Emergent Defense
MAGAZINE

BEST WORKPLACES IN DEFENSE

THE BEST COMPANIES TO WORK FOR IN DEFENSE

Parallax Advanced Research, Best Workplace in Defense Winner

Contents

WINTER 2025-26

Increasing Connectivity

Connecting with defense community members since our launch last fall has been exhilarating. The volume of compelling stories reinforces the magnitude of our mission: amplifying the voices of those whose innovations don't just photograph well—they safeguard our nation.

YOUR VOICE IN THE DEFENSE ECOSYSTEM

Emergent Defense exists to be your platform for communication and connection within the defense community. We bridge conversations between decision makers across military ranks, contracting officers, prime contractors, government agencies, universities and incubators—ensuring your breakthroughs reach the audiences that matter.

Our expanding Global Editorial Board brings together thought leaders and experts from across the defense spectrum, providing direct insight into the challenges and opportunities shaping our industry. Their guidance ensures our coverage reflects the real priorities of practitioners like you.

This commitment to authentic community representation drives features like this issue's Best Workplaces in Defense—showcasing organizations that attract and retain top talent through genuine investment in their people.

JOIN THE CONVERSATION

Beyond our quarterly magazine, we're launching Emergent Forums—curated networking events connecting defense professionals, service providers and decision makers in meaningful dialogue. These gatherings extend our mission of facilitating the relationships that drive innovation.

Get your complimentary subscription at **EmergentDefense.com**, sign up for our email updates and engage with us on social media. We want your feedback and your story.

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Eric Harmon

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Contributors

Colonel Chad M. Pillai is a senior U.S. Army Strategist who has served in a variety of assignments in the U.S., Europe, the Middle East and Asia. He is an editor for *Emergent Defense Magazine* and a member of the Military Writers Guild.

Lieutenant Colonel Sam Rosenberg, PhD, is a senior U.S. Army Strategist and Goodpaster Scholar serving as the Concepts Branch Chief at U.S. Army Europe-Africa. His writings have appeared in *Foreign Affairs, RUSI, War on the Rocks*, the *Irregular Warfare Initiative* and *Modern War Institute*.

Major Phillip J. Hoying is an intelligence officer in the U.S. Army Reserves who has served in numerous active-duty operational support roles in intelligence and planning. He was most recently an operational integration planner for U.S. Army Europe-Africa.

Michael Simon, PhD, MBA, has over 23 years of aerospace, engineering and business development expertise. Currently, he holds the position of VP of Advanced Technology at Parallax Advanced Research.
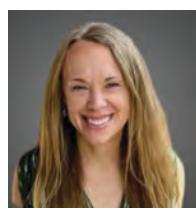
Kathryn Person is a military officer in the US Army Reserves and creator of the Dual-use Ventures Incubator, a program at MIT that helps technology startups navigate non-dilutive federal funding opportunities to support their business strategy.

Digital Exclusives

Top 5 Online Stories

1 *Detect, Track & Target* by David Holthaus

2 *The Eastern Flank Deterrence Line* by Colonel Chad M. Pillai, Lieutenant Colonel

3 *Investing in Defense* by Terry Troy

4 *A Matter of Safety* by Paul Wilson

5 *A Critical Need* by Terry Troy

Top Tweet

Emergent Defense Magazine
@EmergentDefense

Introducing our newest Global Editorial Board member, Kathryn Person — Military Officer in the US Army Reserves and Creator of MIT's Dual-use Ventures Incubator! Welcome to the team! 👍
emergentdefense.com/global-editori...

Global Editorial Board, Kathryn Person
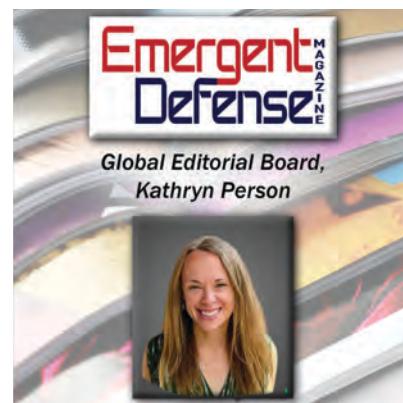
Dialogue

Association of the United States Army - AUSA National

"We're excited to announce that #AUSA was named to *Emergent Defense* magazine's inaugural #Impact100 list of "the most impactful organizations within the defense industry ecosystem." #AUSAorg"

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MIDWEST

GE Aerospace was awarded a maximum $ 9,740,500 firm-fixed price contract for procurement of initial spares and consumables. This contract provides initial provisioning of engine component spares and consumables. Work will be performed at Cincinnati, Ohio, and is expected to be completed November 27, 2026. The Air Force Lifecycle Management Center, Air Force Sustainment Center, Tinker Air Force Base, Oklahoma, is the contracting activity.

MOUNTAIN-PLAINS

The U.S. Army has awarded **Northrop Grumman Corporation** a contract valued over $200 million to produce the XM1211 High Explosive Proximity (HEP) fuzed round of medium caliber ammunition. This award is a significant milestone in delivering next-generation munitions for short range air defense against small Unmanned Aerial Systems (UAS).

Dave Fine, vice president, armament systems, Northrop Grumman, says, "As the only qualified producer of the XM1211 proximity round, Northrop Grumman is uniquely positioned to deliver this urgent need for advanced munitions with speed. Our partnership with the U.S. Army drives innovation and ensures that we meet the critical needs of soldiers on the battlefield today."

Northrop Grumman ammunition

SOUTHWEST

Raytheon has delivered its 500th ESSM Block 2 missile to the U.S. Navy. The company is investing in infrastructure and material to continue deliveries, with plans to nearly double production rates by June 2026.

ESSM Block 2 is an advanced surface-to-air missile that has proven effective against a variety of air and sea-surface threats. It features an upgraded guidance system with a dual-mode active and semi-active radar seeker, increased maneuverability, and improved performance over its Block 1 predecessor.

"ESSM plays a crucial role in helping to ensure both ship self-defense and local area defense for U.S. and allied navies around the globe," says Barbara Borgonovi, president of Naval Power at Raytheon. "The continued delivery of this capability is a testament to the strong partnerships and shared commitment among our team, our customers, and our allied nations to equip our servicemen and women with the best defense solutions."

ESSM Block 2 Missile

CREDIT: U.S. NAVY

SOUTHEAST

Lockheed Martin Missiles and Fire Control has been awarded a $84,729,165 modification to previously awarded contract for the Joint Air to Surface Standoff Missile Foreign Military Sales Production Support. The modification brings the total cumulative face value of the contract to $9,578,685,257 from $9,493,956,092. Work will be performed at Orlando, Florida, and Troy, Alabama, and is expected to be completed July 31, 2031. The Air Force Life Cycle Management Center, Eglin Air Force Base, Florida, is the contracting activity.

MIDATLANTIC

HII announced that its Newport News Shipbuilding division has delivered Virginia-class fast-attack submarine Massachusetts (SSN 798) to the U.S. Navy.

Massachusetts is the 12th Virginia-class submarine delivered by NNS, and the 25th built as part of the teaming agreement with General Dynamics Electric Boat. It is the fifth Navy vessel named for the commonwealth of Massachusetts.

"Delivering Massachusetts after its rigorous sea trials is an important milestone commitment for our team this year," says NNS President Kari Wilkinson. "We are absolutely steadfast in our resolve to increase the pace of submarine construction and see this as a solid step toward our overall objective."

More than 10,000 shipbuilders from NNS and Electric Boat participated in the construction of Massachusetts, alongside thousands of suppliers across the country, including more than 20 in Massachusetts that support Virginia-class submarine construction at NNS.

Submarine Massachusetts

Boeing has been awarded a Lot 12 contract by the U.S. Air Force for 15 additional KC-46A Pegasus tankers, valued at $2.47 billion.

"Getting on contract helps ensure production stability, including our long-lead supply chain, to continue delivering the unmatched capability of the KC-46A," says Jake Kwasnik, vice president and KC-46 program manager.

The U.S. KC-46A fleet has exceeded 150,000 flight hours, reflecting high utilization across training, operational sorties and global deployment missions.

There are 183 KC-46A multi-mission aerial refuelers on contract or in service globally, providing advanced capability advantages for the joint force and allies. This includes 98 delivered to the U.S. Air Force, six to the Japan Air Self-Defense Force and four contracted for the Israel Air Force.

U.S. KC–46A

NORTHEAST

General Dynamics Electric Boat Corp. was awarded a $2,283,291,317 cost-only modification to previously awarded contract for additional advance procurement and advance construction Columbia-class fleet ballistic missile submarine hulls and to support additional program execution. Work will be performed in Groton, Connecticut (70%); Newport News, Virginia (15%); and Quonset Point, Rhode Island (15%), and is expected to be completed by December 2031. Naval Sea Systems Command, Washington, D.C., was the contracting activity.

3 Questions with Jared Shepard

CEO OF HYPORI

BY CORINNE MINARD

Something everyone needs in this day and age—from private companies to the government—is a way to secure their data and messages. Hypori, a tech company based in Reston, Virginia, aims to address this problem head on with its offerings. We spoke with Hypori CEO Jared Shepard to learn more about the company and how it can assist the government and defense contractors be more secure in their communication.

EMERGENT DEFENSE MAGAZINE: WHAT IS HYPORI?

Jared Shepard: Hypori is a highly secure virtual operating system that enables you to have access to a secure enterprise of some kind. And in this case, like the U.S. military, or in other cases like a corporate enterprise environment from any edge device—think phone, tablet, etc.—but in a way in which you, the edge device, your phone or your tablet, never actually possess the data and the enterprise never actually sends the data. All it's really doing is streaming pixels so that it renders a picture of the information that you're working with/ And when you touch or type or swipe, it actually manipulates it as if you were in possession of it, but there's no chance for you to lose it or to compromise it or regardless of what applications are on your phone. They can't get to the enterprise's data so the enterprise is protected.

