

**FLIGHT  
SIMULATION  
GROUP**

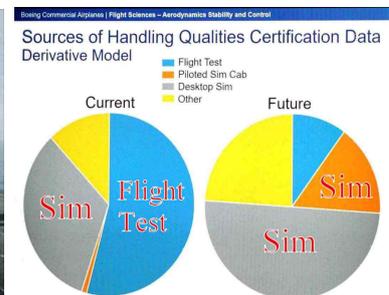
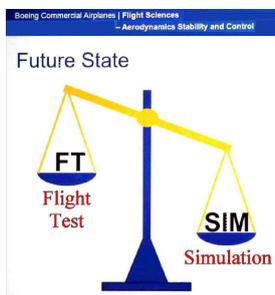


**ROYAL  
AERONAUTICAL  
SOCIETY**

## Simulation and Training - Recent World News

*July 2018*

*Editor: Ian Strachan FRAeS*



*Pictures from the RAeS Flight Simulation Group Conference June 2018*

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## RAeS Flight Simulation Group Conference June 2018

This was held at RAeS HQ in London from 12-13 June. Barry Tomlinson of the FSG Committee gave a historical introduction that covered the development of flight simulators from the Antoinette cockpit trainer of 1908, the "breakthrough" Link trainer first patented in 1929, through WW2 to the modern Full Flight Simulator. The following sessions included subjects such as testing and validation of current flight simulators, regulatory developments, Upset Prevention and Recovery Training (UPRT), training effectiveness, safety management, training for "startle" events, application of gaming technology, and the use of modern virtual and augmented reality technology to improve simulator fidelity. Speakers came from Canada, the Czech Republic, France, Germany, Italy, the Netherlands, UK and USA, and included Jeff Schroeder, chief scientific advisor to the US FAA, Denis Crider, chief technical advisor to the US National Transportation Safety Board, and representatives from Airbus, Boeing, Bohemia Interactive, CAE, Delft University, EASA, Flight Safety International, Leonardo, Munich University, Shell Aircraft, and the UK CAA.

At the end of day 1, Air Vice Marshal Bruce Hedley gave the annual Edwin Link lecture and said that we must exploit the potential of modern simulation technology. He concluded that combining other advanced technologies with simulation gives us an unparalleled opportunity not only to enhance training but also to enhance military decision making.



## Civil Airline Market Forecast

The Airbus Global Market Forecast 2018-2037 predicts that the world civil passenger fleet will more than double to 48,000 aircraft in the next 20 years with traffic growth at 4.4% per year. 540,000 new pilots will be needed, all of whom will be trained on a variety of training aids up to the highest level of Full Flight Simulators that are certified for Upset Prevention and Recovery Training (UPRT). 37,390 new aircraft will be required, of which 10,850 replace older aircraft and 26,540 are for growth. Emerging economies account for over 60% of economic growth, with flights per person increasing by 2.5 for these nations.

## European ITEC 2018



The 2018 European International Training Equipment Conference (ITEC) and Exhibition was held at the Messe Stuttgart Exhibition Centre, conveniently located on the north side of Stuttgart airport. Hotels were at the airport and in the suburb of Echterdingen one stop on the S-bahn. On 14 May there were presentations by members of the international Simulation Interoperability Standards Organization (SISO). Subjects included NATO Standardization of Modelling and Simulation by Agatino Mursia of the Leonardo company, Distributed Information Systems (DIS) by Patrice le Leydour of Thales, Cross-domain Security by Wing Commander Colin Palmer and Squadron Leader Rebecca Collis of the UK Air Force, and Version 3 of the Real-time Platform Reference Federation Object Model (RPR FOM V3) by Bjorn Möller of Pitch Technologies. Other subjects included Medical Simulation, Metadata and Open Standards, Modelling and Simulation as a Service (MSaaS), and Urban Combat Training. However, it was disappointing that there were only about 60 attenders and I wonder if in future years it might be possible to integrate the "SISO Day" more closely with the main conference so that more people have the opportunity to attend these valuable sessions.

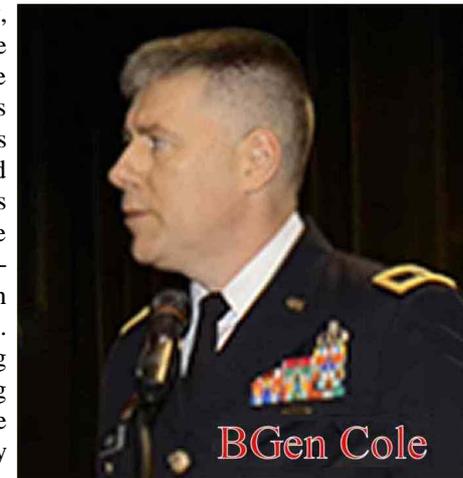
## ITEC Keynote Addresses

Introducing the Keynote addresses on 15 May, conference chair Udo Keuter of Airbus Defence emphasised the conference theme of "Readiness". With current and future threats, out-of-the-box thinking is required, he said, particularly in the cyber area. He also mentioned an increase in the use of drones, for which more training is required to control, deter and counter them.

Rear Admiral Simon Williams of Clarion Defence recalled that ITEC started in 1990, the year that Saddam Hussein invaded Kuwait. Since then there has been constant change in the training world and the challenge is how to keep ahead. The world training audience is also changing, he said, and asked three questions: (1) Who are we making ready, (2) what is "readiness", and (3) Readiness for what? Defence capability, he said, is a result of manpower, equipment and training. Looking at manpower, he used figures from World Mapper ([www.worldmapper.org](http://www.worldmapper.org)) to show that world population in most regions is due to rise steadily, particularly in the Middle and Far East, but that of Russia is forecast to fall, with implications for the future balance of power. As well as sophisticated warfare using modern weapons and including the cyber domain, he mentioned the use of "crude" weapons such as by rebels and insurgent movements - this area also needs training, he said, so that more basic weapons and techniques can also be countered. Strategy, he suggested, should take into account both intelligence and force which he characterised as "David and Goliath", and we need to allow for Artificial Intelligence (AI) and the Super Intelligent systems of the future. If industry and the military are pushing technology, it should be recognised that there will be occasional failures. The world is changing, and we must change with it, he concluded.



The next address was from US Army Brigadier General William Cole, Principal Executive Officer (PEO) for Simulation, Training and Instrumentation (STRI), headquartered in Orlando, Florida. His theme was "Readiness 2025", an integral part of the "Force 25" concept. The head of the US Army, General Mark Milley, had recently stated that "Readiness is our Number One priority". On Live, Virtual and Constructive (LVC) training, General Cole said that in exercises, we need to link the L, V and C domains. As well as Virtual simulation, the Constructive element is most valuable for battle staffs and commanders, and we still do "quite a bit" of live training. He quoted French General Foch as saying in 1917 that "it takes about 15,000 casualties to train a Major General", but was pleased to be able to say that, today, those casualties can be in computer exercises. For instance, at Fort Riley the so-called "Big Red One" Division with some 4500 soldiers, has one battalion in field training, another in simulators and another in constructive training. The significant point is that the Colonel who is co-ordinating the training often cannot tell the difference between which of the LVC elements is being used. The L, V and C elements originally were independent, but we have now integrated them, he said, and larger LVC exercises are held up to Army level, although some work is needed to standardise the interfaces between the three elements. In some exercises, Automated Forces (AF) are inserted, for instance by a few operatives controlling thousands of Automated personnel and vehicles in the exercise. He also pointed out that vehicle and troop movements are recorded during exercises, plus the audio within each vehicle. At the moment this data is not kept but in the future it should be, he said, for analysis purposes.



