SHOWDAILY

THURSDAY
DECEMBER 1, 2022

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U.S. Army looks to Army of 2030

In the aftermath of conflicts in Iraq and Afghanistan, the U.S. Army has refocused its capabilities and requirements on the so-called "pacing" challenge of China as well as the demonstrated threat posed by Russia. Through a combination of reorganization and the introduction of new technologies, senior service leaders have identified the "Army of 2030" as a goal that will help to ensure U.S. victories in any future engagements.

To meet the evolving threat, the Army is undergoing a once-in-a-generation transformation to develop the capability to converge effects on land, in the air, sea, space and cyberspace.

In the training realm, the entire portfolio of the Army's Program Executive Office for Simulation, Training and Instrumentation (PEO STRI) increases/maintains readiness, supports overall modernization efforts and is helping to build the Army of 2030.

"This transformation, both at PEO STRI and Army-wide, includes investment in our people, reorganization of our forces, the development of new equipment and the adoption of new concepts on how to fight that allow the Army to maintain superiority over any potential adversary," said Ms. Karen D. H. Saunders, SES, PEO STRI. "The Army must adapt to changes in technology and enemy capability. To defeat our adversaries on the modern battlefield, the Army and PEO STRI are developing newer and more advanced equipment and are incorporating next-generation warfighting technologies and advanced procurement processes that will enable the Army, as part of the Joint and Combined fight, to compete and win globally."

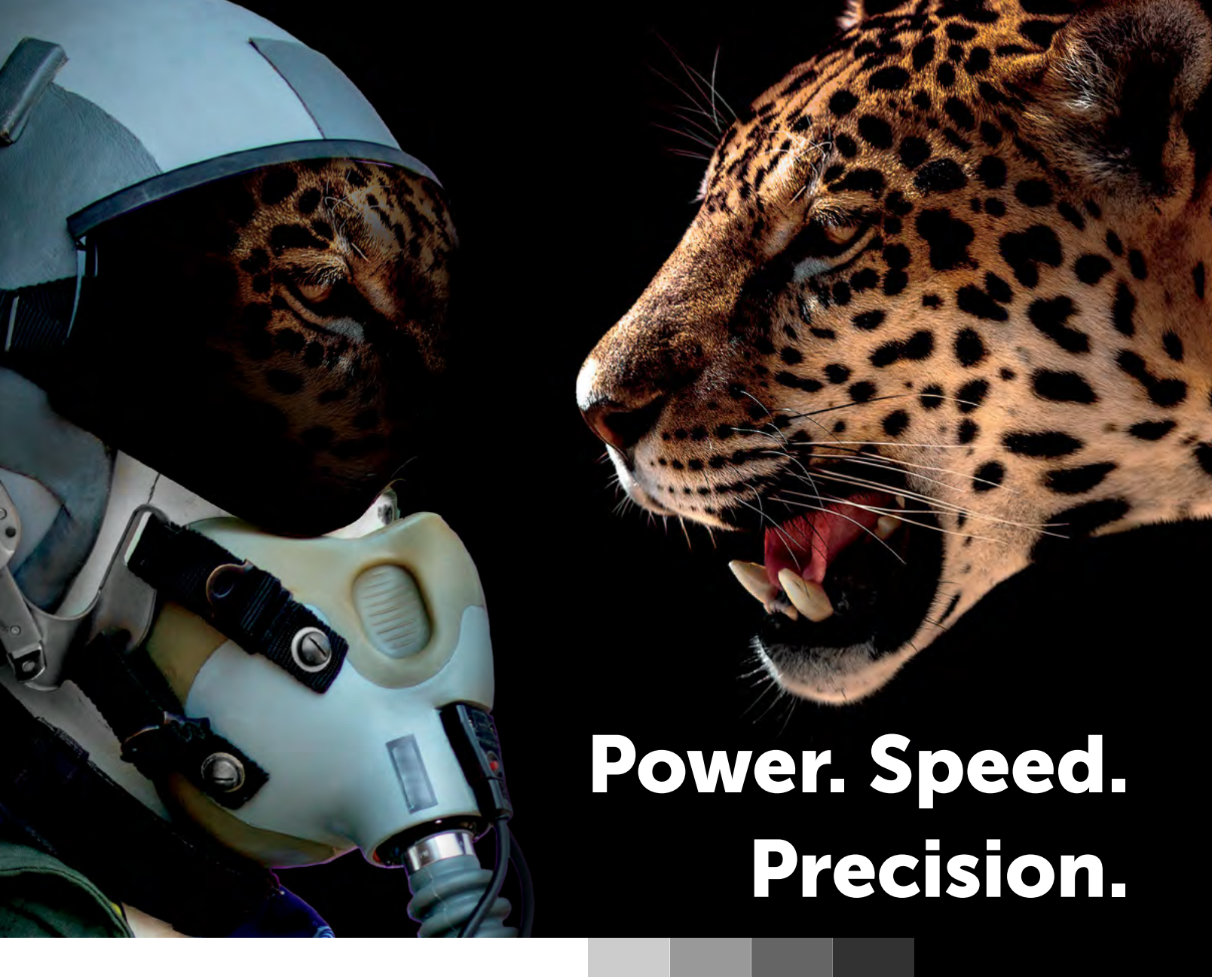
Saunders noted that the transformation is about more than just new technologies, observing, "Under the direction of Secretary of the Army Christine Wormuth, we are setting the Army on a sustainable strategic path – one that balances the generational investments we are making to prepare for the future fight with the realities of our fiscal environment."

For the Army of 2030 vision to transform to reality, Saunders identified a number of necessary accomplishments and capabilities, including: acquisition of sensors to see more, farther and more persistently than our enemies; the ability to concentrate highly lethal, low-signature combat forces rapidly from dispersed locations to overwhelm adversaries at a place and time of our choosing; the ability to deliver precise, longer-range fires as part of the Joint Force to strike deep targets and massing enemy forces; the capability to protect our forces from air, missile and drone attacks; maintaining security from enemy cyber and electronic attacks in order to reliably communicate and share data with ourselves, sister services and coalition partners; and ensuring we can sustain the fight across contested terrain and over time.

Against that background of required capabilities, PEO STRI identified a range of benefits to be derived from synthetic / virtual training.

"The many benefits of synthetic training include increasing cost-effectiveness, improving safety,

Continued on p24



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THURSDAY, DECEMBER 1

CONFERENCE HIGHLIGHTS

REGISTRATION HOURS

0700-1500 *(West Concourse)*

EXHIBIT HALL HOURS

0930-1500

SIGNATURE EVENT

1030-1200 **Virtual Evaluation in Prototyping and Experimentation** *(Room W304GH)*

FOCUS EVENTS

0830-1000 **Special Operations Force Battlespace Preview** *(Room W310AB)*

0830-1000 **Innovation Match Game** *(Room W304EF)*

0830-1000 **Accelerating Readiness Through Digital Engineering** *(Room W309AB)*

0930-1500 **I/ITSECverse** *(Exhibit Hall – Booth 1332)*

1030-1200 **International Perspectives on Creating and Sustaining Learning Ecosystems in the Wild** *(Room W309AB)*

1030-1200 **Evolving Distributed Mission Operations Joint DMO Panel** *(Room W310AB)*

COMMUNITY OF INTEREST EVENTS

0830-1000 **Simulation Standards: The Path to Seamless Interoperability for Multi-Domain Operations** *(Room W308C)*

