Simulation and Training - Recent World News

January 2018   *Editor: Ian Strachan FRAeS*

Pictures: I/ITSEC 2017 Orlando exhibition hall, Boeing/QinetiQ Portal Farnborough, Warton F-35 sim, BAES sim integration facility

Contents

This Newsletter has just over 8400 words, of which 3400 are on aviation systems, followed by 3100 on the I/ITSEC conference in Orlando. Land systems have 700 words and Maritime 100. Simulation systems have 700 and corporate changes 240. Within air systems, Civil Fixed-wing has over 2000, Military Fixed-wing 1000, followed by civil and military rotary wing with nearly 200 each.

The overall trend is to fully exploit modern simulation technology. MGen Scott Smith, US Air Force Director of Training and Readiness, pointed out that "lots of training flying will break the bank, therefore more simulation is needed", and MGen Kevin Liams USMC said that "we need to embrace simulation to a level not seen before, and will extensively use the Virtual World to train for the future".

I/ITSEC - Inter-service & Industry Training, Simulation and Education Conference and exhibition

The 2017 I/ITSEC was held at as usual at the Orange County Exhibition Centre in Orlando, from 27 - 30 November. Over the four days there were over 16,000 exhibition attenders, and 379 organisations were listed as exhibitors in the event guide.

Conference Chair David Hutchings of DDH Associates said that I/ITSEC includes 129 Papers, 22 Tutorials, and 21 Special Events, and the Blended Warrior training event that runs during the conference was international for the first time with inputs from NATO as well as the USA.

Brigadier William Cole commands the Program Executive Office for Simulation, Training and Instrumentation (PEO STRI) in Orlando, and quoted Secretary of Defense James Mattis in emphasising the importance of "Readiness". For readiness, he said, we need to take advantage of the latest progress in industry, including simulation technology. It should be noted that General Mattis, then of the US Marine Corps, gave an inspiring keynote address at I/ITSEC 2009, in which he asked industry to use its expertise to provide the military with the best possible simulation and training systems.

Military Keynote: Gen David Perkins, Commander, U.S. Army Training and Doctrine Command (TRADOC)

General Perkins has an armour background, seeing service in Macedonia and taking part in the 2003 invasion of Iraq. Later, he commanded Fort Leavenworth, home of the US Army Combined Arms Center, then was Assistant to the Secretary of the Army in The Pentagon. For this address there was a full house, with people standing at the back

The job of TRADOC is to train people how to train, he said. In the 1980s we created National Training Centers that were used in Brigade-level exercises, but a particular unit could only participate about once in every 2 years. This was inflexible and led to what he called "the tyranny of training". What we want, he said, is good training at home-bases. This should exploit Live, Virtual and Constructive (LVC) technology and prepare for large-scale training events. Training should embrace all environments, not only Land, Sea and Air but also Space and Cyber . We don't want "one-trick ponies" in training, he said, adding that the Cyber environment is complex and interacts with other domains. Training needs to be seen as an essential tool, not an onerous task, and should lead to realistic Mission Rehearsal.
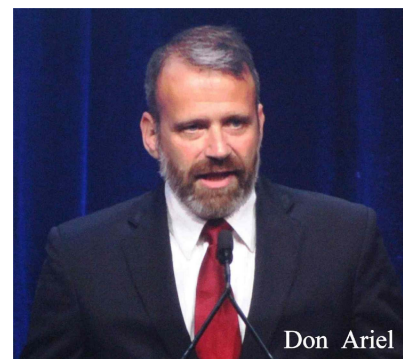

General Perkins

We now have a National Simulation Centre at Fort Leavenworth that promotes a "Single Live/Synthetic Training Environment". Turning to Education, this phase comes first, he said, but as it progresses, it blurs with training for operations. We first educate about training systems, then use them, and finally improve them after feedback from military operations. Single system training "stovepipes" are no longer acceptable, multi-domain LVC is needed. This not only gives better training but can save lives both in operational training with live equipment and then in combat itself. Within TRADOC, he said that Leavenworth graduates were being sent to units to "spread the word" about future LVC.

Finally, he suggested to the audience that "all of us at I/ITSEC have a duty" to push for further use of modern Simulation and Training technology. This was a forward-looking address and showed the enthusiasm that General Perkins has for the exploitation of LVC technology to obtain the best possible military training.

Industry Keynote: Don Ariel - founder and CEO, Raydon Corporation

Don Ariel suggested that we need to understand the mind of warfighters so that training in this "information age" can be applied. We should look at companies like Apple and Google, and see how they deal with IT and associated technologies, in particular in making rapid change where it is needed. On money, future military budgets may be difficult, and he quoted Winston Churchill as saying "now we have run out of money, we have to think". Applying this to military training, we must look to a "modern acquisition budget" that takes advantage of information technology. He noted the recent formation of US Army Modernization Command, a progressive step. Although simplicity has merit, he quoted Einstein as saying that "effective people can make complex things seem simple".

Don Ariel

He noted that the US Army Vice Chief had recently admitted that its present structure is not suited to the modern technological scene, and needs to change. Turning to industry, he said that it should standardise, for instance using "open platform" technology rather than many different proprietary systems that are incompatible with each other. Industry should revel in, and embrace, innovation by different companies. He suggested that, as a principle, "good now" should win over "better later", although he emphasised that "good now" means the best possible, not the average or past systems. Finally, he said that the S&T industry "should not do this to make money, but to make money so that it can do this". This was another forward-looking address confirming future potential in simulation and training.

FLAG AND GENERAL OFFICER PANEL

Fred Drummond, Deputy Assistant Secretary of Defense for Force Education and Training listed the priorities of Secretary of Defense Mattis as (1) Readiness, (2) Alliances, (3) Business Reforms, and quoted him as saying that "there is no place for complacency". In the past, the DoD had been too slow to take advantage of progress in technology and exploit the capabilities of industry, in particular the LVC area, and this must change in the future. Our overall aim, he said, is more lethal force across the board. Mr Drummond agreed that although live training was often expensive, "training by simulation saves money" and should be exploited to the full, including its capability to train in more areas than live, such as including a variety of realistic actions including those of the enemy.

VAdm Paul Grosklags, Commander, Naval Air Systems Command said that interoperability is vital, but not the way that we have gone about it in the past. Training is needed between fighter aircraft, helicopters and ships, and stovepipe-type systems must be avoided. Currently, training systems lag behind operational equipment, and in naval aviation, simulators may not have the current aircraft software. He mentioned the Naval Integrated Fire Control Counter Air programme (NIFC-CA), designed to link Navy ships and air systems such as the F-35 in a single integrated network. For programmes such as this, LVC should be built in, he said, and "from day one we should have the training end in mind". For this, we need good relations with the training industry and a versatile contracting strategy. The Navy and Air Force had recently held joint LVC exercises, during which it had become apparent that the AF is ahead of the Navy in LVC matters, and our policy should be "interoperabilty, interoperability, and more interoperability".