On individual simulation systems, some are getting old, and new ones are needed that exploit the latest simulation technology. Turning to Cyber training, he mentioned the Persistent Cyber Training Environment (PCTE). This is a closed system, necessary because live cyber training risks exposure of classified techniques and data to potential enemies. High-level cyber training is therefore carried out on restricted networks, for instance in exercises at Fort Polk, between Houston and New Orleans. On medical training, he mentioned the new Defence Health Agency (DHA) for which PEO STRI is the co-ordinator on behalf of the DoD. Training manikins are becoming more realistic with simulated blood, body movements, sounds and even simulated death, and the Fort Polk so-called "Star Wars" facility now includes medical manikins as well as other training devices. A recent development is the Warrior Injury Assessment Manikin (WIAM), a specially-instrumented dummy for training situations such as injuries from blast or mines.

Turning to multi-national training, he mentioned standards for laser-based systems within NATO. Because the US and European nations have different laser coding systems, so called "bi-lingual" systems have been developed, and are being used in increasing numbers, for instance at the US Army European training complex at Grafenwoehr, NE of Nuremberg. Another recent example of multi-national exercises was in April at Fort Bragg, North Carolina, where UK soldiers were involved in battle command exercises. This shows that pre-planned variable levels of security can be used where different nations are involved, in which, he said "we are better but not perfect". One barrier to innovation was the amount of Procurement Regulations, said to be "twice as thick as the bible", but there was also a so-called OTA system (Other Transaction Authority) for new and prototype systems and technologies. This was an informative and frank address, and it is hoped that future ITEC conferences will also benefit from the involvement of PEO STRI.

The final keynoter was Jürgen Michel, head of international sales at Rheinmetall Defense Electronics (RDE), headquartered in Bremen. Training needs to be available where units are located rather than just on ranges, he said, and training for the overall mission should be recognised as more important than individual weapons training. For mission training, modern systems such as Artificial Intelligence (AI) and so-called "Big Data" should be used, and he noted that Commercial Off-the-Shelf (COTS) reduced both procurement time and cost. With threats varying from individual terrorists, through organised insurgency to full force-on-force conflict, the future is unpredictable, he said, and Training and Simulation systems need to be designed to be flexible so that they can keep up with changing conditions. We need simple tablet-based systems for individual training, right up to high-fidelity systems with built-in Augmented and Virtual Reality (AR/VR). In training the young, we have to realise that they don't like reading manuals but they often have very good knowledge of computing and I.T. systems, so future training systems should take this into account.

The keynotes were useful and informative, as usual, but the 400-capacity room was only about half full at the start and 3/4 full at the end, compared to earlier ITEC keynotes where the hall was full and people standing at the back. This is probably because either people were still arriving on the morning concerned, or had arrived the day before but found the conference room hard to find in the enormous Stuttgart conference complex, in which many people became lost (including myself on the previous day). In the pre-conference programme other speakers were listed, including Brigadier General Franz Pfrenge, ACOS for SHAPE J7, Brigadier General Markus Kurczyk, German Army Director for Joint Support Services, and Ray Trecher, R&D Director of the US Sandia Laboratories. It was said on the day that Brigadier Kurczyk had been called away to a government meeting, but there was no contingency such as his address being delivered by someone else, and no explanation was given for the absence of the other two.

### **The Exhibition**

The exhibition occupied just over half of Halle 9, the number of halls illustrating the enormous size of the Stuttgart Airport Exhibition Centre. 93 companies were listed as exhibiting, led by the USA with 23, followed by the UK (19), Germany (17), France (10), Canada and Italy with 4 each, Sweden and Switzerland with 3, Belgium, Netherlands and Norway with 2, Bulgaria, Czech Republic, Europe (NATO), and Norway with one. At one end of the exhibition were three inflatable domes in which some of the conference presentations were held. This was a relatively small exhibition compared to previous years, and it might be better if ITEC were stabilised at one or perhaps two popular European Conference locations rather than constantly moving around. Next year ITEC is in Stockholm, and it is hoped that this attracts more exhibitors and attenders than either this year in Stuttgart or last year in Rotterdam.



**ITEC May 2018 in Stuttgart - Three of the five Presentation Venues**

**This Newsletter** has about 8800 words, of which 4460 are on aviation systems, followed by 2300 on conferences in London and Stuttgart, the 30 year civil aviation training outlook, and world simulation events. Land systems have 720 words and Maritime 200. Simulation systems have 600 and corporate changes 130. Within air systems, Civil Fixed-wing has 2300 , Military Fixed-wing 1200, followed by military rotary wing with 500 and civil rotary wing with about 200.

## **World Simulation and Training Events**

### **August 27-29 2018 - IFEST 2018**

Venue: Hilton Mark Center, Alexandria, S side of Washington DC  
Organiser: National Training and Simulation Association (NTSA) [www.trainingsystems.org](http://www.trainingsystems.org)

### **August 28-29 2018 - Asia Pacific Airline Training Symposium (APATS)**

Venue: Marina Bay Sands, Singapore [www.apats-event.com](http://www.apats-event.com)  
Organiser: Halldale Group [www.halldale.com](http://www.halldale.com)

### **September 24-25 2018 - National M&S Coalition Meeting**

Venue: Omaha, Nebraska USA  
Organiser: National Training and Simulation Association (NTSA) [www.trainingsystems.org](http://www.trainingsystems.org)

### **September 2018 - Fall Simulation Interoperability Workshop (SIW)**

Venue: Orlando, Florida, USA  
Organiser: National Training and Simulation Association (NTSA) [www.trainingsystems.org](http://www.trainingsystems.org)

### **October 30-31 2018 - MilSim Central & Eastern Europe (MilSim CEE)**

Venue: Brno, Czech Republic  
Organiser: Clarion Events [www.clarionevents.com](http://www.clarionevents.com) & [www.milsim-cee.com](http://www.milsim-cee.com)

### **November 6-7 2018 - European Airline Training Symposium (EATS)**

Venue: Madrid Marriott Auditorium, Spain [www.eats2018.com](http://www.eats2018.com)  
Organiser: Halldale Group [www.halldale.com](http://www.halldale.com)

### **November 12-13 2018 - RAeS Flight Simulation Group Conference - Developments in Flight Simulation**

Venue: Royal Aeronautical Society, 4 Hamilton Place, London W1J 7BQ, UK  
Organiser: RAeS Flight Simulation Group [www.raes-fsg.org.uk](http://www.raes-fsg.org.uk)

### **November 26-30 2018 - I/ITSEC 2018**

Interservice/Industry Training, Simulation & Education Conference and exhibition  
Venue: Orange County Conference Centre, Orlando, Florida, USA.  
Organiser: National Training and Simulation Association (NTSA) [www.trainingsystems.org](http://www.trainingsystems.org)

### **2019 - April 30 - May 2 - World Aviation Training Summit 2019 (WATS)**

Venue: Rosen Shingle Creek Resort, Orlando, Florida.  
Organiser: Halldale Group [www.halldale.com](http://www.halldale.com)

### **2019 - May 14-16 - ITEC 2019**

Venue: Stockholmsmässan, Älvsjö, Stockholm, Sweden  
Organiser: Clarion Events [www.clarionevents.com](http://www.clarionevents.com) & [www.itec.co.uk](http://www.itec.co.uk)

## **Countries and Regions mentioned in this newsletter**

*(Use the search function to find individual items)*

Arabian Gulf, Australia, Austria, Belgium, Cameroon, Canada, China, Colombia, Czech Republic, France, Greece, Germany, India, Ireland, Italy, Japan, Lebanon, Panama, Philippines, Poland, Qatar, Malaysia, New Zealand, Norway, Romania, Saudi Arabia, S Africa, S Korea, Spain, Sweden, Turkey, UK, USA. (33 countries and 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*

**Aegean Airlines** - <https://en.aegeanair.com/>

**Greece.** Aegean Airlines, headquartered in Athens, is to build a 30 million training centre at Athens International Airport, in co-operation with Airbus. It will have an area of 12,000 sq m and be able to house six flight simulators, starting with two. Aegean will sponsor 100 scholarships for young pilots from pilot academies Egnatia Aviation and Global Aviation. Aegean is an Approved Training Organisation (OTA) by the Hellenic Civil Aviation Authority (HCAA) for type rating training on the Airbus A320.