0830-1000 **Evolving Medical Training – Big Data, Multi-Domain Operations and Prolonged Care** *(Room W304GH)*

1030-1200 **Human-Centered Artificial Intelligence in Training, Simulation and Education** *(Room W308C)*

1030-1200 **Flying in the Metaverse: Certifying Extended Reality** *(Room W304EF)*

1330-1500 **Information Warfare: Combating Disinformation Via Inoculation Training and Social Simulations** *(Room W308C)*

PROGRAM BRIEFS

0830-1200 **PEO STRI TSIS Program Brief** *(Room W311ABCD)*

1030-1200 **Navy Vision from Training Systems Program Managers** *(Room W304AB)*

PROFESSIONAL DEVELOPMENT

(Download the I/ITSEC app for synopses)

0830-1000 **Paper Sessions** *(Rooms W307ABCD; W308AB)*

1030-1200 **Paper Sessions** *(Rooms W307ABCD; W308B)*

1330-1500 **Paper Sessions** *(Rooms W307ABC)*

AWARDS

1030-1200 **Iron Dev Competition Show and Awards Ceremony** *(Room W308A)*

1300-1400 **Serious Games Showcase and Challenge Awards Ceremony** *(Booth 2588)*

1800 **Hosted Reception Sponsored by Lockheed Martin Corporation** *(Hyatt Windermere Ballroom)*

1900 **Conference Awards Banquet** *(Hyatt Windermere Ballroom)*
Including Best Paper, Best Tutorial and Scholarship Presentations

SHOWDAILY

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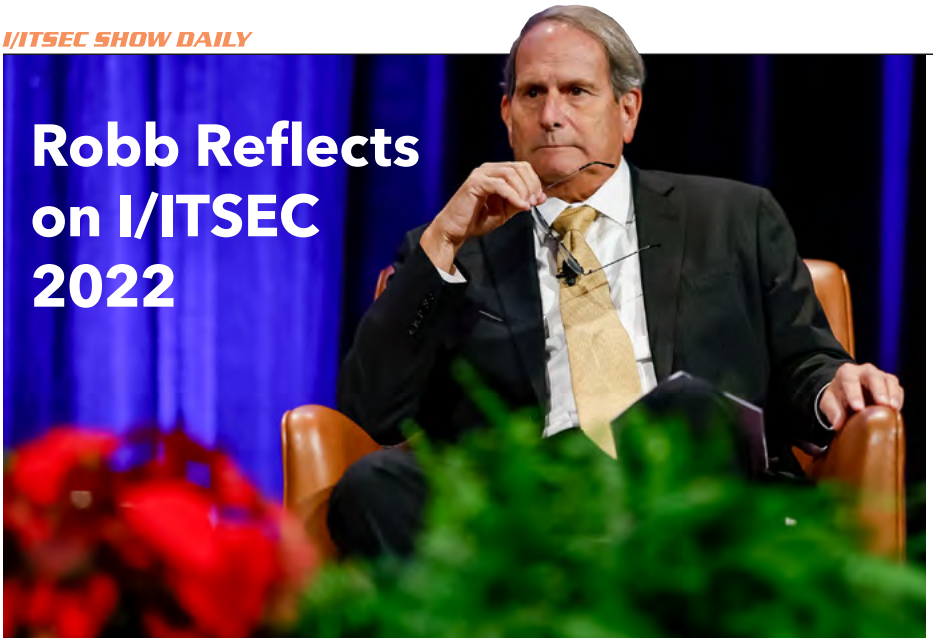
Robb Reflects on I/ITSEC 2022



Asked for his initial impression of I/ITSEC 2022, Rear Admiral James A. Robb, USN, (Ret.) offered a single word response.

"Big!"

As President of the National Training and Simulation Association, Robb reflected on the first few days of this year's conference.

"This is still a first impression," he cautioned. "But it's big and it's back to normal. Actually, it's spectacular that not only are the numbers much higher, but the high-level leadership attending is extremely impressive, from an Undersecretary from the Department of Homeland Security here for the first time to a large Coast Guard contingent. In recent years we have talked about the breadth of I/ITSEC, but look at the depth as well."

To illustrate his point, he offered, "Deputy Assistant Secretary [of Defense] Caroline Baxter was here. And she not only did the Senior Leader Panel, but she moderated two other Special Event panels. All of the panelists were powerful people who had great discussions.

He pointed to several instances where people were invited to speak at I/ITSEC but also benefited from a chance to talk with other panelists.

"It's more than a voice. They get to meet each other and share ideas. And in some cases they might not cross paths otherwise. So we learn a lot," he said.

He noted that another positive factor was the return of international participation to pre-COVID levels, observing, "Last year, our first in-person I/ITSEC after COVID, we lost about half of our international attendees. They're very excited about being here and the biggest problems seem to be running low on food or not enough chairs for the audiences who want to attend our Special Events."

He continued, "But as far as the crowds, that's great for us. We definitely don't want people to come here and waste their time."

Asked about the significant increase in the number of Special Events at I/ITSEC, he indicated that those were the types of things that will be studied in the coming weeks.

"I've always been an advocate for more," he said. "And I acknowledge that there may be some challenges in scheduling them, because the common wisdom is that they compete with each other, and the more they compete, the smaller your numbers. But we will look at those numbers when we get back, in terms of panel attendance in individual rooms. And if we're all full, fine. But we have also taken steps, like trying to record some of them, so that more people will have access online. So there's a blend. But I think that, from my perspective, the more quality content, the better. Again, if you go through that program, it's amazing to see the quality level of discussion, the breadth and depth of what they're talking about. I think it's great. Yes, I have heard a few complaints about full parking lots or running out of food at lunch. But if that's the tradeoff, okay."

Robb offered additional observations regarding the technologies in the I/ITSEC Exhibit Hall.

One of our first time events involved the metaverse, which we call the I/ITSECverse, which is bringing a lot of new technologies together, like 5G, cloud computing, high power computing and software that's universally better, provided by NVIDIA and Microsoft. And so there is a whole new world to be had, according to some, that says these three-dimensional immersive environments are going to be something significant in the future. So we're trying to find a balance between that capability and military need. And we're doing it in an iterative manner. It's been a demonstration this year. Next year it could be bigger, I don't know. But we're still trying to find out if 'there's a there there.'"

Other capabilities on display that caught his eye included higher speeds and more graphics capabilities that combined to deliver more sophisticated visual effects.

"Along with that, I think that I'm seeing companies that are broadening their portfolios on the floor with ground, air and sea systems," he added. "And they seem to be healthy because they're getting bigger. And that's excellent," he said.

Following up on his advice for I/ITSEC attendees to research the show and plan their visit, he said, "I would challenge them to go back and continue to learn from the I/ITSEC experience. There might be a lot that they missed. And for some 10 or 15 percent of that, they could find it recorded and posted. The opening ceremonies, for example, were all recorded. The big panels were all recorded. And we will post them online, so that people can see the content. We also had some live streaming during the show, and we're exploring other ways we can get to more people, especially if we start getting really crunched on space. So attendees should not only plan their time at the show, but they might be able to plan their time after the show as well."

"It's more than a voice. They get to meet each other and share ideas. And in some cases they might not cross paths otherwise. So we learn a lot."

Robb also cited a number of approaches to use social media and other venues to spread the word about I/ITSEC.

"One of the things the Vice Chief of the Air Force said after his opening remarks was, 'I didn't know about this. And when I got here, it's incredible.' And that's very common, where people don't know about us, and then we somehow get them here and then they're overwhelmed by what they see."