And then inversely, because our platform is designed to assume that every edge device is compromised, you get to keep your privacy. I assume your phone is already compromised, so I don't want to know what's on it. So protect the company, protect the business, protect the government from a user's device, but then also protect the user from overreach of the enterprise, right? I don't lose my privacy. I don't get hacked. You don't get to watch what websites I'm going to or you don't get to take my phone in case somebody does something stupid. It's kind of protection on both ends of that.

EDM: HOW DID THE COMPANY COME ABOUT?

JS: Originally the [intellectual property] that is now Hypori was started by another company actually for an NSA program. They weren't successful initially going to the street. I stepped in and bought what was the IP with my first company ... because we believed in the idea. And then we invested a whole bunch, brought six of the original developers in and then we've hired a bunch of other developers and we worked on the platform to get it to be ... what it needed to be for that initial capability.

And then came back to the government and said, 'Hey, look at this. We solved a hard problem for you.' An they challenged us and said prove it. And they gave us an exercise environment to prove it in and we were, we were very successful at that. And that led to us then beginning to do work with portions of the military like U.S. Special Operations and others. And then it just grew.

It doesn't grow on its own. It grows through a lot of work. You have to do business development, you have to make sure that you're getting your product in front of other potential consumers or buyers. We started off with trying to really just do classified communications and then we realized, "Wait a second, we created this environment for the most hostile places in the world for the most secure communications necessary. What about something easier like BYOD." And then we were like, "This actually solves BYOD in a way that nobody else out there does." So then we, we branched into the BYOD side of the house and started doing that with the U.S. Department of Defense (DoD) and then U.S. federal government and then now commercial and other governments and commercial and banking.

**Jared
Shepard**

EDM: WHAT IS THE NEW SECURE MESSAGING SERVICE YOU'RE NOW OFFERING?

JS: All the stuff that was in the news about Signal became the genesis for us going, "OK, can we solve that problem?" The problem with Signal is not that Signal was unsecure, although, Signal has its problems, everything does. It's that Signal is based on what's called a public private key infrastructure. Which is I have a key, you have a key. Only you and I are allowed to see the message, which if you're very interested in just privacy, that works really well. That doesn't work for an enterprise, because that means the enterprise can't see what we were talking about. And if you're an employee of that business and you're talking to somebody else … that becomes very problematic.

That becomes what we call Shadow IT, which is when your employees start to find other ways to communicate outside of official ways that you're supposed to communicate. We were like, "Can we give the same level of convenience that a platform like Signal or WhatsApp offer, but do so in a way in which the enterprise can audit and monitor it so they can meet compliance and regulation requirements, but then also, can I do it in a way in which still protects your privacy?"

So how do we protect against that for the enterprise, but also protect you from the enterprise, from overreach? That's really what we're getting to. The new secure messaging platform will function a lot like WhatsApp or Signal in that you can do groups, you can do chat groups, you can share information, you can add people, remove people, but all from an approved enterprise-like environment, all fully auditable. And I don't have to actually ever possess any of that information on my personal device.

From a customer standpoint, it's advantageous because Hypori Messenger's cheaper than the full Hypori. It's cheaper because all it is just a messaging platform. It's not a completely containerized operating system with all the capability to do all the other things. It's just messaging.

When you look at the advantages from a technical standpoint, the no data in transit, no data at rest standpoint, we start to solve a lot of problems that probably nobody else out there does. ∎

Bringing More Tech to Market

DEEP-TECH SHOWCASE CONNECTS BUSINESSES WITH THE GOVERNMENT AND INVESTORS

BY CORINNE MINARD

Deep-Tech Showcase is on a mission to connect tech companies with the investors, government stakeholders and venture capital firm they need to move to the next level. We spoke with Asher Radensky, managing director of Deep-Tech Showcase, to learn more about the organization and how it's supporting businesses.

Emergent Defense Magazine: What is Deep-Tech Showcase?

Asher Radensky: Deep-Tech Showcase is a department within a larger company called Eagle Point Funding. Eagle Point funding is a grant writing consultancy. That's what they do. What they found is that a lot of the companies they were working with were doing really well on the grants and then poorly on the business. And that's not to say that that was a rule. It would just happen ... more times than they liked. So they decided what is the best way to keep our clients working with us and have them for longer. And we decided to open this up as a way of helping them with the business side.

It's changed in the way that we started getting involved, getting more hands on, trying to introduce them to the right stakeholders, trying to get them in front of the right people, whether that be corporate stakeholders, government stakeholders or investors.

Deep-Tech Showcase: Space - Shared screen with speaker view
Oct 22, 2025 07:56 PM

A Deep-Tech Showcase Zoom
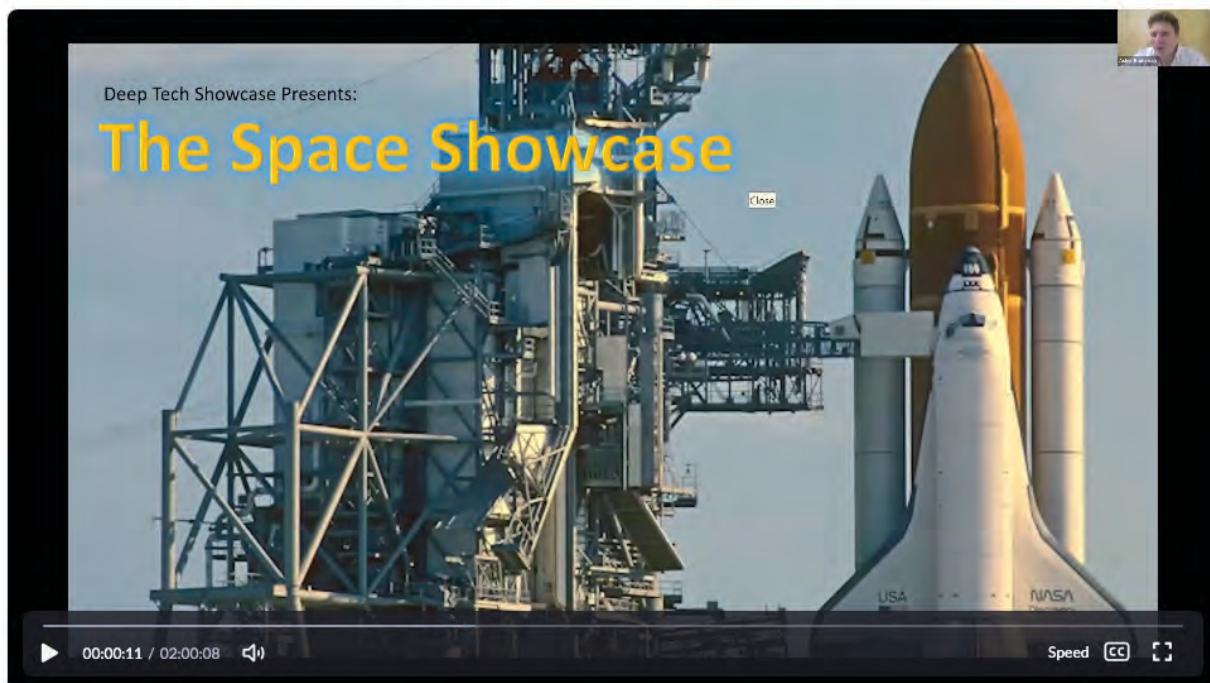
.... It's really good and healthy to have, not just these grants, but to also start connecting to the right people in the right places.

EDM: How are you helping business make these connections?

AR: One thing we do [is have] people who have been in the military, who are willing to talk to companies, say, "Hey, this is what you're doing great. This is what you're doing terribly. This is what you need to do to succeed, is mission critical." That's usually one of the first steps we do. We work with folks who are usually retired from the military to give us a, a perspective on the technologies.

Then also we try to make guided introductions wherever we can. If you're looking for stakeholders in the specific maintenance unit, we'll try to get you in front of those people.

And then the last thing is we run monthly showcases. They're all over Zoom. The next one is aerospace and defense. That's going to be on Jan. 28 after the holidays. And then after that is AI, IOT, Edge, Cloud, Cyber—I think all of the buzzwords are on software. And so it goes on and on.

EDM: What kind of companies do you work with?

AR: Usually seed to series A, although that could change. We've worked with some companies that are public or currently working with some public publicly trade companies. It really just depends on the situation. And we've worked with companies as well that are relatively early, but would need the traction or would like the traction or are interested in the traction in order to get to the next stage.

EDM: Where are the companies you work with based?

AR: Ninety-nine percent of our clients are U.S. based.. That being said, we did work recently with some Israeli companies, some European companies, but it's rare.

EMD: If someone is interested in connecting with Deep-Tech Showcase, what are their next steps?

AR: We are a for-profit, just to be very clear. There's two ways that we can work with companies. One way is that, if you want to engage with us and you want that kind of heavy level of support, obviously that we charge for. But if you're a company that wants to test the waters or try something out, or you think it could be relevant, we also have companies present for free sometimes just to get them in front of the audience and give them that boost. Always happy to talk to companies that are relevant for future showcases.

If it's free, it's competitive. Basically, if your tech is good, your deck is good and it makes sense, you'll probably get the spot. If not, you might not get the spot. No promises either way.

Asher Radensky

EMD: Could you tell readers more about the showcases you host?

AR: [They're held] once a month, different technology, so this upcoming one is aerospace and defense. And it's a little bit different. A lot of folks get the misconception, they think it's going to be like a long panel discussion where people just talk about the field. Fortunately, or unfortunately, it's not. What we do is we have anywhere from five—I think the smallest one we've ever had was like four or five companies—to 18. I think one time we did a multi-day showcase where we had probably over 20 companies present. But basically, each company gets five minutes to pitch and then five minutes for Q and A. And then they have this panel of investors, corporate stakeholders and government stakeholders and those folks usually ask questions. And the goal obviously is at the end of the day to make connections.

