



**MONDAY**  
NOVEMBER 29, 2021

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Published by **NTSA**

## Navy Training in a State of Transition

As the U.S. Navy training community continues to implement increasingly relevant and effective training processes and procedures, Navy trainers are working across a joint service enterprise to ensure that tomorrow's Sailors have the skills and capabilities they will need to win in the future.

"U.S. Navy training is in a state of transition," asserted Captain Dan Covelli, Commanding Officer, Naval Air Warfare Center Training Systems Division (NAWCTSD). "And it's really amazing to compare how the Navy conducted training back in 1994, when I entered the Navy, with how it is currently conducted and where it's going tomorrow."

As examples of these changes, Covelli pointed to "the use of full visuals and game technology to create a training environment that looks like the Sailor is really on the ship or in an airplane," as well as "a fundamental shift in the way the Navy trains our Sailors."

He explained, "Back then, enlisted Sailors received most of their training and specialized schooling before the Sailor actually needed the skill. They got everything they would need in a school before they went to the Fleet. In fact, they might not ever have used some of the material they received. And it's hard to justify the time and expense of training Sailors on the skills they don't even actually need. That training was neither relevant nor timely."

Covelli contrasted that situation with today's evolving training environment, stating that "Today we are on the way to making training more relevant

and effective. Resources are limited - both returns of investment and timewise. And that shift is towards something called Ready Relevant Learning (RRL), which began about five years ago and is a pillar of the *Sailor 2025* effort to modernize both personnel management and training systems."

He noted that RRL "changes the Navy's fundamental approach to training," adding, "That's no small undertaking, because the Navy has about 246 years of culture and tradition and much of our training methods have their foundation back in the 20th Century. And, as a service, we realized that 20th century methods are not necessarily the best to train the 21st Century's Sailors. So we are progressing towards the goal of providing the right training, at the right time, in the right way, for every Sailor."

Covelli identified a number of representative RRL accomplishments at NAWCTSD over fiscal year '21, including the fielding of modernized accession training for three new ratings - Personnel Specialist, Yeoman and Yeoman Submarine - as well as updated modernized training for Operations Specialist. Additionally, Navy trainers completed requirements development for four ratings: Fire Control Technician, Information Systems Technician, Gunner's Mate and Cryptologic Technician Maintenance.

"The RRL team also completed courseware using the Analysis, Design, Development, Implementation and Evaluation (ADDIE) process, which supports incremental review of the course content as it's de-

*Continued on p4*



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# COVID-19 Information for I/ITSEC 2021

The health and safety of I/ITSEC attendees, exhibitors, team and volunteers is the National Training and Simulation Association's (NTSA) number one mission. NTSA is working closely with all of its partners at the Orange County Convention Center (OCCC), host

hotels and conference vendors to ensure it presents an event that meets all recommended health and safety requirements. I/ITSEC will follow the latest guidance and recommendations for large groups and meetings from the U.S. Centers for Disease Control and Prevention (CDC). In addition, the OCCC Operational Procedures & Guidelines adhere to those same guidelines and include the implementation of physical distancing measures, strict sanitization and cleaning protocols, and hand sanitizing stations. NTSA will also comply with all applicable requirements imposed by the Florida Department of Health in Orange County.

## MONDAY, NOVEMBER 29

### CONFERENCE HIGHLIGHTS

#### REGISTRATION HOURS

0700-1800 (*South Concourse*)

0730-1800 (*Satellite Registration, Hyatt Regency Main Lobby*)

#### EXHIBIT HALL HOURS

1400-1800

#### SIGNATURE EVENTS

1030-1200 Congressional Modeling and Simulation Caucus (*Room 330ABCD*)

1600-1730 I/ITSEC Fellow 2021 (*Room 310C*)

#### FOCUS EVENT

1400-1500 CMSP 3.0 – Reinvention! (*Room 319*)

#### COMMUNITY OF INTEREST EVENT

1400-1800 Air Force Gaming & Esports Across the Military (*Booth 1084*)

#### PROFESSIONAL DEVELOPMENT (See program guide for synopses)

0830-1600 Tutorials

Track 1: LVC 2 (*Room 320A*)

Track 2: Artificial Intelligence & Machine Learning (*Room 320B*)

Track 3: Cyber & Communications (*Room 320C*)

Track 4: Best Tutorials (*Room 320D*)

Track 5: LVC 1 (*Room 320E*)

Track 6: M&S Fundamentals (*Room 320F*)

Track 7: Employing M&S (*Room 329*)

Track 8: Instructional Systems Concepts (*Room 310C*)

#### Mask Policy

Consistent with CDC guidelines, masks are optional in areas of moderate to low transmission for fully vaccinated individuals. Orlando and surrounding area transmission levels have decreased and masks will be optional at I/ITSEC 2021 for fully vaccinated attendees. Unvaccinated attendees must wear a mask regardless of transmission levels. If transmission levels should change, information will be updated on the I/ITSEC website and through email communication to all registered attendees.

#### COVID-19 Safety Information

Because COVID-19 is extremely contagious and spreads mainly from person-to-person contact, NTSA has adopted preventative measures to reduce the spread of the COVID-19 virus at I/ITSEC. However, NTSA cannot guarantee that I/ITSEC conference attendees will not become infected with COVID-19. I/ITSEC attendees should self-monitor for signs and symptoms of COVID-19 and are asked to contact NTSA at [NTSA\\_events@ndia.org](mailto:NTSA_events@ndia.org) if experiencing symptoms of COVID-19 within 14 days after participating at I/ITSEC.

NTSA has developed COVID-19 health and safety best practice measures for I/ITSEC. The event space will be configured for social distancing for exhibitors and attendees. Some measures include:

- Attendee seating with appropriate spacing (reduced attendee capacity)
- Exhibit Hall floor plan with spacing allocations/attendee counts
- Additional signage, floor decals and directions for health guidelines
- Cleaning and sanitization of spaces across the show venues
- Limiting touch points throughout the facilities including through cashless systems for all transactions

Additionally, NTSA has arranged for placement of Health Entry Far-UVC Sanitizing Portals at key entrance points at I/ITSEC. (See p. 10 in today's *Show Daily* for details.)

#### COVID-19 Testing

NTSA will offer onsite COVID-19 testing for attendees at the Orange County Convention Center in the side hallway next to Room 210A. Attendees are responsible for the payment of their own test. Instructions for booking appointments and testing hours are on the I/ITSEC mobile app.

## SHOWDAILY

The I/ITSEC Show Daily is published by the  
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## Navy Training ... *continued from p1*

signed and developed," he said. "This way you can ensure the training requirements are met, because you're doing checks along the way."

Content conversion was also completed for students in six other ratings and courses: Aviation Boatswain's Mate - Launch and Recovery Equipment; Aviation Boatswain's Mate - Fuels; Aviation Boatswain's Mate - Handling; Aviation Administration; Logistics Specialist - Submarine; and Aviation Professional Apprenticeship Career Track.



"These training paths, or courses in the case of the Aviation Professional Apprenticeship Career Track, have completed their initial course pilot event and are being prepared for their first class convening," he said. "So we have tested them. We have had a practice class or pilot class to see how it flows. And then they're getting ready for the first real class convening."

Asked about lessons learned through these class milestones, Cavelli brought his response "to the 50,000 foot level," explaining, "It's really what we're learning as a whole with training and even with our military force. And that is, that technology is advancing at an incredible rate. At the same time, the world is becoming more and more competitive. And we're learning that we can't simply choose to train the way we always have. It applies to those courses and it applies to all the training we do. We're also being shown by our competitors that we don't have the luxury of sitting on the slow pace of advancement. Our near peers, or people we compete with, were never as close as they are now. And they are accelerating."

He continued, "We run the risk of having

other nations surpass us in readiness. Because training is readiness. And other large competitive nations know that it's in their best interest to surpass the United States, technologically and militarily. We can see their progress. And we recognize that there's a definite sense of urgency for us to improve, and to do so quickly. We must become more agile and innovative if we're going to do that. Simply, it's clear the United States' technological edge is at risk. And if we don't change that trend soon, our potential adversaries will surpass

us. Our best defense against larger military forces is a well-trained military that enjoys a technological advantage. We have that now. Most forces that have been supreme or that prevailed throughout history had that technological advantage. And now more than ever, we see that our mission is of critical importance to the United States."

