain critical support to the future joint force and advancing its means and capabilities to harden and protect key assets from threats across any domain, including cyber. The OIB Modernization Implementation Plan includes requirements for cybersecurity and cyber protection, utilities, production and manufacturing methods, as well as energy improvements, environmental policy compliance and life, health and safety of the workforce.

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

RICH MARTIN, Col. USA (Ret.) serves as the director of the AMC Organic Industrial Base Modernization Task Force, charged with developing the plan that will synchronize AMC's strategic investments in depots, arsenals and ammunition plants over the next 15 years. He holds an M.A. in business and organizational security studies from Webster University; two Masters of Military Arts and Sciences from the School of Advanced Military Studies; and a B.A. in sociology from the University of North Carolina at Chapel Hill.

FERMENTATION IN VATS
DEVCOM Chemical Biological Center's biomanufacturing facility can scale biomanufacturing processes in up to 1,000-liter fermentation vats. Once a process is proven at this level, it can be transitioned to industry for further scaling to production. (Photo by Gabriella White, DEVCOM Chemical Biological Center)

GROW YOUR OWN SUPPLY CHAIN

Biotechnology is key to sustainable domestic production of high-value defense materials.

by Henry S. Gibbons, Ph.D., and Brian B. Feeney, Ph.D.

The COVID-19 pandemic exposed weaknesses in U.S. manufacturing that have been developing for years. Decades of outsourcing of U.S. industry had rendered supply chains vulnerable before COVID-19. Pandemic-related disruptions to global supply chains laid bare the fragility of just-in-time production methods using extensive foreign sourcing of components. Over the last 40 years, the corporations controlling U.S. wartime production capacity have dispersed those manufacturing facilities around the world to take advantage of cheaper labor.

Leaders in Washington and the Pentagon have begun to address this issue, both by promoting the return of production to the United States and by leveraging the nation's global leadership in the burgeoning field of biotechnology. On Sept. 22, 2022, President Joe Biden issued Executive Order 14081. It orders DOD to incentivize the expansion of domestic, flexible, industrial biomanufacturing capacity for a wide range of materials needed for the nation's defense. This order reflects the realization that, just as with software and artificial intelligence, nations that can harness biomanufacturing for their national defense will possess a vast military advantage over those that cannot. To ensure its success, DOD is investing $1.5 billion in materials biomanufacturing and synthetic biology over the next five years.

The U.S. Army Combat Capabilities Development Command (DEVCOM) Chemical Biological Center is doing its part to meet this national security need by helping to usher in a new bioeconomy. It has built, and is now expanding, a 20,000-foot biomanufacturing facility at its research campus at Aberdeen Proving Ground, Maryland. Scientists inside the plant use DNA-engineered cells to manufacture materials in 1,000-liter vats. Biomanufacturing enables the creation of high-performance, high-value materials by controlling the growth environment and genetic makeup of the organisms that make them. The center is uniquely able to do this by bringing together its world-class chemical engineering and molecular biology experts to finesse the fermentation process.

WHAT IS BIOMANUFACTURING?

According to 42 U.S. Code § 18901(4), the definition of biomanufacturing is "the utilization of biological systems to develop new and advance existing products, tools, and processes at commercial scale." Biomanufacturing uses microorganisms to make products in a way that's similar to how a neighborhood microbrewery uses yeast to produce beer. The range of products that can be biomanufactured is limited only by scientists' ability to use genetic engineering to reprogram the central metabolism of those cells. Billions of these engineered microorganisms are suspended in a watery liquid in a fermentation vat and fed sugars and salts. As more and more of this material is produced, it is taken out of the vat and turned into precursors for products such as explosives, reactive coatings and textiles, optical and sensor materials or new therapeutics including vaccines. Or it can produce more ordinary—but much needed—materials such as the rubber in tires, polyurethane for cushion foam or the polyethylene that makes plastic bottles. In effect, these microbes are miniature factories programmed to make the high-value molecules needed by American industry and the military.

The process begins inside a research laboratory, where scientists reprogram a microbial cell's DNA to make it produce a desired chemical instead of, or in addition to, simply replicating itself. Designing these changes in the cell's operating system is comparable to opening a new app on a smartphone—a change in the program renders an entirely different set of operations. Recent advances in DNA engineering have made this possible, and the science is advancing rapidly. Biomanufacturing represents an industrial revolution and holds the potential to enhance existing materials and produce new ones. The possibilities include:

- Living textiles for environmentally interactive uniforms.
- Light-bending camouflage for warfighters, vehicles and aircraft.
- Decontaminating lotions that last a lifetime with a single application.
- High-performance fuels generated without a conventional refinery.
- Heat-resistant protective surfaces for applications that require thermal protection.
- Jam-resistant bioelectronic computing components.

VATS VS. SMOKESTACKS

By using plant-based feedstocks, biomanufacturing brings many advantages over petrochemical-based production. Biomanufacturing operates at lower ambient temperatures and pressures, which reduces utility costs and environmental impacts. It uses fewer toxic materials such as industrial solvents. Petroleum plants consume more energy and have a far more elaborate logistics train. Petrochemical facilities rely on an oil supply, much of which is controlled by foreign governments.

Also, petroleum-based manufacturing is a relatively stagnant technology compared to biomanufacturing, where the science and technology are ever improving. In academic and military research laboratories all over the nation, chemists and biologists work with systems engineers and use artificial intelligence to steadily improve upon the three essential elements of biomanufacturing:

- Increasing the sophistication of DNA engineering to produce new kinds of materials, including as-of-yet unconceived of materials.
- Improving the effectiveness of the fermentation process in the vats to increase material yield.
- Refining the methods for extracting the useful material that microbial organisms generate, also increasing yield.

If you think about the emerging biomanufacturing infrastructure as a landscape, what you see is an archipelago of research laboratories in which scientists are hard at work creating new strains of DNA-engineered microbial organisms. These organisms, and the chemical processes for extracting the desired product, are tested and optimized using small-volume cultures in bench-scale chemical glassware. If a journey of a thousand miles begins with a single step, so the journey to industrial-scale production begins with one flask. Industry needs the new material available at the kilogram quantities or greater. Within DOD, a consortium of laboratories is emerging that will deliver biomanufactured products and processes to industry. The DEVCOM Chemical Biological Center and the DEVCOM Army Research Laboratory hold key roles in that effort.

The world is on the cusp of a bioindustrial revolution.

ORGANISM DISCOVERY AND ENGINEERING

DEVCOM Army Research Laboratory typically takes the first look at newly engineered microbial organisms being considered for scale-up production using their specialized synthetic biology expertise. In effect, DEVCOM Army Research Laboratory finds the microbe best suited to generating the desired product via biomanufacturing plants like DEVCOM Chemical Biological Center's biomanufacturing facility. They prospect for new strains by scouring the scientific literature and through their partnerships with other defense laboratories, research universities and industry.

Once DEVCOM Army Research Laboratory has a good candidate organism, its scientists work on making it better at its intended function. That can mean fine-tuning the DNA using genetic engineering to narrow down the activities of the organism so that more of its metabolic energy goes into producing the desired material, thereby increasing the yield. Or it could mean making the organism more survivable in the vat by ruggedizing it so that it better tolerates the other ingredients inside the vat. This effort is usually performed below the one-liter scale, and once DEVCOM Army Research Laboratory has made improvements and verified the performance of the microbe and the material it produces, it hands the organism off to the DEVCOM Chemical Biological Center for scale-up.

PRODUCTION AT SCALE

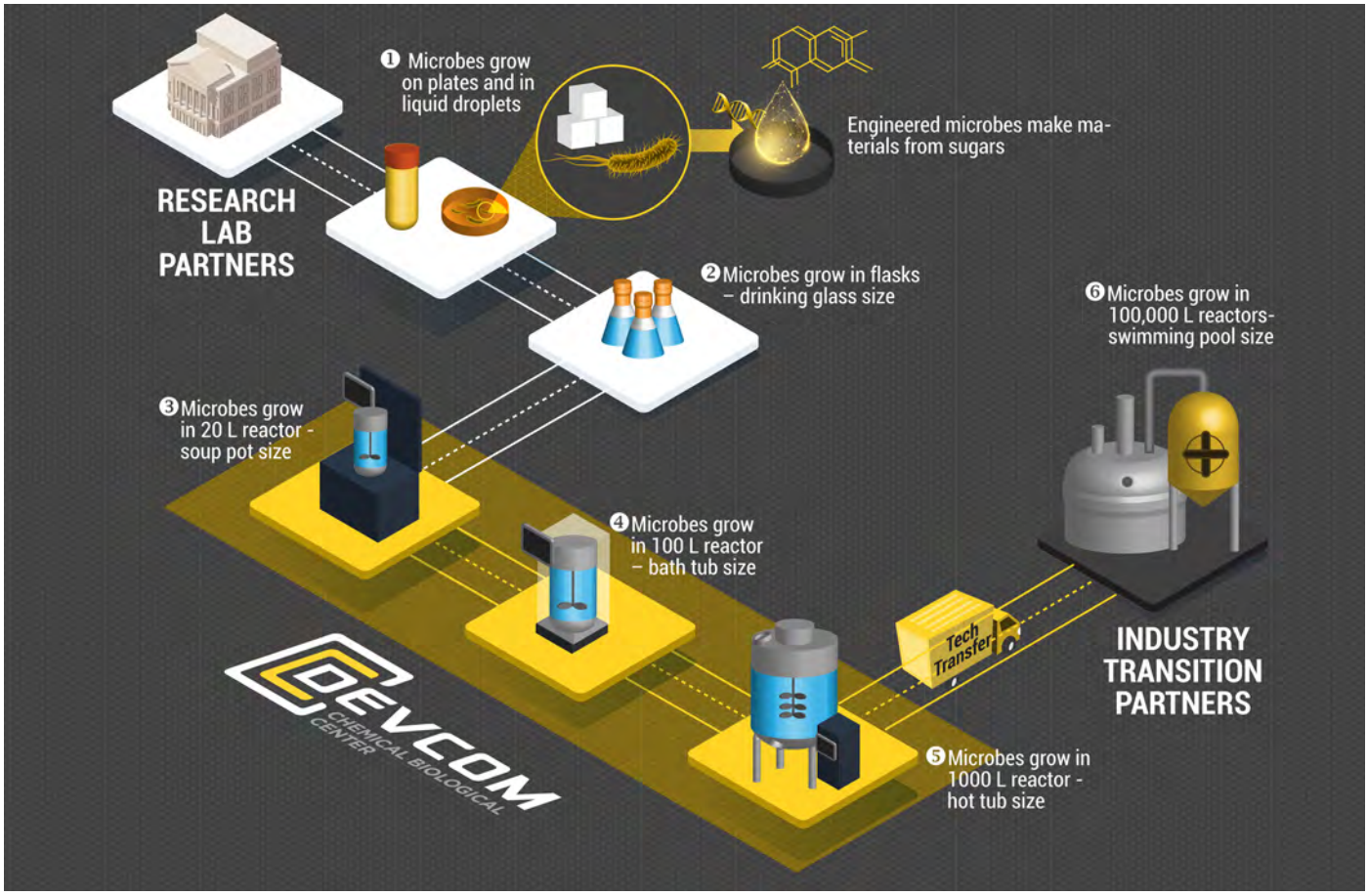
Getting from flask-size to 1,000 liters as a scale-up for industry use is an exacting process. It requires scientists and engineers who are seasoned in the art of enhancing the strains that basic research laboratories discover. The DEVCOM Chemical Biological Center biomanufacturing team creates the best conditions for them to

FINESSING FERMENTATION

DEVCOM Chemical Biological Center's Henry S. Gibbons, Ph.D., demonstrates a solvent-based extraction process using oil and colored water to remove biomanufactured material from the watery fermentation broth in June 2023. (Photo by Gabriella White, DEVCOM Chemical Biological Center)

MAINTAINING THE RIGHT ENVIRONMENT

Henry S. Gibbons, Ph.D., monitors the growth of a microbial culture in a 20-liter fermenter in June. Industrial fermenters are equipped with electronic process controls that allow scientists to monitor conditions within the bioreactor and maintain a constant favorable growth environment for producing microbes. (Photo by Gabriella White, DEVCOM Chemical Biological Center)



THE BIOMANUFACTURING PROCESS

Army's DEVCOM Chemical Biological Center collaborates with research lab partners, like the DEVCOM Army Research Laboratory, to scale up biomanufacturing processes for high-value materials, with the goal of transitioning those processes to industry for bulk production for national defense applications. (Graphic by Anna Crumbley, Ph.D., and Addie Huynh, DEVCOM Chemical Biological Center)

thrive inside the vats. This includes placing them in the right-sized vats at the right time and placing just the right mixtures of salts and sugars in the vats. They optimize aeration and mixing inside the vats to keep the microbials producing the new material consistently and in large quantities. The team seeks to maximize each strain's ability to precisely create the material it was designed to produce and do it with the greatest yield possible.

The biomanufacturing team also works with DEVCOM Chemical Biological Center engineers to devise the best way to extract these new materials from the vats, which are full of nutrient soup. To do this, the center pulls together a project team of professionals from across the organization to create the right mix of skills and knowledge. Throughout the process, from strain discovery and process optimization to full-scale production, information flows between the DEVCOM teams involved. This shared knowledge enables them to continuously make improvements to the process. The result is that when the Army hands off the scaled-up process to its industry partners for commercial production, those partners get an optimized organism and an optimized production process.

BETTER EQUIPPED WARFIGHTERS

Everything that DEVCOM Chemical Biological Center and DEVCOM Army Research Laboratory scientists and engineers do to support the biomanufacturing facility is with the

Biomanufacturing uses microorganisms to make products in a way that's similar to how a neighborhood microbrewery uses yeast to produce beer.

FINDING THE BEST SUITED MICROBE

DEVCOM Army Research Laboratory scientists evaluate microorganisms to find the microbe best suited for scale up production of materials via biomanufacturing. (Photo by Jack Bunja, DEVCOM Chemical Biological Center)

warfighter in mind. A more complete domestic defense supply chain means more certainty in getting the warfighters what they need when they need it. Developing new, specialized materials increases warfighter lethality and survivability. Better artillery propellants increase range, better composites for body armor and combat vehicles make them robust and enable warfighters to stay in the fight. Jam-resistant bioelectronic computing components keep warfighters communicating and coordinating on the battlefield. The range of benefits to the warfighter expands with every new material discovered, optimized and scaled up to industrial production.

CONCLUSION

The world is on the cusp of a bioindustrial revolution made possible by the blurring of the divisions between the digital and biological technology and advances in genetic engineering. It is likely to disrupt all prior industrial technology, with all the military applications that implies. Its military impact may be on the same scale as the transition from sail to steam, horses to armored vehicles and propellers to jets.

DEVCOM Chemical Biological Center stands poised to function as DOD's go-to agency for enhancing and scaling up the manufacture of high-value chemicals and materials of military value for hand-off to industry. This places it in a key role in the larger national project of developing America's bioindustrial base and driving the evolution of the nation's arsenal of democracy.

For more information or to contact DEVCOM Chemical Biological Center, go to ***https://www.cbc.devcom.army.mil****.*

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MARTIN "MARTY" ZYBURA

COMMAND/ORGANIZATION: Program Executive Office for Enterprise Information Systems

TITLE: Student, The Eisenhower School for National Security and Resources Strategy

YEARS OF SERVICE IN WORKFORCE: 23

YEARS OF MILITARY SERVICE: 27

DAWIA CERTIFICATIONS: Advanced in program management; DOD contracting professional; Foundational in life cycle logistics

EDUCATION: M.S. in industrial engineering, University of Washington; Master of Military Art and Science, U.S. Army Command and General Staff College; B.S. in electrical engineering, United States Military Academy at West Point

AWARDS: Meritorious Civilian Service Award (2022 and 2019), Legion of Merit (2016 and 2014)

FOCUS MAKES PERFECT

Some knowledge is learned through education, while other knowledge is gained through experience. For Martin "Marty" Zybura, it's a focused combination of the two that has been of most benefit to him throughout his career.

Zybura, formerly chief of staff at the Program Executive Office for Enterprise Information Systems (PEO EIS), was recently enrolled in The Eisenhower School of National Security and Resources Strategy at National Defense University, where he planned to build upon the knowledge and experience he acquired as an active-duty Soldier and Army civilian and apply it to his new role as deputy for acquisition and systems management at the Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASA(ALT). He graduated from the program in June.

According to Zybura, the curriculum at the Eisenhower School focuses on national security and resourcing and has an acquisition-focused track. "The resourcing portion is especially relevant for acquisition professionals," he said. "It is a terrific opportunity for military and civilian acquisition personnel to interact with other acquisition professionals from the other services, DOD agencies and federal agencies to include the [Department of Homeland Security], FBI and CIA."

When he served as chief of staff for PEO EIS, Zybura said he provided guidance, direction and oversight for staff functions across the PEO, directly supporting six project managers and six deputy project managers, as well as providing support to the program executive officer and deputy program executive officer.

PEO EIS is responsible for managing and providing the information technology network and business systems that Soldiers and the Army need to operate on a daily basis, but Zybura said most people find the breadth and impact of the PEO EIS mission interesting and surprising. "They understand the Army has large weapons systems programs, but the work done by PEO EIS to provide software capabilities and the enterprise network is not well known," he said. "PEO EIS supports and provides capability to the whole Army. It is a far-reaching and critical mission."

The chief of staff role serves to manage the day-to-day functions of the PEO, so that the program executive officer, deputy program executive officer and project managers can focus on their programs and on delivering capability to Soldiers and civilians across the Army. He described the role as especially interesting because it touches all areas of the PEO in one way or another, and there is coordination with multiple organizations outside of the PEO, including ASA(ALT), other PEOs and Department of the Army staff. "The broad responsibilities of not only supporting efforts to bring capability to the field, but also supporting the PEO workforce, provide the greatest satisfaction," he said.

Zybura has had a lengthy and diverse career with the Army, beginning with active-duty service as a field artillery officer and then transitioning to the Army Acquisition

FESTIVE FORMAL
Zybura with his wife, Sok Hui, at the Redstone Arsenal Holiday Ball in 2015, seven months before he retired from active duty. (Photo courtesy of Marty Zybura)

Corps after multiple company grade field artillery assignments. His first acquisition assignment was serving as the contracting officer representative for the operations group at the National Training Center in Fort Irwin, California, in 1999. He retired from active duty in 2016 and then went straight into an Army civilian acquisition position.

"My first acquisition assignment was working contracts at the National Training Center at Fort Irwin. That was a great assignment. Not only did we directly support the operational units participating in the National Training Center rotations, but we had to work all the contracts supporting the training infrastructure on Fort Irwin to include the combat vehicles, range instrumentation and communications systems. It was a very fast-paced assignment," Zybura said.

He spent a total of seven years with the U.S. Army Contracting Command in various leadership roles, in theater and at home. Additionally, he served four years at ASA(ALT), where he was product manager for large caliber ammunition in then-PEO Ammunition; director of Ammunition and Chemical and Biological Defense programs; and director of Mission Command Programs on ASA(ALT) staff. In 2019, he joined PEO EIS as deputy project manager for Defense Integrated Business Systems before he became chief of staff in August 2021.

Zybura served in centralized selection list (CSL) positions in a few places—as the product manager for large caliber ammunition at PEO Ammunition (now known as the Joint Program Executive Office for Armaments and Ammunition) and as commander at the 413th Contracting Support Brigade. "Competing for and serving in acquisition CSL positions while on active duty were major points in my career," Zybura said. The CSL selects the best-qualified individuals at the colonel/GS-15 and lieutenant colonel/GS-14 grades for specifically identified acquisition command and key acquisition positions to meet the needs of the Army Acquisition Workforce. "It was an honor to serve in those positions, and I learned a great deal, not only about acquisition, but also about working in large organizations with multiple stakeholders. As a civilian acquisition professional, the time I served in ASA(ALT) was unbelievably valuable. It provided great insight into how things run at the Department of Army and higher levels. If I could change something, I would have served in ASA(ALT) earlier in my career, preferably before or early in the lieutenant colonel/GS-14 period of my acquisition career."

Zybura said he gained valuable perspective and greater insight into Army processes and procedures from his experience working in a variety of roles.

"The Army acquisition mission is remarkably diverse. The best way to learn is to work in various positions in different programs at multiple organizational levels," he said. His best advice for junior acquisition personnel is to "look for opportunities that expand your experience and opportunities that provide an unfamiliar perspective."

Outside of work, Zybura's main focus is spending time with his family. Married for 30 years, he and his wife have two children—a son who is a junior in college and a daughter who completed graduate school and is currently working at George Mason University. They recently added a puppy to the household, who has been keeping everyone busy.

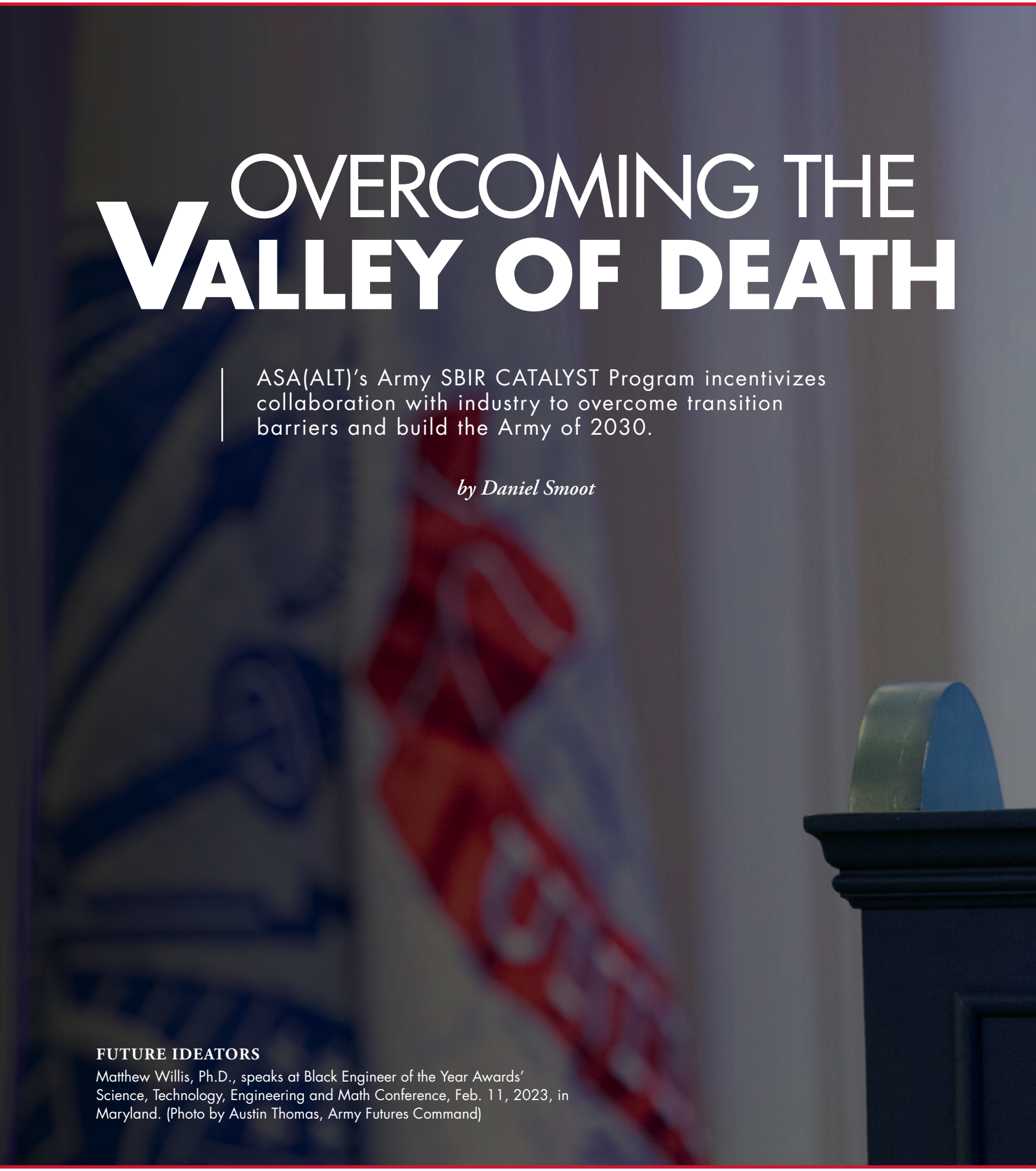
"Take care of your team—supervisors, peers, team members, staff and stakeholders outside your organization—listen more than you talk and be open to ideas from all directions," he said. "There are always areas that can be improved, and always keep in mind the end-state objective of providing capability to Soldiers and civilians in our Army."

—CHERYL MARINO

OVERCOMING THE VALLEY OF DEATH

ASA(ALT)'s Army SBIR CATALYST Program incentivizes collaboration with industry to overcome transition barriers and build the Army of 2030.

by Daniel Smoot



FUTURE IDEATORS
Matthew Willis, Ph.D., speaks at Black Engineer of the Year Awards' Science, Technology, Engineering and Math Conference, Feb. 11, 2023, in Maryland. (Photo by Austin Thomas, Army Futures Command)

The Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASA(ALT)) provides the American Soldier a decisive advantage in any mission by developing, acquiring and sustaining the world's finest equipment and services.

In that same vein, the congressionally funded and ASA(ALT)-sponsored Army Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs are competitive, contract award-based initiatives that allow Soldiers and Army experts to solve technological challenges.

FOSTERING INNOVATION

Through the Army SBIR and STTR programs, ASA(ALT) provides small and nontraditional businesses with contract opportunities for solutions that show technical merit, feasibility and commercial potential.

The Army SBIR CATALYST Program is a new ASA(ALT)-led mechanism designed to further accelerate and support disruptive innovation while cultivating collaboration with the defense industrial base—the industrial complex prioritizing the research, development and delivery of military capability.

The transition from conceptualization to fruition happened quickly for the novel effort. Announced by Under Secretary of the Army Gabe Camarillo at the October 2022 Association of the United States Army Annual Meeting and Exposition, the Army SBIR CATALYST Program is one of five new initiatives—alongside xTechPrime, the Army Tech Marketplace, Intellectual Property Cadre and Project VISTA—incentivizing collaborative efforts with industry.

The pilot launched shortly thereafter, in February 2023, demonstrating ASA(ALT)'s responsiveness at the point of need to unite small businesses and major weapons systems integrators to drive innovation.

LAUNCHING CATALYST

All five of ASA(ALT)'s latest initiatives capitalize on the speed and innovation of small businesses, and the stability and expertise of technology integrators through additional funding—and the Army SBIR CATALYST Program's pilot was the first to launch.

ASA(ALT), and its Office of Army Prize Competitions and the Army Applied SBIR Program, lead the Army SBIR CATALYST Program to alleviate and overcome constraints in the defense industrial base.

Companies often develop concepts that lead to prototypes. However, there is a gap between prototyping and the transition of equipment into the hands of Soldiers. The Department of Defense refers to this as the "Valley of Death"—a long and arduous acquisition process where vendors face multiple barriers in transitioning their technologies to programs of record.

Despite the need for innovations that support the National Defense Strategy and offer commercialization potential, solutions frequently focus on unique Army challenges. Technologies that fall within these niches take time to mature as they navigate regulations and potential commercialization. These factors contribute to obstacles relating to the Valley of Death and are a reason behind the implementation of the Army SBIR CATALYST Program.

To overcome these hurdles, and better support the defense industrial base, the Army SBIR CATALYST Program accelerates innovation using over $75 million in matching capital from Army customers, integrators and the Army Applied SBIR Program.

Comprised of small-, medium- and large-size businesses, the defense industrial base is essential for not only a strong military but also for a robust commercial sector. Data from a 2022 Congressional Research Service report shows that over 200,000 companies make up the defense industrial base. Meanwhile, the

The Army SBIR/STTR Program specifically invests in companies focused on developing dual-use technologies that benefit Soldiers on the modern battlefield.

XTECHPRIME TEAMS INTEGRATORS

As the U.S. Army's premier prize competition, the xTech Program enables small businesses to compete for cash prizes that are nondilutive—enabling financing where the business does not lose any equity—with some competitions also awarding SBIR contracts to accelerate and transition winners' transformative technology solutions to the Army.

As one of Under Secretary Camarillo's new initiatives, the xTechPrime competition builds on the existing program by providing greater resources and opportunities to small businesses. Launched in April, it challenges nontraditional vendors to team with technology integrators to submit their innovative solutions that contribute to the Army's current modernization goals while supporting a resilient industrial base.

Small businesses can showcase their innovative technology solutions, with the potential to receive significant funding through the Army's $28.5 million investment. Meanwhile, technology integrators provide expertise and resources to scale up technologies through continued collaboration with small businesses as they integrate their solutions into the Army ecosystem.

"XTechPrime empowers small businesses and technology integrators to partner as teams and accelerate the transition of novel and often overlooked ideas by leveraging the resources of technology integrators," said Matthew Willis, Ph.D., director of Army Prize Competitions and the Army Applied SBIR Program. "It is important that we support these relationships to address innovation challenges within the Army and across industry."

XTechPrime is an open-topic competition that accepts proposals for a variety of concepts. However, it prioritized solutions within artificial intelligence and machine learning; autonomy; climate and clean technologies; immersive and wearables; and sensors.

As a result, a panel of Army experts selected 50 participants—who submitted white papers aligning with these focus areas—to move forward and partake in a networking forum at the August Fed Supernova defense innovation event in Austin, Texas. Alongside this opportunity and the Army's total investment of $28.5 million, semifinalists received $5,000; continue to compete for $40,000 in nondilutive cash prizes; and, for the winners, have the potential for $1.9 million in Direct to Phase II SBIR contract awards.

Throughout each round, judges will provide feedback to participants to help accelerate the transition of technologies to Army users. The panel of experts will offer insight on the best applications for the technologies, suggestions for product improvements for Army use and the next steps for development.

"This competition plays a key role in the under secretary's strategic initiatives," Willis said. "It capitalizes on xTech's proven competition model while supporting industry and the potential integration of scalable, Soldier-driven solutions."

XTechPrime is the first prize competition since the program's launch in 2018 to focus on partnerships between small businesses and technology integrators, with incentives for each participating group.

While the format of xTechPrime deviates from the standard xTech model with the addition of the small business and technology integrator teaming, a critical xTech component remains constant across all competitions—xTech's dedication to providing not only financial gains but also feedback, mentorship and networking from Army experts.

For information on the xTech Program and other upcoming competitions, go to **www.xtech.army.mil**.

JUDGING TECH

Judges consider six international companies' pitches in the electric power and energy technology area at the conclusion of xTech International, July 13, 2022, at Detroit Arsenal, Michigan. The U.S. Army has partnered with the Air Force and Navy to discover small businesses from around the globe with innovative dual-use technology for the defense industry through this prize competition. (Photo by Jerome Aliotta, DEVCOM Ground Vehicle Systems Center)

U.S. Chamber of Commerce notes that small businesses account for 99.9 percent of all businesses in the U.S. but only 25 percent of all DOD prime contracts.

SMALL BUT MIGHTY

Small businesses offer agility and creativity that often lead to innovative ideas and disruptive solutions. These benefits make them a sought-after market for emerging technologies for DOD, technology integrators and venture capital firms. Expanding collaboration with these small businesses presents a valuable opportunity to tap into their innovations, enhance the defense innovation ecosystem and achieve leap-ahead capabilities. The Army SBIR/STTR Program specifically invests in companies focused on developing dual-use technologies that benefit Soldiers on the modern battlefield.

This creates a win-win situation for technology integrators and small businesses, as integrators provide the resources and experience needed to scale manufacturing and to meet Army needs. With the Army SBIR CATALYST Program, the Army can better support these firms while bridging the capability and transition gap between innovators and national defense priorities.

During the 2023 pilot year, the Army SBIR CATALYST Program selected five small businesses to receive base contracts of $1 million each for a six- to

The "Valley of Death" is a long and arduous acquisition process where vendors face multiple barriers in transitioning their technologies to programs of record.

12-month performance period. Each of the selected small businesses identified Army customers and interested technology integrators for the capabilities in their proposed solutions.

To participate, each selectee must have previously received an Army SBIR/STTR contract within the past four fiscal years, while not having yet received a second SBIR/STTR Phase II under the same project. Following these criteria, the pilot accepted a wide array of proposals from businesses capable of supporting the Army's future force. However, it prioritized solutions within specific technology ecosystems.

