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MONDAY, NOVEMBER 27, 2017

Army Shines Spotlight On Cyber Training Growth

One of the key focus areas for the US Army at I/ITSEC 2017 involves the increasingly critical "cyber arena."

According to Colonel Richard Haggerty, Project Manager for Instrumentation, Targets, Threat Simulators, and Special Operations Forces Training Systems (PM ITTS) within the US Army's Program Executive Office for Simulation, Training and Instrumentation (PEO STRI), that organization has created a significant and broad cyber capacity.

"While STRI is well known as the Simulation Training and Instrumentation organization, over the last several years we've been building cyber capacity and capability," he explained, "It's not completely within my office, but I'd say about 95% of it is in my organization."

As one example of the organization's unique programs, Haggerty pointed to the Persistent Cyber Training Environment (PCTE), an Acquisition Category I Special Interest program chartered with providing critical training capability, not just to the US Army but to all DoD Cyber Mission Forces.

"We also have some unique capabilities on the test and evaluation side," he added. "For example, we have one of nine certified and accredited 'Cyber Red Teams' within the DoD. They perform as a threat would, assessing our strengths within our Army systems to help build in cyber resiliency and augment cyber security."

In addition to the red teams, the organization is charged by the Army to provide management and oversight of the 'Cyber Blue Teams.'

"Where a red team acts as a threat or an aggressor, a blue team goes in and helps

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NTSA President Robb Welcomes I/ITSEC 2017 Attendees

In welcoming attendees to I/ITSEC 2017, RADM James Robb, USN (Ret), President, National Training and Simulation Association (NTSA), characterized this week's gathering as being "in the sweet spot" of growing government participation, emerging technologies, innovative applications and potentially increasing funding.

"One of the things that stands out to me is the strength of government participation," Robb began. "We have participation from people like General Perkins, Commander of US Army Training and Doctrine Command, and Admiral Moran, US Navy Vice Chief of Staff. In fact, the list of distinguished visitors on the government side is extraordinary."

To illustrate his point, Robb highlighted the impressive participants in Wednesday's US Navy panel of training centric leaders

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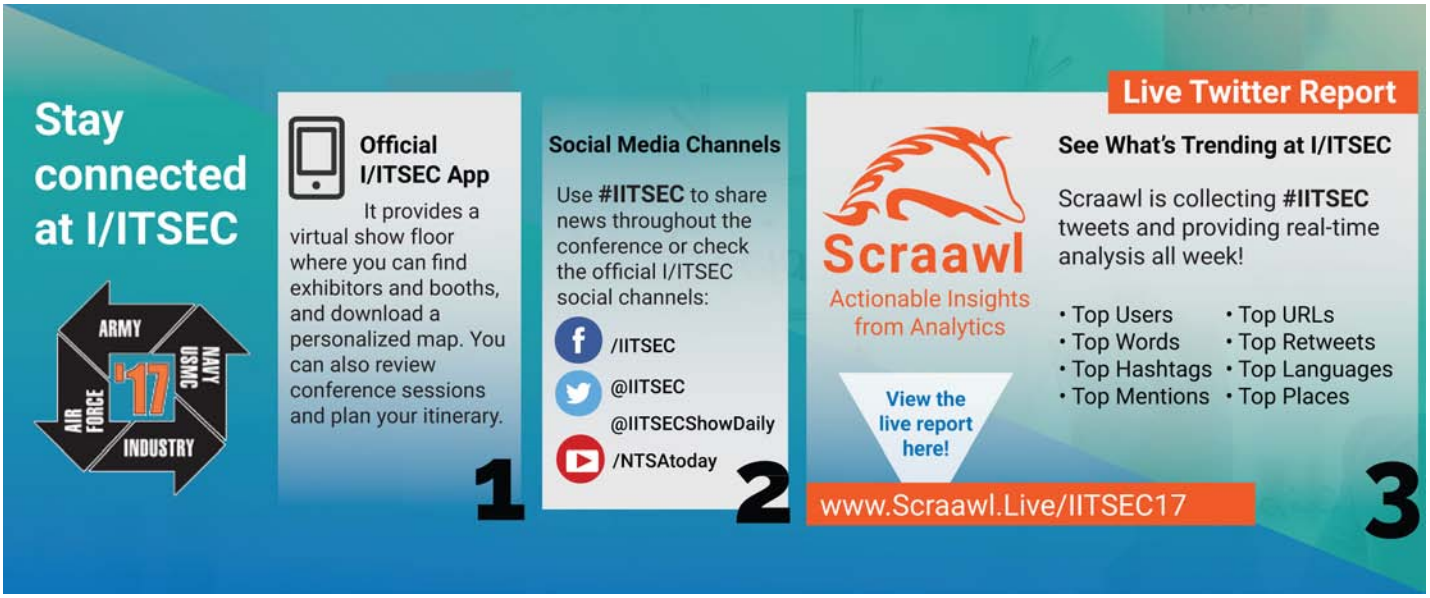

TODAY'S CONFERENCE

HIGHLIGHTS

MONDAY, NOVEMBER 27

REGISTRATION HOURS

0730-1800

EXHIBIT HALL HOURS

1400-1800

SIGNATURE/FOCUS EVENTS

1030-1200 **Congressional Modeling and Simulation Event** *(Room S330BCD)*

1400-1530 **Small Business Senior Executive Leadership Panel** *(Room S329)*

1430-1600 **Operation Blended Warrior: Interoperability Data Management** *(Booth 449)*

PROFESSIONAL DEVELOPMENT (SEE PROGRAM GUIDE FOR SYNOPSES)

0830-1000 **Tutorials** *(Rooms 320A-H, Room 330G)*

1245-1415 **Tutorials** *(Rooms 320A-H, Room 330G)*

1430-1600 **Tutorials** *(Rooms 320A-E)*

SHOWDAILY

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THE CALM BEFORE THE STORM: Frantic final touches were being applied across the I/ITSEC show floor on Sunday before the opening of the conference and exhibition on Monday afternoon.

The Annual I/ITSEC Bag Stuffing

More than 100 volunteers from government, industry, academia and research organizations again assembled on Sunday morning for the traditional I/ITSEC bag stuffing. Two thousand bags for attendees were stuffed in an effort indicative of the teamwork that makes I/ITSEC a success.

IAI Debriefing System for Israeli Blue Flag 2017 Exercise

Israel Aerospace Industries (Booth 2049) is eager to discuss how it can develop tailored solutions to meet the specific needs of customers using the Israeli Air Force's Exercise Blue Flag 2017, for which the company developed a debriefing system.

The two-week long exercise, conducted in mid-November at Israel's Ovda Air Force Base, was the third and largest in the Blue Flag series with about 80 fighters from seven countries flying about 800 sorties; foreign participants included the US, Greece, Italy and Poland and, for the first time, France, Germany and India.

IAI's MALAM division was contracted to develop a debriefing system based on its EHUD air combat maneuvering instrumentation (ACMI) system. Seventeen different countries, many in Europe and Asia, use the EHUD system, and more than 1,000 EHUD pods have been built for use on at least 20 different fighter types.

The debriefing system was optimized to meet the IAF's requirement for Blue Flag and provided a unified air combat view of all participating aircraft and the air threat. The scenarios practiced were fed into the system's database to enable full documentation for future insights and learning.

IAI also provided on-demand air practice services, and leased EHUD pods and company training experts to support the exercise.

"The debriefing system we developed replaces the manual feeding of training scenarios, thus enhancing the learning process and insights from drills of this scope," said Jacob Galifat, General Manager of the MALAM Division.

"The air training services provided by IAI to multinational drills allow our clients to gain the most from each drill. They also allow countries which do not have training systems to fully participate in complex exercises and large-scale training. This is another step in the evolution of our long-standing EHUD system, which is broadly deployed in air forces across the globe."

In June, IAI received a contract to provide an unspecified number of EHUD pods for use with the IAF's new M346 Lavi advanced trainers.

An IAI representative told the *Show Daily* that "the M346 has a virtual radar and virtual avionics, and the virtual radar and avionics systems need to know the accurate location of the real target, because the M346 doesn't have real sensors.

"The EHUD pod sends TSPI (Time and Space Position Information) and missile events to the M346 network and enables the radar to lock on the real target, and give the pilot direction for interception, and then to show the avionics cursor in the right place."

The representative also said the new EHUD pods feature the new Collision Warning System (CWS) which IAI introduced in 2016.

The U.S. Navy uses MetaVR visuals for Fire Scout UAV simulation

Naval Fire Scout sensor operators use MetaVR Virtual Reality Scene Generator (VRSG) in ship-based portable training systems to locate and classify vessels at long distances

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Army Shines Spotlight continued from page 1

program managers find vulnerabilities and weaknesses to fix or try to correct those," Haggerty said.

In support of the Test Resource Management Center, an Office of Secretary of Defense organization, PM ITTS also manages the current contract for the National Cyber Range.

"Right now, the National Cyber Range is a 'one of one' organization here in Orlando, FL, run out of Lockheed Martin, that provides various support to training and test cyber activities," he said. "And now, through a congressional directive, we've been tasked to expand that 'one of one' to five geographic locations across all the services.

Haggerty emphasized the criticality of this cyber training in light of recent global events, noting that cyber "is changing the way we look at warfare."

"One of the unique things about cyber attacks is the lack of rules of engagement," he observed. "Warfare obviously has evolved over the centuries, so there is a fairly recognized standard set of rules of engagement: what constitutes an attack; how we respond to an attack that is kinetic with a missile or shots fired. But that really doesn't exist with cyber."

Pointing to recent cyber examples in places like Estonia, Ukraine and North Korea, Haggerty asserted that the lack of rules of engagement "has the potential to bleed over into our daily lives; our security, our personal information, our finance system; our water; and our electrical grid."

