



Simulation and Training - Recent World News

May 2019

Editor: Ian Strachan FRAeS



ITEC May 2018 in Stuttgart - views of the Exhibition Floor

ITEC 2019 - European International Training and Education Conference and exhibition

The photos above show some aspects of the last European International Training Exhibition and Conference (ITEC) in Stuttgart, and are typical of what is expected at the next ITEC. This is in Sweden at the Stockholmsmässan exhibition and conference centre on the south side of Stockholm, from 14-16 May. Last year there were about 2500 attenders and a similar number is expected in Stockholm, where the Keynote speaker is the Head of the Swedish Army, Major General Karl Engelbrektson. The main panel speakers include Dan Eliasson, Director General of the Swedish Civil Contingencies Agency; Dr Frank DiGiovanni, Deputy Director of the US Navy Expeditionary Warfare Division; Hans Lindgren, Head of Business Development in the Training and Simulation division of Saab; and Dr Raed Arafat, Head of the Department for Emergency Situations, Ministry of Internal Affairs, Romania.

Conference subjects include the following, in alphabetical order: Analysis of Trainee Performance; Civil/Military overlap in simulation; Crisis management; Cyber effects; Data for flight simulation; Future simulation requirements; Networking across training devices; War Gaming in NATO; Virtual & Constructive simulation & the Cloud.

The equivalent event in the USA is I/ITSEC in Orlando in November/December which has between 15,000 attenders and in some years, 20,000. The military and civil simulation market in the USA is larger than in Europe, but it is significant that numbers at I/ITSEC were also low until the Organisers decided to stabilise the location at Orlando. Not only is this an attractive place for attenders and also for their families, but it is also more convenient to have a known future location for companies and other organisations involved in exhibition booths and other events. They can make arrangements years ahead rather than, as with the European ITEC, have to make new arrangements each year as the venue changes from Stuttgart, Stockholm, London, Cologne, Prague, Lille, Lausanne, and other places. Indeed, several companies no longer participate in ITEC because of its small size and perhaps also the extra work in making arrangements at a different place each year. If ITEC stabilised its location at one or two popular places rather than going to a different place each year, it might be better for the long-term future of the European event.

Some other significant points in this newsletter include the following:

Word Count by Subject - Commercial Aviation predominates. The Commercial Aviation sections have 4070 words compared with only 1000 for military aviation. This emphasises the enormous world growth in commercial aviation and its requirement for simulator training. Unlike the military which can choose its training methods, equipment and techniques for airline training is mandated by the International Civil Aviation Organisation (ICAO) and implemented by national and regional bodies such as the US Federal Aviation Administration (FAA) and the European Aviation Safety Authority (EASA). These and other world aviation Regulatory bodies now mandate the use of state-of-the-art Full Flight Simulators (FFS) for Upset Prevention and Recovery Training (UPRT) and other critical training. This results from fatal accidents such as AF447 which crashed into the Atlantic in 2009 when it would have been straightforward for the crew to recover had they realised that it was stalling. At that time, the stall and other critical aircraft manoeuvres were not included in data provided by aircraft manufacturers to the Flight Simulation industry - they now are. There are also the recent 338 fatalities in two B737MAX8s due to uncommanded nose-down inputs from faulty sensors, and this can be comprehensively simulated so that crews can take the right corrective action. The current high standard of the civil Full Flight Simulator design with its wide-angle visual and high-quality cueing of real motion, allow the pilots to have extremely realistic cues on which to base their use of the flight controls in emergency situations. Some have queried why motion is required when visual cues are strong, but the way human sensors work is that change-of-motion cues are processed by the brain before it senses a change to the external visual scene, so that the pilot can start to take action sooner and the simulator control feel can be "as aircraft". In any case in accidents at night such as AF447 there are very limited external visual cues and motion cues are the main ones available in an "upset" situation. Therefore, a modern Full Flight Simulator can go a long way to prevent such accidents once the conditions that caused the accident are found and replicated in appropriate simulator training. Finally, on the proportion of this newsletter devoted to aviation, the word count for aviation systems is 5600 compared to only 850 words for Land systems and 270 for Maritime, and for a detailed breakdown by subject areas, see the summary at the top of page 3 and the comprehensive table on the last page.

Simulators for Extended Envelope training. As an example of the above, CAE has obtained qualification from the US Federal Aviation Administration for Extended Envelope and Adverse Weather Training (EE-AWT). Training in Full Flight Simulators with 6-axis motion can now include full stalls, upset prevention and recovery training (UPRT), icing conditions, gusting crosswind landings and bounced landings. This applies to CAE 7000XR Series full-flight simulators for the Airbus A320, A330, A350, and Boeing 737MAX, 737NG, 777 and 787.

Pilots for worldwide Commercial Aviation. Boeing has forecast that nearly 800,000 new pilots will be needed worldwide within the next 18 years, about 44,450 per year. The Asia-Pacific region is forecast to need about 261,000, about 14,500 per year, and in Europe 94,000, about 5,220 per year.

Man-rated Centrifuge for Fighter Pilot training. Austria Metall System Technik has provided a man-rated centrifuge for high-G training to the UK Royal Air Force, replacing an older centrifuge with less advanced characteristics. The new device is used by Air Force and Navy fast-jet pilots to replicate G-loadings in aircraft such as the F-35 Lightning, Hawk, and Typhoon. It can accelerate up to 9G in one second and some 300 pilots are to be trained each year.

Air Battle Training. The Air Battlespace Training Centre at RAF Waddington, Lincoln, is to connect its systems to other Air Force Bases by a secure network. This will allow up to five training exercises to be run at the same time, and shows the potential for connecting training systems together in a network.

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Countries and Regions in this newsletter

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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

Table of Word Count

This Newsletter has just over 9370 words, of which 5600 are on aviation systems, followed by 1004 for editorial and events. Land systems have 850 words with 560 more for Medical, and Maritime 270. Simulation systems have 470 and corporate changes 370. Within air systems, Civil Fixed-wing has 3750, Military Fixed-wing 810, followed by rotary wing civil with 310 and military rotary with nearly 200.

World Simulation and Training Events

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 (Modelling & Simulation 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 12-13 - Defence and Security Equipment International (DSEI)

Venue: Excel Exhibition Centre, London
Organiser: Clarion Events <https://clarionevents.com> & enquiries@dsei.co.uk

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 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

October 29-30 - European Airline Training Symposium (EATS)

Venue: Berlin, Germany
Organiser: Halldale Group www.halldale.com & www.eats-event.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

Countries and Regions mentioned in this newsletter *(Use the search function to find individual items)*

Argentina, Australia, Austria, Bahrain, Brazil, Cambodia, Canada, China, Colombia, Czech Republic, Denmark, Egypt, Ethiopia, Finland, France, Germany, Ghana, Guatemala, Hungary, India, Indonesia, Ireland, Israel, Italy, Japan, Latvia, Malaysia, Mexico, Montenegro, Oman, Papua New Guinea, Poland, Polynesia, NATO, Netherlands, Nigeria, Romania, Singapore, S Korea, Spain, Sweden, Thailand, Tunisia, UAE, UK, USA. (46 Nations & regions)

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

AeroGuard Flight Training - www.flyaeroguard.com

South Korea. AeroGuard Flight Training Center, headquartered in Phoenix, Arizona, USA, is to train Korean cadets at AeroGauar bases in Phoenix, Arizona and Austin, Texas. Cadets will be from the Uljin Flight Academy of the Republic of Korea, Korean Aviation College (KAC), and Korea Aerospace University (KAU). This is through the Korean Ministry of Land, Infrastructure and Transport (MOLIT).

Airbus Training - www.airbus.com/support/training/training-centres

France. Airbus Training, headquartered in Toulouse, France, is to open the Airbus Flight Academy Europe in Angoulême. This will provide EASA-approved ab-initio Pilot Cadet Training for up to 200 cadets per year. This will include 750 hours of ground school and simulation plus 200 hours of flight training. It has been reported that some 94,000 new pilots will be required in Europe over the next 20 years.

