Simulation and Training - Recent World News

January 2019   *Editor: Ian Strachan FRAeS*

I/ITSEC exhibition hall November 2018 - Orange County Exhibition Centre, Orlando

Contents

Countries and Regions in this newsletter, significant new systems

I/ITSEC Exhibition and Conference, Orlando November 2018 - report

> Congressional Caucus
> Keynotes
> US Navy Brief
> US Marines Brief
> Exhibition
> Conference sessions

Dates of future World Simulation and Training Events

Recent S&T news

> Aviation S&T news - Civil Fixed-Wing, Civil Rotary, Military Fixed-Wing, Military Rotary, UAVs
> Multi-Role S&T news, including cyber
> Land systems S&T news, including medical
> Maritime systems S&T news
> Corporate S&T news,
> New S&T systems

Word Count Table

This Newsletter has just over 10,000 words, of which 3750 are on aviation systems, followed by 3200 on the I/ITSEC conference in Orlando. Land systems (including Medical) has 850 words but Maritime only 350. Simulation systems have 140 and corporate changes 50. Within air systems, Civil Fixed-wing has over 2500 words, Military Fixed-wing 675, followed by civil and military rotary wing with 340 and Air Control with 300 words.

Significant Trends

Aviation simulation activity more than Land or Maritime. In new equipment, the largest section is aviation by a large margin with over four times the word count of land systems and over ten times that for maritime. In simulation, aviation has always led land and maritime because simulators are ideally suited to aircraft training - even more now they can be linked together for networked training that is difficult to achieve in live exercises.

Civil Aviation Growth. Within the aviation section, civil is four times larger than military, reflecting the large worldwide growth that is forecast for future airline activity.

Multi Security Levels. At I/ITSEC in November 2018, Rockwell Collins launched their SecureOne™ system with Multiple Independent Levels of Security (MILS). For instance, in multi-nation military exercises, high classification data is automatically filtered so that it is not available to other entities in the exercise.

Multiple Images from one Projector. A new projection system that allows an image to be adjusted to the perspective of different viewers has been produced - see the entry for Digital Projection Ltd.

Portable training system. The Blue Boxer portable aircraft training system is based on a 72 x 38 inch cabinet and can be used in the field or in aircraft carriers. See the entry for Blue Boxer under L-3 Link.

Countries and Regions mentioned in this newsletter *(Use the search function to find individual items)*
Aruba (a Netherlands dependency), Australia, Bahrain, Belgium, Brazil, Brunei, Canada, China, Czech Republic, France, Germany, Ireland, Italy, Japan, Kuwait, Lithuania, Mexico, Netherlands, Poland, Russia, Saudi Arabia, Singapore, South Korea, Spain, Sweden, Thailand, Turkey, UAE, UK, USA. (30 countries)

World Simulation and Training Events 2019

March 5-7 - Land Forces Training
Venue: Hilton London Olympia, UK
Organiser: IQPC Ltd (International Quality and Productivity Centre)   www.iqpc.com

March 19-20 - Defence Simulation Education and Training (DSET)
Venue: Bristol, UK
Contact: https://dset.co.uk/contact

March 26-27 - Simulation & Training for Resilience & Safety Symposium (STRS)
Venue: Royal Aeronautical Society, 4 Hamilton Place, London W1J 7BQ, UK
Organiser: European Training and Simulation Association (ETSA)   www.etsa.eu

April 22-24 - MODSIM World
Venue: Norfolk, Virginia, USA
Organiser: NTSA   www.modsimworld.org/

April 30 - May 2 - World Aviation Training Summit 2019 (WATS)
Venue: Rosen Shingle Creek Resort, Orlando, Florida, USA.
Organiser: Halldale Group   www.halldale.com   &   www.wats-event.com

May 14-16 - ITEC 2019
Venue: Stockholmsmässan, Älvsjö, Stockholm, Sweden
Organiser: Clarion Events www.clarionevents.com & www.itec.co.uk

June 11-12 - RAeS Flight Simulation Group Conference
Venue: Royal Aeronautical Society, 4 Hamilton Place, London W1J 7BQ, UK
Organiser: RAeS Flight Simulation Group www.raes-fsg.org.uk

June 27-28 - Asian Aviation Education and Training Symposium (AAETS)
Venue: Conrad Hotel Seoul, South Korea
Organiser: Halldale Group   www.halldale.com   &   www.aaets-event.com

July - Capitol Hill M&S Expo (M&S briefing for Congress)
Venue: Washington DC
Organiser: NTSA   www.trainingsystems.org

September 3-4 - Asia Pacific Airline Training Symposium (APATS)
Venue: Sands Expo and Convention Centre, Singapore
Organiser: Halldale Group   www.halldale.com   &   https://apats-event.com

September 18 - 19 - International Flight Crew Training Conference 2019
Venue: Royal Aeronautical Society, 4 Hamilton Place, London W1J 7BQ, UK
Organiser: RAeS Conference Office   www.aerosociety.com

September 12-13 - Defence and Security Equipment International (DSEI)
Venue: Excel Exhibition Centre, London
Organiser: Clarion Events   https://clarionevents.com & enquiries@dsei.co.uk

September 24-26 - NATO CAX Forum - Computer Analysis, eXercise & experimentation
Venue: Paris, France
Organiser: NATO M&S Centre of Excellence   www.mscoe.org

October 28-30 - Bahrain International Defence Exhibition & Conference (BIDEC)
Venue: Bahrain International Exhibition and Conference Centre
Organiser: Clarion Events   https://clarionevents.com & www.bahraindefence.com

November 12-13 - RAeS Flight Simulation Group Conference
Venue: Royal Aeronautical Society, 4 Hamilton Place, London W1J 7BQ, UK
Organiser: RAeS Flight Simulation Group www.raes-fsg.org.uk

November 18-20 - Defence and Security Equipment International (DSEI) Asia
Venue: Makuhari Messe, Chiba city, SE of Tokyo, Japan.
Organiser: Clarion Events   https://clarionevents.com & enquiries@dsei.co.uk

December 2-6 - I/ITSEC 2019
Interservice/Industry Training, Simulation & Education Conference and exhibition
Venue: Orange County Conference Centre, Orlando, Florida.
Organiser: NTSA   www.trainingsystems.org

## I/ITSEC - the Largest World Training and Simulation event

The 2018 International and Inter-Service Training, Simulation and Education Conference (I/ITSEC) was held at the Orange County Exhibition Centre in Orlando from 26 to 29 November. There was a throughput of over 16,000 people over the four days, there were important presentations by Members of Congress, Generals and Admirals, and the exhibition was large and impressive with 315 different exhibitors listed in the exhibition catalogue. The great majority of exhibitors were based in the USA, followed by the UK, Canada, Germany, Israel, France, a total of 14 countries. In the conference sessions, 142 papers were presented and there were 34 tutorials, 32 special events and 25 workshops.

Congressional Caucus
The traditional Congressional Caucus is held on Monday and was evenly balanced with two Democrats and two Republicans. Training and simulation is an area in which there is agreement between the two parties, because both recognise that the use of simulation technology is less costly than using real equipment in a training mode, and cost savings are particularly attractive to politicians! They also recognise that simulation can be used for training that is more comprehensive than can be achieved safely by use of the real equipment, such as simulating opposing forces and various responses to them. It was also notable that the annual US budget system that encourages a rush of spending at the end of each Fiscal Year, the so-called "end of year log jam", was criticised by both sides.

Stephanie Murphy (Democrat, Florida 7th District) is co-chair of the Congressional Modelling and Simulation (M&S) Caucus and said that she had been very impressed with M&S technology and emphasised its bi-partizan nature in Congress. She particularly liked the concept of common data that could be shared across different organisations, to be applied via the National Defense Authorization Act (NDAA).

Bobby Scott (Democrat, Virginia 3rd District) is co-founder of the M&S Caucus and pointed out that M&S saves money. For instance, if you crash an aircraft on a training sortie, in an simulator you just re-boot rather than lose the aircraft. M&S should be pushed in all areas, he said, and Science, Technology, Engineering, and Mathematics (STEM) should be encouraged in schools. He also pointed out that a current problem for contractors is that tax cuts may put some out of business, and we should recognise and protect valuable M&S companies until federal budgeting returns to normal.
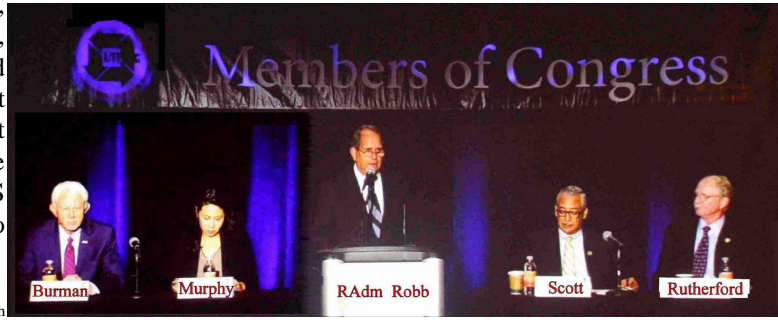

John Rutherford (Republican, Florida 4th District) said that the US Navy bases at Jacksonville and Mayport were in his District, and he had been amazed at the detail that could be simulated today. Referring to the US Navy ship collisions in the Pacific in 2018, he said that "You'all (simulation people) can save lives for us in the future" .

