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Professionalism - from Engine Start to Shutdown

"Don't stop 'flying' the airplane until you switch off the engine and tie it to the ground."

Decades ago – several more than I care to remember – I had a primary flying instructor who was fond of saying "Don't stop 'flying' the airplane until you switch off the engine and tie it to the ground."

Some will instinctively know that such a comment suggests tail-dragger operations and I was indeed fortunate to obtain early instruction in classic airplanes. Taxiing properly, especially in gusty wind conditions, and the inherent ground looping tendency of the type demands that care and vigilance be exercised to a significantly greater extent than a conventional tricycle gear aircraft, particularly in takeoff and landing.

With quality instruction, the training benefits of classic aircraft are significant, however, particularly when the early training environment also includes the complexities of a towered airport, and mixed general aviation and commercial transport operations. I remember this time for its rapid and deep learning, which stimulated heightened awareness and vigilance, and provided a solid foundation to accompany the plethora of reading prescribed by my instructor, including the iconic "*Stick and Rudder*" by Wolfgang Langewiesche, first published in 1944!

I often think of this early training when I read about runway incursions. I hear again that instructor insisting that we were "flying" as long as we were moving. "Head up, eyes outside, and communicate no less carefully and clearly with the ground controller as you do with tower." Wise words, since incident and accidents on the ground are more likely than in the air, given all the varied players and moving parts. In fact, the FAA states that there were almost 1,800 total runway incursions in 2017 and investigations revealed that two-thirds were caused by pilots.

Those investigations underscored the three major areas contributing to incursions, including failure to comply with ATC instructions, lack of airport familiarity, and nonconformance with standard operating procedures. Maintaining clear and concise pilot-controller communications is fundamental to safe airport surface operations, and English language proficiency is critical.

Chris Lehman
Editor in Chief

Miscommunication, or sometimes no communication at all, happens too frequently. Poorly designed airport layouts can add to the hazards, and sometimes busy radio frequencies mean that transmissions are "stepped on". Standard procedures are there for a reason; pilots must read back their instructions to confirm they are understood and that they are intended for their aircraft and not another. Incidents and risks are enormously varied, and compound quickly at non-towered airports where approach and ground operations are not directed, and thus rely solely on pilots and ground vehicles communicating on an "as required" basis and in accordance with accepted convention.

The importance of verifying "hold short" instructions is of course critical, but other common issues include incorrect runway/taxiway crossing, incorrect spacing between departing and arriving aircraft, incorrect entry or exit of an aircraft/vehicle onto the runway protection area, and even takeoff without an ATC clearance. Throw in the fact that pilots taxiing sometimes do not actually ask Controllers for help when there is confusion, as they can be caught up in checklists, and non-essential chatter with the FO.

An airport undergoing redevelopment or runway re-surfacing adds to incursion potential. A closed taxiway may mean that aircraft need to use runways to get to another open taxiway, and closed taxiways can also result in aircraft needing to backtrack on the runway in use.

One of the most distressing runway incursion accidents happened in 1996 in Quincy, Illinois, which is a non-towered airport using a Common Traffic Advisory Frequency (CTAF). Miscommunication between a landing Beech 1900, a departing King Air and a third aircraft, became deadly when the King Air's pilot failed to look for traffic and the 1900's crew mistakenly assumed a radio transmission confirmed they were okay to land. Both aircraft collided on the intersecting runways and some 12 people tragically lost their lives.

The importance of clear and concise communications and extreme vigilance cannot be overstated, and it is encouraging to see the application of technology to mitigate some of the risks. At some of the largest international airports the use of ground surveillance radar adds greatly to the safety equation. And in flight training we've seen Simulated Air Traffic Control Environment (SATCE) technologies being incorporated into the full flight simulator. Nothing, however, can replace vigilance, clear communications and an attitude that "flying" the airplane begins as soon as engines are started and does not stop until they are shut down.

Safe travels

Chris Lehman
CAT Editor in Chief

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On the cover: Cognative Lockup is a serious error-causing mechanism for airline pilots. Image credit: beeboys/ Shutterstock.com.

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Enabling "the Language of the Industry"

Group editor **Marty Kauchak** provides an update on how three US ATOs are enabling their non-English speaking students to successfully complete their programs of study.

US-based airline training organizations (ATOs) are helping to meet the community's surging demand for qualified professionals. Aspiring aviators from around the globe are journeying to America to complete academic programs and gain licenses and other credentials to pursue civil aviation careers. An important focus at many of these ATOs is the holistic learning strategy to allow non-English speaking students overcome language and culture barriers to finish their programs.

Student Profile Snapshots

By several accounts, US ATOs are one hub of academic excellence for non-native English-speaking students. Of significance, efforts are in place to seamlessly integrate this student segment into rigorous programs of instruction and with good reason. Nick Leontidis, the group president for CAE Civil Aviation Training Solutions, presented the imperative for this discussion when he offered, "As the language of the industry, English is an important part of the training."

The industry leader noted about 600 cadets coming from all over the world train every year at one facility, CAE Phoenix - Aviation Academy, with about 50% of them non-native English speakers.

Similarly, Pete Nily, the manager of FlightSafety Academy, FlightSafety International's (FSI's) ab-initio flight school in Vero Beach, Florida, observed that 44 countries are currently represented in training at the FlightSafety Academy. The largest group of students are from the Asia Pacific region followed by Europe and South America.

Also, within the FSI training portfolio, 70% of the training provided at the FlightSafety DFW South Learning Center is to individuals whose first language is not English. "Of that percent, 55% of the instruction provided at the Center is to Spanish-speaking customers who are primarily from Mexico, Central & South America," Paul Ozmer, FSI's regional director for Training Operations explained, and continued, "It may also be of interest to you that 25% of the training at DFW South is provided to people from the Pacific Rim, 15% are from Eastern Europe, and 5% from Brazil."

Above
CAE's Leontidis observed "Our instructors' communication skills, teaching skills, including teaching English to our foreign students and ability to adapt their training style to each trainee's particularities and specific situation, is a culture that we continuously develop."

Opposite
Nick Leontidis, CAE Group President, Civil Aviation Training Solutions.
Both images: CAE.

Strategies

Leaders for these US-based ATOs shared insights on how they are allowing their non-English-speaking students to establish and maintain competencies in the English language and culture.

One significant learning resource resides within the organizations' instructor cadre.

At the Aviation Academy at CAE Phoenix, about 100 cadets come from China, training as part of the Air China cadet program. Leontidis pointed out for this cohort, "the Chinese cadets are required to complete CAE's 100-hour intensive English course upon arrival. CAE's team, specialized in aviation English, work closely with these cadets to support and accompany them in their journey."

The corporate leader further emphasized, "As the leading training organization in the world, we strongly believe that flight instructors are at the core of training. Focusing on instructor quality, leveraging the CAE instructor key pillars (teaching skills, communication skills, style adaptability), is central to supporting the next generation training needs of our airline customers. More specifically, our instructors' communication skills, teaching skills, including teaching English to our foreign students, and ability to adapt their training style to each trainee's particularities and specific situation, is a culture that we continuously develop. CAE recruits, enables, and connects instructors to deliver high quality training."

Similarly, FSI's Ozmer offered, "A number of our instructors have experience interacting with and teaching people from other areas of the world whose first language may not be English."

FlightSafety Academy's Nily spoke of a second resource within an ATO's instructional toolkit – screening – and noted students must pass English screening and meet prescribed FAA English standards prior to enrolling in the academy. The community subject matter expert told *CAT*, "Through our experience in delivering training to international students we are able to adapt the training delivery to meet varied cultural differences. There is no 'one size fits all' approach."

To that end, the academy's international students are provided various pre-course learning modules to acclimate the student to the rigors of the training environment, aviation English, ATC communication, and study and preparation strategies.

"Students are fully versed in the expectations and requirements to succeed as a professional pilot," Nily emphasized and added, students who fail to meet prescribed English standards during pre-screening are not admitted into the training program. "If it is found that a student is struggling with English skills after enrollment there are several web-based programs and applications that may be recommended to aid the student to improve language skills."

Elsewhere in the learning organization, learning and practicing in an English-speaking environment is most often a key challenge that CAE's cadets coming from China, for example, typically face. Leontidis observed, "In general, they are more proficient with reading and writing as opposed to listening and speaking, which is critical for the comprehension of aviation concepts, as well as interaction inside and outside the classroom." As a result, "We mainly focus on developing listening and speaking in English in our classes by utilizing role-play, presentation assignments and other interactive activities."

FlightSafety's DFW South Learning Center has also found that a small number of its customers are proficient in English during normal day-to-day conversations, but may experience some difficulty during technical subjects such as avionics, hydraulics, engine, systems and so on. As a result, this organization has incorporated some elements into its programs that are designed to help make their training as effective and efficient as possible. "For example, we have added animation and graphical information to our presentations that are 'user friendly' no matter what language the person speaks. We also provide extensive briefings/debriefings as needed in order to make sure that everyone in the class regardless of their native language understands the material fully," said Ozmer.

While the majority of FlightSafety DFW South Learning Center's training is provided in English by English-speaking instructors, it has instructors that are fluent in Spanish and Portuguese who can conduct a course in those languages. "And in some cases, the courseware has also been translated into Spanish," added Ozmer.

Above **FlightSafety Academy's Pete Nily spoke of a second resource within an ATO's instructional toolkit – screening – and noted students must pass English screening and meet prescribed FAA English standards prior to enrolling in the academy.** Image credit: FlightSafety International.

For customers who speak other languages, FSI's DFW center sometimes hires interpreters or recommends the services of an interpreter available to them. And finally, the center offers an online Aviation English Course that it recommends non-English speaking students take prior to training.

For its part, CAE takes advantage of several other tools and techniques to support its' cadets learning English as part of their training program. Leontidis explained, "For example, we use digital recording to help cadets with pronunciation difficulties. This technique proves to be very successful. Other examples include listening to the Live Air Traffic Control feeds, participating to our intensive English course, observing our dispatcher team communicating with our crews, performing virtual instructor-led language training and a continuous immersion in an English-speaking environment."

In addition, CAE's instructional philosophy holds that it is imperative for its cadets to continue their efforts outside of the classroom in order to continue developing their English language skills. To that end, the company encourages the cadets to listen to music and watch aviation-related videos in English. According to Leontidis, there are many English software and web-based English Instruction sites available that his team gives as references to its cadets for additional practice. "Our cadets are using easily available online tools to practice whilst being offsite. Based on our experience, these software and web-based programs help cadets stay focused and help improve their listening comprehension, reading, grammar and vocabulary, with more time in class to work on interactive activities."

Responding to Demand Signals

With the demand for aviation professionals projected to remain strong well beyond this decade, US-based ATOs featured in this article are building their competencies to support non-English speaking individuals in their academic programs. Cadres of capable instructors are supplementing their organizations' other efforts to bolster the language and culture competencies of those students who do not speak English as their primary language. cat

High Performance

In recent years pilot training for airline operations has seen a series of developments and improvements, but these have not necessarily been transferred to training for business jet operations. **Chris Long** looks at the challenges faced.

Above
Are the recent developments and improvements in pilot training for airline operations being transferred to business jet operations?
Image credit: FlightSafety International.

The adoption of Competency Based Training and Assessment (CBTA), and the gradual rollout of Evidence Based Training (EBT) continues, as does the use of scenario-based training. The expansion of the capability of full flight simulators to facilitate Upset Prevention and Recovery Training (UPRT) is yet another area where there have been improvements.

What is worthy of note is that these same changes in training have not so far been systematically transferred to the realm of training for business jet operation. There is concern that the range of quality of the training varies enormously, with the high-end trainers, for example (but not limited to) FlightSafety International and CAE, providing equivalent training to that used by airline operators. Others, the minority of very low cost organisations, apparently and anecdotally offer the absolute minimum or less.

A primary area of concern is that - given the drive by airlines to fill cockpits and the process normally requiring careful selection of candidates - the business arena is frequently faced with having to recruit low-time pilots who may not necessarily be of the highest standard, and who may come with the absolute minimum of qualifications and ability.

Challenges

These new recruits will have to operate aircraft which can have seriously lively performance, operating in increasingly densely-populated airspace. They are likely to have to operate into relatively austere airports, which present their own challenges. In other words the workload can be at least as high as for the bigger aircraft, but sometimes without the sculpted preparation and training adapted to that task.

Mag. Michael Holy, CEO of Aviation Academy Austria, expresses concern that at the low end of the market the training for business jets is carried out with the old-fashioned approach of simply completing predictably sequenced minimum training tasks in the shortest amount of time. It is not unknown for two training sessions to be carried out in succession so as to process the training rapidly - an eight hour continuous training regime is not likely to produce good results.

It is also reported that, whilst there are clear regulatory requirements for the use of properly certified training devices for each stage of training, not infrequently fixed base devices are used where a full Level D FFS should be employed.

Standards

It appears that the pressure of keeping the costs down, coupled with the potential lack of understanding of the implications of carrying out training to the lowest possible standard, can lead to serious concerns about the level of proficiency of those low-time pilots currently operating high-performance business jets in crowded airspace.

Holy is reassuring in the competency of those who follow a thorough pattern. At his own training organisation he delivers instructor-led ground school and CBT, followed by the use of Level D FFSs supplied by the nearby simulator manufacturer, Axis. These FFSs give him both the capability and reliability which means that true competency can be transferred routinely. Those owners and operators of business jets who use such reputable training organisations are well aware of the benefits of professional training. The challenge is to persuade others to buy into competent training before the industry pays a high price. cat

Assess, Analyze, Manage

Mandating SMS worldwide is only the first step in making air transportation safer. **Robert W. Moorman** explores the training component that involves risk.

While the concept of safety management systems (SMS) has been around aviation for years, some integral elements of the approach to managing and assessing risks may not be well known. Risk assessment, analysis and management are three key elements of the four-pillared SMS, which are being implemented by airlines, training houses and independent fixed and rotary aircraft operators.

The Euro Control-funded Skybrary, with input from the Flight Safety Foundation and ICAO, defines risk assessment as an engineering-related evaluation to determine whether "the achieved or perceived risk is acceptable or tolerable." [The definition is based on ICAO Doc. 9859.]

Good risk assessment comes from good data gathering and analysis, and being able to effectively manage the risk via education/training. How to go about evaluating risk as part of an overall SMS program is still evolving.