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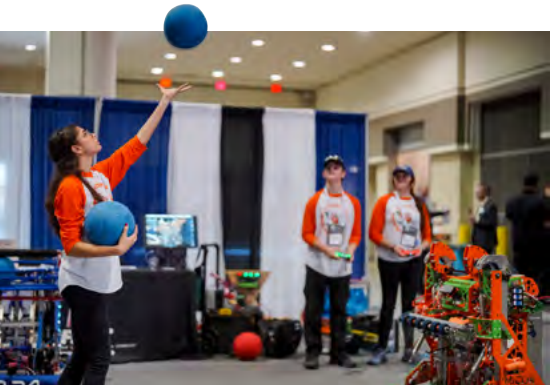

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LVC Solutions in Cubic Spotlight

Cubic Mission and Performance Solutions (CMPS) [Booth 1029] is showcasing its advanced LVC training solutions at I/ITSEC 2022.

"CMPS provides a portfolio of advanced training capabilities that delivers a readiness advantage to ensure mission success for our U.S. and Allied Forces," said Jonas Furukrona, vice president and general manager of Cubic's LVC Training division. "Our live, virtual, constructive training solutions bring next generation capabilities that fill current training gaps and allow our customers to train to the peer fight in a secure and cost-efficient environment with unprecedented realism."

With top executives on site, CMPS will feature its solutions including the following multi-domain LVC training, immersive simulation, game-based learning, air combat training and high fidelity combat training systems.

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Multiple Launch Rocket System (MLRS): Cubic's MLRS Training System comprises the platform for training integrated surface-to-surface precision fires. It enables the land commander to train sensor-to-shooter and weapon-to-target matching in a realistic and immersive environment.

Live Training System (LTS): Cubic's LTS provides soldiers with a realistic training experience during both individual soldier gunnery training and force-on-force exercises at home station and in the field.

LVC Simulation of Chemical and Biological Threats: The Chemical, Biological, Radiological and Nuclear Defense (CBRND) Collective Training Simulation System (CTSS) provides high fidelity LVC simulation of chemical and biological threats and provides realistic training to battlefield participants, responders and analysis specialists.

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Naval Aviation Panel Brings Unique Training Insights

Wednesday morning's Signature Event, Naval Aviation Flag Officer Panel, drew a packed audience who came to hear observations from senior leaders across naval aviation.

Rear Admiral James A. Robb, USN (Ret.), President, National Training and Simulation Association (NTSA), served as the moderator for what he described as "a premier event," with panelists providing the audience with their unique perspectives on some of the challenges and recent accomplishments surrounding U.S. naval aviation.

Panelists included: Vice Admiral Kenneth Whitesell, USN, Commander, Naval Air Forces / Commander, Naval Air Force, U.S. Pacific Fleet; Rear Admiral Richard T. Brophy, USN, Chief of Naval Air Training; Rear Admiral Andrew Loiselle, USN, Director, Air Warfare Division, N98, Office of the Chief of Naval Operations; Rear Admiral Max McCoy, USN, Commander, Naval Aviation Warfighting Development Center; Rear Admiral Joseph B. Hornbuckle, USN, Commander, Fleet Readiness Centers, Naval Air Systems Command; Rear Admiral Keith A. Hash, USN, Commander, Naval Air Warfare Center Weapons Division / Assistant Commander for Test and Evaluation, Naval Air Systems Command.

As the "Air Boss" for the U.S. Navy, Vice Admiral Whitesell opened the panel remarks by reiterating the "three priorities" that he identified when he took the job two years ago.

"Nothing has changed with the priorities as we have moved down the path of maintaining and building a capability and capacity to win a great power competition," he said. "Priority number two is to generate force and develop forces that the fleet commanders can employ. And then, revolutionize training, both in the officer as well as in the enlisted world. Those priorities have remained over the last few years for naval aviation and for us."

He went on to discuss efforts and initiatives ranging from mission capability rates to the Air Wing of the Future.

As the Chief of Naval Air Training (CNATRA), Rear Admiral Brophy described a number of training initiatives designed to accelerate the delivery of naval aviators.

He described a call he received from Whitesell on his second day on the job, during which he was told that there was a one year wait before candidates could start flight training, and wondering how he would fix it.

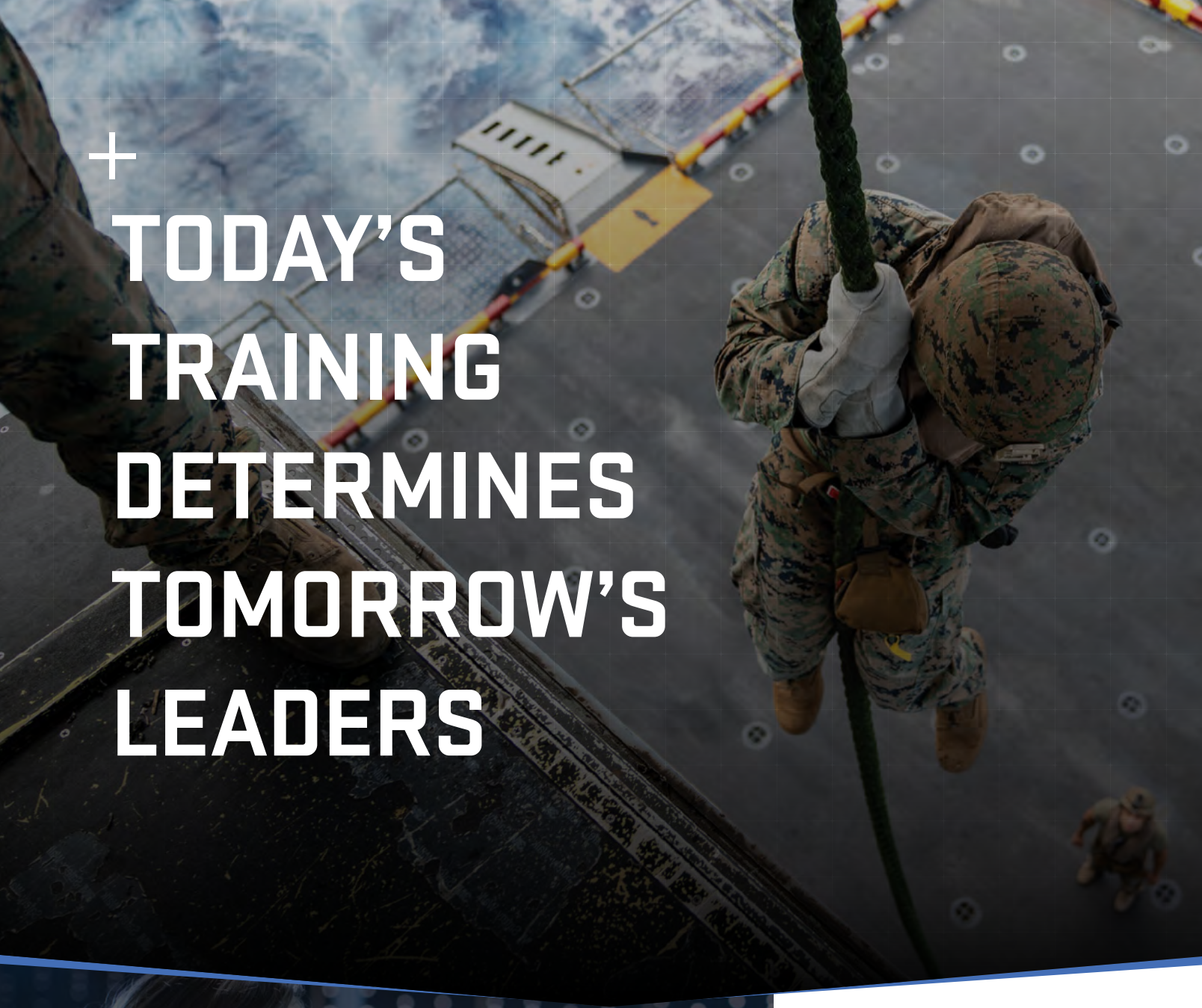
"We had a look across the entire enterprise, and we saw that, over the last 10 years, CNATRA has produced at 91 percent," he said. "So year in and year out, essentially nine percent do not make it through. So how do you fix that? Well, like many organizations, we're just a giant conveyor belt: you come in one end and I just spit you out at the other end. And everybody starts off with primary [flight training]. So we're having to break it up into individual increments, and deconstructing it at each level. Because I've got to be able to put more people on. And I've got to get them through at a faster rate. Some of that, of course, has to do with getting the right parts and ensuring that our aircraft are flying. But the piece that I think is most important to you all is the technology piece, and how I change a syllabus so that I'm getting the same quality that I've always been able to produce out of naval aviation at faster rate."