Jack Burman (Republican, Michigan 1st District) is a retired US Marine Lieutenant General and gave a particularly interesting example where a Virtual Combat Trainer was deployed initially only at military reserve units, after which production was increased so that it could be used in the front-line. This level of simulation was initially ignored by the front-line until used successfully by the reserves, the reverse of what might be thought to be logical - maybe showing a reluctance by some areas of the front-line to adopt modern simulation technology as an alternative to constant applications of live training. He also recognised that simulation saves large sums of money, particularly in aviation.

Keynote Speakers

The Keynotes are held on Tuesday and the first speaker was Admiral Chris Grady, commander of US Navy Fleet Forces Command. He said that the nature of weapons is changing and we need to push the leading-edge of training, so that we can "out-innovate" our competitors. Pointing to the ITSEC audience, he said that we need YOU to go faster so that we can anticipate new technologies in the future battlefield. He challenged the manufacturers in audience to produce the technologies that we need. In live training, he admitted, realistic combat cannot be completely replicated. Therefore the missing training areas should be replicated in simulation so that, if conflict comes, people can say "we have been there before". Limitations in live training include how to model the potential enemy. It is also important during live training not to give away potential future actions to people who may spy on military exercises. Simulation, he said, gives us more Repetitions and Sets of repetitions than live training, particularly in critical areas - often abbreviated to "Reps and Sets". Now, he continued, it is possible to rehearse the fight using Virtual technology and current Navy exercises use both live and virtual. This includes ships at sea, land-based simulators for ships and their weapons,

and "pierside training" where moored ships can have their operational systems sTimulated (note the extra letter "T") with exercise material, and so participate in a realistic war game even though static in port. We need this high-end Live and Virtual training to prepare for what he called the "high-end fight", and suggested that no-notice training could be held for scenarios that are not possible in real-world training such as live on-range exercises. He concluded by saying that what we need is a seamless mix of live and virtual - we are not there yet - so "we need your help and we need it now".
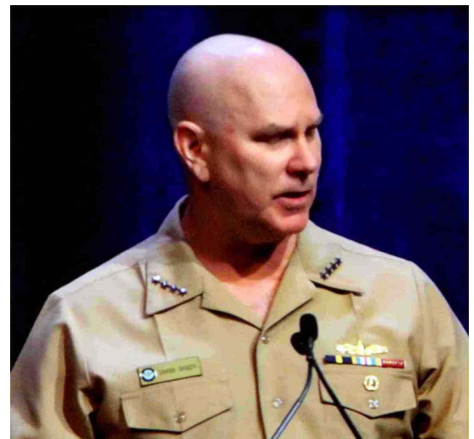
Admiral Grady was followed by Stan Deal of Boeing Global Systems, who said that industry and the military are "in this together". He gave the example of training for the Aircraft Carrier Theodore Roosevelt with its Boeing F-18 Super Hornet aircraft and its Boeing-built flight simulators. Innovation, he said, is borne out of competition, and the need to introduce training technology faster. "My call to action today", he continued, is for us to work together to improve future training, which is the first point for military success or failure. A key military feature is "readiness" which needs good training systems to prepare for it. Modern training technology must be made available to the military quickly, he continued. He gave the example of the new Boeing T-X jet trainer which will have the latest design of simulators. Turning to Civil/Military interaction, the military must take advantage of progress in civil aviation simulation and he noted that the latest Boeing airliners such as the B787 had simulation built in to their production schedules from the start. Then there are military aircraft based on civil designs such as the Boeing P-8 Poseidon maritime patrol aircraft and its simulators are derived from highly capable Full Flight Simulators (FFS) designed to standards of the US Federal Aviation Administration (FAA) with full 6-axis motion and wide-view visuals. He also praised civil aviation training organisations

such as the Emirates Flight Training Academy in Dubai, and suggested that the military could learn from such training centres. Aircraft producers like Boeing, he said, had enormous amounts of "Big Data" that should be used for not only for analysis but also for Virtual Reality-based training applications. He concluded by saying that industry is highly adaptable and this should be utilised by the military, particularly in the simulation and training area.

Fred Drummond is Deputy Assistant Secretary of Defense for Force Education and Training in The Pentagon. He mentioned the strategy of Defense Secretary Mattis, a retired US Marine General who gave an impressive keynote address to the IITSEC conference back in 2009 in which he emphasised the need for co-operation with allied nations. Mattis has since resigned from the Trump administration due to the President's decision to withdraw from Syria without consulting Mattis and other senior government members. Drummond said that "we must break the stovepipes", that is, systems that are unique to one equipment and cannot be transferred to others. We must also use modern tech - "think F-35", he said, and at the other end of the scale, new types of small arms simulators at the US Marine Corps base at 29 Palms in California. A blended approach was needed, taking into account land, sea, air, cyber and space, using a Secure LVC Advanced Training Environment (SLATE), and he gave the example of Combined Operations (ConOps) training at the Fort Irwin National Training Center, California. We must be "joint", he said, and accommodate coalition partners, as in the F-35 programme. He also mentioned multi-national Coalition Warrior events using Advanced Distributed Learning (ADL) systems. More innovation is coming, he said, with stovepipes being replaced by common systems including databases. He concluded by saying that in the future "we must be joint, we must be coalition ".

Major General Stefano Salamida, Italian Air Force, is Deputy Chief for Joint Training at NATO Allied Command Transformation, Norfolk, Virginia, and mentioned the need for interoperability and technical innovation. He particularly emphasised Modelling and Simulation (M&S) and the need to invest in simulation systems and ADL (Advanced Distributed Learning).

Rear Admiral Kyle Cozad commands Naval Education and Training Command and praised the level and variety of simulators on the exhibition floor. The Navy has 12 major training centres and 256 different schoolhouses, he said, and is involved in a programme to update training aids to modern standards.

Major General William Mullen, US Marine Corps, commands the Air Ground Combat Center at Marine Base Twentynine Palms in California, and said that our training environments should be difficult, even "disruptive" in the sense of deliberately doing things differently. Our big training challenge is "time", he continued, and synthetic training saves time. Self-paced learning should be used rather than classroom lectures, and fortunately "our young folks are digital natives". People need to make mistakes in training, he said, because that is the way to learn. After individual training at home bases, people can get together for combined training. All training ranges should be instrumented for full After Action Review (AAR), including for "mega city" training for urban combat which work well using modern simulation systems.

Major General Michael Fantini is Director of Global Power Programs at HQ US Air Force in Washington, responsible for 159 Air Force, joint service and international programs with a US$10 billion annual budget. He emphasised the need to leverage Modelling and Simulation, including using small Silicon Valley firms and "agile contracting". We should discard stovepipe systems, he said, and introduce open, secure architectures with common standards that can also be used by coalition nations. He mentioned multi-level security which, using modern IT systems, can now be achieved without the time-consuming manual security filters of the past. Young servicemen, he said, know how modern IT works and "can advise us Generals", so that the old guard can let go of old systems. Modern flight simulators are now really good, crews say "great training" when they come out of "the box". Another example is the Nellis ranges in Nevada which are now complemented by a Virtual Test and Training Range (VTTR) using modern simulation technology. The future of training includes open-and-common standards, he said, across all three Services and friendly nations. Tri-Service co-operation is sometimes not easy, although at the working level there is less difficulty because specialists share common interests irrespective of the colour of their uniform. In conclusion, he suggested that the business case for future M&S systems should include their potential for tri-service and international use.