Sometimes the showcases are really good and there's a lot of connections. Sometimes the tech's a little drier, things are a little bit softer. That being said, it's a lot of fun. People have called it ike a company speed dating event with stakeholders, which I like.

EMD: What are you hoping to do in the coming year?

AR: One of the things—it's on my goals for 2026, it was also on my goals for 2025—but to help companies to get to that next stage. Whether it be getting from a phase one to phase two or phase two to phase three, or getting on some of these contracts that are a little bit more complicated, we really want to help companies with those. Because we think there's a lot of value to be had and there's a lot of different vehicles. My goal is to use those more and to capitalize on those opportunities more going forward.

Our goal is to obviously—I mean it's in our tagline—bring more tech to market. Not to be cliche, but it's to bring more tech to the end users and to the warfighter. ∎

Tyrus Rodewald
on the
Future of Multi-INT ISR for Decision Advantage and Fusing Intelligence

A PARALLAX/OAI EXPERT'S PERSPECTIVE ON HOW MULTI-MODAL INTELLIGENCE INTEGRATION IS TRANSFORMING NATIONAL SECURITY MISSIONS AND RESEARCH COLLABORATION

As data volumes surge and near-peer threats evolve, intelligence, surveillance, and reconnaissance (ISR) operations are undergoing a profound transformation. Fusion technologies that integrate data from HUMINT, SIGINT, GEOINT, OSINT, and other sources have become critical to maintaining decision superiority in contested, fast-moving environments.

At the forefront of this evolution is Tyrus Rodewald, intelligence research analyst at Parallax Advanced Research and the Ohio Aerospace Institute. With nearly a decade of experience across the Department of Defense and the Intelligence Community, Rodewald focuses on scaling ISR systems from concept to field adoption. His current work spans multi-source fusion design, decision support frameworks and AI-assisted ISR tools.

Tyrus Rodewald, CAGE Technical Product Lead at Parallax Advanced Research and the Ohio Aerospace Institute

"Fusion is not a technical endpoint—it's a cognitive enabler for faster, smarter decisions," Rodewald said.

One of the biggest challenges is no longer data collection but making sense of that data quickly enough to act. Fusion helps analysts maintain object custody—continuous tracking and identification of entities across sensors and domains—by weaving multiple sources into a single, actionable picture.

"The ability to maintain object custody is now critical to winning at the tactical level," Rodewald said. *"Strategically, emerging threats are scarier than ever with the battlespace evolving so quickly."*

Still, as data volumes grow, the risk of information overload increases—often leading to decision paralysis.

"Finding the sweet spot—where you provide enough context without overwhelming the user—is one of the hardest challenges," he said.

Latency is another pressing concern. In fast-paced environments, even brief delays can mean the difference between success and failure. That urgency is driving new applications of machine learning in ISR, including object recognition, anomaly detection and behavioral forecasting. Rodewald points to increased use of neural networks and predictive models that help accelerate the shift from analysis to action.

But trust remains a hurdle. When AI systems recommend or make decisions, operators need to understand the rationale.

"Without context for why a decision was made, it's hard to trust what the system is telling you," he said. *"You've got to show the work—just like in math class."*

Human-in-the-loop (HITL) systems help bridge that gap by keeping analysts engaged, ensuring that human judgment remains central—especially when outcomes carry operational or strategic risk. Rodewald emphasizes this point, noting that training and cognitive foundations remain essential despite the growing role of automation.

None of this work happens in isolation. Rodewald's efforts are part of a broader push by Parallax Advanced Research and the Ohio Aerospace Institute to drive ISR innovation through close collaboration with government, academia, and industry.

"Parallax and OAI are uniquely positioned to test and scale ISR innovation with agility, scientific rigor, and real-world relevance," Rodewald said.

As multi-domain operations evolve, ISR fusion will not just inform decisions—it will help define how future conflicts are anticipated and managed. ■
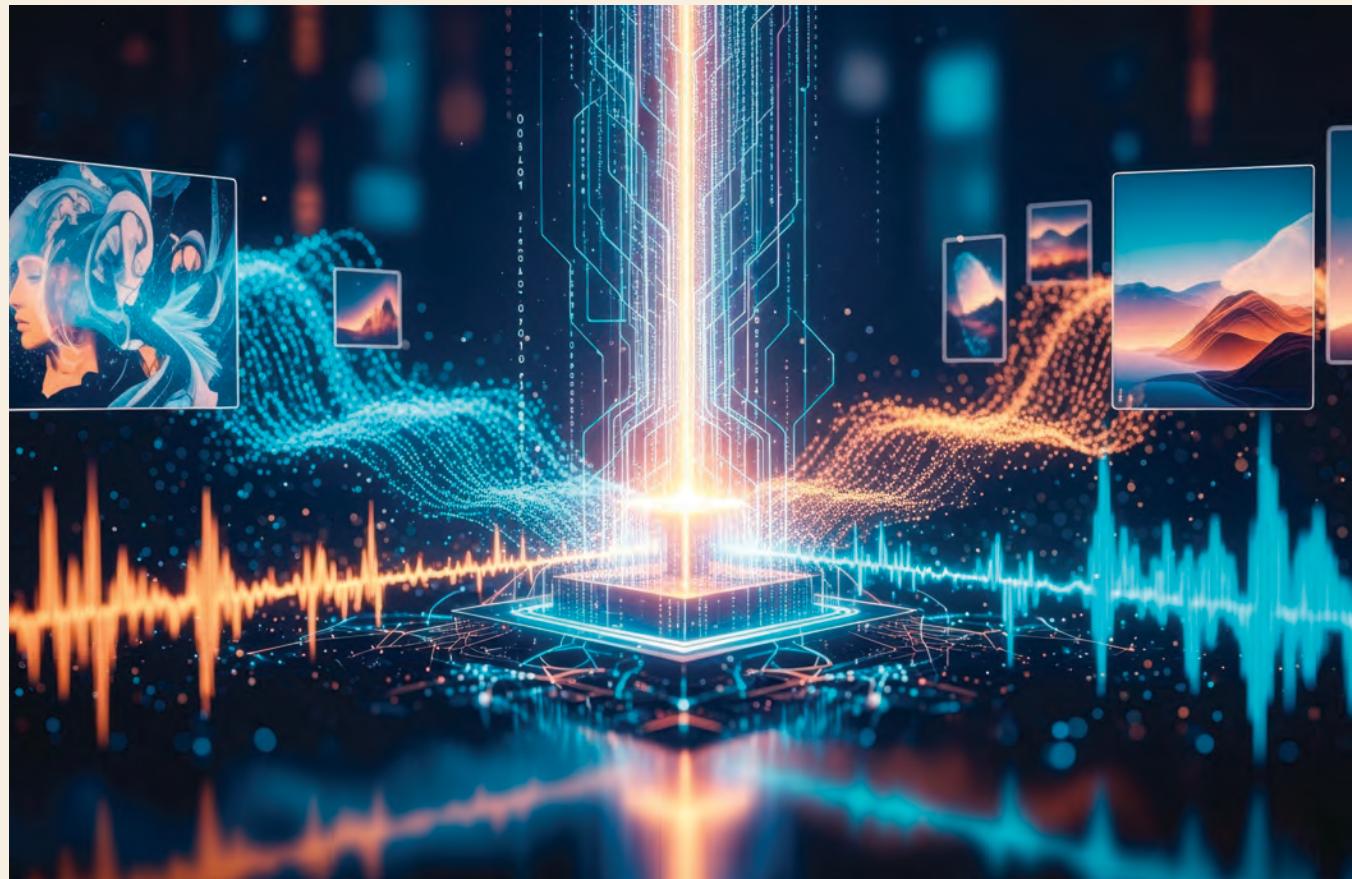
BY THE EDITORS

For our second annual Best Workplaces in Defense, *Emergent Defense* called for nominations from throughout the country and was met with several exciting and innovative businesses. These businesses represent what is next for defense technologies, all while supporting their employees and fostering growth from the inside out. Check out this year's awardees in the following pages.

NOMINATION PROCESS

For the 2025 Best Workplaces in Defense, a link to a nomination form was emailed to businesses and people throughout the country, inviting them to self-nominate. A form was also posted online so that other businesses could participate. For-profit, nonprofit and government institutions were able to self-nominate. Nominees were asked to provide details about their workplace, benefits and interactions with the community. The winners were then selected by committee. If you are interested in nominating your company next year, subscribe to *Emergent Defense* magazine and its newsletter (both of which are complimentary) at EmergentDefense.com.

BLACK CAPE
Arlington, Virigina
blackcape.io

Black Cape is a veteran-owned small business that develops mission applications and applies machine learning and artificial intelligence to projects within government and commercial sectors.

With its team of employees, Black Cape has designed, developed, tested and deployed more than 100 analytic microservices. What's more, the company has designed and leveraged a managed attribution system for collecting open-source data and enriching it with natural language processing (NLP) and large language model (LLM) functions such as automated geo-registration, tagging, categorization and foreign language translation.

Using teams of data scientists and engineers, Black Cape works with its customers to produce analytics to help companies achieve "analytic modernization for the Department of Defense (DoD) and intelligence community." Throughout its existence, Black Cape has built and accredited more than three dozen applications and services now in production at U.S. Army and U.S. Air Force combat support elements, the Defense Intelligence Agency, the National Geospatial-Intelligence Agency, the National Reconnaissance Office and U.S. Special Operations Command.

Behind all these developments is a team of 170 full-time employees. "We've intentionally cultivated an environment where each team member is seen, heard and valued as an individual with unique needs and contributions," the company says. "We are large enough to offer robust resources and growth opportunities, yet small enough that leadership knows everyone by name and understands their personal career aspirations." Some of these resources include flexible scheduling, comprehensive wellness programs and "a sincere respect for work-life boundaries."

