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Air Force Highlights Joint Simulation Environment at I/ITSEC 2022

One of the significant training activities being highlighted by the United States Air Force at this year's I/ITSEC is the Joint Simulation Environment (JSE).

"The JSE is going to be the Air Force's solution to a common synthetic training environment, which is a capability that the Air Force has been exploring for the last couple of years," explained Colonel Charles "Matt" Ryan, USAF, Senior Materiel Leader, Simulators Division, Agile Combat Support, Air Force Life Cycle Management Center, Wright-Patterson Air Force Base, Ohio. "Significantly, as the name implies, it is also a collaborative program with the U.S. Navy."

He continued, "Earlier this calendar year, senior leaders in the Air Force determined that JSE is going to be how we go about providing that common synthetic environment. The idea behind that is developing an advanced multi-domain, synthetic digital test and training range. We have lots of test and training ranges around the nation where we do live fly, but this will be the place where we do virtual fly, to get ready to go into combat and to test weapon systems in the future."

The JSE is comprised of six major building blocks: a software battlespace environment that is highly extensible, modular, and builds on a solid foundation of existing DoD modeling & simulation technologies; a physical computing infrastructure that

implements the battlespace; one or more 'ownships' that constitute the system under test (SUT); cockpits and visual display systems that provide the pilot interface; planning/control/briefing rooms that facilitate mission execution; and an overarching facility that securely contains all of the above and the manpower to operate it.
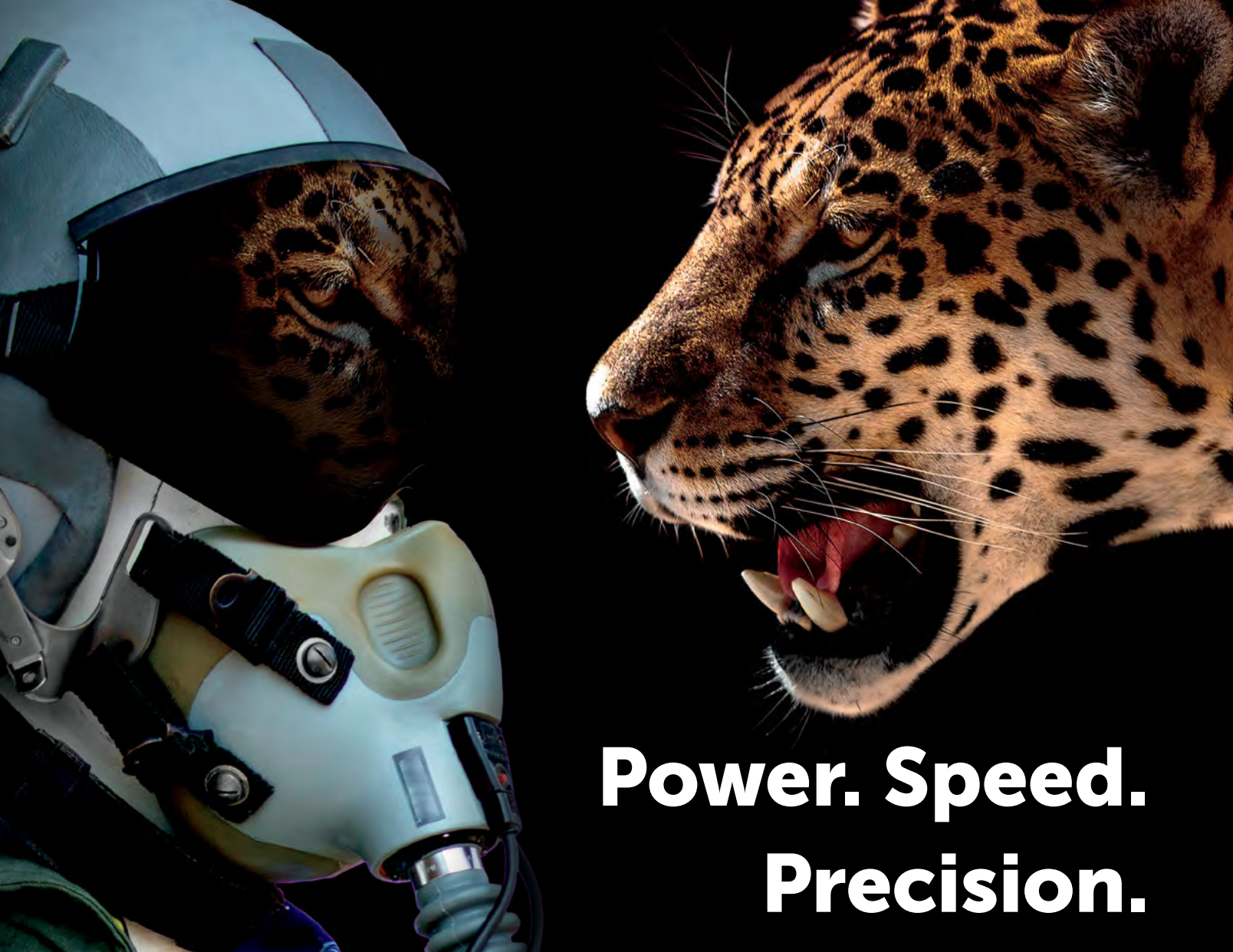
Ryan said that the JSE effort had overcome significant inertia over the past year, as evidenced by some early 2022 activities between the Air Force and the Navy at Naval Air Station Pax River, Maryland. The activities featured participants from the Air Force Weapons School for the F-35 fighter as well as from the Navy's "TOPGUN" Strike Fighter Tactics Instructor program.

The Pax River facility currently features eight F-35 cockpit domes with an ecosystem of hardware and software that presents the environment itself, to include radio frequency, atmospherics, high fidelity threat models and cockpits representative of man-in-the-loop "Red Air" capabilities.

"They walked out of those training events with pretty high praise for the operators about the capability that was presented and the stability and the fidelity of the simulation with regard to aircraft behaviors, and in particular threat presentation," Ryan said.