Brigadier Michael Sloane is the Program Executive Officer (PEO) for Simulation, Training and Instrumentation (STRI), based in Orlando, in charge of an annual $3 billion programme with 8 main functional teams in which projects are run at Colonel level. Modern synthetic training means that a unit can have 25 simulated fights before a real one, he said. All three Services are represented in Orlando, at which a multi-functional facility has just been established and some facilities are moving from Fort Leavenworth in Kansas to Orlando. The three services work together better than 10 years ago, he continued, and the Army is working with the Marines in common task areas. A monthly Industry Day is held by the STRI organisation, which is also involved in Other Transaction Authority (OTA) contract awards in the training and simulation area. Inputs are made to the Defense Acquisition University (DAU) at Fort Belvoir, Virginia, and to Army Futures Command (AFC) headquartered at Austin, Texas. "Please bring us your ideas" he said, on subjects such as simulator acquisition strategy and how to streamline documentation.
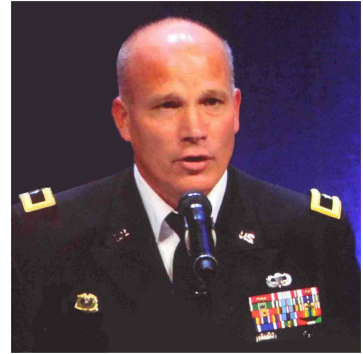
In sum, the ITSEC keynotes were forward-looking and recognised the power of modern simulation. However, due to the large size of the US Services, although top-level motivation is there, it may take a few more years before old training systems are retired and state-of-the-art new systems are put in place.

US Navy Briefing

Rear Admiral Ronald Boxall, Director of Surface Warfare, referred to the Immersive Ship Virtual Environment (ISVE) for future training, and looked forward to new ship designs such as the Cruiser 2024 project. We need upgradable training systems, he said, both in land-based training and also on-board. He gave the example of the Aegis ships, to which we have added specific on-board training systems. He also talked of future small unmanned ships that could be used to deliver weapons. Another development is to introduce a new post of Information Warfare Commander (IWC) in some ships.

Real Admiral Paul Sohl commands the Operational Test and Evaluation (OT&E) Force and emphasised the need for testing before equipment is used in real combat. "Every day is a design review", he said about OT&E activities.

Rear Admiral Gregory Harris, Chief of Naval Air Training (CNATRA), is in charge of 5 wings consisting of 18 squadrons. He had just completed the T-45 Goshawk course and noted that it still used PowerPoint slides and paper books on aircraft systems. We already have Warfare Development Centers (WDC) for sea, air and underwater training, he said, and look forward to introducing VR and Augmented Reality systems. He suggested that a 90% training solution is probably OK and we should not strive for 100%. An example is VR headsets which we should just go ahead and get - but he noted that procurement rules did not allow quick acquisition and put VR headsets in the computer category. There is a need to make mistakes in training, he concluded, so that they are not made in real combat.
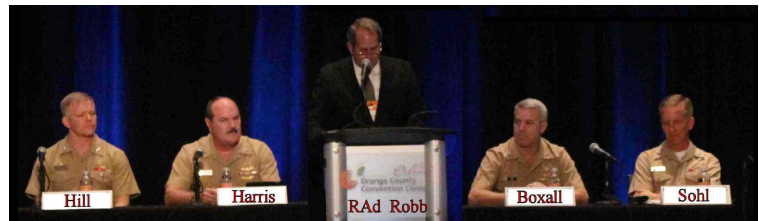
Captain Tim Hill, head of Training Systems Division, Naval Air Warfare Center (NAWC TSD), said that our acquisition rules sometimes slowed up procurement in some areas, and perhaps for small items a system similar to credit-card acquisition could be considered. We need to beat the "end of year log jam" where funds have either to be spent by the end of the Financial Year, or are lost.

US Marine Briefing

Major General William Mullen commands the Air Ground Combat Center at Marine Base Twentynine Palms in California and said that classroom-based training should be replaced by on-line technology for self-paced training. On exercises, all elements should be instrumented so that After Action Review (AAR) can be used to "do it again, and again - the Army is doing it and the Brits are doing it", he said. How do we do this except though simulation, he continued. Training was needed throughout a Marine's career, and we need to think flexibly and "get out of the groove".

Brigadier Eric Austin, Deputy Commander of USMC Forces Command, said that many pilots get 13 simulator rides before they fly the jet. Simulation, he said, does not have the weapon and on-range limitations that apply to aircraft and has been particularly effecting in training for flying with Night Vision Goggles (NVGs). The Marine Corps Aviation Master Plan (MCAMP) started 4 years ago and includes linking all simulators for combined training. In addition, deployable simulators are to be available for training when away from home bases. The Marine Air-Ground Task Force (MAGTAF) system includes the ability to connect simulators and other training devices for ground and air training, and the Marine Corps Air Station (MCAS) at Yuma, Arizona, is to have a Mission Rehearsal capability.
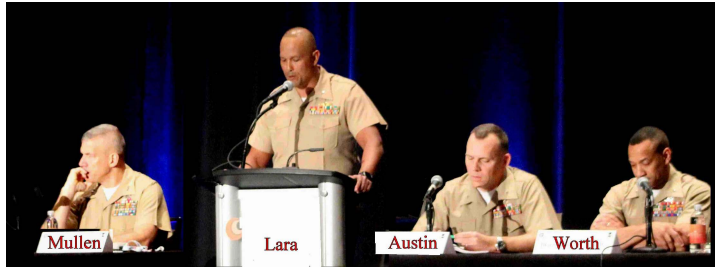
Brigadier Calvert Worth is in charge of USMC Training Command, headquartered in Quantico, Virginia, on the west bank of the Potomac river south of Washington. Some 100,000 trainees per year are currently processed by Training Command, although at any one time about 3000 are waiting for their next course - the waiting number needs reducing and digitisation of training material will help, combined with self-paced training rather than classroom lectures. We need to digitise everything, he said, and adopt technologies such as WiFi. The future high-end simulation systems, and to update facilities such as schoolhouses and other training buildings. The youth of today are digital natives, he said, and expect good training systems. Future classrooms will have computer-based training bays for students monitored by state-of-the-art instructor stations, and will be extensively used before students first transition to the real equipment. Finally, he said, future big exercises will exploit Live, Virtual and Constructive (LVC) technology.

Colonel Luis Lara is Program Manager for Marine Training Systems and said that much progress has been made on the aviation side of training, but the ground side has some way to go. There is a need for distributed and blended training, and, he continued, live training frequently can not respond in time and is also costly. Using synthetics, improvements have been seen between 20 and 50% in some areas. A so-called Live Virtual Constructive Training Environment (LVC-TE) system is based at the 29 Palms Marine Base. As mentioned earlier, he suggested that Repeats and Sets of Repeats (Reps and Sets) is the answer to training, using what he called a "Team of Teams" approach.

The Exhibition
The Exhibition catalogue listed 315 Exhibitors from 14 countries. 265 were based in the USA, followed by 11 from the UK, 7 each from Canada and Germany, 5 from Israel, 4 from France, 3 each from the Netherlands, Sweden, Switzerland, and others from Australia, Denmark, Poland, Singapore, and South Korea. With such a huge exhibition it is difficult to summarize, suffice it to say that all areas of modern training and simulation were represented, land, sea, air, cyber, Electronic Warfare, and so forth. The only qualification

is that physically large devices such as aircraft Full Flight and Full Mission Simulators (FFS/FMS) are not seen on the exhibition floor because they are simply too big and complex to transport to an exhibition for only a few days.

Conference Sessions
With 134 papers plus 91 special events, tutorials and workshops, a total of 225 items, it is again difficult to summarize except to say that this is the most comprehensive annual set of Training and Simulation papers and events in the world. Just picking a few subjects to illustrate the breadth, these included Cloud-based systems, Decision-making training, Distributed Mission Training for the Land, Sea, Air and Cyber domains, Medical Simulation, Variable security systems for multi-national training, Virtual and Augmented Reality, and many more subject areas.
See: http://www.iitsec.org/-/media/sites/iitsec/agenda/2018programguide_complete

Summary

I/ITSEC is the largest annual world event devoted to Training and Simulation (T&S), and is held every November or December at the Orange County Convention Centre on the south side of Orlando. This is in contrast to the much smaller European ITEC event each June that moves from place to place every year, to the detriment of numbers attending. Anyone with an interest in T&S should think seriously of attending I/ITSEC, for at least a couple of days. For your diary, I/ITSEC 2019 is from 2-6 December with the Congessional Caucus on 2 December and the Keynotes on 3 December. For future dates, see www.iitsec.org/attend/future-iitsec-dates .

AVIATION SYSTEMS - *training systems for aircraft and the aviation environment*

CIVIL FIXED-WING AIRCRAFT SYSTEMS
For rotary wing systems (helicopters and propeller-driven tilt engine / tilt wings), see later

AeroStar - https://aerostartyperatings.com
USA. AeroStar Training Services LLC, headquartered in Kissimmee, S of Orlando, Florida, USA, announced an agreement with Spirit Airlines, headquartered in Miami, Florida (https://www.spirit.com). AeroStar will provide Spirit with training for Commercial Pilot Licence (CPL), Airline Transport Pilot Licence (ATPL) and A320 type rating.