Along with the FY'21 accomplishments cited above, Covelli highlighted the close cooperation between NAWCTSD and the Fleet, ranging from Live, Virtual and Constructive (LVC) training support to tactics, techniques and procedures (TTPs) designed to counter emerging regional powers threats, to a continuing transformation from yesterday's platform centric warfare to a more integrated, mission-focused LVC approach to training.

Turning toward the future, Covelli enthused over the possibilities of technology advances over the next 18 months.

"We are just accelerating with Artificial Intelligence (AI), Machine Learning (ML) and in game technology," he said. "AI and ML advances have the potential for plenty of great impact, because of their ability to automate human performance, basically in terms of im-

provements in the speed of decision making and critical thinking. Sailors, Marines, Soldiers and Airmen are weapons. Valor is a weapon. And their ability to make decisions and think critically is going to be paramount."

He continued, "The application of data driven tools is going to see continued growth and prominence within training systems. As the mission systems become more dependent on advanced data driven applications, including machine learning and artificial intelligence, to help augment human performance, training systems are going to have to ensure they can meet new training requirements presented by these complex human machine systems."

Pointing to Department of Defense involvement with the game industry for nearly two decades, he highlighted exploration of continued opportunities to apply game technology to training challenges.

"NAWCTSD and our partners have successfully utilized AAA game engines like Unreal and Unity3D to produce varying levels of interactive courseware, part task trainers, small mission trainers, and even bold motion simulation systems," Covelli said. "Some examples include NAWCTSD's immersive 3D suite of trainers, the Littoral Combat Ship immersive virtual ship environment, NAWCTSD's VISIT [Virtual Interactive Shipboard Instructional Tour] 3D and NAWCTSD's LSO [Landing Signal Officer] Trainer, which are highly successful utilizations of game industry technology that we're using to meet the Navy's simulation-based training requirements."

He added, "The commercial gaming consumer entertainment industry technologies continue to grow. And they become larger components in our training systems as well, especially the promise we're seeing with commercially-driven XR [Extended Reality] technologies."

To illustrate his vision, he cited recent NAWCTSD participation in the first ever "Armed Forces Jam" in the Central Florida Tech Grove, where teams came together to focus on training challenges and rapidly prototype game-based solutions.

The event participation also served to highlight the cooperative environment across the joint service training enterprise in the Orlando area, which Covelli characterized as "among the best examples of collaboration and innovation in the entire DoD."



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# Robb Welcomes the Return to Live I/ITSEC

Rear Admiral James A. Robb, USN (Ret.), President of the National Training and Simulation Association, enthusiastically welcomes exhibitors and attendees to I/ITSEC 2021.

Noting the significant growth of the event that occurred in the decade prior to COVID, Robb acknowledged to the *Show Daily* that the pandemic had presented significant challenges in planning for an event like I/ITSEC. However, he quickly pointed to this year's assemblage of 122 Paper Presentations, 10 Professional Workshops, 23 Tutorials and 35 Special Events, asserting that close government and public health monitoring revealed "plummeting" COVID risk in the area and opened the door for a milestone I/ITSEC gathering.



The planning committees have pulled together an amazing schedule. Our special events are all high-powered. And we've got several of them, involving senior flag officers and general officers from across all of the armed services."

"As you know, the delta variant of COVID has been making its way around the country and the world," he said. "So we've been tracking the situation in Orlando for the last several months, including weekly meetings with the military, and I'm happy to say that the continuing improvements in the situation are allowing us to have a great event with amazing industry and military participation."

As an example, Robb highlighted the fact that invitations to visit had been extended to both the Chief of Naval Operations and Commandant of the Marine Corps, noting, "They both accepted, which is fantastic. So we're going to have a fireside chat with the two of them at the opening ceremony. That's something we've never done before. And the fact that they feel confident to come here says two things: the first is that it is safe to attend and the second reflects growing advocacy for the training and simulation community and training in general."

He pointed to additional examples of that advocacy and support scattered throughout the I/ITSEC 2021 agenda, explaining, "The planning committees have pulled together an amazing schedule. Our special events are all high-powered. And we've got several of them, involving senior flag officers and general officers from across all of the armed services. We're also bringing in the Chief Data Officers and representatives of all services, because collecting data, processing data, using data and digital transformation are big themes this year. Likewise, there are themes like digital twin, digital monetization, and how you can use data in new ways of building things."

Robb added, "We also have a panel that's called 'A New American Way of Training,' which includes retired general and flag officers as well as a number of very powerful people who are coming to Orlando to support training and help identify ways to move training forward."

He continued, "Another significant event is 'The Next Big Thing,' which I created to look forward in terms of identifying emerging technologies and how they might impact the way we train. Bob Kleinhample, last year's I/ITSEC Chair, took this project on and has gathered a group of scientists and thinkers this year to focus on extended reality and how we can move forward with the application of what are becoming relatively mature technologies."

Along with the emphasis on extended reality, Robb noted that I/ITSEC 2021 marked the debut of a new Cyber Pavilion on the show floor, designed to bring together all "leaders in the cyber business" to explore cyber training opportunities and possibilities.

Other representative venues and events identified ranged from a new U.S. Air Force gaming program to the rollout of the Certified Modeling Simulation Professional 3.0 program, an updated certification open to workforce members to acknowledge their specialty in modeling and simulation.

"For I/ITSEC 2021, I would repeat my past advice to attendees to take advantage of the amazing opportunities here," Robb said. "There is just so much here that is incredibly rich in terms of content. And we are expand-



ing into new areas to better serve this community. So I would urge people to prepare up front, do their homework, and utilize all the digital tools available in the app to help plan their trip."

Robb admitted that maximizing the I/ITSEC experience can be daunting and that past attendees had expressed frustration at the packed agendas that were forced to include overlapping events and show opportunities.



We will be recording a lot of things to greatly increase the amount of content that we will be able to put online both during and after I/ITSEC.

"We're addressing those concerns this year, when we will be recording a lot of things to greatly increase the amount of content that we will be able to put online both during and after I/ITSEC," he said. "Now people will be able to benefit from multiple simultaneous events."

Robb concluded, "I challenge people to do their homework, think through their opportunities, and prepare to maximize their I/ITSEC experience."

Welcome to I/ITSEC 2021!

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The traditional “stuffing of the bags” on Sunday morning illustrates the cooperative volunteer community that helps to make I/ITSEC possible.

## I/ITSEC 2021 Nominees for Best Tutorials

**21001** Advanced Air Mobility (AAM) – Innovating Modeling & Simulation (M&S) to Revolutionize the Future of Transportation

**21005** A Comprehensive Introduction to Medical Simulation

**21032** Addressing the Challenges of Rigorous Simulation Validation



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# Healthe Entry Portals Add Entrance Protection

Attendees at this year's I/ITSEC may notice COVID-related differences at the conference, and one of those is the placement of Healthe Entry Far-UVC Sanitizing Portals at key entrance points at I/ITSEC.

In an effort to enhance attendees' confidence about resuming I/ITSEC in-person, the National Training and Simulation Association (NTSA) has partnered with Healthe Inc. [Booth 1230] to provide several Healthe Entry portals that employ far ultraviolet C (Far-UVC or UVC 222 nm) light to reduce microbes on clothing and belongings upon entry.

"It's to give people a sense of confidence," said Dr. Wes Naylor, Captain, USN, (Ret.), Government and Aviation Lead for Healthe. "We're just coming back into face-to-face exposure, in places where there are large groups of people, and people are making decisions about masks, vaccination and everything else. This is just one more tool that can give confidence to people that they're at a lower chance of being exposed to pathogens."

Healthe Entry utilizes 222 nanometer (nm) Far-UVC, "a novel part of the UV spectrum, which allows for continual sanitization and cleaning with humans in the space," Naylor said.

"UVC has been used for well over 100 years to sanitize medical environments, do upper air sanitization, and has featured prominently in suppressing tuberculosis and a number of other pathogens. What has been used is known as a version of UVC that is either 254 or 265 nm UV," Naylor explained.

