nTsa *Newsletter*

I/ITSEC 2016
The World's Largest Modeling, Simulation & Training Conference

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Headlines from the Interservice/Industry Training, Simulation & Education Conference (I/ITSEC)

The current issue of MS&T Magazine contains a preview of I/ITSEC 2016. This article is reprinted in full here, courtesy of MS&T Magazine.

Show Preview - **I/ITSEC 2016**

The military modeling, simulation and training communities will gather in Orlando 28th Nov to 2 Dec. For the defense training community all roads lead to Orlando and I/ITSEC 2016. Managing Editor Jeff Loube previews the event.

Autumn is upon us, and I/ITSEC 2016 is on the horizon. The 28 November to 2 December event, the largest and best in the military S&T community, is shaping up to be a success: governments have relaxed many of their travel restrictions; registration is open and trending up; as of the same time last year, the number of committed exhibitors is up by 8%; and the organizers are putting together an exemplary program. And the defense community needs an exemplary program.

NTSA president RADM James Robb, USN (Ret) notes the U.S. Services are facing an ever widening mission set at the same time as they are being buffeted by fiscal austerity and mandated reductions. In light of these constraints, he observed "Service leadership … recognizes that moving more training into virtual worlds will allow them to capture the benefits of increasing simulation fidelity, adaptability, security and affordability". He elaborated noting "Advancements in simulation software, data analytics, artificial intelligence and haptics have the potential to

completely transform the way we educate and train."

As this year's theme "Pushing the Training Envelope: Live, Virtual, Constructive" would suggest, participants will see an increased focus on live, virtual, and constructive capabilities and the integration of those capabilities into rich training environments. Conference chair Janet Spruill, Vice President, Training and Simulation for Hickory Ground Solutions, LLC notes LVC technology will be highlighted on the show floor and throughout the program with events such as Operation Blended Warrior (OBW). She added "And the 2016 I/ITSEC Program is rich with papers, tutorials, and Special Events highlighting advances and applications in faster image generators, improved injection of constructive targets, more realistic immersive simulation, and more robust games-for-training platforms – all crucial to continue pushing the training envelope."

President Robb explained the importance of OBW by noting that the Services are redirecting themselves to Common Architectures, common standards and increased modularity that will enable a joint LVC virtual plug and play environment. He stated, "We need to identify the required interfaces, re-architecture as appropriate and find the funding to create the Joint Synthetic Training Environment of the future. It will require a common vision and a common technical base to run on, and NTSA and I/ITSEC are providing the environment for that research, development and collaboration to move forward quickly."

Kent Gritton, Director, Joint Training Integration and Evaluation Center and NAWCTSD Lead for LVC Coordination, is the government lead for OBW. He assessed last year's OBW as "an amazing success" but placed that success in the context of the ongoing program.

He explains. "OBW was created as a multi-year, Live-Virtual-Constructive (LVC)-focused special event to be conducted at the Interservice/Industry Training, Simulation and Education Conference (I/ITSEC) over the course of four years (2015-2018). Each year building and learning from the past, the premise for the event is that the level of effort/resources (time and personnel) required to develop virtual environments, and the subsequent integration of disparate systems within, has not improved since the first integrated event in 1992. While individual capabilities used with (and within) these virtual environments have improved, the foundational development and integration efforts have not. Or, stated another way, why has LVC not progressed further toward the "plug and play" paradigm?

The three focus areas for Operation Blended Warrior 2015 were: standards, after action review, and cyber operations. OBW 2015 consisted of 15 disparate 30 minute LVC vignettes spanning 7.5 hours over a four day period. 31 organizations (25 industry, 6 government) participated and 47 distinct systems were integrated. OBW 2015 was a baseline year and provided valuable lessons learned from a wide variety of aspects ranging from policy, to technical issues and standards, and even

planning. Specific items meriting further investigation include: Information Assurance, ITAR/EAR, Interoperability Standards, Network Administration, Terrain and Visual Model Databases, Trainee Performance Measurement, and Cyber Operations. A multi-disciplinary IPT was created within I/ITSEC to review these OBW lessons learned and determine how best the M&S community should address them.

In addition to re-visiting the OBW 2015 focus areas, new ones for OBW 2016 will be: multi-level security/cross-domain solutions, performance measurement, and long-haul live asset integration. A sub-test of wireless infrastructure for a portion of the architecture will be included. Like last year, the event will include 7.5 hours of LVC vignettes spanning four days.

The growth of OBW has been phenomenal! Current planning for OBW 2016 includes a 77% increase in participation (55 organizations) and a 97% increase in number of distinct systems to be integrated (93 proposed systems). Specific efforts to improve LVC integration initiatives and other processes (based on lessons learned from OBW 2015) will be implemented to determine their effectiveness."

One of the most popular special events last year was Black Swan and the sessions dealing with training leaders to be adaptable and effective in the midst of a Black Swan event; this year, back by popular demand, is another Black Swan Focus Special Event.

Fred Fleury, I/ITSEC lead for Black Swan, reveals that this year they have assembled a new panel of subject matter experts to debate Black Swan Challenges and Opportunities to the Modeling and Simulation Community. "Our panel will present their innovative thoughts and analysis on how various modeling techniques can support research and provide lessons learned on the effects of the Black Swan scenarios. These techniques include big data farming, agent-based interactions and digital humanity modeling."