Alsim - www.alsim.com
Ireland. Alsim of Le Loroux Bottereau, East of Nantes, France, has supplied their AL42 VI model of simulator for the Diamond DA42 Twinstar to Atlantic Flight Training Academy in Cork in the SW of Ireland.
South Africa. Alsim has supplied an ALX Medium Jet training device to the Central Flying Academy in Germiston. This will be used in their PPL, CPL and IR courses. The ALX covers single-engine piston, twin-engine piston, twin turbine, and medium category twin jet (generic A320/B737).

Aviomar - www.aviomarscuoladivolo.com
Italy. Aviomar Flight Training, headquartered at Urbe Airfield on the N side of Rome, is building training centre at its base at Urbe. It will have 3 bays for full flight simulators, 3 classrooms and 6 briefing rooms and an A320 FFS will be installed shortly.

Baltic AA - www.baatraining.com
China. Baltic AA (BAA) Training Aviation Academy of Vilnius, Lithuania, and the Henan Civil Aviation Development and Investment Company (HNCA), are to open a training centre in Q4/2019 in the Zhengzhou Airport Economic Zone, SSW of Beijing. This will initially have a Boeing full flight simulator (FFS), adding 5 more FFS later.
Lithuania. Baltic AA has received an Airbus A320 FFS which is now ready for training (RfT). The company also has an A320 Door, Over Wing Exit (OWE) and Slide trainer, and a Boeing B737 NG FFS.

CAE - www.cae.com
Brazil. CAE, headquartered in Montreal, Canada, is to train pilots of Icon Aviation, headquartered in São Paulo (www.iconaviation.com.br). This is for training on the Beechcraft King Air B200, Bombardier Learjet40/45, Cessna Citation CJ3, Excel/XLS and Sovereign, Dassault Falcon 200EX EZII, Embraer Phenom 300-100, Embraer Legacy 600, Gulfstream G300, GIV and G550. Over 70 pilots have started type-rating and recurrent training at CAE New Jersey Morristown, CAE Dallas and CAE London Burgess Hill.
Canada. CAE is to acquire Bombardier's Business Aircraft Training (BAT) business for US$645M (https://businessaircraft.bombardier.com/en/ownership/customer-training). There are about 4800 Bombardier business jets in operation, and the Bombardier BAT business includes a fleet of full flight simulators (FFS) and training devices covering the Learjet, Challenger and Global aircraft. CAE is to pay US$155M for future royalty obligations under an Authorized Training Provider (ATP) agreement with Bombardier.
Germany. DC Aviation, headquartered in Stuttgart (www.dc-aviation.com/en) has renewed its pilot training agreement with CAE. This is for aircraft by Bombardier, Dassault and Gulfstream. Pilots will have initial type-rating and recurrent training at CAE Amsterdam, CAE Dubai - Emirates Flight Training Centre, and CAE London Burgess Hill.
Ireland. CAE is to provide Bombardier CRJ900 training to CityJet, headquartered in Dublin (www.cityjet.com). This will be at CAE training centres in Amsterdam, Brussels, Copenhagen and Stockholm. In addition, CityJet cadets will complete ground school and flight training at CAE Oxford, UK, and CAE Phoenix, USA.
Netherlands. A CAE 7000XR FFS for the A320 NEO has received EASA accreditation for Upset Prevention and Recovery Training (UPRT). This is located at the Flight Simulation Company near Schiphol airport on the SW side of Amsterdam (www.fsctraining.com).
Poland. CAE has a pilot training agreement with LOT Polish Airlines (LOT) on Boeing, Bombardier and Embraer aircraft. LOT pilots are at CAE Amsterdam, CAE Madrid, CAE London Gatwick and CAE Stockholm.
Saudi Arabia. CAE is to supply flight training devices to the new Saudi National Center of Aviation (SNCA) at Dammam, on the west coast of the Gulf near Bahrain Island (www.sncaksa.com). These are for the Diamond Aircraft DA42-VI twin and DA40 NG single-engined aircraft, and 60 aircraft with Garmin G1000 NXi avionics will be delivered over the next five years, starting in February 2019.
Spain. CAE is training cadet pilots for Vueling Airlines, headquartered in Barcelona, Spain. Vueling cadets will begin training at CAE Madrid, followed by flight training at CAE Phoenix and CAE Oxford before returning to CAE Barcelona to complete Airbus A320 type-rating.

USA - Florida - Ft Lauderdale. CAE is to continue to provide flight training to Windsor Jet of Fort Lauderdale (www.windsorjet.com). This is for Cessna Citation X, Gulfstream IV and V and Hawker 800XP. Training will be at CAE New Jersey Morristown and CAE Dallas.

USA - Florida - Palm Beach. Alerion Aviation (www.flyalerion.com), a charter operation headquartered in Palm Beach, has renewed its pilot training agreement with CAE. This for aircraft including by Bombardier, Cessna, Dassault, Embraer, Gulfstream and Hawker. Training will be at CAE New Jersey Morristown and CAE Dallas.

CEFA - www.cefa-aviation.com

Mexico. CEFA Aviation Mobile Services (AMS) of Colmar, France, SW of Strasbourg, is to provide its FAS (Flight Animation System) to Aeromexico, This animates flight data to aid post-flight debrief and analysis.

DiSTI - www.disti.com & **Havelsan** - www.havelsan.com.tr

Turkey & USA. Distributed Simulation Technology, Inc (DiSTI) Corporation of Orlando, Florida, USA, is to supply its GL Studio system to Havelsan Inc, headquartered in Ankara, Turkey. This is for instruments for Airbus A320 and 737 MAX simulators. GL Studio 6.3 includes support for ESRI and UTM-encoded Shapefiles, CADRG Maps, and Tile Data. DiSTI also has a library of ready-made cockpit imagery to accelerate development time.

Entrol - www.entrol.es

Canada. Entrenadores Olarte, S.L (Entrol) of Madrid, Spain, is to supply an FTD Level 2 training device for the AT-802 Fire Boss firefighting aircraft to the Conair Aerial Wildfire Training Center (AWTC) in Vancouver, Canada (http://conair.ca). It will have a 180 x 40 degree visual and a vibration system.

Spain. Entrol is to deliver an FNPT II level 2 MCC training device for the Airbus A320 to Panamedia's base in the island of Mallorca (https://panamedia.org/en). It will have a 180 x 40 degree visual and is scheduled for delivery in Q3/2019.

Etihad Training - www.aaco.org/Etihad_Airways_Training_Center

UAE. Etihad Flight Training (EAT) at Abu Dhabi, United Arab Emirates, is to provide Boeing 787 Dreamliner Full Flight Simulator (FFS) training to Gulf Air. Gulf Air will dry-lease EAT simulators using Gulf Air instructors at the Etihad Training facility.

FSI Simulation - www.flightsafety.com/fs_service_simulation_systems.php

Russia. FlightSafety International (FSI) Simulation, headquartered at Broken Arrow, Tulsa, Oklahoma, has received European Aviation Safety Agency (EASA) qualification for an Embraer E-170 simulator it delivered to the S7 Airlines S7 training facility at Domodedovo south of Moscow (www.s7.ru/en). This includes EASA Issue 2 upset prevention and recovery training (UPRT).

USA. FSI Simulation has developed a glass-and-graphics system for a Level 4/5 flight training device (FTD) under FAA Part 60. A single piece of glass with projection and touch-screen facilities displays instrument panels, controls and throttles. Additions can include conventional simulator visual systems. The glass system can be used for cockpit familiarization, systems integration, and some flight training, and can be re-configured for different aircraft using four fasteners to change the glass.

Frasca - www.frasca.com

USA. Frasca International Inc of Urbana, S of Chicago, USA, is to supply a Level 5 Flight Training Device (FTD) for the Socata TBM 700 turboprop to SimCom training, Scottsdale, Arizona (www.simulator.com). This will be based on a real aircraft cockpit and will have Garmin G1000Nxi avionics, weather radar, MD302 standby instruments, RSI visual and a 220 degree display.

InfoWERK - www.infowerk.at

Aruba (Netherlands). infoWERK Multimedia Communications System Inc of Innsbruck, is to supply its Flight Operations Officer (FOO) eLearning program to Aruba Airlines. Aruba is a Dutch Caribbean island off the coast of Venezuela. The training modules include aircraft weight control; air law and regulations; air traffic management; anti-icing procedures; flight performance; navigation; meteorology; security; transport of dangerous goods.

