Air Force Training Programs Link Acquisition and Operational Communities

On the final day of last year’s I/ITSEC 2018, Colonel Philip Carpenter, Chief of the Simulators Program Office at Air Force Materiel Command, sat down with the Show Daily to highlight some of the dynamic issues surrounding US Air Force simulation and training.

At the time, Carpenter emphasized underlying efforts to increase readiness and lethality, critical trends that were to be incorporated into this year’s I/ITSEC theme: Winning the War of Cognition by Pushing Readiness and Lethality Boundaries.

Turning to programs, last year, he offered that the Air Force was “on the precipice” of releasing the much-anticipated request for proposals (RFP) for its pivotal Simulator Common Architecture and Standards (SCARS) program, which he summarized 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.

“It’s been a busy year,” he said at the time. “Moreover, we anticipate 2019 to be just as busy. I think we’re going to try to look into innovative ways of doing business and practices that we haven’t done before. And we’re going to explore every option in an effort to increase readiness and lethality.”

Carpenter spoke to the Show Daily again immediately prior to I/ITSEC 2019, acknowledging that it had, in fact, been another busy year.

Offering the example of SCARS, he stated that the RFP for SCARS was released and that the likely question he would receive at this year’s I/ITSEC would be: When is the contract award date?

“Unfortunately, I can’t give you a prediction,” he said. “I will just say that we’re working as hard and as quickly as we can. There are a lot of factors that are in the calculus.”

While some may be keeping their focus on SCARS, Carpenter was quick to expand the aperture of Air Force simulation and training priorities at I/ITSEC 2019.

“One area that is extremely important involves our efforts to stay closely aligned to the Air Force operational community,” he began. “The only way we are going to be able to overcome future challenges is by working hand-in-hand with our warfighters and their representatives. They are the reason that I am in business. The reason I do what I do is for the operational community.”

One key representative of the warfighting / operational community is Colonel Gerard Ryan, Chief of the Operational Infrastructure Division, Directorate of Training and Readiness, Headquarters, USAF.

Ryan explained that, as a representative of the operational community at the Pentagon, his job was to “get outside the beltway, see what the warfighter needs and does, and serve as a truth finder” for that operational community.

“The relationships that we have with [Colonel Carpenter and his office] are... Continued on p6
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Don’t Miss I/ITSEC 2019 YouTube Coverage

Make sure to tune in to YouTube.com/NTSAToday for video coverage throughout I/ITSEC 2019, with all the key special events, products and personalities of the event captured and uploaded throughout the show.

John Williams, NTSA Director of Media Relations, said the video coverage provided throughout I/ITSEC was a great medium to showcase the myriad technologies on display on the show floor.

“The video team will be providing coverage of I/ITSEC 2019 to the NTSA Today channel on YouTube, which allows attendees to keep track of all key events but also generates a wider audience and further cements I/ITSEC as the most important and dynamic event of its kind in the world.”

Video coverage is provided by Denver Film Company, with the team this year including on-screen presenter Andra Dohrn (pictured).

I/ITSEC Traditional Bag Stuffing

A ‘battalion’ of NTSA volunteers descended on the I/ITSEC 2019 venue on Sunday morning to help stuff almost 2,000 bags for attendees in what has become an I/ITSEC tradition.

This year, supported by a fresh injection of youth, representatives from the NTSA Subcommittees, Conference Committee and Council of Chairs, along with many spouses, gathered for the informal tradition that is symbolic of the teamwork that underpins the success of I/ITSEC each year.

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Air Force Training Programs... continued from p1

really important in getting this right and I think we’ve done a good job on that over the last couple of years,” he stated. “Now you know that the acquisition process never works quite as fast as an operator might like. But between the two organizations, I believe that we have found a good place in the middle.”

Ryan went on to share several messages from the operational perspective, acknowledging that he planned to elaborate on them during panel discussions at I/ITSEC.

He began by highlighting the modular open system architecture modeled in programs like SCARS.

“The ‘proprietary game’ is hurting us,” he said. “If we are to keep up with the pacing threats that are out there, we have to change our way of doing business. I’m not saying, ‘Take things away.’ I’m saying we need to change this business model. And that theme is consistent throughout the Air Force. And I know the other services are saying that too.”

He went on to cite examples of how this sort of approach has been adopted in other areas and technologies.

“We certainly have done it in the cell phone world. We’ve done it in artificial intelligence. We’ve done it in so many other technological ways,” he said, adding that the broader connectivity capabilities and open system architecture is critical to train for ‘a high-end war fight.’

He continued, “On the synthetic enterprise side of it, we are trying to rethink how a simulator is not necessarily a thing on a stick or in a box or things that Colonel Carpenter and his predecessors have dealt with for the last 20 or 30 years. A simulator is an input/output device that is connected with all the other input/output devices with a high level of security, critical for the fifth-generation fight, that can interchange quickly, just like the cell phone. I don’t think that’s earth shattering, but those are sort of simple ways to say what we’re trying to do.”

Another point of emphasis from Ryan involved how a common set of standards is also critical to both joint partners and international partners. “In fact, on Friday, the day after I/ITSEC, we’re going to work with some of those partners on what those standards can look like in the simulator for a synthetic enterprise. We are staying later to do that, because it’s that important to us. We did it last year and we’re going to do it again this year. There is four star Air Force Chief of Staff and below emphasis on getting this done.”

He added that additional work with the US Navy was helping both services to be “more efficient with expenditures.”

“I think [Colonel Ryan] brings up a good point about the sort of dynamic that exists between us,” Carpenter echoed. “If you take a step back and look at this entire problem set, it’s almost like a triangle. You have the warfighter community at one point of the triangle. You have the acquisition community at another point of the triangle. And then you have industry at the third point. So we have got this balance. And within the confines of that balance we also have other environmental conditions like funding, sequestration, continuing resolutions and all these other things that are outside of our span of control. We have to juggle these variables in such a way to still meet the warfighters’ needs.”

Elaborating on the “high-end war fight” cited by Ryan, Carpenter echoed the criticality of including both space and cyber in the training environment, with both leaders noting the need to move some space and cyber training programs toward the SCARS standards.

Asked about their messages to warfight-ers, Carpenter began, “My message would be to get on the SCARS bandwagon. In fact, another thing that illustrates the partnership between our office and Colonel Ryan’s office is that we have a joint memorandum signed [by our leadership] basically mandating that future systems will utilize SCARS standards going forward. All future systems.”