The new global cyber realities and the threat to our everyday lives will be the topic of an I/ITSEC 2017 Special Event panel, "Cyber Operations in a Complex World: Embracing the Cyber Frontier." Haggerty will moderate the event, which will be held Tuesday, November 28, 1400 – 1530 in Room S330BCD.

Looking out over the next few years, Haggerty predicted a significant increase in cyber training activities.

"In terms of local activities, we're working on one project that, I think, is going to be great for the Central Florida area," he began. "As part of that expansion of the National Cyber Range and also as part of our PCTE program, we're building a classified facility here in the Orlando area that will really support a lot of activities. But a major thrust of it is going to be supporting cyber."

He noted that benefits of the new facility will not be limited to his organization.

"We are already working collaboratively with the University of Central Florida's cyber department," he said. "In fact, just about a month ago we hosted seven industry vendors demonstrating their cyber capabilities in competition for Other Transactional Awards (follow-on contracts) to support cyber training. And we collaborated with the University of Central Florida and their cyber lab to set up those environments. So this classified facility is going to really be good for all of the DoD services and academia as well."

He continued, "The other thing that the new facility is going to do is increase our connectivity. One of the benefits of cyber is that you can 'remote in' capability from a geographically separated area. So once we get that facility established it's also going to include a lot of connection points to not just the Army but to all of the services and a lot of their cyber capabilities and capacities."

Haggerty acknowledged connection points also require cyber defensive protection and expanded on that point in terms of live, virtual, constructive training environments.

"That's something that General Cole, our PEO STRI, spends a lot of time focused on," he said. "The requirements of cyber security have certainly been heightened with the introduction of the risk management framework and some other policy and procedural activities. But with our training systems becoming more network based and more connected, that's great to provide relevant and realistic training to our soldiers, but with that connectivity, that network and that cyber backbone opens us up to a lot of vulnerabilities. And we have to be very careful that we're building resiliency into the system."

In addition to the collaboration noted across DoD and with academia, Haggerty pointed to ongoing efforts with the Team Orlando organization as well as with US Special Operations Command (SOCOM).

"SOCOM has a facility in Tampa called SOFWERX," he said. "It's a consortium that runs a lot of innovative activities for SOCOM, including 'hack-a-thons' and other cyber activities. So we're very supportive with that. And, SOCOM being a joint organization, that is giving us a lot of exposure to a lot of the other services too. So I would say that in the cyber world we're anything but just Army. We're as 'joint' as any organization could be.

Shifting his message to I/ITSEC, he offered, "We're always excited to support I/ITSEC. This is the Army's year, so we're even more focused on ramping up our game. From a cyber perspective, and speaking for my organization specifically, one message that I'd like to leave for I/ITSEC attendees is that we really need industry to be a part of this. And in some cases we're asking them to do things a little bit differently. We're looking for a collaboration and open architecture. We really have to get away from intellectual property and data rights restrictions, because the threat in cyber technology is moving so fast that we in the government don't think that we can do it on our own. And we also don't think that we can just focus only on one vendor. It's an overused term but we really have to take a 'best of breed' approach to this and be consistently willing to grab the latest and greatest, and integrate it in to provide our cyber mission forces the best training available. So I guess my message is a call to industry to collaborate and work with us to provide a better product.

"Nobody thinks that cyber issue are going to go away in the future," he concluded. "In fact, I think it's only going to magnify in importance and, I believe, so is the amount of interest and effort that the Department of Defense is going to place on it. Quite frankly, I see our office having job security and being very busy over the next several years."

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Robb Welcomes I/ITSEC 2017 continued from page 1

assembled by Admiral Moran to discuss 'Warfighter Decision Superiority' (Wednesday, 1030-1200, Room S330BCD).

"The Navy recently added an entirely new flag officer panel on Wednesday afternoon," he continued, noting that the second signature event panel, 'Delivering Warfighter Proficiency While Deployed' (Wednesday, 1300-1400, Room S310C), coalesced too late to get in the printed convention guide.

"The second panel is a very strong gathering of flag officers who want to talk about 'Training 2025' and some other emerging Navy training challenges," he said. "Like all of the services, there is a lot of concern and assessment about whether and how the operational tempo of the last 17 years at war has eaten into equipment readiness or possibly even impacted some basic skills. As a result, there are a lot of ongoing 'deep dives' into training and readiness markers that would indicate a need to either spend more time on some fundamental blocking and tackling, attempting to manage the deployment tempo to some degree, or addressing the age or condition of some equipment. The fact is that stuff is getting old and it has been used extensively.

"That's true of all the services," he reiterated. "In the Air Force example, they are flying a lot of old equipment. And that service is 2,000 pilots short.

"It took us a long time to get here," he said. "And it's going to take us a long time to get out of this. But it's a big area of both Department of Defense and Congressional emphasis. And I/ITSEC is kind of 'in the sweet spot' of all of that."

Robb predicted that US Government participation "will continue to grow as the government realizes that I/ITSEC is 'one stop shopping' for the training readiness world and also provides an excellent venue to meet with their own people as well as leaders from the other services, OSD, academia and industry.

"And I'm excited about that. I'm excited about the fact that the government is embracing the I/ITSEC environment for their own use as a meeting place," he said.

In addition to expanded participation by the US government, Robb pointed to "a large number of foreign flag and general officers coming." In addition to international presence on some of this week's panels surrounding human performance, he highlighted growing international participation in Operation Blended Warrior, now in its third year at I/ITSEC.

"We also have an emphasis on big data and big data analytics this year," he continued. "It is primarily focused on how to digitize the human performance domain to better integrate information from the training systems back into the learning environment. In other words, feeding analyzed performance data back into the debrief or actually into the training in real time. This would help establish a digital profile of a person over their entire career, including their strengths and weaknesses. So if you were looking for someone with a specific skill set, you would be able to dive into the data and find individuals rather than groups.

"We are trying to treat trainees as individuals not as groups of people. So we want to customize training and training profiles, including analytics and data in their service record."

"We are trying to treat trainees as individuals, not as groups of people. So we want to customize training and training profiles, including analytics and data in their service record. Ultimately you would bring all these people into the system in terms of accession, allowing them to train at their own speed or possibly do some training outside the classroom," he said.

Another area of what he called "continuous I/ITSEC focus" involves bringing even more live, virtual, constructive capabilities into training.

"We're still trying to complement live training and possibly use some virtual reality environments to allow people to be better prepared when they go into a live training exercise," he said. "They would also be saving money, thereby better utilizing resources, and when they get into the real live training, they would absorb more of the content of that activity."

NTSA President James Robb

Robb noted that computers can fly planes pretty well and actually react at much higher rates than humans. As a result, human learning can improve by taking some cues from the computers.

"I think this pairing of humans and machines to the point where the machines are helping humans do better is all very powerful."

"I think this pairing of humans and machines to the point where the machines are helping humans do better is all very powerful," he said.

If there is any problem with I/ITSEC 2017, Robb sees it as "too much great content.

"The program is really strong," he said. "I mean it's just unbelievably dense with high quality and very leading edge discussion items going on encompassing government, industry and academia.

"In general we've got a really strong showing this year," he concluded. "The registration numbers are very good right now and on the show floor I think you can see that added resources into defense and budgets are trickling down into the business development world. So that's all positive for vendors. As I said, I'm very excited about how I/ITSEC is positioned."

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CAE Marks Seven Decades of Training Innovation

CAE is celebrating its 70th anniversary and 70 years of training innovation during I/ITSEC 2017. According to Gene Colabatistto, CAE's Group President for Defense & Security, the company retains a vision to be recognized as the global training partner of choice in helping customers enhance safety, improve efficiency, and maintain readiness.

Gene Colabatistto

Marking his seventh I/ITSEC with CAE (Booth 1734), Colabatistto pointed to a range of products and capabilities being highlighted this week, including: Naval Combat System Simulators and remotely piloted aircraft (RPA) training systems; Virtual/Augmented Reality (VR/AR) highlighting an Unmanned Aerial System (UAS) Ground Control Station (GCS); T-100 Integrated Training System from the Leonardo DRS-led T-100 team pursuing the US Air Force T-X program; and, CAE Healthcare patient and surgical simulation systems.

In addition, CAE and Rockwell Collins will jointly demonstrate an integrated live, virtual, constructive training exercise (Booths 1734 and 2201), during which a live-flying Rockwell Collins L-29 aircraft will be networked with a variety of virtual simulators and constructive forces to demonstrate an integrated joint, multi-dimensional mission training environment.

"We are increasingly bringing a more diverse set of technologies to I/ITSEC," Colabatistto observed. "And the point this year is that we are demonstrating interoperability and our ability to connect a diverse or a heterogeneous set of training systems together and use them collaboratively.

"Two or three years ago, it was very obvious that what our users around the world found most valuable was the ability to provide, of course, as much training as possible," Colabatistto explained. "So it wasn't just about having individuals accumulate skills, but it was the ability to do crew training on a platform; the ability to do team training, both with the cockpit and the rear crew; the ability to do collaborative or cooperative training on multiple platforms. Then you could take that forward and see an element of the ability to do joint training or coalition training if you can actually tie systems together and they can interoperate."

He continued, "Now we have done that. And when I say 'we', I mean CAE, but also the industry at large. We participate in major exercises around the world anywhere from three to six times per year. But I will tell you that those exercises take quite a high level of preparation and planning. Moreover, I would say that, technically, we may have all the parts and pieces we need to do that, but it's still not quite what I would call 'the normal course of business'. If a commander wakes up tomorrow and says, 'You know what? I'd like to use my tactical assets and engage in, say, a refueling exercise, with simulators elsewhere in the country,' it's not just a bunch of phone calls that need to be made. There are a lot of systems engineering and communications and security protocols that have to be worked to do that. So this year, I wanted the CAE exhibit at I/ITSEC to show people how this can be made much more routine."