"What usually is taught is how to look for hazards and do the reactive risk assessments through the use of a probability versus consequence matrix," said Mark Millam, vice president Technical, Flight Safety Foundation (FSF). "If an airline finds that there is a confusing procedure, like an airport taxi instruction that leads to a near runway incursion, a safety report is used and a risk assessment is done to determine whether procedures must change."

Millam said the assessment determines if there is probability that the procedure will confuse other crews. The airline could then change the procedure and monitor the results of the procedure change "until they know the issue is fixed or the probability of it happening has been reduced to an acceptable level."

Being proactive or predictive on risk assessment and management "requires several sets of data and looking for probable outcomes," he added.

Airline employees are often trained on assessing and managing risk through an airlines' overall SMS training program. The same applies to independent aircraft operators of fixed and rotary wing aircraft.

"Proactive and predictive (training) is often learned through greater information sharing between stakeholders," said Millam. The US Aviation Safety Information Analysis and Sharing System (ASIAS) is one example, he added.

One way to determine the effectiveness of an airline's SMS program (and its parts) is through a safety and cost benefit analysis. But determining the cost benefits of an SMS program and its various parts is challenging.

Assessing

Training houses and other aircraft operators employ methods to assess and manage the level of risk associated with a particular flight. Skyborne Airline Academy, a start-up based at Gloucestershire Airport in the UK, requires all student pilots, whether in the aircraft or simulator, to complete a Flight Risk Assessment Tool (FRAT) test to assess the level of risk associated with a particular flight.

Any risk higher than Grade 2 must have a mitigation strategy to lower the

Above **SMS is being implemented by airlines, training houses and independent fixed and rotary aircraft operators.** Image credit: aapsky/ Shutterstock.com.

risk to an acceptable level. Skyborne's 'Significant Six-Key Threats' are reviewed at the end of every pre-flight briefing. Risk factors assessed as 'high', and the related mitigating factors are discussed with the instructor during the pre-flight briefing to ensure that the student pilot is aware of the mitigation factors and how they should be applied. The test is rated by color, with green as low risk; amber, in which mitigating strategies must be included in the flight, and red, which only allows the flight to go ahead if approved by the chief flight instructor.

"We want our students to develop the mindset of avoid, trap and mitigate," said Ian Cooper, chief operating officer, Skyborne Airline Academy. "If you can't avoid, trap it and mitigate the risks."

Example: If a mid-air collision is considered to be a threat because the flight is to take place in congested airspace, then the threat is discussed between student and instructor. The threat can be avoided with a good lookout and/or a traffic awareness system in the cockpit. Vigilant aircrews can trap a threat by spotting an error before it becomes a serious problem, said Cooper. Better situational awareness, briefings before and after flights, and workload management are ways to better manage risk.

FRAT applies both to fixed and rotary-wing operators, and several EMS helicopter flight departments use risk assessment and management as a way to enhance the safety and efficiency of their operations.

All Helicopter Air Ambulance (HAA) operators are required to have their pilots complete and sign a FRAT test prior to accepting an air medical mission. FRAT is part of the FARs and Operations Specifications (AO21) requirements for Air Ambulance operators.

"With the demanding pressures placed on pilots in the aeromedical industry, measures need to be in place for risk assessment/recognition and ultimately risk management/mitigation," said Kerry Berg, Aeromedical Committee Chairman, Helicopter Association International (HAI). If the risk exceeds a pre-determined threshold, the pilot must decline the flight. The FRAT test considers fatigue, stress, duty time, number of flights flown already and the pilot's personal experience and time in the current aircraft. Whether another pilot declined the same flight is also factored into the decision to go or not go.

Course Shopping

Training houses, universities, associations and governments offer courses in risk assessment, analysis and management. The genesis of risk related instruction grew out of the SMS requirements and standards for Part 121 carriers outlined in ICAO Annex 19. A first amendment to Annex 19 requires the states to manage risk from a civil aviation perspective.

Early adopters of SMS include Transport Canada, CASA in Australia and the European Aviation Safety Agency (EASA). Part 121 US-based air carriers were required under 14CFR, Part 5 to have a SMS system in place by March 2017.

While there is no specific need for training, Annex 19 stipulates that all personnel be trained to perform their SMS

duties, according to Nancy Rockbrune, head of Safety Management Systems for the International Air Transport Association (IATA). Rockbrune is IATA's representative on the ICAO Safety Management Panel, which created Annex 19.

"IATA's role is to help our members facilitate a safety management program," which includes risk assessment, analysis and management elements, said Rockbrune.

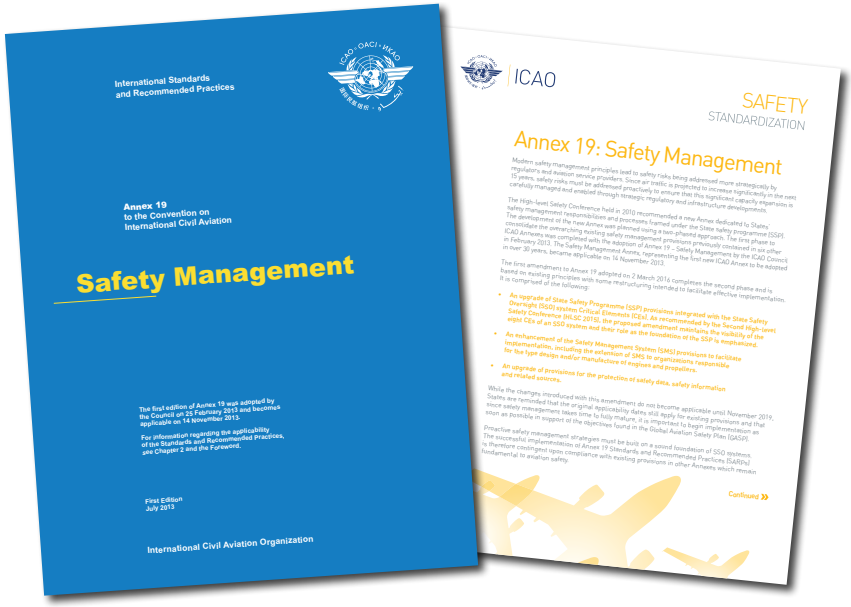
Rockbrune works with regulators to make sure they don't put an undue burden on airlines to implement SMS. "An SMS system needs to be effective and prescriptive," she said.

IATA offers member airlines a three-day risk management course. In the past three years, 479 people from 50 countries have taken the course. "IATA member airlines told us they have challenges with implementing safety risk management training on site," said an IATA spokesperson. "So we created this course to fill the need."

The course is taught by IATA personnel and held at several IATA training centers worldwide. The facilities are located in Miami, Montreal, Geneva, London, Frankfurt, Madrid and Singapore.

Elsewhere, risk-related courses are taught. The UK's Civil Aviation Authority (CAA) offers a two-day course at London Gatwick Airport for approximately £900 ($1,152). The course includes: risk monitoring and safety performance instruction as part of an SMS system; understanding and identifying hazards; risk assessment methods; risk modeling; safety performance techniques; and learning about safety performance indicators.

Embry Riddle Aeronautical University (ERAU) taught SMS related courses long before SMS was mandated for most US commercial airlines. The Daytona Beach, Florida campus offers a Bachelors degree in Aerospace and Occupational Safety. In this program, there are several courses, which cover risk assessment and risk management. Introductory risk-related courses are taught at the freshman level (200-level). As students advance to the 300 and 400-level courses, the school offers a safety management course, which is basically an in-depth SMS course.



Above
ICAO provides various guidance materials to support the implementation of safety management systems.
Image credit: ICAO.

Regulatory Mandate

The regulatory mandate for Part 121 carriers to have SMS certainly played a role in the growing need and popularity of risk related coursework. "But also the general shift in safety from a reactive science to proactive applications as well as the predictive side played a role," said Anthony Brickhouse, associate professor, Applied Aviation Sciences, director, Aerospace Forensic Lab, Embry Riddle Aeronautical University.

Embry Riddle Worldwide offers various risk analysis courses online, which vary in cost from $1,596 to $1,796. The courses range from Safety Management Systems or SMS Basics for Public Service Aviation; Aviation Law and Risk Management; Risk Management and Hazard Identification; and Airport & Aviation Risk Management and Hazard Identification. The courses vary from four to six weeks long.

Some major airlines provide training for certain elements of SMS. Aviation Quality Services (AQS), a unit of Lufthansa Aviation Training, which operates independently, offers risk management training at different levels and tailored to the individuals' involvement in the Safety Management System (e.g. SMS for Safety and Quality Professionals, Risk Assessment Training and Advanced Safety Management System training).

Part 121 carriers in-house training departments typically provide risk related courses or farm out the task to larger training organizations. And there are other companies that provide SMS related training for smaller airlines, charter operators and repair stations.

"What we're starting to see now are a lot of charter carriers operating under Part 135, said Mike Rioux, chief operating officer of JDA Aviation Technology Solutions, an aviation consulting firm that focuses on five lines of business, including training. "In the last six months, we've gotten a lot of queries about SMS and the various parts of it," he added.

Some queries come from repair stations, which want to make sure that they are compliant with SMS regulations, policies and advisory circulars. Rioux said JDA trains an entire company in the SMS basics initially. A select group of those employees are tapped later for JDA's more advanced train-the-trainer program, which dives into the specific risk related elements.

JDA is authorized by the FAA to teach and implement various aspects of SMS. The company is licensed by Bedford, Mass.-based Mitre Corporation, a non-profit, which manages federally funded research and development centers of various government agencies.

SMS is not new. However, certain ele-

ments, such as risk assessment analysis and management might require specific training. "Risk assessment is going to become more important," said Rioux. "This training is not just for air carriers. It has applicability for the helicopter industry as well."

Software

Some software companies feed from the SMS trough. Anchorage, Alaska-based NorthWest Data Solutions provides risk analysis and management software programs. The company's SMS Pro software helps companies obtain a mission risk assessment, evaluate the hazards and determine if the flight risk is acceptable. Clients include universities, flight schools, airlines and FBOs, as well as maintenance, repair and overhaul (MRO) facilities.

"The most important part of aviation risk management is that all [aviation] employees understand the difference between a hazard and a risk and then act upon the risk," said Christopher Howell, CEO of NorthWest Data Solutions. Hazards may have an acceptable risk but they still need to be assessed and acted upon, he said.

Risk management training should be commensurate with the level of responsibility for the SMS. "Try to understand what type of risk management training is required for different users," continued Howell.

He cautioned trainers to avoid the "paralysis by analysis" scenario. Don't document every risk. Come up with credible risk scenarios, he advised. He provided this link to two videos on teaching various aspects of SMS - https://aviation-smsinfo.asms-pro.com/watch-automated-computer-based-aviation-sms-training-course-videos

NorthWest Data Solutions was the first company to come up with the electronic flight risk assessment tool, FRAP, according to Howell.

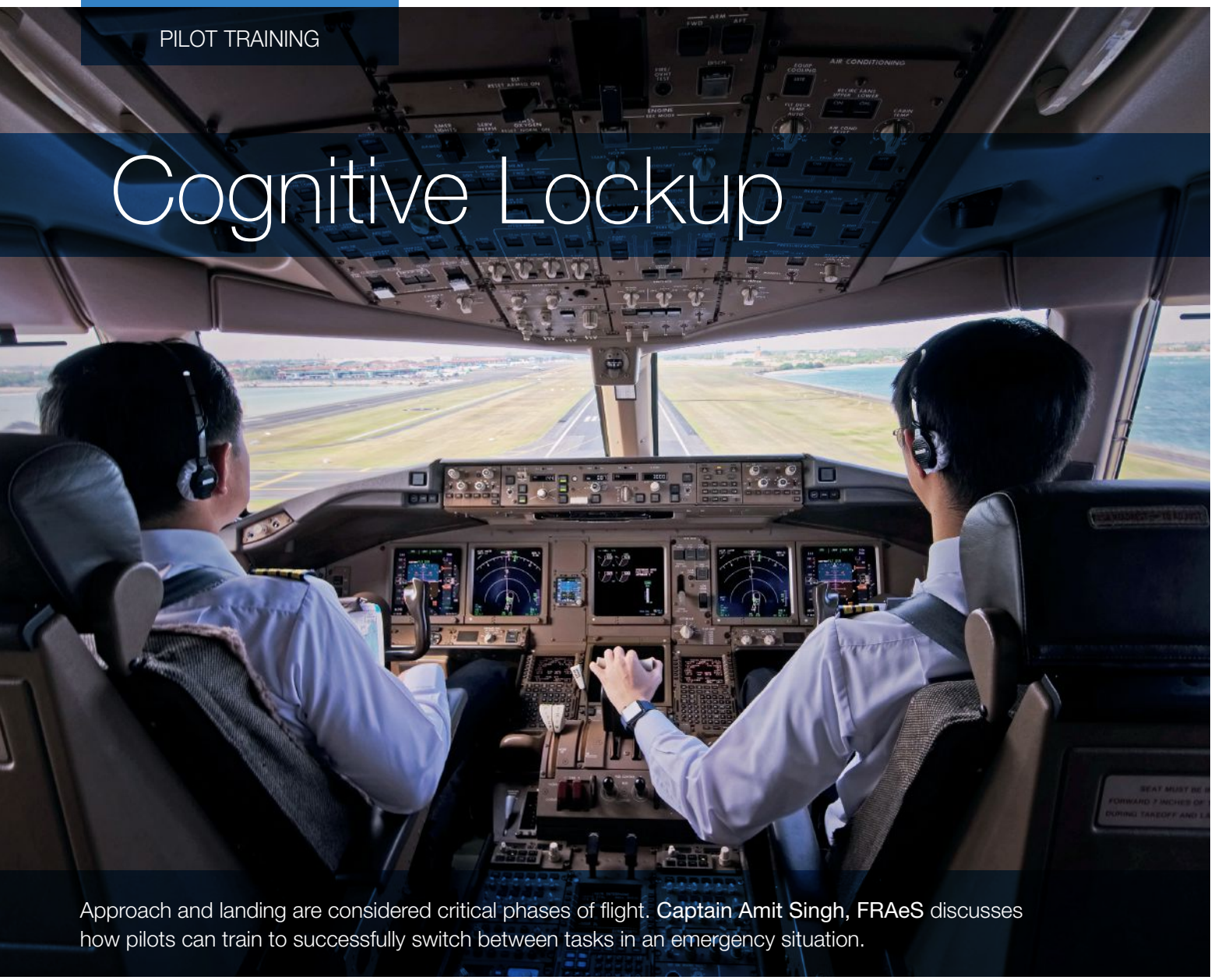
Risk-related courses extend beyond the cockpit, flight operations and airlines. *CAT* found that various safety and risk-averse companies offer corporate and safety risk management courses as well as instruction on fatigue, security and crisis management. The aforementioned helicopter EMS operators also offer risk-related courses as a way to improve their overall safety record.

