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WEDNESDAY, NOVEMBER 29, 2017

Air Force Refines Its SCARS Future

The US Air Force (Booth 1533) is not only using I/ITSEC 2017 to enhance communication with its partners in industry and academia about the future of Air Force simulation, it has integrated the event as an element in its emerging acquisition strategy.

Attendees at last year's I/ITSEC learned about an emerging service simulator concept dubbed Simulator Common Architecture Requirements and Standards (SCARS). As described by Air Force program architects, SCARS would address the inherent problems of multiple simulator designs acquired over multiple decades by pursuing what some called "a smart phone approach" to emphasize an open system design while updating and converting simulator configuration baselines while also implementing increasingly critical cyber security measures.

A recent Air Force announcement summarized SCARS as "a sustainment initiative to incrementally establish a common open-systems architecture for Air Force simulators in order to improve cyber resilience, responsiveness, and minimize life cycle costs. SCARS will address Risk Management Framework implementation strategies for the training systems enterprise. It is a life cycle strategy intended to employ a modular design with application-level differentiation that will leverage industry's best practices while preserving government data rights. SCARS is not a new development effort as it does not intentionally increase capability, nor is it a formal program of record. SCARS will have a significant impact on Air Force simulator inventory

and associated resources. SCARS is a foundational element of the Operational Training Infrastructure that paves the way for increased reliance on synthetic training to enable full-spectrum, multi-domain training.

The system will have four primary technical areas: Simulator Common Architecture; Security Operations and Services; Management Services (to include Standards); and Library.

"At I/ITSEC 2017 we are going to continue to build upon the plan that was put in place by my predecessor, Colonel Dan Marticello," explained Colonel Philip Carpenter, Chief, Simulators Division, Air Force Life Cycle Management Center. "And so SCARS is basically what we see as our future."

Speaking to the *Show Daily*, Carpenter outlined "a heavy focus" on a common architecture for the Air Force simulation training environment, adding, "I think we see that as our main focus area. It puts a common foundation in place for us to find other initiatives – like live, virtual, constructive – that we can build upon. But we think it's pretty important to have that SCARS foundation in place. And we are working towards that and doing everything we can do to build on the plan that we talked about last year at I/ITSEC 2016."

Reflective of the significance that Carpenter's program office places on I/ITSEC, he pointed to a SCARS Industry Day that his office held at I/ITSEC on Tuesday.

"At Industry Day we talked about our approach. We talked about

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TODAY'S CONFERENCE HIGHLIGHTS WEDNESDAY, NOVEMBER 29

REGISTRATION HOURS

0700-1800

EXHIBIT HALL HOURS

0930-1800

SIGNATURE/FOCUS EVENTS

- 0830-1000 **Global General/Flag Officer Perspectives in Learning**
(Room S330BCD)
- 0830-1000 **Cloud-Based Simulation: Hype or Reality?** *(Room S320GH)*
- 1000-1130 **Operation Blended Warrior: Coalition Support Multi-Level Security**
(Booth 449)
- 1030-1200 **Warfighter Decision Superiority** *(Room S330BCD)*
- 1030-1200 **Ignite I/ITSEC!** *(Room S320GH)*
- 1400-1530 **International Collaboration 2017** *(Room S330BCD)*
- 1400-1530 **I/ITSEC Fellows** *(Room S320GH)*
- 1400-1530 **Army Synthetic Environment: Standard, Sharable, Geospatial Framework for the Army M&S Enterprise** *(Room S330EF)*
- 1500-1630 **Operation Blended Warrior: Dense Urban Areas and Performance Measurement** *(Booth 449)*
- 1600-1730 **Narratives in Information Warfare** *(Room S320GH)*
- 1600-1730 **Black Swan – A Blast to the Past** *(Room S330BCD)*
- 1600-1730 **The Future is Now: Future Leaders Pavilion Presentations**
(Room S320D)
- 1630-1730 **International Future Authors Session** *(Room S310C)*

PROFESSIONAL DEVELOPMENT: (SEE PROGRAM GUIDE FOR TITLE/AUTHOR LIST)

- 0830-1000 **Paper Sessions** *(Rooms S320A-F)*
- 1030-1200 **Paper Sessions** *(Rooms S320A-F)*
- 1400-1530 **Paper Sessions** *(Rooms S320A-F)*
- 1600-1730 **Paper Sessions** *(Rooms S320A-F)*

PROGRAM BRIEF: US ARMY PEO STRI TSIS UPDATE *(Room S330EF)*

- 0830-0900 **PM ITTS**
- 0900-0930 **PM TRADE**
- 0930-1000 **JPMO MMS**
- 1600-1625 **PM ITE**
- 1625-1650 **IPO**
- 1650-1715 **Project Lead Field Operations**
- 1715-1730 **Army Contracting Command-Orlando**

COMMUNITY OF INTEREST

- 1600-1730 **GeoSpatial Standards** *(Room S329)*

Booth Sales Are Brisk For I/ITSEC Next Year

Sustaining Members of NTSA have started to make plans for I/ITSEC 2018 by booking their exhibit space early onsite at I/ITSEC 2017, and the pace of sales is brisk. If you want to get ahead of the crowd, stop by **Room 220A** and enquire about NTSA Membership and booking information for next year!

INNOVATION SHOWCASE *(Booth 2389)*

Presentations within the Innovation Showcase are led by cutting-edge exhibiting companies and government agencies that are knowledgeable on the various subject matter 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!

- 1000 **Application Intelligence using Cisco AppDynamics to Gain Deep Insight into IT Operations, End-user Experience and Mission Outcomes – Cisco Systems**
- 1045 **Ballistic Missile Defense International Simulation (BMD I-Sim) Tool Suite – Northrop Grumman**
- 1130 **Techniques with Traditional Terrain Approaches to Meet Today's Multi-domain Visualization and Simulation Requirements – VT MA&K**
- 1300 **3D Ship Scanning in the Navy Exploitation of Mixed Reality Lab – SSC Pacific-Battlespace**
- 1345 **Managing Audio, Streaming Media and Simulation for Enhanced Training and AAR – Pitch Technologies**
- 1430 **DLP 8K Resolution with Pixel Shift Technology – Digital Projection International**
- 1515 **How to Rapidly Develop Virtual Reality Marketing Solutions – Modest Tree**