In concluding the session, the Black Swan scenario and action plans from the panel will be available in the ONR/NPS' Massive Multiplayer Online Wargame Leveraging the Internet (MMOWGLI) platform (https://portal.mmowgli.nps.edu/game-wiki/-/wiki/PlayerResources/About%20MMOWGLI). The audience will be challenged to continue their participation in developing ideas and solutions to the scenarios.

The Serious Games Showcase and Challenge celebrated its 10th anniversary last year. This year it is continuing its mission to showcase game exemplars to the defense community and to acknowledge gaming achievement. Jenn McNamara, VP Serious Games and Strategic Partnerships at BreakAway Games and SGS&C director noted there is a new Innovation Award that "recognizes serious games employing characteristics or techniques that enhance the game in a new or different way." She explained the innovative technique could be hardware integration, instructional design, game design, content topic or a

combination thereof. Innovation finalists will be showcased at the SGS&C booth and the award announced during the SGS&C award ceremony.

The dynamics of the defense community, domestic and international, are complex. According to Robb, I/ITSEC is responding in a variety of ways. "Our conference is increasing emphasis on new and innovative ways to use current and future systems to improve training. We are working to better align industry research and development with near term emerging requirements. Our industry includes some of the most innovative and technically savvy individuals on the planet, and I/ITSEC has become the place where new capabilities are being fielding at a record pace."

MS&T editors are looking forward to walking the show floor. Some issues we will be looking at are industry's strategies and contributions to meet military emerging requirements for effective and efficient training arising from technological innovation, restructuring and modernization. The T-X RFP is scheduled for release in late December and this will be the last opportunity for bidders to show their wares. (MS&T will have a review of the T-50A in Issue 1/2017). And certainly, we will be looking for a general assessments and "state of the nation" from key note speakers and the General/Flag Officers Panel.

I/ITSEC as a conference and exhibition is doing extremely well and growing, according to Robb. He noted there is a growing consensus among military leaders that events like I/ITSEC are extremely valuable to both communicate their requirements to industry and be exposed to leading edge concepts and technology. He adds that international attendance continues to increase at a steady pace.

Finally the NTSA President acknowledged the contributions of volunteers to the success of the event. "Taking valuable time from demanding, often vitally important full-time jobs to execute most of the hard work and planning that go into a complex event like I/ITSEC, these individuals are critical to the excellence of I/ITSEC each year and as we celebrating its 50th anniversary this year we will honor those who made it great".

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A Message from the I/ITSEC 2016 Program Chair - Elizabeth Biddle, The Boeing Company

As we welcome the onset of fall in sunny (and hot) Orlando, the 2016 Conference Committee has kicked into high gear as we finalize our 2016 program. Our Air Force Lead Service team, led by Service Executive Col. Dan Marticello and Service Principal Tony DalSasso, has worked very closely with our Conference Chair Janet

Spruill and me to integrate the theme for our Conference - "*Pushing the Training Envelope: Live-Virtual-Constructive*" - into the Program. When we held our kick-off in January, our goal was to identify a top-quality collection of paper publications and presentations, tutorials, and special events to showcase the best our Industry, Academia, and Government partners have to offer in support of our Warfighters and Civilian community.

With the Spring Abstract Review and Summer Paper Review completed, we are pleased to announce that we selected 123 papers for presentation out of the 320 abstracts that were submitted. Additionally, 23 Tutorials were selected from the 41 proposals received. One of the Conference's key features is the academic rigor of our Program. Continuing Education Unit (CEUs) credits are available for all 123 Paper presentations, 23 Tutorials and 7 Professional Workshops as part of your registration.

Our Special Events this year continue our Operation Blended Warrior floor event and Black Swan panel – both introduced last year. We also are continuing to provide the Warfighters Corner sessions where you will hear our military heroes tell their stories in their own words. Our Serious Games Showcase and Challenge provides an opportunity for you to play some of the world's best computer-based "serious" games developed and selected as finalists – and an opportunity to vote for the People's Choice award.

I/ITSEC's ongoing commitment to Science, Technology, Engineering, and Mathematics (STEM) is an important part of our Program. The Future Leaders Pavilion within our STEM Pavilion showcases innovative work that is an inspiration to all. Our showroom floor boasts over 500 exhibitors and 200,000+ sq ft of exhibit space – making seeing and doing all a great challenge! To help in planning your visit, an electronic program guide and mobile app will be available on the I/ITSEC website. On behalf of the 200+ volunteers who worked, and continue to work, very hard on I/ITSEC 2016, I look forward to seeing everyone in Orlando from November 28th through December 2nd 2016 as we showcase "*Pushing the Training Envelope: Live-Virtual-Constructive*".