"Now, I don't want to give the impression that it's a complete capability," he cautioned. "We have work

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MONDAY, NOVEMBER 28
CONFERENCE HIGHLIGHTS

REGISTRATION HOURS

0700-1800 *(West Concourse)*

0730-1800 *(Satellite Registration, Hyatt Regency Main Lobby/Rosen Centre Hotel)*

EXHIBIT HALL HOURS

1400-1800

SIGNATURE EVENTS

1030-1200 **Congressional Modeling and Simulation Caucus** *(Room W311ABCD)*

1430-1545 **The NBT TalX – Imagining the Future Fight through Emerging Technologies** *(Room W300 – Theatre)*

1600-1730 **I/ITSEC Fellow 2022** *(Room W300 – Theatre)*

FOCUS EVENTS

1245-1415 **CMSP 3.0 – Reinvention!** *(Room W300 – Theatre)*

1400-1800 **I/ITSECverse** *(Exhibit Hall – Booth 1332)*

PROFESSIONAL DEVELOPMENT
(Download the I/ITSEC app for synopses)

0830-1600 **Tutorials**

Track 1: **Best Tutorial** *(Room W307A))*

Track 2: **Innovation and Training Design** *(Room W307B)*

Track 3: **Design Approaches for Learning Engineering** *(Room W307C)*

Track 4: **Building Confidence From Design to Application** *(Room W307D)*

Track 5: **XR** *(Room W308A)*

Track 6: **Let's Get Started** *(Room W308B)*

Track 7: **The R Factor** *(Room W308C)*

Track 8: **Simulation Interoperability Part 1** *(Room W305A)*

Track 9: **Simulation Interoperability Part 2** *(Room W305B)*

Track 10: **From C to Shining C** *(Room W306A)*

The traditional "stuffing of the bags" on Sunday morning illustrates the cooperative volunteer community that helps to make I/ITSEC possible.
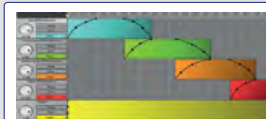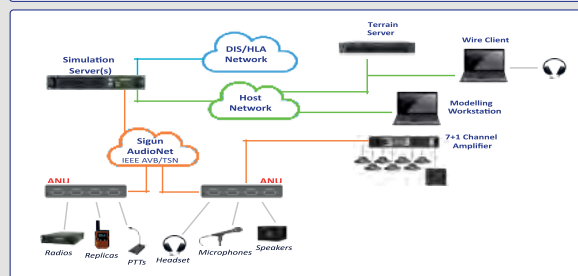
NTSA President Welcomes I/ITSEC '22 Attendees

Rear Admiral James A. Robb, USN (Ret.), President of the National Training and Simulation Association, heartily welcomes exhibitors and attendees to I/ITSEC 2022.

"Last year was our first time back after COVID," Robb began. "We went back to a full, in person portfolio of events, and we had a great turnout. But there were still a few lingering effects of COVID travel in our international participation. The good news is that I/ITSEC '22 fully reflects a return to normal."

Robb pointed to several activities conducted by NTSA over the past year, including the June 2022 Training & Simulation Industry Symposium show and the August 2022 conference on distributed learning known as iFEST.

"We had an enthusiastic turnout at both events," he said. "People were celebrating the fact that they could get back together and talk face-to-face. It was just a very hospitable, tremendous outpouring of the modeling and simulation community coming back together. Those events were tremendous successes and they also contributed to a strong foundation for I/ITSEC 2022.

"

> I think the theme reflects that we've been really pushing government to acknowledge that they have to go faster.... The typical seven-year cycles of procurement are not working for modeling and simulation."

Robb reflected on this year's I/ITSEC theme – Accelerate Change by Transforming Training – It's Time to ACTT!

"I think the theme reflects that we've been really pushing government to acknowledge that they have to go faster," he explained. "The typical seven-year cycles of procurement are not working for modeling and simulation. Now, if you're going to build an aircraft carrier, that probably takes five to seven years and there's only so much you can do about that. But the training community runs on a much faster cycle, because most of it is computer based and it is assembled in smaller, more creative ways. So we're really trying to get the government to identify what they need in some detail and getting enough of that detail out into industry, to where one of two things happens: either industry can make a product and sell it to the government or industry can actually team with government in the in the development process to create prototypes."

As examples of the acceleration of both threats and solutions, he noted the drone technologies appearing on battlefields in Ukraine as well as new approaches to satellite links that are helping to empower the defending force.

"There's a lot of emphasis on moving faster, and bringing in new technologies like cloud, 5G or next generation internet, which weren't really given much thought by the military until four or five years ago," Robb continued. "Another example is the so-called metaverse, an expanded use of virtual worlds that will be included in demonstrations at I/ITSEC this year."

He summarized, "It's all about going faster, and in some cases bringing game changing technologies to the field in record time."

In addition to the technologies and demonstrations in the spotlight at I/ITSEC 2022, Robb talked about some of this year's Special Events and the unique opportunities they provide to attendees.

"We have grown to 43 Special Events this year," he observed. "Some people might caution about that number, which has grown over the last few years, but if you look at the quality of these events it is astounding! The level of participation on our panels – to three- and four-star levels – is amazing. We also have a lot of enthusiasm from OSD this year, reflected in a strong contingent being led by Caroline Baxter, Deputy Assistant Secretary of Defense for Force Education and Training. She is actually doing two panels, one of which is about efforts to improve training in the Indo-Pacific, while the second will talk about countering Russian aggression in Europe."

He added, "We've also got the Vice Chief of Staff of the Air Force coming for a fireside chat as well as Major General Shawn N. Bratton, Commander, Space Training and Readiness Command, U.S. Space Force. At NTSA we've really worked hard over the last year and a half to learn about Space Force and how we can engage with them to support their training needs. I think that this will be very interesting."

Robb said that the growing service support for I/ITSEC reflects the fact that the show is gaining notoriety throughout different chains of command, reinforced by the daily illustrations from Ukraine that training readiness has a massive influence on tactical outcomes. Moreover, he asserted that the growing notoriety is also reflected on the industry side, where companies recognize an increased government acceptance and application of game technologies and simulations.

In terms of his specific messages for government and industry attendees, Robb concluded, "I wish for all of them to have a successful week. And the biggest thing they can do to ensure that is to prepare. They need to do their homework and go through the agenda. My experience has always been, if you want the maximum out of I/ITSEC, spend some time preparing."

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Conference Chair Shares Personal Commitment to I/ITSEC Theme

As I/ITSEC 2022 Conference Chair, Matt Spruill, Director, Training Services & Solutions, Trideum, is four years into a six-year evolutionary leadership process that begins with a year as Deputy Program Chair and then progresses through Program Chair, Deputy Conference Chair, Conference Chair, Deputy Scholarship Chair and finally Chair of the Council of Chairs, which includes all the past chairs who serve in advisory roles.

"So I'm on year four out of six years," Spruill told *Show Daily*. "And we started the process of planning for I/ITSEC 2022 on the morning after I/ITSEC 2021. We had an after-action review at about 9 o'clock Friday morning, at about 10:30 we had a leaders meeting of the current year's leadership, including all the subcommittees and specialty people, to set expectations and start the year off. And then the formal kickoff was in January when people briefed what happened last year, based on their particular areas. And then guidance was given out prior to the next event, which was the abstract review in March."