Lt Gen Michael Lundy, Commander, US Army Combined Arms Center, Fort Leavenworth, said that we need joint training, but currently "we are not joint enough". More use of Virtual is needed - at all levels "from squad to staff". Multi-national interoperability is important, and simulator characteristics must not lag behind the operational equipment. He also recognised the commonality of training requirements between aircraft operators in other Services, and there was a recent MoU between the Army and Marines for this purpose. Another example was training for vehicle drivers, in which in live training there have been a number of accidents, some fatal, and it is clear that better driving simulators are needed in the future.

MGen Scott Smith, US Air Force Director of Training and Readiness, said that training systems need to be built in from the start, but our acquisition system for training aids still lives in the past. However, a 90% training solution in service may be better than attempting the ideal 100% solution. Live Red Flag training exercises flown in Nevada are as realistic as we can make them and give "tremendous results". We need simulation as well, but simulators must be concurrent with the aircraft and connectivity between simulators at different bases is essential. The complex training that we need today "drives us to simulation" because it can train for complex scenarios not possible in live training. There is also the cost factor, and in advanced aircraft like the F-35, "lots of training flying will break the bank, therefore more simulation is needed". We have a window of opportunity, he said, and are looking to the simulation industry for solutions.

MGen Kevin Liams USMC, Commander, Marine Corps Training and Education Command said that the fighting domains of the Corps include sea, air, beach, urban and cyber. At Camp LeJeune on the Atlantic coast of North Carolina we conduct "Infantry Immersion Training" which includes role players, but cost is becoming a problem and the future will include the use of Avatars and Simulation. Therefore, "we need to embrace simulation to a level not seen before", and train not only in barracks but also aboard ship. Marines were now being issued with laptops for training purposes, and future training needs adaptability, with free-play scenarios including uncertainty and risk, including adverse outcomes. Marine Air-Ground Task Forces (MAGTF) must train people from individuals up to Task Force Commanders. Networking across multiple domains part of the Marine Corps Synthetic Training Environment (MCSTE) and after using this, we need in-depth debrief, followed by "repeat, repeat and more repeat" to learn the lessons and develop the abilities of leaders. We will extensively use the Virtual World to train for the future, he concluded.

Brigadier Henrik Sommer, Danish Army, Assistant Chief of Staff Capability, NATO Allied Command Transformation, Norfolk, Virginia, apologised on behalf of NATO ACT Commander General Denis Mercier, French Air Force, who was due to speak but had been called away to a meeting in Berlin. The principles of the NATO alliance are still valid today, he said, and no one nation can manage a crisis on its own. Interoperability is essential and NATO embraces the concept of "open innovation" and the use of distributed networks as a "common cardinal principle" for Training and Simulation. NATO regards Modelling and Simulation as an essential service, he concluded.
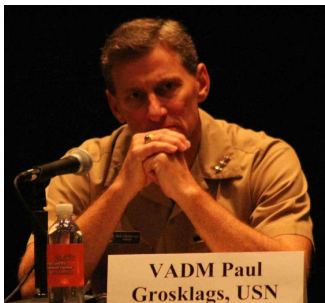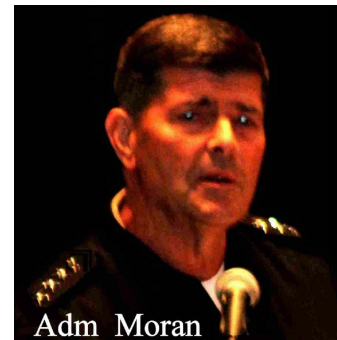
Summary. As MGen Liams said, "we need to embrace simulation to a level not seen before".

U.S. Navy at I/ITSEC 2017

Following the US Navy panel at last year's I/ITSEC led by Chief of Naval Operations, Admiral John Richardson, this year there were several other panels on Navy Simulation and Training.

Flag Officer Panel

Admiral Bill Moran USN, Vice Chief of Naval Operations said that he had been "incredibly encouraged by what I see here" at I/ITSEC. In the past, he continued, we moved at what he called "a bureaucratic pace", and we now need to increase the pace. Our capability is well ahead of the training, and this year we lost 17 sailors in accidents. What we need is training that is in advance of capability. Amongst other things, he suggested, we need trainers for different roles such as Bridge and Engine Room, with some types capable of being deployed where necessary. Schoolhouses are expensive, he said, and we need better systems for training. With this in mind, the Training Systems Division of the Naval Air Warfare Center (NAWC-TSD) in Orlando is developing special training "apps". There is a need to repeat, and then repeat again, vital types of training, what he called the"Reps and Sets" principle. Furthermore, training must be built in to equipment projects at the start, and Navy Admirals are looking at how we should train. In conclusion, the next couple of years, "we'll be into this in a big way".
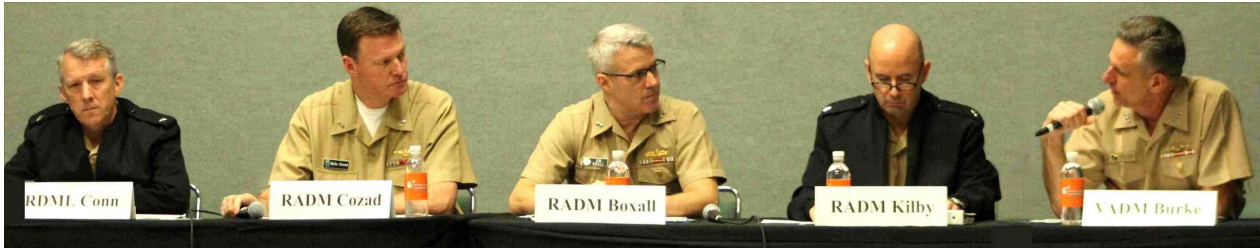

Adm Moran

VADM Paul Grosklags, USN

VAdm Paul Grosklags, Commander, Naval Air Systems Command, said that we must speed up the approval process for training equipment from years to tens of days. We need what he called "tech-based acquisition". Presently, we spend too much time in ensuring Specification Compliance on small issues - what matters is "does it train effectively". A system of "capability-based acquisition" is needed, and our LVC training sequence should be first Virtual, then Constructive, only then going Live.

Rear Admiral Kyle Cozad, Commander, Naval Education and Training Command, said that we need to exploit new training technology. Some training aids should be re-configurable and portable, and some should be capable of being taken on-board ship. Since early Computer-Based Training, lots has happened and in the Navy there are some 250 school houses, but it is often training that gets cut despite its effect in preserving front-line efficiency.