He said that 254 and 265 nm traditional UV can penetrate the epidermal layer of the skin reaching live skin underneath, as well as negatively impact the eye's retina. In highlighting the difference with 222 nm Far-UVC, Naylor emphasized that with Far-UVC, "between 200 nm and about 225 nm, you get excellent inactivation of viruses, bacteria, molds spores, any type of pathogen, but the physics of the wavelength don't allow it to penetrate the dead layer of the skin. It never gets to live skin, so you don't have the exposure risks that you do with traditional UV. The tear layer of the eye also doesn't allow it to penetrate."

Instructions for use will be co-located with each Healthe Entry, Naylor said, describing

it as a very simple process of a slow 360-degree turn. "You walk into the Entry, you lift your arms to remove the shadows from underneath your arms, and you take 20 seconds – four five-second intervals with a series of 90 degree turns – and then you exit the Entry.



**“**You walk into the Entry, you lift your arms to remove the shadows from underneath your arms, and you take 20 seconds – four five-second intervals with a series of 90 degree turns – and then you exit the Entry. And you've reduced the pathogen load that was on your exterior person, or anything that you're carrying with you.”

And you've reduced the pathogen load that was on your exterior person, or anything that you're carrying with you.”

The presence of Healthe Entry makes a positive statement “that the people employing this are putting an extra layer of protection in to reduce the pathogen load that you're either bringing into the space or taking out of the space,” said Naylor, and likened it to “something we do in the military a lot, which is risk management. There's no one silver bullet that defeats COVID, or that defeats any pathogen. You need to put a series of barriers in place, or a layered defense, in order to reduce the odds that somebody is going to be exposed to a pathogen.”

Naylor described Healthe as “a company that was put into place to use light to help improve human performance. Even before COVID came along, Healthe was advancing two basic technologies that had come out of their work with NASA.” In addition to Far-UVC 222 nm technologies, the other technology features lighting solutions to help regulate the circadian rhythm, such as sleep/wake cycles.

Naylor also noted that in a technology partnership with Boeing, Healthe has developed a solution specifically for cleaning electronic intensive environments, like simulators. “It was designed with Boeing to clean the cockpits of aircraft and works just as well to sanitize and clean training environments,” he said. “We think it's important that people know this is a technology that not just small companies are looking at, but world leaders like Boeing see this as a technology for the future.”

Regarding the Healthe Entry portals at I/ITSEC, Naylor said, “We'd like to thank NTSA for partnering with us to be able to make this available, because it was NTSA wanting to raise the level of confidence of the I/ITSEC attendees that really made this possible.”

“Our overall message that we're bringing to I/ITSEC is that a lot of training has to take place in person, and technologies are available to make that a safer environment,” concluded Naylor. “The training world going forward is going to take place in a distributed fashion, but there are also still occasions where people have to come together. If we can use technology to keep that training open, that's a good thing for everyone.”





**P**resentations within the Innovation Showcase [Booth 2588] are led by cutting-edge exhibiting companies and government agencies that are knowledgeable on various subjects within the M&S Industry.

Be sure to stop by one of the 30-minute sessions to hear what is new and exciting in M&S!

Check the onsite schedule for updates.

## SCHEDULE

### MONDAY 29 NOVEMBER

- 1515 ISL** - RF View Training - Hi Fidelity RF/Radar/EW Warfighter Training
- 1600 Allen & Company** - Reality Capture and AR Visualization of Geospatial Data

### TUESDAY 30 NOVEMBER

- 1215 Bagira Systems, Ltd.** - Home Station Training
- 1300 SimIS Inc** - ADRT & HTT Demonstrations
- 1400 BNH Expert Software Inc** - Maintain Training Efficacy with a Digital Thread
- 1445 DigitalCM, LLC** - XRConnect360

- 1515 Hadean Supercomputing Ltd.** - The Distributed Cloud Platform for Massive Synthetic Environments

- 1600 Presagis** - Predicting the Unpredictable: Leveraging AI in Dynamic Digital Twins

### WEDNESDAY 1 DECEMBER

- 1030 MSBAI** - Simulation in Minutes, Not Hours with GURU

- 1115 Britannica Knowledge Systems** - Maximizing AI for Mission Success

- 1215 Shiny Box Interactive** - Bringing Immersive Training to Your Organization

- 1300 Applied Training Solutions (ATS)** - ATSSim: Web-based Simulation Training and Planning Platform

- 1400 U.S. Army - Xtech** - XTechBOLT Prize Challenge Winner Announcement

- 1445 VRgineers, Inc.** - ISLE - LMS - SBIR II, State of the Art Mixed Reality Simulator for U.S. Navy and U.S. Air Force

- 1530 Varjo Technologies** - Implementing Mixed Reality Solutions Using Digital Masking and Chroma Key

### THURSDAY 2 DECEMBER

- 0930 Improbable, LLC** - Enabling Massive User Concurrency in Military Simulation

- 1030 Iron Dev Awards Ceremony**

- 1300 Serious Games Showcase and Challenge Awards Ceremony**

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# Red 6 Defines New Training Paradigm

Training innovator Red 6 [Booth 1922] is embracing its first I/ITSEC exhibit as just part of an inaugural presence that includes participation on two special event panels.

Founded in 2018 by Daniel Robinson, Glenn Snyder and Nick Bicanic, Red 6 is the creator of Airborne Tactical Augmented Reality System (ATARS), which the company describes as the first wide field-of-view, full color demonstrably proven outdoor augmented reality solution that works in dynamic environments. ATARS incorporates both virtual and constructive assets, blending augmented reality and artificial intelligence and using both the indoor and outdoor space as a medium.



We have taken a breakthrough in augmented reality that, for the first time, allows us to work outdoors and in dynamic environments.”

“We’re exhibiting at I/ITSEC for the first time because it represents the largest and latest in defense forums in the world,” Robinson told the *Show Daily*. “It’s a huge privilege to exhibit there, I think, for a startup that has grown so quickly over the last four years. We now find ourselves at an interesting inflection point where it’s important that we are able to ‘display our wares,’ so to speak, at places as high profile as I/ITSEC.”

Robinson said that the company’s I/ITSEC exhibit coincides with “the start of a new paradigm in training.”

Asked to elaborate on the “new paradigm,” he explained, “The classic way that we were trained in the military, certainly in the fighter community is, every time a fighter pilot goes up to fly and train, he or she needs someone to fly and train against. And that’s a multi-billion dollar a year problem that we have been failing to solve, because frankly, we don’t have enough pilots; we don’t have enough airplanes; and we don’t have enough money. So how do we solve that? How do we provide sufficient training in sufficient numbers that is absolutely relevant?”

Robinson continued, “I stress the word ‘relevant,’ because even if we have the pilots,

airplanes and dollars to provide adversary aircraft to train against, we can’t simulate modern near-peer threats, such as platforms like the J-20 out of China.”

Robinson believes that the problem can be solved through synthetic training in a live, virtual, constructive (LVC) environment, offering that the underlying idea is to connect virtual products and simulators on the ground up into the air space, with the virtual and constructive elements driven by artificial intelligence.

“The problem with LVC is that it’s only a 50% solution,” he cautioned. “The pilot can receive all kinds of information generated on computer screens. But as soon as they enter within visual range, generally 10 nautical miles, the role of a pilot changes from sort of a 3D tactician chess player, managing a bunch of radar screens inside of the cockpit, to looking out the window and finding someone visually to fight. But the problem with LVC is the minute you look out the window there’s nothing there. And the reason for that is because so far there hasn’t been a way of synthetically putting virtual assets into the field of view of pilots and having them behave and look and feel like real enemy airplanes.”

As a solution to this challenge, Robinson pointed to a company-developed system called Combined Augmented Reality Battlespace Operational Network (CARBON).

“We have taken a breakthrough in augmented reality that, for the first time, allows us to work outdoors and in dynamic environments,” he offered. “And we put that up in the sky. So now we have a system where pilots get within 10 nautical miles and can look out of the cockpit through the display technology

we’ve developed and perceive synthetic entities. They visually see virtual airplanes that are not really there. And those virtual airplanes are controlled by artificial intelligence, so they think and fly and fight themselves. So it’s the same training as if it was a real airplane that they’re fighting against. But there’s nothing there.”

In addition to the company’s booth display, Robinson plans to share aspects of his future technology perspective during his participation in two of I/ITSEC’s “Next Big Thing” panels.