Thailand. Airbus signed a Memorandum of Understanding (MoU) with Thailand's Civil Aviation Training Center (CATC) for training courses for pilots and maintainers.

Airways Aviation - <http://airwaysaviation.com> & **HAITE Singapore** - www.haite-sg.com

Australia, Montenegro, Singapore, Spain, UAE & UK. Airways Aviation Group, headquartered at Kidlington, Oxford, UK, and HAITE Aviation Training, headquartered at Changi, Singapore, signed a Memorandum of Understanding (MOU) on commercial flight crew training. The HAITE training division operates 12 full flight Airbus and Boeing simulators in Tianjin and Kunming in China and Singapore with another four to be delivered over the next 12 months. Airways Aviation has Training Academies in Australia, Bilinga and Caloundra; Montenegro, Podgorica; Spain, Huesca; UAE, Dubai; and UK, Kidlington, Oxford.

Alsim - www.alsim.com

Hungary. Alsim of Le Loroux Bottereau, East of Nantes, France, is to supply an AL250 training device to Agro Aero of Repülőtér, Hungary (<http://agroaero.hu>). The AL250 trains for PPL, CPL and IR in single & multi engine piston (SEP/MEP) aircraft.

Italy. Alsim is to supply an ALX FSTD to the Aeroclub di Verona (www.aeroclubverona.it) for their new MCC and APS MCC courses. The FSTD covers single piston, twin piston, twin turbine, up to medium category twin jets (generic A320/B737). The device is designed and approved for ATPL, CPL/MCC and JOC.

Malaysia. Alsim is to supply an AL250 training device to HM Aerospace of Kuala Lumpur (www.hmaerospace.com/). This is for single- and multi-engine piston (SEP/MEP) PPL, CPL and IR training.

Polynesia. Alsim is to deliver a FNPT II MCC ALX to the C3P Polynesian Center of Piloting Improvement in Tahiti (www.c3p-tahiti).

Spain. Alsim has delivered an AL42 trainer for the Diamond DA23 to One Air of Malaga (www.grupooneair.com).



Atlantic Flight Training - <https://afta.ie>

Ireland. Atlantic Flight Training Academy (AFTA) based in Cork in the SW of Ireland, is to train pilots for Ryanair. This will be from ab-initio up to Boeing 737 type-rating.

AvSoft - www.avsoft.com

Colombia. AvSoft International of Denver, Colorado, USA, has a contract from SATENA (www.satena.com) for systems courses for the ATR 42-500, Embraer ERJ 145 & E170. SATENA is a government-owned airline based at El Dorado International Airport in Bogotá. The courses will also train Colombian Air Force pilots.

Dash 8 Differences Course. Avsoft has released the Dash 8 Q300 with Q200 Differences Course. This has about 30 hours of content in 25 modules with detailed diagrams of aircraft systems. Each module concludes with a test, and when all are successfully completed, a certificate of completion is generated. The course can be delivered through Avsoft's Learning Management System (AvLMS), a third party LMS, or viewed on an iPad or Android tablet using Avsoft's

Portable Classroom application. This course is for initial type-rating and customers can create their own recurrent training using the Avsoft RD3 System.

Germany. Avsoft is to supply its AvLMS Learning Management system for Airbus A320 and ATR 42/72 to Flitecom at Oerlinghausen near Hannover (<http://flitecom.de>). Avsoft will also provide its EASA PBN- RNP course.

Ghana. Avsoft is to supply its eLearning systems to Passion Air for Dash 8 Q400 pilot training. This will include Avsoft's proprietary Learning Management System (AvLMS) and exams approved by the Ghana CAA.

Ireland. Avsoft is to supply its ATR 72-600 pilot training programme to Stobart Air, based in Dublin. The course content is rotated every year and covers technical refresher training over a period of three years. This arrangement satisfies EASA/IAA requirements for annual pilot recurrent technical training. Stobart Air will use their own Learning Management System to deliver Avsoft's ATR 72-600 course that conforms with SCORM 1.2.

Papua New Guinea. Avsoft has supplied Dash 8 Q100 and ATR 72-600 aircraft systems eLearning courses to PNG Air of Port Moresby (www.pngair.com.pg). The courses use Avsoft's Learning Management System (AvLMS) and have been approved by Papua New Guinea's Civil Aviation Authority.

Bolvert XR - www.bolverkxr.com

UK. Bolvert XR of Valby, on the W side of Copenhagen, Denmark, has supplied its XR virtual reality A321 cabin crew training system to Thomas Cook Airlines, headquartered in Manchester (www.thomascookairlines.com). This has been described as a "Virtual Academy" for cabin crew training and uses VR headsets with cabin imagery including doors, escape slides, and outside scenes. Training includes cabin fires and handling of the aircraft doors, and is said to have eliminated inadvertent slide deployments on larger training rigs.



Britannica - www.britannica-ks.com

Canada. Britannica Knowledge Systems (BKS) headquartered in Chicago, USA, has supplied its Fox Training Management System to Pacific Sky Aviation Inc. This is used at the Pacific Sky flight training centre in Calgary for Twin Otter and CL Water Bomber aircraft. Fox manages training system scheduling and pilot training records.

CAE - www.cae.com

Canada, Chile, Colombia, Mexico, USA. CAE has delivered Airbus A320 NEO full flight simulators to its training bases in Montreal, Canada; CAE Santiago, Chile; CAE Bogota, Colombia; and CAE Mexico. Other simulators are to be delivered for the Bombardier CRJ900 to CAE Minneapolis, USA; Embraer E170 to CAE Phoenix, USA; and a Boeing 787 to CAE Bogota.

USA - FAA. CAE, headquartered in Montreal, Canada, announced US FAA qualification for Extended Envelope and Adverse Weather Training (EE-AWT) for CAE 7000XR Series full-flight simulators (FFS) for three Airbus A320, A330, A350, and Boeing 737MAX, 737NG, 777 and 787. Training can now include full stalls, upset prevention and recovery training (UPRT), icing conditions, gusting crosswind landings and bounced landing.

USA - JetBlue. CAE is to supply two Airbus A220-300 CAE 7000XR Series full flight simulators (FFSs) and two CAE 500XR flight training devices (FTDs) to JetBlue University, Orlando, Florida. CAE also has a training centre operations services agreement at JetBlue University.

CPaT - www.cpat.com

Czech Republic. CPaT Global LLC of The Woodlands, N of Houston, Texas, USA, is to provide Boeing 737NG courses using distance learning, classroom instruction and learning management systems (LMS) to Czech Airlines Flight Training Centre (CATC - <https://www.catc.cz>). Courses for other aircraft types will follow later.

Guatemala. CPaT is to provide e-learning systems for B757 and B767 to DHL de Guatemala at Guatemala City. This will include courses for distance learning, classroom and learning management systems (LMS).

Q400 Course. CPaT has released new Q400 Aircraft Systems courseware. This can be accessed on- and off-line and also by iPad, Android, and PC.

UK. CPaT is to supply e-learning systems for Thomas Cook Airlines, headquartered in Manchester (www.thomascookairlines.com). This includes distance learning, interactive classroom systems and learning management systems for Airbus and Boeing aircraft.

Czech Aviation Training - www.catc.cz

Czech Republic. Czech Aviation Training Center (CATC) at Prague International Airport, is adding Airbus A320 and Boeing 737 MAX simulators.

Diamond Simulation - www.diamond-simulation.com

Latvia. Diamond Simulation GmbH & Co KG of Egelsbach, S of Frankfurt, Germany, is to supply a flight training device for Diamond aircraft to airBalticTraining of Riga (www.airbaltictraining.com).

DVI Group - www.thedvigroup.com

USA. DVI Group of Atlanta, Georgia, USA, announced its eBrief Project video training system. Some 220 videos of 10-20 minutes cover procedures and manoeuvres across nine types of aircraft.