“SCARS is critical because it provides the standard,” Ryan agreed. “It provides the archi-

In terms of desired acquisition speeds, Ryan offered, “Two years is no longer acceptable. If a particular process takes two years, I believe that we now need to figure out how to cut that in half.”

He continued, “A relevant training environment is the main thing we’re focused on. That includes in the live range. It includes things like bringing space and cyber into it. And bringing all those things together is a difficult task.”
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Robb Urges I/ITSEC Attendees to Plan Ahead

In his welcome message for I/ITSEC 2019 attendees, RADM James Robb, USN (Ret.), President of the National Training and Simulation Association (NTSA), emphasized the rapid growth of modeling and simulation and the need to plan ahead and prepare for the I/ITSEC experience.

“In general, the modeling and simulation community is flourishing,” Robb exclaimed. “Across many arenas, we are seeing increasing emphasis on modeling, simulation, big data, virtual reality, and artificial intelligence. We’re seeing it in areas ranging from medical training to the services taking simulation training down to the individual level. And a lot of the vision that has emerged and evolved over the last few years is moving into execution, which is really fun to watch.”

As an example of vision turning to execution, Robb highlighted the US Army’s Synthetic Training Environment (STE), which he said “is starting to put money against programs and to actually work on the practicality of the problem set.

“The Army’s establishment of the STE Cross Functional Team (CFT) is just one example of the emphasis,” he said. “And Major General Gervais, who is the director of the STE CFT, has been doing very well at boiling the problem sets down and putting practical, ‘no kidding solutions’ into the process.

“Another example can be seen in the US Navy, where they are starting to really walk out on their Sailor 2025 program,” he added.

There’s something for everyone, but in some cases, there are two or three at the same time. So, we have packed an enormous amount of quality content into this year’s conference and the show floor, which actually sold out in October.”

Asked about his specific message to attendees at I/ITSEC 2019, he said, “I think that the big challenge here is there is so much available and so many people that you could and would want to interact with. I mean, you basically have five days to do what could be several months’ worth of work. So, you really have to plan it out.

“We encourage people to go to the show app and use it to actually plan, prepare, and seek the right people. And if they can do all that ahead of time, they can really take advantage of their time. We know that it comes and goes very quickly. And the biggest frustration I see is from folks who just haven’t prepared well enough.”

Emphasizing the need for preparation, Robb noted the presence of more than three dozen special events at I/ITSEC 2019, offering, “There’s something for everyone, but in some cases, there are two or three at the same time. So, we have packed an enormous amount of quality content into this year’s conference and the show floor, which actually sold out in October.”

Reflective on some of the representative opportunities, he pointed to Wednesday’s focus event – Patient Safety in Healthcare: The Role of Modeling and Simulation.

“That’s a very special event,” he said. “It reflects the next step in something that NTSA and the Society for Simulation in Healthcare have discussed for several years. It recognizes the problem of patient safety, and the reality that a very large number of people pass away due to preventable accidents or situations within the health care system. We have spent several years trying to explore how we could help address some of that really dramatic problem.

“We aren’t going to solve it completely, but we’re going to help make people aware of the problem and to seek training and simulation solutions that can be a part of better outcomes within the healthcare system.”

Reflective of growing leadership support for the application of modeling and simulation across the Department of Defense, he cited Tuesday’s Senior Leader and Air Force General Officer Panels as well as Wednesday’s Navy Flag Officer Panel.

“Those panels include a lot of really high-quality people,” he said. “And we are very appreciative of their participation. I think it reflects that growing emphasis I mentioned on readiness and training solutions to help us not only be more efficient but also safer and more effective.”

He added, “Many of the senior leaders who have been here in the last five years have said, ‘This is a great way to not necessarily replace live training, but to help prepare people for the scarce live training that they get.’ As the Commandant of the Marine Corps said, ‘Get out there and get your reps and sets. Practice, practice, practice and you will be more effective in the real event someday.’ And many of those ‘reps and sets’ can be accomplished through simulation.”

Other cited event examples ranged from Air Force Simulators Pitch Day to the return of the Launchpad venue, designed to accelerate acquisition and to get technology to the field faster.

“There’s a lot going on at I/ITSEC,” he concluded. “We welcome attendees and urge them to take a little extra time to prepare, plan and optimize their I/ITSEC experience.”
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EXHIBIT ELEMENTS INCLUDE: LAUNCH OF THE CAE TRAX ACADEMY; CAE SPRINT VIRTUAL REALITY (VR) TRAINER; CAE RISE (REAL-TIME INSIGHTS AND STANDARDIZED EVALUATIONS) FOR THE MILITARY MARKET; CAE MEDALLION MR E-SERIES VISUAL SYSTEM; AND, CAE HEALTHCARE TRAINING SOLUTIONS.

Phil Perey, head of technology for CAE’s defense business, outlined several of the efforts for the Show Daily.

“The genesis of our CAE TRAX Academy centers around the challenges that most Western militaries face with regard to both pilot and instructor shortage,” he began. “And the kind of conversations that we’ve had over the past several years indicate that this problem is not going away. In fact, it’s probably getting worse. And there are many reasons for that, ranging from the pull of pi-lots into the civil space to the fact that, ranging from the pull of pilots into the civil space to the fact that many younger kids don’t want to become pilots. There are a multitude factors. But really we have to look for solutions to help what is an ongoing downward spiral in terms of pilot delivery for Western militaries.”

The CAE Training Accelerations (TRAX) Academy is one of those potential solutions.

“The TRAX Academy addresses the entire continuum of pilot training,” Perry explained. “It starts with mobile app-enabled digital courseware and a consumer-level helmet mounted display to help visualize and build up understanding of the various maneuvers. Then it progresses into what we call the CAE Sprint trainer, which is a self-paced trainer with a virtual reality headset, physical sticks, force feedback of vibration sound and, probably just as importantly, a full interaction with the cockpit and the system that you have on a high-end flight training device. And the entire system is connected to a data system, where we can gather performance on the student’s progress, areas of weakness, areas of strengths, and build upon that in a self-paced ecosystem.”

He noted that one of the key components of TRAX is CAE RISE, which the company launched into the defense market at I/ITSEC 2018.

“RISE is that tool that gathers all the data analytics and provides you with all the dashboards and feedback on the performance of the students during their maneuvers,” Perry said, mentioning that the addition of a new interactive “virtual coach” feature that supports students during the training process.