“I think it’s important that there is a general awareness beyond just the immediate stakeholders we’re working with,” he said. “The panelists, of which I am one, bring unique and different perspectives. And I think, when we start thinking about the complementary technologies of AI and Big Data fused together, the different perspectives across the panels is something that I’m very excited to hear.”

From his own perspective, he asserted that any future synthetic training solution should absolutely have a visual component, citing CARBON as a key example.

“We can take off into the sky in real airplanes,” he concluded. “And there is a layer of metadata portrayed in the field of view of the pilot that represents enemy aircraft that are thinking and flying. We have built the world’s first military Metaverse, and it’s working.”







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As selected by the NATO Tactical Leadership Programme (TLP) for fast-jet pilot simulation training. The TLP has purchased 54 Virtual Reality Scene Generator (VRSG) licenses and 30 MVRsimulation fixed-wing PTMTs with patent-pending, reconfigurable flight control stick.



**Above left:** The MVRsimulation PTMT at Los Llanos Air Base (LLAB), Albacete, Spain.

**Opposite, far right:** The PTMT with curved display.

**Opposite, top left:** Classroom installation at LLAB.

**Opposite, bottom left:** Fighter entity in flight over high-res, 3D terrain of Spain, rendered in VRSG.  
(LLAB photos courtesy of the NATO TLP)

**MetaVR has changed its name to MVRsimulation to align more closely with its growing suite of simulation products.**





## Tactical training | Knowledge development | Leadership skills

The delivery to the TLP includes VRSG's geospecific 3D virtual terrain library, with two custom-built, high-res insets in Spain for pilot training: Los Llanos Air Base, Albacete, and the town of La Union, Murcia. Contained in a fully integrated aluminum cockpit shell, the system features touch screen displays for pilot interaction and an out-the-window view on adjustable curved display, a specially-designed, patent-pending flight control joystick that can be easily adjusted for sidestick or center-stick flight controls, and Battlespace Simulations' MACE software.

See the PTMT in the Varjo (#3010) and Battlespace Simulations (#1049) booths at I/ITSEC 2021.

[www.mvrsimulation.com](http://www.mvrsimulation.com)

# International Pavilion Welcomes I/ITSEC Global Attendees

Described by I/ITSEC International Programs organizers as a “home away from home,” the International Pavilion [Room 310E] provides a dedicated space for international attendees to take a conference break, meet, network and access information and resources in a cordial, relaxed setting.

“International Programs began over 15 years ago with a few people who realized that those traveling from abroad for the conference needed a respite from the busy exhibit hall,” according to Dr. Denise Threlfall, International Programs Director, I/ITSEC. “The International Pavilion was established as a place for our international attendees to plan their conference agenda, hold ad hoc or scheduled meetings and enjoy the camaraderie of other international participants. With the expansion of international attendance over the past years, the expansion of offerings within the pavilion and conference program has also grown.”

Threlfall elaborated on the popular venue’s meeting support to global attendees. In addition to the pavilion hosting international attendees in a lounge-like setting, she explained, “We also offer meeting rooms built within the pavilion, at no charge, for participants to hold meetings and demonstrations. The meeting rooms are available on a first-come, first-served basis with advance reservation signups available in the pavilion. Past attendees greatly appreciate the opportunity to utilize the meeting space as well as the tables set up in the open area of the pavilion. It’s incredible to look back at the various organizations that held meetings in the pavilion as it reflects what a global modeling, simulation, training and education conference we provide at I/ITSEC.”

Based on her observations of past years, Threlfall identified another significant benefit of the pavilion extending beyond I/ITSEC. “The International Pavilion not only serves the



The International Pavilion not only serves the international attendees as a place to take a break from all the excitement of the conference, but it also provides informational materials on other global conferences and events within the realm of M&S.”

international attendees as a place to take a break from all the excitement of the conference, but it also provides informational materials on other global conferences and events within the realm of M&S. I’ve seen multiple people now, through postings on LinkedIn, attending NATO-sponsored events throughout the year. Many of those people connect at the International Pavilion during I/ITSEC,” she noted.

The International Pavilion also highlights conference presentations and special events that are internationally focused. This year, there are 20 international paper presentations, two tutorials presented by international authors, and four internationally-themed special events.

Asked if this year’s pavilion will differ from that in past years, Threlfall observed that it is scaled based on attendance trends.

“Even though we’re expecting less international participation this year due to the pandemic and slowly easing travel restrictions, we aren’t cutting back on

## INTERNATIONAL PAVILION HOURS OF OPERATION

Monday, 29 November 0800 – 1800  
Tuesday, 30 November 1200 – 1800  
Wednesday, 1 December 0800 – 1800  
Thursday, 2 December 0800 – 1500

## Internationally Themed Special Events

### Wednesday, December 1

#### Focus Event

**0830-1000** Cloud-based Simulation Developments in Europe (Room 310C)

### Thursday, December 2

#### Focus Event

**1030-1200** Research Foundations and Findings Supporting Augmented and Virtual Reality (AR/VR) Implementation in the Wild (Room 329)

#### Community of Interest Event

**0830-1000** NMSG and SISO Partnership in Simulation Interoperability Standards Development (Room 310C)

#### Focus Event

**1330-1500** Digital Twin/Digital Engineering: Multinational Perspectives on Digital Engineering and the M&S Enterprise (Room 310C)

the level of informational support we are providing to this year’s international attendees,” she emphasized. “The pavilion will be fully staffed with members from the International Programs team, made up of volunteer members who are also members of the conference program subcommittees and tutorial board. This energetic group has been supporting International Programs for several years, and they are ready for questions regarding the conference program, what exhibitors they may visit relevant to their particular area of interest, or just general questions about the conference events.

“It gets exciting every year as we gear up for I/ITSEC, knowing we’re going to see a lot of familiar faces and also meet new friends who are first time international attendees,” she enthused. “Even with the pandemic, I/ITSEC 2021 is truly a global conference!”





# Air Force Brings Gaming Spotlight to I/ITSEC

With the recent two-year anniversary of Air Force Gaming [Booth 1084], that growing service community of gaming enthusiasts is coming to I/ITSEC to offer an array of events and opportunities, ranging from drop by gaming to the Focus Event, "AF Gaming: Advancing M&S thru the Gaming Industry," [1030-1200 Wednesday, 1 December 2021, Destination Lounge].

"We're going to be hosting pop-up tournaments throughout the week where anyone who is walking by can come in and play games like Call of Duty: Warzone and Beat Saber," said Captain Oliver Parsons, USAF, the Co-Founder and Leader of Air Force Gaming. "We're going to do just open and free play on Monday and then on Tuesday we're going to have what we call the Department of the Air Force Gaming League (DAFGL).

"Essentially, our DAFGL season two started in August. And we're going to have our finals live at I/ITSEC," he added, noting that the top two teams from North America and the top team from the Europe and Asia Pacific regions for Super Smash Bros. Ultimate and Call of Duty: Warzone will play on the live stage for the DAFGL Season Two Championship.

"When we first started planning our stage for I/ITSEC, we decided that this event would be the perfect opportunity to host our first global championship with teams from all three regions," he said. "We're going to broadcast the competition on Twitch, YouTube and Facebook. And the winners of those two games - Super Smash Bros. and Call of Duty: Warzone - will go on and essentially represent the Air Force and Space Force against all US branches and three UK branches in New York City at what's called the Call of Duty Endowment Bowl."

Asked about interest from and within the other U.S. services, Parsons offered, "We actually [announced] the standup of Space Force Gaming on 11 November. As for the Air Force, what we do is a little bit different

than other branches. We're very internally focused when it comes to our Esports and gaming for our Guardians and Airmen. We have been working with the other branches - Army, Navy, Marines and Coast Guard - and they are watching this I/ITSEC event and watching us to see if it's something they want to be involved in next year."

Elaborating on Wednesday's Focus Event, Parsons said that it would include a TEDx Talk by one of the co-founders of Air Force Gaming as well as a panel with senior service and industry leaders.

"The panel will focus on what it means to do gaming and esports in the military - specifically the Air Force and Space Force," he said. "And then possibly one or more of the panel members will compete in Beat Saber on stage after the panel."

