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IN REVIEW

HIGHLIGHTS FROM THE ARMY'S BIGGEST SHOW

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Col. Liz Casely, chief of staff for the Network Cross-Functional Team, speaks at the C4ISRNET Accelerating IT Modernization panel on Oct. 14, 2019, at AUSA.

AROUND THE SHOW

A soldier holds awards outside the exhibition floor at AUSA on Oct. 15.

Gen. Joseph Martin, Army vice chief of staff, gives the keynote address at the NCO and Soldier of the Year Recognition Luncheon on Oct. 14.

ERIC KAYNE/FOR DEFENSE NEWS & ARMY TIMES

A solider sings during the opening ceremony of the AUSA annual conference.

A cadet holds a launcher equipped with an Aimpoint FCSI3RE dynamic universal reflex sight inside the exhibition hall at AUSA.

A Raytheon representative demonstrates a virtual reality device on the exhibition floor at AUSA on Oct. I5.

ERIC KAYNE/FOR DEFENSE NEWS & ARMY TIMES

Gen. James McConville, the Army chief of staff, speaks at the Dwight D. Eisenhower Luncheon.

Tim Barton, chief technology officer at Leidos, speaks at C4ISRNET's panel discussion on artificial intelligence applications, at AUSA.

Attendees inspect a helicopter with components by Moog inside the exhibition hall at AUSA.

ERIC KAYNE/FOR DEFENSE NEWS & ARMY TIMES

As an interim solution to counter existing threats, the U.S. Army bought two Iron Dome air defense systems.

ILIA YEFIMOVICH/GETTY IMAGES

WHY THE ARMY IS UNDER PRESSURE FROM CONGRESS TO COUNTER ROCKETS AND DRONES

BY JEN JUDSON
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WASHINGTON — The U.S. Army is under pressure to develop an enduring indirect fires protection capability, or IFPC, before fiscal 2023 due to a congressional mandate that the service buy more stand-alone interim systems if it doesn't have a plan for an overarching system by then.

The service bought two Iron Dome air defense systems co-developed by Israeli company Rafael and American firm Raytheon as an interim solution to counter existing threats — particularly cruise missiles. In the service's FY19 budget, Congress mandated the Army deploy two batteries by FY20.

To fill the gap, "there was nothing else out there that was deemed feasible, acceptable and suitable to get after the threats where IFPC is intended to operate," Brig. Gen. Brian Gibson, who is in charge of the service's air and mis-sile defense modernization effort, told Defense News in an interview shortly before the Association of the U.S. Army's annual conference.

"We bought Iron Dome because that was the only way we were going to meet timelines. It was the right thing to do, but it's a stand-alone weapon system and, at this point, our intent is to not buy more stand-alone weapon systems," he said.

The Army instead would like to take the best-of-breed launchers, sensors and shooters tied together by the service's Integrated Battle Command System to build a platform capable of countering rockets, artillery and mortar threats as well as unmanned aircraft systems and cruise missiles.

Iron Dome is "a very good weapon system for why it was designed and how it's employed inside of Israel," Gib-son said. "There's quite a bit of advantages, especially with its missiles and its launchers." The question is whether the service can we integrate Iron Dome with U.S. sensors and the U.S. architecture using IBCS. Gibson explain.

"Is that feasible in cost, schedule and time without significant changes in performance?" he asked. "If the answer is 'yes,' that's a pretty powerful path forward because you're basing it on your common mission command system you have today for the rest of your force, your air defense force. You're taking advantage of your sensors you have today and you're not introducing another different sensor inside of your defense programs."

That decision is still out in front of the Army, and the service is experimenting to try to decide the right path before it would have to commit to buying more interim solutions.

"For us as an Army and [the Department of Defense] and the joint force, failure would be if we are forced to buy more stand-alone weapon systems; and it's not just Iron Dome, you pick it. I don't care what it is," Gibson said.

The service has to make a decision well in advance of 2023, Gibson noted, because the Army needs time to decide on a path, make recommendations and develop a timeline. "I see that more as a near-term decision and recommendation that we're going to seek to achieve this year," he said.

The Army recently decided not to proceed with its self-developed multi-mission launcher. The service has also paused its efforts to qualify future interceptors for the IFPC program to include Lockheed Martin's Miniature Hit-to-Kill missile. ∎

An airman poses in front of an F-I5E Strike Eagle at the Paris Air Show on June 21, 2019.

AMERICA SOLD OVER $55B IN WEAPONS IN FISCAL 2019

BY AARON MEHTA
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WASHINGTON — The United States sold $55.4 billion worth of weapons to allies and partners around the globe in fiscal 2019, a nearly flat change from the previous fiscal year.

Of that total, $48.25 billion came in payments from partner nations, $3.67 billion from grant assistance programs such as Foreign Military Financing and the Global Peacekeeping Operations Initiative, and $3.47 billion for cases funded under Department of Defense Title 10 grant assistance programs, such as train and equip programs or the Afghan Security Forces Fund.

In FY17, the U.S. sold $41.93 billion in Foreign Military Sales, or FMS, deals. That number jumped 33 percent in FY18 to $55.6 billion in deals.

While another major jump did not happen in FY19, Lt. Gen. Charles Hooper, the head of the Defense Security Cooperation Agency, expressed confidence that the various efforts to reform his agency would continue to pay off.

"We, the United States, will continue to embody what makes us great; transparency in our business practices, responsiveness to our partners needs, integrity in all that we do and commitment to not only advance our national security objectives but those of our partners as well," Hooper said at the Association of the U.S. Army's annual conference Tuesday.

Casting arms transfers as a key tool for the era of great power competition, Hooper said: "We're gonna win this thing, folks. Working together — industry, private sector, the implementing agencies, DoD, State [Department] — all of us. We're gonna win this thing."

Sales totals can look volatile year over year, as large procurements like fighter jets can have an outsized impact on the top line. In FY16, sales totaled $33.6 billion; FY15 totaled just more than $47 billion; and FY14 totaled $34.2 billion.

But three years of strong numbers represent a trend, benefiting both from reforms to the FMS process begun during the Obama administration and a prioritization on arms sales by the Trump administration, which views them as an economic driver.

"Security cooperation has been elevated to a tool of first resort for U.S. foreign policy," Hooper said.

The State Department approved $67.9 billion in weapon requests in FY19, covering 64 individual procurement requests from 28 different countries and a NATO consortium. Those FMS cases will be reflected in the coming years and serve as a sign that American arm sales totals will likely remain strong going forward.

Since taking over at DSCA, Hooper has been public with his desire to reform how the security cooperation enterprise teaches and matures its workforce. That goal became closer last month with the official launch of the Defense Security Cooperation University, an idea Hooper first suggested at the 2017 AUSA conference.

Hooper called the creation of the university a "vision" he has had for a long time, and noted it is the first "career field education institution" since the establishment of the Defense Acquisition University in 1991.

"I'm excited for what 2020 has in store for us," he said. ■

3 ways the Pentagon wants to make buying American weapons easier

WASHINGTON — America sold more than $55 billion in weapons abroad in fiscal 2019, but the man in charge of those efforts hopes to increase sales as he continues to tinker with the security cooperation system.

Security cooperation has long been a foreign policy tool in America's pocket, but under the Trump administration, it "has been elevated to a tool of first resort for U.S. foreign policy," Lt. Gen. Charles Hooper, the head of the Defense Security Cooperation Agency, said during a panel at the Association of the U.S. Army's annual conference.

Since taking over at DSCA, Hooper has implemented a series of reforms aimed not only at speeding the process up, but shaving costs for potential buyers. He intends to keep that reform effort going in 2020. Here's how:

Continue to cut surcharge costs.
In June, DSCA dropped a surcharge on American defense goods sold abroad from 3.5 percent to 3.2 percent; later that year, the agency also cut a transportation administration fee. Both those charges are used to support DSCA operations, but some in the security cooperation process had argued the increased prices for customers would lead potential buyers to look to cheaper Russian or Chinese goods in the future.

Hooper said that in 2020, DSCA plans to also cut the contract administration surcharge — applied to each FMS case to pay for contract quality assurance, management and audits — from 1.2 percent to 1 percent.

"This will reduce the overall costs of FMS and could potentially save allies and partners 16.7 percent in CAS surcharges in this coming year," Hooper said.

Make it easier for customers to get custom weapon systems.
The FMS system is set up to help sell weapons that are identical to systems already in use by the U.S. military. It's easier to move a package of Abrams tanks equipped with the same gear that multiple countries use than to push through a custom version with specific capabili-ties. But Hooper noted that partners are moving away from standard designs and are looking for systems "designed and tailored to meet their needs. Our system was not initially designed to process these types of systems, which increases time and cost in the U.S. response."

To help deal with that, DSCA established an "interagency non-program of record community of interest," which involves all the agencies that have a say in the process, to figure out ways to make moving custom systems more plausible. The goal is to have a new pathway for moving those capabilities by 2020, which Hooper says will "reduce the time it takes to review request for non-program of record systems, to facilitate industry ability to compete in this global market."