**Airbus Training** - [www.airbus.com/support/training/training-centres](http://www.airbus.com/support/training/training-centres)

**China.** Airbus Training, headquartered in Toulouse, France, has delivered an A320 full flight simulator to the HUA-OU Aviation Training Centre ([www.en.hua-ou.net](http://www.en.hua-ou.net)) in Beijing. This is a joint venture between Airbus and China Aviation Supplies Holding Company ([www.casc.com.cn/cas/en](http://www.casc.com.cn/cas/en)) at the Airbus Beijing Campus. The training centre will have three A320, one A330/A340 and one H225 helicopter simulator. The A320 simulator is ready for the new Upset Prevention and Recovery Training (UPRT) which is now mandated by CAAC and other Authorities.

**Indonesia.** Airbus and GMF AeroAsia ([www.gmf-aeroasia.co.id](http://www.gmf-aeroasia.co.id)) of the Garuda Indonesia Group have renewed their Maintenance Training Services agreement for another five years. GMF AeroAsia instructors have been integrated into the Airbus maintenance training organisation and offers A320 and A330 courses.

**Alliance** - [www.allianceaviationinc.com](http://www.allianceaviationinc.com) & **Avenger** - [www.afgsim.com](http://www.afgsim.com)

**USA.** Alliance Aviation, headquartered in Miami, Florida, and Avenger Flight Group, Fort Lauderdale, Florida, have partnered in simulation and training programs. Avenger simulators will be used in Alliance type-rating training.

**Alsim** - [www.alsim.com](http://www.alsim.com)

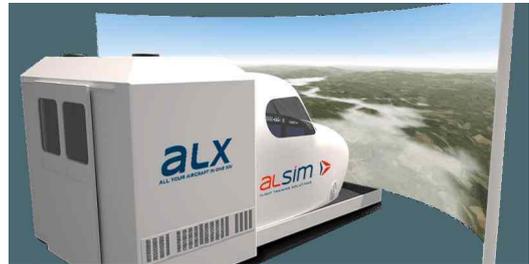
**Australia.** Alsim of Le Loroux Bottereau, East of Nantes, France, is to deliver a training device for the Diamond DA42 aircraft to Diamond Airline Academy at Moorabbin Airport, Melbourne, Australia. This will be configured for the Thielert diesel engine and will be used for procedural and IFR training.

**Canada.** Alsim is to deliver an ALX training device to Select Aviation College flight school in Quebec. This will include Multi-Engine Piston (MEP) and light turboprop models.

**Malaysia.** Alsim is to deliver an ALX training device to the Malaysian Flying Academy (MFA) in Melaka. This will be configured to Single Engine Piston (SEP), Multi Engine Piston (MEP), and Light Jet. It will be qualified to European Aviation Safety Agency (EASA) standards. The Academy operates a fleet of 20 Piper Archer and Seminole aircraft.

**Spain.** Alsim has supplied an AL250 procedures trainer to the Fly-In-Spain Flight Training Centre Jerez. This is EASA certified as an FNPT II (Flight Navigation Procedures Trainer), is re-configurable between SEP/MEP, and is switchable between classic and glass cockpit instrumentation for each flight model.

**USA.** Alsim is to deliver two AL250 and two AL172 flight trainers to Kent State University's College of Aeronautics and Engineering in Stow, Ohio, near Akron, S of Lake Erie. The will be installed in an 18,000 sq ft Aeronautics Academic Center, opening in mid-2019 at Kent State University Airport. This will complement the university's aircraft fleet of 32 training aircraft.



**Avianca** - <https://aviancaholdings.com>

**Colombia.** Avianca Holdings SA, of Bogota, Colombia, and CAE have created a US\$70M joint venture (JV) for full flight simulator training in Colombia. Avianca will conduct all its pilot training at the Avianca-CAE JV for Airbus A320, A330, ATR and Boeing 787 in Bogota on seven full flight simulators (FFS).

**AvSoft** - [www.avsoft.com](http://www.avsoft.com)

**UK.** AvSoft International of Denver, Colorado, USA, has UK CAA approval for Avsoft's PBN-RNP eLearning course. This complies with EASA 539/2016 which requires Performance Based Navigation (PBN) endorsement to Instrument Ratings from 25 August 2018.

**USA.** AvSoft has developed a Safety Management System (SMS) course for airline pilots. This includes safety culture before and after SMS, the concept of safety space, the ICAO SMS model, SMS implementation, hazard identification, risk assessment and management, and the ICAO SHELL model. This course is designed to comply with EASA, FAA, ICAO, and Transport Canada regulations.

**Axis FTS** - [www.axis-simulation.com](http://www.axis-simulation.com)

Austria. Axis Flight Training Systems GmbH of Tobelbad, SW of Graz, Austria, is to deliver an ATR 72-600 simulator to Aviation Academy Austria (AAA). This will have the Bosch-Rexroth eMotion 14000 electric motion platform.

**Baltic AA Training** - [www.baatraining.com](http://www.baatraining.com)

Spain. Baltic AA Training Aviation Academy of Vilnius, Lithuania, signed a Memorandum of Understanding with Lleida-Alguaire Airport, west of Barcelona for training from October 2018.

**CAE** - [www.cae.com](http://www.cae.com)

France. CAE, headquartered in Montreal, Canada, has delivered an ATR 72-600 Full Flight Simulator to the ATR training centre in Toulouse. This will be certified in due course by EASA and the US FAA. ATR has other training centres in Johannesburg, Miami, Paris, and Singapore.

Japan. CAE has a six-year pilot training agreement for the Airbus A320 with Jetstar Japan. A CAE Airbus A320 full flight simulator (FFS) will be ready for training in Q3/2018 at the CAE Tokyo/JAL-CAE Flight Training (JCFT) centre, Haneda Airport, Tokyo. This will use the CAE Rise training system which enables instructors to assess pilot performance in real-time during training sessions.

Qatar. CAE is to supply five full flight simulators (FFS) and two flight training devices (FTD) to Qatar Airways. These include three Boeing 777X and two Boeing 737MAX FFS and FTDs for the Boeing 777X and Boeing 737MAX. CAE is to operate and maintain the airline's training equipment suite for the next 15 years.

S Korea. CAE instructors are to train pilots at Asiana airline's training centre in Korea and at CAE's Korea training centres. This will include Airbus A320, A330, A350, A380, and Boeing 747, 767 and 777.

UK. CAE has added a Bombardier Global 5000/6000 full-flight simulator (FFS) at their Burgess Hill training centre south of London Gatwick airport. This is a 7000XR Series FFS with Tropos™ 6000XR visual system, and models the Vision flight deck fitted to this aircraft. Global Vision training programs are also available at CAE training centres at Amsterdam, Dallas, Dubai, and Montreal.

**Cameroon CAA** - [www.ccaa.aero](http://www.ccaa.aero) & **JAA Training** - <https://jaato.com>

Cameroon. The Cameroon Civil Aviation Authority (CCAA) has a Memorandum of Understanding (MoU) with the Joint Aviation Authorities Training Organisation of Hoofddorp, The Netherlands, for mutual co-operation. This includes instructor qualification and training courses at the CCAA Training School using JAA TO training management tools.

**CPaT** - [www.cpat.com](http://www.cpat.com)

Czech Republic. CPaT Global LLC of The Woodlands, N of Houston, Texas, USA, is to provide its Learning Management System (LMS) to Czech Airlines. This will be used for CBT courses for its Airbus A330 pilots.

**Elite Simulation** - [www.flyelite.com](http://www.flyelite.com)

Panama. Elite Simulation Solutions, headquartered in Dubendorf, Zurich, Switzerland, has installed an iGate Series Advanced Aviation Training Device (AATD) at HP Flight School at Marcos Gelabert International airport, Panama City ([www.hpflightschool.com](http://www.hpflightschool.com)). The AATD has Piper Archer and Piper Seneca models and Garmin GPS.