Areas of focus included climate and clean technology in the face of climate change; artificial intelligence and machine learning resiliency; supply-chain logistics; immersive and wearables; and contested autonomy. The Army selected ANDRO Computational LLC; Compound Eye Inc.; EM Photonics Inc.; R-Dex Systems Inc.; and Solvus Global LLC for their proposals within these fields and their ability to support key efforts, including the Army Climate Strategy and the Army Digital Transformation Strategy.

NEXT STEPS

Through their selections in the base phase and the Army's $75 million investment, recipients can receive Army SBIR CATALYST Enhancement Phase II contracts of $7 million in Army SBIR funds, $3.5 million in funding from the Army transition partner and another $3.5 million from the partnered technology integrator. The result is total funding of $15 million for each small business based on a fund ratio of 2:1:1 over an additional 12- to 24-month performance period.

Upon conclusion of the program, these businesses' solutions can potentially transition to critical Army partners, such as the Program Executive Office (PEO) for Intelligence, Electronic Warfare and Sensors' Product Lead Tactical Space Superiorities and Project Director Sensors-Aerial Intelligence; PEO Ground Combat Systems and its Project Manager Main Battle Tank Systems; PEO Soldier's Product Manager Individual Weapons; the U.S. Army Combat Capabilities Development Command (DEVCOM) Armaments Center, and DEVCOM Army Research Laboratory.

"This is the first SBIR program initiative designed to leverage untapped potential by heavily investing and building a shared risk structure between small businesses, Army transition partners and technology integrators," said Matthew Willis, Ph.D., director of Army Prize Competitions and the Army Applied SBIR Program, within the Office of the ASA(ALT). "Through this pilot—and drastic increase in Army funding—we can drive down risk while providing greater resources to advance prototype development, testing and transition."

ASA(ALT)'s pilot effort and selectees can help shape future iterations of the Army SBIR CATALYST Program, and the involvement of Army customers and integrators. Building on the feedback and experiences of small businesses, integrators and Army customers, the Army will further streamline the program to improve the success of small businesses and integrators, and its exposure to nontraditional vendors, via increased funding and an optimized potential pathway to crossing the Valley of Death.

CONCLUSION

These collaborations with Army customers and the defense industrial base can also catalyze and accelerate the rate of innovation while supporting existing mechanisms for technology transition. As the initiative grows, the Army SBIR CATALYST Program will complement ASA(ALT)'s existing SBIR/STTR contract efforts via additional opportunities and funding that support commercial industrial success—and through Army advancements capable of solving current and future challenges.

Willis will speak about the next iteration of the Army SBIR CATALYST Program at the October 2023 AUSA Annual Meeting and Exposition in Washington, as part of the Army Office of Small Business Programs seminars.

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

DANIEL SMOOT provides contract support to the U.S. Army SBIR, STTR and xTech programs for Booz Allen Hamilton. He holds a B.S. in writing from Towson University.

IN PRODUCTION

Structural repairs in progress on the UH-60V Black Hawk production line at the Corpus Christi Army Depot in Texas, July 2022. (Photo by Jerry Duenes, Corpus Christi Army Depot)

A WEAK LINK TIGHTENED

PEO Aviation creates defense industrial base risk management team to shore up the supply chain for parts for Army's rotary wing fleet.

by Jody Hicks and Bill Crawford

Previously unrecognized issues with the United States' industrial base and distribution system entered the national spotlight during the coronavirus pandemic. News reports cited shipping containers stuck in ports, items piled up at loading docks, transportation disruptions, empty store shelves, labor shortages and many more related challenges. Most of the issues seen in the media were those that impacted our day-to-day lives. However, COVID-19 also exposed challenges facing the United States defense industrial base.

The Army relies on a robust defense industrial base to develop, build and maintain aviation capabilities for both the current aviation fleet and the Army of 2030. Even though the pandemic has ended, some Army aviation enduring aircraft production lines are still facing pandemic-related supply chain challenges. The CH-47 Chinook, UH-60 Black Hawk and AH-64 Apache production lines, which are the bellwether of the fleet, are facing possible slowdowns in the near future.

Army aviators depend on the timely availability of aircraft parts and equipment to keep the force postured to conduct their missions both at home and abroad. They need their aircraft to be available for training and operational deployments.

MANAGING INDUSTRIAL BASE CHALLENGES

The defense industrial base and supply chain have been strained at all levels. From major industrial powerhouses to the small producers of specialty parts, pandemic restrictions, the loss of skilled employees and supply chain disruptions slowed or stopped production lines. Many smaller "mom and pop" specialty businesses that

supported the larger manufacturers have, in many cases, simply gone out of business. They were the vendors of aviation subcomponents and parts that supported the larger original equipment manufacturers and second-tier suppliers. Some of those smaller businesses had a tougher time meeting the challenges caused by the pandemic and all the ancillary problems that went with it.

If a rotorcraft part production line shuts down completely, the risk of it permanently going away is high and increases over time. It is critical to closely monitor the rotary wing industrial base at all levels. Investing in the preservation of drawings, bills of materials, production processes, tools, special equipment, etc., is an absolute must to reduce that risk of having available components to maintain the readiness of the Program Executive Office (PEO) for Aviation's fleet of aircraft and increase the probability that, if needed, the part can be rapidly produced in the future.

Though the country is recovering, the problems associated with the supply chain still exist in varying degrees. Some recent examples of supply chain challenges include inflation and the burden it places on some companies to absorb the increased cost of raw materials, shipping and energy. Other supply chain problems include minimizing foreign intrusion into the supply chain and onshoring critical manufacturing and raw materials. There will always be supply chain challenges, but the intent of the PEO Aviation industrial base team is to not only minimize the risk, but to understand it so that proactive measures can be taken to stay ahead of it.

THE PEO AVIATION APPROACH

PEO Aviation has long recognized the need to manage industrial base issues. The pandemic spurred the defense industrial base management efforts, and PEO Aviation leaders created a defense industrial base team from scratch.

There are over 3,000 vendors supporting the major platforms that are currently flown by the U.S. Army. Conducting analysis for the entire fleet was nearly impossible using traditional methods. PEO Aviation leveraged the latest in AI technology to assist in quickly identifying areas of concern. PEO Aviation has partnered with two companies that utilize this AI technology to scrape the web for open-source data, along with subscription services (like Dun & Bradstreet) to provide quick feedback on vendors who may have a supply chain risk. The defense industrial base team took that information and opened a dialogue with vendors to see if they were aware of the risk, and then worked on finding a way to mitigate this risk. It's meant to be a team effort, with the ultimate focus of providing our warfighters with capable aviation platforms. Along with these tools, the industrial base team also focused on building an internal supply chain risk management process to augment the AI tools to help identify and mitigate potential supply chain risks. The process the team uses is a hybrid approach of both human-in-the-loop analytic research, government databases and AI tools to reduce supply chain risk in PEO Aviation's fleet.

The defense industrial base spectrum of support is wide and multifaceted. PEO Aviation teamed with Govini, Exiger and the U.S. Army Combat Capabilities Development Command Aviation and Missile Center to help identify and mitigate supply chain risks within Army aviation. The defense industrial base team conducted many types of analysis including vendor assessments and deep dives, inflation analysis, foreign risk analysis, industrial sector analysis, and assistance with contract language development among others. The defense industrial base team has completed more than 120 projects in support of PEO Aviation supply chain risk management. Recent PEO Aviation supply chain risk management projects include analysis for critical raw material stockpiling, alternate part supplier analysis, foreign influence analysis and sub-tier supplier research. Larger projects include addressing shortfalls in domestic industrial base capacity and capability and Industrial Base and Sustainment Program projects, both of which strengthen PEO Aviation's industrial base for both future and enduring aircraft.

One of the team's most significant projects was assisting one of the PEO Aviation project managers to address a House Armed Services Committee industrial base capability and foreign

Investing in the preservation of drawings, bills of materials, production processes, tools, special equipment, etc., is an absolute must.

MAINTENANCE REQUIRED
U.S. Soldiers with 12th Combat Aviation Brigade work on AH-64 Apache helicopter maintenance in October 2022 on Katterbach Army Airfield, Ansbach, Germany. Regular maintenance and parts replacement is required to ensure Soldiers can complete their missions. (Photo by Eugen Warkentin, Training Support Activity Europe)

influence inquiry. With its combination of experience, AI tools and in-depth analysis, the defense industrial base team was able to swiftly provide answers regarding the pandemic effects and geopolitical risks associated with this program. The defense industrial base team also realized that the employees of PEO Aviation needed a means to easily access the various analytical sources that the team had developed.

USER FRIENDLY SOLUTION

Making this information available to the project managers (PM) for quick access was a significant challenge. The defense industrial base team needed a user-friendly way to communicate with the PMs that was easy to access and navigate. The PEO Aviation chief information officer and G-6 team assisted with developing a solution that would benefit the defense industrial base team and the PMs. These coordinated efforts resulted in a service desk portal that is tailorable to the needs of the PEO workforce.

"The industrial base team has been a great resource of knowledge, collaboration and support," said Steven Snider, Future Long Range Assault Aircraft supply chain risk management lead. "They are always willing to jump right in and help however needed. They are honestly just an extension of our program, and we are lucky to have them available to us."

The purpose of the service desk website is to centralize and manage the supply chain issues that are generated daily within PEO Aviation. Before having this automated industrial base functionality, tasks were managed manually, which was both lengthy and cumbersome. The sporadic nature of industrial base analysis needed a better way to organize and prioritize all of the tasks being managed. The self-service portal allows the workforce to simply log in and request assistance in solving its industrial base needs. The workforce can submit, track and manage industrial base issues and search the extensive library for previously conducted analyses.

CONCLUSION

The Army's rotary wing industrial base is facing long-term challenges at all levels, and they are probably going to get worse before they get better. Army aviation requires a strong, flexible and resilient defense industrial base. PEO Aviation is taking proactive measures to analyze aviation supply chains to identify and mitigate problems early. The ability to monitor and prevent issues is critical as we move into the future. PEO Aviation remains vigilant in all matters involving the defense industrial base.

For more information, contact Jody Hicks at ***joseph.e.hicks6.ctr@army.mil*** *or Bill Crawford at* ***william.t.crawford12.civ@army.mil****.*

JODY HICKS is a member of the G-3 plans staff in PEO Aviation. He is a retired lieutenant colonel who served 21 years as an Army aviator. He has served in leadership roles from platoon leader to battalion commander. After retirement, he continued supporting Army aviation through various defense contracting positions, most recently the defense industrial base lead for PEO Aviation. He holds an M.S. in aeronautical science from Embry Riddle Aeronautical University and a B.S. in finance from the University of Alabama.

BILL CRAWFORD is a member of the G-3 plans staff at PEO Aviation. He has over 30 years' experience as both an Army aviator and a government civilian engineer. He holds a B.S. from the U.S. Military Academy at West Point and his education includes the Field Artillery Officer Basic Course, Army Aviation Advanced Course and the Combined Arms Services School.

A TRAINED ARMY

Spc. Griffin Wisehart, an infantryman assigned to 2nd Infantry Brigade Combat Team, 34th Infantry Division, loads a round into an M3A1 Carl-Gustaf Multi-purpose Anti-armor Anti-personnel Weapon System (MAAWS) during training at Camp Guernsey Joint Training Center in Wyoming on May 20, 2023. (Photo by Staff Sgt. Tawny Kruse, Joint Force Headquarters – Iowa National Guard)

SEPARATE BUT TOGETHER

How two organizations attained synergy to achieve success in separate but associated acquisition programs.

by Frederick Willecke, Dan O'Leary and Shelley Lowery

As each program executive office (PEO) and its associated project manager offices focus on their prescribed mission, there is a potential for stovepiping and limited collaboration that generate development risk for equipment or systems that require interoperability or integration. Transparency and collaboration across organizations help minimize challenges by synergizing resources, cross-functional expertise, management and schedules. It is crucial that weapons and the ammunition that they fire—each developed and managed by separate organizations—function together as a complete system.

The development of the 84 mm M3A1 Carl-Gustaf Recoilless Rifle, and its associated 84 mm High Explosive (HE) 441E Reduced Sensitivity (RS) round, is an example of overcoming those challenges through sound decision-making, advance planning that leveraged an established memorandum of agreement between PEOs, and an esprit de corps generated by a cross-organizational, integrated product team.

PEO Soldier's mission is to rapidly deliver agile and adaptive leading-edge Soldier capabilities in order to provide combat overmatch. Project Manager Soldier Lethality (PM SL), within PEO Soldier, is responsible for the development, production and fielding of small arms individual weapons, crew-served weapons, remote weapon stations and the associated fire-control systems, including the 84 mm Carl-Gustaf Recoilless Rifle.

The mission of the Joint Program Executive Office for Armaments and Ammunition (JPEO A&A) is to develop, procure and field lethal armaments and ammunition providing joint warfighters and allied partners overmatch capabilities. Project Manager Close Combat Systems (PM CCS), within JPEO A&A, is responsible for the development, production, fielding and life cycle management of lethal close combat munitions that ensure increased mobility and counter mobility to the full spectrum of Army forces, which includes the 84 mm HE 441E round.

READY, FIRE
Multi-purpose Anti-armor Anti-personnel Weapon System (MAAWS) M3A1 fires during new equipment training. (Photo courtesy of PEO Soldier)

To summarize, project manager offices in different PEOs are tasked to develop and produce two interdependent items (weapon and ammunition) in order to deliver the required operational capability. To successfully deliver capability to the warfighter these project managers must ensure program priorities are synchronized.

THE SOLUTION

The success of the M3A1 Carl-Gustaf Recoilless Rifle and its associated 84 mm HE 441E round began with the development of their predecessors: the M3 Carl-Gustaf and the 84 mm HE 441D round. The M3, M3A1, and both 84 mm rounds fall under the Multi-Purpose Anti-armor Anti-personnel Weapon System (MAAWS), which is a reloadable shoulder-fired recoilless rifle capable of firing various munitions to achieve different target effects based on mission requirements. The M3A1 improves upon the M3 capabilities by significantly reducing the overall system weight and adding an advanced fire control system.

PEO Soldier and JPEO A&A signed a memorandum of agreement on Dec. 6, 2016, to support the M3 Carl-Gustaf and the 84 mm HE 441D round effort. This memorandum codified the plan and defined authorities, roles and responsibilities for conducting ammunition and other interdependent program research, development, test and evaluation and production activities associated with ammunition and weapon systems such as the MAAWS. During development, the team identified that the 84 mm HE 441E round required development of enablers to the M3A1 Carl-Gustaf's advanced fire control and weapon electrical communication system. These enablers are required to obtain the target range, determine the ballistic solution, program the fuze, and set the airburst function upon firing.

Adding the enablers provided a significant increase in lethality and accuracy and reduced the engagement time as compared with the predecessor round and weapon. When this was identified, PM SL utilized the memorandum of agreement and formally initiated a development project that required aligning the appropriate funding requests with the respective PEOs within the DOD budgetary process. This effort also tied the two programs together with respect to schedule. This approach identified one singular project manager (PM SL) as the lead to manage the development activities and PM CCS to take over ammunition production and life cycle management after achieving type classification standard. This enabled PM SL to work closely with the original equipment manufacturers (Saab Dynamics for the weapon and ammunition, and Aimpoint for the fire control) and ensured unified direction to the vendors.

Additionally, PM SL established a teaming relationship among the manufacturers and U.S. Army Test and Evaluation Command in order to perform a combination of contractor-led testing and government-led testing. This collaboration was essential to streamline test activities to ensure both items met Army operational requirements. Furthermore, per the memorandum, PM SL ensured the right experts were involved in all aspects of development by funding an integrated product team that included an embedded PM CCS product support

expert as well as shoulder-launched munitions engineers from the U.S. Army Combat Capabilities Development Command Armaments Center (DEVCOM AC). These experts have significant experience working on ammunition items and were essential for planning, review and analysis of the munition development.

While the PM CCS product support expert ensured all the necessary sustainment planning, coordination and documentation for the 84 mm HE 441E round was being executed through development, the DEVCOM AC munitions engineers coordinated all aspects of technology management with PM CCS to enable smooth transition to production. The PM CCS product support expert and the munitions engineers eventually moved to the integrated product team, funded and managed by PM CCS, once transition to production was complete. This transition was critical to support PM CCS responsibilities for production and execution of sustainment.

THE BENEFIT

This collaborative and integrated approach minimized the risk of rework, schedule slip and cost growth due to lack of synergy between the two project managers. PM CCS and PM SL have successfully managed the M3A1 and 84 mm HE 441E integration and qualification and ultimately achieved type classification standard on Jan. 3, 2023. As stipulated in the memorandum of agreement, the primary office of responsibility transferred from PEO Soldier to JPEO A&A (PM CCS) on Jan. 30, 2023, after PEO Soldier achieved the type classification standard milestone. Shortly after, PM CCS awarded a standalone delivery order to procure more than 3,000 munitions from Saab Dynamics. By leveraging the established memorandum and directly embedding DEVCOM AC experts with munition experience, all the experts became members of one team. This generated a feeling of pride, fellowship and a general spirit of collaboration. Ultimately, the team was able to have all programmatic documents approved on schedule, achieving type classification, a major program milestone and place the program on a path to successfully deliver necessary capability to the operational environment.

Project managers must ensure program priorities are synchronized.

CONCLUSION

The structure of the chartered missions of the PEOs and project management offices within Army acquisition could present challenges when developing individual items that are reliant on one another to operate. By planning, identifying items that require synchronization across PEOs, leveraging formal documents like the memorandum of agreement, aligning funding streams and schedules and joining experts from both organizations into one cross-functional integrated product team, both organizations were able to attain a synergy that resulted in the successful execution of two separate but associated acquisition programs.

For more information, go to ***https://jpeoaa.army.mil/Project-Offices/PM-CCS****.*

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WANDA J. DUNN

COMMAND/ORGANIZATION: Joint Program Executive Office for Armaments and Ammunition

TITLE: G-4 director of logistics

YEARS OF SERVICE IN WORKFORCE: 16

YEARS OF MILITARY SERVICE: 26

DAWIA CERTIFICATIONS: Advanced in life cycle logistics and Practitioner in program management

EDUCATION: M.A. in educational psychology, Troy University; B.S. in human resources management, Upper Iowa University

AWARDS: Meritorious Service Medal; Army Commendation Medal; Army Achievement Medal; Good Conduct Medal; and National Defense Service Medal

COURAGE TO CHANGE

The best opportunities for growth come through change.

So is the experience of Wanda Dunn, G-4 director of logistics for the Joint Program Executive Office for Armaments and Ammunition (JPEO A&A) and a 26-year Army veteran. To grow in the Army Acquisition Workforce, "one must be willing to seek potential by risking change to another PEO, project or product for acquisition knowledge," she said. "No two programs or products bring the same learning curve."

"It takes great courage to change projects, from what is known and comfortable to that which is unknown. Often in my career, these changes have brought the best opportunity for growth," she added. And if a change in assignment is not possible, Dunn strongly encourages participation in developmental assignments either within or outside of a person's career field.

The best-ever career development program for her was working with Department of the Army Headquarters G-3/5/7 for U.S. Army Munitions. "This was an opportunity to witness how the G-3/5/7 (plans and operations), G-4 (sustainment) and G-8 (programming) work in unison in the procurement, management planning, testing, [moving to depots] and allocation of munition," she said. "I was able to utilize the knowledge immediately from this assignment to execute my first munition MR." An MR, or military munitions rule, federally defines when a military munition becomes waste and how to manage it.

Dunn initially became aware of acquisition while working in a term position at the Logistics Readiness Center for mobilization at Fort Dix, New Jersey. This was her first Army civilian position following active-duty retirement as a logistician, military occupational specialty 92Y Army unit supply specialist.

"I often had to coordinate the timely movement of [project manager] fielding assets to collaborate with unit movement into the [area of responsibility]. PEO Soldier was active in the rapid fielding initiative of individual equipment to the warfighter and other PEOs with specialized equipment for specific units' mission," Dunn said. "The PEO acquisition implementation and execution to enhance the capability of the warfighter became a beacon to all my military training as a logistician."

After a year and a half, Dunn started applying for permanent positions through USAJobs, and in 2007 accepted her first acquisition position as a product support integrator working with Ground Torch, TASER and Mine Roller Systems, part of Project Manager for Close Combat Systems within JPEO A&A. Mine rollers are designed to detect and detonate improvised explosive devices before the warfighter's tactical vehicle does.

"This position appealed to me due to the daily interaction with highly skilled and professional staff within the direct reporting unit to include project managers,

"You must get comfortable being uncomfortable."

engineers, quality assurance, provisioners, deputy product managers and a variety of other special skills from the OEM [Office of Emergency Management] to outside agencies," she said. These interactions connected the dots to how a product is born, grows and develops from a drawing to a complex program. "This is the highest echelon of opportunities—to be able to contribute my military experience and influence milestone decisions during product development."

Today, as the U.S. Army G-4 director of logistics, Dunn is responsible for taking JPEO A&A objectives, mission and vision into the development of plans and execution—the "how, when, who and where"—to accomplish the life cycle and acquisition logistics mission goal for the organization. She serves as the liaison between Army Futures Command, the Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology, Army Materiel Command Life Cycle Management and other external agencies. "I maintain oversight supporting seven project management offices to include Headquarters staff," Dunn said. These responsibilities are important to the warfighter, she explained, because they include command aspects of life cycle logistics supportability management for materiel release (supply chain risk management), transition to sustainment, Army Equipping Enterprise System and OP-9 (divesture of project manager-owned stock).

People are usually surprised by the scope of external and internal support that JPEO A&A provides, including both Class VII (major items such as military combat vehicles) and Class V (ammunition). Dunn engages in cross-functional teams, working with DOD and government agencies such as Tank-automotive and Armaments Command Life Cycle Logistics Command, Combined Arms Support Command, Training and Doctrine Command capability managers, Army Contracting Command, Army Sustainment Command, the deputy assistant secretary of the Army for cost and economics, U.S. Army Forces Command, U.S. Marine Corps Logistics Command, Special Operations Command and others for continuous improvements of both classes of supplies.

"I ensure all supportable requirements, to include life cycle sustainment plans, are complete and provide detailed product support strategies from cradle to grave."

Dunn gained a deep insight of knowledge on collaboration across agencies and the impact to the mission during an assignment as Program Manager Towed Artillery Systems (PM TAS) product support manager (PSM) of the M777A2 and M119 howitzers. "M777A2 is a joint program with the U.S. Marine Corps and Army as the lead services," Dunn said. "The knowledge of how both services operate through their specific logistics supply channel and capability managers allows me as the G-4 to provide rapid support to PM TAS-assigned PSMs and product support integrators in delivery of fully mission capable systems and requisition of class IX (parts)."

The greatest satisfaction for Dunn in being a part of the Army Acquisition Workforce is to be able to build relationships with other people. She displays her personal values as they relate to the Army values and engages in day-to-day acquisition logistics team building with project managers, product support managers and product support integrators. As director of logistics, she also enjoys executing problem-solving and decision-making skills and being able to demonstrate a maturity of knowledge with feedback and recommendation on life cycle logistics tasked-related inquires and requests.

"The most important lesson I've learned on and off the job is to keep faith and never lose hope," Dunn said. "Hope is my endurance through the uncomfortable and comfortable moments of my life at work and home." As one of her former senior leaders once said, "You must get comfortable being uncomfortable."

Outside of work, Dunn is known for working with community outreach programs and being a collector of books. "Community work enhances my interaction with a diverse group of people at different levels in life," she said. "In acquisition, the workload is performed by a diverse group of people from all different backgrounds with a unified goal for success."

—HOLLY DECARLO-WHITE

MOPP UP DUTY
Test players wearing Level 4 Mission Oriented Protective Posture (MOPP) gear advance to treat simulated casualties during a test in June 2021 at Camp Bullis, Texas. (Photo by Jose Rodriguez, U.S. Army Medical Center of Excellence)

EXPEDITED DELIVERY

JPEO-CBRND fills a gap in Europe with the rapid delivery of a lifesaving antidote.

by Meg Holahan, Alex Hillman and Kelly Burkhalter

The Russian invasion of Ukraine on Feb. 24, 2022, shocked the world, touching off the largest armed conflict in Europe since World War II. Between the unknown of an escalating war and the inability to predict Russia's next move, the invasion put nations across the continent and the world on high alert.

DOD began moving quickly to ensure that U.S. forces in the U.S. European Command (EUCOM) area of responsibility remain prepared for any potential battlefield scenario. The joint force needs to be prepared to fight through any situation around the world, from large-scale combat operations to invisible threats that can incapacitate in seconds.

Since the conflict in Ukraine began, there has been persistent concern about the potential use of chemical weapons, including opioids such as fentanyl and carfentanil. Opioids are highly potent and extremely dangerous. Exposure poses a significant risk to the joint force, as even extremely small doses of these substances—amounts equivalent to a few grains of salt—can cause breathing difficulties and even death in less than 10 minutes.

OPIOIDS AS A BATTLEFIED THREAT

Russia has a well-documented history of using unconventional means to defeat any adversary, including the suspected use of chemical, biological and radiological agents. In 2002, one or more chemical agents (believed to be fentanyl derivatives) were used to end a hostage crisis at a large, crowded theater in Moscow. The incident resulted in several hundred civilian casualties. In 2018, Russian operatives used a Novichok nerve agent to poison former Russian military officer turned British spy Sergei Skripal and his daughter, Yulia, in Salisbury, England, and used Novichok again in 2020 to poison Russian opposition leader Alexei Navalny.

The U.S. Chemical and Biological Defense program, recognizing the potential threat opioids could be for warfighters and the need for a rapid solution, directed its advanced development component, the Joint Program Executive Office for Chemical, Biological, Radiological and Nuclear Defense (JPEO-CBRND), to develop a medical countermeasure against this evolving threat. JPEO-CBRND's Joint Project Manager for CBRN Medical Chemical

Defense Pharmaceuticals team took the lead with development, creating an autoinjector solution as a rapid countermeasure to opioids. The complex process to develop a new drug and get it approved by the U.S. Food and Drug Administration (FDA) can take upward of 20 years. When it comes to protecting warfighters, waiting decades for a solution is too long.

But where there's a will, there's a way, and the solution turned out to be closer than expected. In partnership with the Chemical and Biological Defense program, the assistant secretary of the Army for acquisition, logistics and technology approved JPEO-CBRND's use of the middle-tier acquisition pathway as a regulatory strategy to quickly develop and field this critical medical capability. The middle-tier pathway enabled JPEO-CBRND to work on an expedited timeline.

Partnering with a U.S.-based drug development company, which already had an FDA-approved opioid overdose treatment on the commercial market, combined with DOD authorities granted by public law, meant that, from the very beginning of this race to fill a critical gap, JPEO-CBRND was already closer to the finish line than the starting blocks.

HIGH STAKES, FAST SOLUTION

The Rapid Opioid Countermeasure System (ROCS) naloxone autoinjector is a self-administered antidote (like an EpiPen) that protects service members against ultra-potent opioids. ROCS is the first-ever medical program approved to use the middle-tier pathway, enabling significant acceleration of the development timeline and making it possible to get ROCS into the hands of warfighters as soon as possible. Using the middle-tier pathway, and leveraging a previously approved naloxone autoinjector, allowed JPEO-CBRND's Joint Project Manager for CBRN Medical (JPM CBRND Medical) to deliver ROCS four to eight times faster than the typical 10- to 20-year drug development timeline. (Read about all the ins and outs of the ROCS development process in the December 2022 Army AL&T article, "Swift Antidote.")

One dose of ROCS contains 10 mg of naloxone—two and a half times the dose available in over-the-counter treatments—yet it is small and light enough to fit in a service member's pocket and can be used without any formal medical training. This higher dosage reverses the effects of exposure but also allows the warfighter to remain on their feet and lucid enough to self-evacuate for

URGENT REQUEST

An urgent request in January 2021 set off the chain of events that led to the delivery of ROCS in 2022. (Photo by Yvonne Najera, Training Support Activity Europe)

additional medical treatment. ROCS minimizes casualties between the point of exposure and definitive medical care, limiting disruption to the mission.

But just before the JPM CBRN Medical team developing ROCS reached its acquisition finish line, it was already being handed its next challenge. After breaking medical acquisition barriers in its first test of speed, the operational joint force upped the ante. In January 2022, amid escalating tensions on the continent, U.S. Special Operations Command Europe (SOCEUR) sent an urgent request for additional protection against chemical agent threats. To fulfill SOCEUR's critical requirement, two courses of action had to be worked simultaneously. First, ensuring ROCS, which was not yet FDA approved, could be used, and second, working in close coordination with the deputy assistant secretary of defense for chemical and biological defense, the U.S. Army Medical Logistics Command, and the vendor, determining a rapid path for procurement and delivery of the product to EUCOM.

Less than two months after SOCEUR's request, the Office of the Assistant Secretary of Defense for Health Affairs approved ROCS' use under the Expanded Access Protocol (EAP), which allows for use of treatments when there are no satisfactory alternatives available granted by the FDA. Just nine days after the EAP was secured, JPEO-CBRND and the JPM CBRN Medical team delivered thousands of ROCS doses to the EUCOM area of responsibility. It was late March 2022 and, with the SOCEUR request fulfilled, the team took a collective deep breath and waited for the next round of ROCS doses to roll off the production line for initial fielding. At least that was the plan until a similar, but even larger, request arrived from the EUCOM surgeon general team less than a month after the SOCEUR delivery. In April 2022, EUCOM requested additional ROCS doses—a significant uptick from the amount that had sent the team scrambling into action back in January. But the lessons they learned and partnerships they built from January to April came in handy.

In June, the JPM CBRN Medical team received approval from the assistant secretary of the Army for acquisition, logistics and technology for the procurement of additional ROCS doses to support the EUCOM request. The team worked closely with U.S. Army Medical Materiel Center – Europe, the lead DOD medical logistics agency for Europe, to deliver the first tranche of doses in August 2022, less than two months after receiving approval to purchase the total number of needed doses. Then the remaining ROCS were delivered as quickly as they could be manufactured and shipped—some of the doses were delivered in late October and the remainder in early December 2022.

RESCUE TREATMENT

The naloxone autoinjector is a rescue treatment that will counteract the adverse effects from exposure to opioids and allows impacted service members to remain ambulatory to move to higher levels of care. (Photo courtesy of Kaléo Inc.)

RIGHT PEOPLE, RIGHT PROCESS

On Dec. 9, 2022, JPM CBRN Medical marked the end of a 10-month marathon that saw them deliver tens of thousands of ROCS doses. This rapid execution of a medical countermeasure is nearly unheard of. Executing against such a short timeline took herculean effort and teamwork.

Lt. Col. Owen Roberts II, joint product manager for chemical defense pharmaceuticals at JPM CBRN Medical, attributed this tremendous accomplishment to the hard work of the assistant product managers on the team, who worked together to navigate and coordinate the fast-paced development timeline. He also credited Col. Ryan Eckmeier, then the joint project manager for JPM CBRN Medical, who leveraged an entire career's worth of knowledge about the medical defense community and acquisition to "find a way to yes."

"A process or a system is nothing without the people doing the work behind it. We had the right people, and they were our

NOTEWORTHY TEST
A test player practices administering the ROCS autoinjector on a simulated casualty during a test in June 2021 at Camp Bullis, Texas. (Photo by Jose Rodriguez, U.S. Army of Excellence)

heroes," said Roberts. "Saumil Shah [assistant product manager for ROCS], led coordinating activities between the vendor and the FDA, and he helped develop a logistics plan to pre-position the investigational autoinjectors at Fort Liberty [North Carolina] and EUCOM to bridge a capability gap until fielding of the commercial autoinjectors was available. Jessica Livesay and Dr. Aaron Short [assistant product manager and acting assistant product manager for ROCS production] played key roles ensuring planning, procurement and delivery of the emergency stockpile of ROCS was successfully delivered to the services, and they coordinated directly with several of our partners." Roberts describes the process to obtain approval and deploy ROCS as a whole-of-enterprise approach, with several moving parts being worked by people across agencies in both DOD and the FDA.

CONCLUSION

Though ROCS was the first time the middle-tier pathway was used for a medical countermeasure, the need for rapid acquisition is rising. The COVID-19 pandemic underscored the need to get medical countermeasures into the right hands quickly. JPEO-CBRND hopes to use successes like ROCS as a blueprint for how to serve warfighters at the "speed of need" in the future. Consistent investment and prioritization in this product line was cited as a necessity to meet the immediate demands for the warfighter in the region and on the ground.

"We needed to do whatever we could to meet the needs of the warfighter, they are the number one priority," said Shah. "At the beginning of this process, the odds were stacked against us. As a medical countermeasure, the systems were not set up for this to be an expedient process, for good reason. But in this case, we needed to get a countermeasure out the door quickly. I'm thankful that we were all able to work together to ensure our warfighters are protected and equipped."