Rear Admiral Daniel Cheever, Commander, Naval Aviation Warfighting Development Center, said that connectivity of simulators is required. F-35 simulator numbers were increasing as more aircraft came into service, and there would be links with other units such as Nellis Air Force Base. In the Navy, ship's crews should train as a team, then between different ships, and finally should be capable of joint training with allied nations.

U.S. Navy Panel on Human Training Performance

Vice Admiral Robert Burke, Chief of Naval Personnel, said that training systems could use a model in which people train in different VR environments. Future systems should not only be for shore training but also on ships, and he looked to organisations and companies at I/ITSEC to help future training challenges. He then described the Sailor 2025 Program which is to modernise the Navy's personnel system and has some 45 different initiatives. It is designed to recruit, train, operate and retain personnel, matching abilities and training to jobs. The Navy was a "career service", he said, in which people were in for life, and leader development was important so that ship's crew could trust their commanders.

Rear Admiral Ronald Boxall, Director Surface Warfare, referred to the 17 fatalities in 2017 due to Navy ship collisions with civilian vessels off Japan and Singapore. A major review of training is underway, he said, one result being that better simulators for ship handling will be procured, and used more often. The software designer of a shore-based training system had been hosted on board ship, and this had greatly improved the fidelity of the resulting training system. The Navy has already developed the Surface Training Advanced Virtual Environment (STAVE) that brings virtual (simulation) systems on-board, having been developed at shore bases. There are also requirements for Tactical Team Trainers as well as those for ship operation including use of weapons. STAVE capabilities are already used in 31 courses at Great Lakes, Norfolk, and San Diego, and there are plans to expand to hundreds more courses across the Navy. This includes surface ships, submarines, and Navy aircraft.

Rear Admiral Scott Conn, Air Warfare Director, HQ Navy in The Pentagon, is involved in aircraft training policy from individual aircrew to commanders. Most of our aircraft simulations are realistic, he said, including the air input into ship's Combat Information Centres (CIC). However, air ranges for live training have a number of problems. Not only cost and less realism than some simulations, but potential enemy spying on live flying activities, and some ranges are simply out of enough airspace for modern air weapon operations - the answer is the use of simulation.

Rear Admiral Kyle Cozad, Commander, Naval Education and Training Command, said that he was excited in what he had seen on the I/ITSEC exhibition floor. His command's schoolhouses have some 4000 instructors and have a throughput of 200 thousand students per year on a huge number of courses. Virtual models are now used extensively in training. At Pensacola, for instance, there are some 20 flat-panel trainers in some classrooms. In the future, he suggested, network links should be used to avoid travel to training units remote from sailor's shore bases.

Summary: Overall, the US Navy seems to have wholeheartedly adopted future Simulation technology. There is great enthusiasm for it, as reported above. The next step is to translate this into real state-of-the-art simulators across all Navy activities on land, at sea, and in the air.

I/ITSEC 2017

I/ITSEC is the world's largest and most important event devoted to Simulation and Training. It is several times larger than the European ITEC exhibition and conference, this year to be held in Stuttgart from 15-17 May.

If you have an interest in training, in particular in ensuring cost-effectiveness, spending a day or so at these events could reap dividends. The latest training aids not only enhance training but can save money as well compared to the constant use of expensive front-line equipment in a training mode.

Then there are the smaller S&T events, listed next, including three regular annual S&T conferences at the Royal Aeronautical Society in London in June, September and November.

World Simulation and Training Events

2018 - March 6-7 - Defence Training Simulation and Education (DSET) conference.
Venue: Bristol, UK   https://dset.co.uk

2018 - March 7-8 - Asian Aviation and Education Training Symposium (AAETS) 2018
Venue: Seoul, South Korea   Organiser: Halldale Group   www.aaets2018.com

2018 - April 24-26 - MODSIM World 2018
Venue: Norfolk Waterside Marriott, Norfolk, Virginia, USA.   Organiser: NTSA www.modsimworld.org

2018 - May 8 - Simulation and Training Community Forum
Venue: Dayton, Ohio   Organiser: NTSA www.trainingsystems.org

**2018 - May 15-17 - European International Training Equipment Conference and exhibition (ITEC)
          incorporating Civil Security Simulation conference**
Venue: Alfred Kärcher Halle, Messepiazza Stuttgart, Germany
Organiser: Clarion Events, London, UK www.clarionevents.com & www.itec.co.uk

2018 - June 6-7 - T&S Industry Symposium (TSIS) 2018
Venue: Orlando, Florida.   Organiser: NTSA www.trainingsystems.org

2018 - June 11-12 - RAeS Flight Simulation Group Conference - Future Flight Simulation
Venue: Royal Aeronautical Society, 4 Hamilton Place, London W1J 7BQ, UK
Organiser: RAeS Flight Simulation Group www.raes-fsg.org.uk

2018 - July - Capitol Hill M&S Expo
Venue: Washington DC.   Organiser: NTSA www.trainingsystems.org

2018 - August - IFEST 2018
Venue: Washington DC.   Organiser: NTSA www.trainingsystems.org

2018 - September 24-25 - National M&S Coalition Meeting
Venue: Omaha   Organiser: NTSA www.trainingsystems.org

2018 - September 25-26 - International Flight Crew Training Conference 2017 (IFTC 2018)
Venue: Royal Aeronautical Society, London, UK
Organiser: Royal Aeronautical Society, London   www.aerosociety.com

2018 - September - Fall Simulation Interoperability Workshop (SIW)
Venue: Orlando   Organiser: NTSA www.trainingsystems.org

2018 - November 12-13 - 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

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

Australia, Brazil, Canada, Chile, China, Columbia, Fiji, France, Germany, Iceland, India, Israel, Japan, Kuwait, Malaysia, Netherlands, Norway, Saudi Arabia, Singapore, South Korea, Spain, Sweden, Switzerland, Taiwan, UAE, UK, USA, Vietnam. (27 Countries)

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

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

AeroStar Training - https://aerostartyperatings.com
USA - New Facility. AeroStar Training Services LLC, headquartered in Orlando, Florida, USA, has opened a new 30,000 square-foot training facility at Kissimmee Gateway Airport, south of Orlando, with several simulators. The adds to AeroStar's current ground school facility in Kissimmee.
USA - A320 Sim. AeroStar Training has taken delivery of an Airbus A320 simulator at Kissimmee Gateway Airport (KISM), to be ready for training in March 2018. Also, AeroStar signed an MOU with Fly Smart Pilot Training.