Even schools, which offer risk-related courses under the SMS banner, practice what they preach. UND Aerospace, part of the University of North Dakota, underwent a risk assessment and management process as part of its plan to transition to Piper Archer single-engine trainers from Cessna 172s. Part of that process included sitting down with personnel involved in maintaining, flying and managing the trainer fleet.

Under the SMS umbrella, student pilots, flight instructors, safety officers, academics and others are asked to review their basic responsibilities and principals of the flight department's SMS and its risk-related elements.

"The ultimate goal of proactive assessment is that you're never outside of unacceptable risk," said Brian Willis, director of Aviation Safety. "This is a protection for the university, student pilots and others involved in flight operations." cat

Cognitive Lockup



Approach and landing are considered critical phases of flight. Captain Amit Singh, FRAeS discusses how pilots can train to successfully switch between tasks in an emergency situation.

The statistical summary of commercial jet airplane accidents around the world between 1959-2016 (Boeing, 2017), reveals that 48% of fatal accidents and onboard fatalities by the phase of flight occur during the final approach and landing. As per International Air Transport Association (IATA) publication on unstable approaches (Unstable approaches 2nd edition, 2016), data from 2011-2015 shows that approximately 65% of all recorded accidents occurred in approach and landing phase of the flight, and unstabilised approaches were identified as a factor in 14% of these approach and landing accidents. Further, 31% of runway/taxiway excursions was a result of an unstabilised approach.

The highest number of accidents as per categories is runway safety, which includes runway excursions and incursions, undershoot/overshoot, tail strike and hard landing events.

Approximately 65% of all accidents take place in the approach and landing phase. 83% of the accidents could have been avoided in the approach and landing phase, which amounts to 54% of all accidents, if a go-around was carried out. This is stated in the Flight Safety Foundation 'Go-Around Decision-Making and Execution Project' (p.3) released in 2017.

The question arises, despite intense and detailed training, why do pilots continue with an unstable approach and/or a long landing? Standard operating procedures have clearly defined flight parameters for compliance and the pilots are trained in the classrooms for theory relating to technical knowledge, crew resource management (CRM) for non-technical skills, flight simulators for procedures and skills. Threat and error management is the focus of all training, and awareness of risks and measures to mitigate the risks is the key learning. The pilots who fly commercial airliners need to qualify for their initial and yearly recurrent training, and demonstrate their competence in terms of knowledge, skill and behavior indicators. Despite these barriers, pilots continue to get trapped into continuing with an unstable approach and/or a long landing.

Above
Approximately 65% of all accidents take place in the approach and landing phase.
Image credit: Kiwis/Shutterstock.com.

The pilots are performing the task of approach and landing. The mitigating task is that of carrying out a go-around procedure which can be performed at any stage of the approach or landing, even after touch down of the aircraft wheels, till the time reverse thrust is not applied on the engines.

CRM

Commercial airline pilots undergo intense training as a part of their qualification process to fly an aircraft. CRM is a training intervention to develop threat and error management skills. The training is both in-depth initial training and an annual recurrent training for the flight crew. Training topics include human factors, human performance, threat error and management.

Cognitive Lockup

Moray and Rotenberg (1989) have defined the term 'cognitive lockup' as the tendency of operators to deal with disturbances sequentially. Cognitive lockup however does not occur when people can perform all their tasks consecutively.

Cognitive lockup can also be defined as holding on to a task or sticking to a problem. In terms of the task-switching paradigm, cognitive lockup can be considered as reluctance to switch to an alternative task or problem (Meij, 2004).

The accident of Eastern Air Lines flight 401 in 1972 is a good example of cognitive lockup. As per the NTSB report (NTSB,1973), the probable cause of the accident was, "Failure of the flight crew to monitor the flight instruments during the final four minutes of the flight, and to detect an unexpected descent soon enough to prevent impact with the ground. Preoccupation with a malfunction of the nose landing gear position indicating system distracted the crew's attention from the instruments and allowed the descent to go unnoticed".

The pilots got a landing gear warning signal during the approach to land. The crew canceled the landing and began investigating the warning. In the process, they missed critical warnings about low altitude and the plane eventually crashed.

Experiments on Cognitive Lockup

Research on fault management in process control (Moray, N. & Rotenberg, I. 1989), reveals the onset of "Cognitive lockup" when faults in the system are simulated. When multiple faults are triggered, the sequence of preferred fault management by operators of thermal hydraulic systems is sequential. The result of the research was that operators liked to focus and complete one fault or if it can be replaced by stating one task at a time. There is a strong cognitive lockup, which restricts the operator's information capability. The subsequent fault is noticed but no action is taken, till the handling of the first one is completed.

Study 1

The project, HUMAN Model-based Analysis of Human Errors During Aircraft Cockpit System Design was initiated in 2008, to develop a methodology based on a cognitive model of the crew behavior, to support the prediction of human errors in ways that are usable and practical for human-centered design of systems operating in complex cockpit environments (Cacciabue, Hj lmdahl, Luedtke & Riccioli, 2011).

The study identified cognitive lockup as a serious error-causing mechanism for airline pilots. Scenarios from a human factor perspective with operational relevance were developed, wherein the combination of contextual factors would induce cognitive lockup.

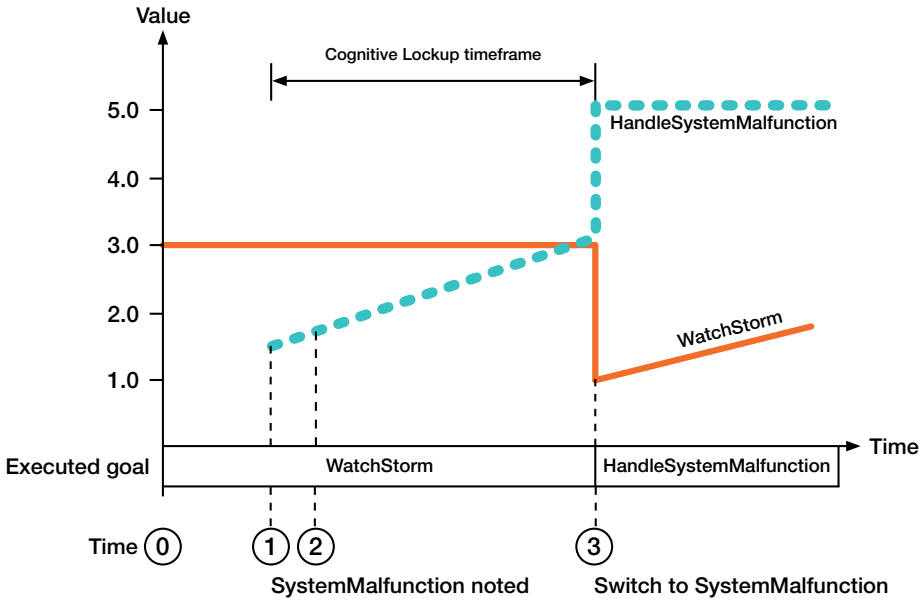
The simulated cognitive model was based on Rasmussen's three behavior levels (Rasmussen J, 1983) in which cognitive processing takes place as skill-, knowledge- and behavior-based. The decision-making module, also called goal management, determines which goal is executed. In the decision-making process, cognitive lockup was found as a relevant error producing mechanism (EPM). EPM has been modeled in the decision-making process, as task switch cost (TSC) representing the difference the goal priorities must have prior to switching goals.

In the scenario, the aircraft is in cruise phase and a thunderstorm is presented very close to the destination. This attracts the attention of the pilot, as it is not clear if there is a need to divert to the alternate or not. The pilot keeps monitoring the movement and intensity of the thunderstorm. During this monitoring phase, a failure is introduced in one of the aircraft engines. The pilot recognizes the failure but does not react and continues to monitor the thunderstorm. After a while, the urgency to handle the engine malfunction is realized and the pilot begins to solve the engine malfunction task.

The cognitive lockup prevents the pilot from immediately switching tasks, from that of monitoring the thunderstorm to handling the engine malfunction. Figure 1 (Cacciabue, Hj lmdahl, Luedtke & Riccioli, 2011), shows the priorities of each goal over time during thunderstorm avoidance.

Study 2

Another study was presented at the proceedings of the 4th workshop human centered processes (2011) with the topic of "the effect of time pressure and task completion on the occurrence of cognitive lockup". "Mental set and shift" by Arthur T. Jersild (1927), analyses the relationship between mental set and shift. The more homogenous and uniform the mental task, the less will be the demand for adjustment. Human beings cannot perform two tasks simultaneously and must prioritize and shift between tasks. This results in an added expenditure of time and energy. The mental set comes into being through practice and a more comprehensive mental set can be formed through more or less practice. If two tasks are well practiced, the losses are less.



Above
Figure 1: Goal priorities during thunderstorm avoidance.
Image credit: Cacciabue, Hj Imdahl, Luedtke & Riccioli, 2011.

Influencing Factors

Sunk cost fallacy: Individuals commit the sunken cost fallacy when they continue a behavior or endeavor as a result of previously invested resources (time, money or effort) (Arkes & Blumer, 1985). This fallacy, which is related to status quo bias, can also be viewed as bias resulting from an ongoing commitment.

Task completion: The project completion hypothesis - has shown that individuals become more willing to allocate resources to the invested option as goal attainment nears and goal completion becomes more important than economic concerns (Boehne & Paese, 2000). Garland and Conlon (1998) stated: "as progress moves forward on a project, completion of the project itself takes increasing precedence over other goals that may have been salient at the time the decision was made to begin the project". When task completion is high, the probability of cognitive lockup increases.

That means, in case people deal with a task, and another more urgent task is triggered, people tend to stick to the current task when they have almost completed this task. People have the tendency to stick to their current task when 90% or more of the total stages of a task have been completed (Boehne and Paese, 2000; Garland and Conlon, 1998).

Time and task pressure: There are typically two types of pressure on pilots - time pressure and task pressure. Since the aircraft is constantly moving, there is a finite amount of fuel, which relates to time. Nearing the destination the fuel remaining is sufficient to approach and land and there is additional fuel to divert, if required, and hold for 30 minutes prior to landing at the alternate. The fuel remaining at approach is approximately 25% of the total fuel uplifted and the fuel required for approach approximately 85% of the total fuel required for approach and landing. From the perspective of time, approximately 95% of the flight is completed and the two events amount to 70-80% of the remaining time.

Time pressure is dependent on the number of tasks to perform at a given time. Time pressure is high when there is a perception that time is scarce. According to a study on man-machine system design (Beevis, 1992), people experience time pressure when the time required to execute the task is more than 70% of the total time available to complete the task.

A study was conducted in order to investigate the influence of time pressure and task completion on cognitive lockup. The aim was to identify critical situations in cockpit environments that would allow for designing cockpit systems which would help pilots avoid critical situations and decrease the probability of cognitive lockup.

The research was carried out at TNO human factors research institute, Utrecht (Schreuder & Mioch, 2011). The task required two types of fire to be extinguished in a computer simulation. One was a normal fire and the second was an urgent fire. Fires were of different types and they needed to be treated differently. The time to react and the time to extinguish the fires were also variable. The results of the experiment indicated that although time pressure can influence decision-making, people are able to assess the priority of different tasks while dealing with it and switch to the more important task if necessary when facing time pressure.

However, the experiment supported the hypothesis that task completion would have an effect on cognitive lockup. The results showed that people who have almost completed the task tend

to finish the task even when a more urgent task is triggered. In other words, if task completion is high, the probability of cognitive lockup is also high. It was also observed that the effect of cognitive lockup was reduced in the second attempt as compared to the first one.

Risk Perception

Framing effect (Tversky & Kahneman, 1981) is a decision problem based on the decision maker's perception of the problem, formulation of the problem and partly by norms, habits and personal characteristics. A problem can be framed and presented with a positive and a negative connotation, despite having the same end result. There is a tendency for the decision maker to shift from risk aversion to risk taker.

The pilots are trained and policies are defined to indicate that the primary task is to fly from departure to destination and divert to an alternate aerodrome if landing at the destination is not possible. The pilots flying the approach are under self-imposed task pressure to land at the destination and the diversion to alternate is taken in a negative connotation. However, if the policy is redefined so that the primary task of the pilot is to fly from departure to an alternative aerodrome if landing at the destination is not possible, then the pilot's task completion pressure is substantially reduced.

Pilots approaching the destination have invested a lot of time in their task and it is nearing completion. The task pressure of completing the flight and the framing of the policy with the primary task of landing at the destination increases the possibility and effect of cognitive lockup. As a result, the pilot will continue with the first task, that of landing at the destination, despite being unstable on approach or when performing a long landing. Carrying out a go-around can be inferred as task switching. This task will be carried out provided there is enough time to realize the consequences of persisting with the primary task. Since there is not enough time and the task completion is within sight, the pilots will continue and land.

Training has the effect of reducing cognitive lockup by practicing task switching from that of approach/flare followed by switching to the task of a go-around and reattempting a second time.

The policy, if framed to depict a go-around and a diversion in a positive light will reduce the pressure of task completion from the pilots and they would be more prone to switching the task to go-around with ease.

Cognitive lockout is the primary reason for the reluctance to go-around. If task switching practice is increased, as compared to other tasks, in training, there will be a significant drop in the number of unstable approaches and long landings. cat

Performance Based Oversight

The regulatory oversight of aeronautical service providers has traditionally been prescriptive. **Mario Pierobon** investigates the performance-based training and regulatory oversight initiative, particularly the work underway by European regulatory authorities.

Approved training organisations (ATO) and organisations managing flight simulator training devices (FSTD) have traditionally been overseen by their competent authorities in relation to a given set of universally applicable regulatory requirements. Non-compliances have traditionally been identified in relation to this given set of requirements.