Austria. infoWERK has released its new Route Competence Training eLearning course. This will include information on various world areas including Africa, Asia, Central, North and South America, Europe, Middle East, and the Pacific. It will include communication and navigation procedures; search and rescue (SAR); air traffic control; terrain and minimum safe altitudes; meteorology; and local customs, health and safety requirements.

L3 Commercial Training - www.l-3com.com & **Seeing Machines** - www.seeingmachines.com
Australia & UK. L3 Commercial Training Solutions (L3 CTS), headquartered at Crawley, S of London Gatwick airport, UK, has partnered with Seeing Machines (SM) of Canberra, Australia, to add SM eye tracking to L3 Full Flight Simulators. The first will be a B787 FFS for an Australian airline. The aim is to standardise head-up display (HUD) training including post flight debrief.

MINT Software - www.media-interactive.de
UK. MINT (Media INTeractive) Software Systems GmbH, headquartered in Kiel, Germany, has supplied its web-based training management system MINT TRMS to Jet2.com, headquartered near Leeds/Bradford airport in the north of England (www.jet2.com).

MPS - www.flymps.com
UK. Multi Pilot Simulations B.V. (MPS) of Groenekan, Utrecht, The Netherlands, is to deliver six training systems for Flight Management Systems (FMS) to Ryanair's training centres at East Midlands and Stansted airports. The FMS trainer includes B-737 display units and control panels for display of routes, navigation aids and lesson plans.

one-G sim - https://flyone-g.com

USA. one-G simulation, headquartered in Seattle, USA, is to provide six training devices for Central Washington University (CWU) at Ellensberg. These are five Foundation Advanced Aviation Training Devices (AATD) and a Piper Archer trainer. These will have a mix of glass panel and traditional instruments, and the company's web-based administrative Portal™ and Instructor Operator Station (IOS).
Self-learning System. One-G has also introduced a Self Operated Learning Objective (SOLO™), a turnkey solution for self guided lessons.

Orbit - www.orbit-groundschool.nl/en
Netherlands. Orbit Groundschool of Arnhem, Netherlands, is to provide Multi-Crew Pilot License (MPL) training for Transavia Airlines (www.transavia.com) headquartered in Haarlem, Netherlands. Classroom-based instruction will be given at Lelystad Airport, a General Aviation (GA) centre east of Amsterdam.

Peak Pacific - www.peakpacificgroup.com
Brunei. Peak Pacific Limited of Hong Kong, China, has supplied eLearning systems to Royal Brunei Airlines. Peak Pacific has implemented a Software as a service (SaaS) learning management system (LMS) to manage, track, report, analyse and audit online learning programs across the organisation.

Prodefis - www.prodefis.de
Turkey. Prodevis GmbH, headquartered in Greifenberg, W of Munich, Germany, is to supply Training Management Systems to Pegasus Airlines, headquartered in Isanbul (https://www.flypgs.com/en). This will include Prodefis Training and Performance Monitoring System (TPMS) and E-FILE for management of personnel files.

Saudi Aviation Center - www.sncaksa.com
Saudi Arabia. The new Saudi National Center of Aviation (SNCA), Dammam, on the west coast of the Gulf near Bahrain Island, is to use the Diamond Aircraft DA42-VI twin and DA40 NG single-engined aircraft. 60 aircraft with Garmin G1000 NXi avionics will be delivered over the next five years starting in February 2019. Flight training devices will also be purchased through CAE of Montreal, Canada.

Skylegs - www.skylegs.com & **Euramec** - https://euramec.com
China. Skylegs of Antwerp, Belgium, is to provide their online flight operations platform for the Chinese aerospace market in an agreement with Euramec NV of Hamme, SW of Antwerp. The Skylegs online flight operations system is a cloud-based centralized data hub that includes real-time operational and planning data; business and governance rules and data on aircraft, crew and passengers. The set up includes crew scheduling, document control, electronic flight bag, movement messages and live flight data.

Simloc - www.simlocresearch.com/en
Canary Isalnds (Spain). Simloc Flight Simulation (SFI) of Madrid, Spain, is to deliver a A320SR cabin trainer to the Brok Air Aviation Group at Tenerife Airport in the Canary Islands (https://brok-air.com). The training fuselage has two access doors, evacuation ramp, 17 rows of passenger seats, and cabin crew service areas.
FTDs. Simloc has produced FTD 1 and FTD 2 MCC training devices for the Airbus A320. Software is based on Airbus Standard Software Packages (SSP), and direct view or collimated visual systems are available. A pay-per-use (PPU) system for training devices is available at Simloc's centre near Madrid airport.

SIM-TECH - www.simtechmanufacturing.com

USA. SIM-TECH Manufacturing LLC, of Peachtree City, south of Atlanta, Georgia, USA, has a contract from Southwest Airlines to build new B737NG door and overwing exit trainers and to update others. The new trainers will have flight attendant seats, several rows of passenger seats, PA system and window LED lighting simulating fire or water. They will train for door and handle jam and slide failure. A Panasonic touch-screen instructor console controls functions and scenarios, including overwing exits.

Southcoast Simulation - https://southcoastsimulation.com

USA. Southcoast Simulation of Miami, Florida, is a new company that has opened a training centre near Miami International Airport with two Boeing 747-400 Level D Full Flight Simulators (FFS) and has six bays available for other simulators. These bays are available for rent so that other companies can base their simulators there.

Thales Group - www.thalesgroup.com

France. The Thales Group, headquartered in Paris, France, has developed the HuMans Human Performance Monitoring system. This is integrated in the Thales Reality H Full Flight Simulator design by adding extra cameras and sensors to the simulator cockpit. The system records simulation data, communications, flight control movements and the trainee's angle-of-look.

Waypoint Aero - https://waypointaeronautical.com/cabin-trainers

USA. Waypoint Aeronautical of Everett, north side of Seattle, Washington State, USA, has updated a B-737 Cabin Emergency Evacuation Trainer (CEET) trainer at Alaska Airline's training facility near Seattle/Tacoma airport. This is for a 737-800 with Boeing Sky Interior for training on doors and exits, slides, fire and smoke. It includes drop down oxygen masks with the auto-reel function.

Virgin Australia - www.virginaustralia.com/eu/en

Australia. Virgin Australia Airlines Pty Ltd, headquartered at Bowen Hills, Brisbane, is to establish a pilot training academy at Tamworth Regional Airport between Brisbane and Sydney. The Tamworth Regional Council purchased pilot training facilities at Tamworth Regional Airport from BAE Systems and Virgin Australia is to expand the facility.

Virtual Aviation re-named **VA Airline Training** - www.virtualaviation.co.uk

UK. Virtual Aviation Flight Training, headquartered at Cambridge Airport, UK, has been re-named VA Airline Training. The company's Cambridge Airport Training Centre is being expanded, a new Airbus A320 simulator is being installed in February 2019, and A320 and B737 type rating courses will be available with more instructors. The company has also expanded its AirlineReady APS MCC course with Competency Assurance.

CIVIL ROTARY-WING SYSTEMS - *Helicopters and tilt wing / tilt engine designs capable of hovering*

Coptersafety - www.coptersafety.com

China. Coptersafety Oy of Vantaa, N side of Helsinki, Finland, has Level D approval from the Civil Aviation Administration of China (CAAC) for its Airbus H145 and two Leonardo AW139 full-flight simulators (FFS). This is under China Civil Aviation Regulations Part 60 (CCAR-60).

MILITARY FIXED-WING AIRCRAFT SYSTEMS
For rotary wing systems (helicopters and propeller-driven tilt engine / tilt wings), see later

Cobham - www.cobham.com

UK. Cobham plc, headquartered in Wimborne Minster in the south of the UK, is heading a team for the UK MoD Air Support to Defence Operational Training (ASDOT) programme. It has been announced that QinetiQ will join Draken International and 3SDL as a member of the Cobham team.

Elbit Systems - www.elbitsystems.com

Poland. Elbit Systems Ltd, headquartered in Haifa, Israel, has delivered a simulator package for the Leonardo M-346 Master training and light attack aircraft to the Polish Air Force (PLAF). This includes Full Mission Simulators (FMS) and Flight Training Devices (FTD). The FMS have a 360-degree display and all training devices can be networked for interactive training, including with fighter simulators at the Air Force F-16 Mission Training Center.

Indra - www.indracompany.com

Spain. Indra Sistemas, S.A., headquartered in Madrid, Spain, has developed a new full flight and mission simulator (FFS) for the Airbus A330 MRTT Multirole Tanker Transport aircraft. This is at the MRTT International Training Centre (ITC) in Seville, Spain.