He added that I/ITSEC visitors will have a chance to experience all aspects of the TRAX Academy in the CAE booth on the exhibit floor.

Another aspect of CAE’s display is the Medallion MR e-Series. First displayed as a partial system at last year’s I/ITSEC, the full Medallion MR will be in the spotlight at I/ITSEC 2019.

“We’ll have a 225 degree by 90 degree visual system up and running,” Perry said. “And that’s pretty exciting, because we’ve linked in a lot of the key training areas where we think that the e-Series really shines and is uniquely qualified to be able to provide that diversity of experience.”

As an example of one of the supporting technologies, he noted that the design features electronic collimation, which compensates for the parallax error distortion you get when you move your head left to right in a relatively small display.

“That’s pretty important,” he said. “Because if I’m moving my head six inches to the left or the right and my screen is only three or four feet away from me, that’s a pretty big angular error. Yet that’s sort of the accepted status quo today. But we’re saying, ‘Hey, we can do better. We can make that picture perfect under all circumstances.’”

He asserted that a second “technology pillar” supporting the Medallion MR e-Series is the ability to create a full stereoscopic view with eyewear.

“You’re getting the full depth perception into that environment,” Perry said. “That’s particularly valuable as a training cue when you’re doing those high gain, up close tasks like formation flight or air-to-air refueling.”

He identified a third technology pillar as “advanced night vision goggle (NVG) optimized renderings,” stating, “We use the special modes inside the projector that allow us to render both an out the window and an infrared view simultaneously and independently. So, we use the image generators in those modes to ensure that quality of the NVG picture that’s being portrayed is essentially a perfect replica of what you see in the real world.”

The CAE exhibit will also include some virtual reality-enhanced emergency medical manikins and ultrasound simulator designs from CAE Healthcare, as well as a virtual reality walkthrough of the new CAE USA headquarters facility, which is slated to open in Tampa, Florida in 2022.
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Cubic Highlights Training Convergence Across Domains

Cubic Global Defense is utilizing the I/ITSEC 2019 venue to emphasize company technologies and capabilities that support the convergence of training environments across multiple domains.

Speaking to the Show Daily, Mike Knowles, President of Cubic Global Defense, offered: “We're excited about I/ITSEC 2019. And what you’re going to see from us this week is the final real convergence of live, virtual, constructive (LVC), to be integrated across multiple domains; not just the air, sea and land, but also in space and cyber.”

Knowles emphasized that warfighters can benefit from the supporting technologies, which can be used "to increase proficiency and drive readiness in a multi-domain operational environment."

He noted that the Cubic exhibit at I/ITSEC 2019 [Booth 1948] will feature "a number of products and capabilities across the domains that we’ll address, showing that it’s here and the technology is mature and ready."

He explained that the specific systems and technologies chosen for the spotlight were reflective of the company’s broad spectrum of capabilities and helped to emphasize how the different domains can work together.

“On the ‘air side,’ for example, a little over a year ago we completed a joint program with the Navy and the Air Force called the Secure LVC Advanced Training Environment (SLATE). And out of this advanced training development program we actually did a large force exercise where, for the first time ever, we integrated virtual and constructive elements into the cockpit of a live fighter. And we did this with NSA type I certified multilevel encryption capability. We also utilized a newly formed LVC waveform that we call Fifth Generation Advanced Training Waveform (5GATW). And we were able to do this at Technology Readiness Level 7 - basically ready for production. This was validated in a large force exercise over the course of a week at Nellis Air Force Base, with both Navy and Air Force participation, and it proved for the first time that LVC technology is available to be used for air combat training,” he said.

Knowles continued, “Building on top of that, the Army has been pushing out quite forcefully on their Synthetic Training Environment (STE) with a number of down-selects and awards. And we were recently down-selected under the Live Training OTA [other transaction agreement] across a number of the focus areas. So, we are delivering a new, non-laser based solution for live training of direct and indirect fires. And at I/ITSEC, we are going to show not only that live training element, but we’re also going to show how that integrates into the STE Common Synthetic Environment (CSE) program.”

Pointing to these efforts as representative of the company’s heavy involvement in LVC training for both air and ground operations, he said, “We have the ability now to really start to create that true multi-domain operations training where we can integrate air and ground training together with other elements.”

As another one of the supporting technologies being demonstrated by Cubic at I/ITSEC 2019, he pointed to the company’s SPEAR [Simplified Planning Execution Analysis and Reconstruction] software.

“That’s really a next generation monitoring and debrief software support system,” he explained. “And what we’ve been able to do is to show, both real-time in training and for after action mission assessment, the ability to integrate the training elements of air and ground together. Moreover, we have also now integrated space and cyber effects into that picture, so we can show true multi-domain efforts. "It was specifically designed for LVC training," he added. "And we’ve also introduced a real-time analytics and data archiving capability so that we can really start to bring in data analytics to better drive and focus, not only developing and generating LVC environments that represent near peer threats, but also be able to drive value-based and metrics-based decisions and evaluations on proficiency and training against objectives."

As a takeaway message for military attendees at I/ITSEC, Knowles offered, “LVC is available and we can now adequately create threat representative environments for near peer adversaries and be able to train in multi-domain operations. That sounds like a lot of words, but if you look at the importance of what’s facing military leaders today, as we transition from a global war on terror, that near-peer threat is going to require significantly different levels of training against weapons systems and sensors that are on par to ours. And to be able to fight in combat in those types of environments, you want to train suitably to manage the environment and manage the weapons system as well as the coordination that is going to take.”

He concluded, “The ability is now there to create these environments to train our warfighters so that not only can they be effective in combat, but so they can come home safely.”
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International Spotlight for Today’s Innovation Showcase

The inaugural International Spotlight session of today’s Innovation Showcase [1430-1745 in Booth 2588] will highlight companies from Australia, Canada, Finland, Israel, the Netherlands, and the United Kingdom. Three of the companies – Green Ammo, inclusion Netforms, and Varjo Technologies – are first time exhibitors at I/ITSEC.

Skip Vibert, NTSA’s Government & International Security Advisor, explained to the Show Daily that following feedback from international exhibitors at last year’s event, it was decided that the extensive international presence at I/ITSEC 2019 could be highlighted by having a dedicated Innovation Showcase session today for companies that are included in the Canadian and Australian pavilions, as well as individual companies.

“The organisers of these national pavilions said that it would be nice if our companies could get more exposure,” said Vibert.