SHOWDAILY

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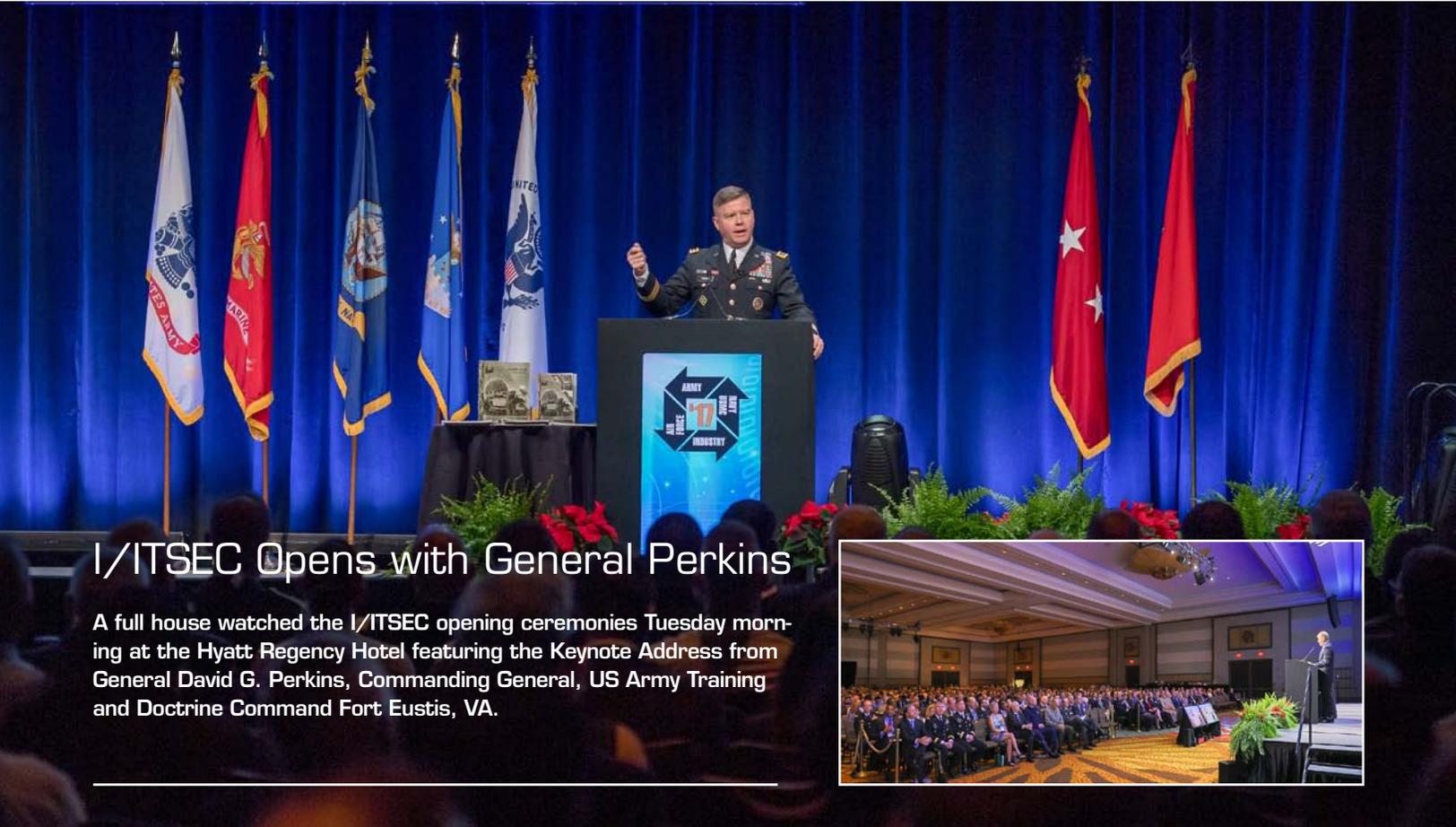
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I/ITSEC Opens with General Perkins

A full house watched the I/ITSEC opening ceremonies Tuesday morning at the Hyatt Regency Hotel featuring the Keynote Address from General David G. Perkins, Commanding General, US Army Training and Doctrine Command Fort Eustis, VA.

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Air Force Refines Its SCARS Future continued from page 1

our schedule. We talked about some of the challenges we're facing in terms of why we're going in the direction of SCARS," he explained. "And the intent of all that was to solicit feedback."

"We want to solicit industry input because we know that we aren't 'the keepers of all knowledge,' elaborated Tony DalSasso, Chief Engineer in the Simulators Program Office. "We don't have all the smarts in the world. We know there's a lot of really good sharp folks out there in the industry that have looked at the same sorts of problems over the years within their own domains. We're kind of relying on them to give us some good and useful feedback that says this is something that maybe is a good idea but then here's some-

based on cyber and cybersecurity," DalSasso echoed. "We determined we had a cybersecurity issue and needed to come up with a common solution that would enable us to keep systems updated to maintain their cyber resiliency. And from that initial challenge I think we started taking a little broader perspective and saw that some of the same principles that you can use to apply to solve that cyber challenge problem could also create goodness in other areas."

Some of that "goodness" range from standardization for reuse to simplified system interfaces that would allow more interchangeability of components among systems.

"I think what initially started off as an idea

to recreate the wheel," Carpenter asserted. "We will leverage what we have in terms of existing standards, looking at industry standards, and then just have a common framework going forward for the entire training enterprise."

Carpenter said that feedback is not limited to the industry day venue and, if someone has a great idea, they are welcome to contact the simulator team at Wright-Patterson Air Force Base, OH.

He went on to note that the SCARS competition will not use one of the existing simulator contracts but will be a complete full and open competition.

"So if there are industry partners out there who don't normally play in the simulator world, they are also invited," he said. "Obviously I can't reach out to every single industry partner, because again I don't know who would be interested necessarily, but we're hoping that perhaps we get a perspective that we haven't had before. There might be a contractor who is outside of 'the normal pool of contractors' who might say, 'Hey I've got a solution for you.' So we want to have complete full and open competition where somebody could come to the table and introduce something we never thought of before."

In support of the planned full and open approach, Carpenter noted "11 or 12" ongoing "pathfinder" activities designed to collect information that will help inform that competition.

"We've asked the contractors for ideas for some potential areas that we can look into when we get into the actual SCARS development in greater depth," he said. "And we're getting some really good inputs from some of the companies that have received those 'pathfinder' contracts. The ones who are on contract right now are putting some of their smartest minds on this and they are coming up with some really interesting ideas. It's still primarily focused on the cyber area, because that's where we started out. But I think as time goes you can start bringing some of the other areas that we get to benefit from."

"We are going to get there," he concluded. "It's not going to happen overnight but we are definitely making progress."

Current Air Force plans call for release of a request for proposals in the late spring-early summer timeframe with a planned award of the SCARS contract in late summer 2019.



thing else that we tried and it didn't work and we don't know why. That kind of helps us in some of the decisions we still have to make in terms of specifics of the approach we follow. So it's really great to have that interchange. And that's one of the reasons we're here and we're doing it at I/ITSEC, because we're bringing all those folks together."

Asked about general challenges on the horizon, Carpenter acknowledged, "We always face concurrency challenges in keeping our simulators up to speed. So concurrency is a big issue. Another obvious challenge is cyber. Cybersecurity is a huge challenge. And then there are some other initiatives that are at the forefront of the simulation world, like LVC. And again, hopefully, the intent is for SCARS to help us address those challenges."

"I kind of look at it as challenges that we're going to turn into opportunities," he added.

The whole SCARS concept was initially

to just resolve the cyber problem, and then looking at it from a little broader perspective, opened possibilities to create other areas of improvement in how we do simulation," DalSasso added. "And I think we're still looking at some of those other areas in terms of specifics, such as where we create standardization without constraining the ability of industry to innovate and come up with creative solutions. You know the problem with standardization is, if you are too strict about it, you can end up creating a basically dead end for the technology that would prevent you from being able to integrate future innovation. So there's a fine balance there and we are looking at things like open architectures and commercial standards. Basically we don't want to create anything new if there is something already out there that would fulfill our needs."

"To Tony's point, if we don't have to 'recreate the wheel' then there's no sense

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For He's A Jolly Good Fellow!

One of the much anticipated signature events at I/ITSEC is the annual presentation by the latest I/ITSEC Fellow. This year's honoree is Henry C. 'Hank' Okraski. As the 2017 I/ITSEC Fellow, Okraski will carry his audience along a decades long journey highlighting his experiences and education in the simulation and training world, both as a member of industry and as a Government employee.

"I was nine years old or so when I was introduced to simulation," Okraski told the *Show Daily*. "In those days radio was 'the theater of the mind.' You could sit by the radio and imagine all these things. You could visualize in your mind's eye what was happening. And we had superheroes, like *Jack Armstrong: The All-American Boy*."

"I'm nine years old, taking all this in. So that was my first simulator."

Okraski recalled how 25 cents and a cereal box top had brought a package containing a cardboard fold-out cockpit and controls. When it was set on a table, it allowed a young Okraski to join Jack Armstrong on his aerial exploits.

"I would be flying right along with him. I'm nine years old, taking all this in. So that was my first simulator," he chuckled.