He identified Project Avenger as the "premier way to get after that" challenge, "And that is, how do we bring in technology that is out there right now – and is probably right out on the I/ITSEC floor – that we can bring in to accelerate training: mixed reality, virtual reality, technology that actually creates bibliographies on folks so that you know where the strengths and weaknesses are of each person that you might have, and then really focus on the aspects that they need in order to become better."

He continued, "Some of the data that we have to date on Project Avenger is absolutely phenomenal. If you look at the average time for legacy pilots to be able to solo an airplane, it's actually 13 flights. Your 13th flight is your check flight and on 14 you get to fly an airplane. We've had two people within the last month actually solo on their fourth flight. And they did it safely. And they are more competent than we had in the past. That's a testament to the technology that you're bringing in."

Rear Admiral Loiselle asked the audience to think about the different investments in training systems that are going to be required going forward, adding, "Each and every one of them has to be predicated on a basic statement that says, 'So that I can.' In other words, it has to link to all of the other things that we're doing. And as [Rear Admiral Brophy] alluded to, this includes individual pilot performance. We've always had this system for training that says, 'Hey, if you do X five times, you're good.' Well, you might not be very good after five times. But you might be good at two times, like with the solo example."

He summarized, "How do we then devise a system that has the feedback mechanisms necessary to generate individual pilot performance metrics, so that individual deficiencies can be mitigated, as opposed to repeating an entire event that might take all these resources to do. Maybe there's just one problem, and that one problem led to an overall mission failure."



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Van Halteren Technologies Advances Howitzer Crew Training

Van Halteren Technologies (VHT) [Booth 177] is focusing their I/ITSEC 2022 message on the company's capabilities in howitzer crew trainers.

According to Ed Noorlander, technical commercial director for VHT, the Austrian and Latvian governments have recently signed contracts with Van Halteren Defence of the Netherlands for the delivery of four M109A5O Electric Appended Howitzer Crew Trainers. The Appended systems convert a M109 Howitzer to a Howitzer Crew Training (HCT) by replacing the barrel with a simulator. Additionally, the howitzer can be brought back to firing condition by depot level maintenance in less than eight hours.

The system features Van Halteren's Ammunition Recognition System (ARES) which is capable of detecting all types of currently available simulated ammunition types including Excalibur, Vulcano, and PGK. ARES detects simulated fuze type and settings, projectiles, charge class and charge orientation, and it also determines recoil length depending on the charge class loaded. Safety systems detect obstructions in the recoil area preventing (unexperienced) gunners being injured. The Appended simulator operates through the full elevation/traverse angles of the original gun. The firing rate is 6 rounds per minute. The Electric Appended Howitzer Crew Trainer fits all types of current M109 versions including the A7.

In addition to the M109 models, the Netherlands Artillery and Van Halteren Technologies are negotiating for three additional appended PzH2000 Howitzer Crew Trainers. The PzH2000 HCT is an upgrade for the Kurzrohr Appended System which came with the original PzH2000 procurement in 2002 (delivered 2004-2009). The PzH2000 HCT is a hydraulic version of the Electric Appended Simulator and has the same philosophy: the original gun is converted and can be brought back to its original state. The PzH HCT operates through the full range of elevation/traverse angles, uses ARES, and has a firing rate of 3 rounds in 9 seconds. The PzH2000 Howitzer Crew Trainer Software will be fully integrated with the existing embedded training software of the PzH2000 Kurrzrohr.

Noorlander said he got started making the howitzer crew trainers after being drafted and assigned to work in materiel.

"I made the first one in the Army, and they liked it, he said. "But it was very basic. So I began looking to more advanced designs. And there was a Swiss requirement in those days. They wanted stuff like ammunition recognition, direct firing, everything that you could think of they wanted in that simulator."

VHT created the winning design, which Noorlander says is still being used in training Swiss howitzer crews today. Moreover, he said that word quickly spread about the trainer, with orders following from countries including Israel, Singapore, Thailand and the United Kingdom.

"We're now building for Hungary and just starting to ship those systems," he said.

He hopes that the company's presence at I/ITSEC will raise U.S. Army awareness of howitzer crew trainer possibilities.

Today Van Halteren has built over 50 M109 Howitzer Crew Trainers in various versions, with the M109 HCT design delivered to seven countries.

Van Halteren has built other Howitzer Crew Trainers for guns such as the M101, LG1, M119, M198, FH70, FH2000, AS90, and Caesar. All of the simulators use the same basic components including the patented ARES system.

NAWCTSD Participates in its First Other Transaction Agreement Initiative at I/ITSEC

The Naval Air Warfare Center Training Systems Division's (NAWCTSD) first Other Transaction Agreement (OTA) initiative leveraging I/ITSEC was very successful with dozens of companies participating in the effort. More white papers are still arriving with potential for presentations in the next several weeks.

To date, NAWCTSD has already received presentations from 13 vendors. Many of those presentations were from companies that have exhibits on the showroom floor, and some were companies that were new to NAWCTSD.

"While we had hoped to announce specific awardees before the end of I/ITSEC, NAWCTSD continues evaluating the presentations with every anticipation that we will reach agreement with some of the participating vendors," Navy I/ITSEC Principal, Kent Gritton said. "The success of this initiative has proven worthwhile. We look forward to doing this again next year and improving upon the process."

OTA initiatives are another way NAWCTSD accelerates warfighter readiness through training solutions.

The U.S. Army's Next-Gen Virtual Collective Training Software

Bohemia Interactive Simulations' (BISim's) flagship product, VBS4, is a whole-earth virtual and constructive simulation that allows military units to create and run any imaginable military training scenario. VBS4 is a core component of the U.S. Army's Synthetic Training Environment (STE), the next generation collective training capability.

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1 Geospecific VRSG terrain of the Keguma hydroelectric dam in Latvia, built to support JTAC training for the Latvian Ministry of Defence as part of a project led by DefenseTek Solutions.

2 30 MVRsimulation Part Task Mission Trainers, including Battlespace Simulations' MACE, are currently in service at the NATO Tactical Leadership Programme at Los Llanos Air Base, Albacete, Spain. (Image courtesy of the TLP).