Plan out commercial offsets.
Many countries require offsets from industry for big foreign military sales. These offsets are essentially throw-in sweeteners for the buying country, put together from the industrial partner. In the past, these were often things like building a new library or school. But in the last two decades, some countries specifically requested high-end technologies or tech transfer to jump-start their domestic defense industries.

Because offsets are negotiated between the industrial partner and the customer nation, the Pentagon, which serves as the in-between for an FMS case, often finds out about offsets only at the end of the process. But with offsets becoming more technological, those now require more review time, and so a deal can slow down while the relevant agencies approve the deal.

Hooper hopes 2020 will see industry better inform DSCA of potential offsets early in the process so that last minute hangups can be avoided.

"We continue to encourage our industry partners to inform the U.S. of potential offset requirements early on so that we can begin the necessary technology security foreign disclosure and policy reviews as early as possible," Hooper said. ■

— Aaron Mehta

TOUGHER DECISIONS ARE COMING IN THE ARMY'S NIGHT COURT BUDGET REVIEW

BY JEN JUDSON
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WASHINGTON — The U.S. Army is preparing to embark on a third all-encompassing deep dive into its budget to ensure it properly allocated money to cover its ambitious modernization efforts. And while the process may be getting easier, the decisions will get tougher.

The budget review process has been coined "night court" after the 1980s television show about an eccentric New York judge.

There's always been a detailed review process at the program level every year, Lt. Gen. James Pasquarette, the Army G-8 chief, who is in charge of planning, developing and resourcing programs, told Defense News.

Before night court, the Army would hold an off-site meeting at the end of the calendar year to begin its five-year budget plan, Pasquarette said. Decision-makers weren't involved in the details "and often I saw frustration like they didn't see they had decision space," he added.

Night court fundamentally changed that.

In the Army's first night court, the chief, secretary, vice and undersecretary presided over decisions — big and small, easy and tough — for roughly 600 programs. It was a long and arduous process but resulted in the shifting of more than $33 billion from programs across the fiscal 2020 through fiscal 2024 five-year plan. Those funds were moved because the associated efforts did not meet the Army's modernization plans to make the force more lethal and agile against near-peer enemies.

That budget is awaiting approval from Congress.

The service repeated the process for the FY21 budget, which is complete. Army Secretary Ryan McCarthy said the Army was aiming to find another $10 billion across the five-year plan to apply to priority programs. The request will be released around February 2020.

The Army will soon begin another round of night court for the FY22 through FY26 plan after picking much of the low-hanging fruit from programs that will no longer meet the service's needs in the future.

"We're going to get a ladder," Army Chief of Staff Gen. James McConville told Defense News in an interview at the Pentagon just ahead of the Association of the U.S. Army's annual conference.

Getting after that higher fruit means the Army will have to work harder to ensure funding is in the right place — and that means making tougher decisions.

"It's not about winning the last fight, it's really about being ready to win the next fight, and we believe we must modernize the Army and we know that there's only so much in the budget," McConville said. "The secretary and I are shoulder to shoulder. We believe in this thing and we were there for night court at the birth and we're going to stay with that and we are going to continue to resource the highest priorities first, and that means some things are not going to get resourced because we don't have enough money."

While the decisions may get more difficult, the chief and secretary are entrusting more of the decisions to leaders below them now that night court has become a regular budgeting activity and senior leaders know exactly where the Army is headed.

"We've educated a lot of the senior leaders on how resources work, and they understand the trades now," McConville said, "so they are actually doing a much better job within their portfolios of moving the money around, which I think is going to make it easier for us to make the tougher decisions."

The expectation now is that the chief and the secretary will only make "the really hard decisions," McConville said, rather every decision, which is what happened during the first night court.

Money is generally managed better, McConville said, from how the service handles de-obligations to improving contracting methods. "All these other type things have helped us make sure that our priorities are being resourced," he added.

Empowering Army senior leaders to make decisions as part of the night court process has made the effort more efficient, McCarthy told Defense News in a recent interview.

"There's a great partnership, but there's also much more ownership," he said, "They drive these investment plans where they have the appropriate level of expertise — the owners from a policy or an execution standpoint are in charge."

The toughest decisions will still fall to himself and the chief, McCarthy said, such as divesting a current system to pay for a future one, but that may not involve a lengthy meeting. "A lot of that might just, for me personally, be reading a briefing book by myself and I take notes, and then I may ask for a follow up," he added.

For the equipping peg, Pasquarette serves as the manager of the night court effort, while the head of Army Futures Command, Gen. Mike Murray, and acquisition boss Bruce Jette make the decisions.

Pasquarette has already attended a few sessions to discuss the challenges, strategies and targets. More such meetings are planned for the end of October through mid-November.

Part of those discussions will include the Army's goals for night court, he said, and how to set parameters going forward.

Since the Army has new leadership with McConville and McCarthy, the guidance might change, Pasquarette acknowledged, but clarity on the way forward should happen "in about a month."

The FY22 through FY26 program objective memorandum is an important one for the Army because it's roughly the time when the service will begin spending more of its budget on future programs than it plans to spend on current programs.

"We're going to take a hard look at the equipping portfolio," Pasquarette said, and the "screening criteria will continue to be the same as it has been," which is whether the Army can operate in the future environment against pacing threats Russia or China. ∎

SPC. JOSHUA SYBERG/ARMY

WHAT DO THE ARMY'S CYBER PROTECTION TEAMS NEED?

BY ANDREW EVERSDEN
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WASHINGTON — The Army cyber protection teams need simple tools with better training capabilities, the teams' project manager told Fifth Domain.

In an interview Oct. 15 at the 2019 Association of the United States Army conference, Col. Chad Harris, project manager for Defensive Cyber Operations at the Army Program Executive Office Enterprise Information Systems, shared what his teams are looking for in the new tools that it adds.

"This goes back to tools that are intuitive [and] are easy to use and easy to train on," said Harris.

Harris said he "continuously" talks to industry about these needs.

"When you give us a tool, make sure you're looking at is this thing user friendly," Harris said. "Does it have automation involved and does it make it easy for that soldier to pick it up and learn it in a short period of time? Does it have a training package that goes along with it that allows us to quickly deploy the tool?"

Part of the need for easy-to-use tools stems from the cyber workforce shortage, he added — a problem throughout the private and public sector that is also affecting the work of the cyber protection teams.

"Their time is valuable," Harris said. "So the training has got to be targeted. They've got to be able to train quickly and they've got to be able to train wherever they need to train at."

He also said that new tools need to come with a training package. Harris said that the training needs to be "tailorable" and "specific" to the needs of each individual — not require 40 hours per week in the classroom.

"We've got to be able to train virtually; we've got to be able to train live," Harris said. "And we've got to have those training sessions off hours. And we've also got to have that training available or that help available for them 24/7, 365 [days a year]." ∎

US Cyber Command has plans for the energy sector

WASHINGTON — U.S. Cyber Command is working with the energy sector and the Department of Energy as a way to bolster their relationship in case of a malicious, or catastrophic, cyberattack.

Cyber Command follows a philosophy of persistent engagement — the notion that it has to be in constant contact with adversaries in friendly, neutral and enemy cyberspace — and officials have stressed this includes enabling other partners. It also includes using its unique authorities to operate outside U.S. networks as a way to provide warning for domestic agencies about potential threats.

Now, the Department of Defense and Cyber Command are working on a pathfinder effort with DOE. As part of the initiative, the Pentagon has tasked staffers with better understanding how the energy sector operates.

The exercise, called Grid X, examined a catastrophic power failure, Maj. Gen. Stephen Hager, deputy commander of the Cyber National Mission Force, said during an Oct. 15 panel at the annual Association of U.S. Army conference.

The CNMF's teams watch specific adversaries and work to target those actors before they reach U.S. cyberspace.

Hager said Cyber Command's role in the exercise was to determine what kind of help the Defense Department can provide in one of those catastrophic events. This could include offering response teams or taking action against a cyber adversary.

He also said they can conduct what's called defensive cyber operations-response actions — which are "defensive" operations that take place off the DoD's networks and are the same actions taken by offensive cyber teams — to make the immediate cyber effect go away.

"A lot of it is just engagement to see how they're operating because we don't have the authorities to do anything domestically. We have to have either a [Defense Support to Civil Authorities] request or somebody has to specifically ask us for support," he said.

Other officials have noted the importance of these pathfinders in helping DoD be better prepared to step in an help if need be.

"Some of these pathfinder activities have been really helpful for us to understand what is actually critical and how would we approach our operations for the different perspective to help them in their defense," then Maj. Gen. Timothy Haugh, the previous commander of the Cyber National Mission Force, said in May. He has since earned his third star and leads 16th Air Force.

Hager explained the importance of this engagement and what it means for his forces.

"My soldiers and airman and Marines are getting trained on somebody's infrastructure," he said. "And that helps us in the long run be better military folks and then it also helps us build those relationships."