More than a decade later, college had taken him to upstate New York with a subsequent job at Link Aviation. His initial job took him around the American Southwest, maintaining and operating jet instrument trainers. Subsequent training on the F-102 aircraft simulator led him on a tour to Thule, Greenland.

"I was there six months one night," he said.

From there, he moved to the Norfolk area, where he was eventually hired by the Naval Training Device Center (NTDC). That center, which would eventually become Naval Air Warfare Center Training Systems Division (NAWCTSD), was then moved to Port Washington, Long Island.

"We were there from 1962 to 1965, when they relocated NTDC to Orlando, and into the old Air Force base which is now Baldwin Park. And so I moved around in the organization quite a bit and eventually ended up being the Director of Research and Engineering, which was kind of fun too. And in 1988 we moved from Baldwin Park out here to the Central Florida Research Park."

After retiring in 1994, Okraski worked and consulted for some small companies before "deciding it was time to give back to the system that was very good to me."

He added, "So I started doing a lot of work with the school systems," referring to a remarkable assortment of accomplishments in STEM-related activities that continue to this day.

"This morning I gave two classes over at a school," he noted. "Now I do that pretty regularly and I just laugh a lot."

Asked about the significant changes he has experienced over the last six decades, Okraski categorized them in four distinct areas: the digital revolution; the 'Age of Enlightenment' regarding the power of simulation; the formation of Team Orlando; and the development of live, virtual and constructive simulation by way of networking technology.

"There are probably many more but I just picked those four," he said.

While acknowledging the obvious progress that has been made in simulation over the last 60 years, he still characterizes the current state as "just the beginning."

"We're going to see simulation get into the cyber area, probably genetic engineering. It's so pervasive today it's everywhere. Everything we look at involves some form of simulation. You know, these opportunities and the career opportunities are really unlimited. And there are a few individual technologies, like augmented reality for example, that is going to blow the minds of people, particularly students," he said.

He continued, "I'm also amazed by the expansion in the medical world. Right here in Medical City, for example, most of the organizations out there have some form of simulation incorporated in their training



and education programs. And I think the live, virtual, constructive thing will continue with the military. And I think we're going to see a lot more of modeling and simulation in schools, because the kids have gotten a running start with their video games and the location-based entertainment. They are up on all this. And they expect high level fidelity and exquisite simulations, if you will. They don't want this cartoonish stuff anymore. They like the real thing because they're used to it."

While not divulging too many secrets about his presentation, Okraski, who calls himself "a self proclaimed historian on simulation," mentioned pictures of old simulators, tributes to some key simulation pioneers that he knew and experiences on Long Island, where NTDC occupied a castle called The Guggenheim Estate that had been built by the son of early railroad developer Jay Gould.

"And I might throw in a couple of other anecdotal things," he added. "Like one time when I met a Soviet spy on a train. That was interesting. I'll probably talk about that a little bit. Yeah. You know, James Bond thrown in to make my life a little more interesting."

The 2017 I/ITSEC Fellow Signature Event takes place Wednesday, 29 November, 1400-1530, in [Room S320GH](#).



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Boeing Highlights New Organization And Full Spectrum Training Capabilities

For I/ITSEC 2017, Boeing (Booth 2083) is highlighting a new organizational structure as well as its full spectrum mission training capabilities.

"In July 2017, we launched Boeing Global Services, a dedicated services business designed to deliver complete solutions for commercial, defense and space customers," explained Keith Cooper, Vice President, Training & Professional Services for Boeing Global Services. "One of the four capability delivery divisions within this new business is Training & Professional Services."

The other three divisions are: Supply Chain; Engineering, Modifications & Maintenance; and Digital Aviation & Analytics.

"The Training & Professional Services capability brings together the commercial and defence sides of Boeing's training businesses, along with Infrastructure Support Services and Tapestry Solutions, a wholly owned subsidiary of Boeing focused on training and logistics management solutions," Cooper added. "Our mission is to provide for the life-cycle development of aviation professionals, both within the government/defense and commercial sectors – including pilots, technicians and cabin crew, operations management and administration."

He continued, "Professional Services" describes our work going beyond the delivery of training programs and training solutions. It describes our intention to look at the ecosystem of aviation and provide a complete solution, meeting not only the immediate needs of our customers, but also addressing anticipated needs, including logistics and infrastructure management for mission-critical systems.

"By bringing together our commercial and training businesses, we've expanded our breadth, we've combined our capabilities, and we've merged our global footprint. We're leveraging synergies that allow us to

offer more agility and responsiveness, and to take advantage of best practices from both sides of our organization – all to the benefit of our customers. We are also bringing a more agile and affordable set of training services to complement the strong system/product portfolio that we have provided to our customers over the past three decades," he said.

He asserted, "We're focused on aligning our training solutions to the way people learn, not just the way we know how to teach, while better integrating the systems and services portions of our offerings to fully address customer needs. Innovation sits at the heart of everything we do in Training & Professional Services.

"Innovation tends to focus on emerging technologies and the tools that can disrupt the way we develop and deliver training," he noted. "However, innovation, as we look at it, also includes leading evolutionary changes in safety practices, regulatory requirements, business processes and business models.

"Innovation ensures there is better transfer and retention of knowledge; it drives our focus and directs how and where we apply new technology in the solutions we provide to our customers. And, it ultimately ensures that we are consistently delivering more value to our customers. We eagerly anticipate the opportunity to deliver all the benefits of the new Training & Professional Services organization to the T-X, C-17 Training System and other programs that will be awarded in 2018," he said.

Cooper said that the company will focus on that innovation at I/ITSEC 2017, demonstrating a full spectrum of our mission training capabilities.

New this year is a concerted focus on collaborative training – as evidenced in Boeing's Augmented/Virtual Reality (AR/VR) demos, where a team of people can work together with an instructor or subject matter expert who guides students through practical training exercises.

This year's Boeing demonstrations include:

737 Nosegear- Augmented Reality focuses on integrating the airplane into the classroom environment to create a familiarity of experience. Benefits include reducing the time needed on the actual aircraft and exposure to areas not easily accessible during aircraft walk-arounds.

Upgraded Constant Resolution Visual System (CRVS) – An updated version of Boeing's CRVS product with even better scene detail over a wider gaming area, to fully appreciate the training value of 20/20 visual acuity supported by the latest generation of high resolution projectors.

Man-In-The-Loop (MITL) Squadron Level Trainer / Threat Station – A new demonstration of a wide field of view, high-resolution emissive display on Boeing's low-cost MITL product that can be configured to represent different platform types in an easily maintainable small footprint.

ADAPT Mixed Reality – Using wearable technology to enable collaborative team training.

F/A-18 Integrated-Live/Virtual/Constructive (I-LVC) Demonstration / Operation Blended Warrior (OBW) – Boeing has participated in all of the previous OBW exercises and is excited to showcase its capabilities using the Super Hornet Low Cost Trainer devices and high fidelity models. The Boeing team can also discuss the I-LVC capabilities fielded this year on the F/A-18 platform and its role in the Air Force Research Lab's Secure LVC Advanced Training Environment (SLATE) program, which will culminate in a large-scale LVC demonstration featuring both the USAF F-15 and USN F/A-18 platforms.