Airbus Training - www.airbus.com/support/training/training-centres
USA. Airbus Training, headquartered in Toulouse, France, has acquired a flight training centre from Strategic Simulation Solutions of Aurora, Colorado. The centre has two FAA-certified Level D A320 full flight simulators. Airbus training centres have increased from five locations in 2015 to 17 today.
A350 Headset-based Training. Airbus and Japan Airlines Engineering (JALEC) have developed a headset-based training system for the A350 XWB using Microsoft HoloLens Mixed Reality technology. Airbus is a member of the Microsoft Mixed Reality Partner Program and through the headset, HoloLens can provide access to aircraft digital data which can be viewed from any angle.

Alsim - www.alsim.com
Canada - Journey Air. Alsim of Le Loroux Bottereau, East of Nantes, France, is to supply a simulator for the Diamond AL42 to Journey Air at Windsor Airport, Ontario (www.journeyair.com).
Canada - Montair. Alsim is to deliver an AL200 MCC simulator to Montair Aviation, a flight training school in Pitt-Meadows near Vancouver, Canada. The AL200 can be configured to simulate a range of aircraft and cockpit layouts and will be part of Montair's course for the Integrated Airline Transport Pilot License (IATPL).

Alsim AL200 MCC

China. Alsim has an agreement with AXAviation on the distribution of Alsim flight simulators in China. AXAviation has also purchased an AL42 Level 5 FNPT for the Diamond DA42 -VI with an Austro engine and GFC 700 autopilot. AXAviation is located at Wuhu Aviation Industrial Park in Anhui Province, west of Shanghai.
India. ALSIM has an agreement with Orient Flight School on the distribution of AL42 flight simulators in India.
UK. Alsim has supplied an AL42 model simulator for the DA42 Twinstar to ACS Flight Training at Perth airport, Scotland, for Airline Transport Pilot License (ATPL) training.

Axis FTS - www.axis-simulation.com
Australia. Axis Flight Training Systems GmbH of Tobelbad, SW of Graz, Austria, is to supply an ATR 72-600 full flight simulator (FFS) to Southern Pacific Flight Training of Brisbane in Q1/2-19. This is to be certified to CASA and EASA Level D and have the ATR avionic Suite 2.1 and 3.
USA. Axis has delivered a Level D full flight simulator for the ATR 72-600 to Alliance Aviation's facility at Sanford Airport, NE of Orlando, Florida. Alliance also operates an ATR42-300 simulator.

AvSoft - www.avsoft.com
Spain. AvSoft International of Denver, Colorado, USA, is to supply its pilot training eLearning system and Printed Materials to Aviation Exchange Group, based in Malaga, Spain. Aviation Exchange Group is an EASA Approved Training Organization for the ATR 42-500, 72-500 and 72-600. Also, Avsoft announced an Upset Recovery course.

Britannica - www.britannica-ks.com
Japan. Britannica Knowledge Systems (BKS) headquartered in Chicago, USA, has supplied its Fox Training Management System to All Nippon Airways (ANA). This will be used for AQP qualification management and compliance under the supervision of the Japan Civil Aviation Bureau (JCAB). It will manage pilot qualifications, grading scheduling and record keeping.

CAE - www.cae.com
Fiji. CAE, headquartered in Montreal, Canada, is to supply an Airbus A330 full flight simulator (FFS) to the Fiji Aviation Academy, which is scheduled to open in Namaka, Nadi, in 2019. This will be installed together with a CAE

Boeing 737 MAX 8 simulator, acquired in late 2017.

Kuwait. CAE to deliver an Airbus A320NEO full-flight simulator (FFS) and a flight training device (FTD) to Kuwait Airways's training centre in Kuwait City. The FFS is CAE's 7000XR design with Tropos 6000XR visual system, and the FTD is an 500XR flight training device.

Malaysia, Singapore & Vietnam. CAE has acquired AirAsia's share of the Asian Aviation Centre of Excellence (AACE) for US$100M. The 150 employees from the three AACE training in Kuala Lumpur, Malaysia; Singapore; and Ho Chi Minh City, Vietnam have now all become CAE employees.

Netherlands. CAE is to deliver a Airbus A320NEO full flight simulator to the FSC training centre at Amsterdam Schiphol, to be ready for training in April 2018. This is a CAE 7000XR Series FFS with Tropos 6000XR visual system and will cover the Airbus standard Version 2.0 NEO and CEO configurations with all four available engine types. CAE will update the current Airbus A320 simulators at FSC to Airbus standard Version 2.0 CEO with Tropos 6000XR visual.

Saudi Arabia. CAE and the Saudi National Company of Aviation (SNCA) are to build a training centre at King Fahad International Airport, Dammam, on a 40,000 square metre site. The new Centre will be funded by SNCA.

South Korea. CAE has delivered two Boeing 737 full-flight simulators (FFSs) to JEJUair, headquartered on JeJu island, south of the main Korean peninsula. These are CAE 7000XR Series simulators with Tropos 6000XR visual.

CEFA - www.cefa-aviation.com

France and Japan. CEFA Aviation Mobile Services (AMS) of Colmar, France, SW of Strasbourg, has produced a tablet that can transform Flight Data Recorder (FDR) data into realistic animation. This can be used after landing for de-brief and training. The animations include playback of flight elements and include cockpit imagery, real-world terrain, and airport data. All Nippon Airways (ANA) has been testing the CEFA AMS tablet with under the "Furikaeri" concept, or "looking back into one's behaviour". The tablet system is available for all aircraft types that have FDRs.

DiSTI - www.disti.com & **Agueris** - www.agueris.com

France & USA. Distributed Simulation Technology, Inc (DiSTI) of Orlando, Florida, USA, has partnered with Agueris Simulationn of Vélizy, France, for maintenance training in Europe. This will be based on DiSTI's VE Studio system.

Emirates Flight Training - www.emirates.com/media-centre/emirates-flight-training-academy-officially-inaugurated

UAE. The Emirates Flight Training Academy opened in November 2017 at Dubai South, with an area of 164,000 square metres and 36 classrooms. When complete, it will be able to train up to 600 cadets at one time. The curriculum will be paper-less and cadets will learn on personal tablets. They will train on the single-piston Cirrus SR22 G6, the Phenom 100EV light jet, plus simulators. On graduation they will have 315 flight and simulator hours, a Commercial Pilot License with Multi Engine and Instrument Ratings, and a frozen ATPL. Emirates has invested US$39M and the academy has 22 Cirrus and 5 Phenom aircraft.

Flame Aviation - www.flame-aviation.com

India. Flame Aviation of Wassenaar, NE of The Hague, Netherlands, has produced a V9000 Commander Cabin Fire + Smoke Trainer for Jet Airways new training complex in Mumbai.