Benefits at the company also include company-paid training and tuition reimbursement. Health care coverage is 85% company-paid for medical, vision and dental, and it also offers employees 401(k) eligibility and a 6% company match, in addition to 100% employer-paid disability and life insurance.

"We've created an atmosphere where authentic relationships flourish naturally rather than through forced corporate bonding exercises," the company says. "Perhaps most importantly, we recognize that work is just one part of a fulfilling life."

As such, in addition to traditional benefits, Black Cape says it provides its employees with "tickets to highly sought-after local arts events and two different professional sports teams," making sure that when its employees aren't in the office, they can unwind and enjoy themselves. "Our company deeply values employees who give their all," Black Cape says. "In return, we prioritize creating an environment where they feel recognized, supported and truly part of a team."

CHENEGA MIOS
Lorton, Virginia
chenegamios.com

Chenega MIOS (Military, Intelligence and Operations Support) provides customers with support across many areas, including human resources, talent acquisition, purchasing, marketing, administration, finance and more. Companies within the Chenega MIOS Strategic Business Unit provide a broad spectrum of services to the Department of Defense (DoD). What's more, MIOS supports over 20 subsidiary companies with centralized functions such as HR, finance, procurement and security, "enabling operational efficiency and consistent program delivery," says April Elnagdy, director of strategic communication and community outreach.

In order to do this, Elnagdy says that Chenega MIOS "fosters a dynamic and inclusive employee engagement culture through a variety of initiatives that connect, inform and celebrate its workforce."

What's more, the company hosts employee events, which it calls "a cornerstone of MIOS culture." These activities include wine tastings and murder mystery games to seasonal celebrations and wellness challenges. On the more practical side, employees are provided with a 401(k), medical, dental and visual health, company-paid life insurance and more.

"Chenega MIOS values its employees and the families that support them, recognizing that when people feel valued and connected—both professionally and personally—they thrive," Elnagdy says.

Chenega MIOS' goal is to create a workforce that feels dedicated to their work and company. Through these initiatives, Chenega not only cultivates a vibrant internal culture but also lives out its mission of service and community stewardship, Elnagdy says.

"Together, these efforts reflect MIOS' commitment to cultivating a connected, informed and motivated workforce," according to Elnagdy. "Through these initiatives, MIOS not only cultivates a vibrant internal culture but also lives out its mission of service and community stewardship."

Chenega MIOS

PARALLAX ADVANCED RESEARCH
Beavercreek, Ohio
parallaxresearch.org

Parallax Advanced Research tackles global challenges with innovation, developing technology and solutions through strategic partnerships with government, industry and academia across its home state of Ohio and the nation as a whole. With all these industries, Parallax "accelerates innovation that leads to new breakthroughs," says Jessica Pacheco, director of communications and marketing at Parallax.

Specifically, Parallax delivers science, technology and engineering solutions to the U.S. Department of Defense (DoD). As a 501(c)(3) nonprofit and partner of government, the organization conducts applied research, provides defense-focused data science and analytics, develops AI/ML-enabled tools for mission and R&D planning, and manages critical programs including the Academic Partnership Engagement Experiment (APEX) and the Ohio Federal Research Network (OFRN). Innovation in the lab is created for the warfighter and supports DoD consortium engagement through its Venture Studio and DevSecOps capabilities.

To achieve this, Parallax leans on its 140 full-time employees,

Parallax Advanced Research

Parallax Advanced Research

whom it aims to empower through events and programs such as regular town halls, cross-functional project teams and direct access to leadership.

"Parallax fosters a mission-driven culture grounded in collaboration, flexibility and professional growth," Pacheco says. "Parallax also emphasizes transparency and responsiveness to employee feedback through quarterly surveys and open forums."

What's more, within its hybrid model, Pacheco says Parallax is aware that the company needs to be more intentional about supporting work-life balance. More tangibly, employees are granted a comprehensive benefits package, including tuition assistance and continuing education support, and professional development budgets for certifications and conference attendance, in addition to competitive health care, dental and vision coverage.

"Parallax's people-first approach has led to high retention, strong cross-functional collaboration and a workforce that consistently exceeds performance benchmarks on DoD contracts," Pacheco says.

Parallax Advanced Research

SRC INC.
North Syracuse, New York
srcinc.com

A not-for-profit research and development company, SRC Inc. "strives to find unique, creative solutions for our customers' challenges; we're committed to redefining possible," the company says. Combining applied science, technology and information with bright minds, SRC says it helps take on the toughest problems to help defend the nation's welfare.

Behind this operation is over 1,400 employees who supply the DoD with mission-critical technology including radar and sensor systems, electronic warfare, threat assessment and software development.

"We prioritize creating an environment where employees feel heard, respected and connected to our mission," the company says."

The company hosts regular all-hands meetings, leadership updates and a dynamic, social media-like intranet to keep employees informed and aligned. What's more, the company says it creates a celebratory environment for both individual and team successes.

"We mark service anniversaries, personal milestones and project achievements with intentionality," says the company. Beyond the workplace, SRC offers employee social activities, from company picnics and volunteer days to employee groups and health initiatives.

While the benefits package contains health insurance and paid time off, SRC highlights its retirement package as a premier part of its employees' benefits. "Our benefits are a direct reflection of our values: take care of people, invest in their futures and create a workplace where they and their families can thrive," the company says.

All employees contribute at least 5% of their salary to their retirement fund, and in return, SRC contributes 10% of their pre-tax salary to their retirement—for a total of 15% or more per paycheck. "By fostering transparency, development and a strong sense of belonging, SRC's engagement efforts ensure employees aren't just showing up," the company says. "They're showing up with purpose, pride and passion."

VIRGINIA TECH APPLIED RESEARCH CORPORATION
Arlington, Virginia
vt-arc.org

Virginia Tech Applied Research Corporation (VT-ARC) is a nonprofit research organization that works to deliver tailored analysis, research and engineering to address an array of problems on the national and global stage.

Specializing in applied research, translational research, technical services and commercialization, VT-ARC works with both government and academic institutions. Specifically, VT-ARC provides the Department of Defense (DoD) with an array of services including national security research and technical services, development of technical and operational approaches, and support for DoD innovation organizations.

To help the company achieve its goal, VT-ARC also works to assist its employees to create "a culture where connection thrives and success is a shared journey," says Christy McFerren, director of Human Resources at VT-ARC. While VT-ARC hosts a number of meetings where employees' voices can be heard, it also facilitates surveys so that employees can voice their opinions in an anonymous way.

"At VT-ARC, employee engagement surveys are treated with the utmost seriousness. Each survey is a window into the collective heartbeat of the organization, revealing insights into job satisfaction, work-life balance, benefits and culture," McFerren says. "Our leadership team and our Corporate Culture Committee meticulously analyze the feedback, crafting strategies that address concerns and enhance the overall experience. The commitment to improvement and the high satisfaction scores reflect a community that feels valued and heard."

Even in conflict, the company says, it finds unique ways to not only resolve issue but use it as learning and growing opportunities. "Our policies, guidelines and principles provide a sense of purpose, creating an environment where employees feel valued and empowered to contribute their best selves," McFerren says, while noting that this emphasis on community is rare in many companies.

"As the director of Human Resources, I firmly believe our company is special in so many ways," she says. "Over the last decade, I've worked for a few other corporations that sought such awards just to add the badges to their website. At VT-ARC, it's so vastly different. We truly live by our core values. Honesty, integrity in everything we do."

STRIKE SOLUTIONS, LLC
Las Vegas, Nevada
strikesolutions.io

Strike Solutions is an organization working to develop commercial-off-the-shelf edge solutions to "address some of the most challenging customer requirements in the age of ubiquitous data collection," says Emma Przybyslawski, CEO of the company.

Looking to combat what the company calls an overuse of AI and machine learning in the defense industry, Strike Solutions "differentiates by focusing on simple solutions first and only leveraging advanced computing where absolutely necessary," says Przybyslawski. This differentiation is also furthered by the company's emphasis on sustainability.

Among its many software and technologies, Strike Solutions provides the DoD with its flagship hardware, ThunderDome. "[This technology is] offering unmatched cost-effectiveness, a hardware-agnostic approach and unclassified data collection," Przybyslawski says. 'We also offer comprehensive training designed to maximize the effectiveness of our technologies in operational areas."

Strike Solutions credits its employees for its success. "Strike maintains a strong engagement with employees by maintaining direct lines of communication between all members of the team, from CEO to junior software developer," Przybyslawski says. "Every Strike employee is encouraged to take ownership of customer experiences and satisfaction, leading to an increased sense of trust, inclusion and mutual respect."

Helping foster this inclusion and respect are the employee benefit packages, which include important staples like health care and bonuses. The company also offers a no-wait 401(k), tuition assistance and home office equipment stipends.

This is all in an effort to create impressive employee retention, the company says, which in turn leads to high customer retention as well. "Strike stays ahead of the curve in innovation and easily adapts to the technology trends and the operators' needs," Przybyslawski says. "This has allowed us to grow consistently, year after year."