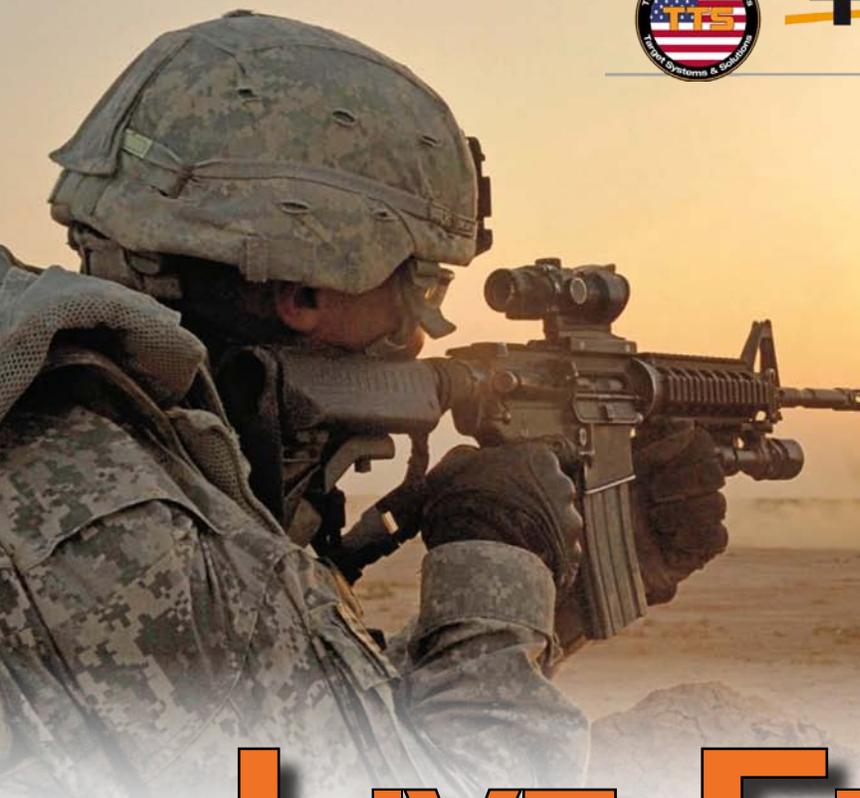
AH-64 Computer Based Training (CBT) – Demonstrating the new look of Boeing's Apache CBT product.

MicroSim – A capability developed initially to support Boeing's commercial aircraft training products, this portable platform provides increased proficiency in learning in different aircraft model systems, while also providing practical "hands on" experience through simulation.





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Pentagon Looks to Paradigm Shift in Training Procurement

Training commanders across the Department of Defense recognize that acquisition and organizational change is essential to fully harness the benefits of new training technologies.

At the General/Flag Officer Panel at I/ITSEC on Tuesday, senior commanders confronted this year's conference theme 'Harnessing New Technology to Win in a Complex World' in the context of their organizational training challenges.

With much of the Pentagon steeped in counterinsurgency/counterterrorism after the past 16 years of operations, more emphasis still needs to be placed on preparing for large-scale combat operations against a near-peer/peer threat in contested environments, several of the leaders argued.

"For the last 16 years, we have been solving a very discreet problem and it is really where our culture is today, not only how we train and prepare leaders. It has permeated our culture as an Army, as an institution, and frankly as the joint force, as an institution," Lieutenant General Michael Lundy, Commanding General, US Army Combined Arms Center and Fort Leavenworth, KS, stated.

"When you think about where we have been and the range of military operations focusing on counterinsurgency, stability operations, counterterrorism—as an Army that presents us with a number of challenges in the current operational environment.

"That's very different from how we train for large-scale combat operations against a near-peer/peer threat in contested environments. That has left a significant imprint on how we train and on industry as well."

Vice Admiral Paul Grosklags, Commander, Naval Air Systems Command, called for a "capabilities-based acquisition" approach in the way systems are renewed.

This would both significantly increase the speed the Pentagon is able to deliver new capabilities and ensure training systems are available and compatible from the outset.

"Moving towards a capabilities-based acquisition brings an integrated, interoperable product on day one," Grosklags argued.

"The operators want to be able to utilize that system on day one with the full extent of its capabilities. What that really means is they want to train to the full extent of the capability that they have been given on day one. But typically, what we are giving them is short in at least three or four ways. The training system often lags behind

the introduction of the platform and if they are actually there, the simulators are often one software version behind, if not more."

US Marine Corps Major General Kevin Iiams, Commanding General of the Training and Education Command (TECOM), said while the service continues to invest in live training events, the future will require greater use of simulation.

"As we continue to build them out, we've got appropriate role players and aggressors but if you think about it in this day and age, the cost to continue to train in this manner is getting prohibitive. We need to look at how we replace these in the future, in very large measure, with avatars and simulation," Iiams said.

"We are looking for an LVC environment which will allow us to plan and execute, and just as important, control in real time. And archive the decisions that were made in the training environment and highlight that for reconstruction, and then debrief. And then repeat, repeat, repeat until mastered – without putting the wear and tear on our very valuable combat assets."

These sentiments were echoed by Major General Scott Smith, Director of Training and Readiness, Deputy Chief of Staff for Operations, Headquarters US Air Force, who described the current situation as "a window of opportunity."

"We do have time, we do have resources to devote to this. But the current paradigm of how we do business, as the others have said, it breaks us. You could argue that some should be live, some should be synthetic – but at the end of the day we can just put that argument aside because once we fully field the F-35, the cost per flying hour will break the bank so you just have to go synthetic."

Fred Drummond, SES Deputy Assistant Secretary of Defense (Force Education and Training), started his presentation by stating: "I am from DC and I am here to help – really."

Drummond said his office was open to any procurement reform, policy change or new acquisition approaches to ensure the emerging training technologies were fully leveraged.

"We all know that with VR, AR, LVC, AI, and the development of machine learning, we in the military, in the DoD are just too slow to take advantage of that stuff. It's a challenge we are all going to continue to face and work through.

"We have the industrial base, the training vendors, where we put groups of people through on a preset time frame, they come out the other end and then we send them to their operational billets.

"But we have the capability now for individualized learning – if Air-

man Smith is finished much quicker and she's ready to go, she can be sent to her unit now. Why do we have to keep her around for another six to eight weeks because that's what the course length happens to be – let's send her. We have to have the flexible systems in place to allow us to do that."





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D-BOX Demonstrates Realistic Gen II Motion

D-BOX is using two simulators in [Booth 1149](#) to demonstrate the new D-BOX Gen II motion-cueing technology.

"D-BOX Gen II is bringing more freedom and evolution capabilities to simulation and training technical experts who understand the significance of feeling real world cues in a virtual training environment," explained Claude Mc Master, President and Chief Executive Officer of the Montreal-based company D-BOX. "D-BOX Gen II is our way of responding

to the needs of this community, which has been asking for a solution like this for some time."

In the booth, a joint venture between Precision Flight Control, Ryan Aerospace, Diamond Visionics, Q4 Services and D-Box



is demonstrating a low cost, all COTS helicopter flight simulator. The ergonomic, intuitive, FAA-approved advanced aviation training device (AATD) features a full avionics suite, a full fidelity immersion dome, an Instructor's Operating Station (IOS), and a fully modular design.

"By equipping the cockpit simulator with D-BOX motion, the pilot gets a precise feel for the experience through simulated changes in pitch and yaw," said Mike Altman, the CEO of Precision Flight. "These are the cues that prompt them to do an instrument scan to get a better understanding of the situation – an instinct that will be crucial when they leave the simulator for a real cockpit."

The second simulator being demonstrated has been developed by McGregor Performance, which designs high performance motor vehicles, Bohemia Interactive Simulation (using its Virtual Battlespace 3 software platform) and D-BOX.

"We chose D-BOX because we wanted to create a simulator that would deliver incredibly realistic motion cues," said Serge Michaud, CEO at McGregor Performance. "And we couldn't be happier with the results. Because this is the first time that we've ever created a simulator with 4DOF (four degrees of freedom), we can confidently offer more options for simulator architecture and, most importantly, a highly realistic experience every time."

The result is a leading-edge simulator that utilizes 52 inches of lateral movement to deliver an "unparalleled" immersive experience. Combined with sound and visuals, the simulator maximizes trainee engagement and envelops the driver in the moment to develop the necessary reflexes and skills.