Summarizing his takeaway message, Parsons offered, "Gaming and esports are a new thing to the military world. See what the different branches are doing. There are some really cool things going on."



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# CAE Positions for the Future

Since the last I/ITSEC, CAE [Booth 1734] has concluded the milestone acquisition of L3Harris Technologies' military training business. Dan Gelston, Defense and Security Group President at CAE, recently discussed that acquisition, how it positions the company for the future, and some of the future technologies that the company will be highlighting at I/ITSEC 2021.

**"W**hen we saw that L3Harris military training was available it was of great interest to us, primarily to drive our strategy and accelerate that strategy," he said. "Our end state is to be the world's leading platform agnostic training and simulation pure play, not just a pure play that deals in air training, but a platform agnostic pure play that can leverage all five battlespace domains: cyber, space, land, air and sea."

He continued, "That's really what our customers are telling us they need, particularly in light of the near peer threat. They want and need solutions that cut across all five battlespace domains. So when we looked at L3Harris we were very excited, because they advanced that strategy through solidifying us as the leader in the air tier; augmenting our land and sea, giving us a lot more power there; and then giving us entry into space and cyber, the newest battlespace domains."

Gelston went on to identify additional synergies that were created across and within some of the domains, observing, "They do fighters and bombers where we do transports and tankers. So they had a lot of the jet training while we had a lot of the prop plane training. In maritime, we do surface ship training while they did submarine training. And those are just a few examples that really speak to our complementary capabilities."

Finally, Gelston noted that the acquisition doubles the company's footprint in the United States performing classified work.

Asked how he views the current state of the military training market, he characterized the environment as being at "a true inflection point."

Referencing his own military experience,

he said, "I was in the military when we really shifted from a near peer threat in Russia to an asymmetric threat more than 20 years ago. But now, with the 2018 National Defense Strategy, we have pivoted back to that near peer threat. And a near peer threat is a completely different paradigm for our military



**With the L3Harris Military Training acquisition complete, CAE will demonstrate an integrated and cybersecure multi-domain training environment during I/ITSEC.**

than the one that I was actively engaged with in the asymmetric threat."

Among other things, he observed that the new paradigm expanded the need for training across all five battlespace domains while also shifting military emphasis from fighting a current war to training for future scenarios.

He elaborated, "So as we pivot to this near peer threat, we're going back to primarily a training stance versus a fighting stance. And in that training stance you need more training across all five battlespace domains, where it is extremely expensive to coordinate real world air assets, sea assets, land assets, space and cyber all together. That means more time in

simulators, and not just the classic simulators of yesteryear."

Shifting to the CAE exhibit at I/ITSEC 2021, Gelston highlighted the launch of several new products and solutions, beginning with the application of the Prodigy image generator and Unreal gaming engine along with a dome display and projectors to create a fully integrated solution for fighter and fast jet training.

"We're also bringing the Common All Domain Environment for Test and Training, otherwise known as CADETT, capability, which is an F-16 mixed reality training device for air, which is pretty exciting because it just doesn't include air but also land and C4ISR integrated into a network cybersecure training environment," he said.

"Again, that reflects the need for more than just a single platform, or maybe just a platoon of platforms and a single domain," he added. "This gives you cyber hardened network capability that goes beyond whatever your base platform and domain is."

Another element of the CAE exhibit will focus on the Simulator Common Architecture Requirements and Standards (SCARS) baseline that seeks to network all of the Air Force's 50+ simulators together.

An additional spotlight will focus on the CAE Trax

Academy. Launched at I/ITSEC 2019, Gelston said that the Trax Academy has been used for U.S. Air Force pilot training transformation initiatives, as well as trials for the Royal Air Force and will be demonstrated this year for application on rotary wing aircraft and multi-crew training.

"One other area we are going to be demonstrating involves our unmanned aerial system mission trainer, which can be used for Electric Vertical Take-Off and Landing," he said. "So we're leaning forward a bit into E-VTOL, which is obviously a bold new arena that the world is embracing, and we're pretty excited about that."



# Elbit UK Spotlights Recent Awards

Elbit Systems UK [Booth 194 / 275] is using I/ITSEC 2021 to highlight its foundation and recent contractual milestones in providing cutting-edge Training & Simulation technology to the UK Armed Forces.

In January 2021 the company was awarded a UK Ministry of Defence (MoD) contract to deliver the Royal Navy Future Naval Training Program as the synthetic training lead for Project Selborne. The program is transforming and modernizing the Royal Navy's shore-based training, including the establishment of a Future Submarine School, for which Elbit Systems UK is developing a new Control Room Simulator. The company is providing new technologies to support the synthetic vision of Defence Operational Training Capability (Maritime) while ensuring efficiency of the Royal Navy's existing capabilities.

Elbit Systems UK also participated in the Army Warfighting Experiment Exercise Dynamic Warrior on Salisbury Plain in October this year, taking part in the Live, Virtual and Constructive (LVC) blend challenge. A number of Elbit Systems UK training tools were employed as integrated coherent solutions

for the event, including the SE-BMA synthetic environment enabled version of the Torch-X Battle Management Application, Augmented Reality Integrated Training Systems, a key training data analysis and exploitation tool, and the Rhino tactical armored command and control (C2) shelter, which provided C2 for the event.

Elbit Systems UK's training support and technology is not consigned solely to land and maritime. In early November this year, Elbit Systems UK's joint venture with KBR, Affinity Flying Training Services Ltd, received a contract from the MoD for operation of four additional Texan T-6C aircraft as well as increased training support and an uplift in training and flight hours. This uplift will bolster Affinity's contribution to the UK Military Flying Training Systems program (UKMFTS), providing further pilot training, procurement, operations and maintenance services at RAF Cranwell, RAF Barkston Heath and RAF Valley.



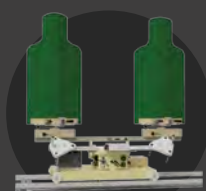
Most recently, Elbit Systems UK was selected to deliver the Interim Combined Arms Virtual Simulation (Deployable) ICAVS(D), a pathfinder project for the British Army's Collective Training Transformation Program (CTTP). Replacing a current in-service system in April 2022, ICAVS(D) will significantly exceed current capability in scale, size and complexity. It will be usable by both regular and reserve soldiers in the British Army, and will also provide the ability to conduct experimentation and collective readiness training, from vehicle crew to Combined Arms Sub-Unit, allowing for rehearsal of complex operational environments.



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# STEM Takes on a New Look at I/ITSEC 2021

While Science, Technology, Engineering and Mathematics (STEM) programs have always played a critical role at I/ITSEC and throughout all National Training and Simulation Association (NTSA) activities, this year's I/ITSEC event reflects a growing focus on strategically building interest and educational momentum across multiple STEM programs and initiatives.

The result, called the *I/ITSEC EcosySTEM of Learning*, demonstrates applications of DoD technology through education initiatives, sample national initiatives highlighting military/community partnerships in education, benchmark outreach programs by companies to support education, and undergraduate, graduate, and post graduate opportunities in STEM that support the future workforce. The dynamic program continues to adapt and incorporate the latest sciences and technologies into the many initiatives fostered with the EcosySTEM.

"STEM has always been a 'cradle to grave' proposition," explained Dr. Linda Brent, Chief Executive Officer of the ASTA Group, LLC and NTSA Strategic Planner and STEM Coordinator. "It has always been a true ecosystem. But people didn't understand the scope of that ecosystem because we had a lot of stovepipe programs that popped up over the years. So a year ago we did a 'hard stop' to allow creation of a smooth, consistent story about education. And all of our programs feed into that. But the difference is that we're trying to help people understand the whole picture; that we're really targeting STEM at all levels."

To illustrate her point, Brent pointed to programs focused on students of elementary schools, middle schools, and high schools as well as internship programs and scholarships focused on college age students and people entering the workforce.

"NTSA is really providing lifelong experiences related to STEM and building the workforce," she said. "As our tagline says, we are 'planting the seeds for tomorrow's workforce.'"

Brent noted that last year's I/ITSEC challenges were met through the application of virtual activities in support of STEM, adding, "Last year we were forced to go virtual but this year we decided to keep some of those virtual programs so that we could reach a larger audience. In the case of 'Teachers Across the Nation,' for example, we had previously brought a handful of teachers from across the country to I/ITSEC. It was great. We enjoyed it. The teachers enjoyed it. But it was hard to figure out follow-through and to determine the actual impact."