Entrol - www.entrol.es

Spain - Coruña. Entrenadores Olarte, S.L (Entrol) of Madrid, Spain, has supplied an A32 FNPT II MCC training device based on the A320 to the Aeroflota del Noroeste (AFN) training centre in Coruña (www.afngrupo.com). It has a three-projector visual, dual MCDU, TCAS II and weather radar.

Spain - Mutxamel. Entrol has achieved EASA FNPT II certification for an en-1000 model flight training device at European Flyers training base at Mutxamel, Alicante (<https://europeanflyers.com>). The en-1000 FNPT II is a fixed-wing simulator reconfigurable between SEP and MEP, interchangeable between analogue and glass cockpits.

Ethiopian Academy - www.ethiopianairlines.com/en/schools/default.aspx

Ethiopia. Ethiopian Airlines Aviation Academy (EAAA) in Addis Ababa is now operating a A350 XWB full flight simulator (FFS). The airline currently operates seven A350 XWB aircraft and has a further 17 on order. Other full flight simulators at the Academy include B787, B-777, B737, B757, B767 and Q400.

Euramec - <https://euramec.com>

India. Euramec NV of Hamme, Belgium, SW of Antwerp, is to establish a Sales and Technology Centre in India, in co-operation with the Society of Indian Aerospace Technologies and Industries of Bangalore (SIATI - www.siati.org). See the entry under Military Aviation training.

Fidelity FS - www.f2si.net

USA - Alaska, Hawaii, Utah. Fidelity Flight Simulation Inc (F2Si) of Pittsburgh, Pennsylvania, USA, is to upgrade a Guardian Flight Beechcraft Super King Air B200 AATD in Alaska. The AATD will have an enclosed cockpit with Garmin GTN 625, and a separate Instructor Operator Station (IOS). F2Si will also upgrade Guardian Flight's Super King Air B200 full motion simulator that was manufactured by F2Si in 2008.

F2Si is to supply an Advanced Aviation Training Device (AATD) for the Beechcraft King Air C90 to the Guardian Flight base in Hawaii (www.guardianflight.com).

F2Si is to supply a training device to Granite School District in Salt Lake City, Utah (www.graniteschools.org).



Flame Aviation - www.flame-aviation.com

Poland. Flame Aviation of Wassenaar, NE of The Hague, Netherlands, is to deliver its V9000 Commander fire trainer to LOT Polish Airlines headquarters near Warsaw Chopin Airport in Poland. This can have up to ten different lesson plans including for lithium-ion battery fires.

FlightLogger - <https://flightlogger.net>

Sweden. FlightLogger of Aarhus, Denmark, is to supply training management systems to Volflight at Jönköping Airport (www.volflight.se). This can integrate flight programs, ground school, bookings, flight registrations, certificates and maintenance.

FlightPath - www.flightpathinternational.com & **Modest Tree** - <http://modesttree.ca>

Canada. FlightPath International (FPI) of Toronto, Canada, and Modest Tree Media Inc of Halifax, Nova Scotia, E coast of Canada, are to introduce Virtual Reality (VR) simulation technology for maintenance training courses. FlightPath will offer CBT and maintenance training courseware. Modest Tree will introduce VR and other simulations to maintenance training modules, and enhance FlightPath pilot training courseware.

FlightSafety - www.flightsafety.com

Egypt. FlightSafety International (FSI), headquartered at La Guardia Airport, New York, USA, is to deliver a full flight simulator for the Airbus A220-300 to the Egyptair Training Academy at Cairo International Airport. This includes include FlightSafety's 60-inch electric motion platform and a new multi-function Instructor Operating Station with large multi-touch displays.

USA - Ohio. FlightSafety has enlarged its Columbus Learning Center, Ohio, by 63,000 sq ft. This now has 14 simulator bays, 29 classrooms, 28 briefing rooms and other facilities. Training is available for aircraft by Bombardier, Embraer, Dassault, and Textron.

USA - Texas. FlightSafety has delivered an Embraer E-170 simulator to the ExpressJet facility at Houston Intercontinental Airport and installed an E Jet cabin trainer. Graphical Flight deck simulators for the Embraer E-170 and ERJ 145 aircraft will also be supplied.

Frasca - www.frasca.com

USA. Frasca International Inc of Urbana, S of Chicago, USA, has partnered with Garmin to integrate Real Garmin G1000 NXi software into its new Frasca RTD (Reconfigurable Training Device). This is approved by the FAA as an Advanced Aviation Training Device (AATD). It has Frasca aerodynamic software based on flight test data, a web-based instructor station and outside world (OTW) visuals. The RTD can be configured to aircraft including the Cessna 172 and Piper Seminole, also between analogue instruments and the G1000 NXi glass cockpit. The RTD can have a single visual display or several windows. Garmin features include Synthetic Vision Technology, Terrain Awareness and Warning System, as well as WAAS (LPV, LNAV/VNAV and Glide Paths) and updatable navigation databases.

FTD Aero - www.ftd.aero

Japan. FTD Aero SP z.o.o. of Komorniki, SW of Poznan, Poland, has delivered a B738 model of Fixed Base Trainer to Solaseed Air at Tokyo Haneda Airport (www.solaseedair.jp/en). The B738 is an FNPT II MCC, modelled on a narrow-body jet airliner, and is equivalent to US FAA level 5.

Poland. FTD is to deliver an FNPT II APS MCC training device to LOT Crew, headquartered in Warsaw (<https://corporate.lot.com/pl/pl/lotnik>). This is a fixed-base training device for a twin engine, mid-size airliner, for Multi Crew Cooperation Airline Pilot Standards training (MCC APS).



ICAO - www.icao.int & **Eurocontrol** - www.eurocontrol.int

Europe & International. The International Civil Aviation Organization (ICAO), headquartered in Montréal, Canada, and Eurocontrol, headquartered in Brussels, Belgium, announced a training agreement. ICAO Secretary General Dr. Fang Liu, and Eurocontrol Director General Eamonn Brennan, signed an agreement under the ICAO Trainair Plus Corporate Partnership system. This will enable collaboration on joint air navigation training programmes and courses on subjects such as air traffic management (ATM), cybersecurity and ATM Security Regulation.

Indra - www.indracompany.com

Colombia. Indra Sistemas, S.A., headquartered in Madrid, Spain, has received certification from Aerocivil of Colombia for a Full Flight Simulator (FFS) for the Airbus A320 at the Global Training Aviation in Bogotá (www.globaltrainingaviation.com/en/colombia).

L3 Commercial Training - www.l-3com.com

Netherlands. L3 Commercial Training Solutions (L3 CTS), headquartered at Crawley, S of London Gatwick airport, UK, is to provide a B787-9 Full Flight Simulator (FFS) to the KLM Royal Dutch Airlines training centre at Schiphol Airport. This will be an L3 RealitySeven model with facilities for Upset Prevention and Recovery Training (UPRT).

Latitude Services - www.latitude-aes.aero

Japan. Latitude Aviation English Services of Plymouth on the south coast of the UK is to provide language training courses in Aviation English for pilots of Japan Airlines (JAL - www.jal.co.jp/en). This includes self-study and instructor-led sessions with Latitude instructors.

KLM Training - www.klmflightcrewtraining.com

Netherlands. KLM Flight Operations Training Facilities Department, based at Schiphol Airport, SW of Amsterdam, has added two Cabin Emergency Evacuation Trainers (CEETs) for the Boeing 737 and 777 for annual cabin crew training. The B777 CEET has a motion system, and both have LED screens instead of cabin windows for outside-world scenes including fire outside the window. Cabin fire can be simulated in 13 different ways, and smoke and heat can be added. A new Fire Trainer will also be installed and a whole floor will be dedicated to training using Virtual Reality systems.