At I/ITSEC 2017, D-BOX motion cueing technology can also be found on products from Bohemia Interactive ([Booth 2235](#)), Calytrix ([Booth 1020](#)) and CM Labs ([Booth 1620](#)).



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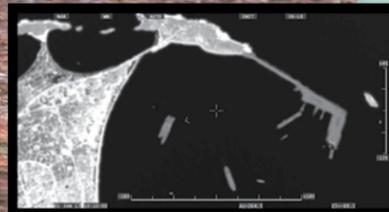
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Keynoters Challenge I/ITSEC Attendees

Tuesday morning's opening session included both military and industry keynote addresses, with both speakers posing challenges to audience members.

"We're the proponent for training in the Army," explained General David Perkins, Commanding General of the US Army's Training and Doctrine Command (TRADOC). "We write the doctrine. We write the manuals. We train people how to train. And we train everybody in the Army."

Perkins spoke "from the point of view of a commander," telling the audience "what a commander expects from their training enterprise; what they expect from their simulation enterprise; and what they expect from their education enterprise."

Perkins compared the Army training situation from when he entered the service to today's environment, noting, "I think in the future the training revolution that we are going to see in the Army is not necessarily just one sort of golden gilded training event, but it is now taking a level of fidelity and the experience of training in it, and bringing it

back to a sort of everyday home station training. We have had great training out there at our Combat Training Centers, but it was very expensive with very high overhead. And you didn't get a lot of repetitions of it. So what happened was we started to kind of replicate that at home station."

He labeled the resulting pressures and priorities as "the tyranny of training,"

To my government partners, the lesson of other information age markets is clear. The fastest way to 'better later' is to reward 'good now.' If you believe in the vision I've painted, do me a favor. If you see something that can help you now, buy it now; rent it now; try it now."

explaining, "As the overhead of training became so large it ultimately became infrequent and you didn't even get those reps [repetitions], even at home station.

"So what we're trying to do in the Army and I think across the joint force is trying to reduce the tyranny of training, reduce the overhead, get to more reps, and bring it closer to where we live and work every day – not in place of those large scale training events – because there are things that can only happen out [at the Combat Training Centers], but to enter those very large scale training events at a higher level, so that when you get out to those things that are very expensive and have very high overhead you are not doing very basic kinds of things."

Related themes ranged from the need to see training as a tool and not a task to the lines that traditionally existed between training and education.

"As a commander we need to blur those lines, because that isn't how life actually happens. And it's not how war actually happens.

Perkins "commended" the audience for taking on the challenges of supporting military forces in this dynamic global environment, adding, "But it's also one where your efforts produce great results and actually save lives. They actually contribute to the significant capabilities of the US military, which contributes significantly to the security of our nation."

The Industry Keynote address was presented by Don Ariel, Co-Founder and Chief Executive Officer of the Raydon Corporation.

After a brief history on the company's formation, Ariel turned to the global challenges of the 21st Century.

"I would say that 9/11 added seriousness to the purpose I don't think any of us could have imagined; a scary purpose to us all," he said. "It shook up our notions of what agility looked like and how badly we prepared for the asymmetric threat array. As is true with every generation of Americans, we were equal to the cause. But there was an important lesson that came from it. We failed to anticipate it. We in the training community in particular had hardened, purpose built training structures oriented on fighting our last war."

Ariel asserted that, over time, a culture of "us and them" emerged between government and industry. He asked cynics with that viewpoint to look around I/ITSEC and "talk to some of these brilliant and committed patriots striving to make a real difference."

He summarized his presentation with two separate challenges for the audience.

"First, for my industry partners. We must standardize and open our platforms, employing standards that we, the innovative and risk taking industry base, create and sustain. Cooperation is about survival. We should think about competition like any great sports league does. The objective is to win the championship each year, not put each other out of business."

He continued, "To my government partners, the lesson of other information age markets is clear. The fastest way to 'better later' is to reward 'good now.' If you believe in the vision I've painted, do me a favor. If you see something that can help you now, buy it now; rent it now; try it now."

"It is time to change how we think," he said. "We all must. It's a moral imperative."

Ariel emphasized the important role played by the modeling and simulation industry in supporting warfighters, adding, "The Industrial Age status quo impedes them accessing our best collective capabilities and our innovations."

He concluded, "Speaking for all industry, I want to leave you with one parting thought: We don't do this to make money. We make money so that we can do this."





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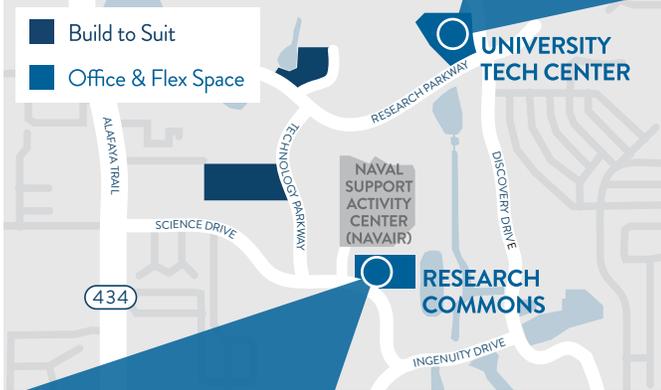
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Army Sees I/ITSEC Benefits

Following his Military Keynote address on Tuesday morning, General David G. Perkins, Commanding General, US Army Training and Doctrine Command (TRADOC), sat down with the *Show Daily* to express his thoughts on key takeaway messages – both for his team as well as for industry attendees – at I/ITSEC 2017.

“First of all, what I get out of this is a chance to see the state of the art right now, so that when we develop requirements, I make sure that those technologies are there and that I understand at what level they can be attained,” he said.

“What is also useful is to see where technology and industry are going and to know where a paradigm is taking us,” he added. “You know, someone might say, ‘We’re not here today but we think four or five years from now we’ll be out here,’” he added.

“And a lot of this stuff that goes on here has huge civilian applications as well. Much of that is driven by civilian customers, who might be seeking different capabilities. For example, if I’m designing a new tank, there aren’t many civilian applications. So the military kind of drives that science and technology investment. But when it comes to simulations, in many cases the civilian world may be a bigger customer than the military. So one of the things I get from here is, if there are areas that the civilian world is driving the industry then maybe those are areas that we sort of ‘draft off’ of versus us driving it.”

Perkins noted that another benefit of TRADOC attendance at I/ITSEC is the potential identification of new partners that they might not have thought about before.

“And for the industry folks who are here, I hope that they get a clear understanding of: what some of our requirements are; how we are looking at them; and things that we might be struggling with right now – say interoperability between allies – because of policy issues and things like that. Industry might provide a different way of looking at the problem than we would if we looked at it purely from a military point of view. So if they can understand what we’re trying to do and maybe where our challenges are, they may give us a new way to look at it that we hadn’t used before. Possibly it’s because they were looking at it from a commercial application perspective. I found that very useful as well. If you can’t solve the problem one way maybe if you redefine the problem there’s another approach to it,” he said.





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Lockheed Martin Receives Nearly \$200 Million of C-130 Training Contracts

Lockheed Martin (Booth 2248) announced at I/ITSEC that it has received six contracts, totaling \$198.4 million, to improve training for the company's C-130J Super Hercules tactical transport aircraft.

"The C-130J is the world's most versatile airlifter, and we've created training products and services for our customers that reflect the Hercules' many incredible missions," said Amy Gowder, Vice President of Training and Logistics Solutions. "With contracts that include customized new trainers, software and hardware updates for existing trainers, along with cybersecurity provisions, we view these contracts as a significant opportunity ensuring we're delivering the best solutions for developing well trained airmen around the world."