He pointed to the cooperative demonstration with Rockwell Collins, as well as CAE's participation in Operation Blended Warrior, as representative steps toward making this type of training "a much more everyday occurrence."

Colabatistto said that I/ITSEC 2017 was chosen for this milestone cooperative event because of its status as "the only time when the big global training – and specifically simulation based training – community gets together at one place."

Characterizing I/ITSEC as "the crossroads of the technology, business and customer segments," he added, "at CAE we also look at I/ITSEC as the prime opportunity to exercise some thought leadership. You have people here not just looking at technologies and programs, but I'd like to say it's the one place where you have everyone really thinking about it. Add the technical seminars and the papers being presented and if you want to be a thought leader this is where you go to impress upon people that you may have a better idea.

"Our message has been consistent over the last few years," he summarized. "We want to be our partners' training partner of choice. And we do that by being what we call a training system integrator for a customer that has pretty much any training need. That does not mean that we're going to come in and recommend or promote a CAE-only solution. I believe it means that we will take a hard look at the training challenge the customer has. We'll look at the assets they have available. And we'll do our best to organize the training program to make maximum use of what they have, and then fill the gaps."

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Rockwell Readies for World Without Boundaries

On the opening day of I/ITSEC 2017, two simulation and training heavyweights will announce a collaborative agreement to develop integrated live, virtual, constructive (LVC) training solutions.

Rockwell Collins (Booth 2201) and CAE (Booth 1734) have joined forces to develop integrated LVC training solutions and will be giving demonstrations throughout the event of an integrated mission training exercise.

Nick Gibbs, Vice President and General Manager of Simulation & Training Solutions at Rockwell Collins, said the company was using I/ITSEC to focus on a key theme of "readiness without boundaries".

"We will be demonstrating that as part of Operation Blended Warrior (OBW) as well as the interconnectedness with coalition partners and others. That joint training, both in terms of our own military as well as with our coalition forces, that integrated live, virtual, and constructive environments is critical," Gibbs told the *Show Daily*.

"We will show all our product lines connected to that, which of course would include our image generators, projectors, our Coalescence solution, which is a mixed reality product. As well as our integrated digital visual system, which is a near eye display for operational work and is an enhanced augmented reality product, that raises situational awareness for the warfighter."

In an echo of last year's OBW integrated LVC exercise, a live-flying L-29 aircraft operated by the University of Iowa's Operator Performance Laboratory (OPL), will be networked with a variety of virtual participants.

Synthetic data will be projected onto the L-29 pilots' integrated Helmet Mounted Display (HMD) while the Distributed Interactive Simulation (DIS) and High-Level Architecture (HLA) networking protocols will link the LVC assets.

Both companies will jointly conduct distributed C2 tasks during the exercise, which is aimed at demonstrating how synthetic environments built on different database standards can be correlated and interoperate as part of an integrated LVC training exercise.

The various components that Rockwell Collins offers to enable such integrated LVC training will be on display on the opening day of I/ITSEC with three announcements in this arena.

Under one agreement, the company will supply next generation forward observer training for the Australian Defence Force.

To facilitate training of Australian Army and Royal Australian Air Force Joint Terminal Attack Controllers (JTAC) and Joint Forward Observers (JFO), Rockwell Collins will deliver eight customized domes, 11 desktop trainer simulations and the company's FireStorm targeting system.

The system allows students to transition from a desktop environment to high fidelity visual realism in an immersive environment in the dome systems. Rockwell has teamed with Australian companies Virtual Simulation Systems (VSS) and Titan IM Pty on core components for the simulators.

The US Army has selected a new version of the Rockwell Collins SimEye HMD for use within the Aviation Combined Arms Tactical Trainer (AVCATT) system. The US Army Program Executive Office for Simulation, Training, and Instrumentation (PEO STRI) plans to upgrade 332 HMDs, with the work expected to be completed by October 2019.

The upgrade includes display and optical improvements to visual symbology, a software update, and provides increased availability and life cycle cost savings.

Gibbs said the company had worked very closely with PEO STRI to "fine tune" the HMD as technology continued to evolve. "This next-generation solution will provide the Army with the highest fidelity simulation available and at a lower cost to maintain."

Rockwell Collins has also been selected by Lockheed Martin to provide display systems for two international F-16 training program customers.

The Rockwell Collins 360° Griffin rear-projection dome configuration will include an expanded ingress and egress system to accommodate the larger cockpit of an F-16 and capitalizes on projector enhancements for night vision goggles (NVG) usage.

As well as being what the company claims is the first of its kind to incorporate full NVG functionality, the front projection SpectraView solution boasts a wide field of view, wrapping 300° around the user, 120° above and 40° below.

The Rockwell Collins/CAE LVC training exercises will take place at I/ITSEC at the following times:

Tuesday, 28 November: 1230-1315 and 1400-1445
Wednesday, 29 November: 1230-1315 and 1400-1445

In addition, on 20 November Rockwell Collins announced it had been selected by the US Navy to provide a new E-2D Advanced Hawkeye Tactics Trainer. Supporting the E-2D Hawkeye Integrated Training Systems (HITS) III program, the contract is initially valued at $34.5 million and calls for the new trainer to be installed at Naval Base Ventura County, CA. This will be the fourth E-2D tactics trainer delivered by Rockwell Collins.

These awards, coupled with news in March that the US Navy had selected Rockwell Collins and Leonardo DRS for its Tactical Combat Training System Increment II (TCTS Inc-II) program under an initial $142 million contract, adds up to an "extremely successful year in terms of growth to the business," according to Gibbs.

"Our message has always been that we want to provide training solutions that our customers require and we've always worked very hard to help do that for them. If the technology exists, we will provide off-the-shelf technology, if it doesn't exist and is required, then we will go off and create it, which we have done multiple times."

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Cybernet Preparing for the Future of Cyber Compliance

Cybersecurity compliance has always been a challenge for Department of Defense programs of record, whether it be through the implementation of a new training system or the ongoing maintenance of a currently authorized system.

Meeting the challenge of an ever-increasing threat from adversaries, combined with the rules and regulations of the DoD, make for an extremely difficult situation that often pits government against industry when it comes to what is required and what is practical. Throw in the ever-changing nature of cybersecurity with the industry's relatively small pool of qualified professionals, and the problems related to cybersecurity compliance begin to compound exponentially. Something has to give.

One of the more recent developments in the DoD Cyber realm has been the gradual shift to the Defense Information Systems Agency (DISA) Windows 10 Secure Host Baseline (SHB) as the DoD base standard for all systems moving forward.

"What SHB has ultimately done is move cybersecurity from the tail end of a system's development lifecycle to the very beginning and also transitions cybersecurity engineering from the bolted-on approach of the past to a truly baked-in solution for the future," said Donald Lawson, Director of Cybersecurity and Training Systems at Cybernet Systems Corporation (Booth 1972). "With SHB, programs of record are required to start with a secured version of Windows from the very onset, which results in cybersecurity being involved in every step from conception to delivery and negates the often 11th hour hassles and complexities of cybersecurity being the last piece of a component's delivery schedule."

Another major change, according to Lawson, and one of the greatest cost savings of the SHB deployment model, is that it provides the ability to automate system Cold Start procedures. "This automation ability will remove the need for contractors and government alike from combing through thousands of manual steps, which, more often than not, lends itself to human error, causing a chain reaction of finger pointing and frustration among all parties involved," explained Lawson.

With SHB, the Cold Start deployment specifics are baked in to the actual system images, making them easily tested and the results reproducible and verifiable among the different parties involved in a system's delivery. This will transition cybersecurity from an iterative patch-scan-repeat process to a systems engineering role and ultimately lead to greater quality deliverables at a lowered total cost.

"Will there be hurdles and lessons learned?" Lawson asked. "Absolutely, however this progressive step by the DoD is a long overdue and welcomed change that sets the stage to combat the cyber threats of tomorrow and ensure the United States continued dominance across land, sea, air, and cyberspace."