3 MVRsimulation's Deployable Joint Fires Trainer is in use at the USAFE-AFAFRICA Warfare Center at Einsiedlerhof Air Station, Germany.

4 100 VRSG licenses provide 3D real-time visuals for flight simulators at the U.S. Air Force Academy's Multi-Domain Lab. (Image courtesy of the USAFA).

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ECS Upgrades Logistics Training Applications for U.S. Air Force Expeditionary Operations School

Mick Golson, president and chief operations officer of Engineering & Computer Simulations (ECS) [Booth 1829], has announced that the firm has been awarded a follow-on order to continue its work with the U.S. Air Force to modernize and advance the use of innovation and emerging educational technologies for its training programs at the Expeditionary Operations School (EOS) at Joint Base Dix-McGuire-Lakehurst in New Jersey.

ECS has worked with the EOS since 2019 to develop new applications, courseware, and simulation that directly support the Air Force's combat support mission in the full range of expeditionary operations and allow airmen to safely prepare for in-garrison and deployment operations. Enhanced modernizations include deployment planning, logistics readiness, air transportation, maintenance and command and control.

Through its ongoing EOS contract, ECS is developing animated models of aviation equipment and logistics environments that mirror real-world operations in the academic environment. Utilizing the latest technology and equipment integrated into the simulators, the ECS team will continue to maintain, upgrade, and strengthen the capabilities through constant communication with the EOS. Specific projects include the Aerial Port Expeditor, Installation Deployment Officer, Air Mobility Command & Control, Pallet Build-Up, Air Terminal Operations Center, Passenger Service, Unit Deployment Manager, Aviation Resource Management, Joint Inspection Simulation, Center-of-Balance and Cargo Restraint applications and a Customer Service course.

"The EOS project for us is essentially a support contract for the Expeditionary Operations School of the United States Air Force," said Nathan "Nate" Ginos, vice president of development for ECS. With that project we developed new and maintained existing courseware and simulations for them. There are approximately 16 applications in one type or form that we maintain and support. And that doesn't include any new work that they ask us to do.

As an example, Ginos pointed to the Joint Inspection Simulation, or "JI Simulation."

"The JI Simulation is an application that prepares Air Force personnel to conduct inspections for whenever you are putting an aircraft load together for a C-15, C-5 or C-130," he explained. "The joint inspector goes out, looks at all the different fasteners and palletization to make sure that it is in tolerance to be not only a safe load for the air crew, but an effective, secure load so it can be quickly employed on the other side. Sometimes it's just the loadmaster, but a lot of times on mass deployment operations they bring just JI inspectors that are certified to do this."

Ginos said that the latest application, which is tentatively called the Joint Load Planning application, reflects a true collaborative effort between ECS and the EOS schoolhouse.

"We have the JI tool that we discussed. And then there's a load planners course. But the Joint Load Planning application is supposed to put a lot of those elements together," he said.

ECS Supports Army Casualty Care

Engineering & Computer Simulations (ECS) [Booth 1829] has been awarded a Broad Agency Announcement Applied Research Contract for the Modular Medical Environment Testbed in support of the U.S. Army CCDC-SC. The testbed will be one focus area of the company's presence at I/ITSEC 2022.

According to ECS representatives, the BAA contract for "Basic and Applied Research to Setup and Operate the Modular Medical Environment (MME) Testbed" is a three-year project as part of the Army's Synthetic Training Environment (STE) and serves as a testbed for integration of combat medicine training solutions and platforms, focusing on existing as well as emerging technology trends."

The MME vision is to revolutionize Army training by merging live, virtual, constructive and gaming platforms into an interoperable training experience that provides real-life immersion for combat training.

Shane Taber, ECS chief officer of technology; Nathan Ginos, ECS vice president

of development; and Madison Quinn, ECS research analyst, will lead the project for ECS.

"This ambitious project is intended as an iterative process for rapid prototyping and testing, to inform decisions more quickly for what the Army should (or should not) pursue in these emerging technologies," Ginos said. "This is a joint effort between our team and CCDC-SC on staying on the leading edge of technology while also making sure that our soldiers have the best medical training we can provide."

"MME, or the Modular Medical Environment, is a fancy way of saying that this is basically an incubation lab to look across different innovative ideas that are out there, that both we and our partners on the team have, and then ask: 'What's out there? What's the cutting edge innovation technology, software or items that can be used to enhance medical training for soldiers in the Army?'" he added.

Ginos noted that the target user demographic would be mostly Army combat medics and their equivalent in the other services.

"So it's our job to work collaboratively with the government to identify these new technologies and then add them into the queue to evaluate the efficacy and, if warranted, take it to scale to put it in front of actual soldiers, airmen or marines on a test case basis to get feedback. And, since this is a research project, valid feedback can be positive or negative," he said.

ECS founder and chief executive officer Waymon Armstrong added, "Especially with the emerging technologies that this is focused on, and integrating those together, the intent is to help the CCDC-SC group be able to rapidly investigate these things in a way that has a much shorter tail than some more traditional research approaches."

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NATO Highlights "Virtual Speaker"

NATO Allied Command Transformation [Booth 1165] is highlighting its new "Virtual Speaker" at I/ITSEC 2022. The concept, which has been evolving over the last two years, allows NATO to "beam in" a speaker to a stage at one of NATO's training schools, where they can give a lecture and have full Q&A with the students, able to interact fully with them and the students able to see the whole body language. Unlike the Zoom of today, the hologram allows a speaker to walk into their studio and "appear" on stage at any destination in the world.

"In Allied Command Transformation, our job is to look at training technologies, and what we can implement," explained Paul Thurkettle, Section Head (Learning Technology), NATO. "We have eight NATO schools scattered around NATO countries, and most of them rely on lecturers to come in and give a talk. It might be the NATO Secretary General, or our commander, who will go once every two years. So we thought about the possibility of stepping in a room at their command and appearing on the stage, not just as a talking head, but a full body."

After exploring several companies and technologies, the system chosen for experimentation was Canadian company ARHT.

"They seem to be the leader," Thurkettle said. "Now, you can go to many things in Las Vegas and see Michael Jackson and Frank Sinatra on a screen. But those are just projections. This is a full two-way enabled capability."

After some experimentation, systems were purchased for NATO schools in Germany and at Norfolk.

"We started doing tests. And then eventually, we started having our generals talk to the students there. And it worked very well. And then our four-star general got interested and said, 'Okay, I can't go to this conference, but I'll use this technology to talk to them.' He's used it four times now, for think tank meetings in London, and several other events."

One recent "non-NATO" user was Ukrainian President Volodymyr Zelenskyy, who used one of a number of "green rooms" in Kyiv to "beam into" four national capitals for a simultaneous talk to national leaders in June.

The system offers full secure connections and the ability to record the lecture or presentation and to replay on demand.

"I'm looking at it from an education and training perspective, but our leaders are looking at it for convenience," Thurkettle added. "You know, if our four-star needs to go to the military committee to give a 10-minute talk, now he doesn't have to fly to Brussels, talk for 10 minutes and then fly back again."

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The Consumer Metaverse Meets Defense

In a continuation of I/ITSEC's series of NBT TalX sessions focusing on the metaverse, speakers at Wednesday morning's Signature Event shared their insights regarding the consumer metaverse and how it relates to the military metaverse and defense simulation and training.