Since the first contract was awarded by the US Air Force in 2000, the C-130J Maintenance and Aircrew Training System (JMATS) program has trained more than 10,000 airmen for missions including cargo transport, special operations and aerial refueling.

The new contracts are:

- Five new C-130J Weapon System Trainers for the Air Force Special Operations Command. These full flight simulators have specialized large field of view glass mirror visual systems, and will be delivered in the MC (special mission) and AC (gunship) variants in mid-2020 through 2021 to USAF bases throughout the US, Germany and Japan.
- A new, reconfigurable C-130J Weapon System Trainer for the Air National Guard which will be installed at Quonset Point Reserve Base in Rhode Island in early 2020. This flight simulator will support training for the C and MC variants. The contract also includes two years of maintenance and training operations support.
- Four new KC-130J observer trainers for delivery to US Marine Corps locations in Cherry Point, NC; Miramar, FL; Fort Worth, TX, and Iwakuni, Japan. These training aids provide a variety of scenarios for crewmasters and loadmasters to recognize and respond to airborne emergencies, aerial refueling emergencies and threat detection and avoidance.



- Upgrades to the two USAF Air Mobility Command (AMC) C-130J fuselage trainers at Little Rock Air Force Base, AR, as well as two visual systems on the flight simulators located at Dyess Air Force Base, TX and Ramstein Air Force Base, Germany.
 - Upgrades to 13 existing AMC trainers at bases throughout the US and Europe. These flight trainers include avionics systems management trainers, engine and propeller trainers, flight control trainers, multi-function training aids, load master and part task trainers, weapon systems trainers, integrated cockpit systems trainers and cockpit procedures trainers.
- A one-year technical support contract to assist the USAF with conducting analyses for common architectures across various simulator elements. These analyses will ultimately be used to set a common approach across all trainers for future acquisitions.
- Lockheed Martin is on track to open its company-funded Hercules Training Center (HTC) by 2018. Located near the C-130J production line in Marietta, GA the HTC will train pilots and crews for the military C-130J and LM-100J commercial freighter. The HTC will include classroom space, training devices and a new, reconfigurable C-130J/LM-100J full mission simulator.



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Signature Event to Discuss M&S Role in Black Swan Preparedness

This is the first year in recorded history when the US has been hit by three Category 4 hurricanes. The October 1 mass shooting in Las Vegas, was the largest by a single individual in US history leaving 58 people dead and 546 injured. The week of October 8 was the deadliest week of wildfires in California history.

The inaugural Black Swan event at I/ITSEC 2015 started discussions on how the modeling and simulation community can help us better prepare for such high impact/low probability events.

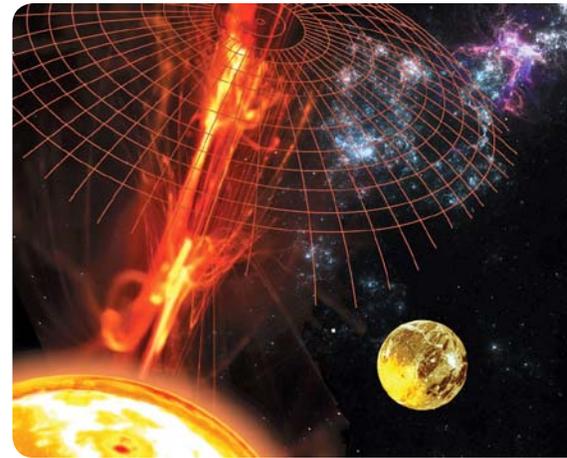
The scenario of the 2017 Black Swan Signature Event will be a Coronal Mass Ejection (CME) with its solar geomagnetic storm hitting the earth and affecting our space and terrestrial communication systems. It is predicted that once the CME is detected the earth will have between one and four days to prepare for the electro-magnetic pulse (EMP) effects. Based on the similar Carrington event in 1859, it is estimated that this EMP would cause widespread electrical outages

as well as damage to electrical circuitry on most communications devices and satellites.

This Signature Event brings together a panel of military and academic experts to discuss the broad technical and societal challenges in dealing with this type of event. Their modeling techniques and outcomes will be discussed as well as their plans to make US infrastructure and society more resilient to these effects.

Brigadier General William Cole, Program Executive Officer, US Army PEO STRI, will moderate the Signature Event, "Black Swan - A Blast to the Past," from 1600-1730 in Room S330BCD.

The Black Swan panellists are: Patrick



J. Baker, Ph.D., SES, Director, Survivability Lethality Analysis Directorate, US Army Research Laboratory, Peter W. Schuck, Ph.D. Space Weather Laboratory; Heliophysics Science Division, NASA Goddard Space Flight Center; Michael Simone Ph.D., Professor and Director of the Nexus Laboratory for Transdisciplinary Informatics, Arizona State University; and, Captain John Ross, Space Weather Operations Center, USAF 2nd Weather Squadron, Offutt AFB.

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Northrop Grumman Highlights VR and LVC Expertise

When the US Army recently selected seven companies for its Mission Training Complex Capabilities Support contract, it was little surprise to see Northrop Grumman listed among the winners.

The multiple award, indefinite delivery/indefinite quantity contract allows Northrop Grumman to compete for more than \$500 million in task orders to operate Army training centers across the nation.

The work will primarily consist of training support – such as creating and conducting simulation and gaming exercises in virtual and constructive environments – as well as providing computer network security and facility operations.

In support of the Army's Mission Command Training Center based at Fort Leavenworth, KS, Northrop Grumman has already helped train more than 250,000 Soldiers and also facilitates exercises for the Mission Command Training Program.



Northrop Grumman officials noted that the company had transformed training scenarios to be more realistic and relevant to upcoming missions, including making virtual environments more immersive.

Mike O'Neill, Manager at the Advanced Defense Services division of Northrop Grumman Technology Services, said the company had made a number of internal R&D investments this year focused on the objective of providing value in training and performance support.

"Elements of this greater enterprise training vision, which we call it, are among the demonstrations that we're showing at I/ITSEC," O'Neill said.

"We are showing a number of virtual reality demonstrations this year at our booth where we have the attendees put on the goggles. They enter the immersive virtual environment and they perform a series of activities in a robust, realistic and relevant scenario within that environment."

The company will provide multiple VR scenarios that visitors can experience and interact with, including short range air defense (SHORAD) training and ship combat weapons systems training.

O'Neill said while the VR experience was impressive technology, the crucial aspect was being able to assess the depth of learning that is taking place.

"We take great pride in our ability to adapt to training and adapt to learning. So, we're looking for analytics – while the folks are in the virtual world, they are performing tasks, they are executing that scenario, and in the background we have assessment tools that allow us to take those analytics, assess those analytics and be able to provide to the learner an outcome or a result of their efforts."

This allows the company to provide feedback to the training organization about how the training is being received by the learner and whether it is meeting training objectives.

"If there is a gap between their desired outcomes and the true outcomes demonstrated by the individual, we have the ability to actually adapt that training and that learning experience to close that gap. So adaptive learning and the way we are visualizing that adaptive learning this year is through virtual reality.

"Today's learner is much different than the learner of my own day - they want to be engaged, they want to be interactive with that experience, they want something that captures their attention. So virtual reality, augmented reality is also a mechanism by which we will engage those learners. But what we really want to focus our attention on are those analytics that are being drawn."

In addition, the company will be demonstrating its PC-based Open-architecture Reconfigurable Training System (PORTS) at I/ITSEC 2017, which is primarily used by the US Navy to train Surface Warfare Officers in combat weapons systems training for the Littoral Combat Ships.

Phil Guy, Manager of Business Development at the Airborne C4ISR Systems division of Northrop Grumman Mission Systems, said a further focus for the company at the event was some of the advancements they have made in advancing live, virtual, constructive (LVC) capabilities.

