



# SHOWDAILY

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NOVEMBER 29, 2023

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## Marine Corps Spotlights Pacific Pivot

United States Marine Corps representatives are utilizing I/ITSEC 2023 to highlight that service's "Pivot to the Pacific" in new training capabilities to sustain the joint force on the first and second island chains.

According to Colonel Marcus Reynolds, Program Manager for Training Systems (PM TRASYS), Marine Corps Systems Command, the pivot reflects the mandates of the 2012 Defense Policy Review Initiative Realignment Plan, which includes the relocation of approximately 9,000 Marines and their families from Okinawa, beginning in 2024.

"Our posture in the Pacific is changing," Reynolds began. "The changes been planned since probably the late 1990s / early 2000s. And the Marine Corps has taken actions over the last approximately eight years now, to get a record of decision on the environmental impacts that the new posture will have on the Island of Guam."

Reynolds, who previously served as Deputy Officer in Charge for Marine Corps Activity Guam, now called Camp Blaz, said that military construction (MILCON) activities are well underway with over a billion dollars of work in place.

"We're anticipating force flow of the first Marines as part of the movement throughout the Pacific," he said. "And it's not just moving Marines from Okinawa or from mainland Japan, but it's also Marines that will come from the United States and from Hawaii. So that flow will start in the mid-2020s and those capabilities on Guam will continue to ramp up."

He continued, "Marine Corps Systems Command

and PM TRASYS have several [military construction projects] on Guam to support the relocation of those Marines and their training ability. For example, right now we're doing government acceptance tests for the known distance firing range. There are a lot of firing ranges associated with a MILCON project called P715, which is a Skaggs Range Complex. With that, we've got five different ranges - a pistol range, a regular 'KD' [known distance] range, unknown distance range, multipurpose range and a 1000 inch range."

Another project involves the development of what will be the largest facility for Military Operations in Urban Terrain (MOUT) in the INDOPACOM [Indo-Pacific] area of operation.

"We're really excited about that one," he said. "This complex was formerly known as South Finegayan, which was a housing complex for the Air Force. Back in the 1980s, we had a pretty big Department of Defense footprint on Guam, countering our near peer adversaries, back then Russia. So that whole area used to be a big housing complex. As we moved forward, and as 'the wall came down,' that area was used for different types of training and other applications."

Over the years, the quality of the housing has significantly degraded, to the point where the Marine Corps devised a plan to turn it into a massive MOUT facility.

*Continued on p28*





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## I/ITSEC 2023 Best Paper Nominees

SUBCOMMITTEE	PAPER TITLE
23225 - Education	Practical Magic: Applying Guidelines to Serious Game Accessibility
23273 - ECIT	Wires Crossed in a Digital World: How to Prevent Misalignments in Human and AI Decision Making
23210 - HPAE	Effects of Trust Calibration on Human-Machine Team Performance in Operational Environments
23233 - PSMA	Developing the Human-Machine Teaming (HMT) Ecosystem
23241 - Simulation	Developing Criteria to Compare Military Medical Trauma Simulations Across Modalities
23179 - Training	Contextualizing Cyberspace Electromagnetic Activities (CEMA) in Multi-Domain Operations (MDO) Through Playbooks

## SHOWDAILY

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**Publisher**  
Debbie Langelier, CEM  
dlangelier@ntsa.org

**Editors**  
Dino Pignotti  
pignotti.dino@gmail.com  
Scott Gourley  
scott\_r\_gourley@yahoo.com

**Associate Editor**  
Gail Gourley, RN, BSN  
gail.gourley@gmail.com

**Photography**  
EPNAC Photography & Video  
www.epnac.com

**Advertising**  
Kathleen Kenney  
kkenney@ndia.org  
Jacob Wright  
jwright@ndia.org

**Print Production Management**  
Tradeshow Media Partners  
www.tsmpartners.com

## WEDNESDAY, NOVEMBER 29 CONFERENCE HIGHLIGHTS

### REGISTRATION HOURS

0700-1800 (West Concourse)

### EXHIBIT HALL HOURS

0930-1800

### SIGNATURE EVENTS

0830-1000 The Joint M&S Data Initiative (Room W304EF)

0830-1000 The TalX – 5G and NextG (Room W304CDGH)

1030-1200 Navy Flag Officer Panel (Room W304AB)

1030-1200 Digital Materiel Management (Room W305AB)

1030-1200 Train While You Fight: Ukraine as a Touchstone for Training in Future Wars (Room W300 – Theatre)

1030-1200 The TalX – Industry Leaders Perspectives on Adoption of Artificial Intelligence (Room W304CDGH)

1330-1500 The Evolution into a Digital Battlefield (Room W304EF)

1330-1500 The TalX – Government Perspectives on Adoption of Artificial Intelligence (Room W304CDGH)

1530-1700 The TalX – Government CTO/CLO Future Vision (Room W304CDGH)

1530-1700 Cyberspace – Future Multi-Domain Challenge Perspectives (Room W300 – Theatre)

### FOCUS EVENTS

0830-1000 Fleet Training Officers Panel (Room W304AB)

1030-1200 Senior NCO Perspective: Operational Readiness Leveraging Simulations for Training & Mission Rehearsal (Room W304EF)

1330-1500 Joint Medical Training – Leadership Perspective on Current and Future Capabilities (Room W305AB)

1600-1730 Digital Transformation & Model Based Systems Engineering (MBSE) (Room W304EF)

1600-1730 Army Science Board FY'23 Study Findings and Recommendations (Room W306AB)

### COMMUNITY OF INTEREST EVENTS

0830-1000 Simulation Standards: Developing Multi-National Interoperability (Room W305AB)

0930-1800 Serious Games Showcase and Challenge (Exhibit Hall Booth 3181)

1300-1700 NTSA Career Fair at I/ITSEC 2023 (Room W110 A)

### PROGRAM BRIEFS

0830-1000 PM TRASYS – Range Training Systems – Acquisition Update (Room W306AB)

1030-1200 PM TRASYS – Synthetic Training Systems – Acquisition Update (Room W306AB)

1530-1700 Air Force Acquisition Update (Room W304AB)

### PAPER SESSIONS

(Download the I/ITSEC app for synopses)

0830-1000 (Rooms W307ABCD; W308C)

1030-1200 (Rooms W307ABCD; W308ABC)

1330-1500 (Rooms W307ABCD; W308ABC)

1530-1700 (Rooms W307ABCD; W308ABC)



# Setting the Stage

Tuesday morning's Opening Ceremonies drew a packed audience at the Hyatt Windermere Ballroom, as Conference Chair Eliot Winer, PhD, announced the official start of I/ITSEC 2023.