Out of the recognition that the modern aviation industry is complex and that the 'one size fits all approach' can prevent the comprehensiveness of safety assessments, the European Union Aviation Safety Agency (EASA) has been promoting performance based oversight in order for authorities to exercise their oversight functions not just against a fixed set of requirements but also by considering the inherent risks of the organisations under oversight, including organisations operating in the domain of crew training.

"Performance based oversight is a methodology to conduct the oversight functions of an aviation authority based on the definition and assessment of the safety performance of its undertakings. This allows to better target the areas of greater concern or needs," said EASA. "By taking into consideration safety and performance data, performance-based oversight encourages each organisation to improve their overall performance. This is fostering a better organisation efficiency and a more calibrated oversight. Those beneficial effects are very much appreciated, especially by the aviation industry."

Beyond Compliance

Very much like safety management systems (SMS) have not replaced the role of compliance management within aviation organisations, performance-based oversight is also not meant to substitute the established compliance evaluation activities of the aviation authorities.

"Performance based oversight does not as such replace the traditional compliance assessment system but represents the development of an integrated tool, adding versatility to the latter. While compliance remains as a foundation to ensure that regulatory requirements are attended to, performance-based oversight implementation supports the authorities in defining their oversight plan to tailor the individual level of attention with a view to optimise its efficiency. In the aircrew domain performance-based oversight is applied for defining and performing the oversight of ATOs and FSTD operators," said EASA.

Above
EASA is supporting standardisation across the national aviation authorities leading to a more harmonised implementation of performance-based oversight across Europe.
Image credit: Brussels Airlines.

One way to conduct performance-based oversight is by looking at the training organisation as a whole, at what the organisation defines as the goals that it sets for itself, and then look at how these goals are achieved. Then it is possible to do the measuring directly by talking to the people within the structure to see how they play their role within the structure.

Regulatory Environment

Current EASA regulations have a mixture of prescriptive and performance-based elements. "The current regulatory framework foresees that the determination of oversight planning cycles depends on the nature of organisations, the complexity of activities, the results of past certification and/or oversight activities and shall be based on the assessment and management of associated risks," said EASA. "On the organisations' side the management system must be able to define and monitor the safety performance in order to provide the necessary information to the national aviation authorities (NAA). The analysis of these elements, including the assessment of specific safety performance data, will then determine the frequency and scope of the oversight plan for each organisation, avoiding applying a 'one size fits all' solution. As a result, the resources for oversight will be deployed on a better need basis, achieving more effectiveness but also an increased efficiency."

A novelty is represented by Part-DTO (declared training organisations) which has been recently added to the European regulatory requirements. "This type of training organisation can deliver training for general aviation licenses and associated ratings, such as the light aircraft pilot license (LAPL) and private pilot licenses (PPL). To start operations, the organisations simply declare their existence, place and scope of activities to the NAA. No upfront certification occurs, however DTOs are required to present annual reports on activity and safety performance. This data integrated with other information, such as occurrence reporting, will support the NAA in determining a performance-based oversight planning to allow focusing on the most critical cases," commented EASA.

Expertise Development

A limitation exists with regard to performance-based oversight reaching its full potential in that it requires a level of expertise, while instead in many parts of Europe the approach tends to be eminently bureaucratic because of the limited resources available. When operators, ATOs and other aviation organisations are required to do something, they will develop the capability and demonstrate to the authority they are performing in accordance with a given requirement, but conversely the authorities may have no capability to understand or even to interrogate those claims because they simply do not have the expertise.

There are multiple elements that we should assess in a performance based way and surely training programmes and assessments given by authorities or the efficacy of training programmes are easier to evaluate because it is possible to set up a series of learning objectives within the ATO for whichever course you are delivering and it is easier to find expertise to measure those efforts by looking at student performance and data collected based on student performance. Indeed, there are some parts of Europe where there is a significant lack of expertise, whereas there are some major authorities which have expertise as it is much easier for them develop.

One way to develop expertise is buy it in, i.e. sourcing people with experience in the given roles and then develop that experience into expertise for performance-based oversight. If the expertise is not bought in it is quite difficult to implement performance-based oversight especially when there is a need for qualitative judgements as to how effective certain measures are. It may be possible to conduct the oversight activities at a bureaucratic level to a degree, but when it comes down to the real delivery of performance-based oversight - which should include a programme of audits and inspections – this by definition must be done by people with expertise. The problem is that the certain authorities, which are government institutions that are publicly funded, may find it difficult to sustain the financial commitment of sourcing the needed expertise. In general terms, most of the authorities, apart from the major ones, are purely prescriptive, they are audit based and this is essentially driven by financial necessities.

According to EASA every NAA is in the position to apply performance-based oversight, however the level of implementation may vary from a basic performance-based oversight to advanced systems. "Mainly the differences are depending on key factors such as availability of data, IT tools, qualification of inspectors and general level of maturity of the organisations. There is an on-going standardisation effort to share and align practices in Europe in order to achieve a more harmonised level of implementation," said EASA.

Standardisation

Indeed, EASA is supporting standardisation across the national aviation authorities and this in the long run will be beneficial to a more harmonised implementation of performance-based oversight across Europe. EASA knows that where expertise lies is within the national authorities. So, if the European model had to be taken to its fullest extent then there should be a team of experts working directly or indirectly for EASA made available to state authorities, as the US Federal Aviation Administration (FAA) does that in certain specific areas. This would be something really positive because if a particular state had a particular need with regard to performance-based oversight it could seek help from such a team of experts under the leadership of EASA. Of course, the funding of this mechanism would need to be determined.

Within an organisation's management system there should be hazard identification and risk assessment. The way the authority provides oversight of this activity is important and cannot be done bureaucratically. While performance-based oversight has considerable potential, much of its development depends on the people that are recruited into the authorities to accomplish the performance-based tasks. It is a specialised role, so the ideal is to have a pool of experts able to make assessments and judgements based on experience on what organisations have set out to do and really measure that effectively. cat

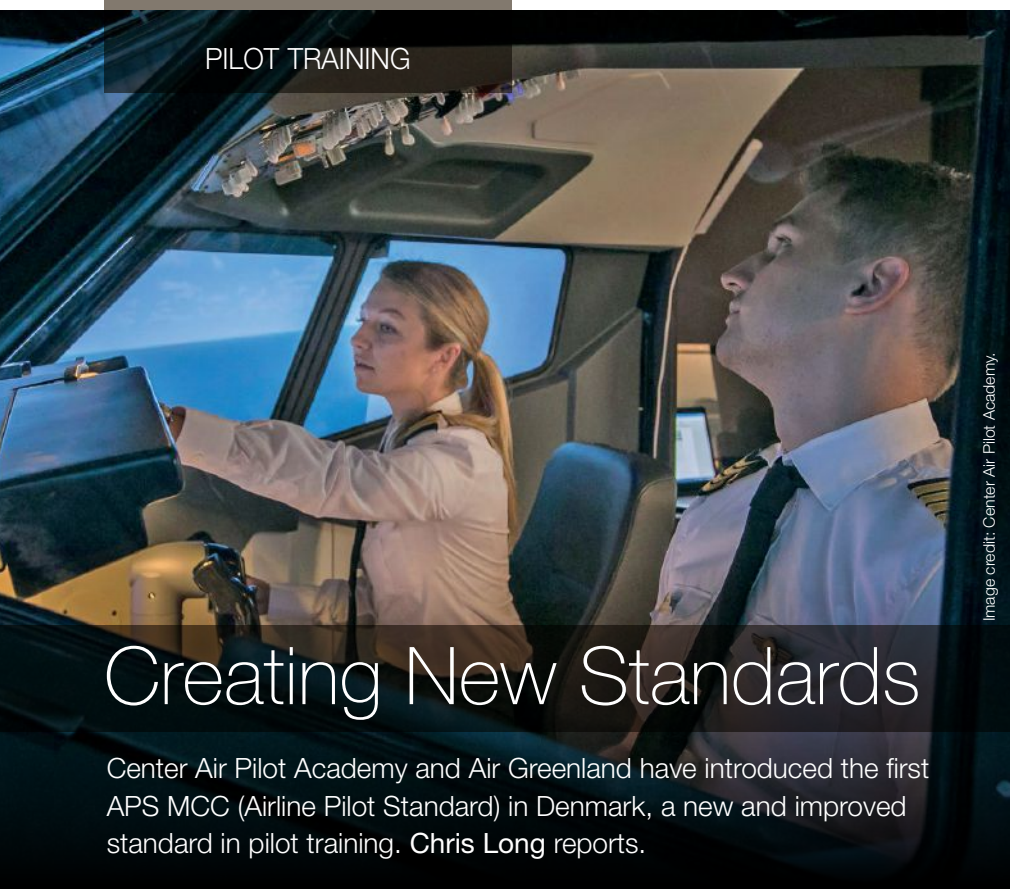


Image credit: Center Air Pilot Academy.

Creating New Standards

Center Air Pilot Academy and Air Greenland have introduced the first APS MCC (Airline Pilot Standard) in Denmark, a new and improved standard in pilot training. **Chris Long** reports.

The APS MCC has been introduced by EASA to deliver enhanced MCC training to Airline Pilot Standards, a new framework which is intended to *"equip a pilot with the knowledge, skills, and attitudes required to commence initial type rating training to the standards generally required by a commercial air transport operator"*.

Center Air Pilot Academy (CAPA) has been working with Air Greenland and the Greenland NAA for several years, and was, right from the very beginning, focused on training the pilots for the specific needs that Air Greenland faces, so an enhanced MCC was not a new idea to either of the parties.

Captain Peter Lethin Larsen, director of Training, head of Training & NP Crew Training explains: "Air Greenland is responsible for initial pilot education for two to three pilots each year. We have accepted this on behalf of the Greenlandic government "Selvstyret", to assure that the money spent on this project is used in the best possible way."

He goes on to say that "Air Greenland decided to evaluate on the benefits – and lessons learned – from the MPL education when compared with conventional pilot education and agreed on a plan that - among other improvements - had an extended MCC course. This was based on the fact that most of the cadets went directly onto a multi-pilot job in Greenland. In fact, all our students for the last four years came out from CAPA with what is now known as APS MCC. A bit premature, but we recognized the need of a brand new low experienced pilot to fit into our existing specialized crews, by making him understand the needs of being part of a multi-crew, to increase safety and maintain our high standards."

As Anna Kjær Thorsøe, general manager and chief Theoretical Knowledge Instructor (CTKI) at CAPA, remarks, "with the APS MCC course it was possible to raise the bar of training even further, and with input and active involvement from instructors from Air Greenland, it is like putting the cadets through a mini type rating before the initial type rating, and prepares the cadets better for what to expect after they have completed their time at the flight academy. The program can also be compared to an MPL program, which was also something that was debated as a training scheme, but, as Air Greenland only needed a small number of new pilots every year, in this specific case the APS MCC showed the potential to be a better and more flexible solution than an actual MPL program.

The APS MCC comprises:

- 20 days total duration including rest and study days.
- Four days of Theoretical Knowledge Instruction.
- Ten days (40 hours) of simulator training in a brand new B737-800 simulator.
- Unlimited access to a full-size cockpit mock-up, FMC trainer and study facilities.
- A personal Standard Operating Procedures book.
- Further simulator training for refresher or assessment preparation.
- Access to the CAPA network.

In addition to multi-crew cooperation training, the APS MCC syllabus also incorporates advanced airline operations scenario training followed by a final assessment. The new regulations include regular progress checks throughout training, and only those students who achieve the required performance level in their final assessment can be issued with an APS MCC certificate. The APS MCC is a challenging training course which requires a high level of commitment and self-discipline, so it is only suitable for motivated and hard-working students, which has proven not to be an issue in this case, as all of the cadets we are training from Air Greenland have been through a thorough selection process before entering the flight academy."

The final call is from Larsen, whose judgement of the selection of this course is revealing, "It turned out to be a wise decision. Compared to other cadets, we experienced that these guys were much better prepared for the job as being a part of a multi-crew, understanding their responsibilities and the simple basics of being part of a crew.

All of our CAPA students passed base release and final line release on minimum time, making the entry into the complex world of being a pilot in Greenland smooth and safe.

I strongly recommend and welcome APS MCC and believe that this will be a new basic requirement for airlines, when employing pilots directly from basic flying school in the future."

This is a training process to watch. cat

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Loong Air commences first contract with L3

Chinese carrier Loong Air has selected L3 to provide three A320 RealitySeven Full Flight Simulators and two A320 Flat Panel Trainers. The devices will help establish the creation of the airline's first training center.

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Commercial Aviation

You CAN Do It

The opportunities beyond the licence are out there. **Captain Mark Dwyer** of Ryanair recounts his continuing progression in a very fulfilling career. Getting the licence is just the beginning of the story.

On 4th January 2010 I walked into East Midlands Training to start my Ryanair Type Rating training. At 23 years old, I certainly wasn't the youngest on my course but in my mind I had made it. Seven years of modular training, part time jobs and lots of hard work along the way, but I had finally got it, my first airline job.

When I finished my flight training in 2009, the pilot job market was in a bad place. The financial crisis was biting hard, oil prices were high and airlines were going bust (XL, Flyglobespan and a handful of small charter airlines). Ryanair were the only major airline hiring and I was very lucky to secure an interview with them. Many of my childhood memories were of watching and listening to the noise of the old Ryanair Romanian-built BAC 1-11's with my Dad at Dublin Airport.

As I sit here writing in October 2018, I'm based again at East Midlands, back where I first started. I've been here six years now and at the age of 32 I'm now a Type Rating Examiner and Training Captain on the Boeing 737. What an incredible journey - and I hope my story will illustrate the opportunities that are available in the aviation industry.

Following my induction week at East Midlands, I completed the rest of my Type Rating at CAE in Amsterdam, followed by line training at Rome Ciampino Airport. This was challenging. There's a big leap from simulator flying to line flying, especially when operating to some of the interesting destinations that were served. In hindsight, this was a great learning experience which gave me the confidence to operate the aircraft in the most demanding environments.

SFI

In April 2012 an advert appeared on our internal crew site advertising for Synthetic Flight Instructors (SFI's). A few weeks later I was on a core course and qualified as an SFI in August 2012.