**Entrol** - [www.entrol.es](http://www.entrol.es)

Spain - Coruña. Entrenadores Olarte, S.L (Entrol) of Madrid, Spain, is to deliver an en-1000 FNPT II simulator to the AFN flight school at Coruña ([www.afngrupo.com/en](http://www.afngrupo.com/en)) on the NW coast of Spain. The en-1000 is configurable between single and multi-engined piston aircraft (SEP/MEP), and has an interchangeable cockpit between analogue and glass.

Spain - León - Entrol has supplied an en-4000 FNPT II MCC to the FLYBYSCHOOL flight academy in León, between Madrid and the N coast of Spain. This has SEP, MEP and JET configurations for IR, CPL, ATPL, and MCC training.



**Flyco Training** - [www.flycoglobal.com](http://www.flycoglobal.com)

UK. Flyco Training Solutions, headquartered in London, UK, is to provide their Advanced Learning Management System (A-LMS) to Gama Aviation Plc at the Business Aviation Centre, Farnborough Airport, SW of London. The system will have an e-library including Route Competency and Winter Operations packages. Gama will be able to create their own training content and will have access to the Flyco Assessment Creation Center, Advanced Report Server and License Auto-Track.

**Frasca** - [www.frasca.com](http://www.frasca.com)

S Korea. Frasca International Inc of Urbana, S of Chicago, USA, is to deliver a Level 5 FTD for the Cessna 172S to

Korea Aerospace University (KAU) in Goyang. This will be used by the KAU Department of Aeronautical Science & Flight Operations. It will include NAVIII Garmin G1000 avionics, Frasca TruVision™ visual with a three channel projected display, and Simplicity™ Instructor Operator Station.

**FSI Simulation** - [www.flightsafety.com/fs\\_service\\_simulation\\_systems.php](http://www.flightsafety.com/fs_service_simulation_systems.php)

USA. FlightSafety International (FSI) Simulation, headquartered at Broken Arrow, Tulsa, Oklahoma, has delivered a Level D simulator for the Pilatus PC-12NG to the FSI Learning Center in Denver, Colorado. This will have the Honeywell Primus Apex avionics suite, CrewView collimated glass mirror display and VITAL 1100 visual system.

**FTD AERO** - [www.ftd.aero](http://www.ftd.aero)

Poland. FTD.AERO SP z.o.o. of Komorniki, SW of Poznan, Poland, has achieved EASA FNPT II/MCC FSTD certification for its B738/F2M fixed-base training device.

**KURA** - [www.kuraaviation.com](http://www.kuraaviation.com) & **Simtech Aviation** [www.simtech.ie](http://www.simtech.ie)

Ireland & UK. KURA Aviation of Stratford-on-Avon, UK, and Simtech Aviation of Dublin, Ireland, are to partner in courses to convert pilots from single to multi-crew aircraft with type and line training. KURA training includes a 40 hour Airline Jet Transition programme and a BESTPILOT™ programme. The Simtech training facility is next to Dublin Airport with several flight simulators including a new B737-800 from MPS.

**L3 Commercial Training** - [www.l-3com.com](http://www.l-3com.com)

China. L3 Commercial Training Solutions (L3 CTS), headquartered at Crawley, S of London Gatwick airport, UK, is to provide four new training devices for the Qingdao Airlines training centre in Longkou, SE of Beijing. L3 will provide two RealitySeven™ Full Flight Simulators (FFS) and two Flat Panel Trainers (FPT) for the A320.

UK. L3 CTS has a five year contract with Padpilot of Gloucester, UK (<https://padpilot.co.uk>) for their iPad-based training system for EASA ATPL training at the L3 Airline Academy at Southampton.

**Leonardo** - [www.leonardocompany.com](http://www.leonardocompany.com)

Italy. The Leonardo company, headquartered in Rome, has a 44M euro contract to supply an ATR 72MP aircraft, logistics support and training services to the Italian Customs Police (Guardia di Finanza - [www.gdf.gov.it](http://www.gdf.gov.it)). This will include maritime patrol; search & rescue (SAR); prevention of narcotics-trafficking, piracy and smuggling; and the monitoring of ecological events. The system has Leonardo's Airborne Tactical Observation and Surveillance modular mission system (ATOS) that manages the aircraft sensors.

**MINT Software** - [www.media-interactive.de](http://www.media-interactive.de)

Turkey. MINT (Media INTERactive) Software Systems GmbH, headquartered in Kiel, Germany, is to deliver their Training and Resource Management System (MINT TRMS) to Turkish Airlines. Instructors and crews will have online access to training schedules, grading forms, reports, learning materials, and other training data. The agreement includes MINT TRMS Premium Edition for training schedules, record management, e-grading, reporting and analysis, and integration with other Turkish Airlines IT systems including crew rostering.

**MPS** - [www.flymps.com](http://www.flymps.com)

South Africa. Multi Pilot Simulations B.V. (MPS) of Groenekan, Utrecht, Netherlands, has delivered a FTD-2 training device for the B737 to Safair Operations training centre ([www.safairoperations.com](http://www.safairoperations.com)) at Tambo Airport, Johannesburg.

**Oman Air** - [www.omanair.com](http://www.omanair.com)

Oman - MPL Training. Oman Air, headquartered at Muscat International Airport, has graduated the first batch of multi-crew pilot licence (MPL) cadets with Boeing 737 Type Ratings.

**Pelesys** - [www.pelesys.com](http://www.pelesys.com)

Japan. Pelesys Learning Systems Inc, of Richmond, S side of Vancouver, Canada, is to provide Airbus A320 Type Rating Courses and Special Operations Courseware for Pelesys to All Nippon Airways (ANA). A320 courseware will be deployed as Software as a Service (SaaS) including Pelesys' Learning Management System (LMS) and the CrewPad tablet-based system.

**Republic Air** - <http://rjet.com>

USA. Republic Air ways Holdings, based in Indianapolis, Indiana, USA, is to open a training academy at Indianapolis Airport. This is to be called the Leadership In Flight Training (LIFT) Academy and will have classroom, flight simulator, online and flight training. Aviation students at Vincennes University (VU), also in Indiana, will complete their flight training at LIFT Academy, with the opportunity to become pilots with Republic, and LIFT Academy students will be able to study for a degree from VU. Flight training will be on Diamond DA40 single-engine and the DA42 twin-engine aircraft and Flight Simulator Training Devices (FSTD) will also be for these aircraft types.

**Simnest** - <https://simnest.com>

Greece. Simnest of Budapest, Hungary, part of the Pear Williams Group ([www.pearwilliams.com](http://www.pearwilliams.com)), is to supply a A320 FNPT II to the Global Aviation training facility in Athens.

**SIM-TECH** - [www.simtechmanufacturing.com](http://www.simtechmanufacturing.com)

India. SIM-TECH Manufacturing LLC, of Peachtree City, south of Atlanta, Georgia, USA, has delivered a B737 NG L1 door trainer and an NG OWE trainer to SpiceJet in Gurgaon. The trainers include cabin lighting, exit lighting, handle jam, slide fail, auto open fail, flight attendant and passenger seats.

USA. SIM-TECH has delivered two A321 R-2 door trainers to Alaska Airlines Group.

**Spatial Composites** - [www.spatial-composite.com](http://www.spatial-composite.com)

Canada. Spatial Composite Solutions FZE, Jebel Ali Free Zone, Dubai, UAE, is to deliver a B787 door trainer to the WestJet crew training centre in Calgary. Training scenarios include door and handle jams, power assist failures, door indicator malfunctions and slide inflation failures. Spatial will also provide a virtual slide trainer.

Ireland. Spatial is to deliver an A330 cabin service trainer to the Aer Lingus training centre in Dublin.



**TAG Global** - [www.tagaviation.com/en/tag-global-training](http://www.tagaviation.com/en/tag-global-training)

UK. TAG Global Training, based at Farnborough, has partnered with the local Farnborough College of Technology for courses on business aviation and travel. TAG Global Training was established in 2007 to train pilots and cabin crew.