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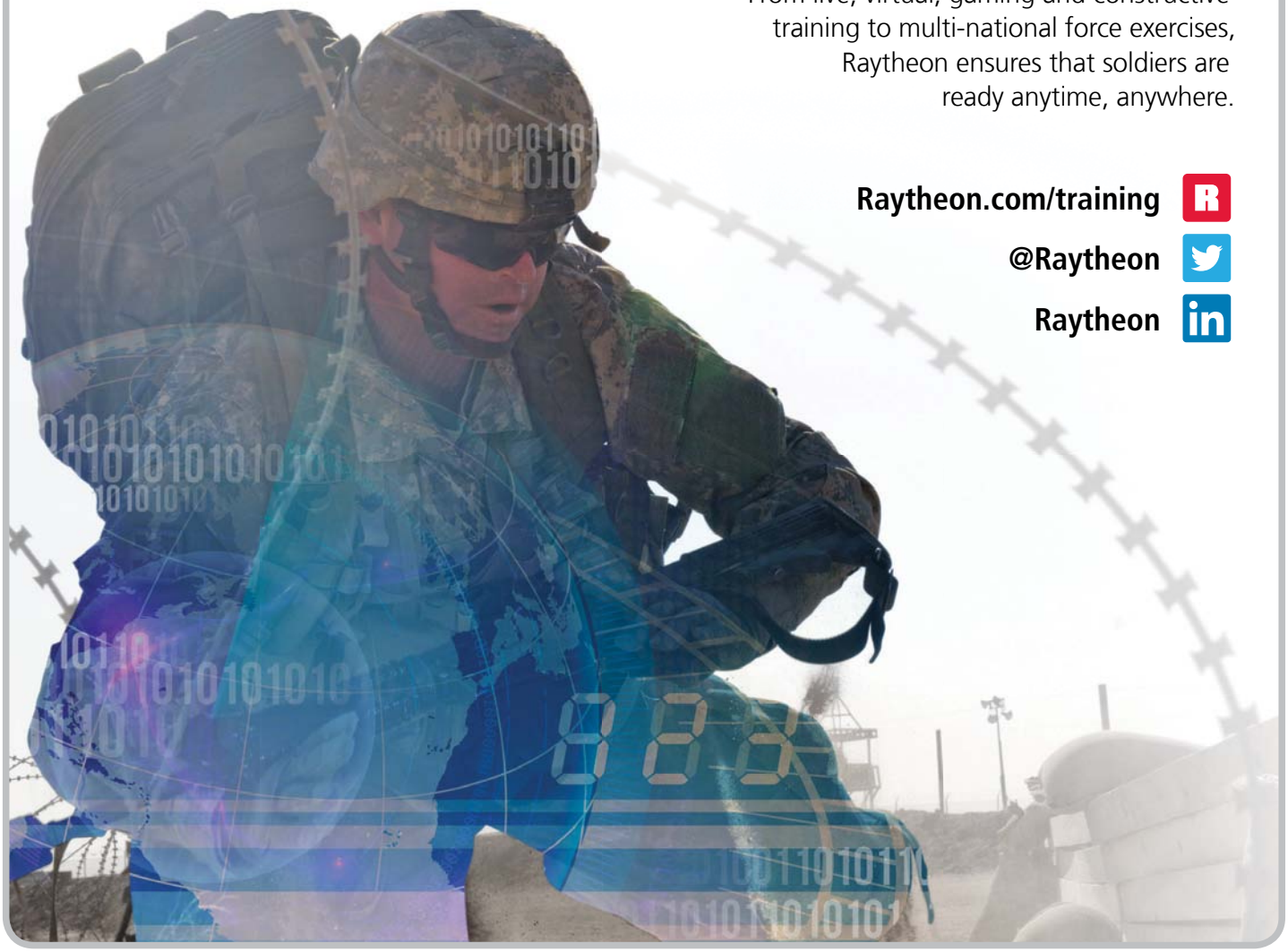

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L3 Link Blurs Line Between Training and Operations

"A key to increasing tactical training in simulation-based training systems is the development of a more robust and higher fidelity synthetic environment," Lenny Genna, President of L3 Link Simulation & Training, told the *Show Daily*.

"When the training system completely replicates the operational environment in terms of weather, threat behavior, electronic warfare, counter measures and other operational characteristics, then virtual training can omit the actual aircraft and achieve transfer of skills from training to operation. We work with customers to define the cues missing in the training environment, then invest in training and simulation technology to provide those cues so that ground based training can be increased."

L3 Link (Booth #1449) has long been a leader in military aviation training systems. The company has delivered more than 80% of F-16 and more than 90% of all F/A-18 pilot training systems; is the only provider to the US Department of Defense for training systems supporting MQ-1 Predator/MQ-9 Reaper pilots and sensor operators, B-2 aircrews and maintainers, and Gray Eagle maintainers; and operates the Aircrew Training Schools for the US Air Force's C-17 and E-3 AWACS fleets.

At I/ITSEC 2017, "L3 Link is demonstrating to selected customers our vision for the blending of schoolhouse training and operations," said Genna. "The gold standard of good training is correct execution of skills in the operational environment. L3 Link is leveraging emerging instructional technologies to blur the line between training and operations," said Genna.

"By applying human performance assessment principles, adaptive learning technologies and advanced synthetic environment technologies, we are demonstrating a training approach today that minimizes the time to train, reduces the cost to train and improves overall retention, while permitting the operational user to tap this training environment when deployed to provide point of need refresher or conversion training. This approach addresses multiple customer priorities to include: training at the point of need, efficient training, measurable effective training and maximizing return on investment in training measured in readiness. We see this approach appealing to both domestic and international customers with training challenges and restrictive investment budgets."

L3 Link's Predator Mission Aircrew Training System (PMATS) has been the US Air Force's MQ-1/9 simulator program of record since 2008 and is being expanded to provide simulators at all USAF active duty and Air National Guard MQ-1/9 operating bases. To date, L3 Link has fielded 29 simulators and expects to deliver 67 by the end of 2018. Most of these will be in the improved Block 30 configuration, with advanced tactical integration and debriefing capabilities.

"This training system employs operational flight programs, a high fidelity synthetic environment, and immerses pilots and sensor operators in an environment that replicates operations," explained Genna. "As to how much training should be done on simulators, the service should make that call, but those who have used the training system have said 'it is just like an actual operation'."

Under the latest follow-on contract awarded in September, L3 Link will install communications equipment for MQ-1/9 Distributed Mission Operations so that aircrews can network their PMATS with simulators of other platforms, such as attack helicopters and fighters, to participate in live and virtual mission training events, Genna said. "This step facilitates the PMATS training environment to more accurately reflect the operational environment where multiple platforms execute their missions in a collaborative, supporting approach."

L3 Link leverages its experience with US projects to support the training requirements of America's allies and partners. In August 2017, L3 was awarded a contract to build and deliver the F-16V Peace Phoenix Rising Mission Training Center (MTC) to the Republic of China Air Force (RoCAF). The USAF has previously received or ordered eight F-16 MTCs: five are already in operation in the USA, Germany and South Korea; two are being installed in Japan and Italy; and an eighth will be delivered to the Oklahoma Air National Guard in Tulsa, OK in 2019.

In January 2017, work began on upgrading the first of 142 Taiwanese F-16s to the advanced F-16V configuration, which features the Northrop Grumman AN/APG-83 Active Electronically Scanned Array (AESA) radar, a new Raytheon mission computer, the Link 16 datalink, an enhanced electronic warfare system, a ground collision avoidance system, and modern cockpit displays.

Scheduled for delivery in 2018 and 2019, Taiwan's F-16V MTC will support basic pilot, pilot conversion and advanced skills training.

Each simulator in the F-16V MTC has a dedicated instructor/operator station integrated with L3 Link's SimuSphere HD 9-facet visual system display, giving pilots a 360° field-of-view. The simulators feature a high-definition database and image generation systems to create realistic training environments.

The Taiwanese contract is the first export order for the MTC. "This is one example of where international military services are investing in mission readiness. This same approach is found in the Middle East, North Africa, Europe and elsewhere in Asia," said Genna. "It is well known that international defense budgets are increasing and, as they do, L3 Link and others in the training domain will pursue opportunities in these markets.

"The F-16V market is a function of the aircraft. Several countries have announced that they are either buying new aircraft or converting existing aircraft to the 'V' configuration. These include Singapore, Korea, Romania and Bahrain. As the F-16V is selected by other customers, the pilot training system market will follow the aircraft."

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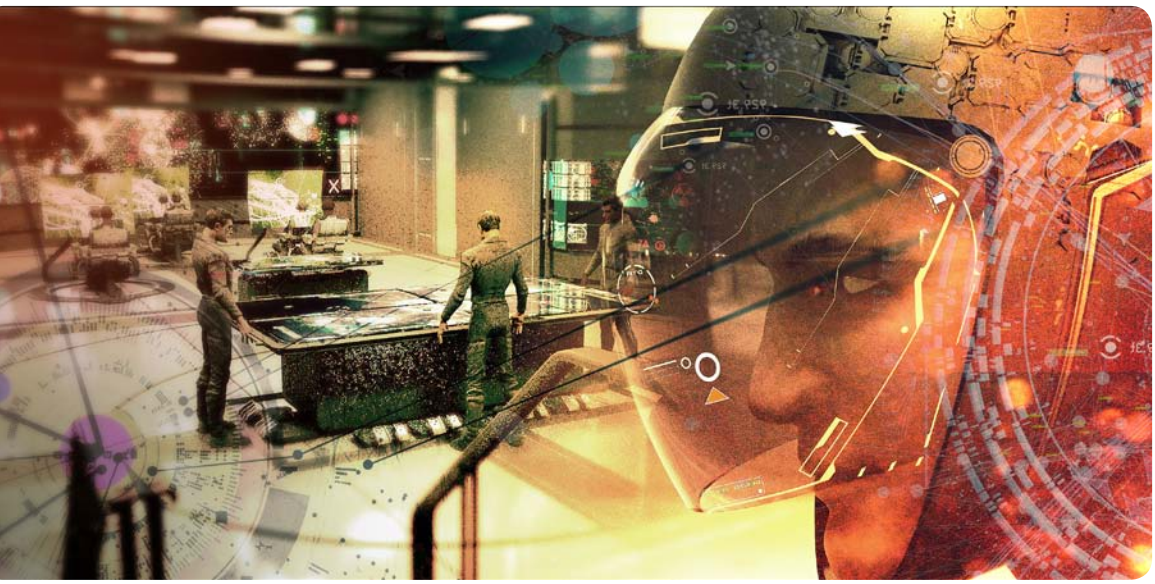
Cubic Looks to "The Science Behind the Art"



According to David Buss, President of Cubic Global Defense and Senior Vice President of Cubic Corporation (Booth 1748), the company's theme at I/ITSEC 2017, "The science behind the art of warfighting," is reflective of many recent comments made by leadership across the Department of Defense.

"We picked up on that theme and it actually dovetails very nicely with many of the things we are doing within Cubic Global Defense," he said, pointing to examples like the company's *NextTraining* strategy and concepts like Performance Based Training.

"We are accelerating that theme," he added. "We have picked up on some of the terms that Secretary of Defense Mattis has used and that has been a major thrust for what we are exhibiting at I/ITSEC this year."

Buss said that, while some of the booth elements might "look a bit familiar," those are actually areas "where Cubic has advanced the ball technologically."