For more information about JPEO-CBRND, go to ***https://www.jpeocbrnd.osd.mil*** *or follow JPEO-CBRND on social media @JPEOCBRND.*

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LOGISTICS FOR DATA

The demand signal for data: Getting battlefield data to the right place at the right time.

by Thom Hawkins

Part One of a three-part series.

If data is the new ammunition, as our leaders are fond of saying to emphasize the crucial role that data plays in modern warfare, then the concept of logistics should apply equally to both ammunition and data. The ability to collect, analyze and disseminate real-time information is crucial for military operations. Just as logistics ensures that physical resources such as ammunition are delivered efficiently, a similar approach must be taken for the movement of battlefield data.

Key concepts in logistics include measuring demand signal, inventory and warehousing, and packaging and transportation. Each of these concepts has a corollary in the data domain. This article will address the demand signal for data, and future articles will address inventory and warehousing of data, and then packaging and transportation of data.

THE DIKW HIERARCHY

Before delving into these concepts, it is important to understand the data, information, knowledge and wisdom (DIKW) hierarchy, and in particular the distinction between data and information. At the lowest level of the hierarchy, data refers to raw, unprocessed facts and figures collected from different sources. This can include sensor readings, images, videos, audio recordings and other forms of data. Information is derived from the analysis, processing and organization

CONCEPT OF OPERATIONS

The Army is developing a concept of operations for decision-driven data to describe the transition path where systems and networks become secondary to the data they transmit and contain. (Photo by Markus Spiske, Pexels)

of raw data. It provides context, relevance and meaning to the data. Through data fusion techniques, such as correlation, aggregation and filtering, the information is synthesized to create a more coherent and meaningful representation of the operational environment. Knowledge is the result of synthesizing relevant information, identifying patterns, relationships and trends, and extracting actionable insights. Wisdom represents the highest level of the DIKW hierarchy. It goes beyond the immediate situational understanding and incorporates broader context, strategic thinking and long-term implications.

By linking and combining related elements, raw data is transformed into higher levels in the DIKW hierarchy, enabling commanders and operators to gain a holistic understanding of the battlefield, make well-informed decisions and take appropriate actions. Army Techniques Publication (ATP) 6-01.1, Techniques for Effective Knowledge Management, breaks this down as follows: "Staffs use processes to produce information from data and analyze and evaluate that information to produce knowledge. Staffs provide collective knowledge to commanders who apply experience and judgment to transform that knowledge into understanding." (The Army uses "understanding" in place of the more nebulous "wisdom.")

The Army is developing a concept of operations for decision-driven data to describe the transition path to a "data-centric Army," where systems and networks become secondary to the data they transmit and contain.

DEMAND SIGNAL

Identifying the demand for resources is key to the flow of logistics. Where are these resources needed, how many and how frequently? In the logistics of those resources, like ammunition and fuel, the term "just-in-time" refers to a delivery at the time of need, to balance resources against other demands and eliminate storage at the point of use. If ammunition is delivered too early, it can become a storage issue. Units at the tactical edge would have to move excess ammunition from place to place, making them a more vulnerable target.

In the context of battlefield operations, just-in-time data refers to the timely delivery of information to decision-makers and operators to ensure that commanders and personnel have access to the most up-to-date and relevant information, allowing them to adapt quickly to dynamic battlefield situations. Receiving information too late to make the decision to which the information is relevant is an obvious problem. If the information arrives too early, it can be outdated and lose its relevance as well. The frequency with which data is collected by sensors or other inputs is driven by the demand signal for information.

PROCESSING THE INFORMATION
Information is derived from the analysis, processing and organization of raw data. (Image by Elisha Gamboa, Naval Information Warfare Systems Command)

The decision point provides the demand signal for data. Do I attack or stand ground? Do I move this unit first or this one? Do I fire mortars or call for air support? Questions are answered with information, which is derived from data. Anticipating which questions will be asked helps to ensure that data is being collected and the processes are in place to refine that data into information—or answers.

This data or information may include:

- Real-time updates on enemy positions, friendly force locations, terrain conditions, weather data and other relevant information that helps build a comprehensive understanding of the operational environment.
- Tactical intelligence regarding enemy capabilities, intentions, vulnerabilities and potential threats. This includes information gathered from various sources, such as human intelligence, signals intelligence and imagery intelligence.
- Data related to logistics and supply chain management, including the availability of ammunition, fuel, medical supplies and other critical resources. This information ensures that the necessary resources are allocated efficiently to support ongoing operations.
- Information about communication networks and infrastructure, including the status of communication channels,

encryption protocols and the availability of secure communication methods.
- Information specific to the mission at hand, such as target information, mission objectives, rules of engagement and operational plans. This data is crucial for mission planning and execution.

Data may need to take more than one path (more on this in the third article on data transport)—the path may be dictated by the demand. For example, there is a need for the most recent, authoritative data to be available in a data platform to be consumed by other systems. However, there may also be a need for raw historical data to train new or retrain existing data models. Finally, data may also need to go directly from system to system for time-or safety-critical uses. In many cases, data will be needed not just for one of these uses, but two or three uses, requiring simultaneous transport based on need.

DATA MESH

A data fabric—a centralized, federated collection of common data provided and consumed by multiple systems—is a useful platform for a particular domain, organization or geographic area, but becomes unwieldy at larger scales. The Unified Data Reference Architecture (UDRA), promulgated by the deputy assistant secretary of the Army for data, engineering and software (DASA(DES)), is based on a concept called "data mesh," where the data is decentralized, but information about data products is cataloged centrally so that users can discover data across the enterprise. The Department of Defense is also considering a data mesh that will expand that discoverability across the services.

When a user finds the data product they need in the catalog, they can request or subscribe to that data product from its source system or domain. The demand is thus shifted from a "push" model, where data is synchronized across platforms for maximum availability, to a "pull" model, where data is consumed on demand.

SCALING TO DEMAND

Demand for data and information fluctuates depending on the level of activity, the rate of change, or the potential for change on the battlefield. This variable demand requires dynamic resources that can scale up and down accordingly. For example, compute resources for creating or updating data models to support decision-making, or decision aids that kick in to help a user when physiological sensors indicate high cognitive load.

The ability to dynamically allocate resources based on the fluctuating demand for tactical data and information is essential in ensuring that decision-makers and operators have access to the necessary support when they need it most. By leveraging scalable compute resources and implementing intelligent decision aids, military organizations can optimize the utilization of data and enhance the overall effectiveness and efficiency of their operations.

However, it is important to note that implementing dynamic resource allocation in data logistics comes with its own set of challenges. It requires the establishment of flexible infrastructure, robust networking capabilities and advanced algorithms for resource management. Moreover, considerations such as data security, privacy and interoperability must be carefully addressed to ensure the seamless integration and exchange of information across different systems and platforms.

CONCLUSION

The demand signal in logistics provides key information about consumption and replacement rates. Data may not be considered a consumable item; however, data is perishable, and the demand signal could provide clues about how frequently data may need to be collected to meet usage needs. Like ammunition, when the operations tempo is high, the need for data to inform a quickened pace of decisions will also increase.

Adopting logistics principles for data management is crucial in the modern battlefield. The demand signal drives the timely delivery of information, enabling informed decision-making and adaptability. The DIKW hierarchy provides a framework for transforming raw data into actionable insights. Embracing concepts like a data mesh can further enhance the efficiency and availability of data across the enterprise. By recognizing the importance of data logistics, military organizations can optimize their operations and gain a competitive edge in the digital age of warfare.

In the next article, we'll discuss another aspect of relating data to logistics—inventory and warehousing.

For more information, contact Thom Hawkins at ***jeffrey.t.hawkins10.civ@army.mil****.*

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WORKING IN TANDEM
Soldiers demonstrate the practical application of the Soldier-Borne Sensor, Nett Warrior and artificial intelligence, working in tandem to enhance the situational awareness of the Soldier. Nett Warrior was one of the pathfinder programs selected to pilot a new software process using digital platform reference architecture to enhance digital transformation. (Photo by Jason Amadi, Program Executive Office for Soldier)

CHANGE IS HERE

Leaders push continuous integration/continuous deployment model and mindset to transform the Army's cultural, process and technological foundations.

by Jennifer A. Swanson and Chad M. Claussen

Change isn't just coming—it has arrived. And it's the new operating paradigm for the U.S. Army. In "Quarterbacking Digital Transformation," in the Winter 2023 issue of Army AL&T, we examined how digital transformation forms the cultural, process and technological foundations that furnish our warfighters with rapid capabilities to counter emerging threats and harness emergent technology. This is the first article in an ongoing series highlighting and celebrating the changes being made, exploring the impacts and providing insight on how to leverage these changes.

Change is unsettling. It's not comfortable. If we were honest, most of us would probably avoid change more often than embrace it. But the ability to change is the key to maintaining a competitive advantage on the battlefield. As technology evolves at an unprecedented pace, we are faced with both an opportunity and an obligation to adapt. We must enable rapid change. For the Army, that means not just policy changes but developing technical means to enable change, as well as cultivating a culture of continuous change.

The Army has committed to taking the steps necessary to be a more ready, lethal and modern force by 2028. Army leaders including Under Secretary of the Army Gabe Camarillo and Vice Chief of Staff of the Army Gen. Randy A. George are providing authority for driving the changes necessary to propel digital transformation across the Army. This is coupled with the arrival of new leaders in the Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASA(ALT)), who prioritize and drive digital transformation for our programs.

These are pivotal events marking a watershed moment in the Army's digital transformation odyssey. Rather than passively endorsing change, leaders are taking a top-down approach to drive a comprehensive digital transformation. At the core of the digital transformation strategy, and driven by Army leadership, is the adoption of the continuous integration/continuous deployment (CI/CD) model and mindset. CI/CD places the programs at the heart of the continuous software life cycle, where all software delivery—from new features to bug fixes and cyber patches—will

now be owned, managed and executed by program executive offices (PEOs) and program managers.

To this end, ASA(ALT) issued new policy guidance in May that PEOs and program managers will no longer transition software to another organization for sustainment once it has been fielded. Instead, the software will remain with the PEOs and will receive continuous, iterative development and upgrades throughout its life cycle. This fundamental change symbolizes a shift toward a more dynamic, responsive and modern software practice.

WHAT IS A CI/CD MINDSET AND MODEL?

A cornerstone of this transformation is the adoption of a continuous integration/continuous deployment model and mindset. The essence of the CI/CD mindset is the understanding that software is never "done" but must constantly evolve to meet emerging needs. This is not just about deploying a technical pipeline of tools but is a holistic and complete process from idea to fielded operations across all aspects of the software life cycle.

The continuous integration/continuous deployment model does include applying technical advances in the form of automated deployment pipelines that scan, test, evaluate, audit and deploy software at the precise moment needed to deliver value to the Soldier.

This shift embraces lean, modern practices, including transitioning from projects to products, enabling the Army to adopt new capabilities rapidly and adapt to the changing threat landscape. Traditionally, projects had a start and end date representing "code complete" with a transition to sustainment. In this new paradigm, where software must continually improve and change, software is treated as a product for the PEOs and programs to regularly advance.

Constant and consistent feedback from users is core to a continuous integration/continuous deployment mindset. The Army's software must be Soldier-centric, reflecting the direct needs of the warfighter. This paradigm shift heralds the implementation

DATA DRIVEN

Data is the strategic asset of the future. Investing in digital transformation and the modernization of the Army's underlying network and computer infrastructure is essential to mission success. (Photo courtesy of U.S. Army Network Enterprise Technology Command)

of Agile methodologies, DevSecOps techniques, and the integration of digital engineering, particularly for simulations and emulations for testing.

FINDING OUR WAY

Adopting the continuous integration/continuous deployment mindset demonstrates the Army's commitment to change and innovation, reaching beyond mere statements and permeating our practices. In line with CI/CD principles, the Army's institutional blockers—the hurdles that can prevent progress from occurring—are being dismantled.

The Army conducted a Network Capability Portfolio Review (N-CPR) to help align digital requirements with associated resources and ultimately advance digital transformation. The N-CPR identified four "pathfinder" programs to pilot this new software process, including three warfighting systems and one business system. The Enterprise Business Systems – Convergence, Nett Warrior, Army Intelligence Data Platform and Cyber Situational Understanding programs were selected because of their broad set of institutional policy and process blockers. Based on the results of this effort, the Army is building a process to implement for all software programs by the start of the new fiscal year.

The pathfinder programs highlighted dramatic slowdowns occurring with attempting to field new capabilities in a system of systems. The digital platform reference architecture (DPRA) is being designed, which defines a new system of systems category enabling digital platforms and the capability products (i.e., applications) created and deployed with them to be decoupled. Applying the DPRA construct to software results in the ability to build, test, evaluate, assess and deploy software modules independently from one another. Capability products inherit the controls and process accreditation of the associated digital platform. The result is that only modules that have been changed need to be built, tested and deployed, creating streamlined and simplified interim authorization to test or authority to operate processes and rapid delivery of value to Soldiers. Individual modules can be deployed independent from an Army interoperability certification testing event.

The software material release (SMR) process is being streamlined, addressing the long and arduous program process. For example, we are reducing documentation required from dozens of documents down to roughly 13, which are statutory and already exist. Programs don't need to generate new documents. The associated SMR training requirements are undergoing streamlining as well, to reflect software changes instead of the traditional hardware-centric view that can delay value delivery by a year.

Constant and consistent feedback from users is core to a continuous integration/continuous deployment mindset.

We are also streamlining the SMR authority by empowering the PEOs of software programs to determine the safety, suitability and supportability of a software release. Who best to determine the impact of a change than the program and PEO? We are piloting giving PEOs the SMR authority and allowing them to tailor the process, which we expect to reduce the time to achieve a software materiel release from months or years to days or weeks. Based on the outcomes of the pilot, we intend to expand the policy to include all software programs by October 2023.

Another significant reform is radically simplifying the Army Interoperability Certification (AIC) process and shifting testing to begin as early as possible in the iterative software development life cycle. In June 2023, the Headquarters, Department of the Army G-6 signed a memo granting program managers (PMs) approval authority for AIC self-determination. This significant change has reduced approval time from months to days, allowing PMs to move forward with greater efficiency. Furthermore, AIC is moving toward a cloud-based certification capability. Using continuous integration/continuous deployment principles like defining infrastructure as code; being able to create, execute and tear down testing environments virtually; and automating test execution and results capture enables AIC testing repeatability, observability and auditability. The G-6 has agreed to these

EXPANDING CAPABILITIES
Soldiers from the Mississippi Army National Guard assess the Training Simulation Software (TSS) and Training Management Tool (TMT). A continuous development process for the TSS and TMT will expand capabilities as new requirements are generated and technology evolves. (Photo courtesy of the Program Executive Office for Simulation, Training and Instrumentation)

changes, and they are codified in executive order DA EXORD 157-23, May 2023, to drive these important digital transformations.

This cultural shift reflects the Army's commitment to fostering an environment that supports continuous software development, where teams have the autonomy to make decisions and drive innovation.

POWERING DIGITAL TRANSFORMATION

The Office of the Deputy Assistant Secretary for the Army for Data, Engineering and Software (DASA(DES)) is driving digital transformation for ASA(ALT) by developing and delivering products and services to PEOs and programs. Our vision is of a data-centric Army, leveraging data for decision dominance and software-enabled change for competitive advantage. Our mission is to engineer pathways for digital transformation so that programs can deliver overmatch capabilities. Our strategy is to cultivate a passionate team of thought leaders and practitioners to drive digital transformation, providing an array of products

The ability to change is the key to maintaining a competitive advantage on the battlefield.

A CALL TO ACTION

Digital transformation is not a destination; it's a journey. It is an ongoing process of learning, adapting and innovating. Every member of the Army has a role to play in this journey.

All PEOs and programs can benefit. Here's how:

- Engage with DASA(DES) PEO liaisons for your PEO and program to get the help your program needs when you need it most. Send an email to **dasades@army.mil**.
- Connect with your PEO liaison to explore ASA(ALT) products and services, including architectural evaluation, digital workforce training, playbooks and supply chain risk management.

Your participation, your voice and your commitment are crucial to leveraging digital transformation to maintain our competitive edge and ensure the Army's continued success.

and services spanning data science, digital engineering, modern software practices and cybersecurity.

DASA(DES) is creating architectures, road maps, guidelines, playbooks, policies and other products and services that enable digital transformation for programs. We are also gathering, packaging and providing training, job aids and Army-contextualized playbooks for an effective digital-first workforce.

The key is engagement. DASA(DES) is engaging with programs to provide direct support in solving immediate problems and removing barriers to digital transformation.

DASA(DES) has established a cadre of folks, called PEO liaisons, who are focused on facilitating digital transformation success. They provide a link between PEOs and DASA(DES) experts and align best-of-breed help to the programs. DASA(DES) has established a contract mechanism for fiscal year 2024 to help programs bring experts directly into the programs.

This is the beginning of a new era for the U.S. Army, an era defined by innovation, agility and a relentless commitment to progress. Together, we can leverage digital transformation to maintain our competitive edge and ensure the Army's continued success. In doing so, we are not just shaping the future of the Army; we are securing the future of our nation.

*For more information, email **dasades@army.mil**.*

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CHAD M. CLAUSSEN is the director of the DASA(DES) Digital Transformation Directorate. He holds an M.S. in systems engineering management from the Naval Postgraduate School and a B.S. in information systems management from the University of Maryland. He holds DAWIA Practitioner certification in engineering and technical management, and in program management.

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KENNETH B. HURBAN

COMMAND/ORGANIZATION: Conventional Ammunition Division, Project Manager for Combat Ammunition Systems, Joint Program Executive Office for Armaments and Ammunition

TITLE: Chief system engineer

YEARS OF SERVICE IN WORKFORCE: 37

DAWIA CERTIFICATIONS: Practitioner in program management; Practitioner in engineering and technical management; Practitioner in systems planning research, development and engineering

EDUCATION: B.S. in mechanical engineering, Rutgers University

AWARDS: National Defense Industrial Association Firepower Management Award, Picatinny Chapter (2018); Honorable Order of Saint Barbara, United States Field Artillery Association (2001); Army Superior Unit Award, Department of the Army (2001); Certificate of Achievement, Defense Acquisition Executive (2000)

HISTORY IN THE MAKING

You don't have to be a historian to learn more about your job or your program's field or product, but you certainly can think like one to achieve a better overall perspective of your role and the mission of your organization.

According to Kenneth Hurban, chief engineer for the Conventional Ammunition Division within the Project Manager for Combat Ammunition Systems (PM CAS) in the Joint Program Executive Office Armaments and Ammunition (JPEO A&A), a combination of past and current practices provide valuable insight and tools to analyze and explain problems in the past and position us to see patterns that might otherwise be invisible in the present.

"Become the office historian," he said, by "spending time researching past development efforts in your program's field or product while learning the current way of doing things." This provides a crucial perspective for understanding—and solving—current and future problems for a well-rounded on-the-job experience. It also helps to get a firsthand look at products and processes, as well as take advantage of hands-on training in your field.

"Broaden your background by visiting Army bases, production facilities and 'greening' with Soldiers," he said. Greening is a training opportunity that enables the Soldier Center workforce to better understand the experiences a Soldier has in a field environment. Hurban believes spending time with Soldiers is important because they come from all over the country, and world, and have a different set of life experiences. As a result, Soldiers approach learning and knowledge of tasks and attack problems differently than scientists and engineers, which, he said, is important to recognize and understand when you're responsible for improving or designing weapon and ammunition systems. Seeing how products are being used provides better perspective on how they're developed. "Our Soldiers are more creative than our engineers at using and developing new tactics for the items and products they are provided. They have always surprised me," he said.

In Hurban's role as chief engineer at PM CAS, he is responsible for reviewing requirements documents for new development programs, material change programs and system engineering actions and conducting preliminary and critical design reviews. He also oversees malfunction investigations involving mortar and artillery ammunition and serves on both the ballistics review and fire support interoperability boards, which integrate new munitions and systems into U.S. Army tactical data systems and software.

PM CAS develops, produces and equips Soldiers and Marines with conventional artillery and mortar ammunition, precision ammunition, mortar weapons and mortar fire control systems.

Hurban believes it is important to give our Soldiers the best equipment and tools to protect our country. "I am proud of the programs I have been a part of, and as a member of the acquisition workforce it was my responsibility to supply the best possible," he said.

FIRE DETECTION

Hurban observes the 1-41 Field Artillery, 3rd Brigade Combat Team, 3rd Infantry Division conduct an Artillery Table VI Qualification Firing Exercise with their M109A6 howitzers during a March 2019 visit to Fort Stewart, Georgia. (Photo provided by Kenneth Hurban)

Before joining the JPEO, Hurban was a member of the Self-Propelled Artillery Branch, Fire Support Armaments Center at the U.S. Army Armament Research, Development and Engineering Center (ARDEC) at Picatinny Arsenal, New Jersey, and was "deeply involved" with the M109A2 self-propelled howitzer production programs, while also supporting the development of the M109A6 self-propelled howitzer. "While I was there, I developed a strong relationship with my project management office colleagues and I'm thankful that they saw potential in me to offer a developmental assignment to join them."

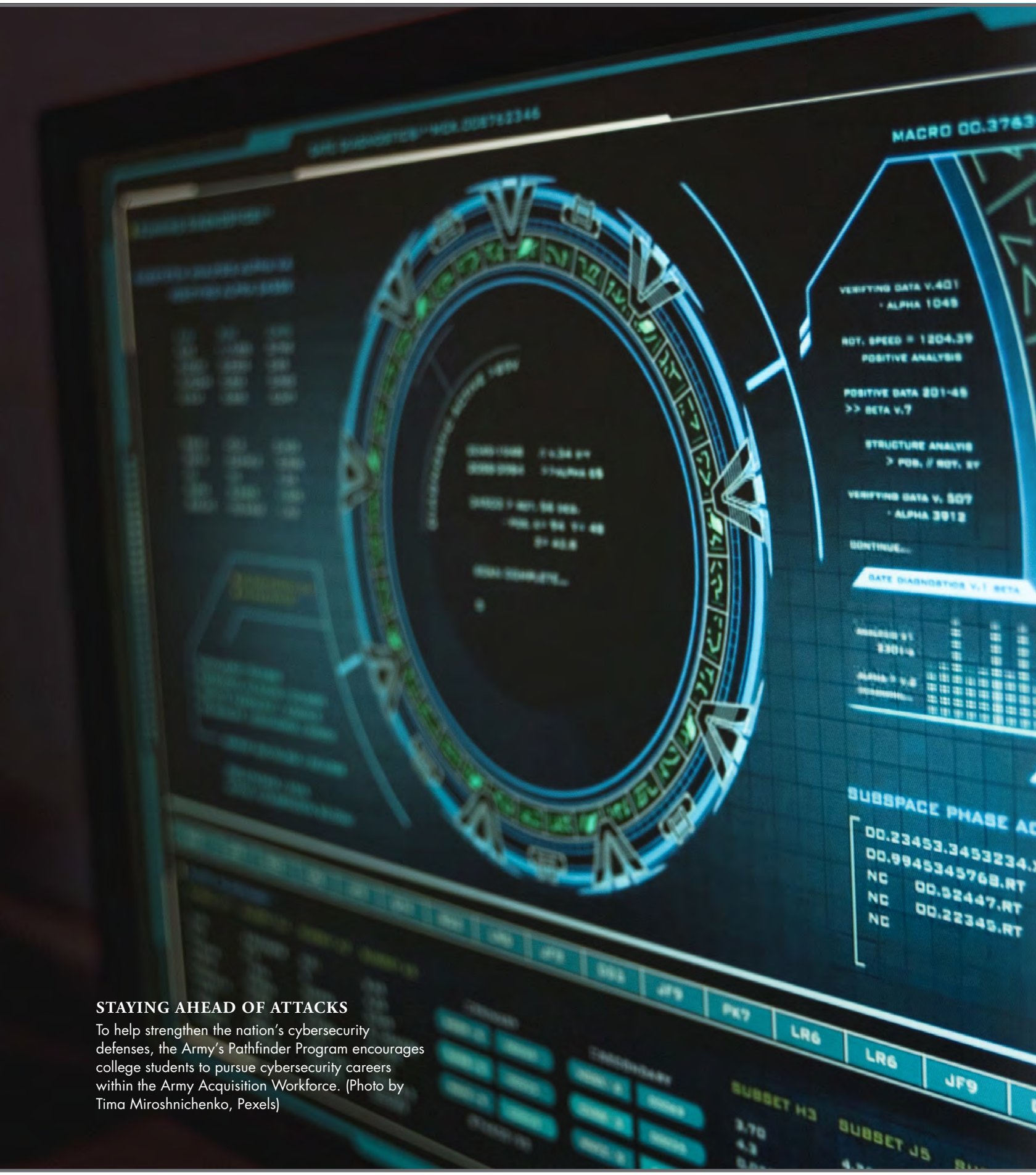
In addition to on-the-job research and hands-on learning in his field, he said career development programs like mentoring and program sponsorship for multiple quality engineering and system assurance Lean Six Sigma projects have also enabled him to excel in his field. "My latest career development program project was [and is] to lead investigations and determine root causes of artillery and mortar malfunctions. This proves to be a challenging effort involving multiple cross-functional teams involved with DEVCOM [U.S. Army Combat Capabilities Development Command], JMC [Joint Munitions Command], USMC [United States Marine Corps] and Fires Center and Maneuver Center of Excellence personnel," he said.

Hurban became a member of the Army Acquisition Workforce in 2000, after accepting the position for production management engineer for the Product Management Office for the M109A6 Paladin and M992 field artillery resupply vehicle. "In that position I became responsible for execution of the fiscal year 2000 production contracts for the U.S. Army National Guard. I also prepared program budgets and executed fielding of product improvements and tactical vehicle software modernization efforts," he said.

Outside of work, Hurban believes most friends and neighbors would view him as quiet and introspective, which, he said, is quite different than what his co-workers would say about him. "I like to challenge my co-workers to think of options and outside the box," he said. "There is a lot of historical knowledge in older technical reports, but you need to dig for them."

Hurban said he has a vast collection of Defense Technical Information Center and ARDEC technical reports and data collected from his own research and from retiring co-workers. "I seem to have files and folders on nearly all artillery and mortar ammunition items dating back to before World War II," he said. As his career has progressed, he has looked to identifying co-workers that will maintain the knowledge base and continue to use it to learn moving forward. The best advice he would offer to co-workers or junior acquisition personnel is simple, he said. "Keep learning, reading, thinking and develop personal connections with your co-workers. Become the program subject matter expert."

—CHERYL MARINO



STAYING AHEAD OF ATTACKS

To help strengthen the nation's cybersecurity defenses, the Army's Pathfinder Program encourages college students to pursue cybersecurity careers within the Army Acquisition Workforce. (Photo by Tima Miroshnichenko, Pexels)

DEFEATING THE ONLINE ENEMY

The Army's Pathfinder Program encourages college students to pursue federal careers in cybersecurity and emerging technology fields.

by Rebecca Wright

Presently, the demand for cyber professionals exceeds the talent pool. With an aging government workforce and the commercial sector appealing more to younger employees, the requirement to recruit and retain knowledgeable experts is at an all-time high. According to the Cybersecurity and Infrastructure Security Agency, the definition of cybersecurity "is the art of protecting networks, devices and data from unauthorized access or criminal use and the practice of ensuring confidentiality, integrity, and availability of information."

"In terms of security, we've got to get back to habits we had during the Cold War as far as keeping ourselves more secure against a sophisticated enemy," Douglas Bush, the assistant secretary of the Army for acquisition, logistics and technology (ASA(ALT)), told a media roundtable at the Pentagon in February 2022. "That applies to both cyber and supply chain in particular in my world," he said before adding, "Cyber testing is an area where improvements need to be made."

Risks to the federal government's information technology (IT) systems are on the rise. In fiscal year 2021, the U.S. Government Accountability Office reported 32,511 information security incidents. In November and December 2021, Chinese hackers gained access to five U.S. defense and technology agencies and obtained passwords to access the agency's IT systems. The need to stay ahead and prevent cybersecurity attacks remains a top priority for the federal government, and the Army recognizes this. As a response to a congressional mandate and with cyber threats intensifying, in a collaborative effort DOD's Director of Operational Test and Evaluation Office and the Threat Systems Management Office (TSMO) within the Program Executive Office for Simulation, Training and Instrumentation (PEO STRI) established the Pathfinder Program to encourage current college students into cybersecurity career fields within the Army Acquisition Workforce.

THE PATHFINDER PROGRAM

Nicholas Steward is a red team lead—a cybersecurity professional who attempts to hack IT systems to identify weaknesses—with TSMO and also serves as a government lead and mentor for the Pathfinder Program. Steward first became involved in Pathfinder in 2020. What started out as a part-time effort has since grown into a full-time role. "The goal for the Pathfinder Program is to grow the next generations of federal government professionals," said Steward. "There is a growing need for cyber talent not only in the U.S. but specifically the DOD. The program is designed to bring awareness, gain interest and ultimately recruit and retain quality cyber talent."

"Many young individuals are aware that pursuing a career as a lawyer, doctor, etc., can lead to financial stability and [a] rewarding job," Steward said. "If the individual is in cybersecurity, they may not consider the DOD as a primary option for fulfilling a career in cybersecurity. My aim is to create a pathway that exposes [nongovernment] individuals [typically with degrees in a cyber related field] about the excellent career[s] within the DOD." Currently, 25 colleges are participating in the Pathfinder Program.

Pathfinder consists of three interactive elements: internships, scholarships, and research and development (R&D). The internship element provides field-specific apprenticeships, on-the-job training and mentoring. Scholarships provide funding through the Cyber Scholarship Program (CySP) and offer students career paths, scholarships provided and sponsored by PEO STRI, and two paid summer internships. In addition, students participating in the CySP will commit to government service following their graduation. The R&D element of the program consists of professor-led teams of students addressing critical cyber issues, assisting in the development of tools that PEO STRI will use for testing, as well as engaging universities in the federal contracting process and assigning DOD projects to universities. Additionally, the R&D element not only provides students an opportunity to participate in work within DOD but also serves as a resource for the test and evaluation community.

Within the internship element, Pathfinder offers a SkillBridge training option for active-duty military. SkillBridge is defined by the Office of the Secretary of Defense as "an opportunity for service members to gain valuable civilian work experience through specific industry training, apprenticeships or internships during the last 180 days of military service prior to release from Active Duty." Every year, over 200,000 service members transition out of the military. Through Pathfinder, transitioning service members can receive on-the-job training for the last six months of their service, providing them with work experience and preparation for a career in the civilian workforce, all while still being compensated by the military.

> "It was what definitely solidified in my mind that cybersecurity was what I was wanting to do with my career."

One of Pathfinder's focuses is training future security professionals in a red team role. According to the National Institute of Standards and Technology, a red team is "a group of people authorized and organized to emulate a potential adversary's attack or exploitation capabilities against an enterprise's security

ROUNDTABLE WITH THE RED TEAM

Students participate in a roundtable session to discuss being in the field of cybersecurity. They were joined by two red team members to provide students an opportunity to engage in a question-and-answer session at the Millennium office in Huntsville, Alabama. (Photo courtesy of Nicholas Steward, PEO STRI Threat Systems Management Office)

PATHFINDER STUDENTS UNITE

Pathfinder graduate Joshua Gibbons, second from left, and current Pathfinder student Serra Nolan, third from right, visit Alabama A&M University with fellow Pathfinder students. (Photo courtesy of Nicholas Steward, PEO STRI Threat Systems Management Office)

posture." As a red team member, a cyber professional assumes an offensive role as an attacker by attempting to identify and exploit vulnerabilities and breach IT systems. By educating and certifying cybersecurity professionals in a red team role, they can aid organizations by imitating a cyberattack on the network, therefore identifying weaknesses. Once these weaknesses have been identified, preventative measures can be implemented to prevent a real-world adversarial attack.

To complement a red team, an agency or organization can establish a blue team. A blue team member acts in a defensive role, analyzing and monitoring IT systems for vulnerabilities and putting proper security measures into place to prevent cyberattacks. A blue team may also be responsible for training an organization's workforce on cybersecurity best practices.

Both teams will often engage in exercises simultaneously: The red team will attack the network and the blue team will respond and attempt to defend it. By working together, both teams work toward a common goal: keeping our nation's networks safe.

LET'S HEAR FROM THE PATHFINDER PARTICIPANTS

To stay engaged, Steward often visits students at school and during their internships. He visits to answer any questions they may have, and to help prepare and guide them for their future.