Being an SFI was my first exposure to professional instructing and I loved it. So much so that I completed my single engine FI Rating on my off days to instruct at a local flying club. As the main hub of training in Ryanair, East Midlands exposed me to such a wide range of training from fixed base type rating courses, to command upgrade training, operator conversion courses and everything in between. Every day was a new challenge; there were good days and not so good days, easy debriefings and some less so! As every instructor will tell you, the best way to learn is to teach.

After two years I became a project SFI. This still included instructing and line flying but the main emphasis of my role became project based. For example, developing material and presentations for our recurrent training programme, new courses and keeping existing course material up to date. One of the biggest projects I was very proud to be involved in was the development of the Ryanair Upset Prevention and Recovery Training (UPRT) eLearning course. This was a fascinating course to write. Once it was launched I was asked to join the EASA Rule Making Team for Loss of Control Prevention and Recovery Training. I was the first F/O in Ryanair to be asked to perform such a role, so I must thank our HoT Andy O'Shea and Deputy HoT Derek Hill for having the belief in me.

When my instructor appointment came to an end I did my command upgrade and remained at East Midlands. I never really left training, and usually completed at least one day per week of sim instruction. I quickly qualified as a TRE and Training Captain both at the age of 31 and within eight years of joining as a cadet, not bad really! I still complete ad hoc projects for the training department which include being on the EIS Team for the Boeing 737MAX, eLearning for our new electronic loadsheet project, simulator standards pilot and a standards instructor for the new Ryanair Mentored Pilot Scheme.

The opportunities are out there... go get them! cat

#EATS2018 #RecordAttendance #EASA-Industry-Vision

The annual EATS gathering could easily be renamed the European Airline Training Action Symposium. **Rick Adams** reports on what the industry's thought leaders focused on in Madrid.

Every industry conference includes a standard mix of elements: speakers representing organisations and companies, exhibitors demonstrating their latest gizmos and services, networking events to reacquaint with longtime friends and engage with a few new ones.

The true value in a conference comes from the caliber of the presenters and the effort they put into their presentations. And especially the interaction among the delegates who have gathered for common purposes.

The annual European Airline Training Symposium (EATS) 2018 in Madrid, Spain, the 17th edition of this event, brought together many of the best and brightest in the global training scene: familiar names in the training community such as Adrian, Advani, Dousi, Drappier, O'Shea, Ranganathan, Rebender, Renier, Schroeder, Varney, Wischer; newer voices such as Marcus Oswaldson, Dr. Rod Wren, and human capital specialist Dr. William Cox; a large contingent from the European Aviation Safety Agency (EASA); heads of training from trend-driving airlines; and a record-shattering 867 attendees, a 35% increase on the previous record of last year, from 92 airlines and more than 50 countries.

This is not a passive group. They were in Madrid to listen, to understand... and to act.

It was at EATS five years ago in Berlin, for example, that the Aviation Training Policy Group (ATPG) was formed, an initiative from EASA to encourage industry support for a vision to implement the rolling revolution in pilot training which has been talked about for more than a decade.

"We are moving rapidly into a period of intense change," Capt. Andy O'Shea told the EATS audience. O'Shea is Head of Training for Ryanair and Chairman of the ATPG. Citing the ongoing pilot shortage worldwide and the 50% wash-out rate of young people who enter pilot training programmes, O'Shea advocated for "scientifically based assessment to make sure we're getting the right people into the industry in the beginning. Let's not waste their money and industry resources training somebody who will never get to be a pilot." He suggested that "mid- to high-90s percentile passing an assessment should be the norm."

O'Shea also urged the industry to "find a solution to the risk/funding" dilemma that saddles cadets with €100-150,000 in debt for their training.

Noting that the education of doctors and nurses is funded with state support in Ireland, he asked, "Why is professional pilot education treated so differently?" Another speaker, Andy Taylor of the University of Bedfordshire, said the UK's air traffic control service, NATS, not only pays for controller training, it also provides a trainee salary.

Above
A record-shattering 867 industry professionals attended this year's show.
All images: David Malley/ Halldale Group.

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Keynote

EASA Aircrew and Medical department leader Georges Rebender, in his keynote address, outlined "a training paradigm shift" which the agency initiated at its safety conference in Luxembourg in 2015. "The first results are visible," he said. The forward approach includes bridging theoretical learning and practice through competency-based training and assessment (CBTA), evidence-based training (EBT), upset prevention and recovery training (UPRT), and "enhanced ATOs" (Approved Training Organisations).

Rebender also sounded a challenge later echoed by other speakers: "Moving toward an intelligent learning system would need to better consider the progress of neuro-cognitive sciences. We do it by research programmes to better understand resilience, but this is only one element in a much broader picture of understanding the human brain processes."

Rebender also announced that "EASA has just launched an external evaluation of the training rules … to provide an independent, transparent, evidence-based evaluation of the performance of the rules regulating the whole pilot training spectrum." Conclusions and recommendations for regulatory and non-regulatory improvements – and proposals on how a "performance-based regulation" could be applied – will be sent to the EU National Aviation Authorities Technical Body (TeB) and industry flight standards FS.TEC group, leading to a joint workshop to agree on a course of action.

Capt. Phillip Adrian, former training regulatory leader for Boeing, now CEO for Dutch simulation device manufacturer MPS, commended EASA "for being willing to work with industry, and Halldale and *CAT* magazine for making this possible."

"We need regulatory changes to allow innovation," Adrian said. "We have brilliant airplanes, but we are still training like they are DC4s. We have to stop basing training on past statistics. The demographics have changed." He said technology is a contributor to training efficiency, "but it's not a solution by itself. We can't always be waiting for the next shiny mirror."

Adrian said the underlying philosophy needs to change "from training to learning" in a blended learning environment. "Task to tool identification rather than tool to task." However, he cautioned, "we can in no way compromise on the level to be reached. The regulatory agencies will not (and should not) relent to commercial pressures and allow a degradation of safety. If anything, the level has to go up."

Above
Captain Phillip Adrian, CEO, MPS.

Left
Georges Rebender, Head of Department Aircrew & Medical, EASA.

Below
Captain Andy O'Shea, Head of Training, Ryanair & ATPG Chairman.

Chris Ranganathan, vice president Operations Training for Etihad Airways, offered some experienced insight on CBTA/EBT, which Etihad has been conducting since 2015. "Scoring of competencies was a major change for instructors, and over 18 months the increase in 'bad scores' was primarily due to the learning curve of instructors. But once instructors were calibrated and gained confidence in the process, the measures became more reliable." He advised training organisations to "use data to identify flight regimes of greatest risk, and therefore to change behaviour to address that."

EASA

Gerda Pardatscher, EASA senior flight crew licencing (FCL) expert, said, "The choice of training device has to be objective, transparent and reproducible. It is not necessarily the case today." She described forthcoming changes to the flight simulation training device qualification method – the "FSTD DNA concept" – addressing a dozen flight simulation features and four fidelity levels. "The DNA of a device defines what the machine is capable of doing against minimum qualification levels."

"We're starting a revolution, and we will face some challenges," Pardatscher said. "It will require proper change management and an implementation agenda. But this will establish a level playing field for industry." Proposed amendments are expected by the summer of 2019 and published in January 2020.

EASA wants CBTA methods for all aviation licences and ratings. Oswaldson, Swedish Transport Agency, said in the transition to CBTA, "we don't want to get rid of what's functioning well. We want to improve training." He believes the examination "should reflect the concept – clear behavior markers of a common minimum level of competency." He added, "This is not necessarily the case with MPL (Multi-crew Pilot Licence) training today. We need to avoid a race to the bottom mentality in which the minimum hours become the maximum hours."

Dr. Jeffery Schroeder, Chief Scientist for Flight Simulation, US Federal Aviation Administration (FAA), addressed upset situations, noting that stall warnings occur once in every 100,000 flight hours, or about every two days. He reminded delegates that an aircraft's behaviour is very different at and after a stall. "If there is no training, it's very difficult to recover." He advised, "In training, don't do too much too quickly. Encourage learning – not how to be frightened."

One theme mentioned by EASA's Rebender – "we need to attract … girls, which represent only 5% of the aviation population" – was also picked up by other speakers. CAE's Torbjorn Wischer, Global Leader, Training Strategy, referenced the company's new Women in Flight programme to sponsor female pilots through host airlines "and make them ambassadors for other females."

EBT Workshop

The EBT workshop took place in the afternoon prior to the EATS event. This was an opportunity to get an update on the principles of EBT, with the challenges and some solutions being proposed. One of the principle providers of training, the EBT Foundation, fronted the workshop.

Mike Varney led off, as he explained that there was progress in the EASA regulatory process to adopt EBT for recurrent training, slated for 2020. Historically the industry has concentrated on negative events to define what training was essential, but with the arrival of comprehensive and detailed data capture through such sources as LOSA, previous training events and Training Critical Surveys there is now data available on successful (hitherto unrecorded) events. This data also reveals situations where effective solutions have been found by crews faced with a real-time problem. Using that data EBT suggests that the use of FFS should be as a platform to create and encourage problem solving skills. The concept was non-jeopardy, or at least reduced jeopardy training, in which the crews can be presented with unusual but realistic scenarios, and learn how to think their way out of them. The Competency Based Training and Assessment (CBTA) methodology allows analysis of root cause of performance and therefore can guide crews to improve their skills. For such a system to work the instructor role becomes significantly more complex, as they have to learn to Observe/Record/Classify/Evaluate (ORCE) the performance, and then coach to improve that performance. For instructors to do that effectively they need to be given specific and thorough training - it is different from legacy forms of instruction.

Mark Dransfield picked up the discussion to run through the challenges for the simulator manufacturers. To assist the instructor in this new form of training the actual operation of the FFS during the training event has to be made simpler. Too great a workload on the actual operation of the FFS results in distracting the instructor from his primary task of ORCE, which is at the core of the session. In order to create an immersive environment, additional functionality needs to be built into the FFS, and that includes replication of realistic and evolving weather situations which must be seen both in the visual systems and

on the normal flight deck displays. Alain Heddebaut revealed how one tool to help alleviate that load is a programme called ETOCloud (Electronic Training Objects Cloud), which helps the instructor to tailor a session in advance and build in selected and unexpected/surprise events sequenced automatically once the session starts, thus relieving the instructor of excessive work on the Instructor Operating Station. This is a blank canvas for specific and individual training sessions and leads seamlessly to the protocols needed for debriefing and record keeping.

A further refinement is the inclusion of realistic ATC inputs. Jeremy Goodman explained that these frequently relied on an instructor to provide that input, again distracting from his primary task. Such automated systems are now available, and incorporate appropriate calls from both ATC and other traffic. An incorrect call from the training crew automatically prompts a correction from ATC, which exclusively uses standard radio vocabulary.

In summary - EBT is becoming more widespread, with some 30 regulators, largely following the EASA example, being in the process of updating regulation to acknowledge the benefits. In fact two authorities, Taiwan and Korea, have already mandated the use of EBT. It is likely to be only a matter of time before it becomes a global standard. – *Chris Long*

The Wings Alliance's Wren cited a commitment by Qantas to intake 20% women in its pilot new hires this year and 40% within 10 years.

Several dominant themes emerged in feedback from the EATS attendees: "shortage of qualified instructors" was the most frequently mentioned. Other responses to the question, "What is the single major challenge to your business at this time? Included "high failure rate in cadet pilot training," "lack of ab-initio motivation to become a pilot," "new trainee generation," "pilot recruitment and retention/pilot shortage," "safety," and "Brexit."

"We left with two main takeaways," commented the Association of Flight Simulator Builders and Instructors (AFSBI). "We learned a lot about the industry and we saw a number of interesting products applicable to our audience (small- and medium-size flight schools around the world). We also confirmed there is a marked cross-flow of solutions across the high-end 'prosumer' market and the professional simulator-based training market."

"Overall," AFSBI concluded, "EATS offered quite a comprehensive view of the aviation training ecosystem. From ATOs to service providers to large and small simulator manufacturers, including giants like CAE, L3 … Boeing, Airbus … For those involved in this sector and those who are working toward getting noticed in it, this series of summits [including WATS in the US and APATS in the Asia Pacific] are the place to be."

Cabin Crew – New Attendees, New Techniques

The EATS cabin crew conference was the busiest ever, with more than half of the delegates attending for the first time. They were treated to a variety of interesting and thought-provoking presentations, again moderated by Anna Mellberg Karlsson, Chief Cabin Safety Instructor at Novair.

In the first session three EASA speakers – Daan Dousi, Aircrew and Medical Standards and Implementation Section Manager (acting) at EASA Flight Standards Directorate; Gerda Pardatscher, Senior Expert Flight Crew Licensing; and Angela Gallorini, Cabin Crew Expert – provided an overview of what EASA is doing regarding cabin crew regulations, and future developments that will be of interest.

A lively panel discussion regarding cabin crew attestations (CCA) and related training was led by the EASA representatives plus Noel Houlihan, Safety Training Officer at Aer Lingus, and Nataša Bešter, Compliance and Safety Manager for Slovenia's civil aviation authority. There were many questions from the floor, obviously a subject that piqued the interest of the audience.

A session focused on how virtual reality training can be effectively used for cabin crew training featured presentations from Thomas Cook Airlines, KLM and the University of Udine.

In a session focusing on crew resource management (CRM), threat and error management (TEM) and human factors (HF), Capt. Collette Evans and Patrick Friel from Aer Lingus discussed the benefits of a fully integrated CRM pro-

gramme, where CRM sits within the airline's training and how all CRM classes are delivered in an integrated way. Gitte Furdal Damm from About Human Factors asked whether resilience is a valuable skill? Her presentation looked at what resilience is, its relationship with stress, challenges on the job, and suggestions to help enhance resilience.

Other cabin crew sessions covered dealing with passengers with disabilities, diverse workforces and the value of developing positive training cultures, using technology to track training, re-inventing annual training to keep the interest of all students, cabin crew attestation and an emotionally moving presentation on human trafficking.

Feedback from cabin crew attendees on the major challenge to their business included "high turnover in cabin crew, requiring many new recruits," "proper screening of initial candidates," "balancing EASA regs with business needs," "training crew on multiple aircraft types," "maintaining standards," and "Brexit."

The 2019 edition of EATS will be conducted 29-30 October in Berlin. To view presentations from EATS 2018, go to www.eats-event.com cat

Heads of Training Meeting

In what is now a regular part of the EATS, there was a Heads of Training Meeting the evening before the main event. This was led by the Chair of the ATPG, Andy O'Shea, who, in his day job is Head of Training for Ryanair.