The Conference Chair was joined on stage by Ms. Karen Saunders, US Army Program Executive Officer for Simulation, Training and Instrumentation (PEO STRI), executive for the lead service at this year's I/ITSEC, who introduced members of a "fireside chat" event. Moderated by the Honorable Katrina McFarland, PhD, Vice Chair, Army Science Board, the event drew both training and service perspectives from the Honorable Douglas R. Bush, Assistant Secretary of the Army for Acquisition, Logistics and Technology (ASA(ALT)) and Army Acquisition Executive, and General Gary M. Brito, USA, Commanding General,

He noted that "anyone with a teenager" is aware how much time they spend in digital environments.

"They spend a lot of time gaming," he said. "That's a good thing. And their expectations are pretty high, when they join the Army, about what experience they are going to have in training. But we need to leverage all the private sector innovation behind that into our training systems. No, it's not gaming, it's training. But there are links between those two worlds, and we have to bring them together. There's amazing innovation we should take advantage of. The other thing is that we in

more streamlined. We are trying to use new tools. But at the same time, we need your partnership in industry, to give us ideas on what we can do better, and how we can do better. America's great innovation engine is the private sector. It is not the government. And we need ideas, we need energy, we need to be critiqued the right way, so we are better partners to work with industry and not working at cross purposes. So if I have one big message that underlies a lot of what we are trying to do in acquisition, it is that we have to do this together. The government can't do it all alone. And to bring it back to this area of training, I think there's an enormous potential for us to leverage great work going on in the digital space in particular, so that we don't have to start everything from scratch. We should be able to build on what's already out there."

Brito added, "I think the composition of this audience shows the amazing opportunities we really have, both in uniform and with our industry partners and of course, those representing the respective staffs of the services."

Emphasizing the value of communications and teamwork, he continued, "We can lay out Soldier touch points to test respective capabilities. But we need to be extremely clear and precise on requirements or problem sets that we ask industry to help us solve. And before you go too far down the pipeline, or invest a lot of money and time, or intellectual energy, test those solutions. And if it doesn't work you pivot left or pivot right. We're doing



US Army Training and Doctrine Command.

After addressing several of McFarland's questions during the fireside chat, Bush summarized some of his thoughts for the I/ITSEC audience, stating, "I worked in government a lot of my life and worked in the Pentagon only recently. But I'm conscious that we are sometimes known for doing the classic government thing of telling you all what the answer is to our problems. That shouldn't be the case, especially not in this field, and especially not in anything digital. We need to take advantage of the innovation in the private sector in this space."

the government need to be a good partner. We are known as a demanding customer. We have a lot of rules, although that's not all the doing of the Executive branch. I get a little help from Congress. Regarding some of those rules, for example, with contracting, thank you for your patience working with us. But it's the American people's money. So there are going to be a few more rules. But we need to be good partners with you to make sure we can contract quickly and get things moving at a rate that's relevant to your business. And I think what we need is feedback on just how we can do that better. We are trying to be

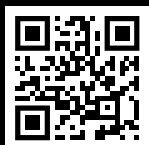
some great work with that now with our network system, which also would benefit the other services as well as part of the joint force. So given that level of detail in the plan and the respective training that supports you, it's very much the output of a team sport here."

The fireside chat was followed by an Industry Keynote, in which Doug A. Bowman, PhD, recounted years of his personal and team academic journeys exploring issues, including the components and categories of immersion, which contributed to early understanding of the training value of related modeling and simulation technologies.



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# Senior Leaders Address Current and Future Environments

Tuesday's Signature Event offerings at I/ITSEC 2023 included a Senior Leader Panel. Moderated by Brigadier General Guy Walsh, USAF (Ret.), executive vice president and chief operating officer of the National Defense Industrial Association, panelists included representatives from across the armed services and the Department of Defense.

Acknowledging that this was his first opportunity to attend I/ITSEC, Walsh said, "I can tell you very simply, it's eye watering." He referenced Monday's Congressional Caucus panel, explaining how it emphasized "the value of modeling and simulation and what Congress has been doing to reinforce and help what we're doing, whether on the government side or the industry side."

Mr. Young Bang, SES, Principal Deputy, Assistant Secretary of the Army, Acquisition, Logistics and Training, opened the panel comments, referencing the Army "fireside chat" held earlier that morning and stating, "You heard the Army talk a little bit about the Army modernization, and how we're delivering capabilities for 2030. Now, one of the things that I always talk about, as part of the Army modernization, is that it's underpinned by digital transformation. And when you think about the topic here, really about the whole notion of the conference theme - Sustaining a Global Force in the Digital World - what does that really mean? And for us, we've gone through what we call The Digital Odyssey, which is our journey to really be more digital as a service. And in this context of global force, that also means kinetic and non-kinetic [capabilities], with our sister services, with OSD with our allies in the INDOPACOM theater. And that's critical for our mission."

He added, "One of the things I wanted to highlight, and it is really very appropriate for this conference, is that we need to really keep on 'upskilling' our warriors, our leaders and our Soldiers, upskilling from a digital context. And when you think about that, it's like going to the gym, where you do 'reps and sets' to build that muscle memory. Our soldiers are incredible. And the way that they think about innovations, the way that they'll take a solution

and figure out how best to apply it to the mission is amazing."

In a related Marine Corps perspective, Lieutenant General Kevin Iiams, USMC, Commanding General, Training and Education Command, observed, "We've gone from the industrial age to the information / digital age. Truly, there's no going back now. We just need to embrace it and continue to move forward."

He summarized, "Let me just close with saying that we're still focused on a number of options inside of our portfolio, to first, build joint and partner capability, multimedia classification, and enclave level capabilities, so that we can train everybody in full high fidelity. We want new simulators for our new systems that

running out of time to rethink, to refresh and to transform training. And then after that I outlined some of the things that my office was doing to accelerate that change. I'm going to be providing a bit of an update on that today on where we are right now. But let me open by saying that my sense of urgency has not abated. And that's not because we haven't made progress. We absolutely have, but what it means to be trained and educated and ready for the future fight continues to evolve. That's for two reasons. First, global events obviously are pulling our forces and our resources and our attention to multiple theaters and supporting different complex [operations] all requiring diverse capabilities... The second reason is what the pace of technological change demands from us in terms of a complete mindset shift."

"This is my first I/ITSEC, said Brigadier General Andrew J. Leone, USAF, Mobilization Assistant to the Military Deputy, Office of the Assistant Secretary of the Air Force for Acquisition, Technology and Logistics. "What an education it's been already to understand the ecosystem that revolves around this con-

ference. It's so much beyond just a single service. It's so much beyond even the Department of Defense. It is also about our partners and allies, and obviously, the rest of industry, but particularly backing up to the partners and allies, and how important that is because our future fight will depend on both Air Force, all the rest of the [DoD] and our partners



are coming online, like our amphibious combat vehicle. We need standardized adversary models as we look to the future...We need more AI, we need to actually put AI into how we're going to build our constructive models out there so that they are real for our training force. We also need to look at how we're going to rapidly prototype some of these things as we move to the future, especially AR VR and AR XR. And then lastly, I'll just say since our inception, our Marine Corps has been adaptable and ready to change."