Indra - www.indracompany.com & **iAltitude** - www.ialtitude.es

Spain. Indra Sistemas SA and iAltitude SA, both of Madrid, Spain, have developed a hypoxia (low oxygen supply) trainer for the Spanish Air Force. Indra has integrated iAltitude hypoxia training equipment in a simulator for the C101 jet. Spanish pilots train in the C101 before they convert to the F18 or Eurofighter. This system regulates the oxygen pilots receive, reducing it progressively for training purposes.

L-3 Link Simulation - www.link.com

USA. At I/ITSEC, L-3 Link Simulation and Training, headquartered in Arlington, Texas, USA, introduced the Blue Boxer™ Extended Reality (BBXR) portable aircraft training system, based on a 72 x 38 inch cabinet. It is for use at airfields at which aircraft are deployed away from home base, or in aircraft carrier ready rooms. Flight characteristics and Operational Flight Programs (OFP) are simulated using virtual imagery, aircraft flight controls and an instrument panel. Recording of activity is through the Link Adaptive Learning Engine (ALE).

MetaVR - www.metavr.com

USA. MetaVR Inc., of Brookline, Boston, Massachusetts, USA, has supplied 30 Virtual Reality Scene Generator (VRSG) channels for two new simulators for the F-16C at Lackland Air Force Base, Texas.   Each simulator has 15 VSRG channels for imagery of the external scene; the Head-Up Display (HUD); Helmet-Mounted Display (HMD); ground mapping radar; targeting pod and Maverick missile displays. It also includes high-resolution imagery of Lackland Air Force Base and the Greater San Antonio area. The simulators are part of the Pilot Training Next (PTN) programme.

Northrop Grumman - www.northropgrumman.com

Japan and USA. Northrop Grumman Corporation, headquartered in Falls Church, Virginia, E of Washington Dulles airport, has supplied its LVC Experimentation, Integration, and Operations Suite (LEXIOS) to the U.S. Air Force. LEXIOS is used on the Joint Pacific Alaska Range Complex (JPARC) range and in simulator cockpits at the Misawa Mission Training Center, Japan, in USAF Red Flag training. Northrop Grumman is the lead in the USAF Combat Air Forces Distributed Mission Operations Network (DMON) and the Mobile Air Forces Distributed Training Center Network for live and synthetic aircrew training.

Pinnacle - www.pinnaclesolutionsinc.com

USA. Pinnacle Solutions Inc of Huntsville, Alabama, has a $20M addition to an earlier contract for training for the KC-10 tanker aircraft that is based on the DC-10 three-engined airliner. Work will be performed at Fairfield, California; Joint Base McGuire-Dix-Lakehurst, New Jersey; and Travis Air Force Base, California. The contract is expected to be completed by December 2019 and brings the total contract value to $100M.

Quantum3D - www.quantum3d.com

USA. Quantum3D Government Systems (Q3DGS), of Milpitas, SE side of San Francisco bay, California, USA, is to provide upgrades for the US Air Force KC-135 Boom Operator Weapons System Trainer (BOWST) at 9 installations. This is part of a contract with CAE USA, the prime contractor for the KC-135 Aircrew Training System (ATS). Quantum will upgrade the five image generator channels in each BOWST from its IDX 6000 system to IDX 8000, plus GeoScapeSE® WWDB (WorldWide DataBase) with special weather and ocean plug-ins.

Rockwell Collins - www.rockwellcollins.com

US Air Force. Rockwell Collins, headquartered in Cedar Rapids, Iowa, W of Chicago, USA, is to update the B-1 Lancer training system in a contract with Aero Simulation of Tampa, Florida (https://aerosimulation.com. Rockwell Collins will bring the following B-1 trainers up to the current aircraft standard: the Weapon Systems Trainer (WST), Mission Trainer, Cockpit Procedures Trainer (CPT) and two maintenance trainers.

MILITARY ROTARY-WING SYSTEMS
Helicopters and tilt wing / tilt engine designs capable of hovering

ACME Worldwide - www.acme-worldwide.com

Brazil. ACME Worldwide Enterprises, Inc., of Albuquerque, New Mexico, USA, is to supply its True Q® Dynamic Motion Seats to CAE for simulators for the S-70 Black Hawk in Brazil. ACME says that its motion seats are used in 15 countries including by the U.S. Air Force, Army and Navy.

US Army. ACME is to deliver Gun Active Recoil (GAR®) training systems to Bugeye Technologies of Union, Missouri, SW of St Louis (www.bugeyetech.com). This is for Bugeye helicopter gunner trainers.

Inzpire - www.inzpire.com

UK. Inzpire Ltd of Lincoln, has completed deliveries of its GECO touch-screen system to the UK Ministry of Defence (MoD) for the Apache, Bell, Chinook, and Merlin helicopters. This is for the UK Cockpit Situational Awareness Tool (CSAT) Programme and deliveries have been to bases at Culdrose, Middle Wallop, Odiham, and Wattisham in the UK, and also to Akrotiri (Cyprus) and Brunei.

Lockheed Martin UK - www.lockheedmartin.co.uk

UK. Lockheed Martin UK Ltd, headquartered in London, was prime contractor for a new Chinook Mk 6 synthetic training facility at the RAF base at Odiham, Hampshire, southwest of London. This was under a 53M UK Pound contract and includes two full flight simulators, a rear crew trainer and a suite of Computer Based Trainers (CBT).

Ryan Aerospace - www.ryanaerospace.com.au

Australia. Ryan Aerospace Pty Ltd of Southport, S of Brisbane, Australia, has delivered three portable HELIMOD helicopter simulators to the Royal Australian Navy at HMAS Albatross, Nowra, SSW of Sydney. These are used by the Fleet Air Arm's Naval Aviation Prospects Scheme. Ryan also developed a unit with a screen and head-tracking that allows observers to see what the pilot is seeing in the VR goggles.

AIR TRAFFIC AND AIR CONTROL SYSTEMS

Airways NZ - www.airways.co.nz

Kuwait. Airways New Zealand (ANZ), headquartered in Wellington, New Zealand, and the Australian College of Kuwait (ACK - www.ack.edu.kw/en) opened an air traffic control training academy in September 2018. ANZ has installed their Total Control model of ATC tower simulator and two ATC radar simulators.

DFS - www.dfs.de/dfs_homepage/en

Germany. Deutsche Flugsicherung GmbH, headquartered in Langen, on the south side of Frankfurt, Germany, has developed the DFS Remote Tower Control Centre (RTCC). This can control aircraft from a remote location rather than from the control tower at the airfield itself, and gives a 360-degree view using video and infrared cameras. On 4 December 2018 a Bombardier DHC 8-400 landed at Saarbrücken when controlled from the DFS Leipzig RTCC. Ten air traffic controllers work at the new Remote Tower Control Centre in Leipzig, having moved there from Saarbrücken. DFS developed the remote tower system together with Frequentis, of Vienna, Austria (www.frequentis.com).

NLR - www.nlr.nl

Netherlands. The NLR aviation research organisation, headquartered in Amsterdam, Netherlands, has developed a Smart Controller Training Tool (SCOTT) for the Netherlands Ministry of Defence (MOD). This is at the School of Air Control at the Air Operations Control Station Nieuw-Milligen (AOCS NM) of the MOD. AOCS NM is the command centre of the Royal Netherlands Air Force (RNAF) that coordinates military flight operations. SCOTT creates simulation exercises that model real-life situations.

UFA - www.UFAinc.com

USA. UFA, Inc., of Burlington, NW side of Boston, Massachusetts, USA, has delivered its AT Cloud training system to Southern New Hampshire University (SNHU) in Manchester, New Hampshire. AT Cloud's voice recognition and response (VRR) system trains for ATC skills, phraseology and radar training. College of Engineering, Technology and Aeronautics (CETA) Air Traffic Management students access training through a web browser, workstation or iOS, automated using UFA VRR technology.

LAND SYSTEMS - *Simulators and training systems for the land environment*
(except Medical Training, which follows this section)

Bagira - www.bagirasys.com

Thailand. Bagira Systems, headquartered in Holon, south of Tel Aviv, Israel, has delivered a JOint-fires BattleSpace Simulator (JOBSS) to the Royal Thai Army (RTA). This is integrated with the 105mm Howitzer Crew Trainer (HCT) from Van Halteren Defence which includes a virtual database of training areas and LG1, M101 and M119 Howitzers. This covers the fire support cycle from forward observer, fire control centre (FDC) to the gun crew.