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

USA. FlightSafety International (FSI) Simulation, headquartered at Broken Arrow, Tulsa, Oklahoma, has received FAA Level C qualification for its FS1000 design of full flight simulator (FFS) for the Pilatus PC-24 twin-engined business jet at FlightSafety's Learning Center in Dallas, Texas. It has VITAL 1100 visual, electric motion and control loading and new type of Instructor Operating Station. As well as the FFS, pilot and maintainer training programmes will use MATRIX, FlightSafety's Integrated Training System with Graphical Flight Deck Simulators for instructor-led and self-paced learning using desk top trainers and the SimVu de-briefing system.

CPaT - www.cpat.com

Iceland. CPaT Global LLC of The Woodlands, N of Houston, Texas, USA, is to provide Distance Learning Solutions to Icelandair. Icelandair will use CPaT's Learning Management System (LMS) for classroom and mobile training for Boeing B737 MAX, 757 and 767. In addition, CPaT Global has introduced an upgraded General Subjects Library.

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

Japan. L3 Commercial Training Solutions (L3 CTS), headquartered at Crawley, S of London Gatwick airport, UK, has a re-location and upgrade contract from All Nippon Airways (ANA). This is to re-locate 12 full flight simulators and eight lower-level devices from ANA's current training facility in Tokyo to its newly built 22-bay training centre, also in Tokyo. At the same time, updates will be carried out on many devices.

MINT Software - www.media-interactive.de
Canada. MINT (Media INTeractive) Software Systems GmbH, headquartered in Kiel, Germany, is to supply its Training and Resource Management System (MINT TRMS) to Air Canada. This includes pilot AQP training, record management, e-grading, reporting, scheduling, and integration with other Air Canada crew management systems. This is said to simplify instructor and student allocation, course and simulator scheduling.

MPS - www.flymps.com
Netherlands. Multi Pilot Simulations B.V. (MPS) of Groenekan, Utrecht, The Netherlands, has FNPT-II/MCC certification from the Dutch Civil Aviation Authority for its Generic Jet Training Device (GenJet). The GenJet is based on a typical Commercial Air Transport Category Aircraft.

Novair - www.novaireducation.com
Sweden. Novair Education of Stockholm, Sweden, has started training Scandinavian Airlines (SAS) cabin crew in survival after ditching in water at Halmsjön lake on the east side of Stockholm Arlanda Airport. Topics covered include the theory of cold water survival, crowd control in water and knowledge of life vests and rafts.

one-G sim - https://flyone-g.com
USA. one-G simulation, headquartered in Seattle, USA, has produced an Advanced Aviation Training Device (AATD) for the Pilatus PC-12 for a training facility in Utah.

PacSim - www.pacificsimulators.com
Australia. Pacific Simulators 2010 Ltd (PacSim) of Christchurch, New Zealand, is to provide the University of South Australia (UniSA) with a fixed-base ProJet series Flight Training Device (FTD). The ProJet PS Series device is a fixed base flight simulator based on the Airbus A320 and the Boeing B737.

Pilot Flight Academy - www.pilotflightacademy.com
Norway. Pilot Flight Academy (PFA) of Sandefjord Airport, Oslo, is to open a second training base at Notodden Airport, SW of Oslo, in June 2018. This will have an area of 1,200 square metres with a school, offices and hangar, and a further 1,200 square metres is available.

SIM-TECH - www.simtechmanufacturing.com
USA. SIM-TECH Manufacturing LLC, of Fayetteville, south of Atlanta, Georgia, USA, has received FAA approval for a second Airbus A320/321 extended door trainer at Frontier Airlines' new Orlando training facility.

Spatial Composites - www.spatial-composite.com
UAE. Spatial Composite Solutions FZE, Jebel Ali Free Zone, Dubai, UAE, is to provide Gulf Aviation Academy (GAA) with a Boeing 787 door trainer with a virtual slide for use in Q1/2018.
UK. Spatial is to provide easyJet with over wing exit trainers for the Airbus A321.

TRU Simulation - www.trusimulation.com
China. TRU Simulation + Training Inc, headquartered at Charleston, South Carolina, USA, is to supply Full Flight Simulators for the Airbus A320 and Bombardier CRJ900 to China Express Airlines, to be qualified to Level D by the Civil Aviation Administration of China (CAAC). They will be installed at China Express' new 10-bay training centre in Chongqing. In 2016/9 TRU received CAAC approval for its Part 142 training centre in China.
France. TRU has certification from the European Aviation Safety Agency (EASA) for a ATR 72-600 full flight simulator (FFS) at ATR's Paris training centre (www.atraircraft.com) near Charles de Gaulle airport. ATR is reported as delivering over 100,000 training hours per year at training centres in Miami, Paris, Johannesburg, Singapore and Toulouse.
UAE. TRU is to provide six EASA qualified Flight Simulation Training Devices (FSTDs), to Emirates Flight Training Academy, Dubai. These will be based on TRU's new ODYSSEY 7 hybrid simulator technology with a mini-motion system. There will be 3 Cirrus SR-22 and 3Phenom P100EV.

Virtuasim - http://virtuasim.com.br
A320 & B737 HMDs. Virtuasim Simuladores Virtuais of Florianópolis, SW of Rio de Janeiro, Brazil, has launched virtual (Vsim_PIT) and hybrid (Vsim_HYB) trainers using the Oculus Rift head mounted display (HMD). To reduce complexity, the traditional joystick is replaced by a LEAP motion tracker on the front of the headset, which allows the student to see their hand in the cockpit. Both have a 3D cockpit model with access to manuals, and a Learning Data Recorder & Analyzer (LDRA) records crew actions. Oculus Rift weighs about 230g and connects to a notebook or desktop. Vsim_PIT is available for Airbus A320 and Boeing 737NG.

Virtuasim - virtual hand on Oculus Rift HMD

Virtual Aviation - www.virtualaviation.co.uk

UK. Virtual Aviation Flight Training, headquartered at Cambridge Airport, has taken delivery of a Boeing 737-800 simulator. An Airbus A320neo simulator will be added later in 2018.

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

J2 Dynamics - www.j2aircraft.com

Helicopter Modelling. J2 Aircraft Dynamics Ltd of Daresbury, SW of Manchester, UK, has introduced j2Rotary for helicopter simulation models, part of the company's j2 Universal Tool Kit. It integrates j2 modelling, analysis and flight data functions with the Blade Element Rotor Model (BERM), tail rotor and gearbox components of the HeliSIM system from Presagis of Montreal, Canada (www.presagis.com). It includes modelling of features such as autorotation, ground effect plus translational lift (due to horizontal flow of air across the rotor). This enables the rotor model and airframe effects to be tuned independently of each other using automated techniques already used for fixed wing models.