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2016 Fred Lewis Scholarship Winners Show Talent and Drive

Doctoral level Scholarship Winners

Shannon Bailey
Doctoral Candidate in Psychology, University of Central Florida (UCF)
Research Psychologist, StraCon Services Group, LLC / NAWCTSD

Shannon Bailey is a doctoral candidate in Psychology at the University of Central Florida (UCF) where she received a M.A. in Applied Experimental and Human Factors Psychology. She is a Research Psychologist at StraCon Services Group, LLC and works with the Naval Air Warfare Center Training Systems Division (NAWCTSD) in Orlando, FL. At UCF, she is currently completing her dissertation as a member of the Applied Cognition and Technology lab. Her research experiences include investigating the effectiveness of training simulations in virtual reality, gesture-based technology interaction, and spatial ability. She has extensive experience conducting human subjects research over the last seven (7) years, as well as expertise in research methodology and statistical analyses. Her research endeavors have led to numerous professional presentations, a co-authored book chapter, and peer-reviewed scientific publications.

Ms. Bailey's recent research has included developing and evaluating several training simulations using both desktop and 3D virtual reality (VR) environments. Coordinating with a team of computer engineers and psychologists, she has designed experiments using the Oculus Rift VR system and Microsoft Kinect motion sensor to evaluate human performance in a maintenance training task. She also has assisted in the development of a periscope operator adaptive trainer for the Navy that was transitioned to the Fleet, which improves skills in determining the angle on the bow and range of contacts. Her next project includes empirically evaluating the use of gesture-based interactions with computer systems in natural user interfaces.

Rebecca L. Law
Faculty Research Associate
MOVES Institute, Naval Postgraduate School

Rebecca L. Law is a Faculty Research Associate for the Modeling, Virtual Environments, and Simulation (MOVES) Institute at the Naval Postgraduate School, working on a wide range of projects including preparing multiple related proposals that help complement and inform the broader "community of communities" that combat wicked problems using MMOWGLI platform.

Prior to her work at MOVES, she served as a Graduate Student Research Assistant for Operations Research department at the Naval Postgraduate School in Monterey, California. During this time, she researched and developed teaching material for the Maritime Defense and Security Research Program three course International Maritime Security Certificate program now taught at NATO. In 2013, she served as an instructor of the same NATO Maritime Security Certificate course. Within the Operations Research department, Rebecca also analyzed current domestic

and international counter-piracy policies regarding Somali piracy. Her Masters' thesis, "*Maritime Piracy Off the Coast of Somalia,*" provides comprehensive and forward thinking policy solutions to the growing global security threat of maritime piracy in the Gulf of Aden.

Rebecca holds a Bachelor of Science in Psychology from the University of Georgia and a Masters in Public Policy from California State University, Monterey Bay, with a concentration in government from the Panetta Institute for Public Policy. She is currently a Ph.D. candidate in the Graduate Program in International Studies (GPIS) at Old Dominion University in Norfolk, Virginia, and a recipient of the GPIS Modeling and Simulation Fellowship from 2013-2015. In addition to her Ph.D. studies, Rebecca is simultaneously pursing a Masters of Science in Modeling, Simulation and Visualization Engineering (MSVE) at Old Dominion University.

Rebecca is the spouse of Major Nicholas B. Law, USMC. Together, they have three daughters, Candler, Emory, and Willoughb, and are expecting a son in September 2016. Presently, they reside in San Antonio, Texas.

Anastacia MacAllister
Research Assistant
Iowa State University - Virtual Reality Applications Center

Anastacia MacAllister is a Ph.D. student working as a research assistant at Iowa State University's Virtual Reality Applications Center. She is majoring in Mechanical Engineering and Human-Computer Interaction. Anastacia earned her B.S. degree from Iowa State University with a major in Mechanical Engineering. She completed her M.S. degree at Iowa State majoring in Mechanical Engineering and Human-Computer Interaction. Anastacia has worked on a wide variety of military modeling and simulation projects from Live, Virtual, and Constructive Training for the Department of the Army, collaborating with Boeing to develop Augmented Reality instructions for complex assembly, and researching intelligent team tutoring systems with Army Research Labs. Currently, Anastacia's research is focused on developing and testing user adaptable Augmented Reality instructions.

Master's level Scholarship Winner

Emily Gonzalez-Holland
Masters of Modeling and Simulation Program
University of Central Florida

Emily Gonzalez-Holland is currently a first year graduate student in the Masters of Modeling and Simulation Program at the University of Central Florida. Her interests range from simulation, training, and team performance to user-centered design and

implementation in serious gaming and AAA title video games. Emily started in her field of research as an undergraduate psychology student at the University of Central Florida. She had the opportunity to work with a range of technologies, from eye-tracking to driving simulators, as well as learning the fundamentals of handling experiments to writing papers and publishing.

Overall, Emily's experience in her undergraduate career has led her to a Master's program where she feels she can contribute to the field of her research interests in a meaningful way.

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I/ITSEC 2016 – Attendee Registration is Open / Helpful Planning Tools Available

Registration for I/ITSEC 2016 is open!
See http://www.iitsec.org/registration/Pages/default.aspx for complete details on registration for I/ITSEC 2016.
While you're on the website, see additional links for planning your trip to I/ITSEC here: http://www.iitsec.org/attendees/Pages/default.aspx
Useful information includes:

- Attendee Justification Templates
- FAQs for New Attendees
- Assistance for International Attendees
- Agenda Overview
- Information on Accommodations
- Directions

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Hotel Reservations for I/ITSEC – Beware of Imposters!