"Our goal with this conversation is to gain some insights on where we are at this foundational moment in the development of the metaverse," said moderator Danny Williams, Unreal Engine simulation manager, Epic Games. "There's a lot of talk about what we're doing on the defense side of simulation and training as it relates to the metaverse, and this talk is to focus on: What is the consumer market doing, how are things happening on that side of the industry affecting [defense S&T] and what lessons can we learn from that?"

Williams emphasized that the metaverse is at a "foundational stage," comparing it to when the Internet began. "I think we're at a similar point in our time with the development of the metaverse in terms of building these foundational technologies," he said. "A lot of us here at this show are focused on the military domain, focused on that industry. It's important for us as an organization, as an industry, to make sure that we're looking at the broad aperture of what's happening everywhere with the metaverse – on the defense side, but also on the consumer side, gaining those insights and lessons learned, and understanding that we are building the foundational software, the foundational standards, the hardware form factors, all of those foundational pieces that are going to be fundamental to what the metaverse will become, and what future generations will be able to build on top of it."

Williams introduced Gastao De Figueiredo, senior vice president, strategic partnerships, Blackshark.ai, who began by describing how his company utilizes aerial or satellite imagery and enriches that with geotypical reconstruction and generative AI to create "realistic looking facades." He said, "We devised a patented approach that allows us to describe recipes for what buildings look like in different parts of the world, and then AI applies the right recipe to the right building based on the geographical location."

He continued, "That's the technology that we brought to bear inside a flight simulator that we now partner with several other companies to bring into what we call serious gaming modeling, exercise and simulation," and in other applications. "We have an energy company that is using this technology right now to do site scouting – where they can deploy wind turbines and solar panels."

"We recently started a global partnership with Maxar Technologies, the leading satellite provider in the world, and we've been working with Maxar in processing multiple petabytes of data in a single day, and generating a constantly refreshable version of the planet. So think about it as a synthetic 3D implementation of every building in every part of the globe," De Figueiredo said.

"Why does it matter? Because you've heard the expression, 'we want to train like we fight.' We want to create the most realistic infrastructure so that other companies can unleash their creativity and develop the most realistic systems that can benefit the warfighter," he said.

Brian Vogelsang, senior director AR products, Qualcomm, continued the discussion with a focus on hardware technologies related to the metaverse, including, he said,"the state of that consumer market and how that market is evolving to impact commercial use in industrial and military use cases, and really accelerating the pace of innovation."Describing the metaverse as extended reality (XR) – augmented, virtual and mixed reality – he said, "The metaverse is a big topic. And the question is: how are you going to consume and interact with it? Is it going to be through a TV screen, on your laptop, on your PC, through a browser or a mobile application? Yes. But increasingly, you're going to want to consume the metaverse in more immersive ways, and XR technologies are the things that are going to help you do that, whether it's a virtual reality headset or an augmented reality device."

He continued, "We're transitioning to a new form of computing; we call it spatial computing. This is where the screens disappear, where really the world becomes the home screen, the desktop. This is a major transition that we're moving through today, it's not going to happen instantly. It's going to take many years to come to full fruition, but we really think that this is the future."

Vogelsang discussed the specific challenges with the development of headworn AR glasses, and some of the considerations to solve those issues. "We're building the software technologies that help make this kind of thing possible," he said, emphasizing, "we're doing it through open standards. We really believe that in order to unlock both the consumer and ultimately the enterprise metaverse, it needs to be using open tech."

The final speaker, Apurva Shah, founder and chief executive officer, Duality Robotics, spoke about his background with Pixar prior to founding his current company, where "our focus is on using the metaverse to solve real world problems."

He discussed data collection, the use of digital twins and cited applications, including a just-launched example of an autonomous ambulance choosing the quickest route in gridlocked New York City, showing the importance of accurate data constantly updating occurrences "on the ground."

Relating that to the military, he said, "The question is: why is that useful? Why is that important? Think about what you mean by 'fog of war.' You have a strategy, but what's happening on the ground? And how is that contributing back to what you do?"

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Lifetime Achievement in Modeling & Simulation in Industry

JoAnne Puglisi

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Ms. JoAnne Puglisi spent her entire Lockheed Martin career fixing, developing, implementing and operating military training, simulation, and modeling systems and programs. Her impact on the world's largest defense program – the F-35 Lightning II, cannot be disputed. As obvious as might it seem today, her training concept directed that pilots and maintainers should directly mirror how they perform in theater – a radical thought in the mid-1990s. Key to her remarkable success was her singular focus on the mission and those who supported it.

Training Systems Acquisition

Persistent Cyber Training Environment (PCTE) Acquisition Team Product Manager Cyber Resiliency and Training (PdM CRT)

The PEO STRI and ACC-Orlando Persistent Cyber Training Environment (PCTE) Acquisition Team is an Army-led agile acquisition program delivering a distributed capability across all services to "train as they fight" in a relevant, configurable and realtime virtual environment for the Department of Defense (DoD) Cyber Mission Forces (CMF) at individual, group/team and force-level. The PCTE team's innovative acquisition strategy directly resulted in delivering capability to the cyber warfighter ahead of schedule.

Lifetime Achievement in Modeling & Simulation in Academia

Dr. Peter A. Hancock

UNIVERSITY OF CENTRAL FLORIDA

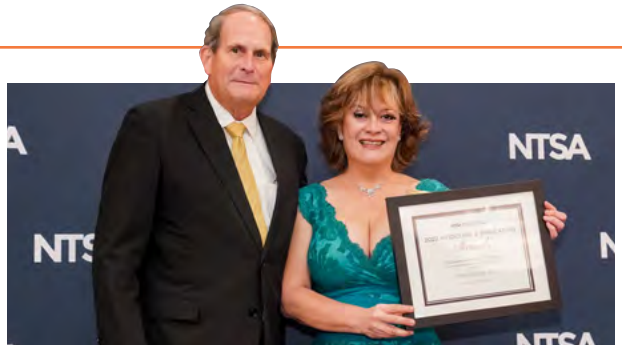
Since the late 1970's Professor Peter Hancock has been at the forefront of Modeling and Simulation. His early work on modeling physiological systems helped pioneer computer-based simulation of human response in extreme environments. In the early 1990's, he published the first work on transfer of training from virtual reality to actual operational conditions. Professor Hancock has secured over $21 million in externally funded research and has authored more than 1,000 scientific articles and reports.

Training and Simulation

705th Combat Training Squadron (CTS), Distributed Mission Operations Center (DMOC), Modeling and Simulation Team, Kirtland AFB, NM

The U.S. Air Force's 705th Combat Training Squadron (CTS), Distributed Mission Operations Center (DMOC) Modeling and Simulation Team effectively modeled and replicated realistic nuclear weapons effects into a multitude of U.S. and Coalition simulation training events. The USAF has come to recognize that in the modern threat environment, U.S. service members must be able to survive and continue to conduct conventional operations in a nuclear environment. The multiple simulation-based modeling solutions replicating the projected nuclear effects have enabled the DoD and the AF to train on how to continue operations under the effects of small-scale nuclear events.

Winners Announced at I/ITSEC 2022



Education and Human Performance Individual

Sofia Santiago, Ph.D.

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During COVID, Dr. Sofia Santiago utilized innovative methodologies and best practices to design, develop, and convert Resident Instruction to Virtual Instruction thus allowing the U.S. Army's Medical Center of Excellence to be at the forefront of virtual instruction (VI) which was central to Soldier Readiness during COVID. Dr. Sofia Santiago's work resulted in MEDCoE achieving the distinction of highest continued training out of the 10 Army Centers of Excellence during the pandemic.