MPS - www.flymps.com

Italy. Multi Pilot Simulations B.V. (MPS) of Groenekan, Utrecht, The Netherlands, has supplied a fixed-base flight training device (FTD) for the Boeing 737-800 to Aviomar Flight Training at Urbe Airfield on the N side of Rome (www.aviomarscuoladivolo.com). This will be for MCC training, type rating and Jet Orientation Courses (JOC).

Netherlands. MPS has achieved FTD-2 certification for a DC-3 simulator from the Dutch Civil Aviation Authority (Dutch CAA) on behalf of the European Aviation Safety Agency (EASA). It was previously certified as an FNPT II, and includes over 70 failure scenarios and the visual system includes rotating propeller imagery.

UK - Cambridge. MPS has delivered an Airbus A320neo simulator to VA Airline Training at its training centre at Cambridge Airport (www.virtualaviation.co.uk).

UK - Gloucester. MPS installed a B737 MAX FTD at Skyborne Airline Academy at Gloucestershire Airport (www.ukflying.com/skyborne). This is certified by the UK CAA and used in Skyborne's EASA cadet pilot programme.

UPRT. MPS is to integrate IDT's UPRight feedback tool for Upset Prevention and Recovery Training (UPRT) into current and future MPS flight simulators. This tool is from IDT of Breda, the Netherlands (<https://idt-engineering.com>). The UPRight Instructor Operator Station tool enables instructors to illustrate critical UPRT features such as the importance of reducing the angle of attack during an upset or stall event.

PacSim - www.pacificsimulators.com

Indonesia. Pacific Simulators 2010 Ltd (PacSim) of Christchurch, New Zealand, has installed two FSTDs at FlyBest Flight Academy headquarters in BSD City Tangerang near Jakarta (<https://flybest.co.id>). One is for the Airbus A320 and is an open-plan PacSim EuroJet FJ2000 model Cockpit Procedures Trainer (CPT). The other is for the Boeing 737 and is an enclosed PacSim ProJet PS4.5 Flight Simulation Training Device.

New Zealand. PacSim is to supply their EuroJet PS4.5 FSTD to Ardmore Flying School in Auckland (<https://ardmore.co.nz>) for Airbus A320 training. The PS4.5 is based on a narrow-body jet airliner with sidesticks and fly-by-wire controls.



Pelesys - www.pelesys.com

Canada. Pelesys Learning Systems Inc, of Richmond, S side of Vancouver, Canada, is updating its courses to a Competency-Based Training Approach (CBTA). This includes its "dangerous goods" courses on handling and transporting of goods by air which are being updated to the CBTA framework.

Pilot Flight Academy - www.pilotflightacademy.com

Hungary. Pilot Flight Academy (PFA) of Sandefjord Airport, Oslo, Norway, is to open a pilot training facility at Hévíz-Balaton Airport, at the SW end of Lake Balaton, SW of Budapest. Training is to start in late 2019 and capacity will be for 300 students per year.

ProSim-AR - <https://prosim-ar.com>

Sweden. ProSim-AR of Delft, The Netherlands, has received FNPT II MCC certification for a ProSim FSTD at Volflight training at Jönköping Airport, Sweden.

Quadrant - www.quadrant-systems.co.uk

UK. Quadrant Systems Limited (QSL) of Burgess Hill, south of London Gatwick Airport, UK, has demonstrated its INTERACT Simulated ATC Environment (SATCE) solution on a FlightSafety simulator. FlightSafety is to look at adding Quadrant INTERACT to FlightSafety training equipment.

Qantas - www.qantas.com/au/en

Australia. Qantas is to open a new Qantas Group Pilot Academy with an initial investment of about \$20M. The Academy will initially train around 100 pilots a year, expanding to up to 500 pilots a year. After up to 18 months of classroom, simulator and flight training, pilots will convert to an aircraft type and enter service as a First Officer.

RSi - www.rsi-visuals.com

Brazil. Redifun Simulation inc (RSi) Visual Systems of Euless, just south of Dallas Fort Worth airport, Texas, USA, is supplying its Epic-View Visual Display System for an Embraer KC-390 Flight Simulator made by Rheinmetall Defence (RDE) at the Embraer Aircraft facility in Brazil. Epic-View has a 220 x 60 degree 11-foot radius collimated display system using seven Norxe P1 IR projectors. The simulator uses the Redifun RS200 Image Generator.

USA. Redifun has supplied its Epic Prime visual system to AeroStar Training Services of Kissimmee, S of Orlando, Florida (<https://aerostartyperatings.com>). Epic Prime is a "Visual as a Service" based on a monthly fee, and provides 4.1 megapixels at 2560 x 1600 pixels, 2m polygons and 250k light points per channel, plus an DLP LED projection system. Aerostar will also be entitled to software updates, airport library access, repairs, spares and service visits.

RST Rostock - www.rst-rostock.de

South Korea. RST Rostock System-Technik GmbH of Rostock, on the Baltic coast of Germany, has delivered a door trainer for the Airbus A321 ACF NEO to Asiana Airlines Training Centre at Seoul Gimpo international airport.

Simloc - www.simlocresearch.com/en

Spain. Simloc Flight Simulation (SFI) of Madrid, Spain, and everis ADS (www.everis.com), are to supply an Airbus A320 Fixed Base Trainer to Aerodynamics Málaga. This is to be certified as an FTD1 MCC at a new Aeronautical Campus at the Axarquía Tecnolimentario Park, Vélez Málaga.

Simthetiq - www.simthetiq.com

Mexico. Simthetiq Inc of Montreal, Canada, has supplied its X2 Visual system for a Level D Airbus A320 Full Flight Simulator (FFS) in Cancun. This is though a contract with the Avenger Flight Group of Fort Lauderdale, Florida, USA (www.afgsim.com). The X2 Visual System is powered by the aXion Image generator and has a suite of weather effects, whole earth terrain and a library of airports.



Skyborne Academy - www.ukflying.com/skyborne

India. Skyborne Airline Academy, based at Gloucestershire Airport, UK is to train up to 100 pilots a year over the next five years, as part of the IndiGo Cadet Pilot Programme. The 18-month programme is for a US FAA and Indian DGCA Commercial Pilots Licence and Airbus A320 type rating. Skyborne cadets will have 13 months of US FAA 141 commercial pilot training in Arizona, USA; before returning to India to convert their US FAA licence to an Indian DGCA licence. Cadets then complete a 10-week phase of Multi-Crew Cooperation and Airbus A320 Type Rating at a Skyborne-approved facility. The Indian aviation market is said to have annual growth of about 17% and it has been forecast that airlines based in India will require up to 10,000 new pilots by 2030.

SoftekSim - www.softeksim.com

Spain. SoftekSim of Riga, Latvia, is to deliver a Boeing 737NG FTD to Barcelona Flight School (<https://barcelonaflightsschool.com>). This will have EASA FTD level 1 and Multi-Crew Cooperation (MCC) certification. It will be used for initial B737NG type training, jet orientation courses (JOC) and MCC training.

Spatial Composites - www.spatial-composite.com

Ireland. Spatial Composite Solutions FZE, Jebel Ali Free Zone, Dubai, UAE, is to manufacture an A321NX Extended Over Wing Exit Trainer for the Aer Lingus Training Academy at Dublin Airport. This will include an Attendant Station with touch screen Flight Attendant Panel (FAP), replica SpaceFlex lavatories and galleys, flight deck door, overhead stowage bins, passenger seats with in-flight entertainment and communication systems.

TRU Simulation - www.trusimulation.com

China - Beijing. TRU Simulation + Training Inc, headquartered at Charleston, South Carolina, USA, delivered a Level D A350 FFS to Airbus Hua-Ou Aviation Training Company in Beijing. Also delivered were an A350 Airbus Procedural Trainer (APT) and Airbus Procedural Trainer Engineering Station (APTES).

China - Chongqing. TRU delivered A320 and CRJ-900 Level D FFS to China Express Airlines in Chongqing.