She said that this year's EcosySTEM shift included the purchase of a mailing list to try to reach teachers across the country, informing them of a range of in person, hybrid, and online programming focused on teacher training and multiple student events.

"We're using those resources to reach out to teachers around the country, through our live and virtual events," she said. "In addition to that, we are also bringing in about 80 local teachers in person for specific teacher training with the Navy. So there will be teachers there every day."

Brent continued, "We're still doing student tours focusing on bringing ROTC students in on Wednesday, and we've got a couple university groups that are bringing students through during the course of the week. And then on Thursday, we are going to have our 'traditional' student tours, but we really focused on Title I schools and disadvantaged schools and trying to get those kids an opportunity to come and see what the possibilities are."

Brent noted that this year's career fair will also be both virtual and in person, observ-

ing, "It's going to be a hybrid event that will allow both the companies interviewing as well as the candidates to either be at I/ITSEC in person or somewhere else to participate remotely."

Another event that has grown in popularity over the last several years is the university cohort gathering, which is focused on attracting faculty to the conference.

"This year that will primarily be in person," Brent said. "But we are looking to broadcast it as well, so that people would be able to see it virtually."



NTSA is really providing lifelong experiences related to STEM and building the workforce. As our tagline says, we are 'planting the seeds for tomorrow's workforce.'"

Other activities cited by Brent included presentations from recent and current interns, who will be describing their experiences, as well as their industry sponsors.

"There have been a lot of activities like this over the years," she said. "But they weren't presented as a single story until this year."

Brent was quick to credit "the amazing work of a 30-person committee" in her descriptions of the EcosySTEM, asserting, "They've just done a wonderful, wonderful job of thinking through how these things relate, how they make sense, what difference we're making, and the metrics we can use to measure that difference."

Asked how industry can best support the committee's efforts, she immediately responded, "They can visit our 'EcosySTEM of Learning' Pavilion, which is also brand new this year. We've always had a STEM pavilion, but it has evolved and we are focusing this year on organizations that are national in scope, including programs from the Department of Defense and other programs scattered across the country."

In addition, Pavilion activities will range from the 'Serious Games Showcase' to the 'Discovery Den,' an informal presentation area that will be scheduled throughout the day.





# Doron Precision Delivers JLTV Driving Simulators to U.S. Army Reserve

Doron Precision Systems, Inc., [Booth 507] in partnership with Oshkosh Defense, LLC, delivered seven new Joint Light Tactical Vehicle (JLTV) driving simulators under contract with the U.S. Army Reserve. The new JLTV simulator, called the 550JLTVplus, was successfully fielded to two U.S. Army installations.

Doron delivered four JLTV simulators to Fort Hunter Liggett, California, and three to Fort McCoy, Wisconsin, this year. Doron was first contracted to supply truck driving simulators to the U.S. Army Reserve in 2017. With the latest delivery, Doron has provided 46 driving simulators to USAR operations around the country to date.

"With this delivery, Doron continues to show that the 550JLTVplus driving simulation system is a successful and powerful driver training tool for today's military," said Michael Stricek, Senior Vice President of Doron Precision Systems. "We've perfected production so that we are able to contract, develop and deliver fully operational simulators that provide true-to-life training for

military personnel in record time."

Last year, Doron teamed with the JLTV's original equipment manufacturer (OEM), Oshkosh Defense, to produce a commercial-off-the-shelf JLTV driving simulator with the OEM.

Oshkosh is supplying key JLTV parts to ensure that those trained on the simulator use the same JLTV components for training as they would on the real vehicle.

"We are excited for our partnership with Oshkosh Defense," said Stricek. "We have 48 years of successful development and deployment of land vehicle simulation systems and our relationship with Oshkosh Defense helped us create the most realistic JLTV driving simulator, while also changing the way military customers buy vehicle simulators. With the



foundation of our successful OTS 550plus driving simulation system, the 550JLTVplus is produced quickly and with a significant cost-savings to customers."

The new simulator, the 550JLTVplus, is a variant of the OTS 550plus series, which is widely used by the U.S. military, technical colleges and the truck driver industry. The newest design includes original unique JLTV instrumentation and controls to provide trainees with transferable skills. It offers a comprehensive virtual training environment with several challenging terrain features such as rough trails, steep inclines, side hills, moguls and a river to cross, and features advanced dynamic terrain effects including driving through mud, sand and water.



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# CMSP 3.0 Unveiled

One of the Focus Events at I/ITSEC 2021 will occur Monday, 29 November 2021, 1400-1500 [Room 319] with the unveiling of the “re-invented” version 3.0 of the Certified Modeling and Simulation Professional (CMSP) program.

According to Ivar Oswalt, Ph.D., CMSP, and Senior M&S Analyst at The MIL Corporation, the CMSP professional designation program started as a collaboration between the National Training and Simulation Association (NTSA), the Simulation Interoperability Standards Organization (SISO) and Society for Computer Simulation (SCS) – in 2002.

“They saw a need that continues to this day to provide a credentialing program for modeling and simulation professionals,” he explained. “It started off with a heavy emphasis on programming and computer science, with a sprinkling of Department of Defense activities and initiatives. But since then, it has grown to include healthcare and many other areas. Moreover, it has also evolved into a whole set of professional resources to support and facilitate professional interactions and exchanges.”



The previous system was not as user friendly as it could be. So, we’re rolling out 3.0 with a Learning Management System called Canvas. That will allow professionals to track their progress, read and study related resources, and take exams. It’s all just much more user friendly.”

Along the way, the CMSP certification also grew in scope and breadth, adding both a technical and managerial track as it evolved from version 1.0 to version 2.0.

Oswalt, who took his own exam certification in 2019, said that he was fascinated by the program growth and the learning opportunities it provided regarding modeling and simulation.

“I’ve been in M&S for almost 30 years,” he said. “And by taking that exam I learned about

areas that I had not appreciated before. For example, there were some questions about how M&S was used in chemistry, and I was fascinated to learn about that particular set of applications.”

However, he added that the 2019-2020 timeframe brought a realization that “the test was getting ‘long in the tooth’ and the process was not as streamlined as it needed to be.”

He said that it took a year “just to identify the areas that needed improvement,” and then another year to determine how to fix those areas.

He was quick to credit “a well-rounded group of volunteers” with establishing the foundation for program success, identifying a number of critical committees.

“As examples, we have an Awareness and Demand Committee to identify the needs for M&S professionals in industry, academia and across the DoD. What are they looking for? What’s the demand pool? There’s also an Engagement Committee that looks at the kind of outreach we perform, from newsletters to social media like LinkedIn. We have an Exam Committee, led by one of the original authors of the 2.0 exam, who brings continuity to the revision of the exam. Then we have an Operations Committee, which has been responsible for all of the activities and infrastructure associated with this week’s version 3.0 launch. Finally, we have an Executive Committee, guided by Rear Admiral Robb, that includes the leads for all of the different committees. It’s all an incredible group of people who bring their different perspectives to the process.”

Turning to the specifics of the new CMSP 3.0, he said, “Before, there was one certification that was pretty much at a master’s level. It focused on the breadth of modeling and simulation. But there was only that one level. Now one of the things that we are implementing is an opportunity to involve people earlier in their careers, even beginning as high school students, who we want to motivate.”

The net result is the creation of four different levels within the certification: intern, apprentice, practitioner, and master.

“The first level caters to high school and community college,” Oswalt said. “The National Simulation Center has a program that supports that level and a credentialing certification exam associated with it. Then the other three levels – apprentice, practitioner, and master – roughly equate to bachelor’s level, master’s level, and advanced degrees.



As you would suspect, the exam gets harder with each level. And that helps to foster the community, because as you work from the lower levels you become part of this organization.”

In addition to multiple levels, another difference in CMSP 3.0 is a revised exam that has been updated to include topics like artificial intelligence, machine learning, big data and other emerging technologies.

“The previous system was not as user friendly as it could be,” Oswalt said. “So, we’re rolling out 3.0 with a Learning Management System called Canvas. That will allow professionals to track their progress, read and study related resources, and take exams. It’s all just much more user friendly.”