Education and Human Performance Team

Rigil and Hampton University StrataGem Team

Rigil and Hampton University is the only Historically Black College and University with the Federal Aviation Administration-endorsed program: Air Traffic Collegiate Training Initiative. Hampton University's partnership with Rigil in 2021 and their StrataGem enterprise platform successfully modernized traditional paper-based processes, translated mission needs, and delivered a working solution with the thoroughness necessary for the safety of our nation's airspace.

All award winners pictured with Rear Admiral James A. Robb, USN (Ret.), President of the National Training and Simulation Association.

Army 2030 ... continued from p1

reducing environmental impact, minimizing the risks of strategic miscalculation and escalation, and enhancing speed and availability," she said.

Elaborating on those individual benefits, she began, "Conducting virtual training does not require the vast expenditures of using live ordnance and moving many combat vehicles and personnel to the approved training locations. Safety is also critical. A large percentage of military deaths occur during combat training. By not exposing soldiers to as many live-fire exercises, this number can be significantly reduced. Additionally, virtual training also helps to reduce the Army's overall impact on the environment by reducing greenhouse gas emissions and reducing the number of live ammunition rounds needed for training. The long-term costs of environmental cleanup at ranges and training facilities can be reduced."

Additional identified benefits range from minimizing the risk of military escalation to enhanced speed and availability.

"Military exercises near hostile nations often escalate tension between the countries hosting the exercise (Country Blue, Country Green) and those who see themselves as the target of the exercise (County Red, County Orange) and the use of virtual training environments could help to reduce these risks," she said. Finally, the Synthetic Training Environment brings together the virtual, live, constructive and gaming environments into a single training environment, making training more accessible – increasing repetition and speed, and bringing training in the hands of soldiers at the point of need. Our training products allow our soldiers to exercise the repetitions multiple times in order to build muscle memory. The result is that when they are working in dangerous environments the basic tasks are performed automatically."

Reiterating that the entire PEO STRI portfolio is a strategic effort to help build the Army of 2030, she continued, "Our world is changing, and the Army and PEO STRI are changing with it. PEO STRI's role in building the Army of 2030 is to create a more sustainable, ready and modernized Army through individual and collective training capability across combat platform teams, mission command staffs, and cyber and intelligence communities."

As part of the Army's modernization program, PEO STRI's Synthetic Training Environment (STE) will deliver a holistic live, virtual and constructive training environment. Senior Army leaders have asked PEO STRI to deliver agile, live-training capability four years earlier than planned, with an initial assessment in the fourth quarter of fiscal year '24.

"The first increment of the STE addresses virtual capability through STE-Information System (STE-IS) and Reconfigurable Virtual Collective Trainer (RVCT)," Saunders explained. "FY'22 was a big year for STE as we continued development of the Air and Ground RVCT platforms as well as the SW integration into the standard IS architecture which will be the core of all STE systems in the future through TSS/TMT and OWT. PEO STRI, in collaboration with the STE CFT, executed three Soldier Touchpoints this past year, demonstrating squad and platoon level compatibility. FY'23 will mark the first year of a STE production award of the RVCT variants in preparation to begin fielding capability in 2024.

"We look forward to showing off some of the STE capabilities here at I/ITSEC," she added.

In addition to the STE, PEO STRI team members have also had recent success in cyber and intelligence capabilities.

"Our Persistent Cyber Training Environment (PCTE) is a modeling and simulation training platform supporting standardized Joint Cyberspace Operations Forces, individual sustainment training, team certification, mission rehearsal and providing the foundation for collective training exercises. It leverages existing connectivity to facilitate the sharing of resources and provides additional cyber maneuver space. We will feature the PCTE in our booth here at I/ITSEC," she said.

Saunders continued, "Our Intelligence Electronic Warfare Tactical Proficiency Trainer (IEWTPT) is another modernization program in the PEO STRI portfolio. IEWTPT is rooted in our Cyber Test and Training portfolio and is aligned to the Army Intelligence Training Strategy. IEWTPT provides proficiency training for military intelligence analysts and system operators and supports the sustainment of mission-essential and highly perishable skills. It facilitates collective training across the various intelligence disciplines and allows the user to exploit intelligence data in a "train as we fight" simulated environment.

PEO STRI also successfully fielded the all-new Soldier Monitoring System II (SMS II) to Army units around the country this past year. The Soldier Monitoring System (SMS) is the Army's materiel solution for soldier tracking, and SMS II represents the next generation in tracking technology. SMS enables realistic, high-intensity, boots-on-ground training that meets all required training objectives. It reduces risks to soldiers when training requires a level of isolation and/or individual execution (e.g., land navigation), by providing real-time soldier tracking (geo-locations), and automated alerts to include boundary alerts, no-motion alerts and soldier-initiated alerts. SMS also provides cadre/leadership with technology to virtually monitor soldiers and maintain enhanced situational awareness."

PEO STRI also remains committed to agile, standardized architectures using modular open systems, as well as collaborating with industry and academia.

Agility is seen as key to bringing in new technology, and PEO STRI has developed enterprise solutions to aid in agility to include the stand-up of the STRI Agile Acquisition Response Team (STAAR), consisting of a collaborative group of select individuals to assess commercial-off-the-shelf solutions

readily available for integration, and leveraging Other Transaction Authorities (OTAs) in innovative ways to access and deliver modernized live capability faster.

Standardizing system architectures for "plug and play" integration also assists in common solutions for partnering and preventing stove-piped systems. The Platform Development Kit (PDK) with the STE offers collaboration across industry, linking technologies and capabilities for planning and platform integration.

Modular Open Systems Approach (MOSA) is another integral acquisition strategy to achieve affordable joint combat simulation training capabilities, saving money, increasing interoperability and allowing for rapid insertion of new technology for use by soldiers.

Saunders emphasized that she wants to hear from industry, pointing to PEO STRI sponsorship of its first Modernization Industry Day in September to collaborate with industry and help to develop technical solutions and common architectures to meet the Army of 2030 objectives as well as the recent launch of the U.S. Army Modernization Exchange Platform by PEO STRI and the STE Cross-Functional Team to streamline customer relationship management and overall project management and business functions. The platform facilitates industry collaboration and innovation through white paper submissions linking current technologies to Army requirements

In her summary message for I/ITSEC 2022, Saunders said, "Events like I/ITSEC allow us to listen to industry and assess the latest technologies in cloud, architectures, data management, gaming industry advancements, terrain generation, models, etcetera. They also help us to encourage a modular open systems approach (MOSA) to enable a diverse solution set and 'plug and play' capability."

She identified a number of additional technologies of interest, including artificial intelligence, machine/deep learning and intelligent tutoring; immersive multisensory simulation and training (A/V, haptic, olfactory); human performance and training effectiveness; cyber (PCTE) and certified ethical hacking; cybersecurity (continuous ATO); embedded training on tactical platforms; integrated Internet of things at point of need; high performance gaming/game engines; high fidelity terrain/environment modeling and rendering; and medical simulation modernization and realism.

"We also recognize the uniqueness of having such an audience in a single location like I/ITSEC, and the technologies available directly influence our test and training environment and solutions," she concluded. "We need them to work with us."