"My key message on the stage last year was 'we are running out of time,'" observed Caroline Baxter, Deputy Assistant Secretary of Defense for Force Education and Training, Office of the Secretary of Defense. "We're

and allies to get after it."

In his naval perspective, Rear Admiral Douglas Verissimo, USN, Commander, Naval Air Force Atlantic, highlighted several key points, including the need to develop operational expertise "at speed."

"I am very proud of my service, that we have an integrated fighting force that is certified, qualified and continues to be capable of fighting in an integrated fashion. But the speed of development of that integrated fighting capability has to improve. And I think a conference like this is a great opportunity to sit down and think about how we can do that."

Following their prepared remarks, panelists addressed a range of questions from the moderator and the audience.



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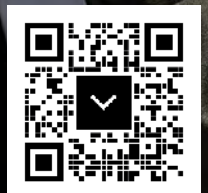
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# Scholarships Reflect Investment in the Future

The commitment of the National Training and Simulation Association (NTSA) to the future of the modeling and simulation community is reflected in the organization's scholarship program.

The program at I/ITSEC 2023 is more robust than ever, and the value of the program to the I/ITSEC community is significant and long-lasting, according to Janet Spruill, scholarship chair.

"It's really investing in the future of our industry – the modeling, simulation and training industry," she said.

"It's important that we continue to encourage students into STEM careers," Spruill continued, "and that we help motivate them to come into the defense modeling and simulation community so that they can help solve some of our nation's and our world's most pressing problems. We need them to be working in operational positions, to be conducting research, to be inspiring the next generation after that. So, it's really about bringing them up, encouraging them, wrapping our arms around them, if you will, to say, 'you are part of this community. This isn't just you in a school

program on your own. We are here to support you, to encourage you, to mentor you.

"I have to say that Admiral Robb was the greatest proponent of STEM education and of investing in this future of our industry," Spruill continued. "He also challenged us to keep [students] in this community and to find ways to plug them into the conference, to connect them to the job fair and into the defense industrial base, and to encourage them, to mentor them, into leadership roles. And you'll see that across the conference. You'll see conference chairs who are former scholarship recipients."

Spruill said the scholarship program has existed "since 1990, so this is our 33rd year. It used to be, in the first 10 or even 20 years of the program, we would give away one PhD and one master's scholarship. And this year, we're awarding scholarships to 25 students in four different scholarship programs." See

page 22 for a complete list of scholarship recipients.

The four scholarship programs are: the RADM Fred Lewis Postgraduate Scholarship; the Leonard P. Gollobin Postgraduate Scholarship; the Barbara McDaniel Undergraduate Scholarship, in its fourth year; and, new this year, the NTSA CMSP [Certified Modeling and Simulation Professional] Scholarship at I/ITSEC.



Among the four different programs, \$175,000 is being awarded this year

"Among the four different programs, \$175,000 is being awarded this year," Spruill said. "Each year, over the last seven years or so, we've set a record. That's through the generosity of NDIA [National Defense Industrial Association] and NTSA, and through the leadership, the vision, the sponsorship of Admiral Robb."

*Continued on p22*



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# Next Big Thing TalX Explores 5G and AI

Today's inventory of Signature Events at I/ITSEC 2023 features a number of opportunities under the broad category of "The Next Big Thing TalX."

"It's a bit of a play on the name 'TED Talks,'" explained Robert Kleinhample, chair of The Next Big Thing. "This is our event, which is similar to that kind of thing, where the speakers use a modern format to engage the audience with their words, not just a bunch of PowerPoint charts. We stay away from the typical panel style of putting out information to get new perspectives through an engaging format. It's our way of using I/ITSEC to disseminate new information about emerging technologies."

Kleinhample said that this is the third year for The Next Big Thing TalX at I/ITSEC, with two Special Event sessions in the inaugural year, five sessions in the second year and four sessions at I/ITSEC 2023.

Today's sessions include: 5G and NextG [0830-1000, Room W304CDGH]; Industry Leaders Perspectives on Adoption of Artificial Intelligence [1030-1200, Room W304CDGH]; Government Perspectives on Adoption of Artificial Intelligence [1330-1500, Room W304CDGH]; and Government CTO [chief technology officer] / CLO [chief learning officer] Future Vision [1530-1700, Room W304CDGH].

Kleinhample explained that the I/ITSEC events have changed in content rather than format over the last two years.

"We change our focus each year," he said. "Last year we were focused on the metaverse and what we did was introduce it to the community. There were some contentious aspects, but we introduced it and enabled the community to collaborate on it. As examples, there are good things about the metaverse and bad things. Where can we go with it and how can we benefit from it? And this year we are focused on two things: 5G and AI, and we are asking the community to engage and collaborate on those."

Asked about the selection process for each year's topics, he described "a journey that will probably change again next year."

He asserted, "Every year we are getting better in how we choose the topics. In selecting this year's topics, we sent out a survey to

both government as well as industry, as well as other outlets, such as NTSA's newsletter, to elicit feedback. And then our committee took all of this feedback and all these perspectives as to what the community felt their emerging technologies needs were and what they saw would be important. We asked them why that would be important and what examples they saw indicating that this is where we need to go. And then, based on that, for two years we really focused on 5G and AI. Now remember that we sent the survey when

ChatGPT was really starting to take off, of course. How do you embrace things like ChatGPT and others? But AI is so much more than that, which is what we're going to help the community understand."

In his message about the The Next Big Thing events for I/ITSEC attendees, Kleinhample offered, "If you attend, you are going to gain a perspective for how your organization can posture itself to accelerate the adoption of these technologies. In the past, with emerging technologies and the way they were introduced, you had several years to try to figure out what it was and how to adopt it. But AI is changing so fast. And that pace of



If you attend, you are going to gain a perspective for how your organization can posture itself to accelerate the adoption of these technologies

being introduced in organizations and being embraced is happening now. So attending these TalX sessions is going to help organizations understand what it is and how they could perhaps use it and leverage it within their organizations as well as for their customers."

He continued, "Additionally, they will know who else is doing it, so they can collaborate with others that are in attendance. I believe



that attending these will allow you to do that."

As an additional incentive to attend the sessions, Kleinhample described a social gathering at the end of the day, noting, "Everyone remains tonight [Wednesday night] at five o'clock. If you attended one of the TalX sessions, you can go to the social where there will be an open opportunity to talk with the presenters, as well as others that were in attendance, and just collaborate on 'Hey, how can we embrace these technologies to advance them?'"

Looking out to the TalX events at I/ITSEC 2024, he said that the dialogue surrounding possible topics is starting now.