“What does a company want? They want to tell people about what they do and they also want to tell them what they need. In other words, who do they want to work with or what kinds of work do they want to do and what their capabilities are.”

Vibert said the International Spotlight is “ideal to help the exposure in general terms, not for a specific company, but to continue to build the international underpinnings and sewing international and US participation together.”

He noted that when the International Spotlight was announced, the available slots were filled quickly.

A number of international companies will also participate in the Tuesday and Wednesday sessions of Innovation Showcase.
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The side door gunnery trainer takes advantage of VRSG’s built-in support for the HTC VIVE Pro Head Mounted Display (HMD), providing high-resolution stereo rendering at 90 frames per second.
Fujimoto, who has been an active researcher and educator in the parallel and distributed simulation field, focused his I/ITSEC Fellows paper on his personal views of the origins and development of the Parallel Discrete Event Simulation (PDES) field, as well as directions for future development.

Describing his presentation to the Show Daily, he explained, “A number of simulation programs take an excessively long time to execute, and the particular type of simulations I work with are called Parallel Discrete Event Simulations. I won’t get into the technical details, but these are for modeling things like communication networks, supply chains, disease spread, military combat engagements - a wide variety of problems. And these large-scale simulations can really take inordinate amounts of time to complete. For the I/ITSEC community, they tend to show up in what are called constructive simulations or wargaming simulations. So, my work has really been focusing on how to accelerate the execution of these simulations by harnessing together many, many computers to try to address the execution time issue.”

Fujimoto contrasted PDES efforts with other types of simulations across the I/ITSEC community, saying, “With most training simulations, for example, the idea is to have the simulation run in synchrony with wall clock time. Or, if you think in terms of a video game, the people that are immersed in the simulation can interact with it in a realistic fashion in real time. By contrast, the parallel discrete simulation I typically use for analysis purposes. They are not always paced with real time as training simulations. But they can be, so they have some role in the training and synthetic environment community in terms of creating analytic models for some of the types of systems that one would use in a synthetic battlefield.”

Citing “an interesting and rich history” for PDES, he stated that the main message he hopes to convey in Monday’s presentation “is not so much the history but looking forward into the future.”

“One of the messages that I’ll talk about in terms of future directions is I really believe that modeling and simulation can play a much, much stronger role in analytics that people use,” he said. “On a day to day basis, we’re in an environment now where basically you have analytics anytime, anywhere. For example, if you’d like some decision aid to help you decide how to drive your car to find the best route to your destination you can just pull out your phone and it will give you recommendations. Underneath the covers of course is some relatively sophisticated analytics that’s helping you by providing these decision aids. And that’s an area where I see the modeling and simulation community can really have a much stronger role. Modeling and simulation has had a significant role to date, but it could be even more so in the future.”

He continued, “And today, with the computing platforms changing as we move away from desktop computing and toward mobile computing on one side and cloud computing on the other, I think that’s an important change that the modeling and simulation community needs to be conscious of and to apply modeling and simulation in the context of these types of platforms.”

Fujimoto concluded, “I’d like to leave the message that this is an area that folks should be thinking about. In some of my own research at Georgia Tech, I’ve been looking at running simulations on mobile devices in particular and interacting with live data streams. I think that is something I would like to challenge the community to really embrace to a much greater extent.”
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From Formula One to Fast Craft Simulators

Its background providing simulators to Formula One race teams is the secret sauce behind Cruden’s new fast craft simulator, which the company is unveiling at I/ITSEC 2019.

The Dutch company [Booth 712] is displaying the latest version of its fast craft crew training simulator, which now features seats for two people – helmsman and navigator, as in a real boat – allowing for more realistic training.

The simulator also features more detailed graphics, rendered in ultra-high definition, which better replicates the conditions of being on choppy seas on a fast craft, allowing for more realistic training scenarios.

Maarten van Donselaar, CEO of Cruden, said the company saw an emerging market for realistic simulators in this segment, given the number of fast craft currently under production.

“There is a training need – these fast craft are being built in high numbers, they need people for those, and we do not want to train them all on the water. We want to have more effective training and you need simulators for that,” he explained.

While other companies offer maritime simulators, these typically simulate the bridges of large ships and are better utilized as procedural trainers.

“But ours is the only simulator that acts accurately and replicates the behavior of these small fast craft. You forget you are on a simulator – you think you are on the water. And that’s because we do not come from the big ship simulators. What we apply is Formula One technology – and that sounds very cheeky, but it is actually true,” he argued.

“That’s where we come from. And why is that so important? Because when you are on a fast boat, when you are going out in choppy sea, doing 50 knots, you’re traveling at such high speeds, that getting the moment of impact with the water right is so important that the importance of that lies within the milliseconds range.”

Van Donselaar said the software module that evaluates the interface plane between a Formula One tire and the road, is the same software code that evaluates what happens between the hull and the water.

“So, it’s not a cheeky sticker on the outside of the box saying Formula One technology inside. But it helps us in providing very realistic behavior. And on the other hand, we have to be honest and explain to our customers, and potential customers, that in real life you will experience slams, giving you accelerations of 15G or maybe even more, and you will not get that in the simulation.

“But you don’t need that to build a proper training device. All we need is relevant motion feedback such that the trainee responds to whatever happens in the exact same way as he does when he’s out on the water.”

The new version of the simulator provides a taller, 4.5m-high screen to cater for a larger projection system and to convey a wider field of view.

After launching the small craft simulator initially 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).

Today Cruden is positioned to make simulators for various requirements, with the team able to structure the system to mirror vessels from small RHIBs to 100ft patrol boats.

These include hull mock-ups mounted to the motion system that moves in six degrees-of-freedom, allowing trainees to be trained in maneuvering, sea keeping and full missions to make real world training far more effective and reduce the risk for injury.

“We do not believe the simulator replaces on-the-water training. The simulator is a tool that will make the actual training on the water a lot more efficient, for several reasons. All of a sudden you can control the weather – but not only that you also have full availability of equipment,” he explained.

“If you want to do a combined scenario with a frigate and a patrol vessel and want to enter a mother ship in the rear dock or by going up on a slipway - that equipment is usually not available upon call. Especially when the trainee was planning to do his training.

“And that’s on top of the well-known positive benefits of using simulators with this kind of training. On these small craft, people can hurt themselves, they can damage the equipment. So, by using the simulator in a proper training situation, you minimize people hurting themselves on the water because, as well as spending less time on the water, they are better prepared once they go out on the water.”