"The team and I wish we had an opportunity like this while we were their age, so we try to provide them with things we wish we had to help them in their future career early," Steward said. "I try to be a positive impact any way I can in the program for all involved."

A positive impact to Pathfinder students like Serra Nolan and Joshua Gibbons.

Serra Nolan is a student at the University of Alabama in Huntsville and is enrolled in the Pathfinder Program. Nolan is currently pursuing her B.S. in

ROOM FOR ONE MORE
Nicholas Steward, far right, TSMO red team lead and Pathfinder Program mentor, joins the Pathfinder students for dinner in Huntsville. (Photo courtesy of Nicholas Steward, PEO STRI Threat Systems Management Office)

cybersecurity engineering. When asked what attracted her to the program, she said it was her excitement to learn and use cyber skills, meet new people, the opportunities to get hands-on experience in real-world situations and to obtain certifications. "You're going to learn so much," Nolan said of the Pathfinder Program. "You're going to get to meet people that have a wealth of knowledge and it'll be a good start to your career."

Nolan began studying cybersecurity in college, but during her sophomore year she was uncertain about moving forward with the area of study. She mentioned she wasn't sure if it was the path that she wanted to continue on, but after she enrolled in the Pathfinder Program through her university, she said, "It was what definitely solidified in my mind that cybersecurity was what I was wanting to do with my career."

Through the Pathfinder Program, Nolan can work on obtaining the certifications she needs to help with her future career goals. "It's very hard to get all of the certifications that you need to be able to be considered a professional in this industry," she said. "But this program offers you a chance to get those certifications." She added that the program is a "foundational part of my career that I don't think I could have gotten anywhere else, honestly. I've met tons of people and got certifications to get started in the workforce. I already have the foundational skills because of this. So, it's really wonderful .... They take us on tours of government facilities that do cybersecurity. So, we've definitely been in close contact, and we know how it works. So, it's very beneficial to get to know that you can do that."

Nolan is enrolled in the CySP element of the program and expects to graduate in May 2024. Following graduation, she will have the opportunity to begin her federal career within the Army civilian workforce to support the PEO STRI TSMO. When asked about starting her new career, Nolan said, "I am very excited and look forward to all I can learn and experience!"

In December 2021, Joshua Gibbons graduated from the Pathfinder Program. Gibbons is a graduate of Mississippi State University, where he completed an M.S. in cyber operations and a B.S. in computer science. After finishing his B.S., Gibbons wanted to complete his master's degree but wasn't sure what he wanted to specialize in. After studying computer science he

> "The goal for the Pathfinder Program is to grow the next generations of federal government professionals."

had an interest in cybersecurity, although he had not taken any classes, nor did he have any experience. After speaking with the head of the cybersecurity program at Mississippi State, he was informed about the Pathfinder Scholarship Program. He applied, was accepted, and once he was engaged in the program, he knew that supporting the Army Acquisition Workforce in cybersecurity is what he wanted to do.

"The Pathfinder program gave me actual hands-on practical application of what I was learning. So, I really gained a lot from that," Gibbons said during his internship. "I was able to make connections with people that I'm actually working with now."

When asked if he would recommend the program to other students, he said, "Absolutely. I've talked to other people that are [studying] cyber at other universities and the common issue right now is that it's not as hands on as it needs to be. So, there's a lot of on-the-job training that has to happen. So I would absolutely highly recommend that program to students because they can start developing some of those practical skills to go with their academic training as well."

After completing the Pathfinder Program, Gibbons began his federal career as part of the Army civilian workforce. He now has one year of government service working with PEO STRI TSMO as an intelligence specialist.

FUTURE EXPANSION

Currently, there are 86 interns spanning across the 25 universities participating in the Pathfinder Program. Of those 25 universities, five are Historically Black Colleges and Universities and four are Hispanic Service Institutes. Research has shown that workplace diversity improves employee engagement and retention, increases creativity, and leads to quicker problem-solving and better decision-making. The Pathfinder Program will be capable of recruiting skilled individuals with fresh and innovative ideas because it engages with a diverse group of students. Additionally, included in the total number of Pathfinder interns, three are military service members enrolled in the SkillBridge portion of the program, providing these service members a pathway from active duty into the civilian workforce through training, apprenticeships and work experience.

When asked what he would like to see out of Pathfinder in the future, Steward said, "I would like to see the program grow and integrate with more agencies." And it has. Since its inception, driven by a congressional mandate and funding provided in the 2020 National Defense Authorization Act, the program is quickly expanding across government agencies with aspirations to add blue team education and certifications for future students, incorporate additional computer and software testing, increase diversity and offer experience to support in-demand and hard-to-fill positions.

CONCLUSION

With the Pathfinder Program continuing to grow, so will the Army's pool of cybersecurity talent.

"The most rewarding part of the program is watching the advancements made by the students," Steward said. "From first meeting with students engaged in projects or internships, to watching their growth and development through the skills they learned, and finally, hearing about them getting a job after graduation and how the program assisted them to achieve their goals. That's the best part."

As the threat of cyberattacks increases, so does the need to fight against them. Not only do we need to continue to stay vigilant, but we need to stay ahead of the threat. These future experts will not only protect current national security systems, but future ones as well.

For more information, contact Intelligence Specialist and Pathfinder Lead Nicholas Steward at ***Nicholas.Steward2.civ@army.mil****. For information about SkillBridge, go to* ***https://skillbridge.osd.mil.***

REBECCA WRIGHT is a writer and editor with Army AL&T magazine at the U.S. Army Acquisition Support Center at Fort Belvoir, Virginia. She has over 14 years of experience writing and editing for the Department of Defense and the Department of Justice.

FUTURE VERTICAL LIFT
Engineers turned to digital engineering to release a model of the barrage relay radio model to the greater DOD community, which is being used by the aviation community in testing out Future Vertical Lift concepts. (Photo by Maj. Jeffrey Tolbert, 82nd Airborne Division)

DIGITAL ENGINEERING FOR ALL

PEO C3T tech expert explains how digital engineering can be used across the acquisition enterprise.

by Kathryn Bailey

Digital engineering is becoming increasingly essential to the DOD acquisition community, and with good cause. The requirement to modernize systems has never been greater as we prepare to support the data-centric Army of 2030 and the potential for large-scale combat operations against near-peer threats. In 2018, the undersecretary of defense for research and engineering released the Digital Engineering Strategy, which provided guidelines on how to incorporate digital engineering into the system acquisition cycle to increase the speed of delivery and meet the challenges of future wars.

Digital engineering is a method used to modernize how we design, develop, deliver, appropriate and sustain our systems. DOD defines digital engineering as an integrated digital approach that uses authoritative sources of system data and models in a continuum across disciplines to support life cycle activities from concept through disposal. In other words, rather than use a design-build-test methodology, digital engineering uses a model-analyze-build methodology. Basically, it's a way to use technology to not only ensure a system will work as expected, but to compute a multitude of data to determine if the system meets full-cycle development criteria from well before contract actions, all the way out to sustainment. While quantitative benefits are difficult to measure, data points emerging across DOD show a huge potential when using digital engineering in processes and decision-making.

Randy Young, deputy director of the Technical Management Division at the Program Executive Office for Command, Control and Communications – Tactical (PEO C3T), sat down for a question-and-answer session on July 19, to explain how the organization is implementing digital engineering practices now, and plans for the future, as the Army undergoes rapid modernization

with a major shift in developing and delivering a transformative network across formations today and tomorrow.

Bailey: Who uses digital engineering practices? Is this just for system engineers implementing modeling and simulation or computer-aided design software?

Young: No, not at all. If we only target digital engineering at the technical level, we limit who benefits from this critical process. While modeling and simulation and traditional engineering tools are a big part of digital engineering, digital engineering should facilitate communications beyond technical across all disciplines by automating business practices, configuration management and capturing financial information relevant to the system.

PEO C3T uses a tiered approach to help develop a digital engineering road map. The tiers start with functionality that provides value across the entire acquisition community and progresses to high-end, high-fidelity, purpose-built engineering tools designed to answer very specific technical questions.

Bailey: How does modeling and simulation aid digital engineering?

Young: Digital engineering, supported by modeling, provides a digital picture of how the information flows throughout that system, allowing us to identify issues or challenges early on and subsequently identify solutions—even before it reaches a lab for testing. With many of today's systems integrated into a system-of-systems design, often using commercial components, developers should use digital engineering to anticipate changes to the future environment. For example, if we introduce a different interface into a modeling and simulation program, we will find out how that new interface will impact the overall architecture. We may also ask how a certain capability will affect the network, and of course we must know how our decision will ultimately affect the warfighter.

Bailey: How can digital engineering help the development and test community if, despite all of the preliminary modeling and testing, Soldiers still have an issue with a system?

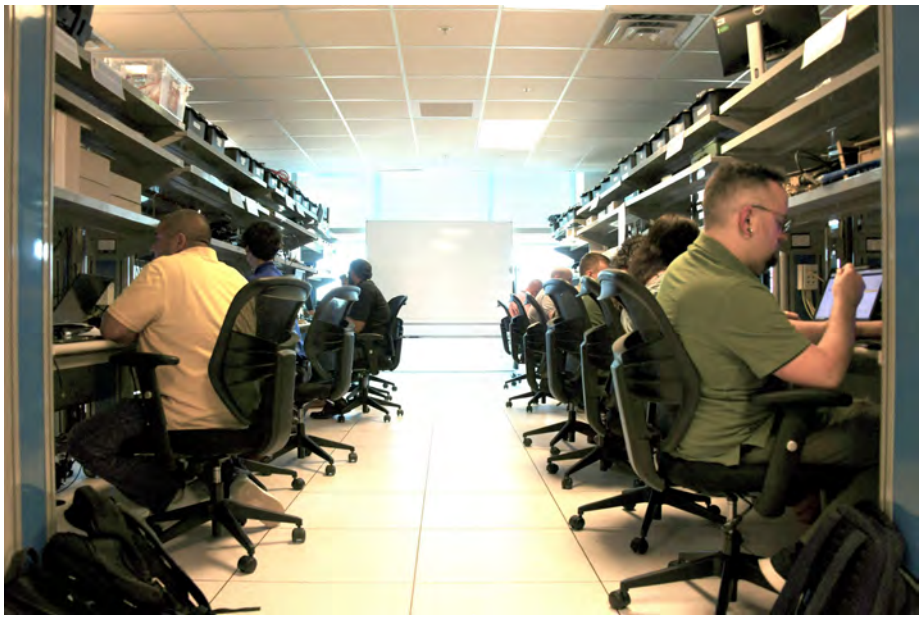
Young: Should we discover an issue down the road, we use the digital engineering tools to select that portion of the system and its interfaces to assess the problem. The tools allow us to isolate on the affected systems and to replicate the issue in a controlled environment. This enables the engineers to more rapidly define the root cause of the issue and define the solution.

Bailey: Could you elaborate on how digital engineering is used at the general user level?

Young: An example is using digital engineering to capture specifications that can be used to put into the contract for industry solicitation. The contract specialist then has the capability to trace equipment purchases throughout the contract life cycle. We can also use digital engineering in financial projections to quickly determine how much it will cost to supply an entire brigade with a system, which is a critical data point senior leaders require.

Bailey: How have you used digital engineering to save the Army time or money?

Young: We used digital engineering to help us determine how many Variable Height Antennas (VHAs) to procure as part of the Integrated Tactical Network's first unit equipped fielding to the 82nd



MODEL-ANALYZE-BUILD
PEO C3T Mission Command uses digital engineering to mitigate issues early in the development cycle, using a model-analyze-build methodology to provide data needed for decision-making across disciplines to support life cycle activities of the system. (Photo by Sam Brooks, PEO C3T)

Airborne Division. The system, which features a tethered drone fitted with a 2-Channel Leader radio, extends line-of-sight communications. We built a simulation using high-end computational modeling software, where we simulated the VHA into the unit's representative operational environments. The simulations allowed us to adjust the number of VHAs and assess whether Soldiers were able to maintain connectivity among the radios. The analysis provided senior leaders with a high confidence level in providing the capability required even with decreasing the number of VHAs fielded to the unit, resulting in significant cost savings to the Army. The unit operated the VHA over more than two years and agreed that our assessment was consistent with their observed real-world operational experience.

We currently use digital engineering on a daily basis to conduct integration testing. Prior to fielding new software, we perform integration testing that includes the impacts of tactical communications and networking. We integrate with Project Manager Tactical Network Emulation Testbed, which provides a digital representation of the network. Implementing these digital engineering capabilities significantly reduces the physical size and complexity of our integration environments, which not only allows us to utilize the expertise that resides in the individual project manager organizations and not have to duplicate that expertise in other organizations, but also reduces the length and focus of field testing.

Examples like these demonstrate how the acquisition community works with the operational community using digital engineering to come up with a scenario for informed decision-making.

Bailey: Is the information derived from the PEO C3T digital engineering approach available outside of the organization?

Young: Yes. Since we're fielding technologies that many systems have to connect to, this gives us tools in order to share information outside of our community, such as with the Army's cross-functional teams and the joint community to aid in joint all-domain command-and-control decision-making. One example of this was to release a model of a barrage relay radio to the greater DOD community. It is being used by the aviation community in testing out Future Vertical Lift concepts.

Bailey: Will you adapt your digital engineering models to meet the current effort to unify the enterprise and tactical networks?

Young: Yes, digital engineering will be even more valuable as we move towards the Army's unified network plan. Currently, we have many discrete individual component models that, like the networks, must come together to support one network design. We are already working across PEO C3T and PEO [Enterprise Information Systems] teams, where there are ongoing communications among the project manager organizations in the areas of software-defined networking and cloud concepts.

Bailey: What are the next steps for your organization's digital engineering efforts?

Young: As we refine our collection of tools, we will be able to tackle even more complex decisions, such as the current decision facing the Army to relegate all systems at battalion and below at the Sensitive But Unclassified – Encrypted, or SBU-E, classification level. The digital engineering tools could provide a visual to compare a unit's capabilities operating under SECRET versus SBU-E. We are currently piloting this integrated solution, but for now, we are applying digital engineering across a variety of disparate tools and information sources to help with this decision. However, in the not-too-distant future, we see a digital engineering solution that will take days, versus weeks, to aid with operational environment-wide decisions such as these.

Bailey: In summary, what do you feel are the top benefits to incorporating digital engineering into the system development process?

Young: Digital engineering is a very effective method to make more informed decisions, whether technical or programmatic. Working across all disciplines provides us with the overall confidence in the accuracy and quality of the data, improved analysis of capabilities and systems, and the tools to rapidly trace the decision-making path to fielding. Ultimately, our goal is to rapidly and accurately field the most modern systems to our Soldiers as we prepare for the Army 2030 and beyond.

*For more information, email **pao-peoc3t@army.mil** or go to **www.peoc3t.army.mil**.*

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LOGIN TO LEARNING
Soldiers view milSuite login page on a tablet device. (Photo courtesy of milTech)

ENABLING NETWORK CONVERGENCE

How milSuite is helping shape the future of the Army and DOD.

by Dan Lawton

As the U.S. Army moves toward achieving a unified network—an integration and convergence of enterprise and tactical networks—milSuite's steady presence has helped to bridge the gap. In an environment where innovative technologies constantly materialize, providing modern solutions to today's problems, many legacy systems are being replaced. That shift often leads to unforeseen challenges and speed bumps that can have dramatic effects on network stability and functionality as new, untested technologies are adopted. In the defense environment especially, those challenges can be catastrophic—which is why the U.S. Army and DOD have repeatedly turned to milSuite, a continually evolving portfolio of information technology (IT) capabilities from military technical solutions (MilTech) that has provided responsive and innovative information-sharing capabilities across DOD for nearly 15 years.

THE MILSUITE DIFFERENCE

First launched in 2009, milSuite has supported over 2.25 million registered users since its inception and is one of the largest networks of personnel information-sharing across the joint domain. While most information systems within DOD are chain of command-centric—built from the top down with traditional organizational hierarchies in mind and limited in terms of who can access and acquire knowledge—milSuite offers a different solution. MilSuite was built for users. That means every individual who uses milSuite has a unique experience based on their distinct needs. Users can acquire information they may not have otherwise been able to with other systems and connect and collaborate with other members of the Army and DOD workforce.

"MilSuite provides the ability for users to discover information they never knew existed and connect with peers in their areas of interest," said Tom Curran, milSuite product lead.

This information-sharing capability uniquely connects agencies in a way other chain of command-style systems do not. With information sharing comes knowledge, and with knowledge comes power—and for the U.S. military, that leads to better connectivity and readiness across DOD.

MILSUITE'S CAPABILITIES

What began as a wiki and blog where Army personnel could share knowledge during DOD's base realignment and closure has evolved into a DOD-wide platform that allows those personnel to create solutions to meet mission requirements.

"MilSuite played a critical role in helping us communicate with our more than 32,000 Army Acquisition Workforce professionals last year as we streamlined 13 career fields into six functional areas," said another milSuite user—Stefanie Pidgeon, chief of the Communications Branch at the Office of the Army Director of Acquisition Career Management. "The Army Acquisition Workforce is geographically dispersed and, as every single workforce member was impacted by this transition, we needed a direct way to communicate important and timely information with them. MilSuite was the platform that helped us do that."

Over the years, milSuite has grown into a suite of five programs used across DOD: milWiki, milBook, milSurvey, milTube and milUniversity. Each offers a unique set of information-sharing tools that are significant communication vehicles across the joint domain.

milWiki

MilSuite's initial product, milWiki, is a knowledge management system that is essentially Wikipedia for the military. Unlike Wikipedia, however, the information stored within it is secured behind a firewall and is not accessible by the public; only those with a DOD Public Key Infrastructure (PKI) certificate can access milSuite and contribute to milWiki articles. Subject matter experts are encouraged to share their knowledge about certain topics on an ongoing basis, and topics vary from leadership biographies to glossaries to organizational profiles. MilWiki is a powerful tool that provides organizations like the Army Corps of Engineers, Army Medical Command and the Enterprise Cloud Management Agency with the ability to create living collections of articles to help build readiness for organizations in one cohesive location.

milBook

MilBook serves as a professional networking tool for military personnel. It is a place where military personnel can connect with like-minded people working in different fields. The greatest benefit is how it connects individuals across DOD regardless of branch. Army users can communicate with U.S. Navy personnel and cross-functional teams to work in a common operating environment. Doing so not only strengthens the military community, but also opens lines of communication regarding the sharing of relevant and mission-critical information. MilBook is also home to Army professional forums like Army S1Net, one of the largest Army online communities, where Soldiers and civilians converge to share and implement human resource (HR) processes, procedures, programs and knowledge, and best practices between the institutional and operational force. S1Net provides the information flow to over 100,000 Soldiers, leaders and Army HR professionals.

"The use of the S1Net and milSuite has had a significant positive impact on the HR community and the Army," said Brig. Gen. Gregory S. Johnson, adjutant general of the U.S. Army at the Army Human Resources Command—a milSuite user. "This platform helps synchronize all of us while shaping the forces' understanding of HR policies, changes to procedures and best practices. I rely on S1Net to help communicate what we need HR professionals to know and to understand in order to take care of Soldiers and drive readiness and talent management."

milSurvey

MilSurvey allows members of the milSuite community to create custom surveys for enterprise distribution with advanced survey statistics to capture, review and share. MilSurvey keeps sensitive information secure for major organizations like the Army Inspector General and Army Special Operations Command and allows for robust reporting on mission-critical information collections. MilSurvey is the only approved survey tool in

"Users should be able to leverage the best capability for their mission regardless of the underlying platform."

POINT OF VIEW
A Soldier views milSuite's suite of program options. (Photo courtesy of MilTech)

the U.S. Army, offering a secure platform for personnel to formally capture important data from the workforce on a variety of relevant topics. It replaces the use of unsecured survey tools, mitigating potential security issues of sensitive information being in the public domain.

MilSurvey adheres to the strict information-sharing management control protocols outlined in Army Regulation 25-98, Information Management Control Requirements Program, where Army organizations must obtain approval before administering an Army internal survey.

milTube

MilTube is a video sharing and streaming service that allows any member of the Army or DOD workforce to share videos with the DOD for viewing, downloading or embedding. Videos uploaded to milTube range from highly produced official content such as system and application training, news and event updates and senior leader messages from across DOD, to ad-hoc content produced on demand by users and organizations to meet immediate mission needs. Once uploaded, a video can be streamed directly from milTube, downloaded for offline viewing in bandwidth-constrained environments or embedded in other milSuite applications such as milUniversity. Programs like Army Enterprise Staff Management System rely on embedded milTube videos in their milUniversity courses to enhance the learning experience and ensure a consistent training environment for the Army enterprise and DOD. MilTube is accessible with fully integrated closed captioning and the ability to upload transcripts.

milUniversity

MilUniversity provides a platform on which organizations can create learning

SUITE REALIGNMENT
PEO EIS' Ross Guckert, left, answers questions about the organizational realignment at the Technical Exchange Meeting 10 held in Philadelphia in May 2023. MilTech is focused on enhancing capabilities in the future. (Photo courtesy of PEO EIS)

and reference materials and make them available to their workforce, customers or anyone with an interest in learning. Military personnel can access and complete training courses for relevant certifications anywhere they are—all in a secure technological environment. MilUniversity is especially important for talent management and is a valuable tool for the military HR community. As vacant roles need to be filled throughout DOD, HR personnel can find the talent with the skills, trainings and certifications needed to fill the positions. Having a highly qualified staff is a vital cog in ensuring Army and DOD readiness and enables the Army to recruit, educate and retain a highly skilled workforce to support operations at the strategic, operational and tactical levels.

"MilUniversity has allowed me to immediately create, publish and mandate a financial management-specific course for all Army personnel that approve or certify miscellaneous payments they may be held pecuniarily viable for," said Carlos Arguello, U.S. Army contract and commercial pay action officer at the U.S. Army Financial Management Command (USAFMCOM). "I am also in the process of creating and publishing a second course based on the success and feedback I received for the previous one. This tool has allowed USAFMCOM to keep nine geographically dispersed financial management Army-operated offices informed of the latest policies, procedures and regulatory updates. Quick access to this information has helped achieve worldwide process standardization and overall compliance," he added.

THE FUTURE OF MILSUITE

In November 2022, the Army Unified Network Council (AUNC)—a group of representatives from across the Army commands that is responsible for stewarding programs and mission efforts related to the Army's unified network road map—evaluated milSuite's capabilities and contributions to the network. The AUNC, chaired by a three-star leader, determined that milSuite was a viable information-sharing solution, and its capabilities were subsequently validated as an emerging requirement in the program objective memorandum (POM) for fiscal years 2025 through 2029—which means milSuite will be included as part of the Army's unified network road map. For a system that's evolved over time to meet the defense community's latest needs, that is a great accomplishment, and is a tribute to the users of the platform and their use cases.

As POM fiscal 2025 through 2029 approaches and MilTech looks to the future, the team is focused on continuously improving and evolving—adding, removing and enhancing capability to complement milSuite's existing offerings and ensure convergence with other Army enterprise offerings—all while incorporating customer input and feedback.

"MilSuite is constantly evolving based on feedback from the user community," Curran said.

To that end, MilTech allows users to post ideas on how milSuite can improve and vote on other ideas provided by their peers through a platform they call milSuite X. Those efforts are part of MilTech's agile approach to making iterative improvements that improve the delivery of capabilities and overall user experience.

In the short term, the MilTech team is preparing for two critical initiatives. First, based on milSuite's foundation in the cARMY cloud, the team is planning to

"MilSuite provides the ability for users to discover information they never knew existed and connect with peers in their areas of interest."

integrate its milSuite offerings with Army 365 (A365), which leverages Microsoft 365 capabilities providing the Army with collaboration tools and resources across the force. The first phase will involve incorporating integration points, like synchronizing authentication, then ensuring connectivity with A365 applications so users can benefit from both platforms' unique sets of enterprise capabilities.

"Users should be able to leverage the best capability for their mission regardless of the underlying platform," Curran said. "Ideally a user taking a survey on milSurvey could take that survey directly in a [Microsoft] Teams channel, or conversely start a Teams chat with a fellow student taking a milUniversity course."

The second initiative is to ensure that milSuite's knowledge and information is accessible to the enterprise network in support of the Army's data plan and expand the use of machine learning enhancements that began with the introduction of milSuite recommendations. MilSuite recommendations combines users' organizational profiles with activities of similar users to provide daily recommendations of people, sites and content.

CONCLUSION

As the Army continues to modernize and unify its tactical and enterprise networks, information sharing will continue to be critical across the service and the joint domain. The digital transformation of the Army is happening across multiple fronts. Establishing the unified network means not only convergence of separate organizational networks to collapse stovepiped, vulnerable networks, but also the convergence of people, processes and capabilities across multidomain operations to gain operational advantages and fiscal efficiencies.

MilTech's ability to quickly innovate and iteratively adapt to evolving needs of the user, combined with the proven success of milSuite to connect people, processes and capabilities across the Army and DOD, make it an ideal integrator with A365 in establishing the Army unified network. As the Army bolsters its use of Army 365 to improve its business and operational processes as part of the Army Modernization Strategy, milSuite continues to evolve to meet joint information-sharing needs and multidomain collaboration across the armed forces, as well as to deliver a unique set of capabilities that complement A365 to provide enterprise-wide continuity.

For more information about milSuite, go to ***https://www.milsuite.mil****.*

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DISCUSSION IN PROGRESS

Representatives from JPM CBRN Medical and the U.S. Department of Health and Human Services discuss preparations and responses to warfighter and public health threats during a panel session at the 2023 Biotechnology Innovation Organization International Convention. (Photo by Col. Matthew Clark, JPM CBRN Medical)

FAIL FORWARD AND PIVOT

VAMP program takes an agile approach to accelerate the delivery of vaccines against priority threats.

by Matthew Kuhn, Ph.D., Emily Cisney and Andrew Glenn

December 11, 2020, was a momentous day for our nation. It was a day that signaled a hope for relief at the height of the COVID-19 pandemic as the U.S. Food and Drug Administration (FDA) issued the first emergency use authorization for a COVID-19 vaccine. A then little-known provision of the U.S. Code, 21 U.S.C. § 360bbb-3, emergency use authorizations has since become a household name in the fight against COVID-19.

But their utility reaches far beyond pandemic control.

The rapid response to the novel coronavirus pandemic revealed an ability of the pharmaceutical industry to rapidly address novel threats through the application of advanced vaccine technologies, then untested at commercial scale. Independently, many companies showed a capacity to pivot to a clear and present biological threat at a pace few believed possible.

There was a need for a new program capable of working with such companies to advance the next generation of vaccines for the warfighter on a time scale that can meet both current and future threats head on.

Vaccine Acceleration by Modular Progression (VAMP), a program within the Joint Project Manager for Chemical, Biological, Radiological and Nuclear Medical (JPM CBRN Medical) as of 2021, was created for this very purpose. The program facilitated the establishment of agreements this past fall and winter with eight pharmaceutical leaders, targeting over 15 biological warfighter threats, to bring vaccines to Phase I clinical trials and beyond, all within the next five years. But VAMP represents more than just the sum of eight candidate vaccines; it demonstrates a new approach to vaccine development through a stepwise, modular method in which DOD

can advance vaccine development at the speed of relevance through partnerships with government agencies and performers with a record of proven performance.

THE NEED ARISES

As the COVID-19 pandemic unfolded, a program management team at JPM CBRN Medical, a component of the Joint Program Executive Office for Chemical, Biological, Radiological and Nuclear Defense (JPEO-CBRND), focused on the development and acquisition of medical solutions to combat CBRN threats, took note of the criticality of rapidly manufactured vaccines in battling the pandemic, and the distinctive value emergency use authorizations provide in an emergency situation. The program management team forecasted that this invigorated requirement for rapid advancement of vaccines in times of acute need was applicable to DOD in rapidly pivoting biological defenses for the warfighter and the nation in response to emerging and novel threats.

A team of program managers, scientists, lawyers and contracting officers set in motion a flexible contracting strategy that could accept funding and move quickly to support development of new vaccines. Additionally, the team utilized its established partnership with the Office of the Deputy Assistant Secretary of Defense for Chemical and Biological Defense to begin messaging essential investment and identification of enhanced biodefense and pandemic preparedness funds.

When JPM CBRN medical leaders returned to their DOD roles after details to positions with Operation Warp Speed and other critical COVID-19 responses, they brought with them the lessons learned from their front row seats to the twists and turns of the pandemic and our nation's public health response. Such lessons came on the heels of shepherding several medical countermeasures into pivotal Phase III clinical trials and ultimately, emergency use authorizations at a never-before-seen pace.

The question was, could DOD build off this experience to similarly address priority threats to the warfighter? Supporting vaccine development toward FDA licensure can be a long process, but the response to COVID-19 rebuked this narrative. The pandemic revealed that full FDA licensure is not necessary to get shots in arms when circumstances permit. If success hinged on emergency use authorizations rather than full licensure, how rapidly could DOD move?

To accelerate advanced research to the necessary pace, the development of partnerships with other government agencies was indispensable, as demonstrated by the relationships built during Operation Warp Speed and previous interagency coordination. JPEO-CBRND continues to strengthen its relationship with the U.S. Department of Health and Human Services' Biomedical Advanced Research and Development Authority (BARDA), and with other DOD agencies, such as the Defense Innovation Unit.

As an interagency partner, BARDA contributes both funding and technical expertise to the VAMP program. Collaborating with BARDA allows the program to tap into a vast array of experts in vaccine design, manufacturing, testing and regulatory navigation, all of which are essential to maintaining an efficient program. A new partnership with the Defense Innovation Unit, which will leverage its accelerated contracting process, will allow VAMP to rapidly seek out and contract innovative biotechnology companies to provide cutting-edge medical capabilities.

VAMP FOUNDATIONS

Moving at an accelerated pace and maintaining the latitude to address emerging biological threats requires an acquisition approach that values nontraditional defense contractors with significant expertise in vaccine manufacturing. It also requires the development of system-of-systems technologies that move beyond the "one-bug-one-drug" dogma, the incorporation of a mechanism to consistently review progress, and be ready and willing to end efforts that underperform and easily pivot to the next candidate in line.

These pillars underpin the VAMP program and its use of the other transaction authority for prototype projects to enter into agreements with nontraditional defense contractors for rapid vaccine development.

Other transaction authority has provided a consistent capability to provide basic, applied and advanced research for decades. Although originally required to be directly relevant to weapons or weapon systems, other transaction authority agreements for prototype development can now be created for any effort directly relevant to enhancing the mission effectiveness of military personnel and the support or improvement of platforms, systems, components or materials. Vaccines are a prime example of meeting this need by developing vaccines toward lethal pathogens that lack medical countermeasures and are largely unmitigated risks to warfighter readiness and effectiveness. These vaccines are intended to provide an additional layer of protective defense, regardless of natural or intentional threat exposure, augmenting the warfighter's biological armor against such threats.

PLATFORM DEVELOPMENT

Lessons learned from Operation Warp Speed continued to influence the VAMP

SYSTEM OF SYSTEMS

The VAMP program takes a system-of-systems approach to vaccine delivery. By breaking down vaccines into their individual systems (e.g., adjuvants, payload delivery type, delivery method), each system can be individually advanced as part of a collective vaccine prototype. Doing so allows for rapid advancement of both vaccine components and vaccine platforms specific to warfighter needs. (Graphic by JPM CBRN Medical)

program as it undertook the selection of performers. Namely, that when it comes to vaccines, there is no single-best technology for vaccine design; the best technology is the one that works for a given threat. A second motif during selection was that designing novel vaccines one at a time from scratch cannot keep up with the speed of nature. A balance of cutting-edge technologies and tried-and-true vaccine backbones were selected for further development. However, the foundational concept shared by all VAMP performers is an emphasis on vaccine platform technologies creating system-of-systems prototypes.

Vaccine platforms act as the rolling body and turret of a tank. As tanks are produced, the body and turret largely remain the same, and can be deployed to counter an array of battlefield threats. Different threat-specific ordnance (e.g., armor piercing, high explosive) can then be selected to address each individual target, without changing the overall design of the tank. For vaccine platforms, the basic vaccine components and antigen carrier of the platform remain the same regardless of threat, just like the body and turret of the tank. Similar to threat-specific shells, the antigenic design of platforms, or the pieces of the vaccine construct that train the immune system on what to prepare for, can be modified to target-specific threats without changing overall vaccine design.