He continued, “You can currently get a Ph.D. in M&S through a number of universities. However, you are not required to continue participating in M&S to keep that Ph.D. But CMSP requires recertification every four years. Part of that recertification is showing that you’ve stayed engaged with the community, with a certain number of points for different kinds of engagements. And I think that is a great discriminator.”

In addition to Monday’s Focus Event presentation, Oswalt highlighted other related events throughout I/ITSEC, ranging from a “State of the Nation” event on Wednesday to a Friday workshop after the official close of I/ITSEC that will include preparation support for taking the exam.

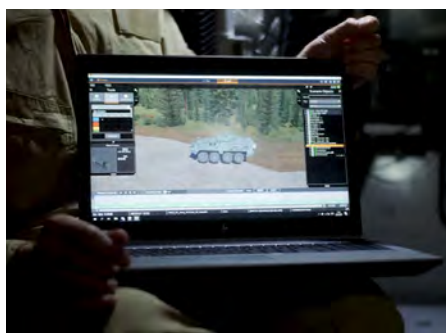


# Kongsberg Defence & Aerospace and BISim Debut New Training Simulator at I/ITSEC 2021

Kongsberg Defence & Aerospace [Booth 1071] has partnered with Bohemia Interactive Simulations (BISim) [Booth 1071] to jointly develop simulation solutions for the Kongsberg family of Protector Remote Weapon Systems.

During I/ITSEC 2021, Kongsberg is unveiling its Core Training Simulator, which uses BISim's VBS4 for standard classroom-based simulator training and in-vehicle training available directly on Protector systems. The company will provide demonstrations of the new simulator as a partner on BISim's booth at I/ITSEC.

"The Core Training Simulator sets a new standard for training simulators by enabling training on actual Protector systems with simulated scenarios," said Pia Andersen, Program Director Through Life Support for Kongsberg. "Because you are using real equipment, training with control grips and interacting with buttons, this approach to training improves and strengthens muscle memory. Combined with the stunningly realistic virtual world provided by VBS4, it's also more engaging, which



improves knowledge retention and drives behavioral change."

The system uses the real software of the Protector system.

Andreas Ulven Holmen, Training Manager for Kongsberg, offered, "A major advantage of using VBS4 is its VBS World Server, which enables us to provide our customers with

the ability to conduct training anywhere in the world."

Kongsberg's Core Training Simulator also includes a VBS Instructor Operating System (IOS) that allows instructors to monitor multiple trainees, observing operator system interactions during the live training sessions, including aiming technique, observation technique, weapon settings and much more.

The system is scalable, moving from individual training to full crew training to networked classroom collective training.

"The Core Training Simulator is an excellent example of how integrators can leverage VBS4 to extend virtual training outside the classroom, delivering synthetic training whenever and wherever needed," said Craig Turner, BISim Business Development Director. "Not only does virtual training allow Kongsberg's customers to save on costs of fuel, ammunition and maintenance, it also facilitates continuous training from home base to theater of operations."

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# Improbable Brings Gaming Breakthrough to Military Applications

Improbable's Games Technology Unit [Booth 1248] has recently developed an experimental gameplay mode, called "ScavLab," that allows 9500 distributed players to enter a virtual world simultaneously, pushing the limits on player density and scale in a way that the commercial gaming world has not yet experienced.

According to Caitlin Dohrman, President and General Manager of Improbable U.S. Defense and National Security, the latest development stems from the company's work supporting the development of a commercial game called Scavengers.

player bandwidth was 350 Kbps [kilobits per second] for the 9500 player test, which is pretty comparable to the bandwidth for typical 64 Plus player arena games like Apex Legends and Battlefield V. So, on a per concurrent user basis, our player bandwidth is orders of mag-

fense business, and bring them into defense, to help the warfighter," she said.

One application was the recent British Army Warfighting Experiment, which included a challenge to industry to leverage the latest technology and deliver virtual training for up to a divisional level of concurrent users.

"That event is really about bringing the latest technology to prepare for complex future warfare," Dohrman said. "And it's a challenge that the British Army puts out to



"Scavengers is a big, massive, multiplayer online game," she explained. "And we have a lab type of experimentation environment that we call 'ScavLab,' short for Scavengers lab. And in that lab we developed a simulation runtime environment that supports really massive concurrent usage alongside a complex environment. And we've demonstrated that capability in the experimental simulation environment 'ScavLab.'"

Dohrman characterized the recent development as "an unprecedented demonstration of scale and density in a way that the commercial gaming world has never seen before," describing a total of more than 9500 live and simulated players who were themselves distributed globally across North America and Europe.

"They were all in one virtual environment at the same time," she said. "So each of the 9500 players could see every other player; they could message each other within the platform; and they collectively did a number of tasks together."

She added, "We had player updates at 30Hz [hertz], which is similar to other high-fidelity games in the market. And the overall

nitude smaller. That's what makes this experimentation so exciting, because we've enabled this kind of density and scale that was previously unprecedented, in part because of our ability to manage that network usage and player bandwidth."



**We were able to take the innovations that are being driven by the games unit of our business, which is much larger than the defense business, and bring them into defense, to help the warfighter."**

And the new capability goes well beyond gaming. In just six weeks, company developers modified and augmented the experiment to meet defense applications.

"So we were able to take the innovations that are being driven by the games unit of our business, which is much larger than the de-

industry, academia and allied governments. Then they come together and explore how they could use them. So we took that same underlying architecture as the 'ScavLab' event and we demonstrated a first person simulation with a representation of 10,000 simulated users plus 1500 non player characters. It was really awesome."

In terms of her takeaway messages, Dohrman concluded, "Our defense business provides a collaborative synthetic environment development platform to create, deploy, and evolve synthetic environment solutions, things like collective virtual training, and operational and strategic decision support tools...Second, we understand the present, and access the latest most relevant data and information from the widest possible range of sources for a comprehensive intelligence picture and accelerated threat recognition. And finally, we can explore the future. Through modeling and simulation techniques, we allow our customers to develop new concepts, experiment and compare with the unintended cascading effects of decisions in a multi-domain environment in faster than real time."



# New Tools Support CH-47F Block II Training Program

Engineering & Computer Simulations (ECS) [Booth 1235] has designed and delivered a software suite of adaptive, customized learning products and training tools in support of the U.S. Army Program Executive Office - Aviation (PEO Aviation) for its Project Manager Cargo (PM Cargo) CH-47F Block II Training Program.

**"PM** Cargo is upgrading their aircraft platforms to the Block II version of the CH-47F cargo helicopter," explained Nate Ginos, Program Manager at ECS. "The Block II version, which is going through test and development, provides increased capabilities. So, concurrently with developing the aircraft - with Boeing and Collins as the major OEMs involved - they looked for somebody to develop, in lockstep, the training program from the ground up."

Ginos said that the effort began with an initial analysis of aircraft changes and how those impacted operators and maintainers, then moved to development of a full software suite addressing the full range of key training metrics.

The new software suite includes the following technical enhancements: computer-based training for rated crewmembers, non-rated crewmembers, including Army aircraft electricians (15F), Army CH-47 helicopter repairers (15U), Army avionics mechanics (15N) and Army aircraft powertrain repairers (15D); 3D interactive preflight instructor tool; and cockpit desktop trainer, developed in partnership with SAIC. The trainer features the

current CH-47F and CH-47F Block II avionics software (CAAS) with a desktop and touch panel control interface.

Ginos said that there were "incremental deliveries" of the software suite last spring to support limited user testing of the Block II.

"That's where they give the new version of the helicopter to an actual active Army unit and used our training to prep them to evaluate the weapon system as well as to evaluate the training," he said.

"The part we delivered there was originally primarily only courseware," he added. "It was targeted at the pilots and the enlisted crew

members that flew on the helicopter to prepare them as well. And as the aircraft has gone through its testing and minor system design changes, we've had to 'circle back' a bunch of times to update our training to keep pace with the changes in the helicopter."

As an example, he pointed to a change that was made in the Block II rotor blades, observing, "We had to go in and update all of our training to remove all references and all the training that was specific to the version of the rotor blades they had and change it to the current one."