Strike Solutions
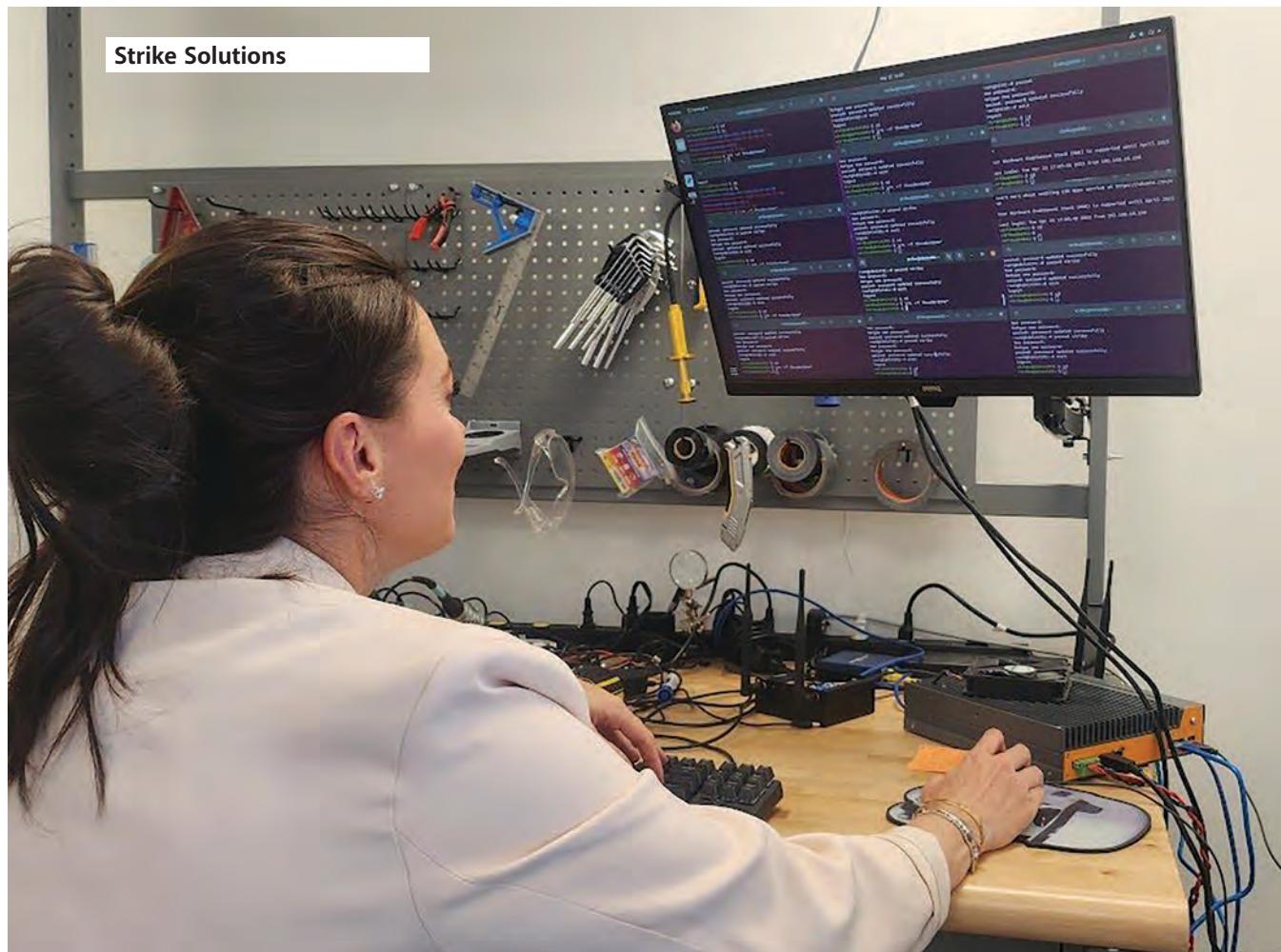
VISIMO, LLC
Carnegie, Pennsylvania
visimo.ai

VISIMO is an innovative technology company specializing in the development of advanced software solutions leveraging artificial intelligence and machine learning. Founded in 2015, James Julius, the company's founder, says its "core expertise is delivering data-driven tools tailored specifically for defense and national security applications."

Primarily serving government agencies, including multiple branches within the Department of Defense (DoD), VISIMO highlights that it is renowned for its "agile approach, rapid innovation and commitment to transforming complex datasets into actionable intelligence," in hopes of enhancing mission readiness and national security.

To help meet its goals, Julius says his company actively fosters an employee-centric culture characterized by open communication, continuous professional development and collaboration. What's more, VISIMO invests in individual growth through ongoing training, mentoring and clear career progression paths. Additionally, Julius says VISIMO emphasizes recognition, work-life balance, wellness initiatives and community-building activities.

VISIMO's proactive employee-relations policy has significantly enhanced operational effectiveness, according to the company, and has positively influenced its local community.

"Internally, our emphasis on transparency, collaboration and continuous professional growth has resulted in high employee satisfaction, increased retention and elevated productivity," Julius says. "[This enables] us to consistently meet and exceed client expectations."

Helping boost its profile throughout Southwest Pennsylvania, Julius says VISIMO's employees participate in community outreach programs such as STEM education initiatives and volunteer activities.

"VISIMO is proud to cultivate a workplace that places equal value on innovation, professional growth and personal well-being. Our collaborative and supportive culture empowers employees to produce groundbreaking solutions critical to national defense, while also positively contributing to our local community," Julius says. "We continually strive to set a higher standard, demonstrating that employee satisfaction, impactful work and community engagement are not mutually exclusive—but mutually reinforcing."

WEST OHIO TOOL CO.
Russells Point, Ohio
westohiotool.com

West Ohio Tool Co. is a U.S.-based manufacturer specializing in custom carbide, polycrystalline diamond (PCD) and cubic boron nitride (CBN) cutting tools, servicing aerospace, defense, automotive, medical and more.

Located in Russells Point, Ohio, the company provides precision custom cutting tools for defense manufacturing, including form tools, porting tools, endmills and more to the DoD.

"By prioritizing employee well-being and training, West Ohio Tool Co. has built a loyal, high-performing workforce, with many employees staying for over a decade," says Kaci King, CEO of the company. "This stability boosts productivity and strengthens team cohesion."

The company is equally committed to its community. Through paid volunteer days, employees have donated over 286 hours and helped provide more than 18,250 meals, King says.

"West Ohio Tool's evolution from a garage startup into a 20,000-square-foot advanced manufacturing facility, with over $15 million invested in automation, technology and quality systems, helps demonstrate its long-term commitment to innovation, growth and national security," King says. "This combination of technical excellence, mission alignment and investment in people and technology reflects what makes West Ohio Tool Co. one of the best places to work in defense."

ASSOCIATION OF THE UNITED STATES ARMY (AUSA)
Arlington, Virginia
ausa.org

The Association of the United States Army (AUSA) is a nonprofit, nonpartisan organization dedicated to supporting the Army community. Through professional development, advocacy and connections, AUSA says it is able to "strengthen the total Army and ensure their voices are heard."

Specifically, AUSA supports the Department of Defense (DoD) directly through the U.S Army, to which it provides professional development opportunities, public outreach and advocacy. Within its programs, AUSA educates the Army community and the public on national security issues, informs policymakers through expert forums and publications, and connects military, industry and civilian leaders through chapter events.

In order to keep supporting the U.S. Army and the DoD, AUSA does it best to create a supportive work environment, it says. To do this, employees of AUSA benefit from tuition reimbursement and flexible scheduling, programs, and partnerships that help deliver scholarships, job fairs and readiness resources to military families and transitioning service members.

"In short, AUSA's strong employee-relations policy contributes to a thriving workplace that directly enhances its mission and extends meaningful value to the local and military communities it serves," the company says.

"AUSA engages its employees through a mission-driven, service-oriented workplace culture that reflects its commitment to supporting soldiers and their families. As a nonprofit, AUSA emphasizes collaboration, professional development and cross-functional teamwork," the company says. "Engagement is fostered through a shared sense of purpose, meaningful work tied to national service and opportunities to contribute to high-impact initiatives."

AUSA

Best Workplace in Defense

VT-ARC
Virginia Tech
Applied Research Corporation

Virginia Tech Applied Research Corporation

900 North Glebe Road ▪ Arlington, VA 22203 ▪ vt-arc.org

Virginia Tech Applied Research Corporation (VT-ARC) is driven by a bold vision: to safeguard the nation and advance global welfare through innovative, mission-focused solutions. Its culture thrives on collaboration, integrity and excellence where smart risk-taking and intrapreneurship fuel groundbreaking advancements in wireless communications, decision science, workforce development, and technology engagement and analysis. VT-ARC doesn't just solve problems; they create transformational solutions with enduring impact.

As a nonprofit research organization, VT-ARC partners across government, industry and academia to deliver tailored analysis and engineering that address challenges of national and global importance. Its teams are empowered to think creatively, work flexibly and grow professionally in a dynamic, people-centric environment.

If you're passionate about innovation, service and making a difference, VT-ARC is more than a workplace, it's a mission.

CENITH INNOVATIONS
Ashburn, Virginia
cenithinnovations.com

Cenith Innovations, based in Virginia, specializes in creating cutting-edge AI technology to solve novel problems, primarily for the Department of Defense (DoD). Within the business, Cenith has gathered a cross-functional unit comprised of engineers, scientists and service-disabled veterans from the military and intelligence communities. As such, Cenith Innovations refers to itself as "subject matter experts and a go-to resource.

"The processes and products we use and develop to solve complex problems demonstrate decades of practical experience and expertise in building AI/ML-enhanced software, drawing on our defense and commercial backgrounds," says Aimee Kaiser, bids and proposal coordinator at the company.

As a remote company, there is an obvious flexibility that Cenith's employees have. That being said, the company also notes some challenges.

"As a remote company, it can be challenging to foster a common workplace culture. We hold a monthly virtual company-wide meeting where we all come together and showcase what different teams are working on. Because of this, the engineering teams can see, for example, what the operations teams are working on and vice versa," Kaiser says.

Beyond that, the company uses other virtual methods to help create a sense of community, such as playing rounds of the video game *Among Us.* Because the company has many virtual employees, Kaiser says that the company has a flexible scheduling program.

"We strongly encourage a good work-life balance," he says. "Our employees enjoy a flexible work schedule that gives them the freedom to step away from the desk and support their families and local community."

This fostering of community helps draw some of the top people in the industry, Cenith says. "We want rock stars who are committed to going above and beyond, who play to win and who consistently deliver way more value and productivity than average personnel," Kasier says.