"We already have a committee and we're already exploring what next year is going to be for The Next Big Thing TalX," he said. "We're trying to figure out whether we could possibly introduce a design thinking approach for next year. So we're looking for a series of engagements with the I/ITSEC community to elicit what's evolving, what are their needs, what is on the tech horizon and what they see in the tech pipeline. Then we can attempt to match those technologies to those needs to solve a problem. This is something that we might want to try, where the committee is leaning toward some kind of design thinking approach for next year. But we're open to ideas, particularly at the events and the social, where people will be able to find me or other committee members. Please approach me. Let me know what some of your ideas are. And I'd be more than happy to take them for consideration and discussion on where we go next year."



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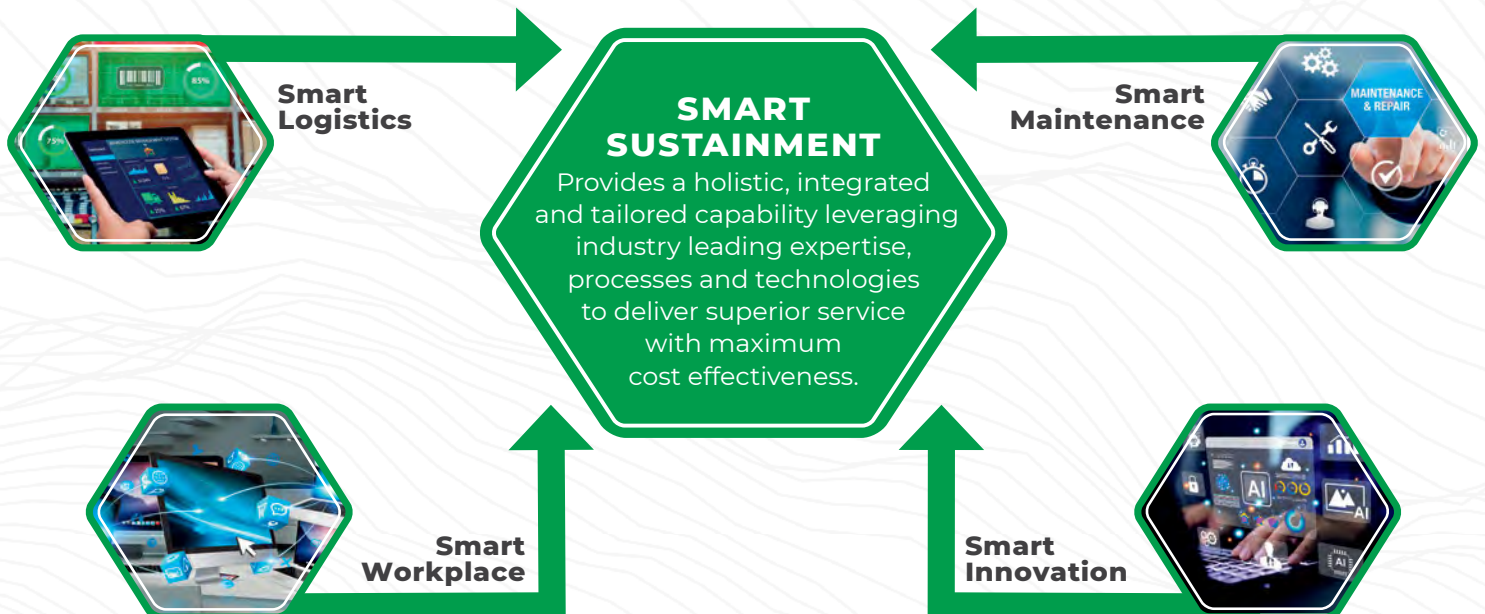
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## Landing Zones Canada Introduces Drone-Launched Training Bomblet Pyrotechnic

Landing Zones Canada, Inc. [Booth 573] is highlighting the introduction of its drone-launched training bomblet pyrotechnic at I/ITSEC 2023, developed to fully replicate the drone threats encountered on today's battlefields.

Company representatives assert this cutting-edge patented innovation, the Drone Bomblet Pyrotechnic (DBP), the world's first, underscores the company's dedication to pushing the boundaries of technological advancement in the training and simulation fields.

Spencer Fraser, founder and chief executive officer of Landing Zones, said, "We are all now seeing a variety of grenades, mortar rounds, RPG warheads, as well as myriad other explosives, being routinely dropped from drones to significant tactical effect... It is understood that there is an urgent operational requirement to train against this ubiquitous threat." He added, "In keeping with the mantra of 'train as you will fight,' we have successfully developed a highly threat-representative training solution for widescale adoption."

Fraser emphasized the paramount importance of safety in this venture. As the architect behind this battlefield training product, he highlighted the extensive human factors research that was undertaken to ensure that safety remained at the forefront of every aspect of development.

While the DBP is platform agnostic, Landing Zones is working with several European and North American OEMs and welcomes other collaborations.

## Hadean and 4C Strategies Sign MoU to Augment Collective Training Solutions

Hadean, a spatial computing company [Booth 1954] and 4C Strategies [Booth 2660], training readiness and organizational resilience solutions providers, have signed a Memorandum of Understanding (MoU) to explore capability integration opportunities that will aim to transform training and exercising in the public, private and defense sectors.

Company representatives said that under the agreement, Hadean and 4C Strategies will be working together to seamlessly combine AI-powered spatial computing capabilities of the Hadean platform with the trusted data-driven UI of 4C Strategies' Exonaut to offer a powerful new solution for scalable and interoperable multi-domain collective training, as well as personalized learning and education.

They noted that Exonaut is utilized by NATO and multiple allied forces and partners for training and exercise management.

Craig Beddis, chief executive officer at Hadean, said, "In joining forces with 4C Strategies, we embark on a transformative journey to fuse cutting-edge spatial computing and GenAI/LLM integrations with data-driven training organization systems. Together, we are zeroed in on redefining how soldiers across services learn and train together."

4C Strategies managing director Jonas Jonsson said, "Collaborating with Hadean demonstrates our commitment to be at the forefront of the evolution of training technologies. Combining data-driven training readiness with world-leading GenAI/LLM capabilities, we will redefine the transformation of training."





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# Lockheed Martin Shares Security Vision

Two new technologies developed by Lockheed Martin [Booth 1748] internal research and development investments will make their debut at I/ITSEC 2023. According to Rich Benton, vice president and general manager of Lockheed Martin's Training and Logistics Solutions line of business, the new technologies are the SIMRES geo-pairing system, which captures Soldier and weapon location and orientation, and the AMAZE visual display system.

"Those two systems are helping us to showcase Lockheed Martin's 21st Century security vision," he began. "And underpinning that are mission-focused defense capabilities combined with innovation with urgency to bring the best of commercial technology and digitizing our operations that will transform the defense industry, providing the ability to move at a greater speed and with greater affordability."

Characterizing the company as a "customer mission-focused system integrator," Benton added, "It's not all the products we build. Instead, it's integrating the best of industry and commercial products to deliver a mission-focused capability to the user. And hopefully people will see that come through on some of the examples that we're going to have at I/ITSEC."