Reiser - www.reiser-st.org

Germany. Reiser Simulation and Training GmbH of Berg-Höhenrain, SW of Munich, Germany, supplied a full flight simulator (FFS) for the H-145 twin-engined utility helicopter to the ADAC HEMS Academy facility in Germany. This has received Level D certification from the German Federal Aviation Office, the Luftfahrt-Bundesamt (LBA). It has 6 DOF-electric motion, a vibration system, and 240x80 degree visual with 15 two-channel HD LED projectors, an NVIS-compatible cockpit and simulated Helionix avionics suite.

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

3DP - www.3d-perception.com

Sweden. 3D perception A.S. (3DP) of Asker, W of Oslo, Norway, has delivered a Northstar™ visual display to the simulator facility for the Gripen fighter aircraft at Malmslätt, near Linköping SW of Stockholm, under a contract with Saab. This has 3DP's latest display processor and a dome with twelve CompactView WQ50 projectors.

Babcock - www.babcockinternational.com
and Elbit - www.elbitsystems.com

UK. Babcock International, headquartered in London, and Elbit Systems Ltd, headquartered in Haifa, Israel, are to develop future aggressor air capabilities for the UK Ministry of Defence, part of Air Support to Defence Operational Training (ASDOT). The two companies already work together in the UK Military Flying Training System (MFTS).

CAE USA - www.cae.com

US Air Force. CAE USA of Tampa, Florida, USA, has been awarded subcontracts from Lockheed Martin for six C-130J weapon systems trainers (WSTs) for the United States Air Force and Air National Guard. The C-130J WSTs are full motion, full mission simulators for delivery to various air bases during 2020 and 2021.

Elbit Systems - www.elbitsystems.com

Colombia. Elbit Systems Ltd, headquartered in Haifa, Israel, has produced a Fighter Mission Training Centre (FMTC) for the Colombian Air Force. This provides training for up to 24 pilots using a variety of aircraft systems and mission scenarios with computer generated forces (CGF) for friends and enemy. This is similar to the Elbit SkyBreaker™ MTC design already in use (http://elbitsystems.com/product/mission-training).

Israel. Elbit Systems Ltd, headquartered in Haifa, Israel, has a 13-year, US$74M contract from the Israeli Ministry of Defense (IMOD) to provide and operate flight simulators for the upgraded C-130H and C-130J transport aircraft. Elbit will set up and operate a C-130 training center for the IAF with two inter-connected flight simulators and a ground crew simulator for aircraft maintainers. Elbit has recently upgraded the C-130H with a new digital cockpit, head-up display (HUD) and radar system.

GD-IT - www.gdit.com

USA. General Dynamics Information Technology (GD-IT) headquartered in Fairfax, Virginia, USA, SE of Washington Dulles airport, has a US$47M contract from the US Air Force for systems for a Mission Operations Center at Kirkland Air Force Base in Albuquerque, New Mexico. This is for simulation software and hardware, and integrating a live, virtual and constructive combat environment.

Indra - www.indracompany.com
Germany, Spain. Indra Sistemas SA, headquartered in Madrid, Spain, is to produce a new type of simulator for the Eurofighter Typhoon for the German and Spanish Air Forces. Indra is also to develop two Eurofighter Part Task Trainers (PTTs) for Spain, for delivery in December of 2018 to the Albacete and Morón airbases.

J2 Dynamics - www.j2aircraft.com
Helicopter Modelling. See the entry above under Civil Helicopter Simulators.

Lockheed Martin - www.lockheedmartin.com
Lockheed Martin Corporation, headquartered in Bethesda, N side of Washington DC, USA, has a number of contracts with the United States Department of Defense (DoD).
USAF - AFSOC. Lockheed Martin has contracts of $198.4M for Air Force Special Operations Command (AFSOC) C-130 Weapon System Trainers. Five new C-130J weapon system trainers (WST) will have large field of view glass mirror displays, and will be delivered in MC (special mission) and AC (gunship) variants in mid-2020 through 2021 to Air Force Bases in the U.S, Japan and Germany.
USAF - ANG. Lockheed Martin is to supply a re-configurable C-130J weapon system trainer (WST) in 2020 to the Air National Guard Quonset Point Reserve Base, Rhode Island. This is for the C and MC variants of the C-130.
US Air Force. Lockheed Martin is to deliver visual systems to flight simulators at Dyess Air Force Base, Texas & Ramstein Air Force Base, Germany. It is also to upgrade two AMC C-130J fuselage trainers at Little Rock Air Force Base, Arkansas. This includes trainers for avionics, engine, propeller, flight control, multi-function, load master, weapons and cockpit systems. A new Hercules Training Center (HTC) is to open in Q2 2018 and is to include a reconfigurable C-130J/LM-100J full mission simulator (FMS).
US Marines. Lockheed Martin is to supply four new KC-130J observer trainers to US Naval Air Systems Command (NAVAIR). www.navair.navy.mil/nawctsd). These are for crewmasters and loadmasters to train for emergencies, aerial refuelling, threat detection and avoidance. The trainers will be delivered to Marine Corps bases Cherry Point, North Carolina; Miramar, Florida; Ft. Worth, Texas and Iwakuni, Japan.

Rockwell Collins Simulation - www.rockwellcollins.com/service/simulation
F-16 Dome Systems. Rockwell Collins Simulation & Training Solutions (STS) of Sterling, Virginia, N of Washington Dulles airport, USA, is to provide display systems to Lockheed Martin for two F-16 simulators. This includes Rockwell Collins Griffin dome and SpectraView™ display, as used in F-35 Full Mission Simulators. Field of view is 300 degrees horizontally and 120 x 40 vertically.

US Navy - Aviation Training Systems - www.navy.mil
USA. At I/ITSEC, it was announced that the office of Naval Aviation Training Systems is developing new VR headset-based trainers for the F/A-18 Super Hornet, TH-57 Sea Ranger helicopter and T-45 Goshawk jet trainer. This is (quote) "part of a larger push by the U.S. Navy to build deployable flight simulators that decrease aircraft flight hours and save money, without losing the quality of training". These trainers will be deployable for use at sea because of the small size of VR headsets and independence from more complex training aids.

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

DiSTI - www.disti.com
US Army. Distributed Simulation Technology, Inc (DiSTI) Corporation of Orlando, Florida, USA has developed a Virtual Maintenance Trainer™ (VMT) for the UH-72 Lakota/Eurocopter EC145 helicopter at the Western Army National Guard Aviation Training Site (WAATS) in Phoenix, Arizona. Powered by VE Studio®, it can develop training content across several platforms, and users can move between various training environments. Stations have a Virtual Reality (VR) Zone with HTC Vive and HP VR1000-100 with a Mixed Reality (MR) Zone using Microsoft's HoloLens. The VMT also has lessons on a tablet and in a classroom.