**TRU Pilot Training** - [www.etops.net](http://www.etops.net)

France. TRU Pilot Training Center Toulouse, formerly ETOPS training, has received EASA certification for pilot training for the ATR 42 and ATR 72-600.

**Veer Immersive** - [www.veerimmersive.tech](http://www.veerimmersive.tech)

Philippines. Veer Immersive Technologies Inc of Quezon City, Philippines, in combination with Philippine Airlines ([www.philippineairlines.com](http://www.philippineairlines.com)) have developed virtual reality (VR) technology for training cabin crew of Philippine Airlines. This includes general aircraft familiarization and cabin door operation for Airbus A320 and A321, the Bombardier Q400NG turboprop to follow.

**Venyo** - [www.venyo.aero](http://www.venyo.aero)

Belgium. Venyo Europe SA, of Charleroi Airport, south of Brussels, is to install a B737 fixed base training device at TUI fly headquarters in Zaventem on the NE side of Brussels ([www.tuifly.be](http://www.tuifly.be)).

**VSTEP** - [www.vstep.nl](http://www.vstep.nl)

USA. VSTEP B.V. of Rotterdam, Netherlands, is to supply their RescueSim system to Denbigh HS of Newport News, Virginia. This is a training system for incident command personnel and deals with scenarios such as aircraft crashes, airport vehicle collisions, fires, liquid releases and spillages, security threats and fuel incidents.

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

**Bell Helicopter** - [www.bellhelicopter.com](http://www.bellhelicopter.com)

USA. Bell Helicopter Textron Inc., headquartered in Hurst, Texas, NE of Fort Worth, opened an Advanced Vertical Lift Center (AVLC) in Washington, D.C. This has a flight simulator for the V-280 Valor tilt-wing aircraft, augmented and virtual reality (AR/VR) demonstrations.

**Reiser** - [www.reiser-st.org](http://www.reiser-st.org)

Germany. Reiser Simulation and Training GmbH of Berg-Höhenrain, SW of Munich, Germany, has obtained Level D qualification from the German National Airworthiness Agency LBA for a full flight simulator (FFS) for the Airbus/Eurocopter EC145 twin-engine light utility helicopter. This simulator is at the ADAC Helicopter Emergency Medical Service (HEMS) Academy in Bonn Hangelar airport on the NE side of Bonn. This has 6 DoF electric motion, vibration system, a 240 x 80° direct projection dome display, and NVG stimulation for use with real NVGs. It also has the Avionics Standard Helionix® Step 2, Synthetic Vision System (SVS), and Helicopter Terrain Awareness Warning System (HTAWS). The initials ADAC originally stood for Allgemeiner Deutscher Automobil-Club.

## MILITARY FIXED-WING AIRCRAFT SYSTEMS

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

### **3DP** - [www.3d-perception.com](http://www.3d-perception.com)

Czech Republic, Hungary, Sweden. It was announced at ITEC in Stuttgart that 3D perception A.S. (3DP) of Asker, W of Oslo, Norway, is to deliver Northstar visual displays to the Czech, Hungarian and Swedish Air Forces. These will have enhanced night imagery, and are for mission simulators for the Saab Gripen fighter. The contracts are through the Swedish Defence Material Administration (FMV).

### **Boeing Defense** - [www.boeing.com/bds](http://www.boeing.com/bds)

Australia & US Navy. Boeing Defense, Space & Security (BDS), headquartered in St. Louis, Missouri, USA, has a 10-year, \$1.86 billion contract for new and updated training systems for the P-8A Poseidon maritime patrol aircraft. The indefinite-delivery/indefinite-quantity (IDIQ) contract will include aircrew and maintenance training systems for the US Navy and the Australian Air Force. This will include the modernization of 20 operational flight trainers (OFT), 37 classrooms with desktop trainers (DTT), 16 weapons and tactics trainers (WTT), five part-task trainers (PTT), eight deployable mission system trainers (MST), three support centres, and one avionics systems trainer (AST). In the maintainer area it will include 37 maintenance trainers and two weapon loading trainers.

### **Bohemia Interactive** - [www.bistudio.com](http://www.bistudio.com)

US Navy. Bohemia Interactive a.s., headquartered S of Prague, Czech Republic, is to provide augmented and virtual reality systems (AR and VR) for aircrew training for the T-45 Goshawk advanced training aircraft in a contract with the Chief of Naval Air Training (CNATRA) and the Naval Air Warfare Center Training Systems Division (NAWCTSD). This will include a head-mounted displayed (HMD) with 360 degree T-45 cockpit imagery and two T-45 virtual reality part-task trainers (VR-PTTs). Image generation will be from BISim VBS Blue IG.



### **CAE** - [www.cae.com](http://www.cae.com)

Canada. CAE, headquartered in Montreal, Canada, is to deliver a full-flight simulator (FFS) for the Airbus C-295 twin turboprop to Canadian Forces Base (CFB) Comox, on the E coast of Vancouver Island. This will have a Rockwell Collins 225 x 60 degree Panorama™ collimated display. This is part of a Search & Rescue Training Facility for the C295 at CFB Comox, being built by Airbus Defence under the Royal Canadian Air Force Fixed-Wing Search and Rescue (FWSAR) programme.

### **CAE Australia** - [www.cae.com/Worldwide-Presence/cae-australia-pty-ltd](http://www.cae.com/Worldwide-Presence/cae-australia-pty-ltd)

Australia. A C-130J Fuselage Trainer (FuT) from CAE Australia Pty Ltd, of Silverwater, Sydney, NSW, been accepted into service by the Royal Australian Air Force (RAAF). Airbus Australia Pacific provided ex-RAAF C-130H airframes for the fuselage of trainer, and Lockheed Martin provided other parts. The fuselage trainer will be able to network with the C-130J Mission Simulator and other training devices. In addition, under the Management and Support of Australian Defence Force Aerospace Simulators (MSAAS) program, CAE Australia provides a range of training services at Richmond, including academic, simulator and live flying instruction.

### **Fidelity Technologies** - [www.fidelitytech.com](http://www.fidelitytech.com)

US Air Force. Fidelity Technologies Corporation, of Reading, Philadelphia, USA, is to supply the Maintenance Training System (MTS) for the E-3 Airborne Warning and Control System (AWACS). Fidelity will provide Program Management support, Contractor Logistics Support (CLS) and a Training System Support Center (TSSC) for the E-3 AWACS MTS program at Tinker AFB in Oklahoma.

### **Inzpire** - [www.inzpire.com](http://www.inzpire.com)

UK. Inzpire Ltd of Lincoln, UK, is to continue providing airmanship and human factors training to ab-initio students in the UK Military Flying Training System. This will include an introduction course during elementary flying training and a more advanced course at fast jet, rotary and multi-engine training schools. Students will include pilots, crewmen, ISTAR (Intelligence, Surveillance, Target, Acquisition & Reconnaissance) and Royal Navy observer students.

### **Kratos** - [www.kratosdefense.com](http://www.kratosdefense.com)

US Air Force. Kratos Defense & Security Solutions, Inc., of San Diego, California, has opened the Kratos Aircrew Training Center (KATC) in Orlando for Aerial Gunnery Training (AGT) for Air Force Global Strike Command (AFGSC) Special Mission Aviators. Kratos instructors train AFGSC aircrew using simulation systems as well as training in crew coordination, rescue hoist and cargo sling operations.

**Leonardo** - [www.leonardocompany.com](http://www.leonardocompany.com)

UK. The Leonardo company, headquartered in Rome, Italy, has a contract from the UK Ministry of Defence (MoD) for threat simulation for the C130J, Tornado, and Typhoon. The equipment uses RF-emitting hoods and handheld devices to stimulate the aircraft sensors. This simulates threats using radar energy while the aircraft is on the ground. The majority of aircraft Defensive Aids Suites (DAS) have built-in-test-equipment (BITE), but it is said that problems can emerge that can be diagnosed using RF threat simulation.