Much of the energy sector's infrastructure is different from the internet-based infrastructure cyberwarriors are trained and operate on. The military has made an effort recently to increase training on these industrial control systems (ICS) and supervisory control and data acquisition, known as SCADA, systems for both offensive and defensive purposes given they can be both a vulnerability if targeted, but also useful targets themselves. ∎

— Mark Pomerleau

BOEING AND SIKORSKY'S DEFIANT IS BACK UP IN THE SKIES

BY VALERIE INSINNA
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The SB-1 Defiant flew for more than 30 minutes in its first flight in Florida on March 21, 2019.

COURTESY OF SIKORSKY-BOEING; STAFF SGT. MARY JUNELL/ARMY

WASHINGTON — The SB-1 Defiant, built by a Boeing-Sikorsky team, resumed flight testing in September after the companies made modifications to the demonstrator aircraft.

During the hourlong fourth sortie on Sept. 24, the Boeing-Sikorsky team demonstrated the Defiant could fly every direction at speeds of 20 knots, said Ken Eland, Boeing's director and manager of the company's future long-range assault aircraft program.

The Defiant is one of the aircraft taking part in the U.S. Army's Joint Multi-Role technology demonstration, which is informing the requirements for a future long-range assault aircraft, or FLRAA.

The coaxial helicopter first flew in March and clocked in two additional flights in April. However, the compa-

nies took a pause in flight operations after discovering an issue with the gearbox of the propulsion system test bed, or PSTB, which Sikorsky and Boeing are using for extensive ground tests of the aircraft.

"We saw a phenomenon called 'bearing creep' in the gearbox, and so we made a minor design tweak to keep that from becoming an issue," Eland said. Bearing creep occurs when a bearing begins to slip, causing wear to the surface.

The problem was found during a planned disassembly and inspection of the PSTB, Eland said. Although immediately fixing the issue in both the PSTB and test aircraft added six to eight weeks to the companies' test schedule, the Boeing-Sikorsky team opted to immediately fix the problem rather than

kicking it down the road and having to absorb a larger delay to the schedule later.

"We could have gotten away with waiting on the aircraft, but … it saved us weeks, if not months, to do it now as opposed to pushing it out as far as we could and then having to make that modification … we were still waiting for the PSTB to come back up and get more data run to expand the envelope," he said.

A fifth flight of the aircraft is scheduled to occur in two weeks and will help to expand the flight envelope of the aircraft by pushing the speed to 40 knots. Boeing and Sikorsky officials believe the aircraft will be able to hit a top speed of 250 knots, more than the 230-knot requirement set by the Army. ■

Shadow drones will get new sensors

WASHINGTON — The Army of tomorrow needs data collected today, and every new pairing of sensor and platform is another node in the ever-hungry maw of future artificial intelligence.

At the 2019 Association of the United States Army's annual meeting, defense giant L3Harris Technologies announced an order from the Army for 65 electro-optical sensor suite units, specifically to mount on the service's latest Shadow drones.

Configured to mount on the Tactical Unmanned Air Systems Shadow UAV (RQ-7Bv2), the contract is for 65 WESCAM MX-10D electro-optical, infrared and laser designator sensor suites.

The sensor suite can geolocate and tag targets, on land or in the air.

The sensor collects information for fighting at a distance, with an eye toward the threats posed by new vehicles or weapons in use across the globe.

Before receiving the contract, L3Harris delivered eight of the sensors as part of a testing program, which then led to the larger contract.

For the Army to take advantage of AI, it will first need to collect data on which it can train AI algorithms.

While the Shadow was already a data-rich platform, every new iteration provides more information that cannot be collected anywhere but by military vehicles. ■

— *Kelsey D. Atherton*

Recent testing has shown that the Stryker vehicle currently is required to stop for the operator to get out so he or she can fire the weapon and climb back into the vehicle.

ARMY DELAYS STRYKER-MOUNTED JAVELIN MISSILES

BY JEN JUDSON
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WASHINGTON — The U.S. Army is delaying the integration of Javelin anti-tank missiles onto the Stryker combat vehicle due to problems in connecting the weapon to the remote weapons station, according to Col. Bill Venable, the service's program manager for the Stryker combat vehicle.

The service has been working to mount Javelins on the Stryker along with a 30mm cannon as part of a joint urgent operational need from the European theater.

The Stryker Infantry Combat Vehicle Dragoon was evaluated by the 2nd Cavalry Regiment in Germany and the Army subsequently decided to field 30mm cannons on more of its Stryker vehicles going forward. The service initiated a competition earlier this year to come up with designs to integrate the gun onto the vehicle.

The Army incorporated a Javelin capability into the Stryker, but it required the vehicle to stop and the operator to get out and fire the system and climb back into the vehicle.

While the Army expected to complete the integration of the Javelin system on the Stryker later this year, it has delayed the effort by over a year.

Integrating Javelin and the remote weapon stations has "a specific set of constraints for this vehicle," Venable told Defense News in an interview at the Association of the U.S. Army's annual conference.

The service is taking the highly capable and long-fielded Javelin and integrating it onto a remote weapons station that is also fielded. The RWS system is actually being taken from the flat-bottom Stryker fleet and being upgraded to accommodate the weapon.

"We have some technical risk that we're managing. I think it's safe to say that we're going to slip fielding from this summer," Venable said. "Because of the technical risk encountered in this latest test cycle, we're going to have to slip the fielding cycle."

The issues cropped up in the Army's early user assessment three weeks ago, he said.

The technical difficulties have been fixed, Venable said, but the system has to get back into the test cycle and move through a materiel release approval process to get to fielding, Venable said.

"Other than that, I think the capability itself works great, the technical risk wasn't associated with and we validated our functionality of the system," he added. "It's just marrying up the two, getting them to talk to each other and the fire control stations down below in the hull."

Getting all of that integrated into a new suite of computing and presentation capabilities has "been technically challenging for the team," Venable said.

The plan now is to field the capability to the 2nd Cavalry next summer and then to the 1-2 Stryker Brigade Combat Team at Joint Base Lewis-McChord, Washington, the following summer. ■

ARMY HIRES RAYTHEON TO BUILD NEW MISSILE DEFENSE RADAR

BY JEN JUDSON
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Raytheon's Lower Tier Air and Missile Defense Sensor is displayed at the AUSA conference on Oct. 14, 2019.

WASHINGTON — Incumbent Raytheon will build the U.S. Army's new missile defense radar to replace the Patriot air and missile defense system's current radar as part of the service's future Integrated Air and Missile Defense System.

The company has taken its years of experience refining gallium nitride, or GaN, technology at its Massachusetts-based foundry to help design a new radar system that will provide the Army 360-degree threat detection capability in a configuration that includes one large array in the front and two smaller arrays in the back.

The contract is worth about $384 million to deliver six production-representative units of the Lower Tier Air and Missile Defense Sensor, or LTAMDS.

"Our clean-sheet approach to LTAMDS reinforces Raytheon's position as the world's premier air and missile defense radar capability provider," Ralph Acaba, president of Raytheon Integrated Defense Systems, said in a statement.

The service earlier this year held a "sense-off" at White Sands Missile Range, New Mexico, between three working radars from Raytheon, a Lockheed Martin and Elta Systems team, and Northrop Grumman. The service analyzed the results and was in contract negotiations with the winner as the Association of the U.S. Army's annual conference, which kicked off Oct. 14.

Brig. Gen. Brian Gibson, who is in charge of the service's air and missile defense modernization effort, told Defense News in an interview ahead of the show that negotiations were ongoing and that the award would happen soon.

Without public knowledge of the win, Raytheon brought its offering for the LTAMDS competition to the show and passed out red lanyards advertising LTAMDS that said: "No time for a blind spot," referring to the 360-degree coverage capability.

Replacing the Patriot radar has been a long time coming. The radar was first fielded in the 1980s, and the Army previously attempted to replace the system with Lockheed Martin's Medium Extended Air Defense System through an international co-development effort with Germany and Italy. But that program was canceled in the U.S. after closing out a proof-of-concept phase roughly six years ago.

Since then, the Army studied and debated how to replace the Patriot radar, while Raytheon continued to upgrade its radar to keep pace with current threats. The service has acknowledged there will come a point where radar upgrades will be unable to keep up with future threats.

Taking years to decide, the service moved forward on a competition to replace the radar in 2017 and chose four companies to come up with design concepts for the capability — Raytheon, Lockheed Martin, Northrop Grumman and Technovative Applications.

Toward the end of 2018, Raytheon and Lockheed were chosen to continue technology development under that program. But then the Army redirected its plans into a sense-off competition last fall.

Raytheon is expected to build six prototypes by the end of fiscal 2022.

The radar that Raytheon specifically designed for the Army uses next-generation GaN and is 7 feet longer but 11 inches more narrow than the current radar unit. But it no longer requires outrigger stabilizing legs. Rather, the system is held stable by jacks underneath, which means it takes up less space on the sides, according to Bob Kelley, Raytheon's director of domestic integrated air and missile defense programs for business development and strategy.