> **Honestly, we plan I/ITSEC by the good graces of almost 300 people. … Literally, it's out of their volunteer time. Nobody has to do this. They do it because they want to. They do it because they see value in I/ITSEC and realize that it's important to our community."**

Asked about challenges along the way, he highlighted the fact that NTSA is an extremely lean organization that is largely supported for I/ITSEC by an all-volunteer workforce.

"Honestly, we plan I/ITSEC by the good graces of almost 300 people," he said. "Literally, it's out of their volunteer time. Nobody has to do this. They do it because they want to. They do it because they see value in I/ITSEC and realize that it's important to our community."

Spruill enthused over this year's I/ITSEC theme: "Accelerate Change by Transforming Training – "It's Time to ACTT!!"

"It's time to act, and what the impacts of that are was derived from a speech and a paper by General Charles Q. Brown, Jr., USAF, Chief of Staff of the Air Force," he said. "And his speech and the paper basically said that we have to accelerate change or lose. If we can't do that, it's going to cost lives. And for me that's pretty impactful."

Sharing some additional thoughts from his opening presentation to attendees on Tuesday morning, he continued, "You will see throughout your many experiences this upcoming week that this theme runs through this year's program to provoke your thought, to engage you, and to encourage you to collaborate. I hope that you take a moment to stop and ask yourself: How do I reach that next generation? How do I help speed the development of a system and delivery of it to our warriors? How do I accelerate change? That is the purpose of this year's conference."

Spruill emphasized, "General Brown also said that everybody has a part in this. Everyone has a purpose. It doesn't matter whether you are military, government civilian, academia or industry. We are all here for the same reason, and that is to enable our soldiers, sailors, airmen, marines and guardians to close with the enemy and win our nation's wars. That's really what we're doing. Yes, there is profit and loss in industry. And there are equities by government representatives. But, at the end of the day, that is what we're doing."

Offering some personal emphasis, he added, "Everybody needs to find their purpose. In my case, my purpose reflects the fact that I have a son on active duty. I have a son-in-law who is a reservist. And I have a brother who is still serving in the military."

Spruill acknowledged that I/ITSEC 2022 attendees face a challenging task of organizing their attendance against a background of 43 Special Events and myriad unique opportunities.

"If I were to talk to a first-time visitor today,

> **I hope that people leave I/ITSEC 2022 with a better understanding of their own purpose. What is their part in all of this? How can they help?"**

I would tell them to study the program. It's important. The program is so rich in content. They need to use it to map out those events, whether they are Special Events, tutorials, papers, professional development workshops or something else on 171,000 square feet of exhibit hall. They really need to map that out, based on their own interests, because there's not enough time in a five-day conference of this scale to get to everything. So plan, plan, plan your conference," he said.

In terms of his takeaway messages for I/ITSEC attendees, Spruill summarized, "I hope that people leave I/ITSEC 2022 with a better understanding of their own purpose. What is their part in all of this? How can they help? How can they listen to somebody talk about an idea or event that they ran, and go up and talk to that presenter, leaving a mark on that person and helping them to make it better? I'm not talking about argument for argument's sake. I'm not talking about academic discussions. I'm talking about true, genuine, 'Hey, I heard what you said. Somebody else over here did this. They could possibly help you.' That's what I hope people take from I/ITSEC."

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Program Chair Looks Back to the Future

As Program Chair for I/ITSEC 2022, James "Jim" Threlfall, Vice President of Operations/Business Development at Tipping Point Solutions, Inc., reflects on the meeting's continuing growth in a post-COVID environment.

"This year has turned out to be a pretty intensive program increase after COVID," he said. "We were down, obviously, with a virtual I/ITSEC two years ago. We came out of COVID last year and we had a very good show. But this year we are witnessing a vast increase in support from academia, the Department of Defense and industry in the development of the program. The papers, the tutorials, the workshops and the Special Events have all ballooned this year to something that looks back almost pre-COVID, in fact, back about five to 10 years."

He continued, "Those of us in the conference leadership are extremely happy this year. Not only has the program increased, but the support from the vendors on the floor has increased dramatically this year. They actually had to expand the exhibit space twice, because they kept selling out of slots."

Threlfall described the role of Program Chair as "assisting NTSA with the development of the program for the conference," describing a process that actually begins before the end of the previous I/ITSEC event.

"We start in the November-December time frame," he said. "And, as part of my role, I coordinate the 200 plus volunteers that make up the six paper subcommittees, the one tutorial subcommittee, the professional development workshop subcommittee, Special Events, the STEM program and all the organizations that collectively make up what is presented to everyone at the conference."

He explained that the process picks up speed and intensity around February, when the subcommittees select and review abstracts that have been submitted.

"That's the start of our process," he said. "The abstracts and proposals come in from industry, from academia, from the Department of Defense and from federal agencies. They submit their abstract, which these subcommittees review and approve to go on to the next step. As part of that next step, the authors

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International Programs Support I/ITSEC Global Attendees

The International Programs Team (IPT) at I/ITSEC 2022 welcomes international attendees to this year's conference!

This dedicated group of approximately a dozen volunteers works throughout the year to ensure that global attendees have a valuable experience at I/ITSEC, according to Dr. Denise Threlfall, International Programs Director, I/ITSEC, through their support of the International Pavilion [Room W205ABC] and the many internationally-themed Special Events offered throughout the conference.

"The International Pavilion is exclusively for those who travel from outside the U.S. to attend I/ITSEC," said Threlfall. "The Pavilion has five meeting rooms that can be reserved, and also has open seating so international colleagues can gather, hold meetings and exchange ideas away from the exhibit floor."

The IPT members have a wealth of information to support international attendees and are a great resource for providing suggestions on which tutorials or papers to attend, as well as guidance on Special Events and Professional Development Workshops (PDW). Threlfall said that many international guests,

especially first-time I/ITSEC attendees, ask for guidance regarding companies on the exhibit floor which focus on their particular areas of interest in the various aspects of modeling, simulation and training. "The IPT members serve the international community as advisors through their expertise in MS&T," she said.

Asked if the needs of international attendees have changed over the years, Threlfall said, "In my ten years of supporting International Programs at I/ITSEC, I've noticed that there has been a focus shift from business development to professional development, as more attendees are heading to tutorials on Monday and staying for the PDWs on Friday. They are taking advantage of the robust program offerings by listening to research outcomes and innovative ways to approach complex problems in our industry. Of course, there is always excitement for the exhibit hall to open on Monday, but it is really fantastic to hear the takeaways they gain from the speakers and panelists as well."