Just like platform vaccines support the insertion of various antigens to target differing threats, the system of systems that make up a platform vaccine can support interchangeability of various vaccine components to optimize a vaccine for a specific use. For example, deliberate alteration of the delivery method of a vaccine can tailor use for warfighter needs by allowing easier vaccine administration, or through improvement of cold chain storage and stability.

Although each performer will design and test a candidate vaccine for a specific threat or threat family, the overall objective of the program is to advance the underlying platforms and systems upon which the vaccine is built for DOD to employ as part of the warfighter's complete biological armor. The performers with whom agreements were recently awarded represent a diversity of platform technologies.

Traditional Vaccine Platforms:

- **Modified Live Attenuated Vaccine**: Bavarian Nordic A/S will modify its BN-MVA platform vaccine, the backbone of the FDA-approved JYNNEOS smallpox vaccine and mainstay of the nation's strategic national stockpile, for prevention of three equine encephalitis viruses (Venezuelan, Eastern and Western).
- **mRNA**: The University of Texas Medical Branch (UTMB), in partnership with Moderna Inc., will build on their success in developing a bivalent COVID-19 vaccine by applying their mRNA platform to hemorrhagic fever viruses, including Ebola Zaire, Ebola Sudan, Marburg and Lassa fever viruses. Additionally, AstraZeneca will further develop its mRNA platform for protection against pandemic avian influenzas.
- **saRNA**: Two efforts, the Access to Advanced Health Institute and UTMB in partnership with HDT Bio, will further develop self-amplifying RNA (saRNA) vaccines, a more recently developed technology, against pandemic avian influenzas, henipaviruses and Crimean Congo hemorrhagic fever virus. The saRNA vaccines aim to improve the immune response to mRNA vaccines while increasing their safety profile.

Immune Modulator Platforms:

- **Cytosine-Phosphate-Guanosine Oligodeoxynucleotide**: Dynavax Technologies will conduct a Phase II human clinical trial with its novel immune modulator platform cytosine-phosphate-guanosine 1018, a toll-like receptor agonist, co-administered with DOD's Plague Vaccine rF1V, to improve the utility of the plague vaccine for rapid response.
- **Toll-like Receptor Agonists**: ENA Respiratory and the Access to Advanced Health Institute are independently developing a self-administered dry powder nasal spray for the prevention of common and emerging respiratory viral threats. Both products are designed for rapid protection and use in austere environments.

The utilization of platforms significantly reduces development time for future efforts by altering only minor portions of vaccines to address new targets. By targeting development of proven platforms, the program supports the creation of an agile pharmaceutical industry with the tools and technologies necessary to rapidly shift design and manufacturing of vaccine candidates from current to emerging threats, in near-real time.

COMING TOGETHER
JPM CBRN Medical, BARDA and UTMB personnel during a UTMB site visit. (Photo by Sarah Murtaza, BARDA)

DELIBERATE DECISIONS POINTS

The final and most pertinent enabler for VAMP's agility and speed is its purposeful modular contracting strategy. VAMP incorporates go/no-go decision checkpoints in each agreement throughout the development and licensure process. The go/no-go decision checkpoints are mutually agreed upon measures of performance between the government and the performer. These measures set expectations, and should a performer not meet the threshold criteria (or do so significantly behind schedule), the agreement may be terminated, followed by selection of a new performer.

When combined with optional work built into the agreements, VAMP is enabled to advance the development of vaccine prototypes to reach full or interim capabilities. The flexible contracting approach employed by VAMP empowers the ability to fail smart and pivot to maintain a steady flow of technologies, or to address emergent needs related to nascent biological agents of interest.

By pursuing agreements through other transaction authorities, the program can carry out go/no-go decision-making and significantly reduce the risk inherent in vaccine development by pursuing those platforms showing promise and shifting away from those that require more extensive troubleshooting. Over the long term, this method will offer opportunities for a wide range of performers to prove themselves and their products while maintaining a relatively discrete program budget.

Although it may seem that a significant risk to cost and schedule remains when an agreement is terminated and a new performer selected, VAMP is deliberate in selection of performers, identifying those with a proven track record of manufacturing capabilities and positive evidence of prior platform use. As manufacturing is one of the most risk-intensive aspects of vaccine development, taking this focus early in performer selection mitigates much of this risk.

CONCLUSION

The VAMP program's success is highly contingent on not just selecting performers with the most promising vaccine candidate, but those with the technology and expertise to develop vaccine platforms that fit with the goals and structure of the program. This will require careful vetting of performers and meticulous expectation-setting to achieve mutual benefit.

Through interagency coordination, multiple risk-mitigation measures and creative contracting, the program aims to shift the vaccine development paradigm. Establishing prototype project agreements for vaccine platform technologies while applying the system-of-systems approach allows the program to pivot and respond to emerging threats and unique requirements for warfighter use. VAMP takes an agile and "fail forward and pivot" approach to accelerate the delivery of interim and full capabilities against priority threats. Drawing from the successes and lessons learned from the nation's response to the COVID-19 pandemic, the Vaccine Acceleration by Modular Progression program facilitates DOD's dedication to enhancing the warfighter's biological body armor with a dependable layer of protection against further current and emerging biological threats.

*For more information, go to **https://www.jpeocbrnd.osd.mil**.*

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ERIKA CURRY

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AWARDS: Army Achievement Medal for Civilian Service (March 2014)

CONTROL YOUR DESTINY

As an international logistical specialist, Erika Curry supports the military by providing "everything from beans to bullets"—specifically, training, services and people for tasks. "Most people are not aware that you can support the Army and not be in the Army .… You can support as a civilian within the government and not just as a contractor," Curry said.

Curry provides logistical expertise to the missile weapon systems for the Project Manager Strategic and Operational Rockets and Missiles within the Program Executive Office for Missiles and Space. She ensures that requested assets are provided at the right time for the right price. Specifically, she manages the contractor logistics support contract for weapon system sustainment, which ensures that assets are repaired and returned, adequate spares are available, and training is sufficient for the ongoing tasks.

She began her career in the Army Acquisition Workforce through the Army Intern Program at the Army Aviation and Missile Command Logistics Center, Blackhawk Utility Directorate at Redstone Arsenal, Alabama. "It was very appealing because the position of the logistics management specialist aligned with my degrees in logistics," Curry said. Her father was a logistician in the Marines, so she wanted to provide the same support that others provided to him.

"Within my tenure, I have taken full advantage of every opportunity provided to me," she said, the most valuable opportunity being mentorship. "I have had both formal and informal mentorships which have allowed a different insight on how I could accomplish my goals." In September, Curry completed the Inspiring and Developing Excellence in Acquisition Leaders (IDEAL) program. "All these experiences and exposure allowed me to see the Army from a different lens. I have gained knowledge that I have immediately applied to my current position. Bonds that have been built with individuals cannot be broken," she said.

"You can support the Army and not be in the Army."

"As a federal employee of 15 years, I have witnessed the retirement tsunami. A clear indication of the generation gap within the workforce," she said in her submission for the program. "Although there have been many attempts to bridge the gap, the fact remains that knowledge has left and there must be a way to replace it. The solution is to provide the tools that will allow the upcoming generations to thrive. … One of those essential tools is training, which will allow those that lack the experience to become exposed to elements that would otherwise not be available."

Curry said the IDEAL program helped her to change her mindset, infusing leadership doctrine and principals with real work situations, like techniques to work with the

JOB WITH A VIEW
Curry enjoys the views while in the Middle East in 2022. She is an avid traveler and visits many international and U.S. locations for her job, too. (Photo provided by Erika Curry)

various temperaments of the workforce, which will allow her to handle challenges better in the future. "It is seldom that a course supersedes the statement of interest: prepares self, builds trust, stewards the profession, communicates, develops others, leads by example, gets results, creates a positive environment, leads others, [and] extends influence," she said. "I highly recommend IDEAL as a leadership course."

In her personal time, Curry is an avid traveler and enjoys being able to travel frequently as part of her job, too. She has been to Asia, the Middle East, Europe and a myriad of U.S. military installations. She travels in her role for several reasons, but most often she said it is to brief leadership on logistical matters, oversee training that is provided by the contractor to the Soldiers, and preform onsite surveys.

For Curry, the rewarding part about being in the Army Acquisition Workforce is that it provides her with peace of mind. "Peace that the Solider does not have to worry about what is needed to support the mission, peace that their families have one less thing to worry about. Peace to know that I have done my part. … The sum of all is greater than the sum of one," she said.

Curry has learned throughout her career, "You miss every shot you don't take. Anything that you want to achieve can't be done without taking the initiative and doing the work," she said. "If it's meant to be, it's up to me. You control you own destiny."

—HOLLY DECARLO-WHITE

XM30 COMBAT VEHICLE
The XM30 Mechanized Infantry Combat Vehicle, shown here in a conceptual illustration, will be the Army's replacement for the aging M2 Bradley Fighting Vehicle. (Image courtesy of PM XM30)

DIGITAL ENGINEERING LEARNING CURVE

PEO GCS receives training on emerging digital design efforts and the digital acquisition strategy in the XM30 combat vehicle program.

by Macam Dattathreya, Ph.D., Col. Jeffery W. Jurand and Steven A. Dawson

The XM30 Mechanized Infantry Combat Vehicle, developed to replace the aging M2 Bradley Fighting Vehicle, is the first ground vehicle to fully adopt modern digital engineering tools and processes to design, test through simulation and iterate a full vehicle design before building prototypes. This model-based approach is heavily reliant on the workforce understanding the systems modeling language and applying the principles of the Ground Combat Systems common infrastructure architecture (GCIA)—the modular open-systems approach (MOSA) standard for the Program Executive Office for Ground Combat Systems (PEO GCS).

To train the workforce, the assistant PEO for systems engineering and integration (APEO SEI), in collaboration with Project Manager XM30 Combat Vehicle (PM XM30), spearheaded on-the-job training for the XM30 team. The curriculum was specifically designed to train team members on how to read digital system architecture contract deliverables to ensure that contractors are meeting MOSA and GCIA requirements.

To be successful, the workforce must align training efforts with the emerging digital engineering and MOSA trends for the XM30 program. Using government-led micro instructional sessions—a teaching technique that involves breaking down lessons into smaller, more manageable parts—enables the XM30 workforce to read and understand digital system architecture contract deliverables. There have been 14 training sessions conducted across three cohorts so far, resulting in 25 trained employees. The success of this training approach has spurred the addition of more cohorts and at least 10 more sessions through the end of fiscal year 2023.

THE NEED FOR A DIGITAL ACQUISITION WORKFORCE

Developing a digital acquisition workforce is key to meeting two goals: complying with the new law requiring a modular open-system approach in major defense acquisition programs and DOD's drive toward digital engineering within acquisition. Using a formalized, model-based

systems engineering approach achieves both these goals. First, it provides experts to identify the data necessary to address the challenges, opportunities and requirements to realize the MOSA objectives—incremental development, enhanced competition, innovation and interoperability. Second, it provides the training, tools and infrastructure needed to extract, contextualize and analyze that data.

The key tenets of digital engineering are establishing an authoritative source of truth for the system, ensuring that all system data (requirements, engineering, test, logistics, cost and software data) are always aligned, and more importantly, making the models accessible to project management office staff for review to ensure contract compliance. Combining digital engineering principles and model-based systems engineering enables programs to demonstrate compliance with the MOSA statutory requirements. The synchronization of models inherent in a digital engineering

Using this unique government-led, -developed and -instructed training enables the workforce to learn and be useful quickly through streamlined and context-based education.

REPLACEMENT ON ORDER

Soldiers assigned to 2nd Armored Brigade Combat Team, 1st Cavalry Division, NATO Enhanced Forward Presence Battle Group Poland maneuver M2 Bradley Fighting Vehicles during a platoon live-fire exercise at Bemowo Piskie, Poland, in February 2023. The U.S. Army Optionally Manned Fighting Vehicle, now officially named the XM30, will replace the Bradley Fighting Vehicle. (Photo by Sgt. Lianne M. Hirano, 117th Mobile Public Affairs Detachment)

approach will provide unparalleled insight into design activities as well as support verification and validation of performance requirements. However, to realize the benefits of this approach, each project office must train its workforce to use and understand digital models.

TRAINING THE WORKFORCE

Systems engineering models can wield enormous amounts of information about the structure and properties of a design. Employed properly, they allow decision-makers to dynamically select, organize and process data to inform all kinds of detailed design and programmatic analyses.

But building and validating that the models are sufficiently detailed, and that the data is appropriately indexed, managed, compiled and presented reliably enough to inform potentially multibillion-dollar decisions, requires a cadre of engineers, logisticians, testers and program managers with practical experience in model-based systems engineering.

As one of the first major defense acquisition programs to use a model-based digital engineering approach, PM XM30 lacked that cadre of professionals with practical experience in model-based systems engineering. The PM XM30 organization selected experts to work on the model, but they were not yet trained on how to read and digest data from a model. Additionally, the few employees who were well versed in model-based systems engineering did not have the required knowledge about the combat vehicles themselves.

WHAT'S DIGITAL ENGINEERING?

According to the Office of the Under Secretary of Defense for Research and Engineering, digital engineering is an integrated digital approach using authoritative sources of system data and models as a continuum throughout the development and life of a system. Digital engineering updates traditional systems engineering practices to take advantage of computational technology, modeling, analytics and data sciences.

To address this knowledge gap, APEO SEI and PM XM30 assembled a small team with knowledge about both combat vehicles and model-based systems engineering, and then looked to academia and industry for educational resources. Unfortunately, those resources were focused heavily on either theoretical or very specific applied aspects with no applicability to the day-to-day operations the PM XM30 workforce needed to manage a combat vehicle developmental project.

To meet the project needs, APEO SEI and PM XM30 developed training that was focused on learning how to read models, and then how to specifically evaluate designs for compliance with the MOSA and GCIA standards, within the context of a ground combat vehicle. This on-the-job training paves the road, one mile at a time, to the future digitally aware workforce required to manage models-based, open-architected programs like the XM30, the Robotic Combat Vehicle and future acquisition programs.

ONE MILE AT A TIME

The approach taken at PM XM30 has students learn topics through a gradual introduction of related concepts in small iterations of instructor-led discussions. The students then apply those concepts in hands-on practical exercises, reviewing system architecture models to reinforce learning. The instruction is done with the system architecture model with sufficient detailed design information, as compared with the conceptual level (i.e., requirements) or physical level (i.e., computer-aided design drawings or three-dimensional models of a system), to focus the learning on the principles of a model-based approach to design. Each block of instruction is narrowly focused on a modeling concept, then uses a specific area of ground combat vehicle design (i.e., electronics, software, MOSA) for practical exercises. To pilot the training, PM XM30 provided 10 engineers to participate in six or more three-hour sessions over multiple weeks. This group provided invaluable feedback on course design and topics, allowing the instructors to improve the course for subsequent classes.

The classes have now matured into one three-hour session a week, where students are expected to do some pre-reading focused on areas critical to ground combat vehicle design (e.g., architecture, computing, network, safety, cyber). The reading materials allow the course to focus more on practical exercises and less on lectures. Students summarize their learning in their own way and the course instructors discuss the student's summary and conduct model reviews of student work to assess their understanding, before revealing answers and discussing conflicts. Practical exercises over the course of the class use a gradual release concept.

WORKFORCE TRAINING
Students participate in an interactive training session at the PM XM30 office in Warren, Michigan. (Photo courtesy of PM XM30)

The first two classes are heavily structured and led by the instructors, with subsequent classes pairing students for the practical exercises. The final classes require the students to complete the practical exercises independently. This approach helps students navigate through the concepts slowly, methodically and incrementally, using a ground combat vehicle system architecture model to help explain MOSA principles and model-based systems engineering concepts.

CONCLUSION

DOD's push for digital acquisition, along with the new MOSA statute, requires modern skills within the acquisition workforce, while retaining the irreplaceable expertise of our acquisition workforce. Building a digital engineering and MOSA-enabled workforce requires training current employees to employ new tools, modeling languages and approaches. Using best-of-breed academic and industry training, along with specific practical examples from ground combat vehicles, is key to quickly building competency within PM XM30 and the larger PEO GCS workforce.

A road to a digitally aware workforce, one mile at a time, is exclusive and probably the first ever training approach employed within the Army to train their workforce on the model-based training with MOSA. Using this unique government-led, -developed and -instructed training enables the workforce to learn and be useful quickly through streamlined and context-based education. APEO SEI intends to partner with the U.S. Army Combat Capabilities Development Command Ground Vehicle Systems Center to incorporate the training into workforce development to support propagation of the newly developed skills.

For more information, contact Macam Dattathreya, Ph.D., at ***macam.s.dattathreya.civ@army.mil****.*

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SUPPORT IN EUROPE
The Regional Contracting Center Victory South mission is to plan, execute and assess contracting support for the Victory South area of operations and other forward operating stations in Eastern Europe. (Photo by Staff Sgt. Alvin L. Reeves 5th Mobile Public Affairs Detachment, I Corps)

SUPPORT FOR VICTORY SOUTH

A regional contracting center was established to support forward operating stations in Eastern Europe, enabling friendly forces to reinforce the European theater's response to Russian aggression.

by Maj. Emery Baughan and Maj. Zach Shutte

After Russia attacked Ukraine in February 2022, NATO's focus turned toward enabling Ukraine's defense—and the need for additional support became immediately apparent.

"As combat operations continued in Ukraine, the 409th Contracting Support Brigade [CSB] quickly realized we did not have the organic resources available to support the rapid growth of U.S. forces on Europe's eastern flank," said Col. Jarret Moffit, commander of the 409th CSB. "We realized we needed to reach back to the Army Contracting Command for an additional deployable contracting battalion."

The 923rd Contracting Battalion Headquarters from Fort Riley, Kansas, and elements from the 922nd Contracting Battalion from Fort Campbell, Kentucky, deployed to Romania with limited notice to support the 409th CSB. Once the two units arrived, they organized their disparate parts into a cohesive team to establish Regional Contracting Center Victory South (RCC-VS) at Mihail Kogălniceanu Airbase. Their mission: To plan, execute and assess contracting support for the Victory South area of operations and other forward operating stations in Eastern Europe, thus enabling friendly forces' ability to reinforce the European theater's response to Russian aggression.

FORMING, STORMING, NORMING

Combining the mission command capabilities of the 923rd Contracting Battalion and the contracting capabilities of the 922nd Contracting Battalion helped to enhance the already robust capabilities of the 409th CSB. This led to three insights: The key to synchronization is communication; onsite administrative capabilities prevent delays; and building good working relationships is vital.

The first insight, to merge successfully the units had to synchronize different organization and experience levels into one command structure, and that required clear and concise communication, flexibility and ways to mitigate risk. The 923rd Contracting Battalion command team decided to place key leaders from each unit together, combining assessed strengths from the limited available personnel for key positions to mitigate risk from lack of experience.

The battalion then task-organized into four elements: two administrative contracting officer teams, a theater contracting section, and a staff element. Initially, there were two procuring contracting officers with level three (advanced) warrants, with another obtaining an under-simplified acquisition threshold warrant approximately three months into the deployment.

A warrant is a contracting officer's certificate of appointment, which expressly states the dollar thresholds up to which the warranted contracting officer may sign and obligate money on behalf of the government. It assures the public that the contracting officer has authority to enter into, administer or terminate contracts. Procuring contracting officers receive warrants from their respective agencies to issue legal contracts between the U.S. government and the contracting entity. The administrative contracting officer is responsible for monitoring, evaluating and documenting contractor performance within authorities set by a procuring contracting officer.

In six months, the theater contracting team executed 30 contracts, valued at over $6.5 million, and provided administration for 47 contracts, valued at over $15 million. The administrative contracting teams managed numerous sites across multiple countries and managed a combined portfolio of over $380 million.

However, this only captured a portion of the workload required of a contracting battalion headquarters. Integrating into the 409th CSB's battle rhythm required multiple briefing requirements, preparation and updates for current, planned and possible future contract actions. Limited personnel covered both contracting and staff functions. Initially falling in on outdated tracking methods, one priority was to revamp an internal contracting tracking system, which allowed the team to clearly articulate to senior leaders the status of the working and awarded contracts, which enabled leaders to make informed decisions and lowered risk.

ON THE WAY

Lt. Col. Randy Garcia, 923rd Contracting Battalion commander, speaks to Soldiers and family members during a color casing ceremony before deployment to Romania, Aug. 10, 2022, at Fort Riley, Kansas. Once in Europe, they would be joined by Soldiers from the 922nd Contracting Battalion from Fort Campbell, Kentucky, to provide contingency contracting support. (Photo by Maj. Mark Mayor, U.S. Army)

VICTORY SOUTH

Victory South spanned portions of several countries, including Romania and Poland. Each location had its own separate administrative contracting concerns under the 923rd Contracting Battalion. The Romania administrative contracting officer team provided support to multiple countries and locations across the Black Sea via the Logistics Civil Augmentation Program (LOGCAP) V contract vehicle with Kellogg Brown & Root Services Inc. and supporting requirements valued at over $80 million. The main requiring activities included the 101st Airborne Division, Area Support Group Black Sea, and Area Support Activity Black Sea.

The Poland administrative contracting officer team supported a $300 million portfolio that included a multitude of distinct units, each with specific and original requirements sprinkled throughout strategically critical locations within Eastern Europe, spanning 13 sites, and thousands of Soldiers, civilians and structures.

Two forward operating stations in Poland that required contracting personnel were the Remote Maintenance Operations and Distribution Center – Ukraine and the Military Aid Contribution Coordination Cell, which directly supported Ukrainian aid. They ensured arriving materiel reached the right place, at the right time, to support Ukrainian forces. Upon arrival to theater, these locations were at the beginning phases of development, but with coordinated efforts by the requiring activities (quality assurance specialists, contract officer representatives) and contracting officers, the throughput and capacity to provide aid increased exponentially.

The administrative contracting officers received warrants at different stages throughout deployment. The Poland administrative contracting officer team received its warrant first, as its counterpart was first to depart theater. The Romania administrative contracting officer team received warrants a few weeks into the deployment.

This highlights the second insight, not having approved warrants immediately upon arrival created difficulties achieving effects without delay, requiring reach-back support provided by personnel of the 928th Contracting Battalion in Germany. Once warranted, timeliness of administrative contracting officer actions would continue to be an issue as procuring contracting officer support for LOGCAP V is limited to Central Time Zone business hours. Not having a procuring contracting officer in the mission area and time zone delayed important decisions and fostered a negative perception with the supported units in contracting personnel's ability to execute efficient and timely contract support.

COORDINATION IS KEY

Romanian President Klaus Iohannis; Romanian Prime Minister Nicolae Cicua and French Armed Forces Minister Florence Parly address dignitaries and NATO troops at Mihail Kogalniceanu Airbase, Romania, March 6, 2022. As a member of the alliance, the U.S. makes a commitment to provide forces to the NATO Response Force and work in coordination with allies and partners to deter further Russian aggression. (Photo by Staff Sgt. Alvin Reeves, 5th Mobile Public Affairs Detachment, I Corps)

MISSION EXECUTION

As the war continued, DOD began to focus on quality-of-life support for robust formations, ensuring readiness through establishing ample infrastructure to conduct training for NATO and U.S. forces, secure lines of communication throughout the theater and build relations with international partners. Units have government purchase card holders, billing officials, field ordering officers and pay agents to enable deployed units to be self-reliant and provide increased purchasing power. This fulfills their purchasing needs quickly and maintains lower level approval authorities related to contracting, thus relieving dependency on contracting professionals. With few government purchase card holders and billing officials in theater, the lack of options left units seeking contracting support.

Immediately upon arrival, 923rd Contracting Battalion completed key leader engagements with combatant commanders,

highlighting a contracting command headquarters that is on location and available at all hours. The ability for commanders to talk directly to one another proved invaluable in addressing and solving issues that arose; from resourcing office space and equipment to multiple general officer engagements and briefs across theater—quickly solving quality-of-life issues for Soldiers on the ground.

This brings us to the third insight, building good working relationships with our sister contracting battalion, and the staff sections at 409th CSB continuously paid dividends during the deployment. Multiple times the contracting office would receive last-minute requirements, and a simple call for advice provided guidance and notification for incoming reviews. This helped streamline execution and an expedient procurement acquisition lead time. The contracting operations division at the brigade level went above and beyond to help educate and inform our relatively inexperienced contracting team and ensured mission completion while limiting risk. Their patience, expertise and guidance helped inform and direct the team so proper procedures were followed in the execution of the contracts, ensuring the customer received the contract in a timely manner to accomplish their mission.

Limited manning not only impacted contracting support, but also directly affected the supported divisions' ability to conduct operational contracting support. The biggest roadblock encountered, from a contracting perspective, was the lack of a dedicated operational contracting support integration cell (OCSIC) at the operational level. This cell, while on a theater and field Army's headquarters Modification Table of Organizational Equipment, is not specifically authorized at a division level. This led to multiple units across theater trying to implement and resource their own contracting solutions through the contracting office, each with their own level of experience and understanding of the U.S. Army Europe Requirements Validation System and the separate requirements package processes and associated timelines. Having an OCSIC, or at a minimum, a designated contract coordinator who gathers all subordinate requirements, checks for document accuracy and submits into paperless contract files would expedite the contract award timeline. It would also allow the supported unit to effectively track and manage all contracts period of performance and option timelines, while also providing a database to enable requirements transfer between rotational units.

CONCLUSION

To support additional division level units in theater, Army Technical Publication 4-71 aligns to a contracting battalion division headquarters to provide mission command over organic contracting detachments and to plan, execute and assess contracting support to theater opening, reception, staging onward movement and integration, and maneuver operations.

While much of contracting theoretically can be done via a reach-back solution, it is immediately apparent the impact quality relationships have on operational effectiveness. Having contracting elements geographically co-located with the supported unit allowed for continuous assessment of the operational environment and integration into supported units' planning cells to stay abreast of changes to operational requirements.

"The establishment of RCC-VS was a crucible, bringing multiple teams together to establish the groundwork for future success," said Lt. Col. Randy Garcia, commander of the 923rd Contracting Battalion and Regional Contracting Center Victory South. "Their actions exceeded mission requirements, increased morale and fostered an environment for superb training, relationship building and improved quality of life. I am beyond proud of the character, competence and commitment of my warfighters and their ability to execute to meet the needs of our mission partners."

For more information about Army contracting, go to ***https://www.army.mil/acc****.*

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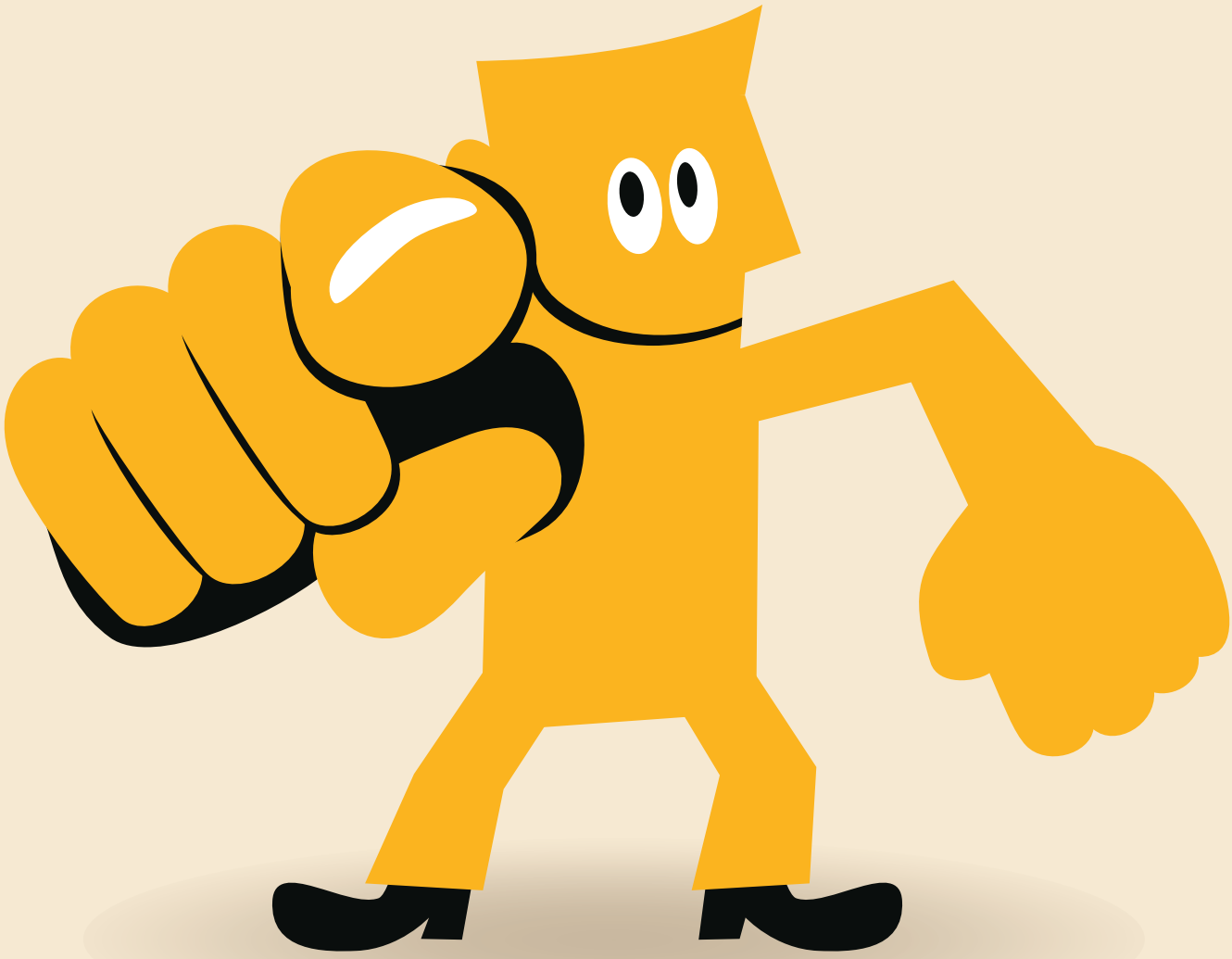

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SUSTAINMENT THROUGH INSPECTION

Two Soldiers inspect the wave guide and feedhorn assembly of a power amplifier in November 2022. In addition to maintaining systems, using COTS technologies will help the Army in the future. (Photos by Sean Kief, U.S. Army Communications-Electronics Command)

THE ENDURING NEED FOR C5ISR SUSTAINMENT

A robust and agile C5ISR supply chain serves as a necessary insurance policy for warfighters of today and tomorrow.

by Maj. Gen. Robert L. Edmonson II

As America's near-peer adversaries are advancing at lightning speeds, the Army is accelerating our competitive edge by exceeding their pace. This is particularly relevant in the field of command, control, communications, computers, cyber, intelligence, surveillance and reconnaissance (C5ISR), where rapid technological advancements are allowing us to remain at the forefront of modernization for the Army of today, 2030 and beyond. At the same time, the mission to sustain and maintain existing C5ISR systems, managed by the U.S. Army Materiel Command (AMC), is foundational to the Army's ongoing readiness.

To better support these efforts, over the last several years the Army has shifted focus toward a new, flexible model for C5ISR life cycle system support. This model, focused on continuous modernization, is designed to enable program executive offices (PEOs) to maintain aggressive fielding schedules for updated systems. Much of this continuous modernization is enabled by increasing the use of commercial off-the-shelf (COTS) technologies that allow rapid delivery of new capabilities to the field. This contrasts with traditional processes where programs of record are acquired and fielded by the PEO and then, after several years, transition to sustainment under AMC's C5ISR life cycle management organization, the U.S. Army Communications-Electronics Command.

This new system support model has many benefits. It ensures we continue to deliver the most modernized kit directly to our Soldiers. It also challenges us as an Army to keep moving forward by frequently improving and upgrading our C5ISR hardware and software and allows users to give constant feedback through an ongoing iterative cycle.

However, as discussions around the flexible model and COTS continue to gain traction, and new technology and equipment rapidly rolls out, there is an idea that the Army will turn away from its sustainment responsibilities and will simply throw away equipment when it breaks and replace with new without making any effort to repair it first. The

assumptions and dependencies that undergird this philosophy should be reviewed, if for no other reason than affordability. We must also consider our industry partners and the importance of providing them with predictability. Therefore the Army has a critical need for a stable supply chain from which to draw repair parts, that we can maintain only through robust maintenance and sustainment of our C5ISR inventory.

SUSTAINMENT IS THE KEY TO READINESS

Some of the United States' greatest victories can be attributed to supply chain issues that affected our enemies. Despite many significant advantages the British had over the North American colonies in 1775, one of its biggest failures was an inability to develop and protect an effective supply chain. Because of this, British troops found themselves unready due to a lack of proper supplies, much to the benefit of the future United States. During the Civil War, American troops weaponized the supply chain in the Siege of Vicksburg when the Union army cut off the Confederate army's access to supplies and communications outside the city while simultaneously pushing their way inside.