China - Shanghai. TRU delivered a Level D 737 MAX FFS to the Boeing Flight Services Training Center in Shanghai.

China - Shandong. TRU is to deliver two 737 MAX FFS to Shandong Airlines of Jinan, Shandong Province. The first is to be ready-for-training by Q4/2019.

Finland. TRU has received Level D qualification by the European Aviation Safety Agency (EASA) for a 737 MAX FFS at Icelandair's training centre in Reykjavík.

Oman. TRU is to supply a 737 MAX FFS to Oman Air to be delivered in Q4/2019.

UK. TRU has delivered the second 737 MAX FFS to the Boeing Flight Services Training Center at London-Gatwick.

India. TRU has delivered a Level D A320 STD 2.0 FFS to the Airbus India Training Center (AITC) in Gurgaon. A Level D ATR 72-600 FFS is to be delivered to Gurgaon later in 2019.

US AA - www.usaviationacademy.com

Cambodia. US Aviation Academy of Denton, NW of Dallas, Texas, has been approved by the State Secretariat Civil Aviation of Cambodia (SSCA) as an Approved Training Organization (ATO). US AA provides flight training for commercial multi-engine pilot certification, flight instructor and turbine transition.

VSTEP - www.vstep.nl

Netherlands. VSTEP B.V. of Rotterdam, Netherlands, has a contract extension with Schiphol airport, Amsterdam, for use of their Response Simulator (RS) for training airport emergency services personnel. *This includes personnel at the scene of an incident and also incident control personnel.*

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

TRU Simulation - www.trusimulation.com

Finland. TRU Simulation + Training Inc, headquartered at Charleston, South Carolina, USA, has supplied a Level D Full-Flight Simulator (FFS) for the Airbus H125 to Coptersafety of Vantaa, Helsinki (www.coptersafety.com).

FlightSafety - www.flightsafety.com

USA. FlightSafety International (FSI), headquartered at La Guardia Airport, New York, USA, has added extra modules to its helicopter Master Aviator program. The one-day courses now include Advanced Rotorcraft Energy Management, Advanced Helicopter Crew Resource Management, and Advanced Helicopter Surviving Inadvertent Instrument Meteorological Conditions (IMC).

Frasca - www.frasca.com

USA - Alaska. Frasca International Inc of Urbana, S of Chicago, USA, has supplied a Helicopter Flight Training Device (FTD) for the AS350B2 to TEMSCO Helicopters, headquartered in Juneau, Alaska (<http://temscoair.com>). This will be for training pilots on tourist flight routes and for converting pilots from piston helicopters to the AS350. It will train for Alaska conditions such as white-out and flat light (an optical illusion also known as "sector or partial white out."). The FTD has Frasca TruVision Global imagery with a 220-degree visual, and the Frasca Motion Cueing System (FMCS). This includes Avidyne IFD550 flight management system (FMS) with Forward Looking Terrain Alerts (FLTAs), synthetic vision, height-above-terrain call-outs and remote transponder control.

Helisim - www.helisim.fr

USA. Helisim, a Joint Venture (JV) between Airbus and Thales, headquartered at Marseille Provence Airport, France, has built a new 23,000-square foot helicopter pilot and maintenance crew training centre in Grand Prairie, Texas. This will have Level D full flight simulators for Airbus H145 and H175 helicopters. Existing training facilities include an H125/AS350 full-flight simulator and an H135/H145 flight training device.

SoftekSim - www.softeksim.com

USA. SoftekSim of Riga, Latvia, is to supply Tecnam P2010 and Tecnam P2006T convertible FAA Level 5 Flight Training Devices (FTDs) for single- and multi-engine aircraft to Universal Helicopters Inc (UHI) headquartered in Dallas, Texas (www.universalheli.com).



MILITARY FIXED-WING AIRCRAFT SYSTEMS

For rotary wing systems (helicopters and propeller-driven tilt engine / tilt wings), see later

ACME Worldwide - www.acme-worldwide.com

Argentina. ACME Worldwide Enterprises Inc is to provide its True Q Dynamic Motion Seats to TRU Simulation. This is for their T-6 aircraft operational flight trainer (OFT) for the Argentina Air Force in early 2020.

ACS Aviation - <https://acsaviation.com>

UK. ACS Aviation of Perth, Scotland, is to train pilots for the UK Ministry of Defence. In addition, the Enhanced Learning Credits (ELCAS) system will allow military flying qualifications to be used for civilian licences.

AMST - www.amst.co.at

UK. Austria Metall System Technik GmbH of Ranshofen, Braunau, Austria, has provided a man-rated centrifuge for high-G training at RAF Cranwell, Lincolnshire through a £44M contract with Thales UK. This can produce G-loadings up to 9 and is used by Royal Air Force and Royal Navy fast-jet pilots in aircraft such as the F-35 Lightning, Hawk, and Typhoon. The cockpit layout can be changed to represent the aircraft to be trained. The AMST centrifuge weighs about 39 tonnes, rotates up to 34 times a minute and can accelerate up to maximum G in one second to simulate a rapid "pull" manoeuvre and the dangers of black-out and spatial disorientation. The RAF Centre of Aviation Medicine uses the centrifuge to train aircrew to recognise the effects of high G and learn techniques to prevent grey-out or black-out in a safe environment. Squadron fast jet pilots will have high-G refresher training at least every five years and up to 300 aircrew will have centrifuge training each year.

Embraer - <http://embraer.com/global>

Nigeria. Embraer Defense & Security, headquartered in São Paulo, Brazil, is to deliver 12 A-29 Super Tucano light attack aircraft to the Nigerian Air Force. This will include simulators and other training devices, mission planning and debrief systems.

Euramec - <https://euramec.com>

India. Euramec NV of Hamme, Belgium, SW of Antwerp, is to establish a defence team for Indian Air Force and Indian Navy training. This is associated with the Sales and Technology Centre of the Society of Indian Aerospace Technologies and Industries of Bangalore (SIATI - www.siatl.org). The centre will use Euromec simulation technology and work with universities and the SIATI business network.

IFAD - www.ifad.dk

Denmark. IFAD TS A/S of Odense, west of Copenhagen, Denmark, has delivered a Deployable Advanced Readiness Trainer (DART) for the F-16 and a Joint Terminal Attack Controller (JTAC) training system to the Danish Air Force Fighter Wing Skrydstrup (FW SKP), SW of Esbjerg on the Atlantic coast. The system consists of two F-16 simulators, an instructor station and two JTAC trainers. It can be networked with JTAC and Air Control Wing (ACW) fighter controllers at a base 120 kilometres away.



Inzpire - www.inzpire.com

UK. Inzpire Ltd of Lincoln, UK, has been awarded the Defence Operational Training Concept (Air) (DOTC(A)) Interim White Force contract. This is to manage the transition from the Defence Synthetic Air-Land Training (DSALT) programme over a 42-month period. DOTC(A) will enable simulators to use a common synthetic environment. The Air Battlespace Training Centre at RAF Waddington, Lincoln, will have DOTC(A) Core Systems and Services and White Force personnel, connected to Main Operating Bases by a secure network that will allow up to five training exercises to be run at the same time.

L-3 Technologies - www.l3t.com

USA. L-3 Technologies, headquartered in Arlington, Texas, USA, has a \$120M contract to continue training U.S. Air Force B-2 pilots, maintainers and weapons personnel using its B-2 Aircrew Training System. Training is at the 509th Bomb Wing, Whiteman AFB, Missouri, and the L3 Training Systems Support Center (TSSC) is also at Whiteman.

Plexsys - www.plexsys.com

USA. Plexsys Interface Products Inc of Portland, Washington State, USA, has joined the team for the Joint Intelligence, surveillance, and reconnaissance Tactical data link Modernization (JITM) Quick Reaction Test (QRT) programme. This is to integrate ISR data into Link 16 architecture and to update Military Standard 6016. It has tested MIL-STD 6016 new message sets with more accurate intelligence. The JITM QRT team works for the Air Force Joint Test Program Office (AFJO) at Nellis Air Force Base, Nevada.