"I'll give you a couple of examples," he continued. "One of the displays that we had front and center at I/ITSEC 2016 was an augmented reality training display, where you wore a set of augmented reality goggles and held a weapon. And we did an augmented reality overlay that showed an urban area and some good guys and bad guys that you interacted with. This year we have advanced that demonstration significantly. And it is one of the showpiece supports at the center of our booth. It's a mounted display, where you actually climb up on a tower to a second floor. It is much more holistic and has much higher fidelity than what we displayed last year. It shows how we've actually made some very good progress in our Augmented Reality training system."

Turning to new exhibits, he offered the examples of machine learning and data analytics.

"Through the training systems and the training architecture that Cubic delivers in both ground and air training, we have access to an awful lot of data," he explained. "As examples, we feed a lot of after action reports and we build a lot of the exercise control systems for both air and ground that are widely used both in the US and around the world in instruments and ranges. So what we've undertaken this last year is a way of using machine learning to get after data analytics in a way that feeds the performance based training architecture."

Buss outlined a range of training synergies "that allows customers to be much more surgical in the application of training systems, so that we really emphasize and hone in on developing the skills at the individual and unit level."

He noted that this point is emphasized through Cubic kiosk displays that show how combing through reports and performance metrics can help to identify trends and rates and which individuals pick up skills.

"You can then feed that forward to the training architecture, so that you can be more discerning in how you go about your training next time around," he said, acknowledging that these in-house development efforts tie into broader Department of Defense initiatives like Advanced Distributed Learning.

Other booth elements will highlight Cubic's cooperative activities, ranging from partnership arrangements with companies like 4C and their Exonaut product, to participation in Operation Blended Warrior (OBW).

"We are playing in OBW again this year with a technology called Social Media Analytic Replication Toolkit (SMART), which replicates social media feeds into training exercises. We used the tool as part of OBW last year. But we've enhanced it. It's got some new dimensions to it that are pretty exciting. And we have that on display again this year, both in our booth as well as part of OBW.

"And then the same sub-business within Cubic that developed the SMART technology also has done some synthetic ISR feeds," he added. "So if you think about a training exercise where you may not have access to a live UAV with sensor data and so forth but you still want to replicate that in your training environment, we have a way to do that synthetically that is pretty compelling. That's technology we demonstrated last year but have enhanced for this year's display.

"I/ITSEC is probably *the* major tradeshow that we do each year," Buss concluded. "It is a great opportunity for us to rub elbows with a very broad customer set, more broadly than we get to do anyplace else. And we get to do it in a terrific environment in Orlando. It's not only a great opportunity for us to showcase what's new but also, most importantly, to get feedback from our customers – both domestic and international. In fact, in the last year we've grown our international business space within Cubic Global Defense by about 10%. And I see that continuing for the future. So when our partners from around the world come by and spend time in our booth and see the kind of things we're working on – and provide us the kind of feedback that we need in terms of what works for them and what may need a tweak or two – that's really, really valuable. That's what makes this show so terrific for us."

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Elbit Systems Introduces Homeland

It is a fact of modern life that any homeland security incident will be quickly followed by intensive media coverage, eyewitness accounts and speculation across social media platforms.

For first responders and emergency agencies looking to incorporate such public and media response into their crisis response exercises, Elbit Systems (Booth 2000) has introduced new capabilities to its Homeland Security Simulation (HLS²) system.

Operational with several customers, including the Israel Defense Forces and Israeli municipalities, the HLS² system provides 3D program training, operational mission rehearsal and security planning for first responders and emergency agencies.

The new specifically-designed application "simulates news flashes, characteristic social media content and citizens' inquiries during an emergency, enabling trainees to practice under new pressures, helping them to discern, prioritize and act upon both on the operational and communication levels," the company explained.

In a further enhancement to HLS², a second new capability allows the role of exercise controllers to be expanded, giving them the ability to intervene and manipulate drills, responding in real time to trainee performance.

This new application gives controllers the freedom to aggravate or alleviate a simulated scenario depending on trainee readiness and to record trainee responses for higher quality after action reviews in a shorter timeframe.

The company will be demonstrating both enhancements of HLS² at I/ITSEC 2017.

In addition, Elbit Systems announced on the opening day of I/ITSEC that its interconnected, multi-cockpit Mission Training Center (MTC) was recently inaugurated by the Colombian Air Force.

Providing realistic simulated battlefield training using a variety of aircraft systems and mission scenarios, the MTC employs a computer-generated forces (CGF) solution that enables simultaneous participation of friendly and enemy forces.

Security Simulation Capabilities

Covering all stages of tactical mission training, including planning, rehearsal, and debriefing, the MTC can be used for basic and emergency training or for advanced mission-oriented training. Up to 24 trainees can be trained together in a "real" mission environment.

The Colombian MTC draws on Elbit Systems' experience with the SkyBreaker MTC, which is operational with the Israeli Air Force.

The company will also be demonstrating a range of other simulation and training products during I/ITSEC 2017.

On the airborne side, this includes the training applications of the Targo Helmet Mounted Display (HMD) and the Embedded Virtual Avionics (EVA) suite, which can both be integrated into any aircraft avionics and can be combined to provide advanced training.

For the training of land forces, Elbit Systems will be showcasing its Live Combat Training System (LCTS); IronVision HMD system for armored fighting vehicles; and the Augmented Reality Integrated Training System (ARTIST), an embedded live and virtual training suite.

A Hack of a Great Idea

One of the inaugural events at I/ITSEC 2017 is the Data Science Futures Hackathon.

Using the 'Mad Scientist' data provided by the US Army's Training and Doctrine Command, the hackathon provides the opportunity to discover insights into military data and use those insights to save lives and improve mission operations.

The event will kick off Monday at 1400 in Room S310AB and run through Wednesday, culminating in an awards presentation during the 'Big Data & M&S' special event on Thursday at 1030-1500 (Room S320GH).

The hackathon is open to anyone, whether they have participated in a hackathon or not, and I/ITSEC registration is not required to participate.

I/ITSEC is partnering with several top tier companies and providers for the event, including Microsoft, Samsung, Nvidia and Booz Allen Hamilton.

The Army will use key findings and recommendations from the hackathon to advance understanding of the future and innovate more rapidly. As the Army faces unparalleled complexities in the future operating environment, initiatives like the I/ITSEC hackathon will ensure future readiness of the entire joint force.

Registration required:
https://DataScienceFuturesHackathon.eventbrite.com

Pratt & Miller Defense Unveils New Target Option

Pratt & Miller Defense is debuting the newest addition to its Trackless Moving Targets (TMT) family of live fire training platforms at I/ITSEC 2017.

The new TMT-I is an infantry sized moving target, not constrained by traditional target rails, that can be operated in a realistic manner.

According to Jim Fontaine, Product Director of Ground Robotics for TMT, the company's expertise was originally developed at Pratt & Miller Engineering (Booth 1201) in the motor sports arena.

"Through the years we started to adapt many of the advanced tools that we utilize on the motor sports side over to the defense side," he explained. "And about seven years ago we launched Pratt & Miller Defense with a focus on three main areas: mobility, survivability and more recently, robotics. Those are the three pillars where we've continued to prove our value to DoD customers. And the one underlying thing that crosses all of our projects is that we're looking to help our warfighter, protect the men and women of our military as they go out into battle."

Fontaine said that 2017 marks the company's third year at I/ITSEC, noting that the first two years focused on the TMT-V "vehicle version," a moving platform sized to carry vehicle and armored vehicle flanks.

"The essence of what makes the TMT family so special is the combination of those same three pillars I mentioned: high mobility; survivability; and robotics. The result is that these platforms can respond to different inputs given either by the Soldier as they're firing at it, or inputs that have been preprogrammed from the trainer who set up the training exercise," he said.

"We developed a versatile mission planning tool suite to go along with zone based hit detection, so that we can get the right reactions through different scenarios of training engagement," he added.

Fontaine said that the TMT design, which utilizes a GPS-based path following technology, is the result of a Small Business Innovative Research (SBIR) program with the US Army's Program Executive Office for Simulation, Training and Instrumentation (PEO STRI) and that the anticipated program launch for the TMT-V is 4th quarter of calendar year 2018.

"The TMT-I that we are unveiling at I/ITSEC 2017 has leveraged a lot of the work that was done previously for the TMT-V program, particularly in the areas of robotics systems, communications, path planning, reactive sensing and behaviors," he said.

He identified one of the big discriminators in the TMT design as advanced mobility, stating, "Given Pratt & Miller Defense's background, when we looked at the problem presented in the SBIR task, one of the first things we went to was mobility. As soon as you take a target off of a groomed track or a groomed section of ground, you have to consider that you need to climb over and around varying types of terrain, different soils, hills, wet snow, mud and other challenges. So we truly believe that the differentiation is in the high mobility of our systems. And that's why we have four wheel drive, four wheel steer, and full suspension on our robots."

Pointing to the fact that the TMTs are not autonomous, he continued, "Some of the other systems out there are touting the autonomous feature. What we have instead is GPS waypoint navigation of a fixed set of paths."

"So we've taken something now that promotes the randomness that is really required for marksmanship training, but the trainer can be very confident in where it is going and is not going time over time, because it's not making its own decisions as a robot. But yet the trainee is getting that full benefit of seeing something different and seeing reactive behaviors albeit reacting on a predefined set of paths," he said.

NEWS IN BRIEF

GlobalSim To Unveil VR Simulator with Motion Base

Salt Lake City-based GlobalSim Inc. (Booth 711) will unveil a Virtual Reality Simulator with a three degree of freedom motion base at this year's I/ITSEC.

Jonathan McCurdy, President and CEO of GlobalSim, said the company had introduced its first VR simulator last year at I/ITSEC and "this year we're taking another leap forward by incorporating a large motion base into our VR simulator."

Participants at the I/ITSEC conference will be able to try the new simulator, which will feature a ship crane and a construction type crane designed specifically for military operations.

Noitom Brings Alice Space VR to I/ITSEC

Noitom Ltd. (Booth 2671), the creators of the out-of-home VR platform Project Alice, will reveal its newest turn-key edutainment mixed reality solution created for museums and science centers: Alice Space.