J2 Dynamics - www.j2aircraft.com
Helicopter Modelling. See above in the Civil Rotary Wing section under J2 Aircraft Dynamics.

Thales Group - www.thalesgroup.com
Switzerland. Thales Group, headquartered in Paris, France, has delivered upgrades to the full flight and mission simulators (FFMS) AS532 Super-Puma (TH06) and EC635 helicopter of the Swiss Air Force. This included upgrading avionics, radio, digital map, forward-looking infrared (FLIR) imagery and the visualisation helmet.

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

MASS - www.mass.co.uk
UK. MASS Consultants Ltd of St Neots, west of Cambridge, UK, has a 10 million UK pound extension to its contract with UK Joint Forces Command. This includes exercise planning, mentoring and reporting, working with the Joint Warfare Support Team (JWST), plus Tier 3 Combined Joint Task Force exercises.

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

BAE Systems Australia - www.baesystems.com/en/our-company/our-businesses/bae-systems-australia
Australia. BAE Systems has produced an Advanced Air Defence Simulator (AADS) for the RBS-70 air defence missile system at the Australian Defence Force's Woodside Barracks in South Australia. The AADS trainer has a 5-metre dome with 27 projectors. Bohemia Interactive Simulations (BISim) VBS3 is used for scenario generation, and the VBS IG is for binoculars for target identification.

Calibre Systems - www.calibresys.com
US Army. Calibre Systems of Alexandria, Virginia, South of Washington DC, has a $554M contract from the US Army for Training Support Systems Enterprise (TSS-E). Calibre will support Army LVC Integrating-Architecture (LVC-IA), Combat Training Centers (CTC), Mission Complexes, the Soldier Training, Sustainable Range Program (SRP) and Training Development.

Doron - https://doronprecision.com
USA. Doron Precision Systems Inc, Binghamton, upper New York State, USA, is to deliver several 660Truckplus™ simulators to the US Army Reserves (USAR) . This is to train USAR drivers for a tractor trailer, two tanker trucks, an 80-passenger bus and the Joint Light Tactical Vehicle. Delivery is scheduled to begin in late 2017.

GD-IT - www.gdit.com
USA. General Dynamics Information Technology (GD-IT) headquartered in Fairfax, Virginia, USA, SE of Washington Dulles airport, has a US$975M Mission Training Complex Capabilities Support contract from U.S. Army Contracting Command. This will include live, virtual, and constructive (LVC) training and game-based exercises.

GlobalSim - www.globalsim.com
USA. GlobalSim Inc of Salt LakeCity, Utah, USA, is to supply simulators to the United States Army Reserve Command (USARC) for delivery in the first half of 2018. These are JLG Atlas II telehandler forklift simulators and Kalmar RT240 rough terrain container handler simulators. They will have large flat panel displays, motion systems, and instructor stations for interactive training. The GlobalSim scenario editor and student database will be included.

MASA Group - www.masagroup.net
Brazil. MASA Group, headquartered in Paris, France, has a further 4 year contract with the Brazilian Army for its SWORD battlefield simulation system. This is used in the Brazilian COMBATER simulation system at Comando de Operações Terrestres (COTER - Land Operations Command), which includes the Army's Command Staff Training Centre in Santa Maria. The Dec@tron company converted the working language to Portuguese, working with MASA. The system is used by command staff from brigade to division level for warfare scenarios, public safety and peacekeeping exercises, and the company MASA do Brasil in Rio de Janeiro provides local support.

Meggit Training - www.meggitttrainingsystems.com
Small Arms Training. At I/ITSEC, Meggitt Training Systems (MTS), headquartered in Suwanee, Georgia, USA, introduced its new FATS 300 training system. This has five screens with 300 degree cover plus surround sound, and is for marksmanship, judgmental and collective training. This follows the introduction of the FATS 100P portable training system and Live-Fire screen in Q3/2017.

Ravenswood - www.ravenswoodsolutions.com
UK. Ravenswood Solutions of Fremont, SE of San Francisco, California, USA, has deployed its Mobile Ground Truth System (MGTS) to the UK Army exercise area on Salisbury Plain, west of London. MGTS tracks vehicles and other exercise participants for real-time monitoring and After Action Review. For the UK exercise MGTS was connected to the Lockheed Martin Joint Fire Training Simulator. Forward observers used VR goggles and simulated binoculars, and the exercise was part of Augmented Reality Training for Observers (ARTO).

Rheinmetall Defence Electronics - www.rheinmetall-defence.com

Legatus. At I/ITSEC, Rheinmetall Defence Electronics GmbH (RDE) of Bremen, Germany, showed its Legatus live simulation system. This allows fast weapon simulation and can be used for military operations in urban terrain (MOUT).
Osiris. At I/ITSEC, Rheinmetall showed its new Osiris command and staff training system. This can be used platoon, company, battalion, brigade, and higher formations.

Saab Defence - www.saabgroup.com

New Simulation Tool. Saab Security and Defence Solutions, headquartered in Järfälla, Sweden, has launched the "We:Are" tool for military observers, controllers and exercise leaders. This gives a 360 degree view of the battlefield with targets, engagements and other movements. It is based on Google Maps and is compatible with other digital maps and Saab training systems. We:Are can introduce new threats such as minefields and artillery, and assesses how many troops are likely to be wounded or killed.

MEDICAL TRAINING SYSTEMS

GDIT - https://gdit.com

US Army. General Dynamics Information Technology (GDIT), headquartered in Fairfax, Virginia, west of Washington DC, has a $58.9M contract from U.S. Army Medical Command. This is for medical training and exercises at15 U.S. Army Reserve regional training sites and other medical program locations.

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

Antycip - www.antycipsimulation.com

France. Antycip Simulation of Argenteuil, Paris, France, is upgrading French Navy ship defence simulators (SIMDAV) in the ports of Brest and Toulon. The simulators use VT MAK CGF, VR-Forces for scenarios, VR-Vantage for visualisation, and Antycip adapted the software for the French Navy. A 16m dome gives a 270 degree view, with 2560 x 1600 pixel projectors and infra-red and image intensification for night and low light operation. Antycip also provided terrain imagery and modelling of air, land and sea vehicles.

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

Cloud Global - www.cloudglobal.co.uk

UK. Cloud Global Group, headquartered at Glasgow Airport, Paisley, west of Glasgow, UK, has acquired Border Air Training (www.borderair.co.uk). Cloud Global offers flight training and maintenance services from Perth Airport in Scotland. Border Air Training operated flight schools at Carlisle and Cumbernauld Airports. Cloud Global has also acquired Fly Scenic Scotland, operating aircraft charter services.