This year the emphasis was on the good work done by the Aircrew Training Policy Group (APTG). This group has its origins in earlier EATS conferences, but has since gone from strength to strength, such that it is now in a position to present directly to the European Commission to give an independent view of issues in the airline industry.

Top of the APTG agenda is the pilot shortage which, whilst long predicted, is now upon us. A prime reason for the shortfall of new pilots is that an alarming percentage of new licence holders who apply for positions with airlines do not pass the selection process.

Figures from one major European airline, which, over a period of two years, had 3,500 applicants of whom 40% did not meet the basic entry requirements, 30% needed extra training, and 30% did not successfully pass the post-licence training. That works out at an overall pass rate of 35%. At that rate in order to provide the 50,000 new European pilots by 2028 and reach the target of 146,000 pilot workforce, we will need close to a million applicants.

The challenges to the present industry start with the reality that pilot careers are generally not included in career options for STEM students, and knowledge of the pilot career path in schools is weak. Entrants must be able to pass both the medical and aptitude selection processes, and this generation frequently believes that there is both a high risk and a high dropout rate in the career.

Two other aspects where work needs to be done are in the area of the legacy instructional methods and platforms which are outdated and unattractive to a digital generation and as ever, there is the intractable problem of funding. That automatically excludes the majority, who cannot self-fund. By the same token, all the above challenges become even more evident in the very low numbers of women pilots - we need to encourage that half of the population to join the industry.

The good news is that there is a recognition of the problems. The solution is a multi-faceted approach, with positive steps being made to address them. Georges Rebender, EASA's Head of Department Aircrew & Medical, pointed out that EASA is being pro-active in moving regulation to embrace both CBTA and EBT, together with proposals to adopt ICAO recommendations of qualifications for instructors in those disciplines. There is work in progress to standardise the quality levels within the EASA nations so that graduates of ab initio training will meet the essential operational standards. For instance, one area of particular concern is the lack of Aviation English language competency, which is hugely variable, even when individuals hold a Level 4 qualification. Another initiative to improve the skills of new pilots is for them to attend and pass an augmented MCC course - known as the APS MCC. Possession of such a certificate should make entry into an airline much more straightforward.

New platforms and adapted training technology should be introduced with relevant syllabi to match the expectations and talent of the new generation. Training can and should be made relevant and interesting which, at the same time, makes it more efficient and affordable.

So - there is recognition of the problem areas, and progress towards solving them is moving in the right direction. The whole industry - regulators, ATOs and airlines need to work together to resolve the challenge of providing enough pilots for the predicted demand. – *Chris Long*

CONFERENCE REPORT

NTAS

The Changing Role of the Pilot

The 2018 National Training Aircraft Symposium (NTAS) was held August 15-18 at Embry-Riddle Aeronautical University at Daytona Beach. Chuck Weirauch reports.

The Symposium drew fewer attendees than in past years but even so, the event featured more than 40 presentations and covered the usual wide range of topics, from pilot training to aviation cybersecurity. The theme of the 31st year of the event was "The Changing Role of the Pilot."

Earl Weener, Member of the National Transportation Safety Board (NTSB), was one of the keynote speakers at the 2018 NTAS. He cited Loss of Control In-flight (LOC-I) as the leading factor of fatal accidents in general aviation, personal flying, instructional flying, business aviation and world-wide commercial jet operations through 2008 to 2017, and discussed the efforts of the industry-wide Loss of Control Working Group. To help reduce the number of such inflight accidents, Weener recommended a change in a flight departments safety culture management system, from the reactive and forensic "whack-a-mole" management to risk-based and predictive risk management. And everyone in the organization must be responsible for safety, not just the safety department, he added.

Other keynote speakers included Robert Joslin, the FAA's Chief Scientific & Technical Advisor for Flight Deck Technology. He stressed the need to adapt existing training methods, or developing new ones that can safely and effectively interact with both current and new cockpit technologies. Crystal Maguire, executive director for the Aviation Technician Education Council (ATEC), cited a recent organization report that found that aviation industry mechanics are retiring faster than they are being replaced. To help meet this challenge, ATEC is encouraging aviation community involvement in the development of new regulatory standards, facilitating employer-employee partnerships, and enhancing access to mechanic testing.

Pilot Training

In addition to these topics, NTAS presenters covered a number of views, methods and approaches to ab initio and advanced pilot training. For example: ERAU Assistant Professor of Aeronautical Science, Robert Thomas, outlined a study that validated the use of computer-based scenario training as a viable means for pilots to remain instrument current. Matthew Furedy of the Aviation University of Central Missouri discussed FAA Aeronautical Decision-Making training and how to help pilots recognize hazardous attitudes that may affect their decision-making process. Twelve ERAU assistant professors participated in a panel entitled Personal Safety Culture: A New Measure for General Aviation Pilots.

Mixed Reality

The application of virtual and mixed reality technology in aviation training was one of the major topics on the first day of the NTAS. Lori Brown, Associate Professor and researcher at Western Michigan University's College of Aviation, described the Microsoft HoloLens-based JetXplore mixed reality applications she has developed and incorporated into the WMU aviation curriculum for cockpit instrumentation familiarization, flight procedures and maintenance training. ERAU's Stephanie Fussell described a new state-of-the-art VR laboratory at the university for the further development of VR flight and maintenance training as a proof-of-concept test bed. Lulu Sun at ERAU described a study focused on improving air traffic controller training at the FAA Academy and Collegiate Training Initiative Schools through virtual reality applications.

UAS Training & Operations

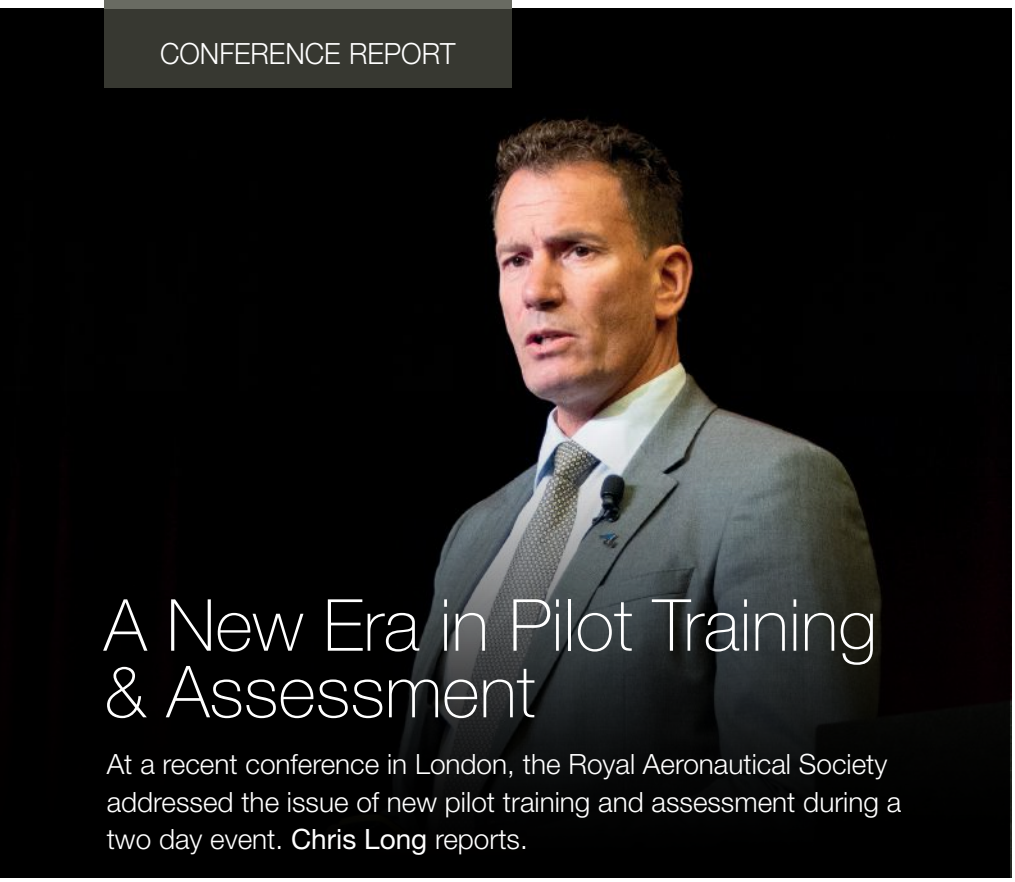
This topic was covered from several different perspectives. ERAU's Tom Haritos discussed the use of simulation to train complex UAS command and control tasks. Scott Burgess told the NTAS audience that with advanced UAS training, those small aircraft could be employed to help investigate aircraft crashes in remote areas. Ryan Wallace and others focused on how UAS operator behavior could lead to the UAS causing interference with aviation operations in controlled airspace. Phillip Craiger and Gary Kessler told how small UAS (sUAS) are susceptible to cyber-attacks. Hackers can take over their control and fly them into controlled airspace, crashing them to cause damage to installations and equipment, they pointed out.

The importance of UAS and aircraft maintenance was also discussed, both from a training and airworthiness perspective, as the two topics are related. The goal of the paper presented by Bettina Mrusek, Patti Clark and Kristy Kiernan called for the establishment of a formal, scheduled maintenance program for sUAS operators. Raymond Thompson of Western Michigan University described a scenario-based education program for large aircraft maintenance developed at WMU.

Pilot Shortage

The pilot shortage and the means to help improve the flow of qualified candidates through the pilot pipeline was yet another major topic discussed at the 2018 NTAS. Suzanne Kearns of the University of Waterloo recommended that aviation academia look at the pilot shortage from the viewpoint of sustainable development. This approach will provide a way to better understand the origins of the pilot shortage, and to help systematically develop sustainable solutions to the problem. In summary, Lindsey Van Beusekom, representing the Air Line Pilots Association (ALPA), stated that all aviation professionals have a role in maintaining the pilot supply ecosystem. They also should help strengthen the system by promoting the pilot career path and getting involved in mentoring programs, she summed up.

Nearly all of the 2018 NTAS proceedings can be accessed at https://commons.erau.edu/ntas/2018/presentations cat



A New Era in Pilot Training & Assessment

At a recent conference in London, the Royal Aeronautical Society addressed the issue of new pilot training and assessment during a two day event. Chris Long reports.

Above
Captain Torbjorn Wischer, Global Leader – Training Strategy, Civil Aviation, CAE.
Image credit: David Malley/ Halldale Group.

At the core of this new era is the increasingly widespread adoption of Competency Based Training and Assessment (CBTA). This is a significant change in the way that training is conducted - both for the trainee and the instructor.

Gone are the days of the student being the passive recipient of the words of wisdom from the instructor merely reading from a script. Now the degree of engagement has considerably stepped up - it has been recognised that one training regime does not fit all. The trainee is expected to actively seek and apply the knowledge, and the instructor's role has morphed into that of a facilitator, assessor and at times, coach. There is collaboration between the two parties, such that the learning process is much better adapted to the individual's needs in terms of both preferred learning platforms and pace of delivery.

Keynote Speakers

The theme and tone of the event were set by the keynote speakers. Torbjorn Wischer of CAE led off by providing a guide to the proposed ICAO PANS Training Amendment and IATA's perspective on that. Representing the view of the regulators, Georges Rebender, Head of Aircrew and Medical Department at EASA, explained the regulatory process for introducing this new approach, which is working its way through the EASA and European Commission legal process. In a supplementary presentation during one of the panel sessions, Rebender commented on a recent ICAO letter to the National Aviation Authorities which proposes the expansion of the CBTA philosophy to the selection and training of instructors. As a major influence in the training world, Airbus's perspective was represented by Jacqui Suren, who explained the endorsement and adoption of that CBTA process, which stresses the importance of applying that in all aspects of training - both theoretical and practical.

Challenges

Other themes evoked were the relationship of the individual and automation. Do we adapt the human to the new technology, or do we make automation more reflective of human strengths/characteristics? Is there a risk of de-humanising the individual in this process, and if so, do we risk losing those attributes of creativity/adaptability which so far have proven to be a step too far for artificial intelligence? Should there be more precise identification of circumstances where the strengths of automation can support the crews, and then concentrate of reinforcing the unique skill sets of competent pilots?

Whilst it is easy to be dazzled by the hype surrounding these new initiatives, what do the teams on the front line really need in order to employ them in daily training/operations? In a world where there is so much pressure on the day job - how do we actually integrate the new methods into practical applications?

Having excellent training platforms and methodology is certainly essential, but as ever, a major topic was the encouragement of the next generation, by whatever label, into the industry, and then how do we best select them? Successful selection leads to a win-win. The individuals are reassured that they have the potential to succeed, and the training systems can be fine-tuned to deliver competent actors in a process which requires minimal rescheduling/recoursing. No longer are recruits seeking a unique job-for-life. The industry must make itself more attractive by offering a whole lifetime career, with the potential for variety built into it.

The shortage of the critical resource of instructors must be addressed - and again, for this role there must be careful selection and training of those who exhibit the distinct characteristics which all good instructors should possess. Those should be fostered and supported with appropriate training and career paths.

Food for Thought

Whilst the speakers highlighted the challenges, there were also good solutions proposed. The event engaged with a well-informed and passionate audience, and consequently moved the training debate forward. cat

Seen&Heard

A compendium of current news from the civil aviation training industry, compiled and edited by the *CAT* editorial team. For the latest breaking news and in-depth reports go to www.civilaviation.training

SIMULATORS

€2m for Six Alsim Sims

Egnatia Aviation, based in Greece, has ordered six simulators from Alsim, four AL250s and two Airliners. The first AL250 was installed in October, which will be followed by three other AL250s and the first Airliner in 2019. The final Airliner will complete their simulator fleet in 2020.

Egnatia Aviation is experiencing a huge growth spurt after signing contracts with Aegean Airlines, Wizz Air and Iraqi Airways.

The AL250 is EASA-FNPT II (flight navigation procedures trainer) certified. It addresses initial phase training needs (PPL, CPL, IR/ME) and is SEP/MEP reconfigurable. In addition, it offers both classic and glass cockpit instrumentation for each flight model at the flick of a switch.

Mr. Dimitris Lymperakis, Engatia Aviation's director, explained the reason for choosing Alsim's AL250 and Airliner: "The AL250 is a proven training device for the initial stage of the Commercial license, however, the "Airliner" will boost our capacity and capability."