To recruit and retain this top talent, Cenith offers "above-average salaries and benefits," including medical insurance, dental and vision insurance, 401(k) matching and flexible vacation time. Cenith also participates in the DoD's SkillBridge program, which provides soldiers with civilian work experience during their last 180 days of service.

Anxiety About the Algorithm

DEFENSE COMPANIES ARE EMBRACING AI. WHAT DOES THIS MEAN FOR BUSINESS?

BY JOE FRYE

Back in June, the Department of Defense (DoD) announced that OpenAI, the company behind ChatGPT, would be awarded a $200 million dollar contract to provide the DoD with artificial intelligence (AI). The following month, the Pentagon announced that it would start using Elon Musk's AI company, Grok, within its work.

While the government has been using AI for defense since the 1990s, these announcements—and the big names attached to them—perhaps represented for many Americans the inevitability of this technology. Not only are chatbots and image generation making their way into our everyday lives, AI is poised to become an integral part of the country's defense plans.

Leading up to his Senate confirmation hearing in January, Pete Hegseth, now the secretary of war, said his leadership would emphasizes developing AI for defense uses.

"The Department of Defense budget must focus on lethality and innovation, technology is changing the battlefield," the then-nominee wrote in his advance policy question interview. "We must identify, recruit and empower the best talent and manage our information effectively, enabled by modern tools such as AI/ML and data analytics."

While big names in the technology industry have signed contracts with the government and well-known defense companies like Lockheed Martin are leading the way forward for the country to utilize AI, smaller companies are also working to make sure that AI can be used within the country's defense forces. That outlook is reflected not only in large, long-term weapons programs but also in the Pentagon's growing interest in smaller technology suppliers. Deloitte's 2025 industry report, which tracks investment priorities across the defense landscape for the upcoming year, identifies AI-enabled systems and autonomous platforms as areas where agile companies can quickly fill capability gaps.

As the Pentagon and civilian security agencies look beyond the traditional tools for AI-enabled systems, Skydio has emerged as a key domestic supplier. The company recently landed a two-year, up-to-$74 million State Department contract to deliver its autonomous X10D drones and training programs across global law-enforcement operations. Under the agreement, the autonomous-drone company will supply its X10D small uncrewed aircraft systems (sUAS), along with related software, training and support.

"DoS INL has established a world-leading program in deploying drone technology in the highest need and highest impact areas around the world," says Adam Bry, Skydio's CEO and co-founder. "This award underscores the State Department's commitment to peace through strength by prioritizing U.S. technology and manufacturing to address global security challenges."

The contract signals that advanced autonomous drones are increasingly being adopted for broader national-security roles and illustrates how smaller companies—such as Skydio—are becoming important suppliers of AI-enabled aerial systems to the U.S. government.

Drones aren't the only place that companies are utilizing and advancing artificial intelligent to assist the DoD. Strike Solutions, a defense company based in Las Vegas, is using AI within its corporation. However, it is approaching this technology with caution.

"We only use AI where it actually earns its keep: narrow ML that sharpens what our sensors can see and helps clean up messy data. It's not the center of our universe, it's just a tool in the kit," says Max Goldwasser, director of Special Projects at Strike Solutions. "In an industry trending towards overuse of AI and Machine Learning, we differentiate by focusing on simple solutions first and only leveraging advanced computing where absolutely necessary. Our focus on practical and sustainable products cut through industry noise and deliver solid, lasting solutions."

Goldwasser and Strike Solutions are not alone in their concern about an overdependency of AI in the defense industry. In an article published by Harvard Medical School, Kanaka Rajan, associate professor of neurobiology in the school's Blavatnik Institute, warns that autonomous weapons powered by AI are ushering in a new era in warfare.

Rajan warns that the rise of AI-driven drones and robotic systems could make it easier for countries to get involved in conflicts, since they reduce the human cost traditionally associated with war. What's more, the article argues these technologies also threaten the scientific community, cautioning that civilian

AI research could be absorbed into weapons development. Perhaps most troubling, Rajan notes, is that these systems risk shifting responsibility for lethal decisions away from humans, complicating questions of accountability and ethics in conflict.

That being said, it is not just experts who worry about the role of this technology in conflict. An October 2025 poll from Gallup found that Americans are uneasy about AI's expanding role in national defense. Eighty-seven percent believe it's at least somewhat likely that a foreign government will use AI to attack the United States in the next two decades and 43% say such an attack is very likely. Additionally, that sense of vulnerability carries over into broader attitudes: 41% think AI will make national security worse, compared with just 37% who believe it will strengthen U.S. defenses. What's more, nearly half of Americans, 48%, oppose the development of AI-enabled autonomous weapons.

"[Americans are] right to be cautious," Goldwasser says, noting that these attitudes are reflected in Strike Solution's business model.

That being said, the Gallup poll suggests that most American's believe there is a place for AI within the defense industry with the poll finding that opposition softens under the fear of falling behind other nations: Support rises to 53% if respondents are asked whether the U.S. should build such systems before rival countries do.

It is this balance that has informed Strike Solution's approach to AI within its products and technology. "We don't chase grand unified AI solutions. We pick one hard problem at a time, solve it cleanly and make the tech behave in the real world instead of selling theory," Goldwasser says. "[We would like to see] a future where AI is dependable, tightly scoped and boring in the best way. The industry should focus on building real tools that make people safer and more effective, not hype machines pretending to 'think.'" ∎

Skydio's X10D drone

The Eastern Flank Deterrence Line

ENHANCING U.S. AND NATO GLOBAL DETERRENCE

BY COLONEL CHAD M. PILLAI, LIEUTENANT COLONEL SAM ROSENBERG, PHD, & MAJOR PHILLIP J. HOYING

The Russian general sets down the phone with the national command in Moscow and looks toward his subordinates to issue the order. For months, his forces have postured themselves near the border of NATO as part of a series of extensive exercises designed to lure the other side into complacency. The general is confident in his troops—veterans of the war in Ukraine—and their equipment consisting of long-range missiles and drones designed to overwhelm NATO's defenses.

Across the international boundary, the area seems deserted as NATO's forces are nowhere to be seen beyond the manmade obstacles designed to slow an attacker. Confident in his advantage, the general orders the surprise attack to seize key terrain within NATO to break the alliance's will to fight. However, as the Russian forces begin their movement across the border, a horrifying reality sets in as a wave of drones and long-range fires from unseen defending NATO forces descend upon the Russians.

This shocking reality persists for hours as the Russians assault into prepared defenses of man and machine. Worse for the Russians is that they are experiencing this all along the borders of NATO. By the time they face sizeable NATO-manned defenses, the Russian forces have been decimated to less than 30% of their starting combat strength and face an enemy disciplined and ready to counterattack with deadly consequences.

The Russian general later learned his forces drove straight into NATO's defenses that maximized the power of low-cost munitions, drones and long-range fires enabled by artificial intelligence (AI). The cost of this education was thousands of dead Russian soldiers and the wreckage of thousands of manned and unmanned systems.

This scenario draws directly on observations from the war in Ukraine and other recent conflicts, where widespread use of drones, proliferated fires and faster decision cycles have changed how battles are fought. These trends point to a new way of defending NATO's eastern flank based on persistent sensors, affordable mass and AI-linked command and control. That concept is the Eastern Flank Deterrence Line (EFDL), which converts technological adaptation into an integrated defensive architecture, built on persistent sensors, affordable mass and rapid command decisions, and marks a shift in how NATO plans to fight on its eastern flank.

THE NEW APPROACH

For years, the U.S. and NATO approached the defense of NATO's eastern flank along the border with Russia and Belarus with the same basic operational approach. When modeled, the result was predictably the same—Russia wins due to speed of action and overwhelming mass of forces it had available. The invasion of Ukraine in February 2022 and the massacre in Bucha forced the U.S. and NATO to fundamentally re-evaluate its defensive plans.

One significant way that NATO adapted to the threat on its eastern flank was the development of new regional plans that cleared laid out the roles of NATO's Joint Force Commands, NATO Theater Component Commands, NATO Corps and Divisions, and the responsibilities of host nations and contributing nations. Additionally, the ongoing conflict in Ukraine and the lessons learned of the employment of drones and AI utilizing multi-domain concepts afforded the U.S. and NATO to develop a new concept that seeks to outthink and outact the enemy within the regional plans.

THE CONCEPT

The genesis of the EFDL concept began in the early Spring of 2025 when planners from U.S. European Command (EUCOM) and the various domain subordinate component plans such as USAREUR-AF worked and modeled ways to defeat an enemy's complex Anti-Access/Anti-Denial (A2/AD) networks and prevent a fait-accompli where NATO is overwhelmed by Russia's mass.

This past Spring, USAREUR-AF hosted planners from across the U.S. European Command (EUCOM) staff and joint components in Wiesbaden, Germany, to conduct a war game. The outcome of the wargame was not that the original plan worked, but instead, it required joint planners to start from scratch using Joint All-Domain Operations (JADO) concepts to synchronize all-domain capabilities ranging from space, cyber, air, maritime, special operations and land to achieve the desired effects to overwhelm the enemy's complex A2/AD networks and its lead offensive echelons. The new JADO approach was briefly modeled using current and emergent capabilities to demonstrate its viability and then shared with our NATO Allies to expand its comprehensiveness as part of the EFDL.

THE PLAN

The plan to operationalize the concept is simple. First, employ a network of multi-domain sensors (space, cyber, electronic warfare, air, maritime and land) integrated with physical barriers and obstacles that can sense and provide targeting data to frontline robotic forces. Upon identification and acquisition of threat information, robotic defense forces simultaneously conduct offensive direct fire engagements against enemies' attacking robotic and manned forces while providing low-cost targeting solutions to multidomain long-range fires. As the adversary continues its attack, the robotic force, consisting of ground and aerial platforms, conducts its defensive engagement in a specified unmanned engagement area with the stated objective of attritting the attacking force to approximately 30% remaining.