Asked about anticipated program activities over the next 12 months, Ginos said, "As the aircraft were getting prepped for the limited user test, there was a lot of emphasis on the helicopter operators. Since then, we've gone beyond that to a lot of maintenance training."



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# I/ITSEC Fellow Reflects on a Half Century of M&S Experiences

One of I/ITSEC 2021's Signature Events will take place this afternoon [1600-1730 Room 310C] with a presentation by the I/ITSEC 2021 Fellow, Frederick E. (Fred) Hartman, LTC, U.S. Army, Ret.

Talking to the *Show Daily*, Hartman outlined his vast experience in M&S and related fields, beginning with his graduation from the U.S. Military Academy and an early tour in Korea as a field artillery battery commander in 1968. That tour was followed by military flight training and an assignment flying radio research missions over Vietnam in 1970-1971. Those field assignments were followed by his receipt of a Master of Science degree in Operations Research from the Naval Postgraduate School in 1974.

"My presentation at I/ITSEC will cover the last 50 years or so that I have been involved in modeling, simulation and analysis," Hartman said. "And what I hope to convey, and I will say this in the beginning of my presentation, is that throughout that time the three most persistent M&S issues have involved interoperability, reuse and data. Those three areas have been with me for my entire history, and I believe that I have some perspectives that I have gleaned that allow me to look at things a little bit differently."



In order to assess readiness, you not only have to collect data, but you have to have metrics that are doable, along with tactics, techniques and procedures, so that a commander can assess how much readiness was achieved from a particular training event."

He credited part of that difference to what he described as a unique engineering background, which included two years at Missouri School of Mines prior to attending West Point.

"I think the result was that I was ingrained early with a scientific analytic process," he said. "I think that helped when I went to Naval Post-

graduate School, got my masters in Ops Research, and became a certified analyst. From there I went to the Concepts Analysis Agency, where I was the model manager for what was really 'the coin of the realm' in analysis and simulation at the time, which was a combat simulation model by the name of CEM [Concepts Evaluation Model]."

He went on to relate early simulation experiences that included working with printouts five feet tall and 20 feet long to the need to run models only at night "because they kept everyone else from getting on the computer."

Following several other critical U.S. Army and joint service analytic assignments, Hartman left active duty for an industry career in 1981. He began that phase of his career at CACI, where one of his early program efforts allowed him to cross paths with a U.S. Navy aviator named James Robb, who is today the President of the National Training and Simulation Association.

This was followed by other projects, ranging from work on the Army Training Resource Model, which helped to model operational tempo costs for Army tank battalions, to transitioning new models from large mainframes to the microcomputers that were now becoming available.

Following his time at CACI, Hartman said that his activities encompassed aspects of "the encryption world," as Chief Executive Officer of a start-up that was later sold to a large contractor supporting activities at Ft. Meade, Maryland, as well as subsequent co-creation of a company called Applied Solutions International.

"We did some interesting things there," he offered. "And then I had the opportunity to go to IDA [Institute for Defense Analysis], where we were supporting Lou Finch, the first Deputy Undersecretary of Defense for Readiness, because he was pulling thoughts together for what was to become the Defense Readiness Reporting System, the automated system for readiness."

According to Hartman, that and other subsequent assignments involved training anal-



ysis and highlighted the critical need to institutionalize data collection for training events.

"In order to assess readiness, you not only have to collect data, but you have to have metrics that are doable, along with tactics, techniques and procedures, so that a commander can assess how much readiness was achieved from a particular training event," he said.

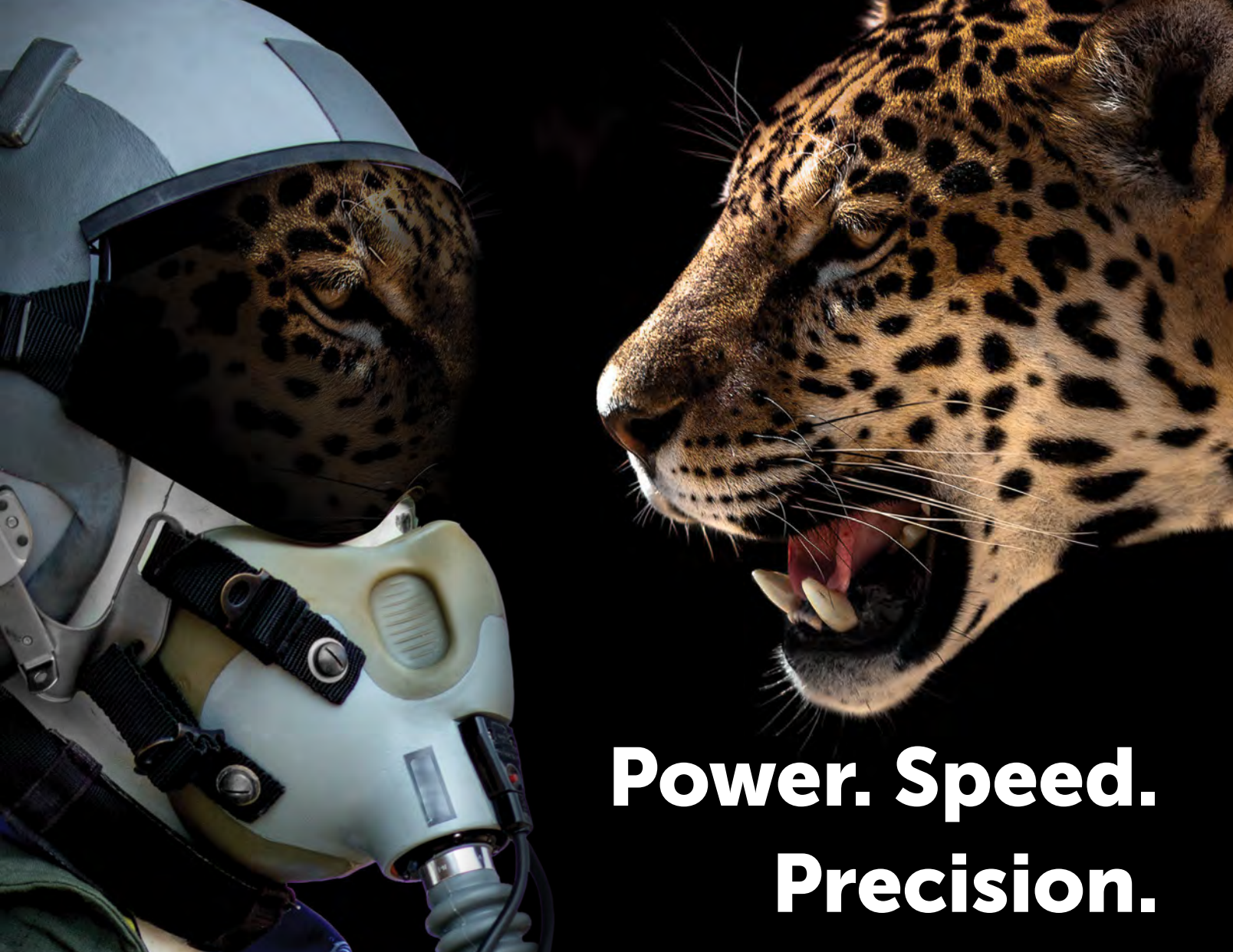
Hartman's Fellow presentation also includes a list of programs that he said he "would have loved to have worked on," ranging from the 1980s SIMNET to the early 2000s DARPA program of "groundbreaking research in Artificial Intelligence technology" that "became the backbone for Apple to launch Siri."

Asked what he hopes audience members take from his Monday afternoon presentation, Hartman quickly summarized, "I want the audience to leave with the idea that when they set out on a technical project - whether it is to build a simulation, a platform, hardware, switches, or communications - before they start moving down that road, I want them to step back and build a model of what it is they are trying to do."

He continued, "And then they need to keep that model updated with the data that is produced by the engineers and subject matter experts along the way. This will result in an optimized product at the end that is at 'the sweet spot of training' when it's introduced to the users."

He added that his briefing will conclude with a series of 10 recommendations that summarize his key lessons learned over the past 50 years.





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16:00 – 15:30 Official launch	13:00 – 12:30 16:00 – 15:30	11:00 – 10:30 16:00 – 15:30	11:00 – 10:30

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