Cruden has developed its Fast Craft Simulator with support from industry partners, including Henshaw Inflatable Solutions, Marine Specialized Technology (MST), Norxe, Seacross High Speed Navigation, Ullman Dynamics and Volvo Penta.
FlightSafety Introduces New and Innovative Advanced-Technology Training Systems

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MetaVR Introduces New Deployable JTAC Trainer

MetaVR is launching a new portable joint fires training solution at I/ITSEC 2019, a system that has been designed as a deployable training capability for joint terminal attack controllers (JTAC) and forward observers.

The Deployable Joint Fires Trainer (DJFT) allows JTACs to be trained alongside fixed- and rotary-wing aircrews within an immersive, joint training environment.

At Booth 1348, the company is showcasing the DJFT networked with a notional F/A-18 Block III Part Task Mission Trainer (PTMT) physical cockpit.

Garth Smith, President of MetaVR, said the new DJFT training capability was developed by a joint fires expert at the company in response to what they saw as a “serious gap” in the military training market.

“The core software here is the MetaVR Virtual Reality Scene Generator [VRSG] - that’s the 3D environment, the 3D terrain and the 3D models. And then there is Battlespace Simulations’ MACE or Modern Air Combat Environment. Those two key components are used on the US Air Force’s JTC TRS [Joint Terminal Control Training and Rehearsal System], they’re used on the Air National Guard AAJTS [Advanced Joint Terminal Attack Controller Training System], and they’re used for the Navy CAVE [Combined Arms Virtual Environment] system,” Smith explained.

“So, it’s important to know that these are applications that have been used in accredited systems that are fielded by the Air Force, the Air National Guard, and the Navy, but they’re now being put into a more configurable kind of package.”

The internally-funded DJFT comprises three or more stations housed within two-person portable ruggedized cases. The system includes all the hardware required to run full-spectrum JTAC/joint fires training scenarios, including laptop, emulated GPS receiver, and communication systems.

Gareth Sebburn, the JTAC/Joint Fires SME Consultant at MetaVR, said the system was designed to provide effective JTAC training when live aircraft were unavailable, such as during no fires days or no fly days.

“This deployable, mobile joint fire trainer allows the guys, when they go out in the field or when they go on an exercise, to augment their live training - some guys may train with the aircraft and then they rotate through the portable simulator trainer,” Sebburn said.

“So on bad weather days or no fire days, the guys can still use the simulator to train out in the field. They can put it in a room, in a tent, run it off a generator or power mains. And the guys don’t have to worry about being computer savvy - they don’t have to plug plugs, they don’t have to think about how to network stuff, they don’t have cables everywhere.

“You open it up, put one network cable in, push the power button and everything comes on. So, it’s about ease of use and portability.”

Sebburn added that current training systems for artillery units were largely classroom based systems requiring extensive set-up and take-down time and multiple personnel.

MetaVR has designed the DJFT to be as flexible as possible, with the role player station able to be configured for JTAC, forward observer, joint fires observer or other operations, and it can emulate a variety of operator hardware.

The system also includes an aircrew operating station (AOS), which can control any fixed-wing or rotary-wing asset, and communicates with all trainees as aircrew via simulated radios.

In addition, an instructor operating station (IOS) provides control of the scenarios, including surface-to-surface fires and simulated aircraft, and can also record scenarios for after action review.

During the I/ITSEC demonstration, MetaVR will also display its F/A-18 Block III PTMT, which is a prototype to-scale physical cockpit simulator that was designed and built under an internal R&D program.

The scenario with the two MetaVR systems will allow JTACs and forward observers to train with two F/A-18 pilots – one in the F/A-18 PTMT, the other at the DJFT aircrew station - in what the company describes as a quickly evolving mission.

The pilot in the F/A-18 PTMT will wear the HTC Vive Pro system running VRSG, which will also be augmented with Collins Aerospace’s Coalescence mixed-reality training system;

Sebburn explained that as the role of the JTAC had become increasingly complex in recent years, the training requirements to stay current had also become much harder.

“Nowadays the training requirements are harder to achieve, the things you have to do to qualify as a JTAC are now a lot harder. But we push ourselves to make sure that we are good at our jobs because it’s a tough job - coordinating air strikes close to friendly forces, putting a 2,000-pound bomb within a couple of hundred meters of your mates. It’s definitely something that you need to train with insight.

“Simulators are key in this area because it’s super expensive to fly an aircraft for an hour. But that JTAC on the ground, has to maintain currency every six and 12 months. And simulators enable us to do that.”
The 550JLTVplus was developed using internal research and development funding, with the company aiming to provide a commercial-off-the-shelf driving simulator that was a "cost-effective and easily accessible solution".

Don Wenzinger, Doron’s CEO, said military customers were changing the way they purchased vehicle simulators.

“Historically, customers have often waited years, and spent millions of dollars, for driving simulators. Those days are coming to an end. If we see a realistic need for vehicle simulators, and the opportunity makes sense for us, Doron will invest in its development and bring the products to those customers very quickly."

The 550JLTVplus is a variant of Doron’s off-the-shelf 550plus series, which is already used by the US military, technical colleges and truck training industries.

However, this latest design includes a realistic JLTV driving compartment with various actual instruments and controls that provide trainees with transferable skills. The simulation is powered by the CM Labs Vortex simulation platform.

The company is targeting the new simulator at JLTV operators, including the growing international users of the vehicle. Lithuania, Montenegro and Slovenia have all purchased the JLTV while the UK has also selected the vehicle but has yet to sign the full production contract.

“The 550JLTVplus offers a unique virtual training environment with several challenging terrain features such as rough trails, steep inclines, side hills, moguls, and a river to cross. The system also features advanced dynamic terrain effects including driving through mud, sand and water. It’s available for quick delivery through Doron’s GSA contract,” the company said in a statement.

Doron recently completed deliveries of 39 660Truckplus interactive driving simulators to the US Army Reserve, one of its largest military orders to date.

The simulators provide soldiers the opportunity to maintain driver proficiency in the absence of access to ‘live’ truck exercises.
PLEXSYS and Matrox Collaborate to Showcase AAR Platform
PLEXSYS [Booth 1573] is using I/ITSEC 2019 to highlight its Video, Audio, Data, for After Action Review in Live, Virtual and Constructive (VADAAR-LVC) environments in collaboration with the Matrox Maevex 6100 Series hardware-based, multi-4K encoder appliances.