Turning to SIMRES, he described the "I-MILES" [Instrumentable-Multiple Integrated Laser Engagement System] laser-based training system currently used by the US Army.

"It's a core part of Army training and [Soldiers] do the best they can based on the technology used," he said. "But what we have been doing is investing in a non-optical base core technology that doesn't use lasers. We call it SIMRES. And when you think about some of the limitations lasers have; as examples, they can get blocked by something and they don't actually follow the exact same ballistic path as munitions in the real space."

He continued, "Industry has been trying to get after this for a while. SIMRES is based on a geo-pairing solution that leverages not just geo-pairing, but sensors and algorithms to track where the Soldier is, where the weapon is in space and ballistically how things move

through space to affect the target in force-on-force training."

In addition to the benefits in a live training environment, Benton highlighted potential benefits in the Army's emerging Synthetic Training Environment.

"SIMRES doesn't just give you the Soldier's location and orientation of their weapon system, because I'm not limited to knowing just what happened in that training battlespace. With I-MILES, when I fired a laser, you knew who fired it and maybe who got hit. However, with SIMRES data, I know where the individual was, what they were doing in that space,



and when they either shot a weapon or got impacted by a weapon. I can now take that data and I can blend it into the virtual and constructive environment. So not only do I have that live environment, I can see that data real time in a virtual environment. Moreover, then I can apply that data in a constructive environment for mission planning or after-action reports. We designed that into it. As you converge that data, you're going to have live, virtual and constructive environments creating that single synthetic training environment that the user really wants."

He added, "We are taking feedback from US Army Soldier touchpoints to improve SIMRES for future live training applications."

Benton said that another new system being highlighted in the exhibit hall is AMAZE.

"AMAZE stands for Amorphic Appearance, Zero Projector Environment," he said, offering that a "broad vision" of current domes or visual display systems includes designs like 120 degree domes or full mission simulators with full domes around them.

By contrast, AMAZE is a visual display system that uses LED panels and a light relay to create a dome. Company representatives claim that AMAZE system performance results in two times the system brightness and three times the system contrast compared to projector-based simulators, asserting that the new system is "a game changer" for a variety of training scenarios including night environments.

Other cited benefits include a reduced space requirement of 240 square feet for a 360-degree AMAZE dome, or approximately half the space required for a legacy projector-based system.

"AMAZE is going to be able to reduce the sustainment costs over the life of the program," Benton stated. "Because the day you start using a projector, it starts great. But you are going to have to replace projectors. And you continually have to do that. It's just the nature of a projector [design]. But AMAZE doesn't use projectors, it leverages fiber optic relay technology, and we've also been able to take some commercial technology, along with some of the things we've done from an innovation

standpoint, and solved the problem of hard connection points...And now you're getting the same projector feel and a full mission system without having the protectors."

He expects the first application of AMAZE to be on the F-35 Advanced Fighter Pilot Training System.

Along with SIMRES and AMAZE, Benton noted that the company display would also include "some other core products, some of which we've been working on, but we continue to iterate and innovate on those... One example is the Tactical Decision Kit. The Marine Corps is currently using this today. And this technology allows Marines to prepare, rehearse and execute live and virtual training exercises at the point of need."

Returning to his introductory message, Benton reiterated, that he hoped I/ITSEC visitors would see the displays and view the company as a mission-focused system integrator, taking the best of defense and commercial technologies and leveraging that combination to accelerate mission readiness.





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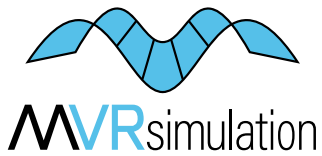


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# VRSG: Supporting U.S. Air Force RPAS Training

MVRsimulation's Virtual Reality Scene Generator (VRSG) is a critical component of the U.S. Air Force's RPAS training infrastructure, used in simulators that build skills progression from undergraduates all the way to MQ-9 Reaper pilots and sensor operators.



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## Geospecific terrain | CAF DMO models | KLV metadata



**1** Nearly 700 VRSG licenses are used by the USAF's MJAT training system for MQ-9 operators. MJAT is a roll-up system that appends to a tactical MQ-9 GCS in order to convert it to a training simulator. It provides RPAS operators the ability to conduct simulation training as part of qualification and follow-on continuation training to maintain proficiency and currency in all required tasks (USAF image).

**2** The AFRL's Warfighter Readiness Research Division uses VRSG for Close Air Support human performance cross-training between tactical dome-based JTAC simulators and networked MQ-1/MQ-9 Predator Research Integrated Network Combat Environment (PRINCE) simulators (Photo courtesy of AFRL).



**3** The 558th Flying Training Squadron at Joint Base San Antonio Randolph uses 52 RPAS simulators with VRSG visuals for the Undergraduate Remote Piloted Aircraft Training Ground Based Training Systems program. The simulators use the Vigilant Spirit software - a government-owned application created by AFRL that allows for command and control of multiple heterogeneous RPAS (Photo courtesy of the 558th FTS).

# Mass Virtual Delivers Immersive C-5 Fuselage Trainer

Mass Virtual [Booth 2800] is showcasing its immersive training solutions at I/ITSEC 2023, and one example is the extended reality C-5 Fuselage Trainer (FuT) recently delivered to the US Air Force.

Mike Peeler, director of communications at Mass Virtual, said, "A few years ago, the Air Force realized that they had a challenge with getting their C-5 loadmasters, the experts responsible for loading and offloading the aircraft, through the training, because the base that provides that training doesn't have a physical asset. There's no partial C-5 parked out there that they can go flip all the levers on and walk around and learn how to do all these tasks. It was going to be a multi-year, multi-million-dollar solution for them to find a C-5 to use to put on the ground and enable it to be used just for this training."

Training loadmasters to ready its C-5 cargo planes meant keeping valuable assets on the ground, at a significant cost to operations. "Those loadmasters would finish their training at the 'schoolhouse,' and then go out to their operational units," Peeler said. "And those operational units' job is not to do the initial training. Their job is to actually fly the missions taking cargo around the globe. But

C-5 FuT provides an effective solution at a fraction of the cost and production time and that the extended reality learning modules significantly reduce training time and build competency in nearly every skill set a loadmaster requires.

In describing the system, Peeler said, "When you're wearing the headset in the virtual environment, if you're there with other people, you will see their avatar. You can use it for single use training, such as a single individual in the immersive environment doing the training, running through the checklist. You can put a team in there if you have a team event. You can address some one-person activity training needs while another person is training on something else. Or you can have one instructor in there with three people from around the globe – someone from California, someone from Delaware and someone from Texas – all in the virtual environment together doing that training as one team."

He continued, "Not only will you be able to

gaming type computer and a tethered headset. That's how the Air Force wanted it. That said, Mass Virtual's training solutions are hardware-agnostic and can be deployed on any device. So, you're going to be on this headset, going through different procedures. Think of any procedure that a loadmaster on the C-5 would need to accomplish."