In recent history, we have seen many examples of nations negatively impacted by poor logistics planning resulting in the inability to resupply forces. Images of broken-down trucks and fuel-exhausted tanks featured in global news outlets served as a reminder to us all. These supply chain issues affected entire military portfolios—weapon systems, air defense, aircraft, ships—because of destruction, damage or seizure during conflict and the inability to repair or replace those systems.

As we see from these examples, it is crucial our Army maintains its robust sustainment capabilities and a responsive and agile supply chain. Resources are finite, and the Army is now competing for parts not only against our adversaries, but our allies and our industry partners as well. Even newly fielded equipment is having to compete for the same parts and resources used by militaries and industries across the globe. Accordingly, it is also essential to have working, sustained legacy equipment as a contingency for times when the supply chain for newer systems cannot keep pace. An environment where we are competing for both in-demand parts and technology is not one to invest in state-of-the-art C5ISR technology and then not sustain it.

PREVENTATIVE MAINTENANCE
A Soldier conducts preventative maintenance and services on his satellite transportable terminal prior to installation in November 2022. Maintaining C5ISR systems is crucial for force readiness.

PAVING THE WAY AHEAD

To ensure the future of C5ISR sustainment, we must continue to look long term, past the Army of 2030 and toward the Army of 2040. We need to embrace public-private partnerships (government agency and private-sector collaborations) while leveraging Tobyhanna Army Depot, the Army's organic C5ISR sustainment facility in northeast Pennsylvania. For enduring programs, this could mean obtaining technical data packages, intellectual property and government purpose rights, potentially held in escrow accounts to ensure we have access to the data necessary to make spare parts at Tobyhanna. It is also pertinent we continue to keep our organic industrial base (government-owned equipment and ammunition facilities) warm, knowing DOD has the capability to sustain systems in case of industry partner failures, shuttered production lines or the need to surge production to support large-scale combat operations.

On the flip side, keeping the commercial industrial base warm is also essential. There is value in using COTS technologies; as modernization continues to move at lightning speeds, COTS technologies help us keep pace. However, using these technologies should not mean adapting to a throwaway mentality. Moving away from traditional sustainment could mean a lowered demand signal to maintain systems. If the Army stops repairing systems, certain parts may not be available, causing vital C5ISR systems to become obsolete before their time. Furthermore, when the industrial base must surge to meet the demands of large-scale combat operations, obsolescence and a cool industrial base can create enormous challenges. Accordingly, we are focused on using deliberate pricing strategies and longer-term contracts to maintain that critical demand signal. This helps ensure we maintain an active supply chain.

While maintaining the organic and commercial industrial bases allows us to obtain parts for hardware, we must also consider software. The Army is currently moving toward a continuous integration/continuous delivery, or CI/CD, model. Under this model, PEOs will maintain the responsibility to sustain software, such as fixing problems and patching cyber vulnerabilities, while simultaneously adding new capabilities via frequent releases. While this will be a major transition for the PEO community, AMC fortunately maintains a wealth of software expertise to provide tactical units with depot-level software repair. By using these existing capabilities in support of CI/CD, including critical skill sets in development, security and operations (DevSecOps) and agile development, the Army will be well positioned to maintain software readiness and deliver new capabilities to Soldiers faster than ever before.

THE NECESSITY FOR PRODUCT USABILITY

We must also think of today's Soldiers using the equipment in the field. Specifically, our industry partners must keep system complexity in mind when creating new C5ISR equipment and technology. The Army has shifted a great deal of resources to modernizing and building its combat forces over the last several years. That said, the rebalance has led to fewer C5ISR maintainers available than in the past. We know that on the battlefield, our ability to send out field support representatives to assist with technical issues at the tactical edge is very limited, as it could jeopardize critical operations. It is therefore crucial that our Soldiers learn to operate and fix the majority of their C5ISR equipment at the field level.

Simultaneously, within the Army, we must practice discipline in our doctrine, organization, training, materiel, leadership, education, personnel, facilities and policy. Before C5ISR systems are fielded, we need to perform our due diligence in each of these areas, as a failure to do so can create gaps in sustainment. A key part of that is putting the right Soldiers with the right rank and grade, who have the right skill sets in the right places. Before we field modernized equipment to a unit, we must make sure the right military occupational specialties are on the modified table of organization and equipment. These are complex challenges that we are working to address in order to maintain the pace of modernization with our Soldiers.

CONCLUSION

During her remarks to the McAleese Annual Defense Programs Conference held in Washington in March, Secretary of the Army Christine Wormuth outlined her six operational initiatives for the Army of 2030. The final initiative she stated was that "the Army of 2030 has got to be able to sustain the fight across long distances where the enemy is challenging our ability to move from fort to port to foxhole. In this kind of contested terrain, the force that wins will be the one who focuses on logistics, logistics, logistics."

Ultimately, our fight-and-win doctrine will only be possible with logistics and sustainment to ensure unit readiness. The work must be done at both ends, from industry and from the Army, to secure the highest levels of sustainability. In practice, the Army does not "throw away" equipment when it malfunctions. There is a responsibility at the Army level to deliver wraparound support providing higher expertise and parts, so Soldiers and units are not solely dependent on themselves. Sustainment is the insurance policy for Soldiers of both today and tomorrow. While moving to a flexible model and integrating COTS equipment has many potential benefits for our Soldiers, it is imperative that the Army continues to embrace sustainment. We owe our sons and daughters in harm's way nothing less.

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

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THE ARMY ACQUISITION TEAM

Partnerships to understand industry.

During a recent Army Aviation Hot Topic event host by the Association of the U.S. Army, the Honorable Douglas R. Bush, assistant secretary of the Army for acquisition, logistics and technology said: "The Army's a team sport, a team effort. Acquisition is a supporting function. What really matters is having units of Soldiers equipped with equipment they can go to combat with and win."

And he's spot on, especially regarding the Army being a team effort. And that team includes our industry partners.

CHANGING ROLES

The role of acquisition in the Army has evolved over time. Since the establishment of the Army Acquisition Corps in 1989, the Army has shifted and improved the way it contracts and procures defense acquisition programs. We streamlined our workforce and the intent of Army acquisition further in 2022 with Back-to-Basics and really defined acquisition's role as developing, acquiring and sustaining operational capability. Today, our Army acquisition professionals are integrators, responsible for managing and building requirements, providing Soldier touch points, basically making sure everything is moving forward.

Our relationship with industry has evolved, too. Today, our success depends on industry's capability to deliver.

Pick any one of the Army's priority programs and it's largely dependent on industry. Our Army acquisition professionals are in the driver's seat, but we rely on the expertise found in industry, along with their business practices and agility. These relationships give us more trade space, ability to innovate and an architecture that we can more easily plug in to when we have enhancements. Through these partnerships and the enhanced tools Congress has authorized, such as other-transaction authority and rapid prototyping, we're able to get the best capability that we can as rapidly as we can.

But we can't fully leverage these partnerships if our Army acquisition professionals and leaders don't have a deeper understanding of how industry functions. Therefore, it's critical that we deliberately develop and execute opportunities for our acquisition professionals to embed with industry to gain that deeper understanding.

TRAINING ON LOCATION
The Training With Industry program allows acquisition officers to complete a one-year work assignment embedded with an industry partner at locations around the country. (Graphic by U.S. Army Acquisition Support Center)

TRAINING FOR THE FUTURE

At the Director of Acquisition Career Management (DACM) Office, we manage a Training With Industry (TWI) program for our military officers in grades O3 through O5. This one-year work experience program embeds the military officer with the industry partner and provides extensive exposure to managerial techniques and industrial procedures within corporate America. Following the participants' tenure at the industry partner's work site, they are placed in a validated utilization assignment.

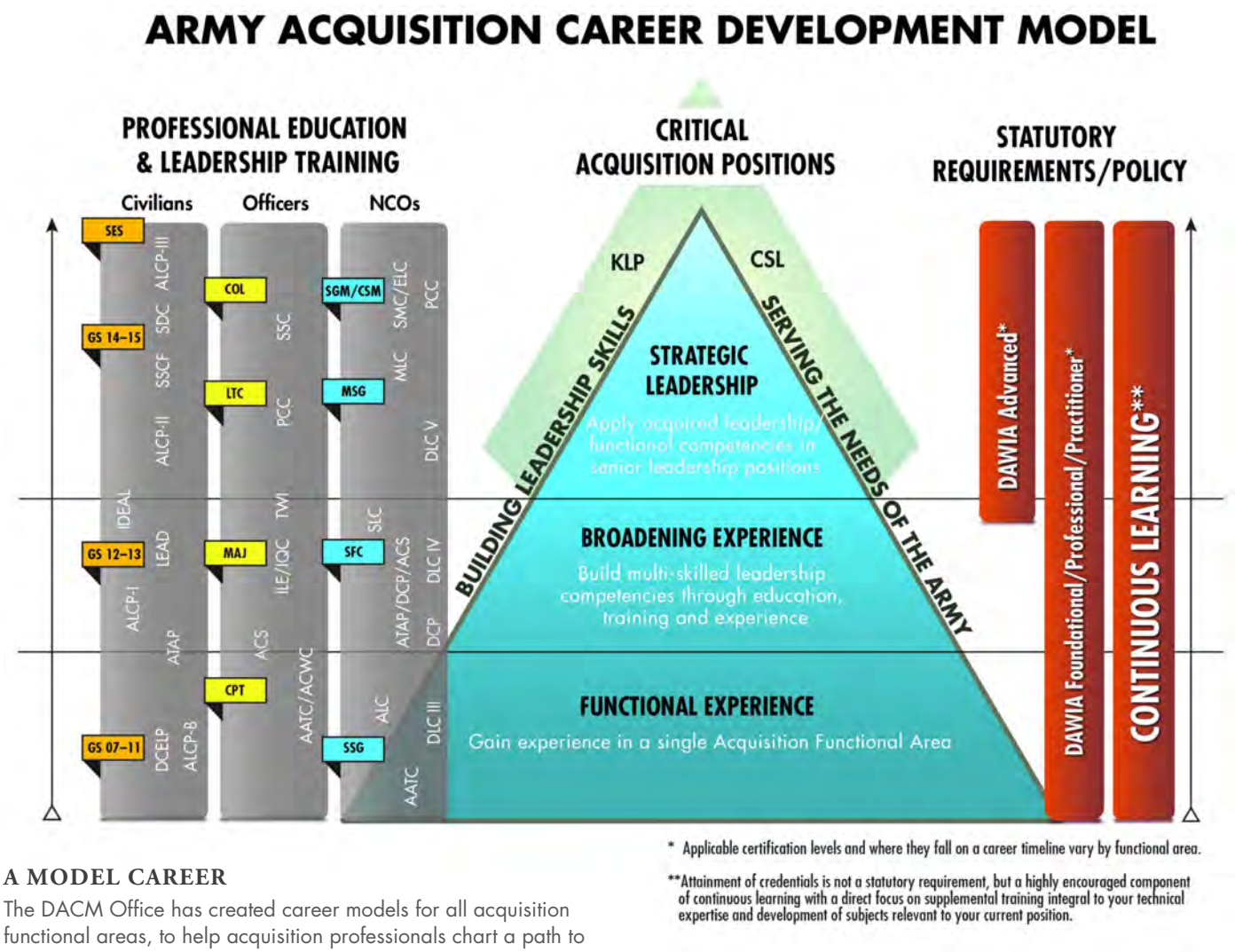
TWI includes industry partners across the country. During their tenure, participants will be exposed to the latest commercial business practices, organizational structures and cultures.

For our civilian workforce, the DACM Office partners with the Office of Human Capital Initiatives in the Office of the Under Secretary of Defense for Acquisition and Sustainment to leverage their Public-Private Talent Exchange (PPTE) program. PPTE is a six-month program that promotes increased communication between government and industry, enables participants to gain a better understanding of industry's business operations and challenges, and facilitates the sharing of innovative best practices. Applications for PPTE open in the fall.

For our more senior acquisition leaders, it's even more imperative that they enter positions of authority already equipped with the knowledge and experience necessary to assume a project management position. Two years ago, we implemented the Enhanced Command Preparation (ECP) program. Those leaders who are selected to lead project offices within a program executive office now go through the ECP program prior to assuming those duties.

We also support the Army Senior Fellowship, which is part of the Senior Enterprise Talent Management program. This program is for those who have graduated from senior service college and who are looking to strengthen their enterprise-wide perspective. Through this program, fellows engage in a 12-month training program designed to build on executive core qualifications, preparing the participant for senior executive positions.

In addition to sending our civilian and military workforce professionals out to industry, we are proactively looking to recruit those



A MODEL CAREER
The DACM Office has created career models for all acquisition functional areas, to help acquisition professionals chart a path to success. (Graphic by U.S. Army Acquisition Support Center)

with extensive industry experience. After a few years of research and feasibility studies, I'm excited to share that we have successfully implemented an acquisition direct commissioning program.

Implemented by the Army Talent Management Task Force, the new acquisition Direct Commissioning Program enables us to directly commission outstanding acquisition talent into the Army Acquisition Workforce. The intent is to not only bring in individuals with advanced technical degrees, but also those with a wealth of industry experience. Our first acquisition direct commission is scheduled to come on board next year in the rank of major.

While all of these programs are available to our workforce, their impacts on our success depend on proper planning and employee and supervisor engagement.

Back-to-Basics empowered our workforce professionals to take charge of managing their individual careers. Supervisors play a key role in building out a meaningful employee individual development plan through Army Career Tracker and encouraging a culture of lifelong learning. My office has developed career models for each acquisition functional area to assist in this effort.

CONCLUSION

To those Army Acquisition Workforce professionals who have attended any of these programs, I encourage you to pay it forward and be advocates. Share your story and help identify others to attend in the future. Encourage your people to leave the organization to gain new experiences and skills.

Like Mr. Bush said, "The Army's a team sport, a team effort."

THE JOURNEY
Like any well-planned journey, digital transformation requires a clear road map and guidance. (Image by Ryan McGuire, Pixabay)

A DIGITAL JOURNEY TO TRANSFORM THE WORKFORCE

The Army promotes a culture of learning by providing training to upskill the acquisition workforce on new digital technologies.

by LeAndrea White

With the ever-evolving landscape of technology, digital transformation has become a critical necessity for organizations across the public and private sectors. The Army and its acquisition workforce are no exception. Embracing digital transformation is crucial to maintain a competitive edge and ensure the Army's readiness for future challenges. Digital transformation is not just about technology, but also about our people. The Army's digital transformation is a necessary journey everyone must take to keep our Army modern and effective.

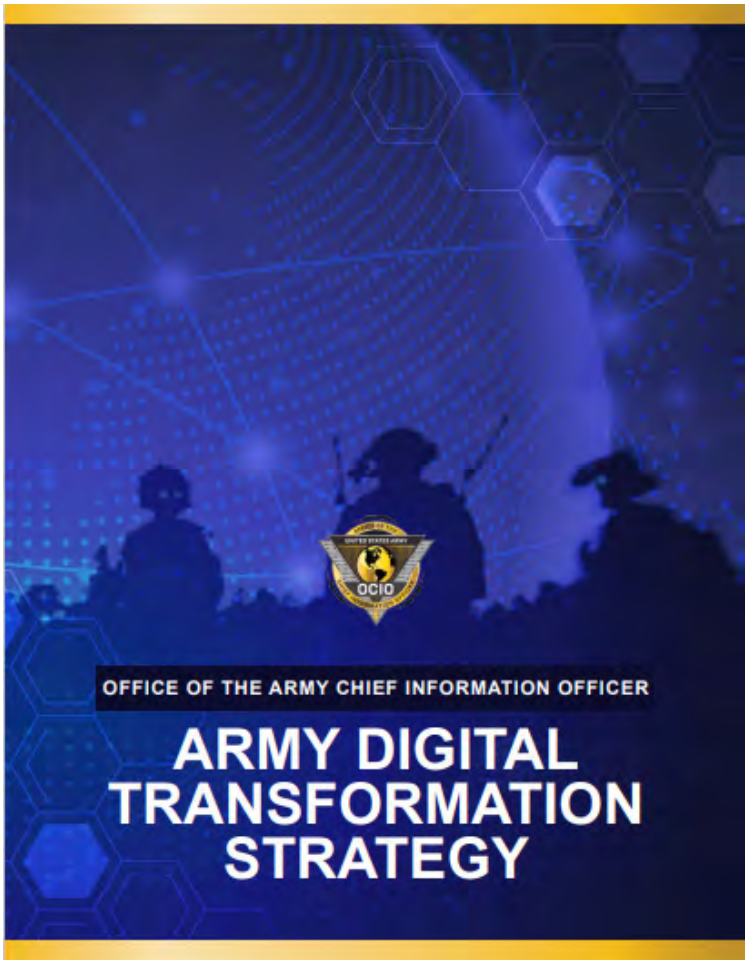
POINT OF ORIGIN – THE NEED FOR CHANGE

Every journey has a starting point, and for the Army, it was the recognition that traditional approaches were no longer sufficient to meet the demands of modern warfare. This point of origin is characterized by rigid procedures within the acquisition process that make developing and fielding technology and software cumbersome and slow; outdated policies based on isolated systems, and a workforce that isn't always empowered to innovate on a large scale. These difficulties are made even more complicated by the fast pace of technological changes.

To navigate, the Army is embarking on a transformational journey that supports Army modernization of a more lethal, ready and digital Army of 2030 that can dominate in technological environments. There are efforts underway to modernize and drive toward open systems for interoperability and flexibility across operational and technical architectures; simplifying data collection and organizing complex data into a more straightforward format that allows effective and efficient data-driven decisions; and reforming the software development process to enable smaller, faster, incremental delivery of capabilities. This includes the recent development of the new Unified Data Reference Architecture plan, a standardized

framework to help govern the acquisition of data-centered capabilities, that will lead to reduction of complexity and enable data products to easily share data.

However, central to the success of these modernization efforts is a workforce that understands technology and can continually adapt and adopt new advanced technologies. Army leaders like Young Bang, principal deputy to the assistant secretary of the Army for acquisition, logistics and technology (ASA(ALT)), have long recognized and reiterated that the digital transformation journey for the Army Acquisition Workforce begins with acknowledging the evolving landscape,



ARMY STRATEGY
The Army Digital Transformation Strategy, established by the Office of the Chief Information Officer, is the framework that sets the vision and implementation guidelines of digital transformation initiatives to be prioritized and resourced to achieve success for the future. (Image courtesy of the Office of the Chief Information Officer)

> "The Army Acquisition Workforce aren't passive travelers, but rather a driving force that helps propel the Army forward."

embracing new technology and upskilling our workforce is not just a necessity, but a strategic imperative.

"Training and continuous learning, or what you may sometimes hear referred to as 'upskilling,' is necessary to ensure success in our Digital Transformation Strategy, an odyssey we've embarked upon to empower us with the knowledge needed to use new technologies effectively as we work to achieve our mission every day," Bang said. "Digital transformation has become a vital strategic initiative across ASA(ALT), as technology continues to reshape the way we operate to support our warfighters, stay ahead of our adversaries, and maintain our nation's security. It involves the integration of digital technologies into all aspects of the Army, fundamentally changing processes, systems and even the overall culture of the organization."

THE PLANNED ROUTE

Like any well-planned journey, this digital transformation requires a clear road map and guidance. It involves the workforce embracing emerging technologies such as artificial intelligence (AI), machine learning, robotics and big data analytics. These technologies provide the foundation for transforming the acquisition process, streamlining operations and enhancing decision-making capabilities. The journey involves promoting a culture of

FUTURE VISION

Maj. Robert Lee, assistant product manager for Product Manager Soldier Maneuver Sensors at PEO Soldier, helps a member from the Office of the Assistant Secretary of the Army for Financial Management and Comptroller don the Enhanced Night Vision Goggle – Binocular on Feb. 23, 2023. The visit helped the team learn more about products within the PEO Soldier portfolio. (Photo by Jason Amadi, PEO Soldier Public Affairs)

learning and innovation, through collaborative partnerships with academia and industry, with training to educate the workforce on digital literacy and leveraging emerging technologies. But also acquisition leaders encouraging the workforce and impressing the importance of digital transformation.

Part of a successful digital transformation is ensuring that we upskill our workforce with the skills and knowledge necessary to use these new technologies effectively and are familiar with certain technological concepts. Upskilling is acquiring new knowledge, skills or expertise to remain competitive. For acquisition professionals, that means learning about new technologies, software and systems that will help them make better, faster and more informed decisions. The Army Director of Acquisition Career Management (DACM) Office, with the support and collaboration of the deputy assistant secretary of the Army for data, engineering and software (DASA(DES)) and the Army Civilian Career Management Activity, is helping to accelerate digital transformation by delivering digital training and upskilling through the online platform Udemy Business.

Through Udemy, the DACM Office curated a digital foundations pathway of three prioritized courses for all acquisition professionals. The Digital Transformation 2023 – Masterclass

covers the basics of digital transformation, including defining digital transformation, exploring the digital transformation framework, and topics centering around various digital technologies and design thinking. The latest feedback from a recent end of course survey indicates that nearly 90 percent of the Army Acquisition Workforce that completed the masterclass course did not experience any dissatisfaction related to the value of the training and the quality of the content provided. The Product Management for AI & Data Science Course provides key technological concepts and AI, expands on the growing importance of AI and data in product management, and a complete overview for a product manager in the field of data science. The Agile Samurai Bootcamp is the third course in this foundational pathway that reviews how to set up, execute and successfully deliver agile projects, including in-depth discussion on agile teams, communication plans and the mechanics behind agile iteration.

"We are changing the way we operate," Bang said in a recent message to the workforce that emphasized the importance of completing the three digital foundations pathway courses in Udemy, "whether it is adopting modern software practices, transitioning to data-driven decision-making or digitizing our engineering processes though digital engineering, the workforce must be equipped with the knowledge, skills and tools necessary to navigate and contribute to successful digital transformations within ASA(ALT). Whether you hold a technical or nontechnical role, this training will provide valuable insights and empower you to adapt to the rapidly evolving digital landscape. We must collectively understand the concepts and lexicon associated with this transformation across all disciplines to ensure we are all on the same page and execute our mission."

These three courses are now a part of the Contribution-Based Compensation and Appraisal System as a new mandatory objective for digital literacy. Although this is only applicable to acquisition-coded civilian and military members in ASA(ALT), the U.S. Army Acquisition Support Center and program executive offices are encouraged to complete the courses to support the Army's overall digital transformation priority.

Increased collaborations and partnerships with industry and academia have become more important, as these are innovation sectors that have technology at the forefront and can assist with access to learning tools to upskill the workforce—minimizing gaps and expanding abilities to help grow the Army Acquisition Workforce now and into the future. The DACM Office has also launched a new digital transformation training course, Digital Data Leaders, through partnership with Carnegie Mellon University to provide key leadership with a working knowledge of state-of-the-art data concepts and best practice examples. The course assists Army leadership in the development of a robust

GOING DIGITAL

Embracing digital transformation is crucial to maintain a competitive edge and ensure the Army's readiness for future challenges. (Image by Gerd Altmann, Pixabay)

The Army is embarking on a transformational journey that supports Army modernization of a more lethal, ready and digital Army of 2030.

enterprise data management capability to improve decision-making to better support the mission of the Army. Course topics include data management, data science, decision-making, emerging technology, change management, data privacy and security. In partnership with Coursera, Defense Acquisition University is building out knowledge areas and credentials in software development, DevSecOps, artificial intelligence and cybersecurity that will be available at the foundational level. These learning resources will build in-demand skills taught by top instructors from leading universities and companies like Yale and Google.

NOT JUST A DESTINATION

No journey is without its challenges, and the Army's acquisition digital transformation journey will likely encounter a few obstacles. Resistance to change and skill gaps can be counted among the hurdles to overcome. This journey has already yielded encouraging outcomes, particularly at the Program Executive Office for Enterprise Information Systems (PEO EIS).

"Digital transformation is hard. It pushes individuals to think beyond 'what is' and focuses on 'how awesome can it be?' " said William Hepworth, deputy program executive officer and acquisition career management advocate (ACMA) for PEO EIS. "Since the beginning of our partnership with DASA(DES), we have seen tangible results in terms of applying industry best practices to replace legacy military processes, better employment of modern technology for better products, and far greater focus on Soldier-centric design. I can say with certainty that the PEO, writ large, is starting to show the results of our upskilling with respect to digital transformation."

"The PEO EIS mission to accelerate and maintain our digital and agile transformation depends on our ability to upskill our workforce to thrive in a more dynamic culture that embraces change and uncertainty, to deliver better products and service for our Soldiers. We are heavily invested in this initiative and find that our staff is energized around upskilling and putting their knowledge to use daily with tangible results. As the ACMA for PEO EIS, I am thrilled to witness this significant and positive change throughout the PEO."

The Army's digital transformation journey is not merely a destination but an ongoing collective endeavor, requiring the commitment and dedication of every individual. Together, we embark on this journey, knowing that the path ahead may be challenging, but the rewards are immeasurable.

"The Army Acquisition Workforce aren't passive travelers, but rather a driving force that helps propel the Army forward," said Ronald Richardson, the DACM. "We are the ones who bring new technology and ideas ensuring the Army stays ahead and ready. So, it is imperative we are up to date on new technology, gain improved understanding of the many ways it can impact every aspect of the work we do. There is great value in these partnerships and courses that are aimed at upskilling, and sometimes even reskilling, to expand individual abilities and close skill gaps to master evolving requirements. We've got to be able to grow the workforce in this way and use this as an opportunity to meet future challenges, because a digitally transformed Army cannot happen without a digital transformed Army Acquisition Workforce."

For more information on digital transformation for the acquisition workforce, go to ***https://asc.army.mil/web/digital-transformation****.*

LEANDREA WHITE supports the DACM Office as a communications analyst and the Acquisition Career Management Advocate program manager at Fort Belvoir, Virginia. She holds a B.S. in public relations and marketing from the University of Central Missouri. She earned a certificate in change management and has served as a logistics journeyman in the United States Air National Guard.

SOUP'S ON

Technical terminology can sometimes feel like a digital alphabet soup, but the Army now offers tools to help its civilian workforce members increase their understanding of the latest tech. (Photo by Dimitris K., Shutterstock)

CAREER NAVIGATOR

SERVING THE DIGITAL SOUP

Udemy training provides a digital transformation solution for the acquisition workforce.

by Brianna Clay

What does the future acquisition workforce look like?

Tech-savvy, agile and digital.

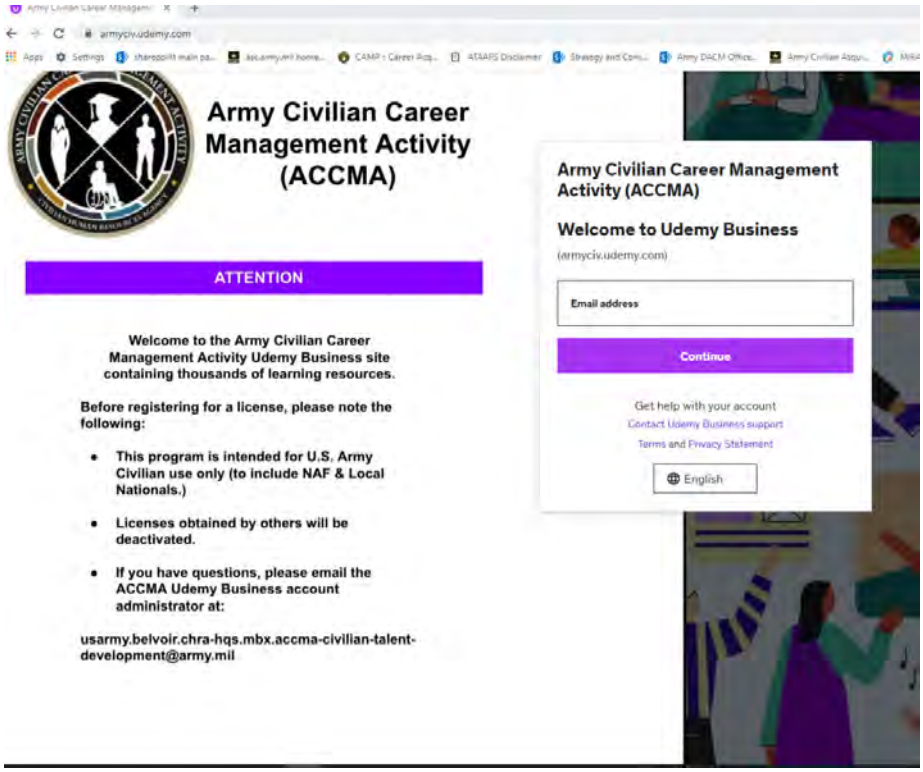
A digital transformation of the acquisition workforce is necessary for the future, but this change can be difficult when the library of digital buzzwords grows more confusing every day, from "AI" and "machine learning" to "agile contracting" and "DevOps." To many, these terms are just another ingredient in the digital alphabet soup, yet this soup will sustain the future of our workforce.

With a plethora of information being thrown at them, how do acquisition professionals begin to make sense of this digital soup? Just look toward Udemy and the new digital foundations pathway training designed to digitally upskill the acquisition workforce. The training includes three prioritized courses required for all acquisition-coded employees under the assistant secretary of the Army for acquisition, logistics and technology (ASA(ALT)), including the U.S. Army Acquisition Support Center (USAASC) and all program executive offices. The three courses are Digital Transformation 2023 – Masterclass, The Agile Samurai Bootcamp and The Product Management for AI & Data Science Course. The training will require approximately 14 hours to complete. Three additional subjects are also recommended—take beginner or foundation courses in agile, DevOps and cloud foundations; data foundations and human-centered design foundations. Together, these courses are designed to help digitally transform the acquisition workforce.

FINDING THE RIGHT RECIPE

Digital transformation first came to the fore of acquisition in 2019 when the Army began a major push to modernize the Army of 2035. "As an Army, we are going to go through this cultural shift," said Maj. Megan M. Pekol-Evans, functional area 51 proponency officer at the Army Director of Acquisition Career Management (DACM) Office. This shift involves not only employing artificial intelligence, or AI, and machine learning into the development of weapons but also figuring out a way for people to apply that in their daily lives to make work easier and more efficient. To do this, people need these new tools, but "you can't use these new tools if you don't understand them," said Pekol-Evans. "That's what digital transformation, especially at the human capital level, is trying to get at. You have to understand these concepts to apply them."

The Army needed a training solution to prepare the acquisition workforce for this shift, and Young Bang, the principal deputy to the ASA(ALT), led the search for a solution. Bang



LEARNING TIME

To access the Udemy courses, first go to armyciv.udemy.com and enter your army.mil email address. Complete the email verification, fill out the required registration information and then you're ready to start learning. (Image by USAASC)

tasked the deputy assistant secretary of the Army for data, engineering and software (DASA(DES)) and the DACM Office with ensuring the acquisition workforce remains digitally relevant, with the DACM Office taking responsibility for upskilling workers. Working together, the team was able to identify the skills most important for digital transformation and the suitability of the Udemy Business platform.

"One of the reasons we decided to partner with Udemy is that we can use it for what we want, digital pathways, but it also now opens up a wealth of information and opportunity for anybody trying to use it," said Scott Greene, chief of the Strategy and Communication Division at the DACM Office. Udemy is an education technology company that the Army has partnered with to provide an online platform for learning and business training. The platform offers a broad library of technical and nontechnical video courses.

When searching for a digital training solution, the DACM Office discovered that around 200,000 Udemy licenses were being underutilized by the Army Civilian Career Management Activity (ACCMA). With the green light from ACCMA, the DACM Office could populate all acquisition workforce members, both civilian and military, into these open slots. DASA(DES) and the DACM Office then identified what types of competencies were important for the acquisition workforce in the digital space. Using these criteria, the team curated relevant digital content on the platform, identifying prioritized and recommended courses for training. This design of Udemy's platform allows all acquisition employees on the list to access curated content through the training pathway already connected to their accounts.

Once this pathway was established in Udemy, the team pitched it to the digital transformation executive board that Bang leads. The pitch was a success, and the new Udemy digital foundations pathway training was launched on March 9.

LEARNING THE DIGITAL INGREDIENTS

Although the training is currently only required for workforce members under the ASA(ALT) umbrella, it is highly encouraged for all acquisition professionals. The Digital Transformation 2023 – Masterclass course would be especially helpful for those working in the acquisition sphere, according to Pekol-Evans. Because the courses help simplify and explain terms that are frequently used in more technical fields, workforce members gain an awareness of the current digital technology landscape.