**Northrop Grumman Technical Services** - [www.northropgrumman.com](http://www.northropgrumman.com)

US Navy. Northrop Grumman Technical Services, headquartered at Herndon, Virginia, USA, E side of Washington Dulles airport, delivered its multispectral testing system for F-35 electronic warfare simulation to the U.S. Naval Air Warfare Center Weapons Division (NAWCWD) at Point Mugu, California. This system recreates mission conditions for range and laboratory use and consists of a Combat Electromagnetic Environment Simulator (CEESIM), Signal Measurement System (SMS) and other simulators, under control of the Synchronizer Controller System (SCS).

**Pitch** - [www.pitch.se](http://www.pitch.se) & **Intuitech** - [www.intuitech.se](http://www.intuitech.se)

Sweden. It was announced at ITEC in Stuttgart that Pitch Technologies AB of Linköping, Sweden, is to supply their Pitch Talk communications system for the Swedish Air Force Gripen Mission Training System, together with the ACES fighter control system from Intuitech AB of Linköping, Sweden.

**RAAF** - <https://www.airforce.gov.au>

Australia. The Royal Australian Air Force received the first delivery of training equipment for its F-35A Integrated Training Centre. This includes an ejection seat maintenance trainer, an aircraft systems trainer, and a weapons load trainer that replicates the F-35A fuselage, including the weapons bay and wing hard points. Two F-35A aircraft will be based at RAAF Base Williamtown beginning December 2018. Williamtown's number two operational conversion unit (OCU) will have six full mission simulators for F-35A pilot training, with the first two for delivery later this year.

**Rockwell Collins** - [www.rockwellcollins.com](http://www.rockwellcollins.com) & **Leonardo DRS** - [www.drs.com](http://www.drs.com)

UK. Rockwell Collins, headquartered in Cedar Rapids, Iowa, W of Chicago, USA, and Leonardo DRS, formerly Diagnostic Retrieval Systems Inc., headquartered in Arlington, Virginia, south side of Washington DC, are to put forward their Joint Secure Air Combat Training System (JSAS) to the U.K. Ministry of Defence (MoD). This is for the UK's Air Support to Defence Operational Training (ASDOT) program and also for the UK Future Air Combat Manoeuvring Instrumentation System (FACMIS). JSAS is to operate with the F-35 and existing P5 training pods. ASDOT is part of the UK Defence Operational Training Capability (Air) program (DOTC-A).

**Rockwell Collins** - [www.rockwellcollins.com](http://www.rockwellcollins.com)

US Navy. Rockwell Collins, headquartered in Cedar Rapids, Iowa, W of Chicago, USA, is prime contractor for the US Navy Tactical Combat Training System Increment II (TCTS Inc II) programme, with support from Leonardo DRS of Arlington, Virginia ([www.drs.com](http://www.drs.com)). This is after a Preliminary Design Review (PDR) of Rockwell and Leonardo work was approved by Naval Air Systems Command (NAVAIR) Naval Aviation Training Systems (PMA-205) program office. TCTS Inc II will replace Navy and Marine Corps training range infrastructure, utilise Live, Virtual and Constructive (LVC) elements, and is said to provide five times the network capacity of current training systems. It will have Multiple Independent Levels of Security (MILS) within an open system architecture, for use in joint and coalition training. It is also to align with industry software standards such as the FACE™ Technical Standard and Software Communications Architecture (SCA).

## **MILITARY ROTARY-WING SYSTEMS**

*Helicopters and tilt wing / tilt engine designs capable of hovering*

**ACME Worldwide** - [www.acme-worldwide.com](http://www.acme-worldwide.com)

UK. ACME Worldwide Enterprises, Inc., of Albuquerque, New Mexico, USA, has delivered replica weapons, a rescue hoist simulator and Dynamic Motion Seats for trainers for the Royal Navy AW101 Mk 4 helicopter. This is under a contract with CAE that includes ACME True Q@ AW101 Dynamic Motion Seats for the pilots and a Rear Crew Trainer (RCT) with ACME's rescue hoist, flare gun and 7.62mm gun simulators.

**CAE** - [www.cae.com](http://www.cae.com)

Canada -700MR Helicopter FTD. CAE, headquartered in Montreal, Canada, at the Farnborough International Airshow, announced the launch of its 700MR Series flight training device (FTD) for military helicopters. This is based on CAE's 3000MR Series helicopter Full Flight Simulator (FFS), but is fixed-base rather than with 6-axis motion. Other features



include a 240 x 88 degree display, Medallion-6000XR imagery, night vision goggle (NVG) facilities, and a dynamic seat for vibration and motion cueing. There is also software for computer generated forces (CGF), a distributed mission operations (DMO) capability, Integrated Live-Virtual-Constructive (iLVC) facilities, and compatibility with the Open Geospatial Consortium's Common Database (OGC CDB). An area behind the simulator cockpit is available for rear-crew training if desired. The 700MR is designed to meet standards for helicopter flight simulation training devices (FSTD), such as the ICAO Type IV and US FAA FTD Level 7.

**CAE Germany** - [www.cae.com](http://www.cae.com)

Germany. CAE Elektronik GmbH of Stolberg, near Aachen, is to provide aircrew training systems and services to Boeing for the H-47 Chinook helicopter being offered for the German Air Force's STH (Schwerer Transporthubschrauber) heavy-lift helicopter competition.

**Leonardo** - [www.leonardocompany.com](http://www.leonardocompany.com)

UK. The Leonardo company, headquartered in Rome, Italy, has a contract from the UK Ministry of Defence (MoD) for threat simulation for the Chinook, Merlin, and Wildcat helicopters. The equipment uses RF-emitting hoods and handheld devices to target the aircraft sensors to simulate threats using radar signals while the aircraft is on the ground. The majority of aircraft Defensive Aids Suites (DAS) have built-in-test-equipment (BITE), but problems can emerge with time that can be diagnosed using Leonardo threat simulation.

**Virtalis** - [www.virtalis.com](http://www.virtalis.com)

Australia. Virtalis Ltd of Sale, SW of Manchester, UK, has delivered a Rear-Cabin Virtual Reality Trainer and Helicopter Crew Reality (HCR) product to Thales Australia for the Australian Navy. These devices are for the Helicopter Aircrew Training System (HATS) to train Australian Navy and Army helicopter pilots at the Joint Helicopter School at HMAS Albatross in Nowra, New South Wales. Pilots will be trained by Boeing and defence-qualified flying instructors using EC135 helicopters, Thales Full-Flight Simulators and a suite of other synthetic training devices. HCR was originally developed for the UK Royal Air Force and uses Virtalis' Cloud-based Visionary Render 2 software platform. It includes a 100-metre virtual winching system, a virtual gunnery system, and shares a common visual database with Thales's Full Flight Simulators. Students wearing Head Mounted Displays interact with the HATS virtual environment. The HATS Rear-Cabin Virtual Reality Trainer includes an underslung load function, Vertical Replenishment and Highlining functions.



## **AIR CONTROL SYSTEMS**

**Airways NZ** - [www.airways.co.nz](http://www.airways.co.nz)

Lebanon. Airways New Zealand, headquartered in Wellington, New Zealand, is to install a Total Control LCD tower simulator and two radar/non-radar simulators at the Directorate General of Civil Aviation (DGCA) at Beirut International Airport. Developed by Airways NZ in partnership with New Zealand-based 3D graphics experts Animation Research Ltd., the equipment includes a 360° tower simulator, an LCD tower simulator, a desktop tower and radar simulator.

**Fidelity Technologies** - [www.fidelitytech.com](http://www.fidelitytech.com)

Norway. Fidelity Technologies Corporation, of Reading, Philadelphia, USA, has delivered its Joint Fires Advanced Training System (JFATS) simulator to the Norwegian Defence Material Agency's (NDMA) Air Ground Operations School (AGOS). This has a 7 metre dome display and is used for Joint Terminal Attack Controller (JTAC) and Joint Fires Observer (JFO) training of four-man Tactical Air Control Parties (TACP). It has 16 channels using Fidelity's FIDViewEX™ Rendering Engine and projected by Barco FS35 IR WQXGA projectors. Fidelity also delivered a 180° x 20° role player station.