Other Nations. JOBSS is to be supplied to two other Armed Forces including a NATO country.

Barco - www.barco.com

Belgium. Barco NV, headquartered in Courtrai (Kortrijk), west of Brussels, Belgium, is to supply its F70 projectors to Immersive Display Solutions Inc (IDSI) of Atlanta (www.immersivedisplayinc.com) for dome-based fast-jet simulators. Immersive is to use 13 F70-4K6 projectors for each dome together with the Barco Pulse electronics processing and Single Step Processing (SSP) pixel-shifting technology.

Doron - https://doronprecision.com

USA. Doron Precision Systems Inc, of Binghamton, upper New York State, USA, is to deliver 10 driver trainers to Air Force bases. These are for the Fireplus Aircraft Rescue and Fire Fighting (ARFF) Vehicle and are a variant of Doron's Truckplus truck driving simulator. An earlier contract with the U.S. Army was for 39 Truckplus simulators. Over the years, Doron says it has delivered some 25,000 driving simulators to many customers.

Lockheed Martin Training - www.lockheedmartin.com/training & **Saab Training USA** - www.saabtraining.com

USA. Lockheed Martin Training and Simulation, and Saab Training USA, both headquartered in Orlando, Florida, have a $17.7M change order to provide modernized code for the U.S. Army Vehicle Tactical Engagement Simulation System (VTESS). This is to integrate one-way and ballistic simulations, and add a common communication architecture. This will update current Instrumentable Multiple Integrated Laser Engagement System (IMILES) VTESS hardware and software to the Simulation Interoperability Standards Organization (SISO) laser interface standards, to enable training with allies that have Legacy MILES systems.

MASA Group - www.masagroup.net

Brazil. MASA Group, headquartered in Paris, France, has supplied its Combater simulation system to the Brazilian Army. This is used by the Brazilian Army Land Operations Command (COTER) at the Army Command and Headquarter Staff School (ECEME) Command and General Staff Course (CCEM). Combater operates through MASA's Simulated Wargaming for Operational Readiness and Doctrine (SWORD) system.

SWORD update. MASA announced SWORD version 6.12, with a new chemical, biological, radiological & nuclear (CBRN) module. Users can model CBRN plumes and their effects during exercises A new feature allows users to model various natural or man-made disasters such as volcano eruptions, earthquakes, floods, and wildfires.

Riptide - www.riptidesoftware.com

USA. Riptide Software Inc, of Oviedo, NE of Orlando, Florida, USA, has been selected as prime contractor for the US$103M U.S. Army One Semi-Automated Force (OneSAF) computer-generated forces simulation system. Other team members include Cole Engineering, Assured Information Technologies, Infinitas and Phoenix Logistics.

SimCentric - www.simct.com

UK & Australia. At I/ITSEC, SimCentric Technologies of Oxford, UK, announced their SAF-Foresight system. This is for live-fire exercises and includes planning, briefing, exercise management and visualization. It includes a safety alert intervention tool aimed at reducing fratricide incidents in live-fire exercises. SAF-Foresight is to be used by the Australian Army in its modernisation of range and target systems.

Trideum - www.trideum.com

USA. Trideum Corporation of Huntsville, Alabama, USA, has four US Army contracts with a potential of over US$3.6 billion. Theses are (1) Enterprise Training Services Contract (ETSC), (2) Aerial Target Systems II (ATS-2), (3) Mission Training Complex Capability Support (MTCCS) and (4) Rapid Acquisition of Materials for Prototyping (RAMP). Under the $2.4 billion ETSC contract, Trideum will support Army, Joint and Security exercises; routine training; and maintenance of training aids, simulators, and ranges. Under ATS-2, Trideum provides aerial target systems for the U.S. Army, the Department of Defense and some foreign Nations. Under the RAMP contract Trideum provides R&D, prototyping, and fielding equipment for the U.S. Army's Communication Electronics Research, Development and Engineering Center (CERDEC), the Night Vision and Electronic Sensors Directorate (NVESD), and the Special Products and Prototyping Division (SPPD).

MEDICAL TRAINING SYSTEMS

ARA - www.ara.com

US Army. Advanced Research Associates Inc, headquartered in Albuquerque, New Mexico, USA, is to build a trainer for the treatment of burn injuries for the U.S. Army Research Laboratory. The Burn Computer Application for Research and Education (BurnCARE) system will cover the course of treatment, from evaluation of injuries to longer-term hospital care. The $2.6M contract includes funding for the U.S. Army Institute of Surgical Research. BurnCARE's physiology

engine is the open source BioGears™ simulates fluid loss, vascular resistance, thermo-regulation, hypothermia, infection and related conditions.

Medical-X - www.medical-x.com
Netherlands. Medical-X of Rotterdam, the Netherlands, has launched the ADAM-X adult patient simulator, part of its Advanced Modular Manikin (AMM) product. This includes swelling of the face to simulate allergic reactions; fluids such as tears, sweat, saliva and urine; different selectable options of urination, urine only, urine with blood, or just blood; movements of the limbs; respiration with different breathing patterns. The limbs are detachable for training symptoms of trauma, such as amputation and other wounds.

MARITIME SYSTEMS - *Simulators and training systems for the ship, maritime and port environments*

Cruden - www.cruden.com
Netherlands. Cruden, headquartered in Amsterdam, The Netherlands, has developed a Fast Craft Simulator with visual images and motion cueing. This is for boat handling, navigation, drills and tactics.

Kongsberg Maritime - www.km.kongsberg.com
Singapore. Kongsberg Maritime AS, headquartered in Kongsberg, W of Oslo, Norway, has a contract with the Singapore Ministry of Home Affairs worth 21.2 million Singapore Dollars (SGD). This is for four K-Sim Tactical Boat Handling and Firing Simulators for the Singapore Police Coast Guard plus a 10-year maintenance agreement. The simulators will have 240 degree visual and full-motion platforms, and there will be two Instructor Operator Stations (IOS) and two briefing rooms. Weapon capabilities will also be provided.

Kratos - www.kratosdefense.com
Saudi Arabia. Kratos Defense & Security Solutions, Inc., of San Diego, California, has an additional US$17M contract to provide training-related products and services to the Royal Saudi Naval Forces (RSNF). This brings the total contact value to over US$99M for training and instructional services. This is part of the U.S. Foreign Military Sales programme, administered by the U.S. Naval Air Warfare Center - Training Systems Division (NAWCTSD) in Orlando.

Rheinmetall Defence - www.rheinmetall-defence.com
Germany. Rheinmetall Defence, headquartered in Düsseldorf, has built a new nautical training facility for the German Navy School in Mürwik, Flensburg, on the Baltic coat near the Danish border. The facility will be used for training bridge personnel, and the German Federal Police will also use the facility. The system is known as the Ausbildungsausstattung Nautische Schiffsführung (AANS) and is to be used for training all German Navy cadets, future watch officers, and bridge personnel. The AANS includes two large and four small bridge simulators, six trainer stations, a large briefing facility, and facilities for planning exercises and updating the database.

Serco Defence - www.serco.com/sector-expertise/defence
Australia. Serco Defence, headquartered in Hook, Hampshire, UK, has delivered simulator training for the Royal Australian Navy Junior Warfare Application Course (JWAC) which qualifies junior officers as Maritime Warfare Officers (MWO). This includes bridge simulator training in navigation, bridge management and general mariner skills.

CORPORATE AND INTERNATIONAL NEWS
International Agreements, Corporate Acquisitions, Partnerships and Changes

UTC - www.utc.com
USA. United Technologies Corporation (UTC) headquartered in Farmington, Connecticut, USA, between Boston and New York, has completed the acquisition of Rockwell Collins. The new Collins Aerospace consists of UTC Aerospace Systems and Rockwell Collins.

SIMULATION AND TRAINING SYSTEMS
New or updated systems that can be applied generally to simulators and training devices
(less systems specific to one of the Land, Sea or Aviation areas).

ACCEL Flight Simulation - www.accelflightsimulation.com & **Rockwell Collins** - www.rockwellcollins.com
China. ACCEL Flight Simulation Co Ltd of Tientsin, SE of Beijing, and Rockwell Collins, headquartered in Cedar Rapids, W of Chicago, USA, are to increase support for Rockwell Collins visual systems in China. This will include customer service, Chinese-speaking representatives and a reduction of turnaround times. The programme will include training classes for visual systems and maintenance and is to develop a China-based workforce for service in-the-field. ACCEL is a joint venture between Haite High-Tech of Chengdu, China and Rockwell Collins.