"Technology is evolving so quickly, and the acquisition processes aren't quick," said Greene. "We're ensuring that the workforce, at all levels and all functional areas, is aware of the latest and greatest technologies that are out there and how to infuse them into what each and every one of us does—making us more agile and better capable of getting the warfighter what they need."

Each of the three prioritized courses is designed to give the learner a baseline for digital transformation concepts. The courses focus on understanding product management and how these new digital concepts and processes bring value

DIGITAL TRANSFORMATION

The Army's ambitious goals for the future require a digital transformation across the service. To make this possible, civilians will take training focused on agile software development, DevSecOps, cloud foundations, data science, machine learning, human-centered design, artificial intelligence and cybersecurity. (Photo by Pixabay, Pexels)

to the customer. The Udemy platform uses a customer-centric, business-focused model, but in the acquisition workforce, the customer is the warfighter. "Many of us in the world of acquisition are not engineers," said Pekol-Evans, "but this enables you to go toe-to-toe at some level with vendors and warfighters."

These courses also count for continuous learning points (CLPs), helping workforce members fulfill the 40 CLPs they are required to complete every year and the 80 CLPs every two years. "Fourteen out of 80 is palatable, and it meets the course objectives of what we came up with, that every workforce member should need, with regard to digital literacy," Greene said. With the addition of three other optional training topics, there are more than 30 total hours of training and CLPs.

In addition to the Udemy courses, there are several digital literacy courses curated by the Defense Acquisition University, and the DACM Office has partnered with Carnegie Mellon University to offer courses to higher-level officers and senior executives. While employees taking those courses may not be required to take the Udemy training, both are recommended.

CONCLUSION

Because this is new, the team is including end-of-course surveys in each learning path to ensure that Udemy is the right solution.

"We're trying to get this right," emphasized Pekol-Evans. "This isn't something where we just click the easy button [Udemy] and then leave it. We want to make sure we're doing right by the workforce in digital literacy."

Feedback ensures that this pathway to digital transformation succeeds. A successful transformation means a successful acquisition workforce, ensuring that the Army of 2035 is the lethal and agile force it needs to be.

To register or learn more about training through Udemy, go to ***https://armyciv.udemy.com/organization/home****. For more information on DACM Office civilian programs or acquisition career development opportunities, go to* ***https://asc.army.mil/web/career-development/civilian****.*

BRIANNA CLAY is an Army Public Affairs Fellow and public affairs specialist at the U.S. Army Acquisition Support Center. She holds an M.S. in international affairs from the Georgia Institute of Technology and a B.A. in international affairs from the University of North Georgia.

EMMA WILSON

COMMAND/ORGANIZATION: Joint Program Executive Office for Chemical, Biological, Radiological and Nuclear Defense

TITLE: Assistant joint program executive officer for logistics

YEARS OF SERVICE IN WORKFORCE: 18

YEARS OF MILITARY SERVICE: 21

DAWIA CERTIFICATIONS: Advanced in program management and in life cycle logistics

EDUCATION: M.S. in national resource strategy, Industrial College of the Armed Forces National Defense University; Master of Public Administration, University of Oklahoma; B.A. in history, Eastern Washington University; Executive certificate in management and leadership, MIT Sloan School of Administration; Senior Executive Fellows, Harvard University John F. Kennedy School of Government

AWARDS: Meritorious Civilian Service Award; Armed Forces Civilian Service Medal; Commander's Award for Civilian Service; Legion of Merit; six Meritorious Service Medals; three Army Commendation Medals; two Army Achievement Medals

LET IT GROW

"Work requires an occasional mess, a vision for how it could be and a plan," said Emma Wilson, assistant joint program executive officer for logistics at the Joint Program Executive Office for Chemical, Biological, Radiological and Nuclear Defense (JPEO-CBRND). Wilson oversees and manages the JPEO-CBRND headquarters logistics staff's support to the joint project offices and the joint program executive officer, and she tends to her work with the same enthusiasm as she has for her garden. "I am happiest when I am elbow deep in dirt or when pruning back plants trying to make order out of nature," she said.

Wilson also oversees the JPEO's audit readiness, supporting joint project managers and joint project leads' internal control administrators and audit points of contact, and is their acquisition career management advocate (ACMA). As the ACMA she supports the Army Director of Acquisition Career Management Office and joint program executive office leadership as a resource for the workforce and to ensure dissemination of important information. "This was critical during the transition to [Back-to-Basics]. It was the command's intent the workforce understands what was happening and be prepared," Wilson said.

As a 21-year Army veteran and career Army civilian, her greatest satisfaction in being a part of the Army Acquisition Workforce is knowing that her efforts are supporting the warfighter.

"My last assignment in the military was at the Pentagon, where I was assigned to [the Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology], working in integrated logistics support. That was my first experience in acquisition," Wilson said. "My career up to that point had been mainly tactical communications. When I retired from the military and was hired as an Army civilian, I was able to join the Army Acquisition Corps and became certified for life cycle logistics."

Wilson retired as a lieutenant colonel, 25A signal officer. Her first civilian position was the executive officer for the deputy assistant secretary of the Army for integrated logistics support in ASA(ALT).

"In my 13 years at the JPEO, I have served in 10 positions, which has given me a unique breadth of experience in nearly all aspects of the work this organization does on behalf of the warfighter," she said. "That experience is proving quite useful in my current role, as logistics in the CBRND world is a complex and fascinating field. Our PEOs need to ensure the equipment we field can be supported by all of the services and the special operations forces." The best example, Wilson said, is their work to create a process that meets all of the service's integrated logistics assessment requirements. "The complexity at my level is understanding the service's policy and disseminating it, ensuring the tools are available to the product support managers," she said.

Wilson acknowledges that getting to this point in her career is not without guidance from civilian mentorship and furthering her education. Her decision to apply for Senior Service College was one of the most important points of her career, as it required her to leave her current position following completion of the training. "As a result of this I ended up at the JPEO after I completed Industrial College of the Armed Forces [now known as the Eisenhower School for National Security and Resource Strategy]," Wilson said. "I think I spent too long at the headquarters level [both ASA(ALT) and the JPEO] before moving to a project office. I wish I had moved to a product or project office earlier than I did, because it became a gap in my training and development." She attended the Massachusetts Institute of Technology Sloan School of Administration and received an executive certificate in management and leadership in 2012 to address the gap she faced in technology management.

The last career development program she participated in was a detail at the Department of Health and Human Services in 2020 supporting Operation Warp Speed project and product managers. "It not only allowed me to use my acquisition skills on a project I felt was important but gave me a better understanding of medical programs and the development challenges of medical countermeasures," said Wilson.

Wilson gives these three pieces of advice to junior acquisition personnel:

- Stay open to opportunities and do not become too focused or narrow in your options until you have tried out a few positions.
- You are your best advocate and career manager. "I advise them not to count on good luck but to prepare themselves for future opportunities," Wilson said.
- Do not solely focus on acquisition training. Take the Civilian Education System training as well to have a well-rounded training base to build on.

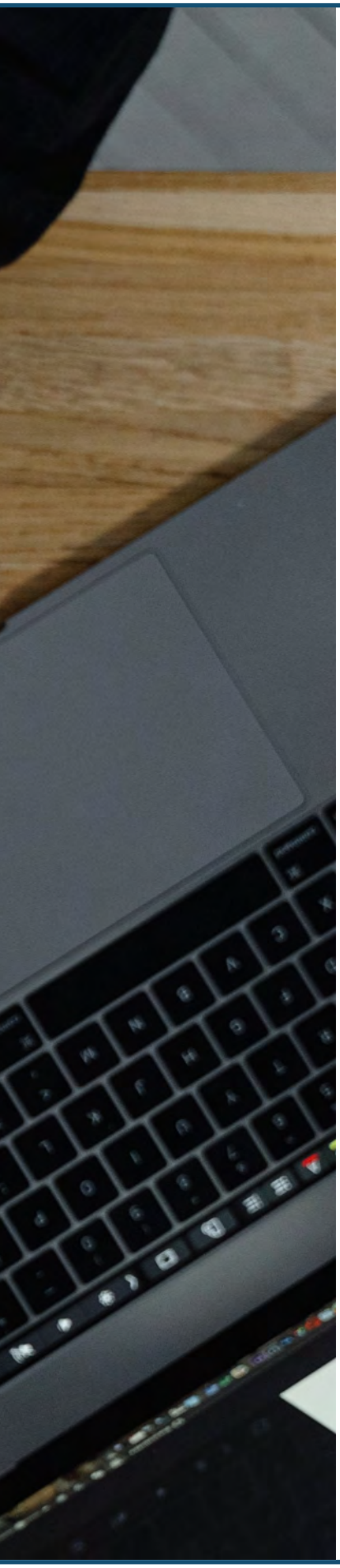
The most important lesson she has learned over the course of her career? "Our accomplishments and successes are not ours alone," she said. "They are built on the people that came ahead of us and the support and work of those we live and work with now."

—HOLLY DECARLO-WHITE

IN THE DIRT

Wilson is happiest in her garden at home and tends to her work with the same care and enthusiasm. (Photo courtesy of Emma Wilson)

WORK HARD FOR THE MONEY
Under the GS pay system, salary increases are dictated by time in grade—but with AcqDemo, employees are paid based on their contributions to the organization's mission. (Photo by Tima Miroshnichenko, Pexels)



A BATTLE OF PAY SYSTEMS: *GS VS. ACQDEMO*

Various government agencies are shifting away from the traditional GS pay system to contribution-based pay.

by Rebecca Wright

Any employee working for the federal government is likely familiar with the General Schedule (GS) classification and pay system. The original GS system was created by the Classification Act of 1923, then later refined and enacted into law by the Classification Act of 1949. Although almost 75 years old in its current form, the GS system is still the most widely used pay scale within the federal government, covering more than 1.5 million employees. But how many federal employees are familiar with other pay structures outside of the GS system?

In 1999, the Department of Defense began implementing the DOD Civilian Acquisition Workforce Personnel Demonstration Project, or AcqDemo for short. The Army defines the AcqDemo project as "a Congressionally mandated project designed to show that the DOD acquisition, technology and logistics workforce can be improved by providing employees with a flexible, responsive personnel system that rewards employee contribution and provides line managers with greater authority over personnel actions."

So, how does it work? And what does it mean for the employees of the acquisition workforce that are covered by the AcqDemo project? Employees of the acquisition workforce currently covered by the AcqDemo project might be surprised to learn about the more flexible career growth opportunities and the possibility to advance in pay at a much quicker pace.

THE INS AND OUTS

The AcqDemo project's key differences from the GS system include streamlining job series classifications with the implementation of broadbanding, a job performance rating system and a simplified and accelerated hiring process.

The current GS system consists of 15 grades (GS-1 through GS-15), and within each grade are ten steps. To receive step increases (commonly referred to as within-grade increases or WGIs),

the waiting period is one year per step to move through steps one through three; two years per step to move through steps four through six; and three years per step to move from step seven through step ten. In most instances, a new federal employee hired into the GS system will begin at step one of the applicable GS grade. Therefore, it typically takes an employee in the GS system 18 years to progress from step one to step ten within the same grade. In addition to grades and steps, job positions in the GS system are classified into 22 occupational families that include more than 400 occupational series.

While still retaining occupational series and job titles, AcqDemo's streamlined manner of broadbanding replaces the occupational families by dividing the acquisition workforce into three career paths; each career path consisting of three or four broadband levels. The broadband levels also combine several GS grades into one, eliminating the use of steps.

The career paths and broadband levels include Business Management and Technical Management Professional (NH), Technical Management Support (NJ) and Administrative Support (NK). The Business Management and Technical Management Professional path and the Technical Management path each contain four levels (level I through level IV) while the Administrative Support path contains three levels (level I through level III). By restructuring the GS grades and occupational families into career paths, this allows for a more competitive recruitment of qualified candidates. It also allows the use of broader pay ranges to set pay. With this capability, agencies can attract and retain talented employees. In conjunction with competitive recruitment and salary, the broadband levels allow more opportunities for current employees to transfer into different positions and career paths, if desired.

In a continuing effort to attract a high-quality workforce, the federal government is making attempts to expedite the hiring process. One of those efforts includes the authorization to use direct-hire authority (DHA). DHA allows agencies to fill job vacancies by eliminating some of the traditional hiring procedures such as the rating of applicants. DHA also presents the option to set limits on the number of applications received in an effort to control a large number of applicants. Many potential employees are discouraged by the length of time it takes to complete the federal government's hiring process. After the initial submission of an application, it

BROADBAND LEVELS

AcqDemo's broadbanding divides the acquisition workforce into three career paths; each career path consisting of three or four broadband levels and eliminates the use of steps. (Graphic by U.S. Army Acquisition Support Center)

can take months to complete the process from start to finish. The Office of Personnel Management can grant agencies authorization to use DHA to fill certain job positions—specific occupational series, grades or geographic locations—when a shortage of experienced candidates exists.

The Army anticipates the possibility that the acquisition workforce will decline in the coming years. To stay ahead of a potential staffing shortage, the AcqDemo project authorizes the use of DHA. With this authorization, vacancies for acquisition-coded positions may be filled by qualified candidates possessing at least a bachelor's degree. DHA may also be used to fill positions that are categorized as non-acquisition but will involve direct support of an acquisition position at least 51 percent of the time.

A NEW WAY TO MOVE UP THE LADDER

While performance level is considered a factor in the GS system, WGIs rely most heavily on longevity. According to the results of the 2022 Federal Employee Viewpoint Survey (page 32), when employees were asked how poor performers are addressed in their agency, 42 percent of respondents answered that the poor performers "remain in the work unit and continue to underperform." In the GS system, an employee is expected to perform their job at an acceptable level and if the employee fails, then a WGI can be withheld. However, in April 2021, a study conducted by the U.S. Merit Systems Protection Board (MSPB) determined that denials of WGIs for poor performers are uncommon. The MSPB survey results stated "that more than one in four supervisors believes they have at least one employee who is not at an acceptable level of competence. If each supervisor had 10 employees, that would suggest a WGI denial rate of at least 1 in 40. Personnel action data reflects a much lower rate, just over 1 in 1,000." So, if WGIs and salary increases are not commonly denied when performance levels are not met, how does this incentivize poor performers to improve? More importantly, there is the morale of those who perform at higher levels to consider.

With typical progression in the GS system primarily depending on years of service in the workforce, the AcqDemo project has a different approach for upward mobility. Instead of relying on years of service and by eliminating WGIs, employees covered under AcqDemo are rated on their performance and their contributions made to the mission. Since AcqDemo is a contribution-based performance system, it presents an opportunity for federal employees to advance more quickly in pay compared with its GS counterpart.

Fundamental to the AcqDemo project is the Contribution-Based Compensation and Appraisal System (CCAS), a rating and performance management system. CCAS is used to measure an employee's contribution to the mission as well as how well the employee is performing. The system consists of three main elements: the contribution plan, the midpoint review and the annual assessment. Employees are offered the option to write self-assessments at the midpoint review and annual assessment, providing an opportunity to highlight their accomplishments. High-performing employees are rewarded with larger-than-average basic pay increases. As a result, AcqDemo can provide more flexibility when it comes to compensation. With this flexibility, an employee who is performing the job at or above expectations can move up in the salary pay band at a much quicker pace than it takes to move from step one to step ten in the GS system. And since broadband levels are comparable to GS grades, salaries are consistent with those that are covered under the GS pay scale.

WHAT OTHER CHANGES ARE THERE?

It is commonly known that GS employees in the federal government are offered a comprehensive benefits package. While AcqDemo's primary changes include job series classifications and broadbanding, performance ratings and a simplified hiring process, all employee benefits remain in place. AcqDemo employees are offered the same insurance options, retirement plans, leave accruals, legal protections, etc., as an employee covered under the GS system. The following employee benefits remain in place under the AcqDemo project:

- Health, dental and vision insurance.
- Life insurance.
- Retirement plans.
- Leave accrual.
- Work schedules.
- Travel and allowances.
- Veteran's preference.
- Merit system principles.
- Prohibited personnel practices.
- Anti-discrimination laws.
- Whistleblower protection.
- Fundamental due process.

Additionally, since AcqDemo broadbands are based on a combination of GS grades, each year—if there is a general pay

WORKFORCE LONGEVITY
The AcqDemo pay system can help recruit and retain a talented workforce. (Photo by Antoni Shkraba, Pexels)

increase—the broadband salaries will be adjusted upward in accordance with the new GS pay schedule. Therefore, AcqDemo employees will still receive the same annual pay increases authorized by the president or Congress as GS employees.

CONCLUSION

As of March, according to the AcqDemo website, there are a total of 54,031 employees covered under the AcqDemo project—including participants from the Army, Navy, Marine Corps, Air Force and various other DOD agencies. Out of that total number, 13,749 are members of the Army Acquisition Workforce. In November, that number is expected to rise by an additional 371 employees when the U.S. Army Corps of Engineers, Mississippi Valley Division joins the AcqDemo project.

So, will all federal agencies eventually replace the GS system with contribution-based performance systems? Not anytime soon. AcqDemo is not yet a permanent pay system and still requires periodic renewals or extensions. As of right now, the National Defense Authorization Act has extended AcqDemo through December 31, 2026, and limits the number of participants at 130,000. However, if the project becomes permanent, it anticipates additional agencies will participate.

With over 20 years in operation, the AcqDemo project has demonstrated great success and continues to see an increase in participation. Although AcqDemo is not yet permanent, it continues to seek permanency every fiscal year.

For more information about AcqDemo, email ***AcqDemo.Contact@dau.edu****.*

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BRIDGING THE ICAP

A competitive program links DOD and the tech world, ensuring service members have timely access to cutting-edge technology across the U.S. military at commercial speeds.

by Cheryl Marino

RAPIDLY ADVANCING TECHNOLOGY
As innovation expands in the tech world, the latest technology trends and developments will be vital for national security. (Photo by ThisIsEngineering, Pexels)

Cutting-edge technology is an essential enabler for organizations in today's fast-paced and digitally driven world, and it offers DOD the ability to gain a competitive advantage, enhance operational efficiency and unlock new growth possibilities. As the frontiers of innovation continue to expand in the tech world, the latest software and hardware trends and developments will be vital for national security. Therefore, it is a DOD priority that service members have timely access to commercially available technology.

To keep pace with commercial product cycles and adopt commercial procurement best practices, the Defense Acquisition University (DAU) and Defense Innovation Unit (DIU) have teamed up to develop and implement the Immersive Commercial Acquisition Program (ICAP)—designed for acquisition professionals motivated to become "the bridge" between DOD and the commercial tech world.

Through the ICAP, DOD is encouraging broader use of agile acquisition methods by training a corps of professionals on DIU's streamlined acquisition process. These professionals, in addition to understanding the dynamics between Silicon Valley tech and government procurement, would acquire knowledge of how other-transaction authority can be leveraged to cut regulatory burdens, simplify and expedite the acquisition process.

"Acquisition professionals, especially those in contracting, work in an increasingly complex environment. Creating opportunities like this where they can develop specialized skills and gain experience that they take back and share with others is one of the great strengths of this program," said Jim Woolsey, president of Defense Acquisition University at the Defense Innovation Unit's website.

Four contracting officers from across DOD—one from the Army, one from the Navy and two from the Air Force—were selected to participate in the program's first cohort, which launched in October 2022 as a 12-month immersive program, with graduation in October 2023.

"I have never had more of a passion for my profession than I do now," said ICAP Fellow U.S. Army Maj. Michael Gerbasi, an agreements specialist in DIU acquisition, who previously served as deputy procurement chief for the Regional Contracting Center – Kuwait, 408th Contracting Support Brigade. "Being a part of this program has allowed me to discover a whole community of practitioners in contracting, tech, venture capital and R&D [research and development]. These folks, both in government and in industry, care about our country. They care about our defense and they care that our technological advantage on the battlefield continues."

Gerbasi was halfway through his deployment to Kuwait, providing contracting support for exercises and base operations, when he applied and was selected for the ICAP program. He said although being a contingency contracting officer on the ground was a great experience, deep down he missed the challenges of systems contracting and the support to the Army program executive offices' pursuit of far-reaching modernization priorities.

"I had heard of other transactions but there was, at the time, no clear path for me to ever execute them." Gerbasi said he never heard of DIU until he stumbled across the Office of the Deputy Assistant Secretary of the Army for Procurement (ODASA(P)) newsletter for Army contracting personnel and a list of open development opportunities. "For me, applying [for ICAP] meant embracing new learning opportunities. I applied on the last day

EXCEPTIONAL SPOKESPEOPLE
ICAP Fellows U.S. Army Maj. Michael Gerbasi and U.S. Air Force Contracting Officer April Davison attended the National Contract Management Association World Congress 23 in Nashville, Tennessee, July 23–26, 2023. (Photo by Devon Bistarkey, Defense Innovation Unit)

applications were due that summer and figured the opportunity was a long shot. I now believe it has changed the direction of my career."

DIU CAN DO

The Defense Innovation Unit was established in 2015 to harness the investment and speed of advances in manufactured technology so that the military can more rapidly deploy cutting-edge systems. Today, the unit has evolved into a proactive DOD organization that contracts with commercial companies to solve national security challenges across a variety of technology areas like future-generation wireless technology; artificial intelligence and autonomy; space technology; renewable energy generation and storage; advanced computing and software; and integrated sensing and cyber. According to DIU's website, by "engaging directly within the venture capital and commercial technology innovation ecosystem, DIU's streamlined process delivers prototypes to DOD partners, along with scalable revenue opportunities for commercial vendors, within 12 to 24 months."

Part of that streamlined process is a solidified commercial solutions opening (CSO)—or source selection—a competitive evaluation process to obtain solutions or new capabilities that fulfill requirements, close capability gaps or provide potential technological advances.

The use of the other-transaction authority through CSO maximizes competition and allows DIU to work at commercial speeds, while minimizing the opportunity costs of participating vendors. Other-transaction agreements are not subject to the traditional Federal Acquisition Regulation (FAR)—meaning, they are not subject to the established primary regulation for use by all executive agencies in their acquisition of supplies and services with appropriated funds. Because of this, other-transaction authorities provide flexibility to leverage commercial business practices and lower the barrier to entry, which encourages nontraditional defense contractors to do business with the government.

TEAM ATTRIBUTES

Members of DIU's Acquisition Directorate participated in the National Contract Management Association World Congress 23 annual training event for contract management, procurement and acquisition professionals. From left, Maj. Michael Gerbasi, Roshan M. Jessani, Phillip Lee, Cherissa Tamayori, Indy Toliver, April Davison, Christina Mokrane and Joshua Tuxhorn. (Photo by Devon Bistarkey, Defense Innovation Unit)

According to Cherissa Tamayori, the director of DIU's Acquisition Directorate, since the private sector has options on who to work with, it is in DOD's interest to be an attractive business partner. Otherwise, the department runs the risk of losing out on commercially developed, mission-critical and even lifesaving technology. "The commercial sector is really efficient when it comes to quickly producing and buying what it needs," Tamayori said. "We at the Defense Innovation Unit have found the other-transaction authority to be the most effective acquisition tool for mirroring the speed and flexibility found in the commercial sector."

Using the CSO and other-transaction authority, DIU aims to move from problem identification to prototype contract award in 60 to 90 days, whereas the traditional DOD contracting process often takes more than 18 months. "ICAP is an interactive training effort designed to help scale the methodology that we use at DIU across the DOD—to bring critical technology providers onto contract as quickly as possible," she said.

BE THE BRIDGE

DIU is the only DOD organization focused exclusively on fielding and scaling cutting-edge commercial technology across the U.S. military at commercial

speeds, aligning with organizations across the DOD. Its work to prototype and field dual-use capabilities that solve operational challenges makes DIU a gateway for DOD to leading technology companies across the country.

Acquisition professionals will be instrumental in acting as the bridge between DOD and the private sector to make sure companies are aware of the potential that exists in the federal marketplace and can find opportunities easily. The aim with the ICAP program, Tamayori said, is to help acquisition professionals learn to "speak commercial" and share this knowledge with their peers so that DOD can better acquire innovative commercial technologies. "The intent is that ICAP fellows, after graduation, will bring their new understanding of DIU's CSO and the OT [other-transaction] authority to their home institutions, enabling them to implement similar processes for future commercial technology acquisitions."

She said that ICAP fellows are required to develop an action plan for their home institution as part of their graduation from the program.

"[ICAP fellows] are already proving to be exceptional spokespeople for the CSO process and the OT authority—delivering briefings in front of their peers at the National Contract Management Association World Congress [held July 23-26 in Nashville, Tennessee], speaking at Defense Acquisition University OT learning events, and writing and contributing to articles to share what they have learned and how CSOs and OTs can help get new capabilities to the warfighter at speed."

FILL 'ER UP WITH ELECTRICITY
Gerbasi was tasked with negotiating other-transaction agreements with four electric vehicle and battery manufacturers as part of the Jumpstart for Advanced Battery Standardization (JABS) project. (Photo by Kendel Media, Pexels)

WHAT MAKES IT IMMERSIVE?

All training is valuable, but immersive experiences take things up a notch. Through the Immersive Commercial Acquisition Program, fellows experience—or are "immersed" in—a combination of service-aligned DIU projects, focused interactions with commercial and nontraditional companies, and targeted training that leverages relevant other transaction virtual classroom training with on-the-job experience for hands-on application.

"Learning about OTs in a classroom was much different from gaining hands-on experience," Gerbasi said. From day one, he was given portfolio assignments and an agreements officer to shadow. Then, the first 60 days were strictly observing, coupled with formal other-transaction training through DAU and the Defense Advanced Research Projects Agency (DARPA), onboarding and adjusting to the culture. "The level of talent at DIU was incredible, and most with industry and tech experience, which brought an incredible perspective."

Gerbasi said the agreements officer to whom he was assigned supported various projects for the cyber, energy and human systems portfolios. "By month three, I was tasked with negotiating OTs with four electric vehicle and battery manufacturers as part of the Jumpstart for Advanced Battery Standardization [JABS] project, which was created to accelerate the adoption of EV [electric vehicle] batteries for DOD," he said. "Once awarded, I jumped on opportunities to support post-award kickoff meetings, which enabled me to interact with stakeholders and to view EV production lines and testing labs." Over the next six months, Gerbasi said

he helped support around 20 other transactions supporting pre-award and post-award actions.

Integrated into DIU's daily work model, ICAP fellows gain experience with the CSO, combined with virtual classes on other-transaction agreements through DAU's credentials program. Working alongside a unit contracting officer and project team, as well as commercial solution providers on a variety of projects, DOD acquisition personnel learn firsthand how to leverage the other-transaction authority, acquire novel commercial technologies, and be change agents through use of flexible acquisition methods within their organizations.

April Davison, a U.S. Air Force veteran and contracting officer for the Air Force Sustainment Center Contracting Directorate—and an ICAP fellow from the program's first cohort—said what attracted her to the program was curiosity about DIU's streamlined acquisitions process. She said she was "really excited to see how DIU utilized the CSO process for commercial OTs."

"Before the ICAP program, I had only used the CSO process for FAR-based acquisitions. Whereas it was a more efficient acquisition process, the FAR still added several hurdles that extended the acquisition lead time," she said. "Now I have another tool in my toolbox that I will be able to use and share with my organization."

Davison currently serves as the CSO lead in support of the Department of the Air Force's COVID-19 Task Force, so what she's learned will be of great benefit to her role and career.

"The ICAP program gives a very immersive, hands-on opportunity for contracting professionals to see how CSOs can be done with maximum efficiency. It also provides targeted 'classroom' training in the form of DAU's OT credential," she said. "There is no scenario where an individual doesn't come out on the other side a stronger, more capable contracting professional."

CONCLUSION

"Our fellows not only learned the ins and outs of DIU's CSO and the OT authority, but they also stepped outside their comfort zones and opted to speak publicly about their experiences along the way," said Tamayori. "The learning curve, feedback and lessons learned we have gleaned from our fellows have demonstrated to us that this program is not only a value-add to DIU, but also to the institutions where they will be returning."

Gerbasi said participating in ICAP has helped him gain insight into the dynamics of government procurement. "I have seen firsthand how CSOs and the OT authority can be leveraged to simplify the acquisition process, cut regulatory burdens and promote participation by nontraditional defense contractors, and I am thrilled that the program will continue for others." (For more information, read the Army Acquisition Executive's column on Page 4.)

After ICAP graduation and upon his return to Army Contracting Command – Redstone Arsenal in Alabama, Gerbasi said he's excited to continue to champion other transactions and to share DIU's source-selection model to accelerate commercial technology adoption.

Tamayori agrees that speed in acquisition is essential to keep pace with near-peer adversaries. "Having knowledgeable contracting professionals who are comfortable using flexible acquisition tools, like the CSO and the OT authority, will enable DOD to move at the speed necessary to equip warfighters—from all of the services—with the goods and services they need to keep us safe," she said.

"The fellows from the inaugural cohort have demonstrated that this program can be a successful tool for scaling flexible acquisition methods. Thanks to their hard work and dedication, I am eager to continue this program into its second year and I am confident we will see positive ripple effects in the future."

For more information about DIU and the ICAP program, go to ***https://www.diu.mil****. To learn more about continuous learning points policy and guidance, go to* ***https://www.dau.edu****.*

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STUDENTS ON A MISSION

The International Submarine Race returned to the David Taylor Model Basin in West Bethesda, Maryland, June 26–30, 2023. Naval Surface Warfare Center Carderock Division hosts this event so that high school and college teams can tackle submarine design, construction and operation. The DCTC pilot program will include real-world challenges with the goal of gaining future civilian acquisition leaders. (Photo by Aaron Thomas, Naval Surface Warfare Center Carderock Division)

CIVILIAN WORKFORCE OF THE FUTURE

The Defense Civilian Training Corps pilot has begun, setting the stage for a new generation of DOD civilian leaders.

by Holly DeCarlo-White

The Department of Defense aims to strategically develop talent that can immediately contribute to the mission and adapt to challenges by partnering with select universities. Attracting and keeping skilled talent at the onset of their career is a challenge—especially in acquisition-related fields where competing opportunities exist in industry.

Through a partnership with academia, DOD is launching the Defense Civilian Training Corps (DCTC), a cohort-based pilot program to educate and develop students from various academic backgrounds with critically needed DOD skills and set them on a public service pathway into the civilian acquisition workforce. These scholars will enter DOD service with not only skills but a knowledge and appreciation of the overall mission and structure, which will empower them to make an immediate impact in support of the mission. Think of the Reserve Officers' Training Corps (ROTC) program, but for civilians, with no basic training or uniform required. Through this investment, the Defense Department will gain new ideas and perspectives that can impact how DOD does business—shaping the Army acquisition civilian workforce of the future.

The National Defense Authorization Act for Fiscal Year 2020 established the Defense Civilian Training Corps "[for] the purposes of preparing selected students for public service in Department of Defense occupations relating to acquisition, science, engineering or other civilian occupations determined by the Secretary of Defense, and to target critical skill gaps in the Department of Defense."

FILLING GAPS

The Government Accountability Office reported in 2019 that skills gaps "played a significant role" in putting DOD at risk for management problems. This finding is not a new revelation. Research conducted by the MITRE Corp. presented the same defense acquisition challenges at the Naval Postgraduate School (NPS) Annual Acquisition Research Symposium in 2017. MITRE's research stressed the long learning curve required to master a career in defense acquisition. While online training and credentialing through the Defense Acquisition University (DAU) are in place, DAU does not have an avenue to apply the knowledge in practice on the job, where the real learning happens.

"It takes many years of experience to develop the depth and breadth of skills and acquire adequate knowledge to execute the acquisition process for all types of requirements," the MITRE report said. "Acquisition professionals are expected to have a broad knowledge base, but those practical skills come only with hands-on experience."

While military members could see a spectrum of acquisition roles by transferring every few years on active-duty assignments, civilians are not exposed to the same rotation opportunities that would develop their knowledge base through experience, for example, to acquire large weapon systems—a complex and regulated process compared to acquiring other general services or supplies.

In addition, historical know-how is exiting. The White House reported in 2022 that 30 percent of the federal workforce is eligible to retire within the next five years. "Without years of experience gaining the knowledge needed to successfully execute the variety of DOD acquisitions, or access to professionals with the requisite knowledge, young professionals will be at a significant disadvantage," the MITRE report said. "Federal acquisition requires a unique skillset to navigate successfully so that government agencies can deliver systems and services that meet mission needs."