The heavy attrition slows the adversary and returns the advantage to the U.S. and NATO's manned and robotic forces to conduct localized counterattacks and initiate a general counteroffensive. The defensive and offensive minded plan is designed to be replicated anywhere along NATO's Eastern Flank. Key to the plan's success is the development of technological hardware and software that will allow the U.S. and NATO to rapidly overwhelm an attacking force and set the conditions to threaten the destruction of remaining forces and the seizure and denial of terrain to the enemy.

TECHNOLOGICAL HARDWARE

For the EFDL to succeed, it must rely on hardware that can be built quickly, deployed in large numbers and sustained in combat. Without affordable scale, the concept remains on paper only. The Russians generally have relied on mass—personnel and machines—to overwhelm their enemies. During World War II, they employed their mass that was reinforced by the American "Arsenal of Democracy" to wear down and destroy the invading German armies. In February 2022, the Russians employed mass in Ukraine but fell victim to Ukrainian tenacity and battlefield ingenuity.

To counter the Russian mass advantage, the U.S. and NATO must re-arm; however, it cannot rely on expensive low-production rate weapons. Instead, the focus must be on returning to the

"Arsenal of Democracy" model where the objective is to mass produce "good enough" low-cost drones and long-range fire munitions. This approach will allow the U.S. and NATO achieve what Michael C. Horowitz termed "Precise Mass" that is based on low-cost precision-strike capable systems that can overwhelm an enemy's defenses and remain affordable enough to be sustained in a protracted conflict.

Of course, the Russians, Chinese and other actors are not going to sit around and watch as the U.S. and NATO develop precision mass capabilities. Therefore, a future conflict will see a proliferation of precision mass capabilities by both state and non-state actors. To gain a competitive edge in an era of precision mass, the development of AI enabled swarming capabilities are needed to overpower an enemy's ability to sense and respond.

The deterrent value of the proposed robotic force will be its ability to sense, swarm, strike an attacking force and rapidly generate capability while reducing the risk to manned formations. For example, ground robotic forces capable of reseeding obstacles and other AI-enabled systems rapidly repairing or producing low-cost robotics systems. However, the true deterrent value will not be achieved until the technical capabilities of swarming are achieved.

CONCLUSION

The character of war is constantly evolving as new technologies and concepts are developed and proliferated globally. The development of EFDL is an example of a concept driven by new technological capabilities that can be exported anywhere to create what General Donahue terms "global deterrence." While EFDL was built to deter Russia, it offers a model that could be applied in the Indo-Pacific and why it is informing the Army's transformation in contact initiative. Yet, as the U.S. and NATO face two-nuclear armed peers and China's industrial power, reliance on expensive, low-volume systems is no longer viable.

To compete, the U.S. and NATO must revive an "Arsenal of Democracy" approach: field persistent sensors, produce affordable munitions and drones at scale, and connect them through AI-enabled command and control. The EFDL concept provides the framework to integrate these elements into warfighting plans, turning investments into a coherent and credible deterrent by producing affordable munitions and drones at scale, integrating them into NATO's wargaming plans. ∎

This article represents the opinions of the authors and does not represent an official position or endorsement by the Department of War and the Department of the Army.

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Major Phillip J. Hoying is an intelligence officer in the U.S. Army Reserves who has served in numerous active-duty operational support roles in intelligence and planning. He was most recently an operational integration planner for U.S. Army Europe-Africa. He holds an MBA from EBS Universität and a Masters in Operational Studies from the U.S. Army's Command and General Staff College.

Dialed-in Tech
COGNITIVE ELECTRONIC WARFARE AND THE SPEED OF THE SPECTRUM

By Michael Simon, PhD, MBA, VP of Advanced Technology,
Parallax Advanced Research & Ohio Aerospace Institute

In modern conflict, milliseconds matter. Adversary radars hop frequencies mid-pulse, communication waveforms shift dynamically, and decision speed often dictates survival. Traditional electronic warfare (EW), which relies on human operators to assess and respond, cannot keep pace.

Cognitive EW leverages Artificial Intelligence (AI) and Machine Learning (ML) to detect, classify and counter signals at machine speed. It represents not just an upgrade to EW, but a paradigm shift in spectrum operations.

Furthermore, traditional EW depends on human decision making. Cognitive EW removes the operator from the immediate loop, allowing systems to:

- Sense and characterize signals automatically.
- Select and deploy the most effective countermeasure in microseconds.
- Adapt to unknown or evolving threats without pre-programmed libraries.

This shift is critical against adversaries employing frequency-agile waveforms, where static countermeasures are insufficient.

THE AI ADVANTAGE

At the heart of cognitive EW are digital In-Phase/Quadrature (IQ) samples—the fingerprints of electromagnetic signals. AI accelerates EW by:

- Classifying threats faster than traditional digital signal processing.
- Learning from limited examples, using reinforcement and deep learning.
- Generating adaptive responses, including deceptive signals that can mislead enemy radars.

Where defensive EW once aimed to avoid radar lock, AI enables offensive deception—feeding adversary systems false data and shifting the balance of spectrum power.

While promising, cognitive EW faces hurdles:

- Training data: Effective AI models require diverse datasets of threat signals. Real-world data is scarce, so researchers rely on simulated and emulated signals—making accurate modeling critical.
- Trust and explainability: Operators must understand why a system acts. Large language models may help by providing human-traceable reasoning for AI-driven decisions.
- Vulnerabilities: Adversarial manipulation of training data is a real risk. Enemy forces could exploit online learning loops, poisoning models in the field.

WHERE IT FITS IN DOD PRIORITIES

Cognitive EW also directly supports multiple service priorities:

- Army: Enhances air and missile defense and command and control by accelerating threat response times.
- Navy & Marine Corps: Advances AI and autonomy and information warfare, enabling more resilient C5ISR and spectrum dominance.
- Air Force: Aligns with advanced battle management systems and next-gen air dominance, ensuring survivability against agile threats.
- Space Force: Strengthens counter-space capabilities and resilient satellite architecture by disrupting adversary communication links and safeguarding space assets.

The key takeaway? Cognitive EW is not a niche upgrade—it is a cross-cutting enabler of each branch's modernization agenda.

NEAR- AND LONG-TERM APPLICATIONS

In the near term, Cognitive EW gives the military radar denial and deception, enabling non-stealth aircraft to operate in contested airspace and adaptive countermeasures against frequency-hopping communications.

In the long term, it provides fully autonomous EW agents operating without human intervention. While U.S. doctrine emphasizes human oversight, adversaries may not share this constraint. Preparing for that reality is essential.

MULTI-DOMAIN IMPLICATIONS

Cognitive EW blurs lines among EW, cyber and information warfare. Disrupting a satellite link, injecting false data or seizing broadcast signals are all spectrum-enabled effects. In future operations, EW will not stand alone—it will be part of an integrated multi-domain toolkit.

BUILDING THE BRIDGE

Advancing cognitive EW requires collaboration across government, industry and research. Independent research institutes and consortia, such as those run by the Ohio Aerospace Institute, can provide neutral testing grounds—ensuring fair validation of technologies before fielding.

Equally important are secure innovation centers and digital engineering environments, where classified datasets and system models can train and validate AI safely.

Thus, cognitive EW is at the nexus of speed, trust and adaptability. It is not just about keeping pace with adversaries—it is about shaping the spectrum fight itself.

As defense priorities converge on AI, autonomy and spectrum resilience, cognitive EW will play a central role in ensuring U.S. and allied forces maintain decision advantage in the electromagnetic battlespace. ∎

Michael Simon, PhD, MBA, is a lateral thinker with over 23 years of aerospace, engineering and business development expertise. Currently, he holds the position of VP of Advanced Technology at Parallax Advanced Research, a private 501(c)3 nonprofit research institute, supporting its affiliate, the Ohio Aerospace Institute, a private 501(c)3 nonprofit research institute, where he actively leads disruptive innovation.

ADOBE STOCK

Biotech in Defense

IMPLEMENTING A DEFENSIVE STRATEGY NOW AGAINST ADVERSARIAL MISUSE OF BIOTECHNOLOGY ON THE BATTLEFIELD WILL PROTECT THE NATIONAL INTERESTS OF THE FUTURE

BY LIEUTENANT COLONEL KATY PERSON

The U.S., its allies and its adversaries have spotlights on emerging developments in biotechnology. For most U.S. stakeholders, military applications in biotech might incite thoughts of monitoring for the next global pandemic, Neuralink-like devices to improve human-machine interaction or advanced wound dressings.

But defense applications in biotechnology exceed these renowned examples–and within a short five-10 years—diverse implementation of biotechnology in conflict and below armed conflict has the capacity to change the battlefield we understand today. They include:

1. Sensors that offer continuous monitoring (leveraging machine learning) for infectious or toxic agents in water sources or other critical resources.

2. Sensors implanted in warfighters that monitor human performance and potentially even administer antidotes in response to a known chemical or biological weapon agent.

3. Improved development of an immunization in response to an infection.

4. Improved and specialized development of probiotics or bacteriophages to prevent common infections.

5. Fuel and other bio-based chemical generation leveraging microorganisms for onshore (and decentralized) biomanufacturing.

6. Brain-computer interface (BCI) and more broadly human-computer interface to enhance warfighter effectiveness when using specialized equipment.

7. Advanced wound dressings that promote healing, which leverage biomaterials

8. Data storage in DNA

Recent developments in biotechnology also offer a number of technologies that should elicit concern for those nations that face an adversary willing to cross a clear ethical boundary. The duality of the core science offers the opportunity for adversaries to misuse the technology, resulting in an enemy force laden with critical advantage. In her 2024 blog post for the Center for Strategic & International Studies, Zelie Petit offers a few alarming misapplications of biotechnology in warfare. These areas of concern, which apply medical science to a defense misapplication, include:

1. Building super warfighters using somatic gene-editing, which is a process for editing genes of mature cells, where edits do not get passed to future generations. The non-defense application enables personalized and precision medicine.