SOFTWARE

Improving Flight Safety

Envoy Air has selected CEFA Aviation's Flight Animation System (FAS) software to improve its flight safety. The software will recreate flights from the 170 Envoy Air aircraft including the Embraer E170/E175, E135/145 and Bombardier CRJ-700 for training purposes.

CEFA FAS translates flight data that shows each moment in an aircraft's flight and provides a clear, precise image of the chain of events that occur during an incident or an accident. Flight data from the aircraft is recorded and translated by the company's Flight Operational Quality Assurance teams into graphs and statistics, and a 3D animation is used to show the influence of the aircraft's environment on the flight and the actions a pilot took.

MAINTENANCE

Human Factor Learning Tool

Aeroteam and Scandinavian Avionics Training have signed an agreement to develop a learning tool called MAYDAY in collaboration with Copenhagen Game Lab, which will improve the human factor (HF) training and enhance the non-technical skills of people working in the maintenance environment.

MAYDAY complies with European Aviation Safety Agency (EASA) part 145.A.30(e) and the Federal Aviation Administration (FAA) requirements for HF training. It provides training and assessment of HF skills in a non-operational, interactive environment. Operators can use the tool to define problem areas and standards for safety in their organizations.

MAYDAY is expected to be available for purchase in February 2019.

TRAINING SOLUTIONS

Diamond Sim for airBaltic Pilot Academy

airBaltic Pilot Academy in Riga, Latvia has received the Diamond Aircraft DSIM flight training simulator it ordered earlier this year. The device supplements the training aircraft used by the academy. In February, airBaltic Training ordered three single-engine DA40 NGs and one twin-engine DA42-VI from Diamond Aircraft for its newly established Pilot Academy. The deal also included a DSIM flight training simulator and options for another eleven aircraft.

COMPANY NEWS

CAE Acquires Bombardier Business Aircraft Training

CAE has agreed to acquire Bombardier's Business Aircraft Training (BAT) business for US$645 million, expanding its ability to address the training market for customers operating Bombardier business jets. The acquisition will also serve to expand CAE's position in the largest and fastest growing segment of the business aviation training market, involving medium- and large-cabin business jets.

CAE also will pay US$155 million to monetize its existing future royalty obligations under the current Authorized Training Provider (ATP) agreement with Bombardier – that will extend CAE's ATP agreement to 2038.

The Bombardier BAT business will be integrated with co-located CAE operations: its Dallas and Montreal training centres. Once integrated, Bombardier business jet operators will have broader access to training, with a total of seven CAE business aviation training locations worldwide. With this agreement, CAE will be adding 12 Bombardier business aviation full flight simulators to its training network, for a total of 29 business aviation FFSs worldwide, with further growth planned.

CABIN CREW

Exit Door Trainer

Pegasus Airlines has commissioned Spatial to build an Airbus A321NX over wing exit trainer to help the airline's cabin crew become proficient in all normal, abnormal and emergency situations with the aircraft's door. Spatial manufactured the custom-built trainer to replicate all the functionalities of a real A321NX semi-automatic door within six weeks, and installed it at Pegasus Airlines' crew-training center in Istanbul, Turkey.

CONFERENCE

Simulation & Training for Resilience & Safety Symposium

The Halldale Group, in association with the European Training and Simulation Association (ETSA) will host the first Simulation & Training for Resilience and Safety Symposium March 26-27, 2019 in London, UK.

Safety critical industries such as energy and power, medical, transport, defence, construction and first response are experienced in exploiting simulation and wider technologies to support their training and education.

There are conferences and information exchange events that serve these domains but this inaugural Simulation & Training for Resilience and Safety Symposium aims to foster innovation and build partnerships in training and simulation across safety critical industries through the sharing of information and ideas.

With continuous and often rapid and disruptive change in these industries as a result of the increasing digitization of activities, together with changes in the geo-political context, there is no better time to share ideas and benchmark against peers.

Short Finals

SIMULATOR

Qantas Selects L3 FFS

Qantas has selected L3 Commercial Aviation to provide a B787-9 RealitySeven full flight simulator (FFS) for its Flight Training Facility in Sydney, Australia. The FFS will feature L3's latest computing architecture and its L3 CTS B787-9 Briefing Station capability that lets pilots complete several elements of the B787-9 Preliminary Cockpit Preparation procedure outside of the FFS, saving time usually spent inside the simulator and improving cost-efficiency and training capacity.

HELICOPTER TRAINING

Certified Training Facilities

Bell Helicopter has launched the first of its network of Certified Training Facilities (CTFs) to expand its global training offering. The first CTF is Helideal, a Bell Independent Representative in Le Cannet-des-Maures, France that will provide initial and recurrent pilot training under the Bell Training Academy umbrella. Helideal will offer pilot training on the Bell 505 aircraft beginning in January 2019.

SIMULATION CENTER

Expanded Pilot Training Center

L3 Technologies has opened its newly expanded multi-purpose L3 Arlington Training Center facility in Arlington, Texas which will enhance its training capacity for simulation and instruction for military and commercial pilots. The expansion adds approximately 40,000 square feet to the center and doubles the size of the high-bay facility located near the Dallas Fort Worth International Airport.

SOFTWARE

Skyborne Goes Digital with FlightLogger

Skyborne Airline Academy has gone digital with FlightLogger's Flight Training Management software and will use the platform to deliver its ATO training activities. FlightLogger is a cloud-based Flight Training Management software which integrates ATO activities including flight programs, ground theory, rental, booking, SMS and flight registrations.

CABIN CREW

Cabin Crew Training Partnership

RST Rostock System-Technik is partnering with PACE, a TXT company which provides engineering software solutions, to develop training solutions for airline cabin crews. RST will enhance its aircraft cabin trainers using PACE's expertise in authoring virtual and mixed reality applications to provide highly realistic and interactive virtual learning experiences for future flight and cabin crews.

TECHNOLOGY

MissionFit: FlightSafety's New Reconfigurable "Glass Canvas" FTD

FlightSafety International's Simulation Innovation Lab in Tulsa, Oklahoma, is unveiling a new glass-and-graphics technology which can serve as a "training canvas." The first product to use the proprietary "looking glass" is an FAA Part 60 Level 4/5 flight training device (FTD) branded as MissionFit. The concept can also be applied to military training.

The single piece of glass – with built-in projection, wireless connectivity, and touch-screen – is used to display an aircraft's avionics panel in the MissionFit application. "Wireless SmartPanels" can be used for flight guidance, multi-function keyboards and cursor control devices. The graphics for the flight deck instrumentation and the aircraft-specific flight simulation program are downloadable via the internet. In its most basic, clean-glass setup, a customer with a mixed fleet could retrieve different aircraft from the "MissionFit Cloud" without any hardware changes.

But unlike traditional LCD flat panel trainers, the FlightSafety training glass can accommodate tactile components such as a flight guidance panel, gear handles, and throttles, which are integrated with the glass. Customers can also add a separate out-the-window visual system with a large-screen television or a projection display.

"We've looked at the cockpit flow, how the pilot operates the cockpit, anything that's hands on and continuously flying – guidance control panel, landing gear, throttles, and cursor control devices; those are the main things, but we have the capability of doing anything," said John Van Maren, VP Simulation, in an exclusive conversation with Halldale Group.

"We can cut the piece of glass to any size and shape," said Steve Smith, Product Director for the Simulation Innovation Lab. "We can cut holes in the glass to put in tactile panels, unlike any other flat training device, and there are no bezels in the way."

In the MissionFit mode, FlightSafety customers may use the device for cockpit and avionics familiarization, systems integration, and some flight training. Smith said the technology is "infinitely scalable" to meet training needs.

The trainer is designed to be "extremely easy to use. It can be fully operated by pilots and doesn't require any maintenance staff," according to Smith. "Start it with the push of a button in the morning, train on it, shut it down at night." The device can be controlled by the instructor from a smartphone, tablet or laptop.

SOFTWARE

Training Management Solutions

Turkish low-cost carrier Pegasus Airlines is now using PRODEFIS Training Management Solutions. PRODEFIS Training and Performance Monitoring System (TPMS) is an all-in-one IT solution for EBT, ATQP and AQP. PRODEFIS E-FILE is a system for electronic management of personnel files and for staff self-services.

Captain Aydin Yumrutas, Pegasus Airlines Head of Training commented: "With the experience and consultancy of Prodefis, Pegasus Airlines will move to paperless workflow and ensure continuous improvement in cockpit and cabin training systems."

SIMULATOR

Expanding Training Capacity

The CAE-Cebu Pacific joint venture, Philippine Academy for Aviation Training (PAAT), is expanding its training capacity with the acquisition of a new Airbus A320NEO full flight simulator. The CAE7000XR Series FFS, equipped with the CAE Tropos™ 6000XR visual system for realism, will serve the growing pilot training needs of Cebu Pacific and other operators in the region. The new simulator will be deployed at the CAE Clark – PAAT training centre, near Manila, in the first half of 2019.

PILOT TRAINING

Airline-Optimized Training

The Wings Alliance, a non-profit association of Flight Training Schools, has launched the Whitetail Cadet Program that gives individuals with little or no flying experience an opportunity to complete their European Aviation Safety Agency (EASA) training through an alliance of Flight Training Schools in Spain, Sweden and the UK.

The 16-month full-time, campus-based, modular program is designed to place students in their first airline job at a lower cost than competitors and is focused on airline optimized training in the latest glass-cockpit aircraft. The program will familiarize individuals with two-pilot operations early in their training so time normally spent flying solo on visual navigation exercises can be replaced by more relevant two-pilot, instrument flight rule and airline-style procedures.

CABIN CREW

CEET Renovation

Waypoint Aeronautical recently began the renovation of Alaska Airline's Boeing 737 cabin emergency evacuation trainer (CEET) at Alaska's headquarter training facility in Seatac, WA. The renovation will upgrade the CEET to a 737-800 with fully replicated Boeing Sky interior. The device will provide crew training on all normal and abnormal operations of the 737-800 doors and exits, slide, fire and smoke training. The cabin trainer will also include drop down oxygen masks with auto-reel feature.

The CEET upgrade follows Waypoint's delivery of 14 door trainers to Alaska Airlines to meet its growing training needs. The previously delivered door trainers included Boeing 737-800 door and over-wing exit trainers, and Airbus 320/321 L1 door, over-wing exit, and mid-cabin door trainers.

PILOT TRAINING

Long-Term Agreement

Global Aviation SA, based in Greece, has entered into a five-year agreement with Orbit Aviation from the Netherlands in order to provide and secure a future training capacity for its clientele. The first cadets have already started their theoretical training at Global Aviation's facilities in Athens followed by intensive flight training at the flight base of Megara.

Training will commence immediately, with the first cadets starting their theoretical training at Global Aviation's facilities in Athens followed by intensive flight training at the flight base of Megara.

The entire training course is completed in 18 months in Greece and includes an Enhanced MCC or APS course conducted at EPST in the Netherlands.

COMPANY NEWS

Joint Venture

TRU Simulation + Training and FlightSafety International plan to form a joint venture to provide a training solution for Textron Aviation's broad product line of business and general aviation aircraft. TRU and FlightSafety will combine their assets and capabilities, including their simulators, courseware and teams, to support their global customers' training needs.

"With Textron Aviation continuing to expand its product portfolio with aircraft such as the Latitude, Longitude, Hemisphere, Denali and SkyCourier, it is critical we provide the full scope of training services our customers require," said Gunnar Kleveland, president of TRU Simulation + Training Inc. "This joint venture will allow us to better address that demand."

TRU will serve as the exclusive supplier of new Textron Aviation simulators to the joint venture. The transaction is expected to close in the next several months, subject to finalizing definitive documentation and regulatory approval.

ARRIVALS & DEPARTURES

Simtech Aviation

Simtech Aviation has appointed Tim Shattock as the company's new CEO. Shattock will be responsible for furthering Simtech's partnerships and relationships with airlines and flight schools and building up its simulator-based training for student pilots and airlines.

SOFTWARE

Training Optimization

Britannica Knowledge Systems has unveiled a new approach that facilitates access to the Fox training management platform for every airline, flight school and training provider. Designed to manage training for pilots, cabin crew, maintenance and ground crew, Fox's packages provide all the training management functionality that large, medium and small operations need. This includes managing planning and scheduling, instructional devices and other training resources, instructors, qualification and compliance, recordkeeping, training development, learning and testing, performance evaluation, and analytics.

Large to small customers will also benefit from Fox's user-friendly self-management tools for data entry, migration and self-integration. The new approach puts Fox more in reach for smaller organizations due to the addition of shared cloud hosting, quick and easy onboarding tools, and preconfigured, structured business process solutions.

MAINTENANCE

MCF Course for New EASA Requirements

Coptersafety will run a two-day Maintenance Check Flight (MCF) course to help helicopter operators and maintenance service providers meet the new requirements and regulations for MCF operations that the European Aviation Safety Agency (EASA) will introduce in 2019. The first MCF course will take place at Coptersafety's training facility next to Helsinki Airport, Finland, in January 2019.

The Coptersafety MCF course is fully compliant with the 2019 EASA regulations, and the syllabus is intended to go beyond minimum EASA standards to minimize operational costs and hazards. It will consist of a ground course and device training in a Level D full flight simulator, tailored for AW139 and H145 helicopter types. The course is designed for current and future MCF pilots and helicopter operators and technicians at helicopter maintenance service providers in EASA member states in Europe. The Coptersafety MCF course includes the opportunity for operators to send one technician for free to the same course per each attending pilot.

HELICOPTER TRAINING

Pilot Scholarship Award

Helicentre Aviation Academy has doubled its pilot scholarship award by allocating an additional £75,000 in part-funded training scholarship awards for its 2018 Professional Helicopter Pilot Scholarship Program. Helicentre has invested over £500,000 into the annual scholarships in the last five years.

The awards give stand-out individuals full or part-funding for a professional license with immediate work opportunities and the chance to gain valuable experience. Helicentre says the program provides life-changing career opportunities to students, helping them progress quickly into industry roles such as Utility and Helicopter Emergency Medical Service.

PILOT TRAINING

Training Agreements Signed

CAE announced four pilot training agreements at the European Airline Training Symposium (EATS). An exclusive two-year pilot training agreement was signed with LOT Polish Airlines (LOT) on various Boeing, Bombardier and Embraer aircraft platforms. LOT's pilots began training earlier this fall at multiple CAE training locations in Europe.