For example, he described the C-5 fuselage trainer "kneeling and unkneeling" module, explaining, "What 'kneeling' the airplane means is that they can actually lower the airplane closer to the ground to make it easier for loading. And it requires three people working simultaneously to get that job done. It basically puts the landing gear in a different mode and lowers the aircraft to the ground. So, part of the module is the ability for three individuals working together to prep that aircraft for loading."

The C-5 FuT is the latest in Mass Virtual's portfolio of 40 aircraft and ground-vehicle trainers. The Air Force currently trains about 31,000 airmen per year at 83 bases across the globe using Mass Virtual's immersive learning system.

Company representatives credit Mass Virtual's other fielded systems with a 40% reduction in aircraft downtime, a 45% reduction in classroom hours and a 35% increase in student retention, asserting that the C-5 FuT is on track to shatter those metrics.

"We like to say that we are a human performance company," Peeler summarized. "We have a pathway to enhance human performance. We do it through immersive training, because really, at the end of the day, none of the technology, none of the coding, none of the software development matters if we're not actually enhancing human performance. And that's how we measure success. We don't measure success

by how many cool gadgets we've got out there. We measure success by 'how did we make your team better?'"

Mueller concluded, "This one was one monster project that we completed," noting that it was completed and delivered in one year. "And it has gotten nothing but great reviews from the Air Force."



what they found themselves doing was taking a significant part of the operational mission and 'fencing off' part of it just for training. It was costing the Air Force operationally that they had to put a plane on the ground and leave instructors on the ground that couldn't go fly those global missions."

He asserted that Mass Virtual's immersive

do it when and where you need it, but everyone can get access to it. The loadmasters at the 'schoolhouse' can get it, the instructors at the operational bases can get... that same immersive training on those very realistic training modules."

Matthew Mueller, account manager at Mass Virtual, described the trainer as "a



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## MAK Showcases MAK ONE Suite of Simulation Software

MAK Technologies (MAK) [Booth 1420] is spotlighting its MAK ONE suite of simulation software at I/ITSEC 2023. MAK will demonstrate its MAK ONE whole-world synthetic environment for modeling, simulation and training across all domains, including multi-domain operations. It will also present training solutions developed using MAK ONE, as well as its latest innovation, Intelligent Avatars – life-sized virtual human avatars that can interact with people using natural language.

The MAK ONE suite of simulation software comprises simulation applications such as VR-Forces, VR-Vantage and VR-Engage as well as infrastructure and LVC interoperability tools VR-Link, MAK RTI, MAK Data Logger and VR-Exchange. These core products provide the simulation framework for developers to build training and experimentation systems.

MAK will demonstrate how MAK ONE can support a wide range of fidelities from single high-fidelity vehicle/subsystem models to

large-scale simulations with enormous numbers of entities. Alongside the core product capabilities, visitors will see several demonstrations that show the scale and breadth of MAK ONE, from managing airspace to addressing a regional threat, to simulating a battalion conducting a ground assault.

Company representatives describe MAK Training Solutions as tailored, ready-to-use training systems built on MAK ONE to fulfill customer-defined training and experimentation requirements.



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## ECS Designing New Virtual Empathy Soft Skills Training Products

Engineering & Computer Simulations (ECS) [Booth 1113] is developing a new portfolio of Virtual Empathy Soft Skills Training (VESST) that supports the development of a variety of soft skills that frontline personnel must employ during challenging situations involving sensitive subject matter. The company is showing a working prototype of VESST and related projects from the product line at I/ITSEC 2023.

These immersive and realistic scenarios portray interactions dealing with current social challenges including racism, extremism, discrimination, harassment and could potentially include training regarding sexual assault prevention and suicide awareness prevention.

"ECS is leveraging over 25 years of expertise delivering training for the Department of Defense and government clients and the last six years developing immersive empathy training to create VESST," said Waymon Armstrong, ECS founder and chief executive officer. "This innovative, immersive technology is not typically available or used to its full potential when providing county-level frontline workers training, mental health resources and scenarios such as those in VESST."

Set in realistic, immersive environments, learners interact with high-fidelity avatars that portray nuanced and evocative responses within engaging lessons and intensive conversations. The avatars deliver immediate reactions to a learner's choices.

The latest in the VESST product line uses Unreal Engine 5-based MetaHumans technology, combined with motion capture and artificial intelligence enabling rapid development and ultra-high realism.



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## Scholarships ... continued from p8

Two of this year's scholarship recipients spoke with *Show Daily* about their educational pursuits and what the awards mean to them.

**Yarisse Adorno Oyola** [pictured, left] has been awarded the NTSA CMSP Scholarship. She is studying aviation human factors at the Florida Institute of Technology.

"For me, the scholarship means that I'm able to do my master's," she said. "I just started it this semester and without the scholarship, I wouldn't be able to start the master's program. So, for me it was kind of a big deal."

Regarding career plans, Adorno Oyola said, "I hope to do two things. I'm starting two



careers simultaneously. I'm working towards being an airline pilot, so currently, I'm doing my certified flight instructor license. And I am also working to be a human factor specialist and researcher."

**Arsha Ali** [pictured, right] has received a RADM Fred Lewis Postgraduate Scholarship. She is studying robotics at the University of Michigan where she is earning a PhD.

Asked what the scholarship award means to her, she said, "Besides the financial support, I think it introduces me to individuals in the modeling and simulation community. It's very valuable to be able to network with people and become part of this community."