The radar meets all of the Army's mobility and transport requirements, Kelley said, including fitting in a C-17 aircraft.

The smaller arrays are about 50 percent of the size of the legacy Patriot system's array, but are twice as capable due to the advancements with GaN technology, he added.

Though the Army backed off its 360-degree detection capability requirement for the competition, Raytheon has been steadfast about keeping that capability in its offering.

In addition to being able to constantly cover 360 degrees, the radar can see farther than the currently fielded Patriot radar. That radar is unable to fully support the maximum kinematic range of the Patriot Advanced Capability-3 Missile Segment Enhancement that it fires. The Army claims that its effort to tie the Terminal High Altitude Area Defense System with Patriot would help the MSE missile reach its full potential.

The LTAMDS will be able to fully support current missile systems including PAC-3 MSE range capability and future missiles ranges, Kelley said. ∎

WHY IS MERCURY SYSTEMS INVESTING $15 MILLION IN MICROELECTRONICS PRODUCTION?

BY NATHAN STROUT
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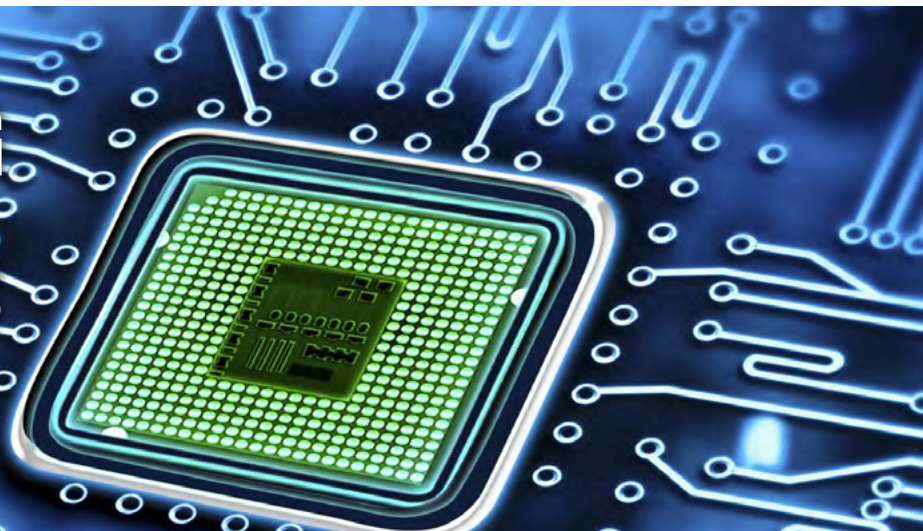
WASHINGTON — Mercury Systems, Inc. is investing $15 million in microelectronics to help fill a government need for trusted components.

The Department of Defense has raised concerns in recent years over foreign-built microelectronics, noting that adversaries with access to foreign-built microelectronics could install malware and bugs on those products. The nightmare scenario, according to Bill Conley, Mercury's senior vice president and chief technology officer, would be a kill switch that would allow that government to shut down those microelectronics at the start of a conflict, rendering a weapons systems useless or unreliable.

DARPA's Electronics Resurgence Initiative is an attempt to address this growing concern by creating a more specialized, secure, and automated industry for the domestic commercial and defense sectors. According to Mercury, their spending is one of the first commercial applications of that effort.

"This investment directly addresses the DoD requirement for made-in-USA microelectronics and equips the warfighter with a state-of-the-art military-grade product, leveraging the most advanced commercial technologies," said Mark Aslett, Mercury's president and chief executive, in a statement.

The $15 million will be used to expand a facility in Phoenix, Arizona, so the company can build the custom microelectronics for the government at scale. Mercury began investing in the field three years ago with the company's acquisition of Microemi's custom microelectronics business.

"In Phoenix, where we have our microelectronics advanced state of the art center, we're expanding the clean rooms there in order to take all these disparate capabilities from the commercial industry and defense and integrate them into those packages," said Thomas Smelker, Mercury's vice president and general manager.

Conley said the company's aim is to become the first that can provide trusted chip-scale to system-scale processing solutions. ■

DO TROOPS HAVE THE SATCOM CONNECTIVITY THEY NEED?

BY NATHAN STROUT
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WASHINGTON — A survey of war fighters published by commercial satellite company Viasat shows less than half of respondents have the necessary level of connectivity to execute their mission objectives.

The survey is the result of a partnership between Viasat, a satellite communications provider with a long history of military contracts, and the Government Business Council. According to Ken Peterman, Viasat's president of government systems, the survey is likely the first state of military communications study.

The survey, released Oct. 14 on the first day of the annual Association of the U.S. Army conference, includes 330 defense leaders selected from 500 respondents, with representatives of all branches of the military.
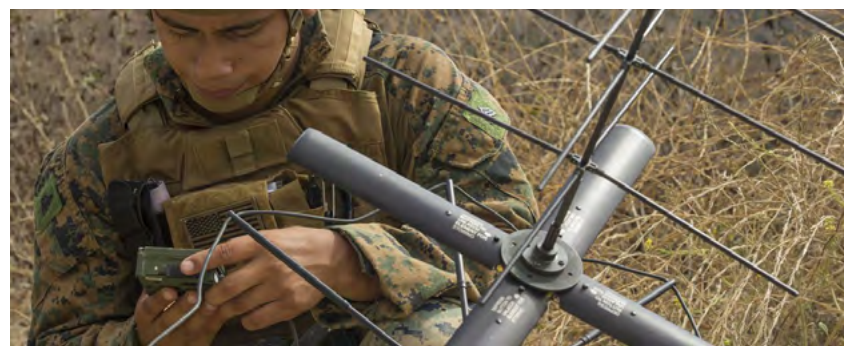
The survey's top-line result was that war fighters do not have the levels of connectivity they need.

According to the survey, there's a gap between what levels of connectivity war fighters expect and what they have. While 68 percent of respondents expect the same level of connectivity on the battlefield as in the civilian world, only 46 percent felt they had the connectivity needed to successfully execute their missions.

Furthermore, 23 percent of respondents said U.S. defense communications technology was either behind or far behind its adversaries, with another 37 percent saying the U.S. was on par with those adversaries.

Resiliency was also an area of concern, with 60 percent of respondents saying "improvements in defense communications technology are most needed to strengthen the military's ability to maintain secure connectivity in the face of digital threats."

For Peterman, the survey results confirmed his understanding of the state of military satellite communications and the needs of war fighters.

"The results of the survey are really clear, and I think that it's insightful and it forces us to confront the reality that the status quo is not working, that this technology is not getting to the war fighter fast enough," said Peterman. "We can't take five to seven years to validate a requirement, budget the money, establish an acquisition strategy, and then finally, five or seven years in, issue an RFP and say 'who wants to bid on this?'"

Seventy percent of those surveyed said they agreed that adopting new acquisition processes would allow them to update communications technologies at the speed of relevance.

Viasat and Government Business Council said they expect to conduct the study annually. ■

CRSTBRT/GETTY IMAGES; PFC. DALTON S. SWANBECK/MARINE CORPS

The Tactical Electronic Warfare System is one prototype the Army is using to inform the development of its Terrestrial Layer System.

ARMY PREPS FOR ELECTRONIC WARFARE PROTOTYPES

BY MARK POMERLEAU
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WASHINGTON — Within the next six months, the Army is expected to choose at least two companies for prototypes and experiments on the service's first integrated signals intelligence, electronic warfare and cyber platform.

The Army has been conducting what it calls "pre-prototypes" to test capabilities, concepts and receive feedback from soldiers for the platform, known as the Terrestrial Layer System.

The window for proposals to evolve these pre-prototypes closes Oct. 31 and the Army's electronic warfare program manager said the plan is to have a decision on the winners by April.

"The next goal is for them to provide some prototypes and we'll put those prototypes on a platform and then we'll actually put those in the soldier's hand to help evaluate those," said Col. Kevin Finch, program manager for electronic warfare and cyber within Program Executive Office Intelligence, Electronic Warfare and Sensors. Finch spoke to C4ISRNET during an interview Oct. 15 at the annual Association of the U.S. Army conference. "Then we'll downse-

lect to one vendor and then we'll go forward."

Finch said the plan is to have the first units equipped with the system by fall 2022.

The two primary pre-prototypes include the Tactical Electronic Warfare System (TEWS) — mounted on a Stryker and its smaller Flyer72 based variant Tactical Electronic Warfare Light (TEWL) — and the Tactical Signals Intelligence Vehicle (TSIG). Both are integrated platforms the Army is using to experiment with technologies that would allow for sensing, signals intelligence, electronic warfare and RF-enabled cyberattacks.

TEWS is being used with 2nd Stryker Brigade Combat Team, 2nd Infantry Division, which took the system to the National Training Center as a way for Army leaders to learn how it was used. It was also part of the Cyber Blitz experiment in September.