Rogue companies continue to inaccurately represent themselves as our "housing vendor" when contacting individuals in the I/ITSEC community. Specifically, they will offer to make hotel reservations within the I/ITSEC block on your behalf, and some will also claim to be calling from one of the I/ITSEC hotels. If you provide your credit card information to any of these unauthorized vendors, your card may be charged but you may not have a reservation when you arrive in Orlando.

Stick with our approved provider – "**OnPeak**" - or a company that you know and trust. Disregard unsolicited sales pitches claiming to have rooms available for I/ITSEC. **OnPeak** is the only provider approved by NTSA-I/ITSEC. Complete housing information is available at http://www.iitsec.org/attendees/planningyourstay.

If you have any questions about the I/ITSEC hotel block, or general questions about I/ITSEC, please contact Barbara

McDaniel at 703-247-2569 or bmcdaniel@ndia.org. Complete information about the conference is also available online at www.iitsec.org.

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I/ITSEC Mobile App 2016

I/ITSEC 2016 Mobile App is now available for download! Currently you are able to review the floor plan and exhibitors; then be sure to look for the Program/Sessions to be made available by late September.

- Apple
- Android
- ChirpE Web

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I/ITSEC 5K Walk, Run, Roll

We are excited to once again be holding the IITSEC 5K Run/Walk/Roll to benefit the Camaraderie Foundation and the I/ITSEC STEM Initiative. Come out and have a great morning of fun on Wednesday at I/ITSEC while you support these two great organizations!

Registration open NOW at https://secure3.rhq.com/iitsec/iitsec2016/5k16/index.cgi

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I/ITSEC Exhibitors

New exhibitors are being added on a weekly basis! Be sure to visit the website to learn about the latest technologies the exhibitors will be showcasing and then plan your time to make the most of your visit! Exhibit Hall website here http://exhibits.iitsec.org

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International Training and Simulation Alliance (ITSA) News

ETSA Post-ITEC Newsletter

The following article is Ian Strachan's ITEC review from the 43rd ETSA Newsletter - post-ITEC edition.

For the full Newsletter, containing all the photographs, plus the usual interesting content and reports, please click here: www.etsa.eu/ETSA%20newsletter%2043

For details of other ETSA activities, please go to the ETSA website at www.etsa.eu

London Conference Shows the Way for Future Training

"Simulation is capable of more realism when training for operations, and high level training almost exclusively uses simulation technology"

The International Training Equipment Conference and Exhibition (ITEC) was held at London's Excel exhibition centre from 17-19 May, organised as usual by Clarion Events. There were over 3000 attendees from 65 nations, and in the exhibition hall there were 127 exhibitors ranging from 3D Perception to Zedasoft, coming from 21 countries from Austria to the Ukraine. Exhibitor numbers were led by the UK with 40 followed by the USA with 33, then Germany (13), France and Netherlands (5 each). The day before there was an all-day seminar of the Simulation Interoperability Standards Organization (SISO), with presentations from organisations in France, the Netherlands, Sweden, UK and USA, including by the NATO Modelling and Simulation Group.

On day one of the conference, the keynote address was given by Vice Admiral Duncan Potts of the UK Defence Academy. He pointed out that UK Staff College training was now completely joint, compared to the past where there had been three separate single-service courses. Above the Staff College level there was a need for higher-level training, and collective training across Land, Sea and Air domains would be key. He mentioned three levels of training: (1) Unit, (2) Formations of Units and (3) Higher Level Command. An example at all of these levels is the training of a Joint Expeditionary Force, and he pointed out that nowadays high level training almost exclusively uses simulation technology. On the live/synthetic balance, both types of training are required, he said, but simulation is capable of more realism when training for operations. Furthermore, a "full spectrum approach" to training not only involves the military but also industry and government, and as well as personnel, weapons and other equipment, includes intelligence and cyber data. The Defence Training Board had recently approved a new approach, which is to first look at the output needed from a particular training system, then work back to see how this could be achieved. He mentioned the new UK Joint Force HQ and the post of Director General for Joint Force Development, and suggested that much modern conflict is not so much about territory, but about concepts. He mentioned the concept of a "training continuum" that includes international and other institutions as well as own forces. He summed up by emphasising the critical need to be able to "Train Joint", live exercises can no longer create the realism needed, and the higher the level of activity the more simulation is required.

Frank DiGiovanni is Director for Force Readiness and Training in The Pentagon, and said that we are now in the "information