Any effort to build the acquisition workforce of the future must align with the National Defense Strategy, which states, "We will cultivate our talents, recruiting and training a workforce with the skills, abilities, and diversity we need to creatively solve national security challenges in a complex global environment." And that workforce must "undertake a campaign of learning to identify the most promising concepts, incorporating emerging technologies in the commercial and military sectors for solving our key operational challenges."

ENTER DCTC

The Defense Civilian Training Corps pilot program seeks high-performing rising college juniors from a variety of majors interested in diving into DOD career fields. These students receive full tuition coverage for their remaining two years, a paid Defense Department summer internship and job placement upon graduation within their skill set and interests. Students are selected based on academic excellence, relevant experience, and an expressed interest in public service with the Defense Department. The universities circulated the opportunity through their student mailing lists, receiving enough response to close it and begin selection after just a few weeks' time. In all, over 300 applications were reviewed.

The first pilot group, Cohort 0, began in August with 94 students selected from North Carolina A&T, Purdue University, University of Arizona and Virginia Tech with diverse interests not only

ROTC FOR CIVS

Deputy Secretary of Defense Kathleen H. Hicks visits ROTC cadets in August 2022 at Purdue University in West Lafayette, Indiana. Purdue is a participating university in the Defense Civilian Training Corps pilot program. (Photo by Lisa Ferdinando, Office of the Secretary of Defense Public Affairs)

in science, technology, engineering and mathematics (STEM), but also public policy, business administration, finance, political science and more.

The Acquisition Innovation Research Center (AIRC), part of a university-affiliated research center housed at the Stevens Institute of Technology, selected the four pilot universities from within its consortium of university partners. Karen D. Thornton, a research fellow at AIRC, said that during the DCTC pilot, the AIRC team will evaluate how the curriculum might be scaled to include more public land-grant universities, historically Black colleges and universities, senior military colleges and minority-serving institutions.

LAB WORK

Deputy Secretary of Defense Kathleen H. Hicks visits the Maurice J. Zucrow Laboratories in August 2022 at Purdue University in West Lafayette, Indiana. Zucrow Labs is the largest academic propulsion lab in the world. (Photo by Lisa Ferdinando, Office of the Secretary of Defense Public Affairs)

> DAU does not have an avenue to apply the knowledge in practice on the job, where the real learning happens.

"[The four schools] are phenomenal partners and really going the extra mile to help us test our model," Thornton said. "Each is very well situated with a vibrant ROTC program and existing DOD research grants. Some already have DOD presence on campus and organizations nearby from which we can bring in expertise to provide students with immersive experiences."

Virginia Tech had the largest number of applicants for the DCTC pilot program, 117 in just two weeks. DCTC was a natural partnership, according to Laura Freeman, Ph.D., deputy director of the Virginia Tech National Security Institute and research professor of statistics, who expressed students' strong excitement to be a part of history in the development of the DCTC program. "Many have military service in their families, so they knew they wanted to go DOD," Freeman said, "but many do not know you can serve as a civilian, too." Virginia Tech is one of six senior military colleges in the U.S. with a robust ROTC military college.

"College-for-service does great things for diversity," she said. "The thing I am excited about is the exposure of our students to interesting careers, exposing our students to a wide breadth of interesting pathways in the DOD is the hallmark of the program."

The scholarship-for-service model will begin with Cohort 1 in 2024. DCTC's Cohort 0 is the true experimental pilot group with no service obligation following graduation, though the hope is that graduates will accept and stay in the federal service positions they are offered. Students in Cohort 0 will play an active role providing feedback about the pilot program and building marketing and recruiting materials for Cohort 1 and beyond.

"We must constantly evaluate how our minimally viable product is being received by the end user," Thornton said. "Looking to our DOD organizations to help us identify critical skills, student feedback, looking to internship supervisors and mentors, asking how are we doing. Are these students accelerated in acquisition systems?" The goal, she added, is that graduates will come to the Defense

EVENT LAUNCH
To mark the launch of DCTC, an event was hosted by Tanya Skeen, front row, sixth from left, acting assistant secretary of defense for acquisition, on June 8, 2023, at the Pentagon with over 50 senior DOD and university officials in attendance. (Photo by Christian Martinez)

Department immediately able to make an impact because they not only understand the technology, but their role within the larger DOD mission. "It's our theory that that will make them immediately impactful, versus a traditional student that needs to spend initial months getting their bearings in training classes," Thornton said.

EDUCATION NOT TRAINING

The DCTC pilot program curriculum places importance on engaging students in continuous learning similar to the ROTC experience. "They graduate with a fundamental understanding of how DOD works, the building blocks of our democratic processes and the acquisition process so they have a bigger picture," Thornton said. "They will also learn about the critical importance of partnering with the industrial base. Down the road when a DCTC graduate is doing audit work or their role is testing a product, they will understand who their end user is and where DEVCOM [U.S. Army Combat Capabilities Development Command] sits in the organizational structure and they'll appreciate all the people and collaboration it takes to achieve a mission-ready solution."

"Our management principal is to encourage them to ask hard questions and share their ideas. Developing critical thinking skills so they understand how to apply it in complex organizations," Thornton said. "Innovation doesn't mean changing everything, it means identifying where there are pockets of agility and helping the students be part of the effort making it a sustainable and a scalable approach."

DOD organizations and partners interested in hosting DCTC interns during the eight-week summer period will soon be invited to submit proposals to the DCTC team for selection to ensure the organization not only can accommodate but immerse, support

involvement in real-life projects for hands-on learning experiences, and have the time to provide communication and feedback throughout the process.

"We want to make sure every internship experience is student-focused to ensure our scholars learn by engaging with real-life national security problems with the guidance and support of mentors," Thornton said. "If you build a supportive community, it becomes easier for them to learn from their mistakes, evolve and thrive—and ultimately, they will want to stay. The DOD organizations that serve as internship hosts will be key allies in helping us further iterate on the curriculum to ensure we are developing graduates with the skills and talents they need to fill critical gaps in their organizations. The DCTC pilot program is providing an investment that responds to the recommendations of the Defense Business Board's 2022 report on talent management, by changing how DOD views the civilian professional and prioritizing their development."

These students receive full tuition coverage for their remaining two years, a paid Defense Department summer internship and job placement upon graduation.

DCTC is working with a select, diverse set of pilot DOD organizations to sponsor summer internship projects. The opportunity to hire the scholars post-graduation will be open to all DOD organizations.

CONCLUSION

The Defense Civilian Training Corps pilot program provides an avenue for the Defense Department to capture high-performing talent early on by investing in students in partnership with academia to fill critical skill gaps and sustain vital acquisition career fields that support our warfighters. The DCTC pilot program curriculum will grow a more informed, capable and diverse acquisition workforce that will bring in new ideas and provide an impact on day one having a greater understanding of the overall DOD mission, acquisition career paths and organizational structure.

DCTC scholars benefit through college scholarships, experiential classroom learning, hands-on critical thinking projects, internship experience in DOD offices, labs and command headquarters, and DCTC will facilitate federal civilian service job placement following graduation. With a supportive network throughout the program and thereafter, DCTC will set graduates up for success to become valuable contributors in the future defense of our nation.

For more information, go to ***https://dctc.mil****.*

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GETTING STARTED
Lt. Col. Lendrick James, left, has his initial visit with Craig Whitten, the director of managed services and OCONUS support for General Dynamics Information Technology (GDIT), in June 2022, in Falls Church, Virginia. Whitten discussed the program and objectives for TWI fellows during the visit. (Photos courtesy of the author)

A REWARDING EXPERIENCE

Training With Industry program provides valuable opportunities for Soldiers.

by Lt. Col. Lendrick James

My role as a Training With Industry (TWI) fellow has been one of the most rewarding and interesting experiences I have had in the military.

TWI is a one-year assignment designed to expose military acquisition professionals to industry best practices, management techniques and organizational structures. During my fellowship, I gained on-site experience, training and industry knowledge not normally obtained through traditional military or civilian education. It also provided an opportunity to acquire unique business knowledge and technical skills.

TWI is a broadening program available for active-duty military officers. Upon selection, TWI fellows are assigned to a company that supports DOD. They each work with their companies to develop individual goals and objectives they would like to achieve during the program. Once the goals are selected, fellows then send their customized training plans to the Office of the Director of Acquisition Career Management (DACM) for review and approval. Some of my individual goals included understanding different contract types, including the advantages and disadvantages of certain contracts, understanding how contracts influence a company's ability to respond to situations, understanding the company's strategic outlook and opportunity selection, understanding the company's program financial metrics and understanding employee relations. This program benefits the acquisition workforce because it allows active-duty acquisition officers to look at contract actions from the perspective of industry partners. This creates a deeper understanding of what motivates industry to support DOD in the best possible way.

KNOWLEDGE GAINED

I first learned about TWI from information published in Army AL&T magazine. From there, I watched videos on YouTube that showed other officers' experiences with the program, and it seemed like a great opportunity to grow and develop. Additionally, one of my mentors completed TWI and encouraged me to apply. Prior to applying for TWI, I was assigned to the Program Executive Office for Simulation, Training and Instrumentation as an assistant program manager for the Games for Training program, within the Product Manager for Common Synthetic Environment. I currently serve as a military assistant assigned to the Office of the Under Secretary of Defense for Acquisition and Sustainment. My experience with TWI has already helped with our mission of delivering capability at the point of need through a defense acquisition system that is flexible, tailorable and enables speed.

When assignments were announced, I learned that I would be working with General Dynamics Information Technology (GDIT), which is a proud partner of the Army's TWI program. The company provides information technology products and services, primarily to DOD and other national security organizations.

When I began my fellowship, I did not know what to expect, but my sponsor, Craig Whitten, the director of managed services and OCONUS (outside of the continental United States) support, provided a list of business development objectives for me to achieve. I used these objectives to create a dashboard to monitor my monthly progress. Each month, I updated and reviewed my dashboard of objectives to ensure I remained on track. My focus areas included contracting, subcontracting, growth and additional professional development opportunities.

During my rotation with GDIT's Contract Division, I was able to attend weekly meetings and observe the team as they vetted questions that would be sent to the government in response to multiple requests for proposal, or RFPs. It was interesting to watch the team compare the government's contract data requirement list to their statement of work. Based on the number of inaccuracies or discrepancies in the documents, the Contract Division would decide whether to bid on proposals. This technique helped GDIT reduce potential risk. During future assignments, my goal is to ensure that the government takes pride in ensuring the contract data requirements lists and the statements of work are accurate, so we won't lose potential offerors.

Working with GDIT's Defense Subcontracts Division was also rewarding. I shadowed Lance Smith, a subcontracts administrator, and he provided a course on GDIT's process of executing nondisclosure agreements (NDAs) and teaming agreements. GDIT's NDAs and teaming agreements are used when there is a need to hold specific discussions about the company's proprietary information, or what many companies call their "secret sauce." Additionally, Smith allowed me to observe the execution of an ongoing NDA from start to finish. During this process, I learned that GDIT has standard NDAs and teaming agreements that are distributed to subcontractors who would like to partner with the company. Although GDIT's NDAs and teaming agreements are standard, companies can request changes, which may or may not be approved by GDIT's legal team. This benefits the government because it could provide insight into an offeror's ability to perform potential work.

Despite these great insights, I believe my time with GDIT's Growth Division was the most beneficial of all. The Growth Division provides services, solutions and outcomes to win bids, while simultaneously proving to customers that they can deliver with little to no risk. I worked with Joseph Bartasius, the defense growth business development director, and watched as he expanded GDIT's business to generate additional profits. He shared many tactics, techniques and tools used to accomplish his mission. This was particularly interesting because several of GDIT's growth functions and methodologies are similar to techniques I used while serving in U.S. Army Recruiting Command. These included performing intelligence and market analysis, lead generation, prospecting, interviewing and processing customers and targeting. The knowledge I gained was beneficial, and now I have a better understanding of how defense contractors study the needs of the DOD and analyze market trends to develop a strategic process that helps their organization grow.

STRONG OBJECTIVES
From left, Garrett Yee, Maj. Gen., USA (Ret.), vice president and general manager at GDIT; James and Craig Whitten, met in September 2022, in Falls Church. Yee and Whitten provided objectives for James to focus on and insight on ways the government and industry can work together to create stronger relationships.

WIN-WIN EXPERIENCE

Throughout this experience, I was fortunate to receive mentorship from GDIT's senior executives, develop strong relationships with GDIT's employees, participate in employee resource groups, or ERGs, participate in industry day events, witness a government accountability test and share lessons learned with other TWI fellows. I believe my greatest contribution was showing up prepared with a positive attitude, and ready to learn. I assisted

SHARE AND GROW
James met Cherri Le, GDIT communications manager, at the company's Interservice/Industry Training, Simulation and Education Conference (I/ITSEC) booth in November 2022, in Orlando, Florida. I/ITSEC is the world's largest modeling, simulation and training event.

the company by meticulously documenting each activity and event in which I participated by creating executive summaries, storyboards and progress dashboards. This technique not only documented the events but also ensured that I understood what took place. This was a "win-win" for both GDIT and the Army because it helped ensure I learned GDIT's best practices, while simultaneously providing quality products.

CONCLUSION

Based on my experience with the program, I believe TWI is appropriate for senior majors and lieutenant colonels. Working directly with industry gave me an opportunity to become a part of the company. When wearing a uniform and conducting business with industry, it is a much different experience. The company's employees are working to create the best possible outcome for the company, and the acquisition officer is working to create the best possible outcome for the government. However, while serving as a fellow you become a company insider and everyone's guards are lowered. You are no longer competing and serving different interests. This allows the company to reveal their strategic objectives and reasoning behind many of their processes. When officers have this deeper understanding and knowledge about industry strategies, it will greatly improve the defense acquisition system. This will also foster improved strategic forecasting and will allow them to play chess instead of checkers.

TWI is relevant to Army acquisition professionals. It gave me the ability to look at business processes and situations from both the government viewpoint and the industry viewpoint. Having completed the program, one of my new goals will be to help government employees understand proposals from the industry point of view. I am extremely grateful for this opportunity, and I look forward to applying what I've learned in future military assignments.

For more information about the TWI program, go to ***https://asc.army.mil/web/career-development/programs/aac-training-with-industry****.*

LT. COL. LENDRICK JAMES is a military assistant assigned to the Office of the Under Secretary of Defense for Acquisition and Sustainment. He holds an M.S. in management from Embry-Riddle Aeronautical University, an M.A. in general studies from the U.S. Army Command and General Staff College and a B.A. in political science from South Carolina State University. He holds the DAWIA Practitioner certification in program management.

ON THE MOVE

ASSISTANT SECRETARY OF THE ARMY FOR ACQUISITION, LOGISTICS AND TECHNOLOGY

IN MEMORY OF A LIFE OF SERVICE

On July 25, 2023, the Army lost Maj. Gen. Anthony Potts to a single-engine plane crash in Harford County, Maryland. At the time of his passing, Potts was assigned to the Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASA(ALT)) at Aberdeen Proving Ground, Maryland, where he was preparing to retire.

Most recently, as the program executive officer for Command, Control and Communications – Tactical (PEO C3T), Potts was critical in supporting the advancement and design of the Army's network of 2030 for Division as Unit of Action to reduce complexity and enable the speed and lethality required for large-scale combat operations.

His previous acquisition leadership positions included the program executive officer for Soldier, where he and his team provided cutting-edge equipment to protect our warfighters. Potts also served as the deputy commanding general for U.S. Army Research, Development and Engineering Command, the senior commander for Natick Soldier Systems Center and numerous other leadership positions within ASA(ALT) commands. As an acquisition officer, he made numerous deployments to the Balkans, Iraq and Afghanistan, fielding and sustaining critical battlefield systems.

Potts was commissioned a second lieutenant in Army aviation. He served as an attack helicopter platoon leader in Germany and served as commander of the U.S. Army's AH-64 Apache Attack Helicopter Training Company. Potts was a rated AH-64 Apache instructor pilot with a combat tour in Operations Desert Shield and Desert Storm.

A highly decorated Army officer, his awards included the Distinguished Service Medal, Legion of Merit, Bronze Star, Meritorious Service Medal, Air Medal with Valor Device, Army Commendation Medal, Army Achievement Medal, Valorous Unit Award, Army Superior Unit Award, National Defense Service Medal, Humanitarian Service Medal, Army Service Ribbon, Overseas Service Ribbon, Kuwait Liberation Medal, Saudi Kuwait Liberation Medal, Senior Aviator Badge, Air Assault Badge and Army Staff Badge.

Potts was born in Jacksonville, Arkansas, but spent his childhood in Kentucky. He is survived by his wife of 18 years, Jennifer; his son, Taylor and daughter, Cynthia.

Potts served his country with distinction for more than 37 years. He touched the lives of many, not only as a dedicated and talented Soldier, but as a husband, father and friend. His loss is felt deeply by the U.S. Army Combat Capabilities Development Command C5ISR Center, Aberdeen Proving Ground, ASA(ALT) and Army communities, and he will be truly missed.

PROGRAM EXECUTIVE OFFICE FOR AVIATION

1: EUAS NEW PRODUCT MANAGER

Sean Tynan, right, accepts the charter as the new product manager for Endurance Uncrewed Aircraft Systems product office from Col. Danielle Medaglia, project manager for the Uncrewed Aircraft Systems project office, during a change of charter ceremony held June 1 at Redstone Arsenal, Alabama. Lt. Col. Chris Getter, who served as the product manager since August 2021, leaves for his next assignment as the Acquisition Corps branch chief at Human Resources Command. (Photos by David Hylton, PEO Aviation Public Affairs)

2: PRODUCT OFFICE CHARTER, RETIREMENT

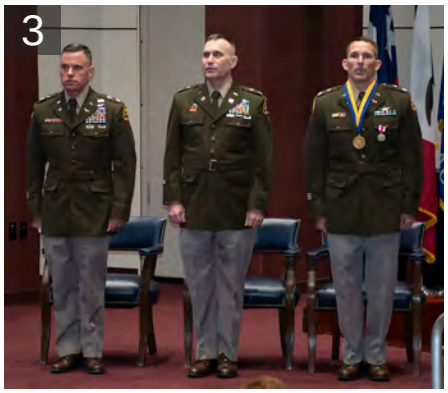
Lt. Col. Jacob Brady, right, accepts the CH-47F Block I product office charter from Col. Al Niles, project manager for Cargo Helicopters, during a change of charter ceremony held June 1 at Redstone Arsenal. Brady assumed responsibility as the product lead, replacing Lt. Col. Travis Blaschke, who served in the product manager role since 2020 and retired from the U.S. Army after more than 20 years of service. (Photos by Elizabeth Graham, PEO Aviation)

3: CHANGE OF CHARTER AVIATION ARCHITECTURE AND ENVIRONMENTAL EXPLOITATION

Lt. Col. James Brooks, left, stands with Col. Burr Miller, center, project manager for the Aviation Mission Systems and Architecture project office, and Lt. Col. John Seitz following a change of charter ceremony where Brooks accepted responsibility as the new product manager of the Aviation Architecture and Environmental Exploitation product office from Seitz on June 9 at Redstone Arsenal. Brooks joins PEO Aviation following his assignment in the Army's Training With Industry program. He previously served at PEO Aviation as assistant product manager for the CH-47 Block II, Degraded Visual Environment and Aviation Network and Mission Planning product offices. Seitz's next assignment is with the Aircraft Survivability Equipment product office at the Program Executive Office for Intelligence, Electronic Warfare and Sensors. (Photo by Michelle Miller, PEO Aviation)

4: FLRAA RESPONSIBILITY CHANGE

Lt. Col. Zachary Keefer, left, holds a guidon in a symbolic gesture of accepting responsibility as product lead for the Future Long-Range Assault Aircraft (FLRAA) Modernization product office from Lt. Col. John Plitsch, far right, on June 27 at Redstone Arsenal. Col. David Phillips, center, project manager for the FLRAA project office and Stephanie Crosby, back, deputy product lead for the FLRAA Modernization product office, look on. Keefer previously served as an experimental test pilot assigned to the Technology Development Directorate at Fort Eustis, Virginia. Plitsch served as the first product lead for the FLRAA Modernization product office. His next assignment is as product manager for Special Electronic Mission Aircraft within PEO Aviation's Fixed Wing project office. (Photo by Valarie Lee, PEO Aviation)



5: NEW CARGO HELICOPTERS PM, NILES HONORED

Col. Daniel Thetford, right, accepts the charter for Project Manager Cargo Helicopters, accepting responsibility as the newest project manager (PM). Following the change of charter ceremony, Maj. Gen. Robert Barrie, left, conducted a retirement ceremony for outgoing PM Col. Al Niles. Niles received the Legion of Merit award and the Army Aviation Association of America Order of Saint Michael Silver Award for his contributions to Army Aviation. Niles, who served as the PM since 2019, retired with 26 years of service to the nation. (Photos by Collin Magonigal, U.S. Army Redstone Test Center)

6: OVER 27 YEARS OF SERVICE

Col. Tim McDonald, right, accepts his certificate of retirement from Maj. Gen. Rob Barrie, the program executive officer for Aviation, during a May 25 ceremony at Redstone Arsenal. McDonald, who retires after more than 27 years in the Army, managed PEO Aviation's Multi-National Aviation Special Projects Office since 2020. He also held several other assignments in PEO Aviation, including executive officer to the PEO and assistant product manager for Cargo Helicopters and the Non-Standard Rotary Wing Aircraft project offices. During the ceremony, he was awarded the Legion of Merit for a career of exceptionally meritorious service and achievements. He also received the Honorable Order of Saint Michael, Silver Award from the Army Aviation Association of America. The Order of St. Michael recognizes individuals who have made significant contributions to the promotion of Army aviation. (Photo by Michelle Miller, PEO Aviation)

7: TACTICAL UAS CHARTER

Lt. Col. Jeffrey Bess accepts the charter for the Tactical Uncrewed Aircraft Systems product office from Col. Danielle Medaglia, project manager for the Uncrewed Aircraft Systems project office, June 28 at Redstone Arsenal. Lt. Col. Olin Walters, the outgoing product manager since 2020, will attend the Air War College at Maxwell Air Force Base in Montgomery, Alabama. (Photo by Barbara Mayers, PEO Aviation)

PROGRAM EXECUTIVE OFFICE FOR COMBAT SUPPORT & COMBAT SERVICE SUPPORT

1: NEW PM TRANSPORTATION SYSTEMS

Zina Kozak-Zachary, right, became project manager (PM) for Transportation Systems in a July 11 ceremony at Detroit Arsenal, Michigan. She previously served as deputy PM for Transportation Systems with outgoing PM Wolfgang Petermann, left. Vince Jakubowksi, center right, the new deputy PM for Transportation Systems, participates on stage with Brig. Gen. Samuel L. "Luke" Peterson, the program executive officer for Combat Support & Combat Service Support (PEO CS&CSS). Petermann was awarded the Superior Civilian Service Medal for his four-year assignment as PM TS and was also inducted into the Transportation Corps' Ancient Order of St. Christopher. (Photo by Carl Jones II, U.S. Army Tank-automotive and Armaments Command)

2: PM EXPEDITIONARY ENERGY AND SUSTAINMENT SYSTEMS

Col. Kathy Brown, left, relinquished leadership of Project Manager (PM) Expeditionary Energy and Sustainment Systems, which passed to Col. Laverne Amara during a June 1 ceremony at Fort Belvoir, Virginia. Brig. Gen. Samuel L. "Luke" Peterson, PEO CS&CSS, stands center stage. Brown served as PM for three years, and the diverse organization she led touches every echelon of the Army's combat support system in managing the costs, schedule and performance of power generation and force sustainment systems. Brown was awarded the Legion of Merit for the culmination of her career as she retires from active duty. Amara joins the team from the Army Rapid Capabilities and Critical Technologies Office. (Photo by Tomas Ortiz, PEO CS&CSS)

3: CHANGE OF CHARTER FOR JPO JLTV

Mark McCoy, right, assumed leadership during a change of charter for the Joint Program Office for Joint Light Tactical Vehicles (JPO JLTV) as Mike Sprang, center left, outgoing project manager for JPO JLTV, passes the PM's colors to Brig. Gen. Samuel "Luke" Peterson, center right, PEO CS&CSS, in a June 27 ceremony held at Selfridge Air National Guard Base, Michigan. Chris Brouwer, left, deputy project manager JPO JLTV, also stands on stage as Capt. Luke Ulrich, assistant product manager JPO JLTV, narrates the ceremony. Sprang was awarded the Superior Civilian Service Medal for his time as a project manager and was also inducted into the Transportation Corps' most distinguished level of the Order of St. Christopher, as well as the Association of Quartermasters' Honorable Order of St. Martin. McCoy returns to the organization from his last assignment with PEO Ground Combat Systems. (Photo by Michael J. Malik, PEO CS&CSS)

PROGRAM EXECUTIVE OFFICE FOR COMMAND, CONTROL AND COMMUNICATIONS — TACTICAL

1: CHANGE OF CHARTER AT PM TACTICAL NETWORK

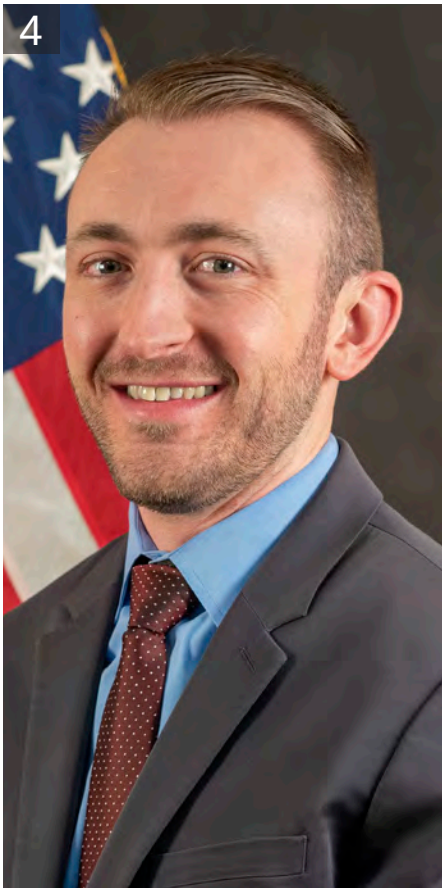
Col. Stuart "Stu" McMillan, right, accepts the charter for Project Manager Tactical Network from Maj. Gen. Anthony Potts, then-program executive officer for Command, Control and Communications – Tactical (PEO C3T), during a July 20 ceremony at Aberdeen Proving Ground, Maryland. McMillan served as the product manager for Mission Network from 2018 to 2021. He then served as the military acquisition assistant to the secretary of the Army and recently graduated from the Eisenhower School for National Security and Resource Strategy at Fort McNair, in Washington. In April, outgoing project manager Col. Jack "Shane" Taylor was called to serve as the assistant deputy for acquisition and systems management-materiel of the Office of the Assistant Secretary of the Army for Acquisition, Logistics and Technology. (Photo by Lynn Bellia, Project Manager Tactical Network)

2: MISSION COMMAND SUPPORT CENTER

Lt. Col. Wayne Dunlap, center right, assumed the mission of the Product Manager Mission Command Support Center (MCSC), replacing the previous product manager Kenneth Lorentzen. Col. Matt Paul, left, project manager for Mission Command, hosted a special ceremony for the Project Manager Mission Command organization, which deactivated the Product Lead MCSC and activated Product Manager MCSC, and included casing and uncasing of the organization's charter colors with assistance from Master Sgt. Edwin Rivas, center left, and Maj. Brian Quinn, both of PEO C3T, on July 12 at Aberdeen Proving Ground. (Photo by Denise Rule, PEO C3T)

3: PROGRAM EXECUTIVE OFFICER C3T

Mark Kitz, right, accepted the charter and assumed responsibilities as the program executive officer for Command, Control and Communications – Tactical, previously held by Maj. Gen. Anthony Potts, left, during a June 29 ceremony at Aberdeen Proving Ground. The ceremony was hosted by the Honorable Douglas R. Bush, center, assistant secretary of the Army for acquisition, logistics and technology, who thanked Potts for the monumental task of preparing the Army's network for 2030 and conveyed his confidence in Kitz to continue this important mission. Kitz comes to PEO C3T after serving as PEO for Intelligence, Electronic Warfare and Sensors. There, he provided technical and managerial oversight of the development, acquisition and fielding of the Army's portfolio of intelligence; electronic warfare; cyber; integrated base defense; force protection; position, navigation and timing; biometrics; and target acquisition programs. (Photo by Kathryn Bailey, PEO C3T Public Affairs)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PROGRAM EXECUTIVE OFFICE FOR ENTERPRISE INFORMATION SYSTEMS

4: NEW DIRECTOR OF BUSINESS MANAGEMENT

Adam Bross assumed the role of director of business management at the Program Executive Office for Enterprise Information Systems (PEO EIS) in July. Before that, Bross completed a six-month developmental assignment as the business management director within PEO EIS's Army Data and Analytics Platforms portfolio.

5: ASSUMPTION OF CHARTER FOR GFEBS PRODUCT OFFICE

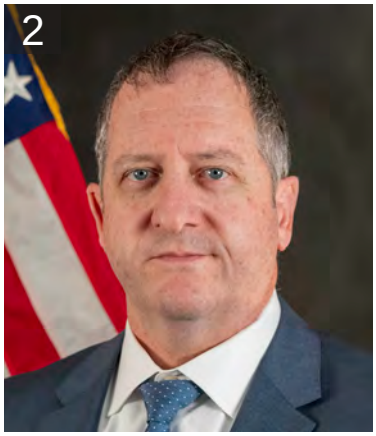
Carlton White, right, accepted the charter for product director of the General Fund Enterprise Business System product office from Kevin Curry, project manager for Defense Integrated Business Systems, at an assumption of charter ceremony on July 10 in Arlington, Virginia. (Photo by Cecilia Tueros, PEO EIS)

6: ASSUMPTION OF CHARTER FOR AHRS PRODUCT OFFICE

John Crone, right, accepted the charter for Product Director Army Human Resource Systems from Ross Guckert, the program executive officer for EIS at a June 20 assumption of charter ceremony at Fort Belvoir, Virginia. (Photo by Laura Edwards, PEO EIS)

7: NEW ASSISTANT PROGRAM EXECUTIVE OFFICER

Rob Schadey assumed the role of assistant program executive officer at PEO EIS in June. Before assuming the role, he received an M.S. in national security and resource strategy and completed the Defense Acquisition Corps, Senior Acquisition Concentration from the Eisenhower School at the National Defense University at Fort McNair, Washington. Previously, Schadey was director of the business mission area at PEO EIS.



1: ASSUMPTION OF CHARTER FOR ACWS PRODUCT OFFICE

Steven Edsall, right, accepted the charter for Product Manager Army Contract Writing System (ACWS) from Kevin Curry, project manager for Defense Integrated Business Systems, at a June 29 ceremony in Arlington, Virginia. Lt. Col. Christee Cuttino, not pictured, relinquished the charter for ACWS at an earlier ceremony held June 9. (Photo by Paul McKellips, Defense Integrated Business Systems)

2: CHANGE OF CHARTER FOR WESS PRODUCT OFFICE

Jason Morneault assumed the charter for the Wideband Enterprise Satellite Systems (WESS) product office in a June 30 change of charter ceremony at Fort Belvoir. Morneault replaced outgoing product manager Lt. Col. Scott Davis.

3: CHANGE OF CHARTER, RETIREMENT AT ARDAP PROJECT OFFICE

Brian Raftery, left, receives the colors for the Army Data and Analytics Platforms (ARDAP) project management office from Program Executive Officer Ross Guckert, foreground, at a change of charter ceremony held on June 15 at Fort Belvoir. Col. Rob Wolfe, right, the outgoing ARDAP project manager, retired from the U.S. Army in a ceremony following the change of charter. ARDAP Deputy Project Manager **Jennifer Potts**, center right, looks on. (Photo by Laura Edwards, PEO EIS)

PROGRAM EXECUTIVE OFFICE FOR SOLDIER

4: PM SWAR CHANGE OF CHARTER

Col. Anthony Gibbs, left, receives the organizational charter for Project Manager Soldier Warrior from Brig. Gen. Christopher Schneider, the program executive officer for Soldier, during a change of charter ceremony May 25 at the National Museum of the United States Army in Virginia. (Photo by Jason Amadi, PEO Soldier Public Affairs)

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"A strong, secure and resilient defense industrial base is foundational to our continued military strength and our ongoing support to allies and partners."

—The Hon. Douglas R. Bush
Army Acquisition Executive and
Assistant Secretary of the Army for Acquisition,
Logistics and Technology (ASA(ALT))

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