VT MÄK - www.mak.com

USA. VT MÄK, of Cambridge, Massachusetts, USA, has supplied a license for its VR-Vantage IG to Boeing's Phantom Works. Its open architecture allows terrain to be generated directly from source data including imagery, elevation, land-use classification and other features. It can generate airport data from X-Plane/Digital Aeronautical Flight Information Files, and imagery can be based on OpenStreetMap data.

MILITARY ROTARY-WING SYSTEMS

Helicopters and tilt wing / tilt engine designs capable of hovering

ACME Worldwide - www.acme-worldwide.com

US Marine Corps. ACME Worldwide Enterprises, Inc., of Albuquerque, New Mexico, is to supply its TrueQ Dynamic Motion Seats for simulators by FlightSafety International (FSI) for AH-1Z and UH-1Y U.S. Marine Corps helicopters. There will be two motion seats per device because there are seats for both pilot and gunner in each simulator. ACME's electric motion seats apply small cues of real motion and also use harness slackening and tensioning as a cue for G, in response to acceleration cues from the simulator's flight model.

Bluedrop Training - <http://bluedropts.com>

USA. Bluedrop has a C\$2.0M contract for its Hoist Mission Training System to Logistic Services International (LSI) for the US Air Force. This is for crewmen of the the Sikorsky HH60W Combat Rescue Helicopter and can be co-ordinated with the pilot's flight simulator for full crew training for rescue missions and hoist and crew communications.



CAE - www.cae.com

USA. CAE, headquartered in Montreal, Canada, is to supply two Level D Full Flight Simulators (FFS) to a new training academy at the Leonardo helicopter facility in Philadelphia. They will be operated by Rotorsim, a joint venture (JV) owned equally by CAE and Leonardo. The simulators will be for the AW169 twin engined helicopter and the AW609 tilt-rotor. The simulators are CAE 3000 Series with 6-axis motion and roll-on/roll-off cockpits that can include other aircraft types. Cockpits can be used as a stand-alone fixed-base Flight Training Device (FTD).

AIR CONTROL AND AIR TRAFFIC CONTROL SYSTEMS

Including military Forward Air Control (FAC) systems and civil and military Air Traffic Control systems

Micro Nav - www.micronav.co.uk

Poland. Micro Nav Ltd of Bournemouth, UK, is to update its BEST simulator system at the Polish Air Navigation Services Agency (PANSa) - www.pansa.pl/index.php?lang=eng in its Warsaw training facility. PANSa has a 360 degree BEST 3D simulator, four 3-Channel BEST Tower simulators and over 20 BEST Radar workstations. The contract includes an upgrade to the latest BEST software platform, enhancements and four new BEST Tower Foundation systems.

TRU Simulation - www.trusimulation.com

USA. TRU Simulation + Training Inc, headquartered at Charleston, South Carolina, USA, has developed a training device for the Forward Air Control 9FAC0 and light attack aircraft environment. This uses the MetaVR Virtual Reality Scene Generator (VRSG) and the aircraft simulation can be networked with the Joint Terminal Control (JTC) Training and Rehearsal System (TRS). It can also include ISTR (Intelligence, Surveillance, Target acquisition, and Reconnaissance) and can be used with mobile high-value-targets (HVT).

UNMANNED AIR SYSTEMS

CAE - www.cae.com

UK - RAF. CAE, headquartered in Montreal, Canada, is to develop a synthetic training system for the Royal Air Force Protector RG Mk1 remotely piloted aircraft system (RPAS). The Protector is the UK variant of the MQ-9B SkyGuardian RPAS from General Atomics Aeronautical Systems Inc (GA-ASI) and CAE's training system contract is from GA-ASI. It will include desktop and mission trainers based on the GA-ASI Certifiable Ground Control Station (CGCS). CAE will also provide scenario generation and briefing and debrief stations. Deliveries will start in 2020 to RAF Waddington, Lincoln, the HQ of UK Intelligence, Surveillance, Target Acquisition and Reconnaissance (ISTAR) and the Main Operating Base (MOB) of the UK Protector.

FlightSafety - www.flightsafety.com

USA. FlightSafety International (FSI), headquartered at La Guardia Airport, New York, USA, is to deliver training for Unmanned Aircraft Systems (UAS) in conjunction with Praxis Aerospace Concepts of Henderson, Nevada (www.praxisaerospace.com). This will initially be offered in the Las Vegas area and at several FlightSafety Learning Centers in the USA. Courses will be to ASTM International UAS standards (www.astm.org) - ASTM was formerly the American Society for Testing and Materials.

MetaVR - www.metavr.com

USA. MetaVR Inc., of Brookline, Boston, Massachusetts, USA, has supplied eight of their VRSG desktop systems to Embry-Riddle Aeronautical University (ERAU) at Daytona Beach for its UAS training lab. VRSG can be driven by the Piccolo Command Center Interface Software via a plugin developed by Georgia Tech Research Institute (GTRI). The UAS lab is to collect imagery from its own UAS to build 3D terrain in MetaVR Terrain Tools for UAS simulators.

Pinnacle - www.pinnaclesolutionsinc.com

US Army. Pinnacle Solutions Inc of Huntsville, Alabama, has a \$533M Unmanned Aircraft Systems Instruction and Mission Support (UAS IMS) contract for UAS training at Ft. Huachuca, Arizona. This is for the 1st Aviation Brigade for the RQ-7 Shadow and MQ-1 Gray Eagle UAS. The estimated contract completion date is March 2026.

Simlat - www.simlat.com

Israel. Simlat Ltd of Tel Aviv, Israel, and Grand Forks, USA, has developed simulation for Counter-UAS (C-UAS) operations. Threats are simulated in environments such as airports, urban terrain and sensitive sites.

MULTI-ROLE SYSTEMS

Simulators and training systems for more than one of the land, sea and air environments, including Cyber

IFAD - www.ifad.dk

Denmark. IFAD TS A/S of Odense, west of Copenhagen, Denmark, has extended its agreement with the Danish Defence Acquisition and Logistics Organization (DALO) for simulation systems for the Danish Ministry of Defence. This includes systems in use by the Danish Army, Air Force, Navy and Special Commands. Simulation-based solutions provided by IFAD include F-16 pilot training, Seahawk helicopter crew training, Forward Air Controller Close Air Support and Artillery Observer Call for Fire training, Naval Warfare tactical training, Naval Search & Rescue training, Radio Communication training, and systems for simulator interoperability and joint training.

Leonardo - www.leonardocompany.com

NATO. Leonardo, headquartered in Rome, Italy, has a 180M Euro contract with NATO for electronic warfare training equipment. This is for the NATO Joint Electronic Warfare Core Staff (JEWCS), based at Royal Naval Air Station (RNAS) Yeovilton, 200km west of London, UK. Pod-based aircraft EW systems will be supplied plus a NATO Anti-Ship Missile Defence Evaluation Facility (NASMDEF) that uses aircraft pods to simulate anti-ship missiles.

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

Aptima - www.aptima.com

US Army. Aptima of Woburn, NW of Boston, Massachusetts, USA, has a 5-year contract worth up to \$19 million with the U.S. Army Research Institute (ARI) for the behavioural and social sciences. Aptima will develop tools to improve competencies including problem-solving and dealing with threats and future missions.

Bagira - www.bagirasys.com

Netherlands. Bagira Systems, headquartered in Holon, south of Tel Aviv, Israel, is to supply a simulator for the National Chemical, Biological, Radiological and Nuclear (CBRN) training center, and to operate it for 15 years. Van Halteren Defence (VHD) of Bunschoten, E of Amsterdam, Netherlands (<https://vanhalteren.com/en/defence>), is also involved. The simulator uses Bagira B-ONE 3D imagery, to simulate CBRN events and different levels of command.