This year's International Pavilion is

co-sponsored by Applied Training Solutions and A. Harold and Associates. "It is so great to have sponsors for this very active space this year," Threlfall said. "After scaling back in 2021, we're back to full strength with scheduling the five meeting rooms and providing support. Sponsorship is so important, so thank you ATS and AHA."

Elaborating on the significance of the Pavilion for attendees, Threlfall emphasized, "The International Pavilion is a very welcoming space for our international guests. We get so many appreciative comments for assisting individuals and scheduling meetings throughout the week. I know that is the reason we have such a large group of volunteers that continues to support International Programs at I/ITSEC. All of our IPT members really enjoy interacting with our international community at the conference."

Summarizing her message to international attendees, Threlfall said, "Check in with us in the International Pavilion early in the week, get your purple badge ribbon identifying you as an international participant at I/ITSEC, and stop in throughout the week to reset and refresh. Don't hesitate to ask for advice on anything related to the conference. Whether it is your first time at I/ITSEC or your 20th, enjoy all that I/ITSEC has to offer!"

INTERNATIONALLY-THEMED SPECIAL EVENTS

TUESDAY, NOVEMBER 29
SIGNATURE EVENT
1600-1730 Indo-Pacific Training Capability Improvements for Multi-Domain Warfighting *(Room W304AB)*

WEDNESDAY, NOVEMBER 30
COMMUNITY OF INTEREST
1030-1200 M & S Emerging Technologies: Innovation Opportunities and Challenges *(Room W308C)*

SIGNATURE EVENT
1400-1530 Transforming Training with Allies and Partners to Confront and Deter Russian Aggression *(Room W304EF)*

FOCUS EVENT
1600-1730 Best From Around the Globe *(Room W304EF)*

THURSDAY, DECEMBER 1
COMMUNITY OF INTEREST
0830-1000 Simulation Standards: The Path to Seamless Interoperability for Multi-Domain Operations *(Room W308C)*

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

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

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STEM in Focus at I/ITSEC

The NTSA EcosySTEM of Learning [Booths 2981-3191] focuses on strategically and tactically building interest and educational momentum through a wide breadth of Science, Technology, Engineering and Mathematics (STEM) initiatives. The mission of EcosySTEM of Learning is to establish, nourish, and maintain a solid foundation for launching future leaders and fostering the future workforce.

"NTSA has always made a commitment to STEM," observed Dr. Linda Brent, Owner/CEO of The ASTA Group, LLC and NTSA STEM Coordinator. "And a few years ago we started a transformational process to really bring together all the programs that had grown up across

▼

The new structure has divided the EcosysSTEM of Learning into four separate pillars: Outreach; Discovery Den; Focused Workshops; and Career Investment.

I/ITSEC. People had good ideas. They went off and did them. And those grew into programs. So we had all these 'stovepiped' programs and we wanted to really bring them together into a total picture to show that we were supporting learning from cradle to grave, basically, throughout the workforce, as well."

Brent said that this year's I/ITSEC will see a few of the same activities and opportunities shown at past events, although some may have disappeared, others have been combined and some will be brand new. She added that the new structure has divided the EcosysSTEM of Learning into four separate pillars: Outreach; Discovery Den; Focused Workshops; and Career Investment.

"Outreach can be anything from the student tours that we do at I/ITSEC, our ROTC tours and our university tours, all of which we are going to continue to do," she explained. "But it also is outreach, for example, doing webinars during the course of the year, for teachers and students, focused on various labs that companies have, like simulation labs or robotics labs."

She continued, "The second pillar is focused on discovery and is based in the EcosySTEM of Learning Pavilion in the exhibit hall. It includes Serious Games, which we have always had. It's also going to include a focus on nationwide opportunities for companies and government organizations to get involved in STEM, things like the Department of Defense Starbase program, the FIRST [For Inspiration and Recognition of Science and Technology] Robotics program and the national Cyber Challenge program. We will have exhibits talking about those programs. We are also going to have what's called a 'Discovery Den,' where we're going to have presentations through the week by various people on topics of interest to groups like teachers, students and the career-focused CMSP [Certified Modeling and Simulation Professional] group. Additionally, some of the exhibitors will do presentations on their actual programs, like, 'What is DoD Starbase and how do I get involved in it as a company or as a government organization?'"

The third pillar of the EcosySTEM of Learning involves focused workshops directed toward teachers, students or elements of the workforce.

"Things like our workshops for professional certification would fall under that category," Brent said. "And the DoD Starbase program that I mentioned will be bringing around 60 of their directors and teachers from across the country for two days of training. Then they'll have some time on the floor. So that's huge. And then we're going to run a Student Challenge this year, which is new. We're going to get four teams of students on Thursday for the day, with their teachers. We're going to present them with a STEM challenge. They will have the day to work on that and then they'll present that challenge in the Discovery Den on Thursday afternoon."

The fourth pillar or cornerstone of the EcosySTEM of Learning is Career Investment.

"That includes things like our scholarships program, which of course, has been ongoing, our CEU program and our CMSP simulation program for modeling and simulation professionals. Our career fair also would fall under the career investment area. We're trying to help people understand that STEM is important for them as a company, and as an organization, because it's the future of our workforce. Moreover, it's also important for them for the ongoing workforce, especially with millennials who may change careers three or four times in their lifetimes. And we need to stay on top of technology – all the STEM fields – to help them grow so that they stay motivated and stay in our career field," she said.

Elaborating on the workforce challenges, Brent observed, "Companies are running so fast that sometimes they may not realize the full value of STEM until it hits them in the face, when all of a sudden they're trying to hire people and there's nobody to hire."

Crediting the military as being "forward leaning" in this process, she identified a range of workforce development and retention programs across the armed services.

Brent said that her primary message to I/ITSEC attendees is to encourage them to stop by the EcosySTEM of Learning pavilion, where an information desk has been established and staffed to talk to people about the ecosystem, how they can get involved and what opportunities might be available for their organization to participate in the future workforce.