TEWL has also been used by 173rd airborne brigade combat team in Vicenza, Italy, according to officials with General Dynamics. Army leaders aren't just interested in the capability

itself, officials and members of industry have said, but the concepts for how they will be used.

Finch explained that service leaders aren't exactly sure which vehicle types TLS will be outfitted to.

"The feedback that we're receiving from [Forces Command] is driving that as well as the feedback from the units," he said. "Obviously, they want to see a vehicle that is like to the formation. For a Stryker to have a Stryker. For an armored formation it would be an [Assault Breacher Vehicle] type of platform. Right now that's actually one of the decisions we're waiting to get finalized moving forward is: 'Hey, what platform do you need to put this on?'"

Officials have described a TLS family of ground systems to include an extended range, which will be used as a division and corps asset, TLS large, which will be a mounted on a large vehicle like a Stryker, TLS small, which will likely remain vehicle mounted but feature a smaller form factor, and TLS dismount.

TLS large is expected to be the first to be developed and fielded. ■

BAE wins Army open-source intel contract

WASHINGTON — The Army has awarded BAE Systems a $437 million task order for open-source intelligence support, the company announced Oct. 15 during the Association of the United States Army's annual conference.

As part of the task order, BAE Systems will provide the Army and Army Intelligence & Security Command (INSCOM) approved partners with open-source solutions to publicly available data.

"We're proud to continue to partner with the U.S. Army and support their critical national security missions with this new capability," Peder Jungck, vice president and general manager of BAE Systems' intelligence solutions business.

The company won the initial award of the five-year task order and began ramping up in August, Jungck said. The task order is an extension of projects the company has been doing for the Army, but this is the first time the work been consolidated and awarded as a larger contract, he explained.

"If you look at contracts in general around OSINT there's been kind of small ones, there's been lots of pilots out of agencies and even within the Army and throughout INSCOM there were different kind of brigades and battalions that had their own set of tools," he said. "This is one of the first of the really large OSINT and AI consolidation contracts. I don't think anybody's really had a large one like this."

The contract ranges from providing open-source intelligence solutions to training Army personnel on how to treat open-source data, whether it's social media, news or other publicly available information. According to Jungck, the company will take the tools it's developed from pathfinder programs, prior contracts with agencies such as DARPA as well as internal innovations to provide the Army with the tools they need.

BAE Systems will also help the Army determine the appropriate policies and governance structures to apply to OSINT as a separate data type. As part of its support, the company will also establish and manage a secure cloud hosting environment. ■

— Nathan Strout

WHEN IT COMES TO ELECTRONIC WARFARE, THINK ABOUT A LIGHT BULB

BY KELSEY D. ATHERTON
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WASHINGTON — At the 2019 Association of the United States Army's annual meeting, the Sensors Open Systems Architecture consortium delved into an Edisonian past to meet the needs of plug-and-play warfare.

The tricky job of a consortium is getting a collection of companies, many of them direct competitors, to agree on the parts of a design that they will not compete on. With light bulbs, it was widespread standards for the size of sockets, so that customers would not be locked into proprietary bulbs.

In more recent times, it can be seen in the "universal" part of Universal Serial Bus", or USB, enabling a wide range of machines to use the same ports and draw the same power supply.

The point of the SOSA consortium is to create the same kind of interoperable architecture, freeing the military customer from being vendor locked into a dead product and allowing a whole market to function supporting existing ports. Army Col. Kevin Finch, program manager for electronic warfare and cyber, said exactly what he didn't want was a program that will cost $50 million to upgrade without offering any more capability.

Finch is part of the SOSA consortium. SOSA's initial focus is creating a unified system architecture for radar, electro-optical/infared, signals intelligence, electronic warfare, and communications, all broadly in the category of "emit and receive structured energy, and process it." For the electronic warfare operator, looking to plug different payload packages into different delivery systems, that kind of interopera-

bility is a boon in the field, expanding options without sacrificing reliability.

For people who more often rely on just receiving signals, rather than actively fighting in the electromagnetic spectrum, the goal is that this functionality is seamless and invisible.

"Pilots might not notice a difference," said Dave Jedynak, the chief technology officer of contractor Curtiss Wright, "but everyone else in the supply chain will."

Asked about the potential for cybersecurity weaknesses in the standards, John Bowling of the SOSA steering committee and a technical expert for interoperability and architecture at the Air Force, argued that the goal is to build systems within standards that don't force poor choices in design.

"You could take this and still build an insecure system, but our goal is to guide people in the right way to make it secure," said Bowling.

A shared standard is helpful but insufficient for security on its own. Should security concerns about vulnerabilities introduced through the standard emerge, the standard itself can be updated. It is a living document, an agreement guiding production of the plugs for plug-and-play parts.

Consortium work is a consensus process among competitors, which can take time and be difficult and involves a lot of meetings. The alternative, as panelists stressed time and time again, is a military where when a light bulb breaks, it has to buy a whole new lamp. ∎

ARMY TO CREATE ENTERPRISE CLOUD MANAGEMENT OFFICE

BY ANDREW EVERSDEN
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WASHINGTON — The Army will create an enterprise cloud management office before the end of the year, the service's top IT official said at the Association of the U.S. Army's annual conference Oct. 15.

The office will offer "centralized oversight of capability that exists in the cloud," provide incentives for Army components to move to the cloud and help them migrate to the cloud, Lt. Gen. Bruce Crawford, the Army's chief information officer/G6 said in an interview with C4ISRNET Oct. 16. With the establishment of the office, the Army also wants to prevent different service entities from buying additional product licenses that the Army has already purchased.

"Think of the enterprise cloud management office as that central touch point for the Army where app owners can go to gain knowledge about the process of migrating," Crawford said. "And more importantly, what the big Army has already paid for in terms of capabilities like ... managed services to move you and common shared services once you're in the cloud."

The office has been operating provisionally in the last few months, but will be officially established in late November or early December, said Crawford.

Within the Pentagon and at the Defense Information Systems Agency, other cloud management offices already

exist. But Crawford said that the Army's cloud management office will provide Army users with more information about what capabilities the service specifically owns, information that the other offices outside the Army can't provide.

"If you don't have a centralized location to go, you're now dealing with the DISA program management office and what you don't know is [that] in ... DISA MilCloud 2.0 we've already got some enterprise resourcing in place," Crawford said. "So when you move to MilCloud 2.0, don't pay for this because we've already got it."

Crawford said the formal creation date won't happen until after an announcement of the office's leader —

who has already been selected.

"We've already have targeted someone with a lot of industry experience and inside the government, [including] work in the services," Crawford told C4ISRNET.

The office is already working on identifying priorities and helping the data and application owners in the field start working with the new team.

The office will need to hire contracting talent with experience writing artificial intelligence, machine learning and cloud contracts, he said, as a way to help "build capacity" among its contracting talent and to move away from scattered contracting talent across the force. ∎

CHONESS/GETTY IMAGES

HOW THE ARMY MUST (RE)ENVISION INTEGRATING CYBER TOOLS

BY MARK POMERLEAU
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WASHINGTON — Once reserved only for the highest levels of the military, cyberspace is now becoming part of the operating environment for all commanders — from the squad to corps.

Commanders are now recognizing that cyber has to be integrated with traditional ground operations, which means they will need to be able to understand and visualize that environment in order to plan operations and maneuver within it alongside physical troops.

Cyber "has to be integrated into traditional kinetic mission command-type activities," Chris Valentino, vice president of global cyber solutions for Northrop Grumman Mission Systems, told C4ISRNET in a phone interview during the Association of the U.S. Army's annual conference on Oct. 14.

With the Army and other services moving toward consolidating related capabilities under the umbrella of information warfare, these integrated capabilities have to be able to provide the requisite sensing and analytics to create useful common operating pictures

or situational awareness and understanding of the different environments.

The Army, in fact, is expected to release a request for information for a program called Cyber Situational Understanding, a command post tool that will help commanders envision the cyber environment.

"We're looking at the depiction of a commander's battlespace — displaying the effects [and] the operational impact of what is occurring in the network, not necessarily just a network map of what occurred in the network. What is their impact to the mission, to the operation," Col. John Transue, capability manager for cyber at the Cyber Center of Excellence, said during an August conference.

In looking at how to support the Army in this effort, Valentino said his company has been focused on understanding how to incorporate cyber situational awareness and understanding into mission command at the tactical level.

"How do you do that in a way that it's useful, meaning it's actionable and you can make decisions based on it ... how

do you do that so it integrates within the Army's current mission computing environments?" he said.

Data will be a critical commodity for tactical commanders in future conflicts and it must be integrated to generate actual successes.

"You have to be able to truly manage big data in a stable environment, in a disconnected environment, in a contested environment — but at the end of the day ... you have to ultimately be able to strategically manage that as an assert," George Franz, cybersecurity lead for Accenture Federal Services' national security business, told C4ISRNET at the AUSA conference Oct. 14. "Data is going to be sometimes more important than ammunition and fuel, and other times it's going to enable those other things."