The company said that integration of these two technologies was crucial for the creation, capture, streaming, recording, and playback of multiple, high-quality video and audio streams in a commercial or military training environment.

This collaborative system has been tested at various US Air Force A-10 Thunderbolt simulator locations as well as at the US Navy Littoral Combat Ship Integrated Tactical Trainer at Naval Base San Diego, CA. Future deliveries include the USAF Airborne Warning and Control System Mission Training Center in Oklahoma City, OK and the Joint STARS Mission Maintenance Trainer at Robins AFB, GA.

ARA Demos Latest Simulation Software

These include the V-22 Landing Gear Part Task Trainer, which allows trainees to replace the nose landing gear tire of a V-22 Osprey tiltrotor using a Valve Index VR headset. ARA is developing the technology for Raytheon Intelligence Information and Services.

The company is also highlighting its Virtual Tactical Assault Kit (VTAK), which is a VR tool that ingests real-world geo-registered terrain data to provide interactive 3D environments; as well as its Synthetic Environment Creation Tools. Showcasing its Distributed Interactive Simulation Web Browser Viewer, ARA will demonstrate a prototype 3D viewer running in a web browser, which is capable of displaying location and health-state updates from simulated and live training participants.

Cobra Simulation Finds Success with Simulator Display
Cobra Simulation [Booth 1394] is using I/ITSEC 2019 to launch its new Cobra180 immersive display, which has already been purchased by an undisclosed US defence aviation company.

Cobra Simulation disclosed that the customer saw the product when it was in its final prototype stage and placed an order for the entire first production run of the...
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Providing an expanding array of software solutions, Chetu is using I/ITSEC 2019 to promote the latest of its simulation and training software. As a developer in the gamification, e-learning and education spaces, Chetu’s latest foray into simulation and training technologies comes from nearly two decades of software development expertise.

“We are excited to be showcasing our software development solutions at the world’s largest show for modeling and simulation training,” said Sachin Sharma, director of operations at Chetu, Inc. “Similar to I/ITSEC, we too are always pushing the boundaries in technological solutions and innovation, and are eager to share our expertise and services with fellow industry leaders.”

Virtual maintenance training solution company DiSTI is using I/ITSEC 2019 to highlight several recent contract awards from the Pentagon.

These include the selection of its VE Studio for Unity Virtual Training Development Platform for internal US Air Force organizations for the development of virtual operations and maintenance training curricula under an AFWERX SBIR contract.

In addition, the company has been selected by the US Army to develop a prototype Family of Maintenance Trainers (FMT) - Common Core architecture and software baselines to support the existing FMT Product Line and future Maintenance Training Systems (MTS).

In October, DiSTI announced the release of GL Studio 7.0, which offers workflow improvements and streamlines the user experience for the editor, providing a drag and drop library of customizable widgets called the User Interface (UI) Widget Pack.
Serious Games

The Serious Games Showcase & Challenge (SGS&C) [Booth 2880] 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.

The SGS&C provides a showcase of best-in-class learning games submitted by business, government and student developers, and awards noteworthy games to recognize their creators’ achievements.

The uniqueness of the SGS&C is that every I/ITSEC “player” has the chance to play the games, talk with the developers, and cast a vote for the coveted SGS&C People’s Choice Award.

The SGS&C team is appreciative of this year’s sponsors: ARA, Bohemia Interactive, Box, Engineering & Computer Simulations, HP, Integration Innovation, Inc. (i3), JANUS Research Group, NTSA, Team Speak and Trideum Corporation.

Be sure to visit SGS&C at Booth 2880 to check out the games and cast your vote for the People’s Choice Award before voting closes on Wednesday at 6:00 PM. Award winners will be announced on Thursday, Dec 5th, at 1:00 PM at the Innovation Showcase [Booth 2588].

Vote Now!
Visit the SGS&C [Booth 2880] before Wednesday at 6:00 PM to vote for this year’s People’s Choice Award.

Get Involved In 2020
Email Serious Games Showcase & Challenge at sgschallenge@gmail.com if you are interested in becoming a future finalist, evaluator, or IPT member!

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Booth #1973

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Getting the ‘Feel’ for Casualty Care

While traditional computer simulated training is cost effective, it lacks the level of muscle memory to develop learned cognitive and psychomotor skills. One potential solution to this shortfall involves the introduction of haptics – the sense of touch, or tactile feedback – that is seen as a critical technology to enhance medical and other types of training through extended reality (XR).

I/ITSEC 2019 attendees will have a chance to learn more about this capability at Engineering & Computer Simulations (ECS) [Booth 1235]. “We are showing the Tactical Combat Casualty Care Simulation (TC3 Sim), which is an US Army research and development test bed for combat medicine,” explained Shane Taber, development director for ECS.

Taber said that ECS has been conducting research in conjunction with the Army for more than 15 years, noting that the past few years they have focused on a multimodal study to explore applications of augmented reality (AR), XR, and haptics.

“Over the past year we’ve done a lot of looking into integrating different haptic technologies that provide an increased level of immersion,” he added. “Haptics goes beyond just virtual reality, which gives you the audio, visual, sensory, and spatial feedback. There’s still a sense that you don’t have that proprioception of being able to reach out and grab something intuitively. Haptics gives you the sensation of touching a virtual object.

“It gives you an intuitive way to interact with the environment,” he continued. “Instead of using an interface on a VR controller, the user puts on gloves and headset, and suddenly they are interacting with the environment just the same way they would in real life. And that can make a big difference when it comes to muscle memory and those spatial cognitive skills where you need to feel what you’re interacting with.”

Recent ECS efforts have included exploration of a range of haptics glove configurations, from emerging prototypes with limited availability to commercially available designs.

“We’re looking at the entire breadth of designs and looking at which technologies are best suited for which skill sets for training,” Taber said.

“It really doesn’t matter whether you are new to VR or a total veteran of the VR technology experience,” he concluded. “Experiencing these simulations with the integrated haptics produces an evocative response because you actually have to crank the windlass on the tourniquet and you hear the simulated casualty groaning with the pain from each crank you do. I’ve seen people jump out of their skin when that happens.”