She concluded, "The best way for them to get involved is to stop by, find out everything that's going on, and connect."
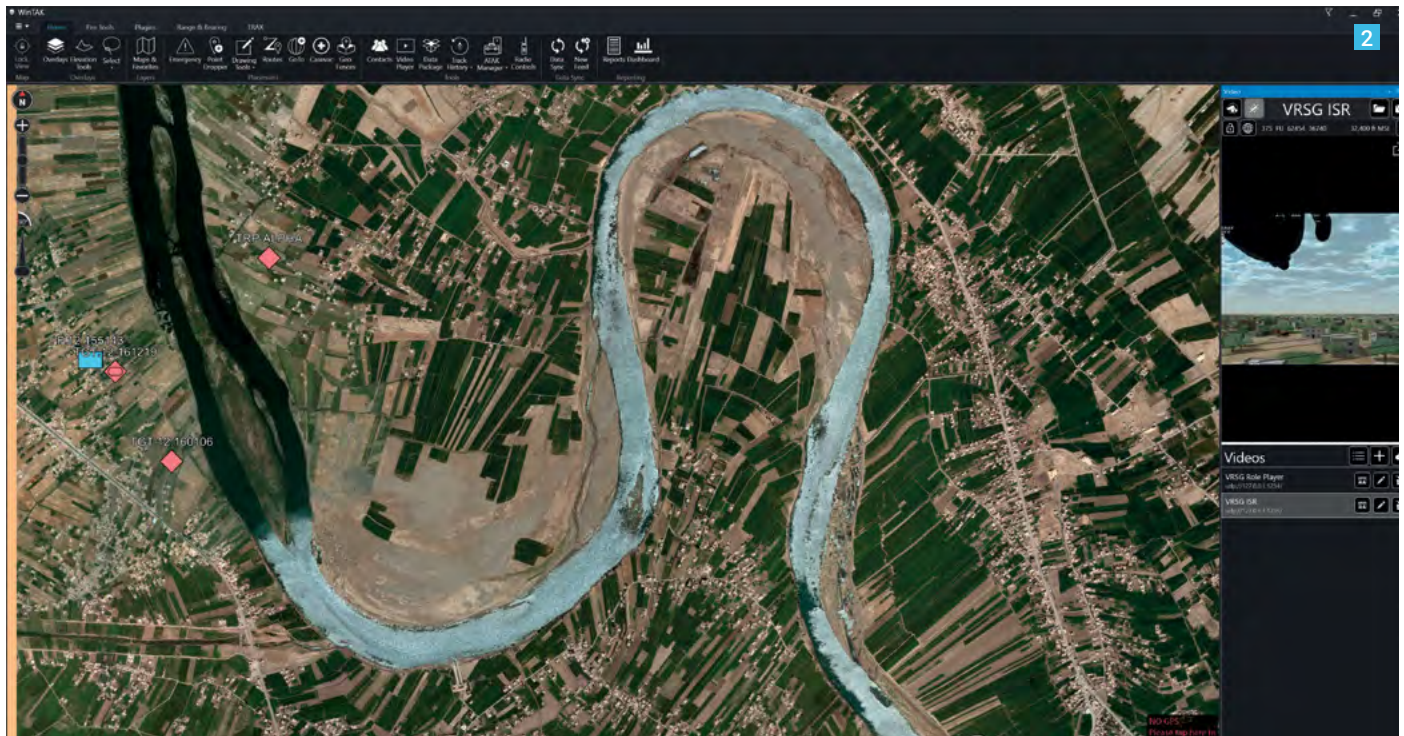
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1   JTAC's view inside the XR-3 headset showing XR-3 pass-through of the real-world Observer Station, within MVRsimulation's virtual Hajin, Syria, terrain.

2   Close-up of WinTAK in real time integrated with MACE, SNC TRAX software, and VRSG; including live sensor feed from the Role Player.

3   Observer Station showing emulated SOFLAM view on the display. Each station is contained in a two-man portable welded aluminum case.

4   The JTAC rendered in VRSG showing trainee eye-gaze captured by the XR-3 headset.

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Innovation Showcase

The Innovation Showcase is led by cutting–edge companies and government agencies within the M&S Industry.

BOOTH SCHEDULE

MONDAY, NOVEMBER 28

1400 **Quantum3D/HAVELSAN** – Forces in Virtual Environment (FIVE)

1440 **XCOM Labs** – Unleashing Fully Immersive Multi-User Wireless XR Experiences

1520 **Vrgineers** – ISLE-LMS State of the Art Mixed Reality Trainor

1600 **GBVI** – Continuous Time-of-Day Visuals: Seamless Optical Blends

1640 **Gaumard Scientific** – Hal S5301

1720 **Microsoft Federal** – Metaverse

TUESDAY, NOVEMBER 29

1230 **Microsoft Federal** – Microsoft Project AirSim – AI First Simulation Platform to Build Aerial Autonomy

1310 **OpenBCI Inc** – Galea: The Bridge Between Virtual Reality and Neural Interfaces

1350 **Varjo Technologies** – VR, XR and Metaverse Solutions for Defense and Aerospace

1430 **Ingalls Information Security** – Viewpoint, 3D Cybersecurity Data Visualization

1510 **Quantum3D/HAVELSAN** – Quantum3D Mixed Reality Flight Simulator

1550 **HTC VIVE** – Deploying Secure Solutions for VR Training Simulations

1630 **NATO** – MASTER Project (M&S Architecture & Services for Training and Experimentation) – A Solution for M&S as a Service (MSaaS)

1710 **BigLever** – Nobody Builds Just One: Leveraging Feature-Based Product Line Engineering to Reduce Complexity

1750 **Bundlar** – Augmented Reality Made Easy: Improve Warfighter Readiness with Immersive Technology

WEDNESDAY, NOVEMBER 30

1000 **Fortress Information Security** – Cyber Resilient Training Systems Through Continuous Cyber Supply Chain Risk Management

1040 **Ultraleap** – Creating Unforgettable VR Training Experiences with Hand Tracking

1120 **Hadean Supercomputing LTD** – Powering the Future of British Army Synthetic Training

1200 **CSIAC** – Free DoD Tools to Jumpstart Your Research

1240 **NATO** – M&S in Support of CBRN

1320 **Ingalls Information Security** – CSAR, Your Best Hope for ATO Survival

1400 **Quantum3D/HAVELSAN** – Serious Games Technologies for Training and Simulation

1440 **HTX Labs** – EMPACT In Action – Modernizing Critical Training with Virtual Reality Across Sheppard Air Force Base

1520 **910 Factor, Inc.** – Cognitive Performance and Decision-Making: A Live Fire Training Approach

1600 **Surgical Science** – Trauma Training in a High Stress Environment Using Mixed Reality

1640 **CAE** – Automated Content Generation for Technical Training Applications

1720 **ESRI** – Building Immersive Apps with ArcGIS Maps SDKs for Game Engines

THURSDAY, DECEMBER 1

0930 **Air Force Agency for Modeling and Simulation** – Addressing Zero Trust as the Multi-level Security (MLS) Imperative for Distributed Training

1010 **NATO** – ELMO – Electromagnetic Layer for Multi-Domain Operations

1050 **Microsoft Federal** – Accelerating Aerial Autonomy with Microsoft Project AirSim

1130 **Fognigma** – Zero Trust Cloud Communication Solutions

1210 **Epic Games, Inc.** – Enabling a Simulation Ecosystem to Simplify Solutions Development

1300 **Serious Games Showcase and Challenge Award Ceremony**

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Session: 22450
Date: Tues, Nov 29th
Time: 1400
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RAVE Presenting Author: Matthew Moy

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Program Chair ... *continued from p8*

present a more detailed paper or proposal. Again, the teams come back together, review these more detailed presentation papers, and approve for the next step, which means submissions have been accepted as a paper, a tutorial, a workshop or a Special Event for the conference. This is the group of people that will be presenting at I/ITSEC."