## 2023 I/ITSEC Scholarship Recipients

RECIPIENT	LEVEL	TYPE	SCHOOL AFFILIATION	FIELD OF STUDY
Yarisse Adorno Oyola	Masters \$5,000	CMSP	Florida Institute of Technology	Human Factors (Psychology or Engineering)
Tyrone Evans Clark	Masters \$5,000	Gollobin	Full Sail University	Game Design (Game Design Master of Science)
Stephen Hilliard	Masters \$5,000	Lewis	University of San Diego	Computer Science and/or Information Sciences
Catherine LoGrande	Masters \$5,000	Lewis	Embry-Riddle Aeronautical University	Human Factors (Psychology or Engineering)
Ancuta Margondai	Masters \$5,000	Gollobin	University of Central Florida	Engineering (Modeling, Simulation, and/or Training Related)
Makely Phillips	Masters \$5,000	Lewis	Johns Hopkins University	International Relations
Sarah Romero	Masters \$5,000	Gollobin	University of Central Florida	Human Factors (Psychology or Engineering)
McKenna Tooker	Masters \$5,000	Gollobin	Embry-Riddle Aeronautical University	Human Factors (Psychology or Engineering)
Richard Yocius, Jr.	Masters \$5,000	Lewis	Colorado State University - Global Campus	Computer Science and/or Information Sciences
Arsha Ali	Ph.D. \$10,000	Lewis	University of Michigan	Engineering (Modeling, Simulation, and/or Training Related)
Scott Boatright	Ph.D. \$10,000	Lewis	Southern Illinois University	Instructional Design and Training Methodology
Kendall Carmody	Ph.D. \$10,000	Lewis	Florida Institute of Technology	Aviation Sciences
Steven Ford	Ph.D. \$10,000	Gollobin	University of Central Florida	Human Factors (Psychology or Engineering)
Lee Gill	Ph.D. \$10,000	Gollobin	Virginia Tech	Engineering (Modeling, Simulation, and/or Training Related)
Alexander Giovannelli	Ph.D. \$10,000	Gollobin	Virginia Tech	Computer Science and/or Information Sciences
Jenna Korentsides	Ph.D. \$10,000	Lewis	Embry-Riddle Aeronautical University	Human Factors (Psychology or Engineering)
T'kara Mullins	Ph.D. \$10,000	Gollobin	University of Central Florida	Human Factors (Psychology or Engineering)
John Sermarini	Ph.D. \$10,000	Gollobin	University of Central Florida	Engineering (Modeling, Simulation, and/or Training Related)
Elisabeth Slifkin	Ph.D. \$10,000	Lewis	University of Central Florida	Human Factors (Psychology or Engineering)
Connor Adams	\$5,000	McDaniel	Birmingham-Southern College	Applied Computer Science
Nicole Villavicencio-Garduño	\$5,000	McDaniel	Birmingham-Southern College	Applied Computer Science
Taylor Reid	\$5,000	McDaniel	Norfolk State University	Computer Science
Kanaya Street	\$5,000	McDaniel	Norfolk State University	Computer Science
Darick Cochrane	\$5,000	McDaniel	Utah Valley University	Extended Reality & Simulations (Animation & Game Development)
Kael Harrison	\$5,000	McDaniel	Utah Valley University	Extended Reality & Simulations (Animation & Game Development)





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# Army Acquisition Executive Shares Vision on Army Training

Following his participation in Tuesday morning's "fireside chat," the Honorable Douglas R. Bush, Assistant Secretary of the Army (Acquisition, Logistics and Technology) (ASA(ALT)) and Army Acquisition Executive, sat down with *Show Daily* to discuss the current status and future plans for US Army training.

Bush began with an overall assessment that he first shared earlier that morning in the "fireside chat", when he observed, "We're already really good at training. Sometimes we're our own harshest critic, but we're already pretty good at it." Relating his own experiences as a young Army Armor officer, he said, "The training equipment I had at the time included an early use of computer simulation, for example, to train tank gunnery. And to train collective training, we had people in simulators linked together to train an entire cavalry troop squadron. It was pretty innovative stuff at the time."

"It was the early 90s, but we were on the cutting edge," he continued. "And that's where we want to stay. We just need to update that. But that should be our approach, because the other thing I didn't quite get to mention was the importance of staying on the cutting edge to keep Soldiers engaged. This generation has a high expectation for what digital is. So, we need to keep them both well-trained and also engaged, because there's also a recruiting aspect to having up to date systems. They're coming to a high-tech workplace and we're competing for that talent."



For years we have been trying to do more virtual training at a higher level of fidelity from a cost saving standpoint. So it's a win / win – You get better training, but you also save money.

Reflecting on the importance of I/ITSEC in that approach, he stated, "Bringing together the joint services is also really valuable. Because the Army does a lot on its own, but we can gain a lot by working with other services. They might already have a system like us. For example, the Army and the Marines

should be working together a lot, because we often train on the same or similar things... But I think, left to our own devices, we will wander our own ways, because that's just how the Pentagon is set up. So we might have to force that. And with industry, for example, if they've got something they already have for the Marines that we could be using, or vice versa, we need to be more open to that and make sure we at least know what's there."

Shifting to this year's I/ITSEC theme – Sustaining a Global Force in a Digital World – against a background of Army modernization efforts, Bush said, "I think there are really two main aspects to it. One is just that the world broadly, and industry, is moving to more digital and software-based approaches to things. So I think we're just trying to keep up with that. Even the new weapon systems we're working on in some ways can be thought of as software programs first, with a wrapper around it, which is the weapon system itself. It used to be the other way around, where the software was kind of an additive thing. But no longer. Software really is central to making any weapon system work. So that's why I was highlighting our need to adapt our acquisition process for software, if we get nothing else right. If we get that right, it gives us a chance to move the Army in the direction the Secretary [of the Army] wants."

"I wasn't able to go into quite as much detail on the other aspect but it involves cost saving. Training an Army brigade in the field is very expensive, by the time you add up just the time, money, fuel, equipment and the spare parts. So for years we have been trying to do more virtual training at a higher level of fidelity from a cost saving standpoint. So it's a win / win – You get better training, but you also save money."

He highlighted "unbelievable advances" in the gaming industry, observing, "We have to take advantage of that."

"I think we definitely know the direction of travel. Of course, this is all paced by resources. But I think, largely, our Synthetic Training



Environment family of programs has been a great success story that's really just now starting to come to fruition," he said.

Asked whether the recent reactivation of the Army's 11th Airborne Division in Alaska presented any unique Arctic training challenges, Bush replied, "It certainly has [presented] equipment challenges. And we're working through those and prioritizing them... Now the training is the really interesting part of innovation. We've got our CTCs [combat training centers], JRTC [Joint Readiness Training Center] and NTC [National Training Center] But what PEO STRI is developing in the Pacific is a mobile version of that, called the Joint Pacific Multi-national Readiness Capability – Instrumentation System, so that you can set up an NTC- or JROTC-like training experience for a unit wherever you want to, in Alaska but also in Hawaii. And it saves a huge amount of money because now those units don't have to travel all the way to JRTC at Fort Johnson [Louisiana] or NTC at Fort Irwin [California] to get that level of fidelity and that quality of training."

He continued, "Additionally, the new capability helps compliment General Flynn's [General Charles A. Flynn, US Army Pacific Commanding General] desire to do more things forward in the Pacific with allies. So now you can bring allies in to something that we used to only be able to do at JRTC and NTC. Now you can do it forward, perhaps even in another country. So the ability to have high fidelity training that we can move around in the Pacific is a huge deal for General Flynn, and PEO STRI has been leading that effort on the technology side. So it's pretty good stuff."





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# Bugeye Technologies Unveils Primary Cockpit Display Trainer

Bugeye Technologies [Booth 700] is using I/ITSEC 2023 to unveil its new Primary Cockpit Display (PCD) trainer in their F-35 cockpit.

Company representatives credit the new PCD with two primary benefits to pilots and trainees: it is an ergonomically correct simulator, and it is available at about half the cost of comparable ergonomically correct trainers. It precisely replicates the cockpit because it measures 20 inches wide and eight inches tall.