Resource Group becomes Blakebrook

UK. After a management buy-out, Resource Group od Worcester, UK (www.resourcegroup.co.uk/news) has been re-branded as Blakebrook. Blakebrook businesses will operate under new names as follows:
    AMI Learning (www.amilearning.com), formerly Resource Group business systems and solutions
    Phixos (www.phixos.co.uk), formerly Resource Group embedded software and systems
    Real Time Consultants (www.rtc.co.uk), formerly Resource Group technical recruitment solutions
    RUAS (www.ruas.co.uk), formerly Resource Group Unmanned aviation services
    Symbiotics (www.symbioticsltd.co.uk), formerly Resource Group Symbiotic Performance Solutions

Rockwell Collins - www.rockwellcollins.com

USA. Rockwell Collins, headquartered in Cedar Rapids, Iowa, W of Chicago, USA, is to be acquired by United Technologies Corp, subject to regulatory and other conditions, the deal closing by Q3/2018. The company is to be combined with UTC Aerospace Systems into the business unit Collins Aerospace Systems.

SimCentric - www.simct.com

Taiwan. SimCentric Technologies of Oxford, UK, have appointed Aben-Tech as a reseller of SimCentric applications in Taiwan. This will enable access SimCentric products such as VBSFusion and VBS3 Fires. Aben-Tech is a Taiwan-based Modelling and Simulation company that develops databases, image generators and 3D modelling.

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).

ARA - www.ara.com
USA. At I/ITSEC, Advanced Research Associates Inc, headquartered in Albuquerque, New Mexico, USA, showed several new VR systems:

Ascend. A cloud-based system for streaming synthetic environment data to multiple users.
Globe. A simulation platform based on the Unreal 4 game engine.
Point Cloud. For visualisation of VR data to millimetre accuracy.

BISim - www.bisimulations.com
New Image Generator. At I/ITSEC, Bohemia Interactive Simulations (BISim), headquartered in Prague, Czech Republic, announced VBS Blue IG. This is an image generator based on the WGS 84 earth model and integrates with BISim VBS3 and any CIGI-compliant simulation host. VBS Blue IG provides "one world terrain" that renders scenes from distant views down to blades of grass, and its content library has more than 10,000 models.

BISim - www.bisimulations.com & **TRU Simulation** - www.trusimulation.com
New AR system. Bohemia Interactive Simulations (BISim), headquartered in Prague, Czech Republic, has developed an augmented reality (AR) visual system for TRU Simulation + Training Inc, headquartered at Charleston, South Carolina, USA. This not only provides the visual scene but includes interactions with controls, equipment and other crew members through a helmet-mounted display (HMD). BISim's new VBS Blue IG is used, integrated with TRU's Bell V-280 Valor system with tactile feedback and interactions with controls.

Britannica - www.britannica-ks.com
Britannica Knowledge Systems (BKS) headquartered in Chicago, USA, has been certified to the new ISO 9001:2015 standard by the Institute of Quality & Control (ICQ). Britannica is involved in training systems and has ISO 9001:2008 certification. ISO 9001:2015 improves organisation, uses simplified language and has a common structure.

DiSTI - www.disti.com
Distributed Simulation Technology, Inc (DiSTI) Corporation of Orlando, Florida, USA, has released GL Studio 6.1 with over 100 new tools, objects, and behaviours. The Package Manager function downloads new objects and tools including customizable UI controls, drag-and-drop importers, new visual effects, shaders and animations. Customers can create packages to add objects, toolbars, importers, deployments, and scripts to adjust workflow. GL Studio content can be used on any platform and integrate with other tools including Unity, Unreal, and X-Plane.

j2 Dynamics - www.j2aircraft.com
j2 Aircraft Dynamics of Daresbury, SW of Manchester, UK, and Presagis of Montreal, Canada (www.presagis.com) have developed new models for aircraft simulation. See the entry in the Military Helicopter section.

MetaVR - www.metavr.com
At I/ITSEC, MetaVR Inc., of Brookline, Boston, Massachusetts, USA, showed its latest version of its Virtual Reality Scene Generator™ (VRSG™). This includes shadows cast from models, screen space ambient occlusion (SSAO), and enhancements to ocean simulation. It also showed two new 3D terrain datasets, built in Metadesic format with the latest version of MetaVR Terrain Tools for Esri® ArcGIS®, in which imagery of 1 metre per-pixel resolution can be blended into NED 1/3 (10 m) elevation data.

Presagis - www.presagis.com
M&S V17. At I/ITSEC, Presagis Inc of Montreal, Canada, launched version 17 of its M&S Suite. This includes software such as STAGE, Creator, Terra Vista and Vega Prime and several new features.
Panorama. This image generation system can add scalable imaging to current simulation systems including Out-of-the-Window (OTW), Electro-Optical (EO), night-vision goggles (NVG) and infrared (IR) imagery. Panorama complies with the Common Image Generator Interface (CIGI), Distributed Interactive Simulation (DIS), High-Level Architecture (HLA). and uses the Open Geospatial Consortium Common Database.
Ondulus NVG. This adds night-vision sensor simulation to other environments.
VELOCITY. This is for building synthetic environments, with tools for 3D visual effects, gaming, Geographic Information Systems (GIS), architectural design, and processes geospatial data.

Terrasim - www.terrasim.com

Terrasim Inc of Pittsburgh, Pennsylvania, USA, has released TerraTools 5.5. This has some new features, enhancements, maintenance updates, and bug fixes. An updated TerraTools tutorial is also available.

TrianGraphics - www.triangraphics.de

TrianGraphics GmbH of Berlin, Germany, announced Trian3DBuilder 6.4. This now supports any language by displaying Unicode character sets, and more language versions will be offered in the near future. A new vector tool allows intersections to be fixed automatically and a vector alignment tool aligns an object's rotation along a line.

Word Count:

Sections	Words	%
Editorial & Events	3099	36.8
Aviation Systems	3411	40.5
Space Systems	0	0.0
Multi role Systems	70	0.8
Land Systems	697	8.3
Medical Systems	49	0.6
Maritime Systems	99	1.2
Corporate changes	238	2.8
Simulation Systems	672	8.0
Word count	96	1.1
Total	**8431**	**100.0**

Aviation Sections	Words	%
Civil Fixed Wing	2053	24.4
Civil Rotary Wing	197	2.3
Mil Fixed Wing	990	11.7
Mil Rotary Wing	171	2.0
UAVs	0	0.0
ATC & Air Control	0	0.0
Total Air Sections	3411	40.5

Air	Words	%
Civ total	2250	26.7
Mil total	1161	13.8
RW total	368	4.4