age". In a recent war game, he continued, the Chief Technical Officer of Google had said that for routine tasks you don't need people any more. It is significant that Google was involved in a military exercise. This confirms previous statements made by others such as Lt General Karlheinz Viereck of NATO Allied Command Transformation who stated that for multi-national exercises and those involving non-military agencies, these wider aspects are more important than using highly classified and other sensitive data for individual weapon systems. DiGiovanni confirmed that lower classification models are perfectly adequate for such exercises to be successful, and pointed out that some 85% of information for such exercises was already in the public domain. He announced that a "Force for the Future" working group had been formed and was looking at personnel management, acquisition and handling of data, and cyber aspects. Our personnel and promotion system had not changed from that of the 1940s, he said, and needs to be more agile, like industry. Traditional factors such as rank, age and years of service may not be as important for a particular task as other abilities such as language fluency, technical knowledge, and personality. We need to use expertise where it exists, and we should take in people to the DoD from outside. Such people should be able to move back and forth from the military to academia and industry so that expertise from both spheres can be pooled. We need to accelerate the learning process - the classroom model was outdated and we had to be flexible, allowing for the ability of an individual to absorb knowledge and develop expertise. Often, he said, the master can learn from the apprentice. Overall, we should preserve a flexible approach to training and later in operations. We should be wary of "filters, biases and cautions". We need to accept innovation where it can help us, improve on it and adapt it to our environment. On data, he said that having the right data for efficient analysis is more important than having a larger amount of data for its own sake. Turning to cyber, he said that there is a gap that needs fixing, and this was another example of where experts should be used independent of age, rank and position. We have the ability to win conventional wars, he said, but the problem is to understand what game the enemy is playing. With opponents such as ISIL, for instance, they have no time limit whereas we want to win quickly with minimum expense and casualties, and then get out.

General Karl Engelbrekson is head of training for the Swedish armed forces and is about to be head of the Swedish Army. There is a demographic problem, he said, in that more experienced personnel are retiring than new recruits are joining. We are a volunteer force, he continued, and in particular should attract and recruit more females to the main force or the reserves; "we should fish from the whole pool", he said. We must get modern quickly, and use modern technology when it is available. Big industry, he said, often knows more than small nations, and multi-national procurement is often the way to go. We cannot divide training and operations as we do today, and we need to train "on the job", that is, as an integral part of operations. He had launched a change of training focus in the

Swedish armed forces, so that when involved in operations, personnel should have a "training mind set". Turning to simulators, they must be able to talk to each other, in particular so that combined-service exercises can be carried out. The Baltic sea is a critical area for Sweden, he said, and also for Russia. Summing up, he emphasised the value of combined-service and multi-national exercises, and said "my wish is to develop simulators at all different levels".

Air Vice Marshal Bruce Hedley is UK Director of Joint Warfare and said that in recent conflicts, war and peace had become blurred, such as situations of terrorism and insurgency without conventional warfare between organised forces. We must prepare for the future, he said, not for an old way of fighting. Our capabilities should be blended together to produce effects across the full spectrum, and this should include the militaries of other countries where appropriate. We are looking for innovation, he continued, and we need to prevent the enemy "getting round us" in ways for which we are not prepared. Looking at career patterns, it is noticeable that when expertise is gained in a particular area, people are often posted out of it rather than continuing in the area of expertise.   We need to keep such expertise, he said, so that specialist areas could be understood properly, and there should be proper career patterns that allow such expertise to be continued and developed further. In sum, he said, we should train people to develop the agility of mind to "think outside the box" and not just take a line of action because that is what we have done before.

F-35 Symposium

Later in the conference there was a full-day symposium on the F-35 Joint Strike Fighter in which training for fifth generation fighters was discussed. The keynote address was given by Air Commodore Lincoln Taylor, UK Assistant Chief of Staff for Combat Air, who praised the Air Battlespace Training Centre (ABTC) at RAF Waddington, Lincoln, which started some years ago as a demonstrator for Mission Training by Distributed Simulation (MTDS). MTDS was so successful that it was expanded and made a permanent facility. This and other advances in simulation technology meant that we can now train for conflict in the simulator, he said, including "full spectrum training for fifth generation aircraft". This includes the full force package that includes AWACS, Tanker support, intelligence, surveillance and reconnaissance (ISR). In order to maintain flying skills and airmanship, he said that a proper Live/Synthetic balance is required, and this should vary to suit each individual. Meanwhile the ABTC at Waddington should be expanded so that it could be connected to other air bases for combined training. He concluded by saying that the UK RAF is already flying the F-35 in the USA and initial operational capability (IOC) for the first UK squadron is expected in 2018.

Tim James of Lockheed Martin Mission Systems and Training (LM-MST) briefed on a number of F-35 systems. These include a simulator for the latest ISR threats and the F-35 Autonomic

Logistics Information System (ALIS). ALIS integrates a range of capabilities including operations, maintenance, diagnostics, supply, customer support, training and technical data. It provides users with up-to-date information on any of these areas and transmits aircraft health and maintenance information on a distributed network that can be accessed worldwide. Up to May 2016, he said that some 200 pilots from several countries had been trained in the USA. The F-35 major training devices were all network-capable and Lockheed Martin had a contract to integrate them with the US Air Force Distributed Mission Operations (DMO) system that includes the DMO Centre at Kirtland AFB, Albuquerque. Training devices for the US Navy and the UK Air Force and Navy would be on this system and would be interoperable, he concluded.