"This year the big advancements we've made is as the United States Air Force is looking to integrate fifth generation platforms, the F-22 and F-35, we demonstrate the capability to tie both platforms' datalinks to our LVC solution, which enables the synthetic participants to be able to more effectively train with our live participants. So that's been a breakthrough – we have overcome the security and technical challenges associated with connecting fifth gen platforms into that solution," Guy explained.

The technical challenge centers on both enabling the aircraft to communicate to the synthetic environment at the required security level and also providing a cross domain solution that allows the data to be used by all participants.

"The primary focus for us was to show that we can execute those security processes that enable us to do that. We're able to consume and process the datalink from those jets as a first stage and move them toward the overall vision of the air force to deliver on their fifth gen LVC concept.

"We're also working towards integration of space assets. This summer, we did our first integration event to bring in some of our space assets. And then we also connected in the joint environment where we brought in some Patriot capabilities into the synthetic environment and also connected to our US Navy's Hornet and E-2 platforms where, for the first time, the Navy was able to join into one of these advanced LVC events where they can support their training in real time."

US Navy Leaders to Discuss High Velocity Learning

US Navy Admiral Bill Moran, Vice Chief of Naval Operations, will be the keynote speaker at a Signature Event today examining the Navy's approach to achieving Warfighter Decision Superiority: "Superior Human Performance Through High Velocity Learning."

Maintaining the best-prepared navy in the world is critical to America's security. At this morning's event Navy leaders will discuss how the service applies the latest learning innovations to hone the human performance of its warfighters to further the Navy's asymmetrical advantage against rapidly evolving potential adversaries.

In the face of any potential opponent, it is the readiness of Navy personnel – their ability to make sound decisions under pressure – that will provide the Navy's greatest warfighting advantage. Training is one of the most effective tools available to guarantee that Sailors remain America's greatest asymmetrical advantage.

Chief of Naval Operations Admiral John M. Richardson made high velocity learning one of the four Lines of Effort in the *Navy's A Design for Maintaining Maritime Superiority*. High velocity learning methods enable Sailors to quickly learn the skills they need, when they need them, and without the inefficiencies of traditional learning methods. Efforts

This Signature Event will take place at 1030-1200 in Room S330BCD.

like Sailor 2025, which will educate Sailors more efficiently than ever before, ensure that the Navy is making meaningful strides toward modernizing training efforts while creating a more lethal force.

For the Navy, a key measure in deciding whether to invest in a new training technology is to ask whether it will make the force more lethal. The Navy does not have the luxury of investing in anything that does not make the force stronger.

The panel will include: Vice Admiral Paul A. Grosklags, Commander, Naval Air Systems Command; Rear Admiral Kyle Cozad, Commander, Naval Education and Training Command; Rear Admiral Daniel L. Cheever, Commander, Naval Aviation Warfighting Development Center.

Modest Tree Offers VR Creation Without Coding

Modest Tree (Booth 1081) released its Xplorer VR software, a rapid development tool to create virtual reality training and marketing solutions without coding, at I/ITSEC 2017.

The Xplorer software is the newest addition to Modest Tree's Modest3D suite of tools. Xplorer's built-in functionality is geared towards empowering creative, sales and marketing personnel to rapidly create VR experiences, without coding.

Xplorer is ideal for creating virtual reality training on product component familiarization, site walkthroughs and producing virtual reality showrooms for marketing products.

"We developed Xplorer as clients were seeking a tool to tap into the VR market and produce engaging experience, without requiring large technical teams to develop a VR experience," said Sam Sannandjeji, CEO of Modest Tree.

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FUTURE LEADERS PAVILION



Future Leaders Pavilion Showcases Student Talent

Visitors to I/ITSEC 2017 will gain impressive insight into the talent which America's high school students will be able to bring to tomorrow's modeling and simulation community at the Future Leaders Pavilion (Booth 2681) in the STEM Pavilion.

The students will present their projects at 1600-1730 today in Room S320D during a session entitled "The Future is Now!". Awards will be presented during a ceremony tomorrow at 1345 in Booth 2389.

This is the 15th year that National Training and Simulation Association (NTSA) has hosted the Future Leaders Pavilion and Paper Session. It spotlights the work of students from across the USA who are committed to excellence. Most are enrolled in engineering, computer sciences, mathematics, or modeling and simulation tracks. Since 2002, secondary schools from Alabama, Florida, Georgia, Hawaii, New York, Texas, Virginia, as well as schools from India, the Netherlands, and the United Kingdom have been represented.

It is vital to America's national security and economic prosperity that more students are encouraged to pursue studies and careers in the STEM field, as more than 30% of current DoD science and technology professionals are expected to retire by 2020 and 40% of US companies report difficulty in filling positions because of a lack of STEM skills. The US would gain an extra \$2.5 trillion in GDP between now and 2050 if its students scored at the international average on math and science tests.

The partnership of NTSA, the Florida High Tech Corridor Council and other 'STEM-U-Lators' makes it possible to bring I/ITSEC to the classroom through the STEMConnect program. Tomorrow, I/ITSEC will welcome about 600 high school students, accompanied by school chaperones and volunteer I/ITSEC member escorts, who will experience first-hand

simulation, training and education solutions that will help bridge the gap between classroom theory and the applied use of STEM subjects.

This year, I/ITSEC offered five graduate-level scholarships, named the RADM Fred Lewis Postgraduate Scholarships, or Lewis Scholarships, to stimulate student interest and university participation in preparing individuals for leadership in the simulation, training and education communities. Over \$400,000 in scholarship awards have been distributed to date.

The Students and High Schools Represented in the FLP

Benjamin Franklin High School, New Orleans, LA

Mark Eyer, Jack Nusenow presenting 'The Effect of Helium Cryogenic Cooling versus Air Cooling'

Bishop Moore High School, Orlando, FL

Christopher Schulz, Lawrence Stempkowski presenting 'An Analysis of Boarding Procedures on Commercial Airlines'

Dayton Early College Academy, Dayton, OH

Sura Raad AIDulaimi, Aailyah Payne present 'NARCAN Navigator'

LaSalle College High School, Philadelphia, PA

Adam Aronson, John Mattie present 'Texecution: An Aim to Eliminate All Forms of Distracted Driving'

Shaker High School, Latham, NY

Meghan Desmond, Rachel Hayes present 'Interactive Interface for Disabled Student Engagement'

The Governor's School of Science & Technology, Hampton, VA

Gabriel Edwards, Nathan Robinson present 'Designing and Programming of Weight-sensing Post OP Shoe'



Short and Sharp Presentations To Ignite Audience Interest

Have you ever sat through a long presentation and lamented that there were only five minutes of content? Imagine if you could hear only that five minutes of targeted, compelling, and maybe even provocative content... that's Ignite! Ignite is a presentation format that allows dynamic, high octane speakers a platform to share their passion and ideas.

During this morning's Ignite Focus Event in **Room S320GH** from 1030-1200, eight industry and service experts will speak on topics such as micro-learning and entrepreneurship. These presenters have been selected from over 30 nominations, and each talk is jam-packed with inspiration and information using 20 slides that auto-advance every 15 seconds, creating a fun and dynamic event.

Speakers

Anne Little, Ph.D., SAIC:

Microlearning: Little Bits of Engagement, Big Rewards

Robby Robson, Ph.D., Eduworks:

So you want to be an entrepreneur...

Commander Henry Phillips,

USN, Ph.D., NAWCTSD:

Navy Enterprise Data Analytics: Big Data in Plain English

Commander Brent Olde,

USN, Ph.D., Office of Naval Research:

Mobile Training and Job Performance: Tying it All Together

Jennifer Vogel-Walcutt, Ph.D.,

ADL Initiative:

ADL Ignite!