Franz, who was the former director of operations at U.S. Cyber Command, also explained that Accenture is in the beginning stages of intellectual thought on how to conduct mission command in a digital environment. Suddenly, tools that were used to manage workflows and were useful for generic IT

and network managers will now be critically important to commanders to help them understand their environment and command forces within it.

This notion of digital mission command is enabled around cloud, data and analytics.

"You can't have a set of tools just on the administrative side, like logistics tools or IT or service. If those don't integrate with your mission command, your operational tools, you're going to be inherently just grossly inefficient," he said. "It's this notion of how do you build a common operating picture, situational understanding where the commander can see the status of his forces, at the same time seeing them in battlespace and seeing them in an operational environment."

Franz added that as the Army is looking to reorganize around an information warfare command that integrates cyber, electronic warfare and information operations to be prepared for information warfare writ large, commanding information demands a different way of thinking than traditional operations. ∎

STEVEN STOVER/ARMY

ON THE BORDERS OF PUTIN'S BALTIC FORTRESS, LITHUANIA CHEERS BUILDUP OF US FORCES

BY DAVID B. LARTER
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1ST LT. ELLEN BRABO/ARMY

ARDEN, Scotland — For an anxious Lithuania staring down the barrel of Russia's heavily fortified Baltic enclave at Kaliningrad, military officials will relish the rumble of U.S. tanks rolling through the country.

About 500 troops are deploying to new training facilities in the country and will stay through the winter in preparation for the real show: a massive divisional exercise in Europe that will see 20,000 U.S. troops in Europe known as Defender 2020. And while U.S. troops have been rotating through the Baltic, including Lithuania, since 2014, the latest deployments and the forthcoming Defender exercise will bring that presence to new levels.

The troops deploying to Lithuania this October are the 1st Armored Battalion of the 9th Regiment, 1st Division, along with 30 Abrams tanks, 25 Bradley Infantry Fighting Vehicles and 70 wheeled vehicles to the

Gen. S.Žukauskas Training Area in Pabrade, about a three-hour drive across Lithuania from the Suwalki border region.

Defender, which will strain the beleaguered U.S. logistics system, will move thousands of U.S. troops from forts in the United States to sealift ships that will take them to Europe, testing investments in European security made since Russian President Vladimir Putin's annexation of Crimea.

For Lithuania's defense officials, this movement of U.S. troops to Europe means a chance to forge a new kind of deterrent in the Baltic by creating a corridor of security partnerships spanning from a new rotational presence in Europe through the Baltic region, challenging Putin's buildup there.

"The geopolitical situation in the region, it hasn't changed," Giedrimas Jeglinskas, Lithuania's vice minister of national defense, said in an interview

with Defense News. "For us this is a great thing. We see that the U.S. is in the region, and U.S. presence is the biggest deterrent that we could ever hope for. We've said for a long time that we want U.S. soldiers on our soil — and we can argue about whether its permanent rotational forces or a permanent rotation — but the fact is that they are there."

Lithuania, a country of 3 million, suffers from an uncomfortable geography. A 40-odd mile stretch of its shared border with Poland makes up the Suwalki Gap, a strip of land that separates Russia from its Kaliningrad outpost and friendly Belarusian territory. A NATO members, Lithuania and Poland have become focal points of renewed tension between NATO and Russia, with the Suwalki corridor one of the most likely battlefields if conflict broke out.

But with the deployment of troops

to both Poland and Lithuania, the alliance has a stronger hand than it has had in years. And despite tensions running high between the Trump administration and NATO, for Jeglinskas, the proof is in the pudding.

"At the end of the day we have a deterrent on the ground," he said. "If you look at [a] map, there is Poland and Lithuania and the Suwalki corridor. And we will have the U.S. to the east and west of that corridor.

"I think it shows we are being heard. It shows that whatever the rhetoric may be, on the ground we see a lot more U.S. presence. I think it's a great sign."

For Jeglinskas, a former infantry platoon commander in the Lithuanian Armed Forces, the buildup of U.S. troops in the region is a chance to create, through regional cooperation, a kind of training and maneuver corridor that gives the U.S. and NATO

Russian President Vladimir Putin attends a ceremony marking Navy Day in Baltiysk in the Kaliningrad region on July 26, 2015.

MIKHAIL KLIMENTYEV/AFP VIA GETTY IMAGES

forces the ability to come to Europe and "not just spend readiness but create readiness," he said.

"With the U.S. more established in eastern Poland, what I'm hoping for is that the posture and force generation guys at the Pentagon and in EUCOM [U.S. Europe Command], that they don't feel like their training area is limited just to Poland," he said. "My hope is that we — Estonia, Latvia, Lithuania and Poland — can all become this broader, larger training infrastructure ecosystem."

For Jeglinskas, the focus has been making sure that when U.S. troops deploy to Lithuania, they can make the time meaningful and not just a token show of force.

"From our side we want to help out with logistics and provide the kind of training infrastructure in Lithuania so that when they arrive, they don't just sit there," he said. "They can do fire and maneuver. There is a lot of infrastructure that we've built out both with our own money and with European Deterrence Initiative Fund allocated by EUCOM for this project."

'Size does matter'

While the deployment of 500 American troops this October is welcome, that number won't stop Putin if he were to make a move on Lithuania or the Suwalki Gap, a prospect Moscow rejects as Western paranoia despite Russia's previous military activity in Georgia and Ukraine.

The threat has sent Lithuania requesting U.S. assistance and sharpening its focus on building its own defenses.

"We value the U.S. soldiers on our soil, but size does matter eventually. It's not only that they are there but that it's a real capability," he said. "And we're investing a lot in this ourselves in building that capability."

To that end, Lithuania has expanded its three main brigades — a motorized brigade, mechanized brigade and a light infantry brigade — that they've augmented with conscripts.

"These are significant units for our budget, for our population. We're a small country: Just 3 million people, and having those three brigades — manning them, equipping them, providing weapons, ammunition and sensors — it's a lot, but we're doing it."

The country hit the NATO goal of spending 2 percent of gross domestic product on defense last year, Jeglinskas said, and more money is coming.

"The political parties have committed to 2.5 percent by 2030," he said. "Now of course it varies from year to year, but it's our job to make sure the public, the people, the parliamentarians are all aware of the situation: The fact that we reached 2 percent doesn't, in and of itself, make us more capable. The real capability will be investing that 2-2.5 percent every year over a long period of time."

Lithuania is also poised to buy up to 500 of the American Joint Light Tactical Vehicle, with the first tranche to include 200 JLTVs and more after, Jeglinskas said

One area of need will have to wait, however, because it is cost-prohibitive: advanced air defense. While the Lithuanians have intermediate air defense, something more akin to the U.S. Patriot system is badly needed, something Poland is purchasing.

"We would love to have Patriot," Jeglinskas said. "Our air defense is one of the weak areas in the Baltic, and NATO is aware of this."

"Would I love to have U.S. Patriot batteries to come and operate in the Baltic? Yes, but we also understand the shortage of those assets. The Poles are buying it, they are a much bigger country and they can afford to. But of course we will connect our mid-range air defense with theirs, but overall there are certain things that are just out of reach.

"But we need to have it because Kaliningrad is a very heavily militarized area." ∎

Members of the National Guard offload Meals, Ready to Eat in Barranquitas, Puerto Rico, in 2017.

CATASTROPHIC DISASTERS COULD HIT MILLIONS OF AMERICANS. WHAT CAN THE NATIONAL GUARD DO?

BY TODD SOUTH
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WASHINGTON — A shift in the plates that lie beneath an area known as the Cascadia Subduction Zone along the coast of the Pacific Northwest could send shockwaves across the 600-mile fault line. Assistance and services may be delayed by at least two weeks.

Experts estimate 13,000 people will die initially, another 27,000 injured and responders will need to shelter 1 million people and feed another 2.5 million.

There's a one in three chance that this will happen in the next 50 years, experts predict.

Another tectonic bump, near the middle of the country, in a place called the New Madrid Seismic Zone at the nexus of Arkansas, Missouri and Tennessee, could see 3,500 initially dead, another 80,000 wounded and 7.2 million people displaced, 2 million of them needing shelter. Researchers have estimated a 25 to 40 percent chance this will happen at some point in the next 50 years.

The devastation of Hurricane Katrina in 2005 was called the largest diaspora of people in the history of the United States.

An estimated 1 million people were displaced, nearly 2,000 died and its effects tied up emergency services and subsequent aid for months.

The first two examples would quali-fy as emergency experts' worst nightmare, known as either a "catastrophic incident" or "complex catastrophes," depending on whether they wear a suit and tie or camouflage.

Planning for the worst

A panel of Army generals and federal officials who are tasked with thinking about such incidents spoke at this week's Association of the U.S. Army Annual Meeting and Exposition.

"We haven't had a complex catastrophe," said Damon Penn, assistant administrator for response at the Federal Emergency Management Agency.