The subcommittee teams work with those presenters to refine and prepare the presentation materials. Once that has been accomplished, those materials are approved around September or October.

"That approved material makes up what we call our initial look at the program," Threlfall said. "That's the first time we actually see all the papers, tutorials, workshops, Special Events and STEM initiatives that will take place, and we actually start to organize the program. That's the time we get to see how many of each we have and how many rooms we have. That really starts to get to the nitty gritty of the organization, working together to make sure that we've got enough rooms and we've got the people to support all those

presentations. So it really moves into more of a logistical operation at that time."

Once the program has been identified, work begins on publishing it for hard copy, digital and mobile applications.

"

Special Events have really ballooned. We have expanded our Special Events program to bring in a lot more than just the Department of Defense."

"That program shows visitors what's going to take place each day and the details of the exhibit hall. It really starts to present to our community of interest that is going to the conference their first look, allowing them to begin planning their time to maximize their I/ITSEC experience."

Elaborating on the learning and exploration opportunities at I/ITSEC 2022, Threlfall

summarized, "This year, not only are the papers and tutorials a great place to start, but the Special Events have really ballooned. We have expanded our Special Events program to bring in a lot more than just the Department of Defense. For example, we have the Department of Homeland Security (DHS) as an active member this year. And there are a lot of other federal agencies that are starting to participate in our program. That hasn't necessarily been the case in the past. But this year we have great support from organizations like DHS that are members of some of our panels. So I believe the Special Events are a real highlight this year. We're also expanding on the Next Big Thing, which was introduced last year. This year NTSA is expanding the Next Big Thing into the metaverse. What does that really mean for DoD? What does it mean for federal agencies? What does it mean to anyone who wants to understand what the metaverse is about? And where is it going in the future to enhance our capabilities to provide education, training, knowledge management or any type of informational flow to our workforce?"

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

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

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NBT TalX Shift to Military Metaverse

One of the returning Signature Events at I/ITSEC 2022 incorporates a series of panel discussions collectively known as NBT [Next Big Thing] TalX. Building on their initial introduction at I/ITSEC 2021, which focused primarily on extended reality applications, this year's "TalX" are shifting focus to the military metaverse.

"What the NBT TalX are really designed to do is to allow organizations, government, academia and industry to posture themselves to embrace these new technologies," offered Bob Kleinhample, Business Line Executive for Training and Readiness at Improbable and I/ITSEC lead for the panel series. "And this year those new technologies involve the military metaverse and what its potential could be in the future."

He said that there are "several aspects" to NBT TalX, explaining, "First, there's market shaping; generally understanding what the technologies are and how to embrace them. How do you bring those technologies in? How does your organization need to be postured for it? And in order to answer those questions, you have to understand what it is first. That then allows you to look at what aspects you might be able to pull in to your programs. What are those golden nuggets? What are

those technologies that are maturing, that we need to keep an eye on? We're trying to avoid technologies that are 'already ready.' We're looking a little deeper."

Kleinhample continued, "Another key aspect of this, and I like to use a metaphor, is that to grow things you have to fertilize. These are emerging technologies. They are somewhat nascent. So we need to help fertilize these technologies to get them ready for military applications. That's also what we're trying to achieve, so these talks were set up with various thought leaders from government,

industry and other organizations to give their thought-provoking perspectives on the military metaverse. In some cases, they're here to challenge the norms of how people have been thinking. In other cases, they're here to help inform us on the nature and state of technology and what we can do with it."

The Signature Events begin on Monday afternoon and continue throughout the day on Wednesday.

Unlike more traditional I/ITSEC panel discussions that encourage questions or comments from the audience, Kleinhample said that the NBT TalX would have minimal opportunities during the panel presentations themselves. However, audience members would be encouraged to attend a "metaverse social," which will be held 1730 on Wednesday [Room W311E].

"During that social they can meet the all the speakers one on one and just have really nice conversations," he said.

Asked what he hoped audience members would take away from the panel presentations, Kleinhample stated, "From the NBT TalX this year we want them to understand that the metaverse is not a dream. It's real. There is technology there that can be embraced. Now, we are still maturing it. There are a lot of aspects of the metaverse that have to be significantly fertilized and developed. However, there is technology there today that is ready for industry and government to get into their labs and start embracing now. There are technologies there right now that could be used to benefit our warfighters. And they are going to hear about some of those examples in these panel discussions."

Kleinhample emphasized that the panels are all unique, with participants providing a glimpse of opportunities, problems and

challenges from different perspectives.

"For example, one session is looking at the metaverse from a non-defense perspective," he said. "They will discuss the commercial metaverse that is being used for things ranging from design and fashion to Hollywood entertainment. We hope that gets people to think tangentially, rather than a more typical military perspective."

> "
> Another key aspect of this, and I like to use a metaphor, is that to grow things you have to fertilize. These are emerging technologies. They are somewhat nascent. So we need to help fertilize these technologies to get them ready for military applications."

He added that Monday's NBT TalX event would include a representative from the U.S. Army Training and Doctrine Command "Mad Scientist Laboratory" and other government representatives to help moderate a "fireside chat type of discussion" that will also be recorded as a podcast.

"In addition to the military metaverse, they are also going to be exploring some deeper kinds of things," he said. "In fact, maybe they're not necessarily limited to purely just the metaverse. They can be a little bit more open with what they discuss."

He noted that those expanded topic discussions were just one part of the process for informing how the NBT TalX might focus in 2023.

"We also have decision points over the next year and we invite anyone who wants to help inform the future technologies that we should be looking at to come and be part of our committee," he concluded. "They should feel free to reach out to me. I can put them onto the committee if they want to 'roll up their sleeves' and help us think through where we should be looking and what we should know to help fit our model of understanding and fertilizing emerging technologies."

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Inaugural I/ITSECverse Highlights Metaverse Capabilities

One of I/ITSEC 2022's Focus Events is the launch of I/ITSECverse, an evolving collaboration involving defense stakeholders and government users, industry partners and the I/ITSEC conference focusing on metaverse capabilities.