Expanding the Allied Perspective on Training in Europe

Another Signature Event at I/ITSEC 2022 focusd on transforming training with allies and partners to confront and deter Russian aggression. Caroline Baxter, Deputy Assistant Secretary of Defense (DASD) for Force Education and Training, USD P&R, moderated the panel, which included: Lieutenant General Michael Claesson, Army, Chief of Joint Operations, Swedish Armed Forces; Lieutenant General John S. Kolasheski, USA, Commanding General, U.S. Army V Corps; Major General Jessica Meyeraan, USAF, Director of Exercises and Assessments, US EUCOM CJ7; and Major General Serhii Salkutsan, Army, Military Representative to NATO, Ukraine.

"Let me start by saying that, from my perspective, this [panel] is not news," Baxter began. "But I think it needs to be said as a frame for this discussion. Allies and partners have always been foundational to the way the United States wages war. We are an expeditionary power. We rely on allies and partners to provide critical things like access, basing and overflight, reception, staging and movement integration, but also to join swords with us on the battlefield in a time of crisis. That really drives everything that we think about; when we think about Russia, when we think about China or when we think about the forward threat driving strategy, through to operations and tactics and creating solutions for that particular fight."

After introducing the panelists, Baxter asked each to offer some thoughts and perspectives based on their current roles.

"Dear friends," offered Major General Salkutsan, "As you know, these are very hard times for Ukraine. And not only for Ukraine, but I think for all of us. Because my starting point would be that this war is not a war only against Ukraine. This is war against the democratic and civilized world. And the threat that we face now is a threat for all democratic societies."

Noting that nearly all of Ukraine's military facilities – from training to logistics to other support assets – had come under attack "from the first days of the war," he stated that the process of compiling "lessons learned" has been underway from the beginning.

Lieutenant General Claesson provided a self-described "Swedish perspective" on the current environment, organizing it into the categories of position, challenge and tools.

"In our case, we have been on the path of defense reform that was initiated in 2015 in order to fulfill a direction to shift back to a national territorial defense, based on our assessment on where Russia was going. It means increased resources. But it also means that it takes time to turn the tide. And one conclusion is that long standing and long-term direction and guidance from the political level really works, because we are optimized for international crisis management."

Moving to challenges, he said, "We can only look at the [map] and draw the conclusion that not only Sweden, but the Nordic countries, are in copacetic dire straits compared to what has happened in Ukraine. But it's definitely a complicated geographical position."

Baxter solicited the thoughts of panelists on the specific things that need to transform in this environment, drawing several well-thought responses.

Major General Meyeraan offered what she described as "a pearl of wisdom that she picked up yesterday," suggesting something of a terminology change in many of these allied transformation discussions.

> Allies and partners have always been foundational to the way the United States wages war. We are an expeditionary power. We rely on allies and partners to provide critical things like access, basing and overflight, reception, staging and movement integration, but also to join swords with us on the battlefield in a time of crisis."

"I was struck by a conversation in one of the breakouts yesterday, challenging the lexicon we reach for and maybe overuse the term interoperability, when in fact, we should be talking about interdependence. And I love that comment. Because when you're interdependent, you're only as strong as your weakest partner, or your partner's weakness is also your weakness when you're interdependent. And I think there is work to be done there," she said.

During the question and answer session, Baxter asked Lieutenant General Claesson about Sweden's decision to join NATO.

He replied, "The thing is that the NATO issue has not been so distant in our minds as we have been partners for more than 25 years. We have been working closely with the Alliance on operations, standardization, development. However, as I was alluding to previously, this sort of line of being more or less alarmed by events in the surrounding region of the world. Finally, there was no possibility to shut off the alarm bell. And finally, the system. Every single part of the system realizes that this is this is not going away. We are not going to trade with Russia to make them happy, or complacent or nice in any way. This is a problem that's going to stay."

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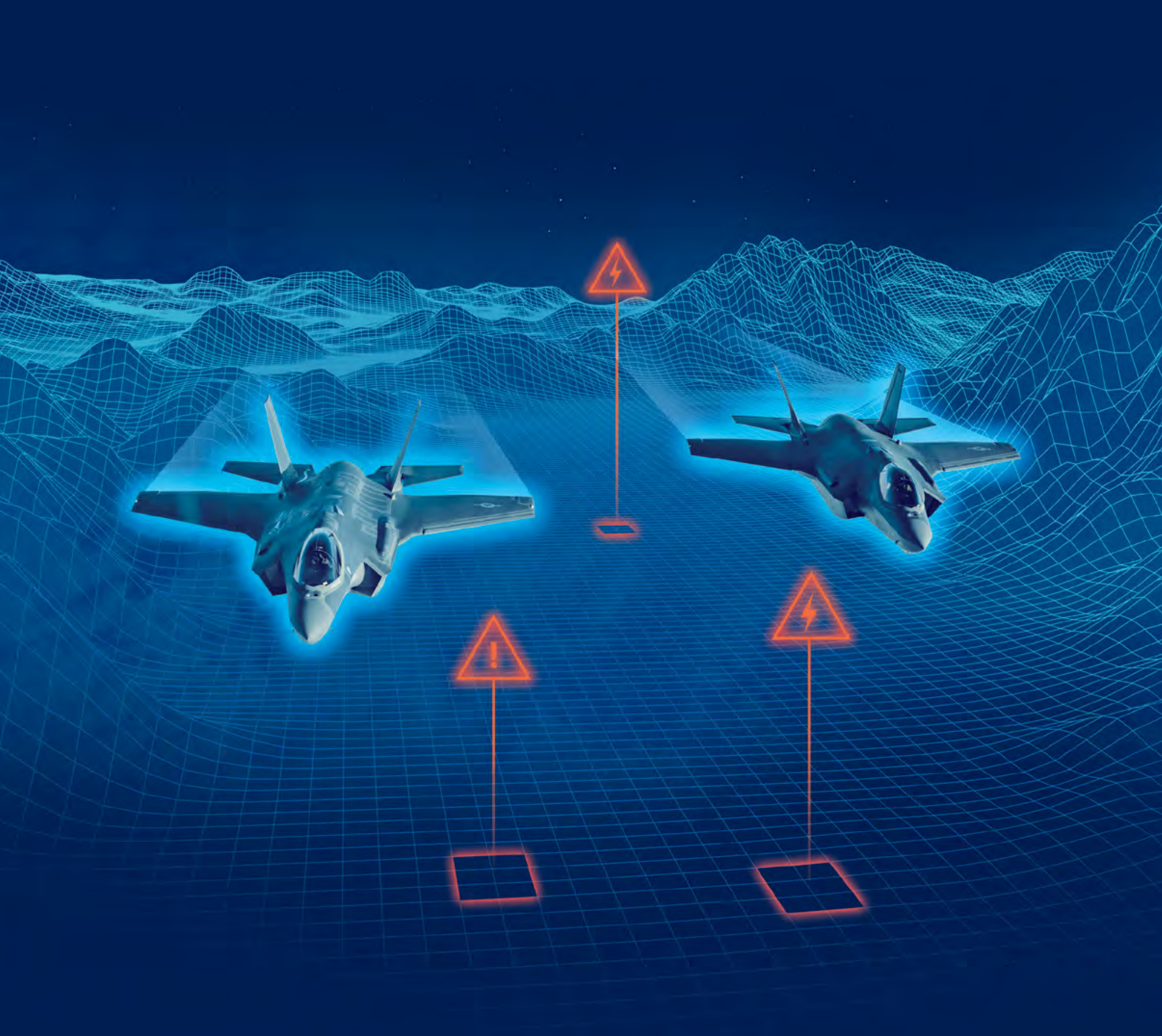

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