Alice Space is conceived as a complete hardware and software package that allows venues such as museums and science centers to offer audiences realistic and immersive experiences.

The packages feature Noitom's high-fidelity hybrid optical-inertial tracking, VR backpacks and goggles for up to six players, and a bi-annually updated content developed in collaboration with NASA.

Alice Space gives operators continuous play for six people with up to three sessions per hour. Providing a tracking space of 7m by 10m, players can move freely and interact with one another as well as with physical objects.

Ravenswood Solutions to Showcase Mobile Ground Truth System

Ravenswood Solutions (Booth 1058) will highlight technologies and services that aid military leaders and first responders in objective performance assessment.

Ravenswood Solutions is the provider of instrumented training for the US Army National Guard's eXportable Combat Training Capability (XCTC). In 2017 to date, 17,140 Soldiers were trained using FlexTrain, an application of Ravenwood Solutions' Mobile Ground Truth System.

As well as promoting the Mobile Ground Truth System, Ravenswood Solutions will be providing demonstrations of the company's ORION software suite throughout I/ITSEC.

Operation Blended Warrior Goes International

Returning to I/ITSEC for a third time, this year's Operation Blended Warrior (OBW) is looking to raise the bar further by taking on new technical challenges and introducing international participation.

For this iteration, the OBW organizers are taking a different approach and instead of focusing on an ongoing, detailed scenario, the emphasis is instead on the "challenges, issues, and technologies associated with creating and sustaining LVC distributed simulation environments."

OBW 2017 will be conducted over five 'blocks', each lasting one and half hours and featuring maritime, ground, air, cyber, and coalition operations – although two specific focus areas will be identified within the individual blocks.

Technical lead and primary integrator for OBW is the Naval Air Warfare Center Training Systems Division (NAWCTSD) (Booth 449 and 339), which is also the design agent of the OBW network and Distributed Training Center (DTC) (Booth 449).

"We partnered closely with the Army this year to define the objectives, which include performance measurement, multiple terrain providers – including dense urban areas – the centralized execution of data and the use of commercial gaming engines," Commanding Officer of the NAWCTSD Captain Erik 'Rock' Etz explained to the *Show Daily*.

"New for this year is the inclusion of an operational area in the Pacific Northwest [PACNW] – last year we utilized the Southern California [SOCAL] operations area – and there will be some live cyber war actions that take place within the event. We do have some planned incorporation of live assets, some aircraft and some Marine Corps ground forces and we are going to bring in some coalition forces that are using this as a stepping stone for Exercise Viking."

With the US Army Program Executive Office, Simulation, Training and Instrumentation (PEO STRI) (Booth 655) acting as both the lead service for I/ITSEC 2017 and co-lead for OBW, the organization has also helped shape the technical objectives for this year.

Brig Gen William E. Cole, Program Executive Officer for PEO STRI, said the event would help inform the Army and industry how best to pursue live, virtual, constructive and gaming (LVC-G) interoperability by developing technologies that involve the full integration of simulation technology into an augmented, live training environment.

"Additional objectives are to investigate the challenges the Army and industry must overcome during the development, fielding, and sustainment of the Synthetic Training Environment (STE)," Cole explained, adding that OBW 2017 would also provide insight into new technologies required in the modeling and simulation realm to support the concept of MultiDomain Battle (MDB).

"MDB is a concept that maximizes utilization of five domains (air, sea, land, space, and cyber) in a joint, coalition effort that calls on each service to step out of their individual services' traditional roles. As an example, the Army could be called upon to step out of the domain of ground combat and use land-based artillery to attack enemy ships at sea."

The inclusion of dense urban operations as part of the PACNW operating area will help PEO STRI demonstrate the power of simulation to support training in complex environments through the Games for Training (GFT) program, which will represent mounted and dismounted virtual forces in dense urban terrain during OBW engagements.

One significant element to this year's OBW is the integration of international elements and the multi-level security/cross domain technical challenges that brings.

"In its third year, Operation Blended Warrior has gone multinational this year. We've been able to integrate some international players; folks here from Sweden and NATO are participating," NTSA President RADM James Robb told the *Show Daily*.

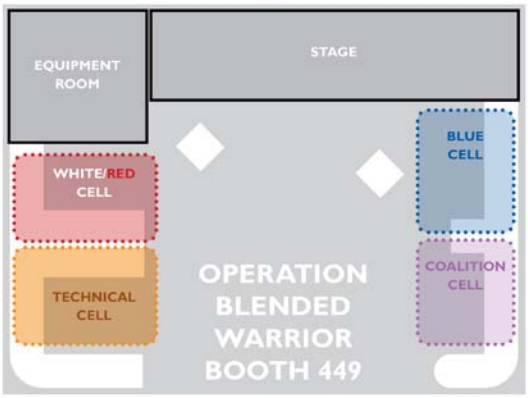
"Bringing international participants into the IT framework is a constant challenge. It's a common problem that we're working on as a nation to overcome – how do you interoperate with your allies and partners? So that's a big deal."

Rockwell Collins (Booth 2201) is making integration possible through its Multi-Level Security, Cross Domain network connectivity solution between the US and Coalition network segments.

Elements of Sweden's Computer Assisted Exercise Viking 18 (Booth 2161) have been connected into the network, allowing participants to test the long distance, network security, and interoperability challenges associated with operating in a multinational simulation.

The aim of Viking 18 is to train participants in multidimensional crisis response and peace operations, and its involvement in OBW 2017 will prepare them for next year's overall event execution, while also identifying and examining requirements for coalition distributed training.

Other international participants include the NATO Science and Technology Organization (Booth 2161), MASA Group (Booth 2227) and 4C Strategies (Booth 1915).



The NATO booth, shared with the US Government's Advanced Distributed Learning Co-Lab, will also host live demonstrations and presentations for visitors.

While OBW participation will be spread across the show floor throughout the event, as in previous years much of the action will be centered on the DTC.

The DTC functions as the "hub" for performing OBW network management and control, exercise management, execution, and exercise observations, and providing technical control of the exercise.

As well as supplying the enterprise solutions for converting between different interoperability protocols, the DTC will include manned positions, white/blue/red cell operators, coalition operators, audio/visual control, and technical control personnel.

NAWCTSD has integrated key capabilities into the DTC, including: semi-automated force systems (Joint Semi-Automated Forces – JSAF and OneSAF); simulation language translation; cross-domain solutions for simulation and voice communications networks; and cyber warfare effects (the Network Effects Emulation System – NE2S).

Also featured in the DTC is the Joint After Action Review – Resource Library (JAAR-RL), which integrates existing AAR systems into a single, cohesive toolkit for supporting DoD feedback and assessment. The system takes disparate data sources and stores them in a central data repository where analysts produce synchronized replay, movie generation, and data reports as debrief and analysis products for training exercises.

The Army Modeling and Simulation Office (AMSO) (Booth 862) is participating in OBW to demonstrate a proof of concept of cloud-delivered procedural terrain generation, while the Army Research Lab (ARL) (Booth 1539) is providing its Augmented Reality Sandtable (ARES) to serve as the common operating picture for OBW.

The Naval Air Warfare Center Aircraft Division (NAWCAD) (Booth 339) is featuring two products: the Next Generation Threat System (NGTS), which is a synthetic environment generator used to support training, testing, analysis, and research and development; and the Architecture Management Integration Environment (AMIE), which is a cross-platform middleware that provides an "interface abstraction", a collection of libraries, and a set of tools that help solve reusability problems.

The 505th Command and Control Wing (Booth 529) is placing a Joint Terminal Attack Controller (JTAC) into the air and ground scenarios, controlling the JTAC-TACP/Operational Simulation Suite (J-T/OSS), and giving the audience insight into the operations of an Air Force JTAC.

The JTAC will demonstrate Types 1, 2, and 3 control, and terminal guidance operations using a ground-based laser system, as well as being coordinated with a wide range of virtual and constructive assets.

The Air Force Research Lab (Booth 1533), meanwhile, is providing the Joint Theater Air Ground Simulator System (JTAGSS), the LVC Network Control Suite (LNCS) and the Performance Evaluation and Tracking System (PETS).

Not to be outdone, the Program Manager, Training Systems (PM TRASYS) at Marine Corps Systems Command (Booth 1433), has three training simulations in OBW 2017: the Deployable Virtual Training Environment (DVTE)/ Virtual Battle Space 3 (VBS3); the MAGTF Tactical Warfare Simulation (MTWS); and the Combined Arms Command and Control Training Upgrade System (CACCTUS).

Integrating 14 external systems to represent challenges in complex distributed training, PM TRASYS is studying a range of technical challenges, including dense urban terrain, cross-domain solutions, cloud-based repositories, performance measurement, distributed exercise tools, dynamic scenarios using HoloLens, and global common terrain.

OBW presentations are organized around nine specific topics. During each 90 minute presentation block, the exercise will cover all nine topics, but two will be emphasized as follows:

Monday, 27 November, 1430-1600
Interoperability/Data Management
Tuesday, 28 November, 1530-1700
Live Asset Integration/Cyber
Wednesday, 29 November, 1000-1130
Coalition Support/Multi-Level Security
Wednesday, 29 November, 1500-1630
Dense Urban Areas/Performance Measurement
Thursday, 30 November, 1000-1130
Gaming Solutions/Interoperability

In addition, the Viking-Coalition team will be doing demonstrations on Tuesday, Wednesday and Thursday at 1300 and 1400.

Getting Serious About Wireless VR

Barely in existence for three years, Orlando-based Serious Simulations (Booth 2826) has quickly established itself as an innovative provider of wireless virtual reality (VR) display technology.

Allowing untethered human motion, the company's patented technologies in wireless VR displays provide a means to effectively use real weapons in simulators for small group training.