Occurring in the exhibit hall throughout the week, I/ITSECverse includes nearly two dozen organizations showcasing these capabilities in their booths, as well as an integrated training ecosystem called the Multi-Verse Training Environment (MVTE) demonstration hosted by Brightline Interactive [Booth 1332].

"I/ITSECverse is what NTSA [National Training and Simulation Association] is calling a technology-centric ecosystem," said MVTE organizer Jennifer Arnold of NVIDIA Omniverse. "This ecosystem has been developed to showcase all of the innovative technologies that are associated with the metaverse, or immersive collaborative spaces. So, imagine a multitude of virtual collaborative spaces or virtual worlds, all interoperating together to support multiple missions."

MVTE organizer Tyler Gates, General Manager at Brightline Interactive and Chief Futurist at The Glimpse Group, added, "We understand overall that the technologies required to actually create these immersive ecosystems that are connected to one another require a collaboration across the entire industry. I/ITSEC and NTSA are no strangers to these types of collaborations. In fact, they have been pivotal in setting up these types of collaborations with conferences like I/ITSEC. What we see is that there are a multitude of companies that exist across the I/ITSEC show floor that have a metaverse mentality, that are not necessarily trying to demonstrate one singular technology as the end goal, but in fact, they recognize that their technologies exist in a very large ecosystem, and that ecosystem collaboratively works together for the betterment of the entire community."

Emphasizing that this is the pilot year of a multi-year vision for I/ITSECverse, Arnold said the focus this year is to identify companies and organizations on the show floor that have a metaverse capability.

Conference attendees can visit the companies highlighting these capabilities throughout the exhibit hall, identified by signage as part of I/ITSECverse. Information on participating companies is also available through NTSA. [Booth 2580].

"Currently, [these companies] are not necessarily all integrated or interoperable," Arnold said. "So, this year, we're trying to identify this ecosystem and who has this capability. As the metaverse

and I/ITSECverse grow, our intent is to have all of these capabilities integrated in some capacity."

One example of this is the MVTE demonstration. Gates noted that, going forward, I/ITSECverse intends to be a demonstration environment, and MVTE is the first. The demonstration showcases a training scenario combining aspects of cloud, network, spatial technology and full-motion simulation, and highlights the collaboration of over 10 partnering companies including Brightline Interactive, NVIDIA Omniverse, Dell, AT&T, Ericsson, Eight360, Varjo, RAVE Computer and others, that "for the better part of the last seven months have been working together weekly to make this happen."

The training scenario is created in the cloud instance and then deployed to two full-motion simulators. At last year's I/ITSEC, Gates said,

"we had this full motion-simulator. People called it the 'hamster ball.' Now we have two of them in this footprint, and we're showcasing the use of both of them at the same time."

"The things that people want are collaboration," he continued. "They want an environment that works well with other environments, and what we want to showcase with this demonstration is that it's actually already possible. We're now doing it. We've put it on the table so that others can now see it and figure out a way to do it themselves."

Asked what messages conference attendees can take away from I/ITSECverse experiences, Gates said a goal is that people feel educated and empowered. "Inclusive of training and simulation, and beginning from now to the next three years or so, the future of all learning is going to completely shift when people recognize that computing is shifting. We're very used to having compute in our hands all the time. Now we have compute in cloud instances and networks that can carry that high-volume compute down to our device at speeds that are faster than we can think to move our head. And that changes how we're able to think about creating simulation content, writing requirements on government contracts, and what can be done by collaboration with large technology companies coming together under one mission."

Gates continued, "Hopefully people walk away with an understanding that there is a shift underway, and at I/ITSEC in that booth, with all of those companies in there, they saw something that made them think totally differently about how simulation works."

Arnold added that attendees will see that "the fidelity of the simulations and the physics that are behind those simulations have gotten us to a point where they are incredibly realistic, and we have not been at this instance before."

Acknowledging that the metaverse "is still being defined in terms of what the metaverse can do for you," Arnold concluded, "our hope is that our [I/ITSEC] community gains an understanding of how we as a community are defining the metaverse and how it can help us meet our mission by using the technologies that they're going to see on the I/ITSEC show floor."

Joint Simulation Environment *... continued from p1*

in front of us. But it's certainly something that provides a viable training capability for a high-end peer adversary kind of fight that is unique and has not been something that the Air Force and the Navy have had available in the past."

Although the JSE is currently limited to the F-35, Ryan said that the first likely expansion program would incorporate the F-22 as well.

"The genesis of JSE came about because of F-35 IOT&E [Initial Operational Test and Evaluation] requirements," he explained. "So we are very focused right now, for both services, on completing the IOT&E requirements using JSE, so that the F-35 program can move on with their Milestone C and get that accomplished."

Asked about Marine Corps F-35 participation to date, Ryan offered, "I do not believe that MAWTS [Marine Aviation Weapons and Tactics Squadron] has had an opportunity to take their weapons instructors to the Pax River facility yet, but I believe they are on the schedule to go very soon."

The Air Force plans to stand up commensurate capabilities, similar to those at Pax River, at Edwards Air Force Base, California and Nellis Air Force Base, Nevada.

"Those locations would be for test purposes," Ryan explained. "And then also at Nellis the Air Force would establish the Virtual Test and Training Center (VTTC), which is really focused on high end training for a 'night one fight' against the peer adversaries. That's what we're trying to be make sure our force is ready for."

He noted that the Air Force and Navy are still working on whether distributed training between the service sites would be possible with the extremely high fidelity representations of fifth generation weapon systems that will be presented in JSE.

"There are some challenges with regard to latency and with regard to those weapon systems rejecting certain inputs," he said. "If there's too much latency, basically, they're smart enough to ascertain that this is not representative of real life and discount it. So there are some challenges there with regard to very long distance distributed training or test. And those are things that we will have to work toward in the future and figure out. But what you will have is a common baseline of software for the JSE environment or the ecosystem. And, as much as possible, we'd like to drive towards some common hardware baseline as well. If you think about an affordability and sustainability perspective, the more commonality you can drive amongst all those sites, the more affordable and sustainable each site will be."

Another area that will be addressed in the future involves the Army's Synthetic Training Environment (STE) and possible linkages between JSE and STE.

"We haven't talked to that yet," Ryan said. "We know that we do need to reach out and better understand where the Army is headed. I think within Air Force that some of that dialogue has begun to happen, but it's still pretty early on. So, while we still do have some work to do in that arena, I'd say right now we are highly collaborative, working extremely tightly with the Navy, and we're also beginning to talk quite a lot with the Space Force."

One area of technology integration interest identified by Ryan was the desire to "break away" from the large physical footprints that come with full dome cockpits.