Air Commodore Harvey Smyth is based at RAF Marham in Norfolk and is UK Air Force Lightning Force Commander, also overseeing the Training Regulatory Authority (TRA). Some 500 million UK pounds would be spent on infrastructure at Marham, he said, including an Integrated Training Centre (ITC) and Operational Conversion Unit (OCU). UK pilots had been flying the F-35 for three years at the US Air Force test centre at Eglin AFB, Florida and the US Marine Corps air station at Beaufort, South Carolina. The RAF's 617 Squadron, the "Dam Busters", is currently forming at Beaufort before re-locating to Marham in 2018. The US Air Force will eventually have over 40 F-35s at Lakenheath south of Marham and they need to get to get together for combined training with the UK at Marham. In 2017-18 the Royal Navy will operate the F-35 with the new 70,000 ton aircraft carrier HMS Queen Elizabeth, re-generating a carrier strike capability that had been lost some 10 years ago with the retirement of the UK Harrier force. On live training, he said that UK airspace is not big enough and that sensitive weapon modes should not be used because they might give away vital evidence to a potential enemy. Overall, he concluded, this leads to the increased use of simulation, and distributed simulation is needed where training aids can talk to each other to maximise training effectiveness. Pilots need to be digital natives capable of versatility and multitasking, he said. The live/synthetic balance would be about 50:50 and combat readiness checks would be carried out in the simulator because "the aircraft can't stress you enough" in replicating critical combat situations. We had learnt this with the Tornado force, he said, which was now running at a 65:35 simulator to aircraft flying ratio. The other side of this coin was that simulators must be in lockstep with the aircraft state, and not behind it. On training for Aircraft Carrier operations, he said that some simulators would be taken to sea and training hours would be between 20 and 30 per month with about half on the simulator. Landing Signal Officer (LSO) training would use simulation with head-mounted displays. On training for maintainers, the facilities in ALIS will be used extensively before anyone starts working on the aircraft. Overall, the planning for the introduction of this complex aircraft has been extensive, and F-35 training uses more simulation than ever before.

It was useful that all the F-35 threads were brought together in one symposium as part of an exhibition where examples of the training hardware and software could be seen. It is hoped that something like this can be repeated at future ITEC events in Europe and the I/ITSEC event in Orlando each December.

Other Conference and Exhibition Items

In the rest of the conference there were presentations and sessions on behaviour modelling, database generation, improving simulator displays, motion simulation, NATO Mission Training by Distributed Simulation (MTDS), simulator interoperability, use of the cloud, training for cyber, and war gaming. In land systems, subjects included anti-tank simulation, combat training centres, disaster and emergency planning and training, small arms training, and urban operations. The maritime area included training ashore and afloat, the latter being acknowledged as a difficult area in which compromises would be needed. Aviation subjects included environment modelling, helicopter simulation, distributed simulation, modelling of pilot behaviour, and USAF distributed mission operations (DMO). In the medical sessions there were presentations on medical evacuation, training for difficult operations, and undergraduate medical training. A presentation from NLR in the Netherlands on live and virtual training pointed out that missions are becoming more demanding and in live training for such missions there is limited realism of the tactical environment. There are restrictions in using live weapons for training. Such restrictions are not just related to cost, the use of live weapons can give details of the weapon to a potential enemy and countermeasures might then be developed. Also, there may be limited range space to use long range weapons in a training mode. The conclusion was that the use of live weapon systems should be preserved for combat, live training is not enough, and Mission Simulation is essential today.

On the exhibition floor there was the usual array of amazing computer graphics with digitised 3D modelling of the real world. This was often indistinguishable from the real thing but is more versatile because targets, friendly forces, weapon and weather effects can easily be added. Display systems included domes by Esterline (USA), Immersive Displays (UK) and Olmos (Germany). Complete simulators included a vehicle simulator from Presagis (Canada) with three large flat screens, and Zedasoft (USA) with their portable "Sim in a Box", the latter being compact enough to take on board existing naval ships as one of the solutions to "simulation afloat". Manikins for medical training were shown by CAE Healthcare and Gaumard, complete with heartbeats, fluttering eyes, blood and other effects. Head-mounted displays with tracking capability were shown by HT Vive (UK) and Oculus (USA). Body and weapon tracking for soldier training was shown by Motion Reality's Dauntless system.

In sum, examples of the whole gamut of modern training and simulation equipment could be seen, except large devices such as Full Flight Simulators with full motion and wide visuals that are

too big to be brought to an exhibition for just a few days.

Summary and Conclusions

Although the mid-year European ITEC is smaller than the Inter-service & Industry Training, Simulation and Education Conference (I/ITSEC) and exhibition in the USA at the end of the year, it complements it well.   All the facets of modern modelling, training and simulation are on show, and the keynote events and other presentations are of high quality and have a European theme. The all-day F-35 symposium was a great success in presenting how the F-35 is being introduced to Europe, and how simulation is being used extensively for pilot and maintainer training. There is no doubt that the place of simulation technology is now fully recognised at all levels, not only as a back-up to live training but, as Admiral Potts said, there is a critical need to be able to train joint. Live exercises, he continued, can no longer create the realism needed, and the higher the level of activity the more simulation is required. Looking to future conferences, I/ITSEC will be from 28 November - 2 December 2016 at the Orange County Convention Center in Orlando, Florida, and the next ITEC will be at the Ahoy Convention Centre in Rotterdam from 16-18 May 2017. There will be an ETSA booth at each of these events. This article shows that you should consider attending one or both of these events if you wish to keep up with developments that not only give better training and contingency planning. You can save money as well because training by simulation is less costly than live training.

To read the full newsletter, please click here.