Barco - www.barco.com

Laser Video Walls. Barco NV, headquartered in Courtrai (Kortrijk), west of Brussels, Belgium, launched an upgrade to its video wall systems. This allows lamp or LED systems to be upgraded to RGB laser technology with little disturbance to the installation, giving more years of service, improved image quality and lower Total Cost of Ownership (TCO). Over 10 years of service are said to be possible in 24/7 continuous operation. During the upgrade, the cube construction and screens remain in place, while the projection engines and input boards are upgraded. This can be done one cube at a time, while the rest of the video wall remains operational.

Projectors. Barco has introduced the FL40 series solid-state projector with HLD and LED technology. WUXGA or WQXGA resolution at 120 Hz is available and the WQXGA version can be extended up to 3840 x 2400 using Barco Single Step Processing (SSP®). Low cost of ownership is suggested with extended maintenance cycles and no lamp changes or colour adjustments for up to 50,000 hours. Extending the FL40 series is the FS40 with NVG sTimulation through a dedicated IR LED channel.

Bohemia Interactive - www.bistudio.com & **CM Labs** - www.cm-labs.com

Canada and Czech Republic. Bohemia Interactive a.s., headquartered S of Prague, Czech Republic, and CMLabs Simulations Inc of Montreal, Canada, have launched Vortex® Studio for VBS, a simulation systems optimised for ground vehicles. This enhances BISim Virtual Battlespace (VBS) and VS for VBS has also been tested with VBS STE, a prototype version of BISim software which combines a VBS simulation engine with VBS Blue earth rendering. VBS STE can work with the desktop Vortex Studio Editor system to model detailed features such as vehicle powertrain, suspension, braking systems and wheel/ground interaction.

CAE - www.cae.com

CAE Rise system. At I/ITSEC CAE, headquartered in Montreal, Canada, announced CAE Rise™. This enables standardized training and allows instructors to objectively assess pilot progress during training sessions. The system gathers data during simulator sessions and provides instructors with real-time assessment of student performance.

CM Labs - www.cm-labs.com

Canada. CMLabs Simulations Inc of Montreal, Canada, has released Vortex ® Studio 2018c, the latest version of its visualisation platform for the land and sea environment. This has visual upgrades, improved surface modelling, a new system for processing components across different cores, upgraded vehicle and cable systems. For instance, the tyre/wheel model simulates ground/wheel interactions and each wheel's inertia can be set independently. The user interface and setup process has been improved and an installation wizard is available.

Digital Projection - www.digitalprojection.co.uk

UK. Digital Projection Ltd of Manchester, UK, has launched the INSIGHT 4K HFR 360 Multi-View 3D projection system that allows an image to be adjusted to the perspective of three different viewers. In other words, the image is adjusted to the viewpoint position, compared to other systems which produce only one image at a time and the same image is seen even though the viewpoint(s) position (s) change. The system has 4K resolution and delivers images at 360 frames per second. The high frame rate allows the different images to be shown at more than one viewpoint but at a lower frame rate. Adding a second projector allows six different viewpoints. Industry-standard synchronisation signals are used in the same way as for 3D active-shutter glasses.

Esterline - www.esterline.com

USA. At I/ITSEC, Esterline Corporation, headquartered in Bellevue, Seattle, Washington State, USA, announced that its subsidiary Esterline Simulation Visual Systems has introduced new rear-projection dome displays. Esterline TREALITY RP-X products have a potential 360° field of view and use the latest projector technologies. The system is compatible with NVG and stereoscopic imagery.

FSI Simulation - www.flightsafety.com/fs_service_simulation_systems.php

Display. FlightSafety International (FSI) Simulation, headquartered at Broken Arrow, Tulsa, Oklahoma, has introduced its Evolution 360 direct-view dome display with up to 360 x 135 degree view.

Interactive Training. FSI has also launched the MissionFit interactive training system for on-site and remote training.

Indra - www.indracompany.com

Spain. Indra Sistemas, S.A., headquartered in Madrid, Spain, is to use unmanned aerial systems (UAS) to scan airports and other locations to generate accurate imagery for its simulators. It is also to use UAS for inspecting industrial facilities, ships, aircraft etc.

JVC Visual Systems - http://pro.jvc.com
USA. At I/ITSEC, JVC Visual Systems Division, headquartered in Long Beach, California, USA, announced three new projectors in their Visualization Series for simulation environments. The DLA-VS4600 output is 4000 ANSI lumens, and the DLA VS47NV and DLA-VS45NV have 3000 lumens plus IR LED for sTimulating real NVGs. All three have 12,000:1 contrast ratio, 120Hz frame rate, and 4096×2160 resolution.

Plexsys - www.plexsys.com
USA. Plexsys Interface Products, Inc., of Portland, Washington State, USA, announced ASCOT 7, a Computer-Generated Forces (CGF) platform for Modelling and Simulation. ASCOT is an interactive simulation tool that can be used from single ship close air support (CAS) missions to multi-ship exercises and special operations. Systems can be networked together at different sites for joint and coalition exercises.

Presagis - www.presagis.com & **Epic Games** - https://www.epicgames.com/
Canada and USA. At I/ITSEC, Presagis Inc of Montreal, Canada, launched ORB ViewR for streaming large amounts of data from an external host. It is powered by the Unreal Engine from Epic Games of Cary, North Carolina, and allows users to explore entire synthetic environments with high resolution and support for round-earth geometry. ORB ViewR will work with OpenFlight, MetaFlight, and Open Geospatial Consortium Common Database (OGC CDB) formats.
ISO Certification. Presagis has achieved ISO9001:2015 certification for its Quality Management System for Modeling & Simulation Technical Services.

Rockwell Collins Simulation - www.rockwellcollins.com/service/simulation

Griffin System. At I/ITSEC in November 2018, Rockwell Collins Simulation & Training Solutions (STS) of Sterling, Virginia, N of Washington Dulles airport, launched its Griffin™ 2 visual system. This is optimised for military simulation and has a visual dome with a smooth projection surface for up to 360 degree cover, with an open architecture so that different projector types can be used. Earlier Griffin systems are currently used in simulators for the Aermacchi M-346, Eurofighter Typhoon, F-16, and the F-35 Lightning II.
Multi Security Levels. At I/ITSEC in November 2018, Rockwell Collins launched SecureOne™ User-defined Cross Domain Guard. This is to enable information exchange between different entities, for instance in military training environments that need Multiple Independent Levels of Security (MILS). Security can be preserved using Rockwell Collins' SecureOne MILS Encryptor. Unclassified networks can be used with SecureOne, which sends data to higher security-level systems.

Simthetiq - www.simthetiq.com
Brazil. Simthetiq Inc of Montreal, Canada, is to provide 3D simulation models to the Brazilian Armed Forces. Simthetiq will develop models of vehicles, armaments and human characters for the Virtual Battle Space (VBS3) engine, using the Simthetiq rapid VBS configuration system.
Canada. Simthetiq is to provide simulation models from their 3D Model Library under the CASE SEM contract from the Canadian Department of National Defence (DND).

Ternion - www.ternion.com
USA. The Ternion Corporation of Huntsville, Alabama, USA, has released version 17.0 of their Flames system. Enhancements include more windows with a Help button; editing windows can be filtered by dataset, entity class, entity name, tags, and script content. General Scenario Settings will allow the format of scenario files to be specified, and a 64-bit version of Flames will be supported on Linux.

Terrasim - www.terrasim.com
USA. Terrasim Inc of Pittsburgh, Pennsylvania, USA, announced STE World Server (STEWS) for geospatial data. This provides a database of terrain data layers that can be streamed into any STE application. As an example, it can be used with BISim's cloud simulation for the U.S. Army Synthetic Training Environment (STE).
I/ITSEC. Updates announced at I/ITSEC: TerraTools support for VBS3 v18.2/3, VBS Blue IG 18.2/3, OneSAF v8.6-8 including WARSIM.

Sections	Words	%
Editorial & Events	571	5.6
I/ITSEC report	3237	31.8
Aviation Systems	3754	36.9
Space Systems	0	0.0
Multi role Systems	0	0.0
Land Systems	681	6.7
Medical Systems	168	1.7
Maritime Systems	347	3.4
Corporate changes	47	0.5
Simulation Systems	1376	13.5
Word count	100	1.0
Total	**10281**	100.0

Aviation Sections	Words	%
Civil Fixed Wing	2428	23.8
Civil Rotary Wing	59	0.6
Mil Fixed Wing	675	6.6
Mil Rotary Wing	290	2.8
UAVs	0	0.0
ATC & Air Control	302	3.0
Total Air Sections	**3754**	36.9

Air	Words	%
Civ total	2487	24.4
Mil total	965	9.5
RW total	349	3.4