Penn said experts have run scenarios on what would be needed to effectively respond to a catastrophe that saw 100,000 casualties and 1 million people needing some kind of help.

The medical need alone is staggering.

"If every doctor in the United States responded, we still don't have enough doctors," he said.

And while managing those disasters and aiding the civilians caught in them is actually delegated largely to the local areas, it will be Army entities such as the Army Corps of Engineers, U.S. Army North and the units of the Army National Guard to provide much of the resources and manpower.

Hurricane Maria, which pounded Puerto Rico in 2017, killed more than 3,000 people. Responding to that disaster required 60,000 military personnel and Transportation Command flew 3,000 sorties in 60 days, said Robert Salesses, deputy assistant secretary of defense for homeland defense integration.

The natural disasters are not the only ones these groups must handle.

Lt. Gen. Laura Richardson, commander of U.S. Army North, noted that part of her responsibilities include having Chemical, Biological, Radiological, Nuclear, or CBRN, troops on hand to respond to a mass attack of that kind within three to 12 hours.

Mass casualty drill in major cities

This past summer, the Guard, primarily Task Force 46 out of Michigan, continued its three-year annual exercise for responding to a mass casualty attack, chemical or nuclear, in Detroit.

That exercise will rotate to other major cities in the coming years to build partnerships and planning with local, state and other federal agencies.

In part, that's a reflection of lessons learned from other disasters.

Maj. Gen. Patrick Hamilton, 36th Infantry Division commander, noted that before Hurricane Katrina, many state leaders didn't quite understand what the Army could provide.

"They started asking for stuff," he said. "They didn't really know how much but started asking for 'stuff'."

For example, he said he'd get a call for a dozen trucks, but not be told what the person was going to use them for.

Now, states have developed "mission ready packages" that coordinate what they have with what the Guard can share, both with equipment and expertise.

At the same time, Guard units are undergoing a ramp-up in training, especially for large-scale ground combat operations. That has seen at least four combat training center rotations for the Guard in each of the past two years.

And Guard partnerships with active units added to new and increasingly longer deployments to Europe and the Pacific to counter perceived threats from Russia and China.

Which raises the question, will the Guard units be stateside to help when disaster strikes the homeland?

As panel moderator retired Army Lt. Gen. Russel Honoré noted, the largest infantry units in Louisiana and Mississippi were patrolling the dusty roads of Iraq when Katrina hit. ∎

WITHOUT GPS, WILL ALGORITHMS AND SENSORS HELP SOLDIERS KNOW WHERE THEY ARE?

BY NATHAN STROUT
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SATELLOGIC

WASHINGTON — War fighters depend on the GPS satellite signal to know where they are and where they're going. But how do they know where they are when they're in a GPS-denied environment?

The Department of Defense interest in alternative positioning, navigation and timing solutions, including those that can verify or replace GPS, has been growing in recent years.

"There's certainly a lot of people looking into the problem of assured PNT," Col. Nickolas Kioutas, the Army's project manager for PNT, told C4ISRNET at the 2019 meeting of the Association of the U.S. Army Oct. 15. Kioutas works out of the Program Executive Officer for the Intelligence, Electronic Warfare and Sensors. "I really like some of the software approaches that I've seen because I think that we've really been focused on hardware, but what are some of the algorithms that we can look at to really exploit the sensors that we already have?"

Leidos, a contractor for the Department of Defense and intelligence community, is one company working on one solution that might fit the bill, which they call the Assured Data Engine for Positioning and Timing (ADEPT). The Defense Department is incorporating into the RQ-7 Shadow and the MQ-1C Gray Eagle for the Army and the MQ-9 Reaper for the Air Force.

At AUSA, Leidos representatives described how the system works on a drone, as well as how they're trying to push the system to work with dismounted war fighters.

"In a nutshell, you've got a sensor on the bottom of your aircraft, and it can either be your ISR sensor ball that's looking around, looking for bad guys or whatever, or it can be a dedicated camera looking down, and it's taking an image," explained Scott Sexton, a robotics navigation engineer at Leidos.

"We run it through an image-processing algorithm that pulls out key features from the image and it's all automated, and so the algorithm knows what's interesting and what's not," he added. "That creates a unique thumbprint."

The system then takes that thumbprint and scans geotagged satellite imagery to find a match. If a match is found, the Leidos system can then use the direction the aircraft is headed and the angle of the sensors to triangulate the aircraft's position.

Representatives note that the technology includes the error in the position data it provides so operators know how accurate the data they're being fed is, whether it's accurate to within 10 meters or 100 meters.

Experts envision the system as remaining on during aircraft operations, working to verify or augment GPS data.

"If you have GPS you're just going to keep using that ... because it's the best sort of information we have," said Sexton. "As soon as it's deviated by 500 meters, well, let's start trusting [ADEPT]."

But Leidos officials are touting that the system can also serve as a check on GPS information.

"If someone is, say, spoofing you, the two solutions are going to start to diverge. So, if our solution coming out of ADEPT is telling you one thing to a high certainty, then that's a pretty good clue that your GPS is inaccurate," said Scott Pollard, vice president and business area manager. "It's pretty hard to spoof this. You'd have to literally rearrange the landscape to fool this or blind the sensor."

ADEPT can also geotag objects in midflight, giving the aircraft a frame of reference to use in navigation in places where GPS is denied and no mapping match is found.

"We're doing street-level image matching," said Troy Mitchell, Leidos navigation program manager. "What we're doing is we're taking satellite images and what they've done is they've made 3D point clouds of buildings and landscapes and stuff like that. We're taking that as a reference."

Essentially, the program takes that 3D point cloud to generate what a street level view would look like. Then by taking a street-level sensor, say a camera attached to a helmet or uniform, the system can match actual imagery with what it expects a street level view to look like in order to find they're location.

"The holy grail would be, can you drop yourself somewhere in the world in a random location and just open your eyes, look out at the landscape and say, 'I'm here,'" said Pollard. "That's a tough problem." ∎

An Army paratrooper with 503rd Infantry Regiment, 173rd Airborne Brigade fires an FGM-148 Javelin shoulder-fired anti-tank missile during a live-fire exercise at Grafenwoehr Training Area, Germany in August.

THE ARMY'S NOT COMPETING ENOUGH WITH RUSSIA AND CHINA, BUT THIS GENERAL HAS A PLAN

BY TODD SOUTH
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WASHINGTON — Russia and China are "near peer" in name only. In some areas they already outmatch U.S. capabilities and the Army is not postured to effectively confront that problem. But they're getting there.

Much of what those two adversaries can do to thwart U.S. efforts in Europe, the Pacific region and beyond lies in their power to conduct effective operations "left of conflict," also known as the competition phase.

And some of their small victories, such as Russian tanks rolling into northern Syria as U.S. troops pull out, send messages that hurt U.S. prospects for beating back adversary influences. The Army's deputy commander on futures and concepts, Lt. Gen. Eric Wesley, stopped short of specific comments on the recent decisions by President Donald Trump to remove U.S. forces from the area but did speak more broadly about the effects of the aftermath of that decision.

"Everything we do carries a message," Wesley said. "It will influence the behavior of others. It's a dialectic that's continuing all the time."

That competition phase work was discussed at length on a panel Tuesday at the Association of the U.S. Army's Annual Meeting and Exposition. The panel included Wesley, Air Force Maj. Gen. Michael Fantini, Australian Maj. Gen. Kathryn Toohey and Center for Strategic and International Studies think tank Vice President Kathleen Hicks.

Wesley noted that those competition phase actions have an impact on the U.S. "market share of influence" with allies partners and the rest of the world, especially adversary action.

"We don't want to lose that, we have to be in this space," he said.

But with an entire globe to view and limited resources, where they are positioned and what they're watching matters.

"Right now, I would argue we don't have the apparatus to do that in either theater that is effective and also agile," Wesley said.

He pointed back to the 2014 Russian takeover of Crimea as an example, when the United States lost market share, noting that the entire incident happened without Russia firing a shot.

That's a definition of "left of conflict."

Hicks dug a little deeper, saying that the recent Syria decision was an "example of how poorly we are executing this understanding of our information operations, and foreign policy in general."

That challenge is exacerbated when the U.S. sees how in Crimea, Ukraine and now in Syria, that Russia has combined both action and information with "finesse" to achieve their aims, she said.

And while in most areas, the United States holds tactical overmatch in conventional conflict, its adversaries have a better ability to "take action at a national level," Fantini said.

That tactical piece isn't guaranteed either.

"At the tactical level we could go toe to toe, but all indications and analysis is that as that moves into the future that ability is going to erode," Fantini said.

To meet that, Wesley and Fantini emphasized how the services are developing multi-domain operations concepts, equipment, training, partnerships and positioning.

For the Army to get after the market share problem in competition, Wesley said the service along with the Defense Department and interagency entities must adapt to the new terrain.

"The winner of the first battle of the next war likely may win the war," Wesley said. "So, winning that first battle is far preferable to a protracted conflict with a peer competitor."