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ITEC 2017 Call for Papers – September 23 Submission Deadline

http://www.itec.co.uk/call-for-papers

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National Security & Resilience Conference 2016
London, United Kingdom
November 8-9, 2016

The NS&R Conference will deliver the latest issues and threats facing government departments/agencies, corporations and

businesses, and thought provoking discussions on strategies and innovations to ensure you and your organisation meet these changing challenges.

For further details please go to www.nsr-conference.co.uk

ETSA has managed to negotiate a special discounted price on a very small number of Individual Full Conference tickets for this leading Conference on these increasingly important issues.

These tickets are available, for a short time, for the ridiculously low price of £50 + VAT. Normally, they sell for £195 + VAT (£295 + VAT after 8th October 2016).

As these few tickets are sure to go quickly, please contact Wilkie on steve.wilkinson@etsa.eu<mailto:steve.wilkinson@etsa.eu> or +44 (0) 77 22 234 752 at the soonest opportunity to reserve your tickets.

Please note that these few discounted tickets are only available through me; they are NOT available online.

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NTSA Member News

Five-Year Follow-On Contract to Support US Marine Corps Aviation Training

Cubic Global Defense (CGD) has announced the award for a five-year, $73 million firm-fixed price task order to support aviation training for the US Marine Corps, under the US Navy's Fielded Training Systems Support (FTSS) III indefiite delivery/indefinite quantity (IDIQ) contract. The follow-on contract is the third consecutive award Cubic has received since 2005.

Under the task order, awarded by the Naval Air Warfare Center, Training Systems Division in Orlando, Florida, Cubic will provide operations and maintenance support of military aviation training devices and simulators at various Marine Corps Air Stations (MCAS), including MCAS Cherry Point, MCAS New River, MCAS Camp Pendleton, MCAS Miramar, MCAS Yuma and Marine Corps Base Hawaii (MCBH) Kaneohe Bay.

In addition, Cubic will provide simulator and academic classroom training for Marine Corps pilots and other aircrew. At MCAS Yuma Cubic will provide instructional system design and development support; revision and maintenance of courseware and curriculum; network management and maintenance; and trianing system management.

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UK MoD Launches Defence Innovation Initiative

The United Kingdom has launched a new defence innovation initiative that will support futuristic technologies and other smart solutions such as surveillance drones inspired by dragonflies, laser weapons, mobile robots that can inspect incidents involving chemical materials, and virtual reality helmets to practice calling in simulated air strikes.

The Ministry of Defence says the plan will transform how defence deals with the challenges of tomorrow, to gain critical advantage for its defence and security forces, and includes:

- An Innovation and Research Insights Unit (IRIS) will anticipate emerging trends in technology and analyse the implications for UK Defence and Security, informing critical decisions to maintain our military advantage and protect the UK.
- Invitations to the best and brightest individuals and companies to pitch to a dragon's den-style panel, backed by a fund of around £800m over 10 years. It will involve taking more risks in backing ideas, with a fast-track for truly novel ideas to match the pace of smaller firms.
- Forming a dedicated hub after the strategy and investment decisions have been taken, to act as a 'defence and security accelerator', ensuring that innovative solutions to our most pressing national security challenges are developed at pace to stay ahead of the country's adversaries.

The MoD said the initiative is aimed at transforming its creative culture, and will fundamentally change the way defence does business. It said, "The initiative will challenge government to collaborate better with industry, academia and allies, and target new providers to boost the competitive advantage of UK defence and find answers to our most pressing national security questions from across sectors at pace.
A challenge function, drawing on external innovation talent and expertise, will ensure the MOD employs the best commercial practices and maintains its focus on innovation."
The full launch event for the Initiative in September will see a prospectus, exhibitions and explain how and when industry can apply to the Innovation Fund.

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TerraSim® Releases TerraTools® 5.2

TerraSim released TerraTools 5.2, the latest version of its terrain database generation software. This release contains targeted enhancements for JCATS and VBS terrain export, as well as various maintenance updates and bug fixes. Highlights of TerraTools 5.2 include:

- Added support for 64-bit versions of Windows 10 operating systems

- TerraTools can now be run by any user account after being installed by an administrator
- Faster rendering speeds for large, complex vector data files in TEdit
- 50% faster for points
- 100% faster for linears
- 500-1000% faster for areals
- Enhanced support for JCATS terrain export
- Improved default JCATS Enhanced Building attribution for doors, windows, and walls
- Improved UTM coordinate system support when exporting to JCATS 12
- Adjusted default JCATS attribution for water depth
- Enhanced support for VBS terrain export
- Added automatic assignment of elevations onto linear road content during VBS export
- Decreased export time for VBS environments containing large, complex water bodies
- Improved efficiency for generating extended surfaces
- Added support for VBS3 3.9.0 and 3.9.1 export
- Added support for Unity 5.3.5
- Added support for MASA SWORD 6.6
- Fixed a licensing bug in the Batch Mode Manager plug-in

TerraTools 5.2 is free to all customers currently under active TerraTools maintenance and support contracts. The TerraTools 5.2 installer is available for download on the TerraTools support site.
For more information about TerraTools 5.2, see the TerraTools products page.