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Corporate Membership Options

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<tr>
<th>Sustaining</th>
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<tr>
<td>• $5,000 in dues</td>
<td>• $1,250 to $3,750 in dues (depending on # of employees involved in training and/or M&amp;S)</td>
<td>• $500 in dues; designed for smaller companies</td>
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<tr>
<td>• First choice of booth space (during I/ITSEC)</td>
<td>• Second round of booth space selection (in early-to-mid February)</td>
<td>• Third round of booth space selection (in late February)</td>
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<td>• 10% discount on booth space for I/ITSEC (Maximum discount = $5,000)</td>
<td>• 5% discount on booth space for I/ITSEC (Maximum discount = dues amount paid)</td>
<td>• No discount on booth space for I/ITSEC</td>
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<td>• Seat on Executive Committee and Invitation to M&amp;S Awards Dinner</td>
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<td>• Additional exposure at I/ITSEC</td>
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I/ITSEC 2019 and NTSA Welcomes New Exhibitors

A warm welcome to the 81 exhibitors, 11 more than in 2018, who are either new to I/ITSEC this year or are returning after a hiatus.

3D Systems Simbionix (Booth 781)
4CAST (Booth 2680)
Air Force Technical Application Center (Booth 3160)
Arch Virtual (Booth 1887)
AR/VR (Booth 1180)
Axiologic Solutions and Barbaricum LLC (Booth 1591)
Bebop Sensors (Booth 773)
BMT (Booth 3102)
Brightline Interactive (Booth 2426)
CACI (Booth 555)
Capacitech Energy (Booth 3172)
Cervus Defence & Security (Booth 663)
Chetu, Inc. (Booth 2082)
CodeFirm (Booth 3171)
Corning (Booth 419)
CyberDream (Booth 3174)
Cyberth GmbH (Booth 1293)
Daktronics, Inc. (Booth 1187)
Defense Acquisition University (DAU) (Booth 1881)
Deloitte (Booth 260)
domeprojection.com GmbH (Booth 1287)
Eagle 6 Technical Services, LLC (Booth 3173)
Elite Aluminum Corporation/FORTSUSA (Booth 565)
Embry-Riddle Aeronautical University (Booth 242)
Epic Games, Inc. (Booth 2161)
esc Aerospace US Inc. (Booth 3167)
Florida Troops to Teachers (Booth 3197)
G&D North America Inc. (Booth 552)
Geeks and Nerds (Booth 3166)
GLESEC (Booth 3175)
Google Cloud (Booth 407)
GovConnection Inc. d/b/a Connection Public Sector Solutions (Booth 1193)
GREEN AMMO AS (Booth 3161)
HTX Labs (Booth 1392)
Hutchinson Stop-choc (Booth 1195)
i2k (Booth 3111)
Industrial Structures (Booth 561)
inlusion Netforms UAB (Booth 775)
Integrated Computer Solutions (Booth 2584)
Joint Program Manager Medical Modeling & Simulation (JPM MMS) (Booth 2185)
Larsen Motorsports Inc. (Booth 2993)
Lightspace Technologies (Booth 673)
LLS Ltd (Booth 3100)
Luminar Technologies (Booth 2430)
Mantis (Booth 342)
Maxar Technologies (Booth 1980)
Moth + Flame (Booth 2581)
Mursion (Booth 1274)
Muskogee Technology (Booth 1985)
MyComputerCareer (Booth 2427)
Nasco Healthcare (Booth 340)
NextGen Interactions (Booth 2669)
NLR-Netherlands Aerospace Centre (Booth 630)
NobleTech Solutions (Booth 2585)
OWI & Vigilante (Booth 2580)
Phoenix TS (Booth 560)
PiTech Solutions (Booth 3063)
ProActive Technologies, Inc. (Booth 453)
PTC (Booth 258)
PureMedSim Technologies Group (Booth 2281)
S2 University (Booth 3065)
Sea Box Inc (Booth 2429)
Shen Te Enterprises Inc. (Booth 313)
SimCraft (Booth 1292)
SimIS Inc (Booth 2960)
Specular Theory Inc. (Booth 1183)
Systems Engineering Group Inc. (Booth 254)
T-Mobile US, Inc. (Booth 240)
TIER1 Performance Solutions (Booth 535)
Tobi Pro (Booth 1981)
Touché Technologies (Booth 3154)
Twin Oaks Computing (Booth 654)
UNIGINE Holding (Booth 307)
Valiant Integrated Services, Inc. (Booth 1491)
VALLEY IT SOLUTIONS LLC (Booth 3035)
Varjo Technologies (Booth 1393) VRgluv, LLC (Booth 1273)
Virtual Simulation Systems Pty Ltd (Booth 1093)
VisionThree (Booth 2597)
Vision Engineering Solutions, LLC (Booth 3164)
Volumetric Camera Systems (Booth 1286)
VRgluv, LLC (Booth 1273)
Wacom Technology (Booth 3021)

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**SIMPROFESSIONAL.ORG**
A ‘Cooking Show’ for Training System Developers

A new event at I/ITSEC 2019 is the Iron Dev competition, which features teams of training system developers. During the first three days of the conference, teams will be given a challenge and are building training systems relevant to America’s warfighters.

The final event on Thursday morning will be similar to competitive food cooking shows. The show hosts will describe how the teams worked during the first few days of competition in a fun and entertaining way.

Meanwhile, the teams will be on the stage making final preparations to their training systems. They will then present their systems live to the panel of judges and audience. The judges will critique the systems in areas of technical precision, use of the ‘secret ingredient’, how well they addressed the challenge in their solution, and how bold and innovative they were. During this Thursday’s show, the winner will be announced. The extent to which teams consist of early career developers will be considered in the final score.

The co-hosts are: Bob Kleinhample, Vice President, Training Solutions, SAIC; Alethea Duhon, Ph.D, Technical Director, Air Force Agency for Modeling and Simulation; and, Mark Tanner, Senior Modeling and Simulation Operations Research Analyst, and a Tony Stark Impersonator. The judges are: Major General Maria Gervais, Director, Synthetic Training Environment Cross Functional Team; John Meyers, SES Executive Director, NAWCTSD; Colonel Tony Millican, Ph.D., USAF Director, Future Learning Initiatives; Paul Thurkettle, Education & Training Technologies Manager, Allied Command Transformation, NATO; and, Amy Peck, Senior Director, Enterprise Content, Vive Studios, HTC Vive.