BISim - www.bisimulations.com

UK Army. Bohemia Interactive Simulations (BISim), headquartered in Prague, Czech Republic, has a contract from the British Army for virtual reality, machine learning and cloud computing for the Army's Collective Training Transformation Programme (CTTP). This is through the UK Defence Innovation Fund. BISim will work under the VR In-Land Training (VRLT) Pilot Programme, a British Army CTTP initiative. The system will use BiSim VBS3 software; VBS Blue IG image generation; and the VBS STE desktop trainer. The HIVE Insight Engine from Cervus Defence and Security will be used to process training data from the BiSim systems.



Bluedrop Training - <http://bluedropts.com>

Canada. Bluedrop Training and Simulation Inc of Halifax, Nova Scotia, has a C\$1M contract for a vehicle gunnery simulator through the Build in Canada Innovation Program. This covers target engagement, malfunctions, firing solutions, and vehicle limits such as rollover. It will be developed in partnership with the 5th Canadian Division.

Elbit UK - www.elbitsystems.com

UK. Elbit Systems UK Ltd, based in Glasgow, Scotland, together with QuantaDyn Corporation of Herndon, Virginia, USA, E side of Washington Dulles airport (www.quantadyn.com), have supplied a mobile Close Air Support (CAS) and joint fires simulator to the British Army. The Joint Fires Mobile Trainer (JFMT) is now in service with the Joint Terminal Attack Controllers (JTAC) and Fire Support Teams (FST) of the 1st Artillery Brigade. The JFMT is accredited

for Motion Video, Rotary Wing, Night/IR, Remote Observer and Laser Target Designation. It is housed in a 20ft trailer with a trainee station, an instructor/operator station (IOS) and a pilot console. Visuals include Computer Generated Forces (CGF) and Semi-Autonomous Forces (SAF) in a dome display. Image Generation includes night vision devices, laser designators and binoculars.

FAAC - www.faac.com

USA. FAAC Incorporated of Ann Arbor, W of Detroit, Michigan, USA, is to support the U.S. Army Training Aids, Devices, Simulators and Simulations (TADSS) Maintenance Program (ATMP). This is under the ATMP prime contractor, the Rotary and Mission Systems division of Lockheed Martin. FAAC will provide technical expertise and staff at Fort Leonard Wood, Missouri; Camp Shelby, Mississippi; and Camp McCain, Mississippi. ATMP provides support for TADSS, Digital Ranges and Combat Training Center (CTC) instrumentation.

Meggitt Training - www.meggitttrainingsystems.com

US Army. Meggitt Training Systems (MTS), headquartered in Suwanee, Georgia, USA, has five delivery orders from the US Army Tank-automotive & Armaments Command. These will include Meggitt pop-up Stationary Infantry Targets (SIT), that can fall, hold or bob up and down. These are for the following locations:

Camp Perry, Ohio: An automated record fire range and a combat pistol qualification course with SITs.

Camp Grafton, North Dakota: a combat pistol qualification course and modified record fire range with SITs.

Camp Shelby, Mississippi: Two fire ranges with SITs.

Camp Williams, Utah: An automated record fire range with SITs.

Fort Campbell, Kentucky: An infantry platoon battle course and a training range with SITs and moving infantry and tank targets.



Saab Defence - www.saabgroup.com

Finland. Saab Security and Defence Solutions, headquartered in Järfälla, Sweden, is to deliver simulators for marksmanship and combat training valued at €9M to the Finnish Defence Forces Logistics Command. This is associated with the Finnish Ground Combat Indoor Trainer (GC IDT). The contract includes models of weapons, the virtual environment and after action review (AAR).

UK. Army. Saab is to supply Tactical Engagement Simulation (TES) to the U.K.'s Infantry Training Centre (ITC) at Catterick in the north of England. Infantry recruits will now use Saab TES during their Attack Week exercises, including simulated effects of direct and indirect fire and After Action Review (AAR).

Marines. Saab is to provide TES to the Commando Training Centre Royal Marines (CTCRM) in Lympstone on the south coast of England.

US Army - www.army.mil

Germany. The US Army Joint Multinational Simulation Center (JMSC) in Germany is now operating the Stryker Virtual Collective Trainer (SVCT). This is a model of the inside of the Stryker combat vehicle with TV screens showing scenes from Virtual Battlespace 3 (VBS3) from BiSim, allowing scenarios to be repeated and changed.

VMS - www.visualmanagementsystems.net

Austria. Visual Management Systems Ltd of Glasgow, Scotland, UK, is to deliver its Titan Vision system to the Austrian Army. Titan will replace earlier infantry training systems in school houses, integrate with the eSim Games Steel Beast product, and be used to upgrade an air defence simulator.

MEDICAL TRAINING SYSTEMS

Exonicus - www.exonicus.com & **Kitware** - www.kitware.com

US Army. Exonicus Inc of Seattle, Washington State, USA, and Kitware Inc, headquartered in New York, USA, have developed a trauma simulator using their Pulse Physiology Engine. Exonicus also created a virtual reality emergency medicine training simulator for military medical personnel using the Unity game engine. This is for the Madigan Army Medical Center at Joint Base Lewis-McChord outside Lakewood, Washington state. It is funded by the Telemedicine and Advanced Technology Research Center (TATRC). Pulse is an open-source physiology engine and the Kitware Pulse team integrated it into their emergency medicine trauma simulator. Kitware also expanded the Pulse Common Data Model and updated Pulse models for localized hemorrhage, administration of packed red blood cells, and a vital sign monitor.

Mechdyne - www.mechdyne.com & **Digital Projection** - www.digitalprojection.com

USA. Mechdyne Corporation, headquartered in Marshalltown, Iowa, USA, and Digital Projection Ltd of Manchester, UK, have the projectors and screens in the wide area virtual environment (WAVE) at the Uniformed Services University of the Health Sciences (USU - www.usuhs.edu) Bethesda, Maryland. The WAVE is a VR environment in which medical and armed forces personnel train for combat situations. The models distractions in a battlefield while attending to injured soldiers. Mechdyne partnered with Digital Projection to upgrade 48 lamp projectors to Digital Projection laser projectors; 24 rigid projection screens to flexible projection screens; and improved graphics processing.

Operative Experience - <https://operativeexperience.com>

USA. Operative Experience Inc (OEI) of North East, NE of Baltimore, Maryland, USA, has launched the TCCS Plus full body medical simulator for trauma training. This is to train battlefield combat medics and first responders in active shooter and other mass casualty scenarios. The simulator provides training in austere environments where care is needed before casualties can be evacuated. Its conforms to the Joint Trauma System (JTS) Center of Excellence and Deployment Medicine training standards. This includes haemorrhage control, airway management, head trauma, cardiac events, respiratory disorders, intravenous cannulation and monitoring. TCCS Plus is a full body articulated simulator with tablet control, pre-programmed clinical scenarios and more than 14 hours of battery time. It is available in five wound configurations that simulate injuries from IED explosions, blunt trauma and gunshot wounds.

US Air Force - www.airforce.com

USA. The US Air Force is working with the Army and Navy on Crowd-Sourced Assessment of Technical Skills (C-SATS) for surgeon training. The system enables surgeons to receive expert feedback on their skills and techniques, and the system has shown promising results with civilian surgeons. Funding is from the Telemedicine and Advanced Technology Research Center at the U.S. Army Medical Research and Materiel Command, headquartered at Fort Detrick, Maryland. Trials are ongoing with surgeons at Keesler Air Force Base, Naval Base San Diego, William Beaumont Army Medical Center and Tripler Army Medical Center.

Vcom3D - www.vcom3d.com/

USA. Vcom3D Inc of Orlando, Florida, USA, released a Virtual Training app on damage to the Humerus bone at the top of the arm where it joins the shoulder. The medical name of the procedure is "Humeral Head Intra-Osseous (HHIO) Infusion". The application has graphics of a wounded soldier after a Humvee rollover accident in Afghanistan and the most appropriate treatment is via HHIO Infusion.