"If we can have a high fidelity representation of the cockpit, high enough fidelity to meet test or learning objectives, but get away from having things like domes, and get to things like augmented reality and extended reality, using goggles and things that are much more condensed, and frankly, a lot cheaper to maintain, that is something of interest for us for integration into JSE," he said. "If you think about something like a large force exercise, if we can reduce the footprint required to represent each individual aircraft and weapon system, we can get a lot more operators participating in those exercises. So we get significantly more bang for our buck."

He identified planned activities over the

next 12 months focused on standing up an early phase of the VTTC at Nellis Air Force Base. Although initially not JSE-based, follow-on activities are planned for VTTC conversion to JSE.

Ryan highlighted opportunities for industry participation in JSE, explaining, "One thing that we see is that our SCARS [Simulator Common Architecture Requirements and Standards] program, which we have had running out of the Simulators Division for a couple of years, will come alongside the JSE program and help to field JSE via that SCARS program in a couple of respects. First, I think that will be one of the keys to having that common hardware stack from a compute perspective. And then I also expect SCARS to be the avenue for us to publish the Government Standard Interface (GSI) for JSE, such that you can now have industry developing simulations and models to be native JSE speaking programs and models. I think some of the areas where we definitely will require industry input is bringing on those high pedigree, high fidelity models of blue weapon systems and capabilities, whether you're talking about an airborne platform, a weapon, communication links, radios, countermeasures and other devices. Those are places where industry has the expertise on how to model – not the government. And we're going to be looking for

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If we can reduce the footprint required to represent each individual aircraft and weapon system, we can get a lot more operators participating in those exercises. So we get significantly more bang for our buck."

those high fidelity representations that take advantage of all the capability that the environment of JSE offers, so that we can get the highest fidelity simulations for our tests and for our training communities."

Ryan said that he plans to provide expanded details on the JSE opportunities and other programs during the "USAF Acquisition Update" on Tuesday afternoon, 1600-1730, in Room W308C.

"I think JSE is that future proving ground that will be utilized at the very beginning of the lifecycle, where we will be able to experiment with new concepts and use it to develop weapon systems," he concluded. "If you think of Dr. Will Roper's "Digital Trinity,' we will be able to develop weapon systems from the earliest stages. We will then test weapon systems. And then, once a system is fielded, that's where operators are going to hone their capability to go employ that weapon system to the absolute fullest. They will be as sharp as they possibly can be when they go into combat, they will have exercised every feature and understand how a threat would respond to them. And they will know how they can win in combat."

I/ITSEC 2022 Fellow Advocates for M & S Free Market of Competing Vendors

One of I/ITSEC 2022's Signature Events is today's presentation [1600-1730, Room W300-Theatre] by I/ITSEC 2022 Fellow Warren Katz. Based on decades of M & S industry experience, Katz will focus his remarks on his passionate advocacy of the conversion of the training and acquisition domains into a free market industry of competing vendors.

With degrees in mechanical and electrical engineering from the Massachusetts Institute of Technology, Katz's initial expertise focused on continuously variable ratio transmissions. His entry into M & S came early in his career during his time at Bolt Beranek and Newman (BBN). "Mechanical engineering is my first love," Katz explained. "I was an expert in this unusual [transmission] device, and it turned out that the SIMnet system that BBN was developing for DARPA was simulating several military ground vehicles, including the M2 Bradley Fighting Vehicle, which had one of these unusual continuously variable ratio transmissions in it. This was a very rare and unusual specialty, and they happened to have a need for somebody with that rare, unusual specialty. I got drawn into writing simulation software for drive trains of military vehicles. That's how it all began."

> **If you think about the core of Americanism and its excellence, it's all about free markets of competing products. If there's no corruption or unfair business practices, the best product rises to the top."**

In 1990, Katz co-founded MAK Technologies, with subsequent experience ranging from President of Neurala, a leading Artificial Intelligence company, to Managing Director of The Air Force Accelerator Powered by Techstars, a partnership to increase engagement between startups with state-of-the-art technologies and the Department of Defense.

In 2021, Katz co-founded The Alliance for Commercial Technology in Government, an industry association whose mission is to improve the efficiency of government by making it easier for commercial technology companies to sell their products to government customers. As Chairman of the Alliance, Katz advocates for a free market of competing commercial vendors in lieu of the current legacy defense acquisition model.

Katz said his passion for this advocacy stems from a basic sense of fairness. "If you think about the core of Americanism and its excellence, it's all about free markets of competing products," he said. "If there's no corruption or unfair business practices, the best product rises to the top. The entrepreneur, the innovator who made the best product becomes a hero quickly, leapfrogs all of the obsolete products and becomes a winner."

Katz continued, "One place where this doesn't work is in the Department of Defense," adding that it has long been his goal "to make this system work like the rest of the free market and enable the innovator with a with a brand-new piece of technology to bypass all of the other incumbents. That's why I do this."

In describing the state of transformation, he said, "When this all started 25 or 30 years ago, every project was completely developed from scratch. Today, I'd say we're 75% of the way there. What do I mean by 'the way there?' What is the end goal?"

As an example, Katz pointed to the airplane industry, with companies selling very expensive, complicated products as commercial-off-the-shelf items.

"So, we are probably 75% of the way in the modeling and simulation world to that end state where any government anywhere that wants a simulator or simulator system will simply go and get it off a price list. And a vendor, not necessarily a contractor, but a vendor of commercial items will give them a price list of an array of simulation pieces and products up to and including the entire system. The customer will check off the boxes they like, maybe they'll ask for some customization, and the vendor will absorb it as part of the deal," he said. "And then the customer will take delivery of the final, finished, turnkey commercial-off-the-shelf complete simulation system. It's inevitable that we wind up in that place." And, he added, "This is the way the rest of the world buys simulation."

Katz also expressed his belief that in the next five to 10 years this transition will be close to 100% complete. "We're in the end game here," he said.

In describing his message to attendees, Katz acknowledged there will be different factions in the audience. His message to "defenders of the old way" is that it has been outdated, he said, adding, "The old business model is antithetical to the interests of the warfighter, the taxpayer and the entrepreneur, and detrimental to the best interest of those three constituencies, who should be prioritized over all others."

Other audience factions, Katz said, "will be extremely bullish on the commercial transition that's been going on for years. They will want it to accelerate and finalize. And those, for the most part, will be entrepreneurs and innovators who believe they can make a better mousetrap for a firm fixed price than anybody else. My message to them is to keep going, keep fighting. You're winning. Push it to the end state making turnkey finished simulation systems, such that nobody should ever bid out a developmental program anymore."

Monday, November 28

What's Driving Training Transformation?

Tuesday, November 29

Enablers for Training Transformation

Wednesday, November 30

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