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L-3 Wins Warfighter Readiness & Training Program Contract

L-3 Communications' Electronic Systems group won a seven-year contract to continue its role as prime contractor in providing training solutions in support of the U.S. Air Force's Warfighter Readiness & Training program. The initial task order is valued at $23.5 million, and has a maximum ceiling value of $200 million. L-3 initially won the Warfighter program in 1997.

The Warfighter program provides the Air Force with a range of research into advanced technologies to improve training effectiveness. L-3's Link Simulation & Training division in Arlington, Texas, will serve as the prime contractor on the program.

"L-3's research, engineering and development efforts will directly transition advanced technologies and improved training methods to the warfighter," added Lenny Genna, president of L-3 Link Simulation & Training. He says the L-3 teams research will positively impact U.S. Air Force and joint training doctrine and enhance the design of future training systems – and that the L-3 team will also provide evaluation and validation of training

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Cubic Wins $52 Million Modification Award

Cubic Global Defense (CGD) has received a contract modification award worth more than $52 million from the US Army Contracting Command to support rotational and pre-deployment training exercises at the US Army Joint Readiness Training Center (JRTC) in Fort Polk, Louisiana. Cubic was given the cost-plus-award-fee incrementally funded contract to fulfill option year-nine of its current Mission Support Contract in support of the JRTC with an expected completion date of June 30, 2017.

Under the contract, Cubic will continue assisting the JRTC with integrating US and allied forces into rotational training exercises through scenarios focused on Decisive Action and theater-specific operational environments. These types of exercises are conducted for units targeted for deployment in support of ongoing military operations overseas and include situational training, live fire, force-on-force and integrated live, virtual and constructive (LVC) training. Cubic also provides expanded Role Play, technical support for combat training instrumentation, battlefield effects, video and cultural role players (foreign language speakers) for added realism.
JRTC is one of the US Army's Combat Training Centers focused on providing realistic, enhanced collective training experiences at the Brigade Combat Team level. The center trains light infantry, air assault, airborne and special operations units, including rangers; and hosts various rotational training exercises involving all other U.S. military forces.

Cubic received an initial five-year contract in 2001 and won the competitive bid in 2007 for one-base year with nine renewable option years.

STEM Connector News

CEO Leader in STEM: Marillyn A. Hewson of Lockheed Martin Corporation

The STEMconnector consortium has recognized Lockheed Martin CEO and President Marillyn A. Hewson as one of its 100 CEO Leaders in STEM (for science, technology, engineering and math).
Marillyn A. Hewson is Chief Executive Officer and President of Lockheed Martin Corporation. Prior to assuming that role on Jan. 1, 2013, she held a variety of increasingly responsible executive positions with the Corporation, including President and Chief

Operating Officer, and Executive Vice President of Lockheed Martin's Electronic Systems business area. She is also a member of Lockheed Martin's Board of Directors, elected Nov. 9, 2012.

In her 30 years with Lockheed Martin, Ms. Hewson has held several operational leadership positions including President of Lockheed Martin Systems Integration; Executive Vice President of Global Sustainment for Lockheed Martin Aeronautics; President and General Manager of Kelly Aviation Center, L.P., an affiliate of Lockheed Martin; and President of Lockheed Martin Logistics Services. She has also served in other key corporate executive roles, including Senior Vice President of Corporate Shared Services, Vice President of Global Supply Chain Management, and Vice President of Corporate Internal Audit.

Ms. Hewson chairs the Sandia Corporation Board of Directors and serves on the Board of Directors of DuPont. She also served on the Board of Directors of Carpenter Technology Corporation from 2002 through 2006. She serves on the USO Board of Governors, is a member of the Economic Club of Washington, D.C., and the University of Alabama's Culverhouse College of Commerce and Business Administration Board of Visitors. She also serves as Steering Committee Chair for the Defense Industry Initiative, a nonpartisan, nonprofit association of responsible U.S. defense companies committed to conducting business affairs at the highest ethical level and in full compliance with the law. Ms. Hewson was selected by Fortune magazine as one of the "50 Most Powerful Women in Business" in 2010, 2011 and 2012.

Read Hewson's full essay in STEMconnector's100 CEO Leaders in STEM (page 140).

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CEO Leader in STEM: Tom Kennedy of Raytheon Company

The STEMconnector consortium has recognized Raytheon Chairman and CEO Tom Kennedy as one of its 100 CEO Leaders in STEM (for science, technology, engineering and math).

Kennedy was selected for his leadership in driving programs that provide STEM learning opportunities for students in kindergarten through

college, with an emphasis on veterans and military families.

"As a veteran, I know firsthand that our servicemen and women have much to offer when they leave the military," Kennedy said. "So we have expanded our partnership with Student Veterans of America through a $5 million, multiyear commitment to help military veterans reach their higher education and career goals, particularly in high-demand STEM fields."

Additionally, under Kennedy's leadership, Raytheon pledged $5 million to bring STEM-focused "Centers of Innovation" to Boys & Girls Clubs affiliated youth centers on U.S. military installations and at clubs that support military families.

STEMconnector is a consortium of companies, nonprofit groups, professional societies, government entities and academic institutions actively working to advance STEM education and the future of human capital.

Read Kennedy's full essay in STEMconnector's 100 CEO Leaders in STEM (page 178).

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