A big part of that is conventional overmatch, partnerships and demonstrations of capabilities, Fantini said.

Wesley pointed to the Defender series of exercises in both Europe and Pacific that begin soon. Those are ways to experiment with the MDO concepts on actual terrain and demonstrate to adversaries and allies how those methods are evolving.

The Army has set its sights on 2028 as the time frame by which it will have an MDO capable force package in theater, Wesley said. And the entire Army is slated to be MDO ready by 2035.

But that will mean a type of warfare that far outpaces what generations of Army leaders have had to conduct, he said. And it won't necessarily be the brigade and above commanders making the battlefield decisions.

"The battlefield is so hyperactive it's still unknown," Wesley said. "That will require us to leverage mission command on a scale that our generation has never seen if this ends in conflict with a near peer state."

That means focusing priorities on the National Defense Strategy by aligning efforts against the pacing threat of Russia and the evolving threat of China.

Much like in the Cold War, when the U.S. prioritized the Soviet Union as the major threat and considered those preparations to also allow it to be ready for other, lesser, conventional concerns, the new strategy marshals resources towards those major adversaries.

But that doesn't mean those are the only problems the United States has to deal with.

Hicks pointed to the strategic shifts made in 2012, which looked to pivot focus to the Asia-Pacific region.

"That's when ISIS rolled across the border," she said. ∎

ARMY

The Army is rolling out a new advertising campaign this November.

'WHAT'S YOUR WARRIOR?' ARMY LAUNCHES NEW ADS WITH LESS COMBAT FOCUS

BY KYLE REMPFER
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WASHINGTON — The Army is preparing to launch an advertising campaign this November called "What's Your Warrior?" courtesy of the service's new Chicago-based marketing team.

The campaign differentiates from past efforts in its focus on the Army's many military occupational specialties that don't involve direct combat, according to Brig. Gen. Alex Fink, chief of Army Enterprise Marketing.

While the campaign hasn't launched yet, Fink gave Army Times an early look of one copy of a print ad. It depicts actual U.S. soldiers from five different career paths: a lab tech, a signals troop, an aviator, a cyber operator and a sniper-qualified soldier.

Those types of roles can be difficult to fill.

"These particular MOSs featured here are indeed in those top ones we need," Fink said. "But that's not necessarily why we chose them."

The soldiers were chosen for the ads because the marketing team wants to expose Generation Z to a variety of options.

"We want to surprise them," Fink said.

Everything from the colors to the music used in the ads will be intended to key an audience into what Army Enterprise Marketing hopes will be a strikingly different campaign than past ones.

"What we've shown our audience in the past hasn't surprised them at all," Fink said. "Soldiers in direct action, combat situations ... they already know that about us."

The campaign will be laid out in a series of chapters. The first releases in mid-November will focus on the team aspect of service. Roughly five months after that, a second release "will roll out the characters." "Chapter two will be about the individual, so we'll look at each of these folks and we want to try to bring them to life, because they are real soldiers. They're not models," Fink said.

Each of the five soldiers have been interviewed and content will be generated in the form of 30-60 second ad spots, online videos, banner ads and other presentation formats to tell their stories.

It's all a bit of a contrast to the "Warriors Wanted" ads launched last year. That campaign used soldiers from units like the 75th Ranger Regiment and 160th Special Operations Aviation Regiment to show off the Army's contribution to the Pentagon's favorite buzzword — "lethality."

But in a competitive job market and booming civilian economy, the Army needs to change how it presents its story, according to Fink.

These new ads are focused on Generation Z, or those born after 1996. It's a cohort of young people that are seeking a larger purpose and narrative in life, according to Army leadership involved in the service's recruiting push.

"This generation, as opposed to other generations, it's a shift. They want to serve something bigger than themselves," Sergeant Major of the Army Michael Grinston said in September. "It may surprise you a little bit."

Finding out how to tap into that sentiment among Gen Z could prove challenging for the service, though, as it works to meet bold recruiting goals year after year to grow to a 500,000-strong active-duty force by the end of the next decade. A Morning Consult poll conducted in May 2019 found that Gen Z adults are notably less trusting of the military, among other institutions, than past generations.

The Army's new marketing team intends to show young people why becoming a soldier is indeed an option, even as military service in general drifts further into an insular pursuit for many American families.

"We're just trying to make it relevant to consider service in the military, whether it's for one term or for a career," Fink added.

A Pew Research poll from 2011 highlighted an often observed civil-military divide in the United States: service members are increasingly likely to come from military families themselves.

Fink, who spent much of his career in the Army Reserve, often noticed that growing divide in his civilian pursuits.

"I've had places I worked or clients I worked with, where I was the only person they had ever known who served in the military," Fink said. "They revere us, but they don't see us in their consideration set."

When the new ads do begin to appear, Army Enterprise Marketing field representatives will use data analytics at the local media level to figure out how to place ads and what resonates best with audiences.

About 30-40 percent of the new ads will be in online video, sports and cable, according to Fink. The remainder will be mostly in digital advertising, to include social media.

Army Enterprise Marketing is working right now to rebuild the GoArmy.com website and put in place a digital and analytic infrastructure that can better predict behavior of potential recruits.

"In the future, we want to be able to ... deliver content to a prospect based on their online behavior," Fink said. "That's a goal of this eventually. If we have a guy whose last 25 web searches were in the cyber area, we need to deliver an ad focused on cyber."

"That's not what we have right now, but that's what we want to evolve to," Fink added. ∎

Army Reserve Officer Training Corps cadets from the University of North Carolina conduct a march at Camp Butner.

ARMY ROTC MUST FIND MORE OFFICERS THAN IT HAS IN YEARS, AND HERE'S HOW IT'S HAPPENING

BY TODD SOUTH
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STAFF SGT. CHRISTINA M. DION/ARMY

WASHINGTON — The demand for Army officers is higher than it has been in years and most of those officers will come not from West Point or other military schools but instead from the swath of colleges and universities across the country through the Reserve Officer Training Corps.

The head of the Army's ROTC efforts, Maj. Gen. John Evans, sat down with Army Times during the Association of the U.S. Army Annual Meeting and Exposition to discuss some of the challenges of meeting those increased demands.

As recently as three years ago the Army ROTC was tapped to provide 5,200 new second lieutenants. That grew to 5,800 this past year and will hit 6,000 next year before dropping back to about 5,900 for the following two years. That's still 65 percent of all officers, or more than Air Force and Navy ROTC and the service academies combined.

But Army officers don't join as quickly or in the numbers that enlisted do. The Army Recruiting Command has to routinely pull in 68,000 or more new soldiers. Those numbers can shift rap-

idly as a new soldier can be put on contract and shipped out the door to basic training within weeks or months.

A new officer takes time to grow while also obtaining a college degree.

Planning for the pending numbers started years ago, Evans said. First the 274 programs across the nation needed more cadre. Unfortunately, they were competing for the very same mid-career, noncommissioned officers and commissioned officers as the expanding One Station Unit Training, lower level operational commands and combat training centers.

The Army just didn't have enough to spare for the nearly 200 additional cadre needed.

To solve that, the Army provided funding for 175 contractors, the majority of which are retired military personnel to take the burdens of logistics, human resources and low-level initial military training for the cadets.

That allowed the uniformed cadre to focus on more complex tasks and some of the basics of shepherding cadets through ROTC and college so that they may wear the gold bar.

And that's because a freshman ROTC cadet or a junior "lateral" join have all the demands of the regular college student such as passing classes and also have to stay out of trouble, stay healthy and stay motivated.

For attracting college students to ROTC, many of which have never been exposed to the military and may not have military family connections, Evans and his staff are reaching out in the digital space.

That includes his own personally monitored Instagram and Twitter accounts @CG_ArmyROTC and a series of YouTube.com videos that explain Army ROTC life and the benefits the programs offer.

The ROTC cadre will also see changes in how they join the program's ranks, just like the rest of the Army.

Two weeks ago, the Army opened its "marketplace" program for officers. That allows officers to provide more detailed requests for duties and the system aims to better match their resume, skills and capabilities with the job's needs.

The program will eventually expand to the noncommissioned officer ranks.

Human Resources Command helps select the top officers, and most programs are run by a lieutenant colonel or major except for the six private military academies, which have colonels. HRC also selects the senior enlisted, and each program has a master sergeant in that position.

And it looks to be a decent career move for the enlisted soldiers.

Those master sergeants are promoted to sergeant major at twice the rate of their other Army counterparts.

Earlier in the pipeline, Evans said analysis has shown some interesting aspects of the Junior ROTC programs. Those number 3,400 across 33,000 high schools, or about 11 percent.

Half of all those programs are Army ROTC.

And that analysis shows that about a quarter of all JROTC participants go on to serve either as officers or enlisted.

Another interesting layer that Evans said needs more research shows that students at schools with JROTC programs are twice as likely to serve in the military, whether they participate in a JROTC or not. ■