2. Germline gene editing, which modifies the DNA of immature cells for population enhancement that, over the course of several generations, would benefit a bloodline

3. Development of biological agents, especially using genomic targeting

These biotechnology areas of concern are all offensive in nature and require a careful strategy for the U.S. and allies to optimally defend against.

While the time horizon for these misapplications to surface is likely several decades, the point in the path where the core research diverges between benevolent and suspicious use cases has likely already occurred.

That means that scientists pursuing those suspicious use cases will likely make incremental scientific discoveries that, unless published, may remain unknown to the rest of the global scientific community.

But the research paths aren't linear, and ensuring the U.S. leads

research in tangential biomedical pursuits will help technical military strategists stay abreast of misapplication development and determine countermeasures to thwart bioterror on the battlefield.

These technologies will fundamentally change the battlefield. And the adversary decides whether to align with American and/ or western ethics or determine its own ethical path.

The U.S. and allies are working on research and development in a number of the ethical use cases. Adversaries are certainly working on applications in both lists, and without comparable research, development, transition, funding and sheer volume of scientists continuing to learn about these concepts, we fall behind.

Allowing international treaties to take the place of a defensive strategy will not suffice. These technologies require thorough examination and wargaming. We can still maintain our ethical standards without allowing them to be a critical vulnerability. ∎
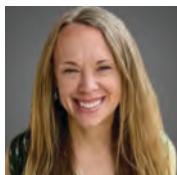
Lieutenant Colonel Katy Person is a battalion commander in the Army Reserve and army acquisitions officer. She created and ran the MIT Dual-use Ventures Incubator, an accelerator for MIT spinouts, from 2018-2024. She earned her master's degree in Public Administration from the Harvard Kennedy School.

Upcoming Conferences & Events

Peter B. Teets Award Dinner
Jan. 22, 2026
Los Angeles Marriott Airport Hotel, Los Angeles, CA
ndia.org
The Peter B. Teets Award Dinner celebrates the NDIA Space Division's highest honor—the Peter B. Teets Award, given to one government and one industry leader for exceptional, lasting contributions to space systems.

Military Additive Manufacturing Summit (MILAM)
Feb. 3-5, 2026
Tampa Convention Center, Tampa, FL
militaryam.com
This annual event brings together military, aerospace and defense leaders to explore the latest in 3D-printing (additive manufacturing) (AM) advances for Department of Defense (DoD) acquisition and logistics. Attendees will hear senior-level talks, see live tech demos and networks across industry and government to shape the future of AM defense.

36th Annual NDIA Special Operations Symposium
Feb. 17-18, 2026
The Westin DC Downtown, Washington, DC
ndia.org
NDIA's Special Operations community will convene to examine how modern conflict plays to the strengths of Special Operations Forces (SOF). Attendees will explore how SOF can integrate new tools and technologies with tried-and-true SOF principles to maintain their strategic edge.

40th Annual National Logistics Forum
Feb. 17-19, 2026
Hilton Tampa Downtown, Tampa, FL
ndia.org
This major forum gathers logistics professionals from government, industry and allied nations to explore how emerging technologies are reshaping readiness and supply-chain resilience.

AFA Warfare Symposium
Feb. 23–25, 2026
Gaylord Rockies Resort & Convention Center, Aurora, CO
afa.org
The Air & Space Forces Association's annual professional-development symposium brings together leaders from the Air Force, Space Force and defense industry to address current and emerging challenges in air, space and cyber warfare.

Future Soldier Technology USA
March 9-11, 2026
London, United Kingdom
smgconferences.com
The conference will discuss in detail soldier lethality, power management systems, mobility, sustainability and survivability.

2026 AUSA Global Force Symposium & Exposition
March 24-26, 2026
Von Braun Center, Huntsville, AL
ausa.org
This three-day event brings together leaders from the Association of the U.S. Army, the U.S. Army, industry and academia to explore key themes in modern defense.

Border Security & Intelligence Summit
April 1-2, 2026
National Housing Center, Washington, DC
dsigroup.org
Convenes key experts, decision-makers and innovators from across the Department of Homeland Security, intelligence community, federal agencies and industry for in-depth discussion on the latest advancements in border security technology and integration of new policies.

Space Symposium
April 13–16, 2026
The Broadmoor & Cheyenne Mountain Resort, Colorado Springs, CO
spacesymposium.org
This premier gathering of the global space community unites leaders from government, industry, academia and the military to tackle critical space issues, foster innovation and build international partnerships.

2026 Department of the Air Force Modeling & Simulation Summit
May 5-8, 2026
The Hotel Polaris, Colorado Springs, CO.
dafmss.org
The goal of this summit is to gather Air Force and Space Force M&S experts to learn about new M&S initiatives and techniques, network across military services and with industry experts, and to hear technological leaders' perspectives on how M&S can transition more training from the real world to digital.

LANPAC Symposium & Exposition
May 12-14, 2025
Sheraton Waikiki, Honolulu, HI
ausa.org
International event highlighting the role of land forces in the Indo-Pacific theater and their contributions to the Joint Force in peace and war.

Training & Simulation Industry Symposium (TSIS) 2026
June 17-18, 2026
Rosen Centre Hotel, Orlando, FL
ntsa.org
TSIS provides an opportunity to network and interact with procurement officials for training and simulation products and services from the Army, Navy, Marine Corps, Air Force and Space Force.

Military Robotics & Autonomous Systems USA
July 8-9, 2025
Arlington, VA
smgconferences.com
This event provide a chance to network and collaborate with dynamic international militaries, offering unique perspectives on the latest advancements in robotic capabilities.

EANGUS Annual Conference 2026
July 31-Aug. 3, 2026
Daytona Beach, FL
eangusconference.org
Unique opportunity to showcase products and services to National Guard Members.

Unmanned Maritime Systems Technology USA
Sept. 14-16, 2026
Arlington, VA
smgconferences.com
Key topics to be discussed include Unmanned Surface Vessels, Unmanned Aerial Vehicles, Unmanned Underwater Vehicles and more.

AUSA 2026 Annual Meeting & Exhibition
Oct. 12-14
Walter E. Washington Convention Center, Washington, DC
ausa.org
Informative and relevant presentations on the state-of-the-Army, panel discussions and seminars on pertinent military and national security subjects, and a variety of valuable networking events available to all that attend.

Global MILSATCOM
Nov. 2-5, 2026
London, United Kingdom
smgconferences.com
The premier event is dedicated to exploring the future of military satellite communications. It brings together over 150 attendees, including a 50/50 mix of industry leaders and government officials.

I/ITSEC 2026
Nov. 30- Dec. 4, 2026
Orange County Convention Center, Orlando, FL
iitsec.org
The Interservice/Industry Training, Simulation and Education Conference (I/ITSEC) is the world's largest modeling, simulation and training event.

62nd Annual AOC International Symposium & Convention
Dec. 8-10, 2026
National Harbor, MD
crows.org/events/annual-convention-symposium/
This flagship event of the Association of Old Crows brings together global experts in electronic warfare, electromagnetic spectrum operations, cyber-electromagnetic activities and information operations.

Additive Manufacturing Is Rewriting Defense Supply Chains—And Labor Economics

I f you're still measuring competitiveness by access to low-cost labor, you're playing last decade's game. Additive manufacturing (am) is shifting the center of gravity in defense and critical tech from labor arbitrage to capability arbitrage—a contest won by who can qualify parts faster, secure digital threads end-to-end and print certified hardware closer to the point of need.

FOLLOW THE MONEY

The Pentagon's AM spend has moved from pilot-curious to program-serious. The Army's Asymmetric Warfare Group, Rapid Equipping Force and expertise from RDECOM (now elements of DEVCOM) spearheaded the use of AM at the frontlines during the Global War on Terror. Although this never manifested in enterprise-wide adoption, it did create a template for future use cases.

Department of Defense (DoD) investment in AM surged from $300 million in 2023 to $800 million in 2024, and analysts project $2.6 billion by 2030. FY26 budget requests show $3.3 billion for AM-related projects, up 83% YoY. This isn't hype—it's structural.

Industry-wide, AM eclipsed $20 billion in 2023, with metal system shipments up 24% year over year. The momentum is real.

RESHORING AND FRIEND-SHORING: THE NEW PLAYBOOK

Reshoring used to mean "bring jobs back." In defense, it now means "bring capability back." Friend-shoring extends that capacity into trusted networks. DoD's AM Strategy and DoDI 5000.93 codify AM across design, qualification and sustainment—localizing production while de-risking adversarial exposure.

The CHIPS Act is doing this for semiconductors. AM is next.

THE LABOR SHIFT

AM doesn't just reduce labor—it changes the mix. Success hinges on design engineers, materials scientists, metrology experts and cyber-secure digital thread stewards. Legacy machinists need upskilling.

THE NETWORK EFFECTS

Defense manufacturing is becoming a network of agile, certifiable micro-factories linked by secure digital threads—not a race to the cheapest labor. Reshoring and friend-shoring will reward those who print capability—and punish those who still buy headcount.

Your competitors are already moving budgets and standards in that direction. The only question: Will you be an operator in this network—or a spectator with backorders?

Tim Crane
Editor-at-Large

Even the Defense Industry Needs Defenders.

Glenn D. Bellamy

Scott M. Guttman

For decades Wood Herron & Evans has worked with clients across the defense industry to protect their inventions, brands, and creative content. We bring expertise in all fields of engineering and in all phases of IP protection, enforcement, and monetization. Let's discuss how Wood Herron & Evans can protect your competitive edge.

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