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

Aptima - www.aptima.com

USA. Aptima of Woburn, NW of Boston, Massachusetts, USA, has a \$18.4M US Navy contract for training services. Aptima will develop new training systems for the USN Center for Surface Combat Systems (CSCS) in Dahlgren, Virginia, one of 11 learning centres in Naval Education and Training Command. This will support Ready Relevant Learning (RRL) in the Sailor 2025 programme. Aptima will use its A-Measure software to help CSCS capture, visualise and analyse sailor performance in real time.

Plexsys - www.plexsys.com

USA - Navy. Plexsys Interface Products, Inc., of Portland, Washington State, USA, is to supply its Video Audio Data After Action Review (VADAAR) system to the U.S. Navy. This is for the USN Live Virtual Constructive Development and Operation Center (LVCDOC) that uses LVC, amongst other objects, for working with industry. VADAAR LVC enables streaming, recording and review of video, audio and other data devices.

Tunisian Navy

Tunisia. The Tunisian Navy has installed a maritime simulator at its La Galite Academy at the port of La Goulette on the west side of Tunis. The simulator includes ships, aircraft, general maritime traffic, enemy threats and vessels. Events and incidents can be added for tactical manoeuvres, radar detection of threats, and enemy engagement. The simulator has a distributed architecture for training at several Navy sites. The object is to be compatible with NATO standards and to take part in NATO exercises.

VSTEP - www.vstep.nl

Netherlands. VSTEP B.V. of Rotterdam, Netherlands, has announced a new portable simulator product in its NAUTIS product line, developed in cooperation with 360-Control of Amsterdam (<https://360-control.nl>).



CORPORATE AND INTERNATIONAL NEWS

International Agreements, Corporate Acquisitions, Partnerships and Changes

CAE - www.cae.com

Canada and USA. CAE, headquartered in Montreal, Canada, has acquired Bombardier's Business Aircraft Training (BAT) business for a value of \$645M. This includes 12 full-flight simulators and other training devices for Bombardier Challenger, Global and Learjet aircraft in Dallas, Texas, and Montreal, Canada.

Cubic Corporation - www.cubic.com

USA. Cubic Corporation, headquartered in San Diego, California, USA, has acquired Nuvotronics of Durham, North Carolina (www.nuvotronics.com) for \$64M. This includes Nuvotronics PolyStrata technology, developed under DARPA for production of packaged radio frequency (RF) devices, such as antennas, filters and combiners.

FlightSafety - www.flightsafety.com & **TRU Simulation** - www.trusimulation.com

USA. FlightSafety International (FSI), headquartered at La Guardia Airport, New York, and TRU Simulation + Training Inc, a Textron company headquartered at Charleston, South Carolina, have formed a new company called FlightSafety Textron Aviation Training (FSTAT). This new Joint Venture (JV) will provide training for Textron Aviation business and general aviation aircraft. FSTAT will offer training at 16 locations with 89 simulators to train 48 types of aircraft including Beechcraft, Cessna, Hawker and King Air.

Ravenswood - www.ravenswoodsolutions.com

USA. Ravenswood Solutions of Fremont, California, and Boise, Idaho, USA, has relocated the bulk of its operation from Fremont, California, to Boise, Idaho. This is to be close to its largest client, the U.S. Army National Guard, at the nearby Orchard Combat Training Center. Ravenswood headquarters will remain in Fremont.

Thales completes acquisition of Gemalto - www.thalesgroup.com & www.gemalto.com

France. Thales has acquired Gemalto for 4.8 billion Euros, increasing revenues to €19 billion and overall company R&D to €1 billion per year, with 80,000 employees in 68 countries. Gemalto is headquartered in Meudon on the SW side of Paris and is a specialist in digital security, providing software applications, secure devices such as smart cards and tokens, and is said to be the world's largest manufacturer of SIM cards. This will allow the expanded Thales to develop secure systems in areas such as unmanned air traffic management, data and network cybersecurity, airport security and security of financial transactions.

UFA - www.UFAinc.com

Canada, Singapore. UFA, Inc., of Burlington, NW side of Boston, Massachusetts, USA, has opened new offices in Canada and Singapore. UFA Technologies, Inc, the Canadian subsidiary, is at Cornwall, SW of Montreal, Canada.

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).*

AVT Simulation - www.avtsim.com & <http://trainingcenter.avtsim.com>

USA. AVT Simulation of Orlando, Florida, USA, and the University of Central Florida Division of Continued Education in Orlando (www.ce.ucf.edu) have developed a number of simulation courses. One example is the AVT 101 Simulation Overview course that describes simulator components and how they fit together.

FSI Simulation - www.flightsafety.com

USA. FlightSafety International (FSI) Simulation, headquartered at Broken Arrow, Tulsa, Oklahoma, introduced its VITAL 1150 Image Generation system, an enhancement of VITAL 1100. The new system can render normal rates of 120Hz with up to 8K resolution. Also added are new features for cyber-security and enhanced weather scenarios. It is designed to connect with network protocols used in Distributed Mission Operations (DMO), for instance for use in Live, Virtual and Constructive (LVC) training exercises. It also supports Night Vision Goggles (NVGs) and has channels for Infra-Red (IR) imagery.



BISim - <https://bisimulations.com>

Czech Republic. Bohemia Interactive Simulations (BISim), headquartered in Prague, Czech Republic, has released updates to VBS3, VBS Blue IG, VBS Simulation SDK and VBS IG SDK. (1) VBS3 Version 18.3.4 includes an expanded 3D model library and there is more interaction with vehicles and equipment, updated voice communications and a mission planning tool. (2) VBS Blue IG adds to the realism of joint fires and close air support training. (3) VBS Simulation SDK includes new samples, improved documentation and new APIs. (4) VBS IG SDK has a new set of APIs.

Plessey Semiconductor - www.plesseysemiconductors.com

UK. Plessey Semiconductor of Plymouth, UK, is developing micro LEDs for applications such as Augmented and Virtual Reality and Head-up Displays. This includes microLED arrays with emitters as small as 1 micron that are capable of producing TV-equivalent brightness using power as small as 5mW (100,000 candela per square metre at 1 watt).

Scalable Network - www.web.scalable-networks.com

USA. Scalable Network Technologies Inc, of Culver City, Los Angeles, California, USA, has released QualNet 9.0 and EXata 7.0. These give new capabilities in the Asynchronous Transfer Mode (ATM), Cyber Tools, Encryption Device Model, Indoor Urban Propagation Model, and the Parallel Enterprise Switch Model. This integrates NDT, QualNet and EXata product lines, and a new Cyber Tools feature.

Simthetiq - www.simthetiq.com

Canada. Simthetiq Inc of Montreal, Canada, has announced that its X2 Visual System has been qualified on over 50 flight simulation training devices worldwide, including over 20 Level D full flight simulators. X2 is powered by the aXion Image Generator and uses whole earth terrain.

ViaTech - www.learnviatech.com

USA. ViaTech of Dallas, Texas, announced that its Active Reader system now supports video and interactive file types. Active Reader allows customers to see who viewed what, and for how long. Customers include CAE which integrates Active Reader in its existing systems.

Sections	Words	%						
Editorial & Events	1357	14.0	Aviation Sections	Words	%			
Aviation Systems	5601	57.6	Civil Fixed Wing	3756	38.6	Air	Words	%
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Multi role Systems	182	1.9	Mil Fixed Wing	809	8.3	Mil total	1003	10.3
Land Systems	849	8.7	Mil Rotary Wing	194	2.0	RW total	507	5.2
Medical Systems	526	5.4	UAVs	360	3.7			
Maritime Systems	273	2.8	ATC & Air Control	169	1.7			
Corporate changes	372	3.8	Total Air Sections	5601	57.6			
Simulation Systems	472	4.9						
Word count	95	1.0						
Total	9727	100.0						