Already working closely with the US Army Research Laboratory, Serious Simulations recently announced two significant contracts which both demonstrate the versatility of the technology and which will be crucial in growing the business.

Christopher Chambers, founder and CEO of Serious Simulations, said the company had quickly grown since starting in 2014, with its wireless VR technology proving popular for infantry training, as expected, but also finding applications with first responders, professional sports and even the entertainment industry.

"The main thing that folks noticed is that we have complete freedom of motion for the individual and that's because we're completely wireless. All of our competitors in this area either have backpack computers or they are tethered to video cords or power cords – obviously that restricts your movement," Chambers told the *Show Daily*.

"So that's one thing that definitely sets us apart. We have invented some wireless video techniques to create our wireless head mounted display and helmet mounted display (HMD). And that's unique to us – we have two patents on that. And we're bringing that into fruition and hopefully shortly thereafter with our newest version of wireless VR."

The company's solution focuses on being able to remove the physical tether without adding any additional latency. By pre-processing video at the computer, sending it across wirelessly and then processing it on the HMD, the system is able to "deliver pixels in microseconds".

The other aspect that has allowed Serious Simulations to quickly gain a foothold in the market is the fact trainees are allowed to use all their own equipment, including real weapons, in the simulator.

"The main thing that folks noticed is that we have complete freedom of motion for the individual and that's because we're completely wireless."

"In the case of a Soldier or a law enforcement officer, they can take the weapon out of the arms room, bring it into the simulator, we quickly convert it… and we put on the data sensing weapon skin, which allows the instructor to monitor everything that's going on in the weapons as they would any other tethered weapon in lots of other simulators. But we do that wirelessly and unobtrusively on the real weapon not some fake toy weapon.

"That's really important now because weapons are highly individualized – with scopes and lasers, they get their own arrangements and they get used to that. They need to get used to the actual arrangement of their weapons so they can react quickly. So, we have enabled training on the real weapon."

On November 11 it was announced that Serious Simulations had contracted with an undisclosed prime contractor for a NATO-member army for the full suite of individual and small group training technologies, which is brand-named "ready2train".

The contract has potential to yield more than $10 million over the next three to five years – not insignificant for the Veteran Owned Small Business.

"That will be delivered into Europe starting in December. We had already delivered one system back in the spring. That was the existing ready2train system and while they evaluated that, we made modifications for their use and now we are delivering the next set of systems. It's a whole suite of tracking, wireless VR and the real weapon skins. And that's all working together for this group level training."

Other deliverables include custom data sensor kits for real and simulated weapons, custom wired to wireless conversion kits, custom wireless and wired head mounted displays, and integration of Serious Simulations' Inverse Kinematic software, which enables human motion tracking in Virtual Battlespace 3.

Beyond this contract, the company is dipping its toes into the world of wireless augmented reality (AR) after being awarded a research and development contract with Melbourne-based Aeronyde Corporation.

Serious Simulations will produce a new wireless AR headset as part of key control technology for unmanned and robotic aerial vehicles.

The company will use its current and soon-to-be-announced patented wireless video techniques for the design, with the first prototype expected to be ready by the end of the year.

Chambers believes with AR device adoption rates for military, commercial, and entertainment purposes generally predicted to far outpace the growth of VR devices, development of this wireless AR headset will help the company make a step into that market.

With the company also working on a wireless link that will support 90 frames a second and much higher resolution – an innovation Chambers said will be a "big shocker to the industry" – I/ITSEC gives Serious Simulations an opportunity to seek out partnerships to help deliver on its various commitments.

"We're going to be out looking for any companies that would like to work with us who are ready to train as a system or any of the components there of – we are a small business but we're eager to succeed however we can. And cooperation is a good way to do it.

"But there will be no big demos or anything like that because frankly my entire company is going to be back in the office trying to deliver on that European contract, which is due at the end of the week of I/ITSEC."

These Are Some Serious Games!

Celebrating its 12th year in 2017, the Serious Games Showcase & Challenge (SGS&C) has grown to be one of I/ITSEC's main attractions, playing a critical role in generating interest in the use of digital game technology and new approaches for training and education.

The SGS&C finalist games are divided into three primary award categories: business, government and student.

Examples from this year's business category include: Aflac Trivia by BreakAway Games; ARTé; Mecenas by Triseum; Bionautica Trails by Plas.md; Cloud Defense by Gronstedt Group; Earthlight Arcade by Opaque Space; Game of Sales by EI Games LLC; Installation Deployment Officer Simulation by Engineering & Computer Simulations, Inc.; Martha Madison by Second Avenue Learning; MyStartup by Simsoft Technologies; Planet Jockey Leadership Game by EI Games LLC; RoboEngineers by Filament Games; medRoom Academy by medRoom ; and Variant Limits by Triseum.

Government entries have been submitted by Veterans Health Administration and the Army Research Laboratory, while student entries have been provided by the University of Central Florida, American University and Arizona State University.

In addition to the three main categories, special awards are also presented for Outstanding Mobile Serious Games, Students' Choice – voted on by middle and high school students – and the Innovation Award, which is an award judged by and awarded at the sole discretion of the SGS&C innovation award committee. Finally, the coveted People's Choice award is determined by votes from I/ITSEC attendees during the week of the show.

The SGS&C leadership team, led by Vance Souders from Plas.md, and Colleen Matthews from the US Army, invites you to visit Booth 2481 to see this year's finalists, including two entries from international partners: the Brazil Independent Games Festival and Australasian Simulation Congress. "We are excited to highlight a set of products exemplifying the enormous impact serious games offer across the training industry," said Jennifer McNamara**,** BreakAway Games and SGS&G director.

SGS&C is very appreciative of this year's sponsors: TechWise, Virtual Heroes Division of ARA Inc., Plas.md, Engineering and Computer Simulations, Inc., General Dynamics Information Technology, The University of Central Florida SVAD, HP, and Box.com.

Voting for the People's Choice award closes at 1800 on Wednesday. Don't miss the opportunity to check out the finalists and vote.

ADL Bridges Learning Gaps

The Advanced Distributed Learning (ADL) Initiative is a US government program, reporting to the Deputy Assistant Secretary of Defense for Force Education and Training, under the Office of the Assistant Secretary of Defense for Readiness, that was established to help programs, initiatives, and policies better support flexible, lifelong learning through the use of technology.

Dr. Jennifer Vogel-Walcutt

According to Dr. Jennifer Vogel-Walcutt, Director of Innovation for ADL, the initiative has marked a number of significant milestones over the past year.

"The first was our Principal Investigator's (PI) meeting, which was conducted at the Institute for Defense Analysis (IDA) in April," she explained. "And we didn't just invite folks who were working on projects, but additionally brought in folks from all over government and defense to participate for two days. What that allowed us to do was

"The primary congressional mandate for ADL is to modernize distributed learning... and that is certainly the defense and security sector first but also includes whole of government and international."

capitalize on the gestalt a bit more, and talk about how every project connects, not only to our vision of the future learning ecosystem, but also how it connects to these other institutions.

"The primary congressional mandate for ADL is to modernize distributed learning," she added. "And that is certainly the defense and security sector first but also includes whole of government and international. So, when we have this PI meeting and

"TLA is what we believe will be the future of education in training"

each of our presenters is sharing a way in which they are connecting to this architecture, it allows these other institutions to say hey, 'Did you know we have an example of a piece of that as well?'"

As an example, she pointed to the frequently overlooked relationship between the National Park Service and the Department of Homeland Security.

The second ADL milestone occurred in May, with the Total Learning Architecture (TLA) demonstration at Fort Bragg, NC.

"TLA is what we believe will be the future of education in training," Vogel-Walcutt said. "While each of our performers demonstrated at the PI meeting in pieces, the TLA is where it all comes together."

She offered parallels to an "internet for learning," noting that TLA looks toward a common specification for the development of all learning programs, allowing complete information about the learner to be placed in a singular location.

"Why does this matter for defense? Because we buy a whole lot of simulators and modeling programs and training apparatus," she said.

In addition to highlighting the expense of older proprietary solutions, she observed,

"If that simulator only talks to itself, you can only learn what you were taught there and you cannot adjust another simulator based on how well or how poorly you did on the first one. But, by having them all speak the same language, metaphorically, then you can do activity one, take an assessment, and have that influence activity two, and then have that experience impact activity three. You can also collect data on personal tendencies, skills, attributes, preferences or experiences."

Designated as the Experience Application Programming Interface (xAPI), the new standard would connect all devices and learning experiences while also collecting data on the experience.

"The goal is that all of the vendors will start following and using this xAPI so that, when you build that simulator or when you build that training exercise, all of it will feed into something called a Learning Record Store. That is where the data collected about you will be stored," she said.

"Academia is working on this problem. Industry is working on this problem. And ADL is working on this problem. Our job from ADL is to steward the policy for xAPI, which has just been signed by the Undersecretary as a Department of Defense Instruction, stating that programs should be using xAPI when they're developed. So that's a very big deal!"

The third 2017 ADL milestone was iFest 2017 on July 31 – August 2. Run by the National Training and Simulation Association (NTSA) and supported by ADL, iFest provided unique opportunities for military, government, industry, and academic professionals to share the latest in distributed learning innovations.

"This was a more experiential meeting where we had the academics coming in and giving us 'the deep dive,' especially as we start talking about security. Anytime we want to push data externally through the user or the training program, we want

"If that simulator only talks to itself, you can only learn what you were taught there and you cannot adjust another simulator based on how well or how poorly you did on the first one."

to make sure that we're really watching those security pieces. And then we also had industry coming in to share what is the art of the possible. Where are we going next? How quickly is data going to be assessed, understood, clarified, and provided to both the user and also to the instructor? That is a focus for us, but it is an even faster and bigger focus for industry. And, of course, we had defense and government representatives as well." Vogel-Walcutt said.