According to Aaron Lackman, director of simulation sales and marketing at Bugeye Technologies, the new PCD comes at a typical cost for 20 x 4 inch displays and provides legroom, feel and instrumentation that will be familiar to existing pilots and better prepare trainees for the real thing. It is available as a stand-alone for desktop/classroom training or lab environments, and as a standard product within any Bugeye cockpit. Additionally, it is highly flexible and can be customized to include multiple video driver

boards, custom mounting or a lite head-mounted display similar to how a jet operates.



"There are other companies that make these, but we will be able to sell these at about half the price because we are building them in-house," Lackman explained. "As a result, there aren't multiple markups along the way. We're buying directly from the glass manufacturer and we have a company that puts the touchscreen overlay on it. And we are also

building the housing for the display as well."

"We're going to offer this as standard on all of our F-35 training devices," he said. "Because the cost of the current commercial off-the-shelf displays is so high, we can offer the correct size display at no extra cost."

He continued, "In the real jet there's a little panel underneath the display where you can control brightness and turn the night vision on and off. So we have implemented that as well. Also in the real jet, on the left side of that panel there's a section that controls your head mounted display. We'll also be able to control that as well through our standard IO [input / output] card."

Lackman said, "I/ITSEC will be the first time that anyone has seen this," adding that the new product is about "getting awareness out there that we are constantly trying to improve our products, making the device better for the warfighters and not charging the customer extra for doing that."

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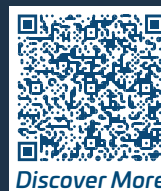
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## Marine Corps Pivot ... continued from p1

"And the modern MOUT facility won't just be used to train Marines," Reynolds added. "It will also be used to train our joint partners across the DoD, our Japanese, Korean and Singaporean partners, and other coalition partners. Currently we struggle in the INDOPACOM region to train with all of our joint partners, because each country has different requirements to use their training facilities. But if it's US property, we don't have those requirements. We can bring all the countries in to train together. It's typical to have the Koreans and Japanese working side-by-side with us, but we aren't able to train that way at very many places. So this new MOUT facility really opens up our ability to work with our coalition partners, and get better as a joint force to counter any threats that are out there in the INDOPACOM region."

He noted that all of the main military construction elements of the facility have been completed, leaving just a few remaining Marine Corps actions prior to taking beneficiary occupancy.

"That's when we can start moving in our cameras and getting all the extra pieces

ready to provide that critical after-action ability," he said. "So, after Marines and Japanese Soldiers train together, they will then be able to go into a facility and get the after-action review on what they did right, what they did wrong and what they have to do to get better."

Current plans target the official ribbon-cutting for the new facility on the 21st of July, 2024, which will also be celebrated locally as the 80th anniversary of the liberation of Guam.

"Then, over the next four to five years, we will have multiple other MILCONs that will rise up on the ground in Guam with a Battle Staff Training Facility, where we can work with our joint and coalition partners, a Training Simulation Center and a Physical Training Complex," he said.

Elaborating on the new simulation center,

he explained. "Unlike in some of our other locations, in Guam, we're very limited on what you can do for things like live fire training. So we're starting to really leverage our Live Virtual Constructive – Training Environment to supplement that, so we can get the most out of our training, even though we're limited on places that we can train there."

Referring to his earlier tour in Guam in 2015, Reynolds noted that some of the early thinking on Pacific pivot training ranges had

*Continued on p30*



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## Marine Corps Pivot ... continued from p28

focused on a crawl, walk and then run concept with the crawl aspects taking place on Guam, the walk aspects up in the Commonwealth of the North Mariana Islands (CNMI), and the run being on an island in the Northern Mariana Islands called Pagan.

"But Pagan is now off the table [as a live fire training range] and I don't know if we'll ever get that," he said. "What we were going to do on part of CNMI, and Saipan – just south of Saipan, the capital is Tinian, we have a military lease area there – is to create live fire training ranges. But that's been scoped back to basically maybe two or three live fire ranges, and we're not going to have the high hazard impact area any longer. As a result, the MOUT training we were going to be able to do there has been scoped back even further. So having to leverage our Live Virtual Constructive – Training Environment to get that type of reps and sets for the Marines is going to be paramount in the future. And these MILCONs will directly support that as we're putting those capabilities out to the Pacific. If we didn't have the Live Virtual Constructive – Training Environment plan, then we'd be having to really struggle out there with what we can do in the Pacific to meet our training needs and requirements."

In another illustrative example of the need for live / virtual / constructive training, Reynolds pointed to that morning's announcement

of the activation of the 12th Marine Littoral Regiment (MLR) on Okinawa.

"That's the second of three MLRs that will be activated over eight years," he said. "The 12th MLR used to be 12th Marine Regiment and artillery is the backbone of that unit. So they're going to have new training requirements going forward that they didn't have in the past."

Another effort designed to support those expanded training requirements is taking place at Camp Fuji, Japan, which will be witnessing further expansion of live / virtual / constructive training capabilities.

"You can't do indirect fire down on Okinawa," Reynolds observed. "You had to do that type of training up at Camp Fuji. And Camp Fuji is limited in the sense that all of the training they do up there is on leased lands owned by the local Japanese citizens. And they have to open up that area every Sunday so the Japanese citizens can have access to their lands. What that means is, if you've got people wandering all over the training area, you have got to be very careful not to leave any unexploded ordnance. So, as we're out there and we're training, we always have to count the impacts and make sure they go off. If they don't, then we have to send out EOD to clear those ranges. So with those requirements, and having a permanent personnel presence there, we're not going to

put more rounds downrange. So we wanted to have more of a virtual training capability out there to support them, so they can meet their training needs."

He went on to highlight another representative example of training requirements presented by Marine Rotational Force – Darwin, which goes to Australia every year.



**The best thing to do is talk to the Marines.**

"Currently they spend about half a year," he said. "The Marine Corps has also built more capabilities in Australia. The intent in the future, I think, is they want to have a more persistent force year round. But right now, because I believe it's monsoon season, they have a reduced ability for live training in that area. So that's another area that we're eyeballing, to see how we can help."

Continuing his regional training examples, he added, "If you look at our partnership with Singapore, we're already in talks with them to take a look at their Live Virtual Constructive – Training Environment and how we can connect that to ours, to work that out as a coalition force. And then if you look at the Philippines, we have got several MILCON capabilities there that are bringing on board more capabilities for us, both training with the Philippine Marines, and partnering with that nation for deterrence of the threats in that region."

Reynolds emphasized the significant training benefits of emerging Marine Corps programs like Force-on-Force Training Systems and the training realism that it will contribute to a Common Operational Picture. Additionally, he said that the Marines are starting to leverage joint training tools.

Asked how I/ITSEC attendees can help his office, Reynolds responded, "Come to our booth. We'll have Training and Education Command there with us. They are our resource sponsor and requirements sponsor. We have new capabilities that we're trying to get after. And if your company is able to meet some of those needs, or if you want more information as to how you can meet them, talk to us. The best thing to do is talk to the Marines."





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