Team Preparations

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<tr>
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<td>Tuesday, 3 December</td>
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<td>Wednesday, 4 December</td>
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Main Event

Thursday, 5 December
1000 -1130 at the Launch Pad (Booth 793)

MODSIM World 2020

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MODSIM World is a multi-disciplinary and international Modeling and Simulation (M&S) event that grants attendees the unique opportunity to learn about new M&S applications and practices across diverse domains. This year, the conference will focus on Mixed/Augmented Reality, Cyber, Defense, Learning Science, and Homeland Security to support ever-changing future demands.

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Associate Director, NTSA Operations
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BISim Announces First VBS4 Customers

The Swedish Armed Forces and Kongsberg Defence and Aerospace will be the first users of the new VBS4 tactical training software, developer Bohemia Interactive Simulations (BISim) [Booth 2534] announced at I/ITSEC 2019.

VBS4 allows users to virtually train anywhere on the planet and provides new workflows for mission planning and execution, explains Pete Morrison, BISim’s Chief Commercial Officer.

“It’s our first major product release since 2013. So, it’s kind of a big deal. In VBS4, the key differences over VBS3 is that we now allow you to create and run a training exercise anywhere on the virtual earth,” Morrison said.

“We did a lot of work for the US Army STE [Synthetic Training Environment] program and we’re converting to product now. Unlike VBS3, when you have these small terrain areas, you can go anywhere on the planet and you can connect to a terrain server to support that – it’s a completely new architecture.

“And we’ve also focused heavily on increasing the speed of scenario creation and terrain editing. So, there’s new mission planning features, there’s new terrain editing components. We’re really trying to speed up that process in VBS4. VBS4 has also been designed to offer better “modularity, openness and ease-of-use” as well as providing the performance and terrain-enhancing capability of the new VBS Blue engine.

The Swedish Armed Forces are the military launch customer for VBS4 after awarding BISim a multi-year enterprise license contract that will upgrade its VBS3 to this latest version.

Kongsberg Defence & Aerospace, meanwhile, has acquired a new portfolio of BISim technology products for its Advanced Research & Development Laboratories and plans to upgrade to VBS4.

Morrison said the VBS4 upgrades were in response to the demands of users of the existing VBS3 offering.

“We’ve seen a demand for virtual simulation to be able to quickly leverage new data types. For example, drone-sourced 3D data… So, we’ve had to rebuild the engine effectively from the ground up—the game engine—to support these data types. So, you can fly a drone, capture some data, and really quickly get that into the game, into VBS4, and then train on that data. And it was pretty much impossible in VBS3. Capabilities like that were effectively in demand. And we’re seeing that demand now across the 50 plus countries that use VBS3 for training already.”

With the entire planet rendered in VBS4 using a curated global dataset, a library of vegetation and clutter models, and advanced procedural enhancement, militaries can lower the cost and time of building new detailed virtual terrains.

The full offering of VBS4 will be developed by mid-2020, including additional enhancements such as animation and physics upgrades, backwards compatibility with VBS3 missions and terrains, and a new workflow for easier creation and configuration of 3D models.

The release of VBS4 caps a busy year for BISim, with the company announcing a number of contract awards and successes in October. These include contracts amounting to $8.1 million through seven separate awards from the US Marine Corps and US Army, which included funding for improvements to VBS3, VBS Tactics and VBS World Server. This followed funding received under the US Army’s STE initiative, which was awarded in the first half of the year.

BISim and Kongsberg signed an agreement to develop simulation solutions for the latter’s Protector family of remote weapons stations and medium caliber turrets.

The company also signed new contracts with Australia and the Netherlands for VBS3 support and upgrades.

This flurry of activity caps a busy period for the company, which has been able to invest heavily in new products since being acquired in 2012.

“Up until 2012, we were focused 100% on desktop training and everything that we built was funded by customers. And then we were acquired by a private equity firm late in 2012 and we had access to R&D funding so we could build new products. So, the first product we built was VBS Blue IG, which was based upon the same VBS Blue engine that underpins VBS4,” Morrison said.

“What we’re beginning to see is a strong interest in these new game-based technologies. The fidelity that computer game technology offers today – I mean, absolutely, no offense to any military simulation companies out there – but it’s really advanced a long way.

“And so, we’ve been able to capture that and customers are seeing the stark difference in digital quality between these kinds of modern game-based military simulation engines and more traditional legacy engines. We show our customer these new game-based technologies and the difference is just night and day, in terms of the lighting, performance, the fidelity of the artwork. So, it’s a really exciting time for Bohemia and other game companies who are coming into the military space.”
A vision to trust

Rock-solid and powerful: meet the FL/FS40

Another powerful Barco Pulse projection system that performs in extreme environments. With 100% solid-state LED illumination and no moving parts, the FL40 and FS40 are designed from the ground up for the simulation environment’s rigorous training requirements.

Providing the ultimate in image clarity with optimal brightness and contrast they deliver peak performance with solid and stable 24/7 performance. The FS40 supports night vision goggle (NVG) training, offering dual input capability at 120Hz for the most optimal training at any time of the day.

Discover more on www.barco.com/FL40
Introducing the CAE Trax Academy

Faster, better and more efficient pilot throughput.

For more than 70 years, CAE has been at the forefront of technology leadership and innovation in the training and simulation industry. This tradition continues with the launch of the CAE TRAX Academy, the industry's most advanced self-paced training continuum for military student pilots.

The CAE TRAX Academy guides the student pilot as they learn how to fly. The self-paced training continuum enables student pilots to Learn, Practice, and Perform in a fully immersive, digitally-connected training environment. From first exposure to a training task using high-fidelity cross-platform courseware and virtual reality (VR)-enhanced modules, students Learn the training procedure. Students then Practice the procedure in the interactive CAE Sprint virtual reality trainer with physical controls, a virtual coach and CAE Rise performance assessment. Students then complete ground-based training as they Perform the procedures learned by demonstrating their proficiency on a high-fidelity flight training device.

As a globally recognized training systems integrator, we are proud to support the preparation and training of military pilots around the world.

Learn more about the CAE TRAX Academy by joining us at our booth (#1734) during I/ITSEC in Orlando, Florida from December 2-5, 2019.

Scheduled launch and demonstrations:

- **Monday, December 2**
  - 15:30 – 16:00
  - Official launch

- **Tuesday, December 3**
  - 13:30 – 14:00
  - 15:30 – 16:00

- **Wednesday, December 4**
  - 11:30 – 12:00
  - 14:30 – 15:00

- **Thursday, December 5**
  - 10:00 – 10:30

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