She added that the fourth broad ADL 2017 milestone includes the work performed with the international community, including the Nordic Defense Conference, the NATO Working Group for Individual Training and Education, and the Partnership for Peace/ADL Working Group.

"In all of these cases, we're looking at stewarding international policy ensuring the xAPI and the Total Learning Architecture is used globally for our defense purposes," she said.

I/ITSEC 2017 and NTSA Welcomes New Exhibitors

A warm welcome to exhibitors who are new to I/ITSEC this year or are returning after a hiatus. (Listing as of November 3, 2017)

ACADA (Booth 1081)
Adder Technology (Booth 515)
Aimeron Inc (Booth 248)
Airbus (Booth 388)
Alpha Omega Change Engineering Inc (Booth1517)
Ameripack (Booth 982)
ARA Virtual Heroes Division (Booth 1207)
ArchieMD Inc (Booth 2571)
Army Educational Outreach Program (AEOP) (Booth 2884)
Arvizio Inc (Booth 1081)
Atlantic Laser Scanning Services Inc (Booth 350)
Autocomp Management (Booth 403)
Aviation Training Consulting LLC (ATC) (Booth 265)
Battlespace Exploitation of Mixed Reality (BEMR) Lab-SSC Pacific (Booth 1086)
Bluedrop Training & Simulation (Booth 1081)
Brunner Elektronik AG (Booth 2235)
Canadian Delegation (Booth 1081)
Chassis Plans LLC (Booth 348)
Chelsio Communications Inc (Booth 2385)
Computer Comforts Inc (Booth 2712)
Concord Aerospace (Booth 2728)
Contex (Booth 1081)
Cornerstone Software Solutions Inc (Booth 2773)
Craig Technologies (Booth 1933)
Cranfield Aerospace Solutions Ltd (Booth 2073)
Cruden B.V. (Booth 313)
Cyper Training Technologies (Booth 2874)
Dimenco (Booth 2711)
DoD's DIB Cypersecurity Program (Booth 988)
EHS Technologies (Booth 2373)
Embry-Riddle Aeronautical University: FAA Center of Excellence for Technical Training and Human Performance (Booth 2672)
Expo Enterprise 990 (Booth 2716)
Fain Models, Simulation Systems (Booth 2073)
Feel Good Inc (Booth 2710)
FoxGuard Solutions (Booth 2235)
Full Sail University (Booth 1788)
GBvi Ltd (Booth 2736)
Gemstar Manufacturing (Booth 1187)
Global Technology Integrators LLC (Booth 2870)
Hutchinson Stop-choc (Booth 2753)
Immersive Technologies (Booth 2573)
Innovative Technology Projects Ltd (Booth 1173)
Inovex Simulation & Training (Booth 880)
Insight Public Sector (Booth 717)
Insperity (Booth 2670)
Institute of Marine Technology at Warner University (Booth 2665)
Integration Innovation Inc (Booth 561)
Janus Research Group (Booth 2674)
JCA Solutions (Booth 261)
Jircor (Booth 2775)
Mass Virtual Inc (Booth 358)
MBX Systems (Booth 447)
Medical-X (Booth 2170)
Mercury Systems (Booth 774)
Merlin Simulation Inc (Booth 2382)
Motion Workshop (Booth 355)
MT2 Firing Range Services (Booth 2661)
Nuegart USA Corporation (Booth 2704)
Noitom Ltd (Booth 2671)
Novatech (Booth 2082)
Oasis Advanced Engineering Inc (Booth 1581)
Orlando Science Center Hands-On STEM Activities (Booth 2886)
Patco Electronics (Booth 2709)
PhaseSpace Inc (Booth 1588)
Planar, a Leyard Company (Booth 2759)
Pratt & Whitney Customer Training (Booth 735)
PTC (Booth 2386)
Red Lotus Technologies (Booth 773)
REDCON Solutions Group (Booth 2771)
Save Corporation (Booth 2749)
Scalable Network Technologies (Booth 1109)
SecureStrux LLC (Booth 255)
Silkan (Booth 2717)
SimBlocks LLC (Booth 454)
Simulator Solutions (Booth 2729)
Spear & Splunk (Booth 167)
Splunk (Booth 407)
SR Research (Booth 986)
TEC Simulation (Booth 149)
Tenosar Corporation (Booth 456)
ThreatAdvice (Booth 2872)
Trideum Corporation (Booth 1032)
UCF Foundation Inc (Booth 874)
Unigine Corporation (Booth 1170)
University of Southern California's Institute for Creative Technologies (USC ICT) (Booth 460)
V-Armed Inc (Booth 613)
Vencore (Booth 1153)
Will Interactive (Booth 607)
Yota Enterprise (Booth 2763)

Cruden Making Waves With Fast Small Craft Simulator

A perceived gap in the simulation market has induced first-time exhibitor Cruden (Booth 313) to brings its new high-speed small boat simulator to I/ITSEC 2017.

The company believes its technology demonstrator will highlight the benefits of simulators for training crews in high-speed boat handling as well as navigation, drills and tactics scenarios.

Cruden CEO Maarten van Donselaar told the *Show Daily* that while the company was better known in the motorsport and automotive industries, they had started fielding questions from all over the world, on whether they offered simulation for high-speed boating training.

"And sort of coincidentally, we had people in-house who were educated in the field of high-speed boating applications. So, we had the expertise and were aware of the fact that while simulation is widely used in the maritime world for training, it's usually big merchant ships and the bigger boats," van Donselaar explained.

"These fast craft that we are simulating today, from a technology point of view, are a lot closer to a Formula One car than they are to a big ferry or a big frigate. From a technical standpoint, if you want to simulate these big boats, they are far away from these fast-small craft – Rigid Inflatable Boats (RIBs), the small patrol boats, anything with a planing hull."

> ***"These fast craft that we are simulating today, from a technology point of view are a lot closer to a Formula One car than they are to a big ferry or a big frigate."***

Exploiting the company's experience developing motorsport racing simulators, the hydrodynamics-focused simulator uses detailed modeling and motion-cueing techniques along with sophisticated image generation to provide training that features realistic motion and dynamic feedback.

"It's highly dynamic and therefore the timing aspects of what you're doing become extremely important. So, if you are driving a RIB in a sort of significant sea state, you will see the wave in front of you and as a driver you have to respond to that. It's very important that everything you see is synchronized with what you feel and that it should be correct in the millisecond area.

"That's something completely different from a bridge simulator for a ferry or a frigate where if you have to port in three miles so you start slowing down already to take the speed out of the ship."

The company is also offering the integration of weapons simulation training with the high-speed boat simulator in conjunction with partner Meggitt Training Systems.

Originating from Fokker Aircraft Company, Cruden was formed in 2004 and, as well as serving the automotive, motorsport and marine industries, also produces geo-correct terrain databases, 3D vehicle models, and dynamic models in-house. The company launched its open architecture Panthera software suite in 2015.

After launching the small craft simulator as an internal project, Cruden joined a project between the Marine Research Institute Netherlands (MARIN) and the Dutch Ministry of Defense to develop a similar Fast Small Ship Simulator (FSSS).

As well as Cruden and Tree C Technology as key suppliers, the project includes input from the Royal Netherlands Navy, including the Surface Assault Training Group.

Cruden's involvement in the project reinforced the company's understanding of the vital role fast small ships play in a nation's defense, allowing a swift and flexible response to a range of maritime threats. Without the use of simulators, crew training is expensive, time consuming, weather dependent and tough on instructors, who face up to 1,000 hours per year at sea and accelerations of up to 9g.

"And of course, this project has helped us a lot in gaining experience, having access to experienced people who could give feedback on – not only what the simulator feels like, subjective feedback – but also what it should be doing for training applications, what they will be training," van Donselaar said.

"Because just driving around on the sea becomes, well, kind of useless after 10 minutes – you have got to have a mission to train. For that you need to talk to the experts on what to do, what is a valuable thing to be trained on a simulator."

Cruden's new high-speed small boat simulator.

The FSSS simulator will help reduce the strain on front-line operational vessels and sharply lower fuel costs, while also opening up the possibility of coordinated training with other marine simulators such as the Ship Handling Simulator System.

Nevertheless, van Donselaar stressed that the system on display at I/ITSEC was not the FSSS, which was still at the prototype stage, and was instead a "100% proven" technology demonstrator built after two years of consulting people with a need for that kind of training.

"We have presented our technology twice at the HSBO, the High-Speed Boat Operators Forum. We were not there to present the technology commercially. We were there to get feedback from operators first of all - is this technology good enough to be used as a training device, and secondly, if you were out for training, what aspects would you be interested in if we could develop that for a simulator?"

"This is the start of our marketing activities but at the same time we already have had a lot of conversations with high speed boat operators, either navy, coast guard or search and rescue organizations. We have been speaking to people in the US and in Asia – it's basically all over the world, because people are looking for this kind of application."

QuantaDyn Corporation

Visit booth #807 for more information!

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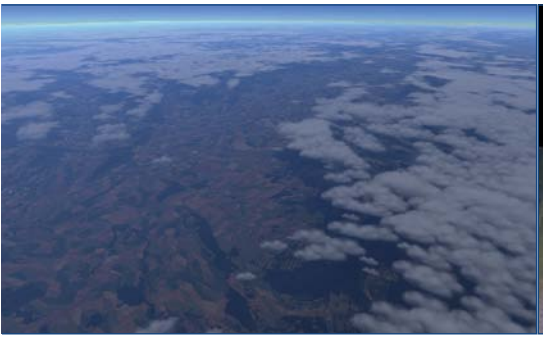

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Please visit CAE (Booth #1734) and Rockwell Collins (Booth #2201) during I/ITSEC for live, real-time iLVC demonstrations on Tuesday, November 28 and Wednesday, November 29 at 12:30 and 14:00.

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