**PAIFA** - [www.panamacademy.com](http://www.panamacademy.com)

Romania & USA. Pan Am International Flight Academy (PAIFA), headquartered in Miami, Florida, is to train personnel of Romanian Air Traffic Services Administration (ROMATSA). The contract includes training for 678 Romanian Air Traffic Control (ATC) personnel plus 60 Flight Information Services (FIS) and Aeronautical Information Service (AIS) personnel over a 36-month period.

**UFA** - [www.UFAinc.com](http://www.UFAinc.com)

New Zealand. UFA, Inc., of Burlington, NW side of Boston, Massachusetts, USA, is to supply their ATCoach Global Edition simulator to Leidos' SkyLine-X Automation System that is used by Airways Corporation New Zealand (ACNZ) in their Automation Modernization Program.

## **MULTI-ROLE SYSTEMS**

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

**4C Strategies** - [www.4cstrategies.com](http://www.4cstrategies.com)

Sweden. 4C Strategies, headquartered in Stockholm, Sweden, launched Exonaut Simulation Extension (ESE)®, that enables Exonaut exercise management tools to interact with simulators and C2 systems. ESE provides a configurable interface for simulation environments, allows plug-in adaptors for different types of simulators, and records Exonaut training data. ESE was used on exercise Viking 18 in April 2018.

**CAE** - [www.cae.com](http://www.cae.com) & **Rolands** - [www.rolands.com](http://www.rolands.com)

Arabian Gulf. CAE, headquartered in Montreal, Canada, is to build a Joint Multinational Simulation Centre for a member of the Gulf Cooperation Council (GCC). This includes Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates. CAE will provide GlobalSim simulation that combines the Joint Theater-Level Simulation (JTLS) from Rolands & Associates (R&A) of Monterey, California, USA, with CAE's GESI simulation for exercises including command and staff training (GESI = Gefechts-Simulation, a CAE system developed for German forces). This will enable exercises from company up to division level in a computer-assisted exercise (CAX) or classroom environment. The combination of R&A's JTLS and CAE's GESI offers commanders a view of the complete operational environment.

**Charles River** - [www.cra.com](http://www.cra.com)

USA - Cyber. Charles River Analytics Inc (CRA), of Cambridge, Massachusetts, USA, is using its Cyber Adversary Modeling and Simulation toolkit, CyMod, to construct a cyber defense tool for the US Air Force. It is using its Figaro™ programming language to build models of networks and their impact on weapon systems. This is under a programme called Game-Theoretic Reasoning and Analysis of Vulnerability (GRAVITY).

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

**ACME** - [www.acme-worldwide.com](http://www.acme-worldwide.com)

Canada, UK, USA. ACME Worldwide Enterprises, Inc., of Albuquerque, New Mexico, USA, has patented a full-force recoil system for machine gun trainers. This is the all-electric Gun Active Recoil (GAR) system for gun trainers used by the Canadian Ministry of Defense, U.K. Royal Navy, and the U.S. Army, Air Force, Navy and Marines;.

**AVT Simulation** - [www.avtsim.com](http://www.avtsim.com)

US Army. AVT Simulation of Orlando, Florida, USA, has a contract from U.S. Army Contracting Command for Post Deployment, Software Support (PDSS) for the Close Combat Tactical Trainer (CCTT) up to 2023. This supports simulation for the Abrams Main Battle Tank, Bradley Fighting Vehicle, and the High Mobility Multi-Wheeled Vehicle (HMMWV).

**Cubic Defense** - [www.cubic.com](http://www.cubic.com)

USA. Cubic Defense Systems, headquartered in San Diego, California, USA, in partnership with Federal Resources has a \$6M contract to supply the United States Air National Guard (ANG) with 95 PRISim Suite® PortableTrainer firearms training systems. These will train personnel in weapon handling using Cubic's L750 portable system from its PRISim Suite. This uses interactive video and includes a Surface Pro tablet controller.



**Engility** - [www.engilitycorp.com](http://www.engilitycorp.com)

USA. Engility Corporation, headquartered in Chantilly, south of Washington Dulles airport, USA, has a \$41M contract for the U.S. Marine Corps' Global Command and Control System Tactical Combat Operations/Joint Tactical Common Operational Picture Workstation Sustainment Support. This includes an Immersive Training Environment (ITE) for classroom training and individual distance learning.

**India MoD** - <https://mod.gov.in>

India. The Indian Ministry of Defence, headquartered in New Delhi, is to build 17 new firing ranges for US\$34.6M. These so-called Baffle firing ranges are covered shooting training areas with barriers, side walls and baffles that block misdirected bullets. The new ranges are for firing from 300 to 500 metres and will add to 60 similar ranges. Seven of the new ranges will go to Southern Command, three to Eastern Command, two to Northern Command, one to South Western Command, and one to the Central Command Officers Training Academy in Gaya, Bihar.

**KeyW Corp** - [www.keywcorp.com](http://www.keywcorp.com)

US Army. KeyW Holding Corporation, headquartered in Hanover, Baltimore, Maryland, USA, has a six-year, multi-million-dollar Task Order for the U.S. Army Training Aids, Devices, Simulators and Simulations Maintenance Program (ATMP). This is as a sub-contractor to Lockheed Martin in a contract from the Program Executive Office for Simulation, Training and Instrumentation (PEO-STR). KeyW will support the Common Battle Command Simulations Equipment; Intelligence and Electronic Warfare Tactical Proficiency Trainer; LVC Integrated Architecture; Secure, Mobile, Anti-Jam, Reliable, Tactical-Terminal; Military Strategic and Tactical Relay; Joint Surveillance Targeting Attack Radar System and the Distributed Common Ground System-Army.

**Raytheon** - [www.raytheon.com](http://www.raytheon.com) & **Seven other companies**

US Army. The Raytheon Company, headquartered in Waltham, Boston, Massachusetts, USA, and seven other companies, are to participate in a \$2.4 billion Enterprise Training Service Contract (ETSC) from the US Army Contracting Command – Orlando (ACC-ORL). This is to provide and manage training in contingency operations; provide planning and support for Army, joint, and security exercises; and perform operations and maintenance functions for training aids and ranges. The eight companies consist of Applied Training Solutions; Calhoun International, Engineering & Computer Simulations (ECS); JV III LLC joint venture, Lukos Visual Awareness Technologies and Consulting, Inc.; PAE National Security Solutions; Pulau Corp; Raytheon; and Trideum Corp.

**Ravenswood** - [www.ravenswoodsolutions.com](http://www.ravenswoodsolutions.com)

US Army and Marine Corps. Ravenswood Solutions of Fremont, SE of San Francisco, California, USA, has introduced a Testing-as-a-Service (TaaS) model. This is to be used in the Joint Light Tactical Vehicle's (JLTV) Multi-Service Operational Test and Evaluation (MOT&E) at the Marine Corps Air Ground Combat Center in Twentynine Palms, California. Ravenswood integrated its Mobile Ground Truth System (MGTS, known as FlexTrain in the US DoD) with the Multiple Integrated Laser Engagement System (MILES) to deliver a live common operating picture (COP), real-time casualty assessment (RTCA), a tactical analysis centre and after-action review (AAR). The MGTS/FlexTrain system is used by the US Army Joint Modernization Command including National Guard training.

**Visual Awareness** - [www.vatcinc.com](http://www.vatcinc.com)

USA. Visual Awareness Technologies and Consulting Inc. (VATC) of Tampa, Florida, USA, has an Enterprise Training Service Contract from the U.S. Army Contracting Command in Orlando. This is for training in several areas, including peacekeeping, disaster response, medical, combined arms, aviation, classroom and field training at military academies. VATC will partner with Lukos LLC of Tampa ([www.lukos.com](http://www.lukos.com)).