Scott Harris,

University of Central Florida:

Combat Readiness Through Scientific Training Effectiveness Assessments

David Metcalf, Ph.D.,

University of Central Florida:

3D/VR/AR – Advanced Visualization for Learning Simulations

Eileen Smith,

University of Central Florida:

Designing for Operational Environments: Engineering Comprehensive Cognitive Ecosystems

Orlando Students to Present M&S Papers Today

Jordan Coulter, an undergraduate at the University of Central Florida, will be part of the team presenting High-Fidelity Surgical Fasciotomy Simulators to Train Special Operations Medics at 1600 in **Room S320F**. She became familiar with fasciotomy (procedure where fascia is cut) while interning at medical simulation company SIMETRI as she prepares for medical school. Coulter is partnered with co-writers: Angela Alban, CEO of SIMETRI; Richard Kelly, Joint Special Operations Medical Training Center, Fort Bragg, NC; and, William Y. Pike and Jack Norfleet of the US Army Research Lab.

Stephen Chapman (lead author) and Mathew Mason, who attend Hagerty High School in Oviedo, will present Mathematical Simulations - Students No Longer Lost in Two-Dimensional Space at 1500 in **Room 320D**.

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Serious Games

The Serious Games Showcase & Challenge (SGS&C) is one of the main attractions at each year's I/ITSEC, and plays a critical role in helping to generate interest in the use of digital games and virtual reality applications for training and education.

While the definition of a "serious game" varies among different communities and different parts of the world, each qualifying SGS&C serious game must have clearly defined, measurable learning objectives; provide players with a clearly identified challenge/problem; and make use of game play dynamics and/or gaming technology.

The SGS&C team is appreciative of this year's sponsors: TechWise; Virtual Heroes Division of ARA, Inc.; Plas.md; Engineering and Computer Simulations, Inc.; HP; General Dynamics Information Technology; UCF School of Visual Arts & Design; and Box.com.

Be sure to visit SGS&C at [Booth 2481](#) to check out the games and cast your vote for the People's Choice Award before voting closes on Wednesday at 1800.

Award winners will be announced on [Thursday Nov 30 at 1300 at the Innovation Showcase](#).



BUSINESS FINALISTS



Aflac Trivia
Breakaway Games



ARTé: Mecenas
Triseum



Bionautica Trails
Plas.md



Cloud Defense
Gronstedt Group



Earthlight Arcade
Opaque Space



Game of Sales
EI Games LLC



Installation Deployment Officer (IDO) Simulation
Engineering & Computer Simulations



Martha Madison
Second Avenue Learning



medRoom Academy
medRoom



My Startup
Simsoft Technologies



Planet Jockey Leadership Game
EI Games LLC



Charge Nurse
Veterans Health Administration,
Employee Education System



Goals of Care of Conversations
Veterans Health Administration,
Employee Education System



MedSurg
Veterans Health Administration,
Employee Education System

Vote Now!

Visit the SGS&C booth 2481 before Wednesday at 1800 to vote for this year's People's Choice Award.

STUDENT FINALISTS



Tootin' Poches
University of Central Florida SVAD



Tuyu Tuyu
American University



VectorBall
Arizona State University



RoboEngineers
Filament Games



Variant Limits
Triseum



Tactical Combat Casualty Care Sim
Army Research Laboratory/
HRED-STTC

Operation Blended Warrior Goes International

Including coalition and international forces into the annual Operation Blended Warrior (OBW) live, virtual, constructive (LVC) exercise at I/ITSEC has long been an ambition of the event planners.

For I/ITSEC 2017, the fundamental technical challenges hindering international participation have been overcome, allowing components from Brazil and Sweden to be pulled into the operation.

OBW organizers have been able to leverage previous work carried out by the Swedish Armed Forces, which – in collaboration with the Pentagon and NATO agencies – has 20 years of experience in running computer distributed, conceptual command post exercises.

Elements of Sweden's Computer Assisted Exercise Viking 18 (Booth 2161) will connect into the OBW network, allowing participants to study the long distance, network security, and interoperability challenges associated when operating in a multinational simulation.

Viking 18 participation in this year's OBW will test and prepare them for next year's overall event execution, while also identifying and examining requirements for coalition distributed training.

Commander Gilbert Gay, the lead for OBW for the US Navy, which is providing the networking and support architecture, said having representatives from Brazil and Sweden as a coalition cell in the Distributed Training Center (DTC) (Booth 449) was "a huge step" for OBW.

"One of the biggest challenges has been the physical distance. Working with the Swedish Armed Forces even a simple thing as the time difference made it difficult to fully incorporate them into our planning," Gay explained.

To facilitate coalition operations, organizers established 10 local area networks (LAN) and the international coalition was incorporated into two of those LAN networks, with a Rockwell Collins cross domain guard solution allowing secure traffic to be passed from the coalition into the main part of the exercise.

Further developed for the US Navy's Tactical Combat Training System Increment II (TCTS Inc-II) program, the Rockwell Collins system (Booth 2201) is the only NSA Type 1 certified test and training solution, according to the company.

"We have created four enclaves, just like we would for a live exercise or joint operation in the real world, which allows the data to remain only in the enclave that it is supposed to be in," a Rockwell Collins spokesperson explained.

"We wanted a network that emulated real life, to get the best out of the exercise," Gay emphasized.

"The whole point is achieving that idea of fighting like you train, training like you fight. We are trying to emulate what we would do on coalition operations, looking at what actual equipment is required, what standards are they operating on and working out what corresponding standards do we use. There has been a lot of trouble-shooting to make sure that data can work across the whole network."

Planned for April 2018, Exercise Viking 18 features around 2,500 participants from 43 nations, deployed at nine remote sites in different countries: four in Sweden as well as in Bulgaria, Brazil, Finland, Ireland and Serbia.

Dr. James Frey of Aero Simulation, Inc said the standardization efforts required to enable coalition operations went well

beyond simply agreeing on networking protocols.

"One key area where standardization efforts have been necessary in joint and international operations is refueling. While that would appear to be a straightforward task, there are dozens of standards required to cover the various complications depending on the type of vehicle or aircraft or where it is being fueled," Frey explained.

"Refueling is done on the ground, at sea, or in the air. There are different types of fuel of course. But there are different hoses, different filters, purity standards, different coupling, different fuel caps and opening/closing methods, different pressure limitations per vehicle or aircraft, and different storage, heat limitations, and pressure requirements once in place. Data is like this. Every system is designed to take the fuel its own way."

Helping to highlight the new international flavor that has been brought to OBW is the use of several non-US companies to help overcome the technical challenges.

Swedish company Pitch Technologies (Booth 2026) is providing the distributed simulation infrastructure, tools, and services to connect the Viking coalition networked simulation systems operating in Sweden, Brazil and multiple booths on the I/ITSEC show floor.

Pitch products used in the demonstration include Pitch pRTI, Pitch Booster, Pitch Extender, Pitch Recorder, and Pitch DIS Adapter.

The Pitch HLA-based infrastructure for distributed simulation interoperability is the core of the Viking federated system shown at OBW 2017.

Simulations, services, and C2 systems running on multiple and geographically distributed sites are connected using Pitch simulation networking technologies and standards-based interfaces.

MASA Group SA (Booth 2227) is supplying its SWORD product to automate entities within the simulation and to provide a common operational picture.

Swedish company 4C Strategies (Booth 1915), meanwhile, is providing its EXONAUT training and exercise management software information system to OBW.

In service in Australia, Sweden and the UK, EXONAUT allows users to program, plan, design, deliver, analyze, and exploit complex, distributed exercises across the LVC spectrum. The company also provides NATO's eMTEP exercise planning program.

The company's Exercise Viking 18 solution will be on show, demonstrating the ability to adaptively manage a large-scale, international, interagency, distributed combined arms exercise.





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