## **MEDICAL TRAINING SYSTEMS**

**Charles River** - [www.cra.com](http://www.cra.com)

US Army. Charles River Analytics Inc (CRA), of Cambridge, Massachusetts, USA, has a \$1.5 million U.S. Army contract for a medical simulation and tutorial platform. CRA is partnering with Professor Frank Ritter and Dr. Chris Garrison of Pennsylvania State University (PSU) to build a Virtual Intelligent Tutor for the Andragogy of Military Medicine Integrated Skills (VITAMMINS).



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

**Cubic Defense** - [www.cubic.com](http://www.cubic.com)

US Navy. Cubic Defense Systems, headquartered in San Diego, California, USA, has a US\$16M U.S. Navy contract for courseware for the Littoral Combat Ship (LCS). This includes Cubic's Immersive Virtual Shipboard Environment (IVSE), and is part of the Navy's Ready Relevant Learning Initiative.

**Kratos** - [www.kratosdefense.com](http://www.kratosdefense.com)

Saudi Arabia. Kratos Defense & Security Solutions, Inc., of San Diego, California, is to supply training programmes to the Royal Saudi Naval Forces (RSNF). Kratos will provide instructional services for surface operations, damage control, maintenance, and English Language Training (ELT). This is part of a Foreign Military Sales (FMS) contract from the U.S. Naval Air Warfare Center Training Systems Division (NAWCTSD).

**Leonardo** - [www.leonardocompany.com](http://www.leonardocompany.com)

Italy. The Leonardo company, headquartered in Rome, Italy, is to supply Black Shark Advanced (BSA) training and operational torpedoes for the Italian Navy U212A 2nd Series submarines. The BSA is developed from the Black Shark heavy torpedo, used by Chile, Indonesia, Malaysia, Portugal and Singapore. This BSA can be optimized for either training or operational purposes. When the BSA is used for training, a rechargeable battery allows up to 100 launches.



## **CORPORATE AND INTERNATIONAL NEWS**

*International Agreements, Corporate Acquisitions, Partnerships and Changes*

**Cubic** - [www.cubic.com](http://www.cubic.com) & **Valiant**

USA. Cubic Corporation, headquartered in San Diego, California, USA, has sold its Cubic Global Defense (CGD) Services business to Valiant Integrated Services headquartered in McLean, Virginia, NW side of Washington DC. Cubic received about \$135M plus \$3M for future contracts. The business provides training, operations, intelligence, maintenance, technical and other support services.

**L-3 Communications** - [www.l-3com.com](http://www.l-3com.com)

USA. L-3 Communications, headquartered in New York, USA, has launched L-3 Commercial Aviation to combine L3's commercial aviation services, including on-aircraft avionics, security solutions and pilot training systems. L3 Commercial Training Solutions (L3 CTS) is headquartered at Crawley, south of London Gatwick airport, and includes L3 Link UK, L3 CTC Aviation and L3 Aerosim-CTC.

## **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).*

**BISim** - [www.bisimulations.com](http://www.bisimulations.com) & **Pitch** - [www.pitch.se](http://www.pitch.se)

Pitch Comms Systems. It was announced at ITEC in Stuttgart that Bohemia Interactive Simulations (BISim), headquartered in Prague, Czech Republic, is to use the Pitch Talk communications system from Pitch Technologies AB of Linköping, Sweden. This is to be used in BiSim products such as VBS3 and VBS Radio.

**DiSTI** - [www.disticom.com](http://www.disticom.com)

USA. Distributed Simulation Technology, Inc (DiSTI) Corporation of Orlando, Florida, USA, released version 6.2 of GL Studio development toolkit for 2D/3D graphics, with over 30 enhancements. Non-programmers can use drag-and-drop and there are dialogs for fine control, customized build settings and WebGL deployment on Linux.

**MASA** - [www.masagroup.net](http://www.masagroup.net)

France. MASA Group, headquartered in Paris, France, announced Version 6.1.1 of their SWORD system. This has the Direct AI 5.1 system that includes naval units with their own behaviours. The upgrade also allows users to customize the applications by adding new themes to SWORD, and the preparation tool includes new search and filter tools.

**Modest Tree** - <http://modesttree.ca>

Editing Software. Modest Tree Media Inc of Halifax, Nova Scotia, E coast of Canada, has released Version 1.5 of its 3D Editor software for creation of 3D training applications. Modest3D Editor uses a visual storyboarding process to create 3D applications without coding. Version 1.5 includes enhancements to increase speed and the ability to create 3D scenarios without code or specific expertise in animation.

**Presagis** - [www.presagis.com](http://www.presagis.com)

M&S Suite. Presagis Inc of Montreal, Canada, has released Version 17 of its M&S Suite with hundreds of new features and enhancements. It includes software such as Creator, Ondulus, STAGE, Terra Vista, and Vega Prime.

**Quantum3D** - [www.quantum3d.com](http://www.quantum3d.com)

**Mantis I.G.** Quantum3D, Inc., of Milpitas, SE side of San Francisco bay, California, USA, announced version 3.4.0 of its Mantis Image Generator, This includes compatibility with the Common Database (CDB) standard of the International Open Geospatial Consortium. Users will be able to upgrade to a commercial off-the-shelf (COTS) compliant Image Generator without the cost of porting the current CDB visual database. The update has a new StaticModels plugin that can add features such as buildings, wind-turbines and radio towers, without having to regenerate the complete landscape. An Autonomous Traffic plug-in now includes small ship models.



**Scalable Network** - [www.web.scalable-networks.com](http://www.web.scalable-networks.com)

**USA.** Scalable Network Technologies Inc, of Culver City, Los Angeles, California, USA, has released new versions of their EXata 6.2 and QualNet 8.2 products. These have enhancements to existing libraries, additional cyber-attack models and traffic modelling tools. New features include 11ax PHY and MAC Models for dense scenarios such as office buildings and apartments. Cyber modelling includes exfiltration, use of the User Datagram Protocol (UDP) and Transmission Control Protocol (TCP).

**TrianGraphics** - [www.triangraphics.de](http://www.triangraphics.de)

**Trian3DBuilder update.** TrianGraphics GmbH of Berlin, Germany, released Version 6.5 of Trian3DBuilder. This supports a wider range of data and includes new scripts, integrated databases, material and shader support, and additional editing functions. It now supports Unity and Titan Vanguard formats and includes an update to OpenSceneGraph 3.4.1. It also includes billboard creation and OpenStreetMap online access.

**VT MÄK** - [www.mak.com](http://www.mak.com)

**USA.** VT MÄK, of Cambridge, Massachusetts, USA, has released an update to VR-Forces, VR-Vantage and VR-Engage. VR-Forces v.4.6 improves simulation accuracy, the use of CDB databases, modelling close-up warfare, and making changes to a scenario. VR-Vantage 2.3 gives better visual correlation, for instance to computer-generated forces (CGF). VR-Engage V1.2 adds remote assignment of roles, interaction with simulated control panels, improved weapon modelling and expanded flight simulation capabilities.

**Word Count**

Sections	Words	%	Aviation Sections	Words	%	Air	Words	%
Editorial & Events	2287	26.0	Civil Fixed Wing	2325	26.4	Civ total	2497	28.4
Aviation Systems	4464	50.7	Civil Rotary Wing	172	2.0	Mil total	1709	19.4
Space Systems	0	0.0	Mil Fixed Wing	1204	13.7	RW total	677	7.7
Multi role Systems	261	3.0	Mil Rotary Wing	505	5.7			
Land Systems	716	8.1	UAVs	0	0.0			
Medical Systems	62	0.7	ATC & Air Control	258	2.9			
Maritime Systems	195	2.2	<b>Total Air Sections</b>	<b>4464</b>	<b>50.7</b>			
Corporate changes	126	1.4						
Simulation Systems	594	6.7						
Word count	100	1.1						
<b>Total</b>	<b>8805</b>	<b>100.0</b>						