CAE has signed a long-term training contract with easyJet valued at more than C$170 million over the next 10 years. Under the agreement, all of easyJet's pilots will train at CAE, which will expand its training network to provide the airline with three new European pilot training locations, equipped with a fleet of CAE's latest XR Series flight simulators. CAE will provide easyJet with pilot training solutions at training centres located in London Gatwick and Manchester in the UK, as well as Milan, Italy.

CAE will deliver Bombardier CRJ900 pilot training to CityJet beginning in May 2020. CAE will deploy a new CAE 7000XR series CRJ900/1000 full flight simulator (FFS) at CAE Amsterdam and will update its current CRJ200/900 FFS to the latest CRJ900 configuration at CAE Copenhagen.

To support CityJet's growth plans and training needs, CAE will train the airline's future pilots starting with 12 cadets next year, building on its previous agreement. As part of their 18-month training program, cadets will complete their ground school and flight training at CAE Oxford and CAE Phoenix. Upon successful completion of their training, graduates will be employed by CityJet.

In a four-year contract signed with Vueling Airlines in Barcelona, Spain, CAE will select, assess and train up to 80 new pilots for Vueling over the next four years. Graduates will be employed by Vueling after completing the training program.

ARRIVALS & DEPARTURES

Virtual Aviation

Virtual Aviation has appointed Anthony Petteford as executive director. Petteford also joins the company as an investor shareholder. He has over 21 years of direct senior leadership experience in global aviation pilot training, having served as managing director of Oxford Aviation Academy and as vice president and principal of Airline Academy training for CTC Aviation.

COMPANY NEWS

ENTROL - a lesson in vision

The aviation industry has a rich history of startups created by those with a particular vision. A case in point is ENTROL. This simulator manufacturer, based in Madrid, Spain, was created by Luis Olarte, CEO, and his brother. Olarte has a business background and always had an ambition to move into manufacturing. His brother was an aeronautical engineer with knowledge of A320 simulator maintenance, and believed that he could design and build a viable simulator.

Starting together in 2005 in a tiny (40m²) workshop they built their first device, which was a FNPT1 Bell 206 (helicopter). They wrote the software directly from data obtained from their own flight tests, and after JAR certification, delivered it to their first customer. The next iteration, using the same process, was to construct another FNPT II unit, this time for an EC135. In 2008 the first international customer, NHV, a major helicopter operator in Ostend, Belgium, received an AS365 FNPT2. The first fixed wing devices were two FNPT IIs for a Spanish customer operating PA34 (Piper Seneca), together with one for the Spanish police, which is still operational.

Post the 2008 crash, times were tough, with slow sales which included a King Air 200 to Germany and additional success in providing an A320 unit. Having by this time focussed uniquely on FNPT II devices, it became clear that there was a sustainable market in that niche sector, and the business decision was made to concentrate on that. Sales picked up in successive years, from four in 2011 to 11 in 2018. That has meant an increase in size of the production facility, and the new one has 2000m², presently with 28 employees.

Not only has the scale of production increased, but the range of aircraft and customers has steadily grown, such that units have been supplied to Argentina, Chile, Malaysia and France (the latter a FTD II for an EC135, certified by the French DGAC). Devices include one in 2015 for an Air Tractor Firefighting aircraft as well as the first Entrol FTD level 5 simulator to be installed in the USA. At the present time there are four units in Spain for the A320 FNPT II MCC which have been certified for RNP AR APCH training.

Altogether 30 devices for some 15 aircraft types have now been delivered, and the target is to provide two additional aircraft types per year. Olarte emphasised that everything is designed and made in-house, so lifetime support does not have to rely on third parties. In a similar vein, ENTROL is not a sub-contractor, nor does it sell to third parties. The aim is to be able to control and to be directly responsible for everything in the stable. The annual production rate is carefully controlled, so that there is no over-stretch of competency and capacity. Careful growth is seen as the key to business success - so far, so good. – *Chris Long*

TRAINING CENTRE

New Facility in Australia

The SimJet Group has opened a Flight Simulator and Recruitment Centre at Brisbane Airport with the installation of a Multi Pilot Simulations' (MPS) Boeing 737-800 FTD1. The company joined the Australian Pilot Training Alliance (APTA) to offer advanced flight training capability and recruitment pathways into airlines under Part 142.

The business will focus on courses such as Jet Orientation, Multi Crew Cooperation (MCC), Instructor Training, Airline Preparation and simulator dry-hire to the industry. The center will provide an extra B737NG, with plans for the B737MAX.

PILOT TRAINING

Pilot Pathway Agreement

Pan Am International Flight Academy (PAIFA) has signed a Pilot Pathway Agreement with ExpressJet Airlines that gives Pan Am's Career Pilot Academy's Certified Flight Instructors (CFI) an opportunity for future employment at ExpressJet.

"We are excited to join Pan Am International Flight Academy in establishing a career pathway that supports future generations of aviators," said Darrin Greubel, director of Flight Operations for ExpressJet. "ExpressJet's reputation for industry-leading training and safety programs as well as our pilot pay package that provides over $50,000 in first-year compensation makes this an ideal opportunity for Pan Am CFIs."

SOFTWARE

Pilot Training System

Aviation Academy Austria GmbH, in Neusiedl am See, Austria, awarded Avsoft International a contract for its pilot training system. Aviation Academy Austria will use Avsoft's proprietary Learning Management System (AvLMS) to deliver ATR 72-500 and ATR 72-600 aircraft systems courses for students at its Simulator Centre, prior to flight simulator training. Avsoft will also provide its EASA compliant PBN-RNP course for all student pilot training. These eLearning courses will be used for Initial Type Rating qualification through the AvLMS platform, which delivers the courseware and other training resources.

SIMULATOR

Generic Sim Completed

At EATS 2018, Simloc announced the successful completion of the design, manufacture and assembly of an A320SR certifiable, generic simulator for the Brok-air Aviation Group. The unit will be fully integrated into the cabin fuselage of an A320.

Brok-air is the first school on the Canary Islands to have a trainer of this type. The device will provide essential support in basic training courses for Aircraft Maintenance Specialists (AMS), AMS aircraft certification courses and specific courses for Multi Crew Cooperation pilots, preparation for airline tests, beginners' flying courses and courses for passenger cabin crew.

SIMULATORS

Three New Orders for MPS

Multi Pilot Simulations (MPS) has received orders for a new Airbus A320 FTD1 simulator from Virtual Aviation, a B737 NG FTD-2 from Norwegian and an A320 FTD from SIM4u in Berlin.

The MPS B737 NG FTD-2 simulator will let Virtual Aviation offer a range of new training services to Airbus operators and increase its AirlineReady® APS MCC course capacity to give trainee pilots a choice of aircraft types. The company plans to use it extensively during the ground-school phase of the A320 Type Rating to provide an improved learning experience compared to traditional 'flat panel' trainers and to enhance the training delivered in other areas.

Norwegian Head of Training, Stig Larsen says the MPS B737 NG FTD-2 will be installed in the Flight Training Center at Gatwick Airport in the UK.

PILOT TRAINING

Academy's New Locations

The Qantas Group has chosen Wellcamp Airport in Toowoomba, Australia as the first of two regional locations for its new Pilot Academy that will open by mid-2019. Construction of the Academy's new $35 million facilities started in October, in partnership with the Queensland Government and the Wagner Corporation, who own the airport.

The Academy is part of the Qantas Group's strategy to build a long-term talent pipeline for its airlines and expects to train as many as 500 pilots a year across both sites, including cadets from other airlines and general aviation. L3 Commercial Aviation will be the training provider for this site.

SOFTWARE

myMINT App

MINT Software Systems has unveiled the latest version of its system extension "myMINT app". The app is the mobile connection to the MINT Training and Resource Management System which automatically synchronizes the MINT training schedule and displays all event information. The app also receives and displays automatic notifications, like grading reminders or other notifications that relate to an action that needs to be performed and lets users visualize reports and statistical charts that were created in MINT TRMS using the Jupyter Notebook extension.

SIMULATOR

ProJet Trainer for JTA

Japan Transocean Air (JTA), part of JAL Group, has selected Pacific Simulators' ProJet FJ2000 cockpit procedures trainer (CPT) to complement its training products and better prepare JTA's pilots for its new fleet of Boeing 737s. JTA is replacing its B737-400s with the latest B737-800 aircraft.

The ProJet FJ2000 CPT is an open-cockpit trainer for airlines using Boeing 737 Next Generation aircraft, which includes the B737-800 model. It can be used for this new aircraft and airline-bridging training such as Jet Orientation Courses for new recruits.

PILOT TRAINING

CAE Business Jet Pilot Demand Outlook

CAE's 2018 Airline and Business Jet Pilot Demand Outlook shows the business jet pilot population will reach 65,000 by 2028, an increase of 18 percent, with a turnover rate of almost 100 percent. More specifically, 10,000 new business jet pilots will be required to sustain growth and 40,000 new business jet pilots will be needed to support retirement attrition across the segment over the next 10 years.

The report's 10-year view gives fleet operators key insights on the future need for professional pilots in business and commercial aviation, building on the markets' key drivers, variables and trends. CAE president and chief executive officer, Marc Parent says the report demonstrates ways the aviation industry can cope with the rising demand for business jet pilots.

TRAINING CENTRE

Helicopter Pilot Training Center

Avicopter, on behalf of investors of Aviation Industry Corporation of China Ltd, and Thales have signed a Memorandum of Understanding (MoU) to establish a joint-venture helicopter pilot training center in China.

Thales and Avicopter's collaboration and mutual technical know-how will help bridge the gap between demand and supply of high-end equipment such as simulators and associated training services to meet the increasing demand for helicopter pilot training in China. The two groups will invest jointly to set up the training center and provide civil helicopter pilot training services on multiple platforms, including AC312/313/352.

PILOT TRAINING

Training Partnership

Air France is reopening its cadet pilot program after an eight-year hiatus to recruit 250 pilots per year to fill its own pilot positions, and for its Joon and Transavia Airlines and has formed a partnership with the École Nationale de l'Aviation Civile (ENAC) (French Civil Aviation School) to handle the training.

The first trainee pilots started at ENAC this summer in an eight-month theoretical training course at the Toulouse campus. They will continue for one year of practical flight training at the Montpellier, Carcassonne, Grenoble and St-Yan campuses before joining the Air France group as pilots on Airbus A320 or Boeing 737.

SIMULATOR

ProJet FTD

Pacific Simulators has sold its ProJet PS4 flight training device (FTD) to the CEA training center which will open in Buenos Aires, Argentina this year. ProJet says the center will be the first to provide FTD's to pilots in Argentina and surrounding countries.

The ProJet PS4.5 FTD is a fixed-base device that simulates a narrow-body jet airliner and can train students for Boeing 737 or Airbus A320 aircraft. It features a fully enclosed cockpit that includes representations and functionalities of aircraft panels; systems; avionics and controls such as glass cockpit displays, flight management computers (FMCs), autopilot flight director systems (AFDSs), traffic collision avoidance systems (TCASs) and ground proximity warning systems (GPWSs).

FLIGHT SIMULATOR

A320 Simulator Approved for UPRT

Flight Simulation Company (FSC) customers can now use the first A320 simulator EASA-approved for UPRT CS-FSTD (A) issue 2 level D in UPRT training. The company says approval of the device was part of a major update program by the manufacturer for the first of the four FSC A320 sims. At the same time, the FSC A320 sims are being upgraded to Airbus standard version 2.0 and their visual systems to the latest standard (Tropos 6000XR with the four megapixel LED projectors).

TRAINING SOLUTION

Simnest Introduces SMCU

Simnest has introduced its Simnest Multifunction Control Unit (SMCU) that helps transform clients' simulators into one-button start-stop training devices. With the SMCU there is no need for long checklists on start-up.

The SMCU includes a touch-screen panel with password protection and lets cadets start the simulator in different modes including training-, test- (for new features and pre-authorization) and practice-mode. SMCU has Internet of Things (IOT) capability including remote startup and shutdown for maintenance out-of-opening hours.

SIMULATORS

TRU Simulation + Training's Portfolio Grows

TRU Simulation + Training is expanding its portfolio through several new wins, including a contract for a Level D A320 full flight simulator (FFS) with Avengers Flight Group, an approved training organization with growing network of training centers in Mexico and United States, and a contract for a Level D A320 FFS with TAP Air Portugal, the flag airline carrier of Portugal. The TAP FFS is scheduled to be delivered to Lisbon in the first quarter of 2019.

FLIGHT SIMULATORS

Moody Aviation Selects AATDs

Moody Aviation has selected Frasca International to provide three reconfigurable advanced aviation training devices (AATDs) for Moody's flight training facility at Felts Field in Spokane, Washington, which will replace its three previous Frasca units.

The AATDs will feature Frasca's Simplicity™ IOS instructor station and TruVision™ visual system with 210-by-10 degree projected display system. They will simulate the flight and systems characteristics of the Cessna 172R, Cessna R182 and the Cessna U206G. Moody's training curriculum will include 10-20 hours of instruction in the simulators prior to training in the corresponding aircraft, giving students a cost-effective introduction to aircraft systems, procedures and flight characteristics.

FLIGHT SIMULATOR

B737 NG FFS

BAA Training has acquired a CAE-built Boeing 737 Next Generation full flight simulator (FFS) to expand its type-rating training capabilities. The training device is worth €9.5–10.5 million and will let the school offer an additional 7,300 hours of training per year.

The FFS will feature an intuitive lesson plan builder, a 3D airplane flight-path map with event markers, integrated information for easier access to advanced functions, an ergonomically redesigned instructor office and a Tropos 6000XR visual system.

PILOT TRAINING

Training the Next Generation

American Airlines has awarded $337,000 from its American's Flight Education Grant program to 17 aviation-focused schools and organizations in the US that are dedicated to training the next generation of aviators.

The grants range from $5,000 to $25,000 and many of the receiving organizations will assist low-income and minority students. They were selected to receive the awards based on proposed projects that would help enhance aviation-related curriculums such as building flight simulators and aviation labs; adding more computers for new pilot courses and providing students with flight books, manuals, calculators, maps and plotters.

PILOT TRAINING

Flying Scholarship

TAG Farnborough Airport has awarded its TAG Flying Scholarship 2018 which provides training towards a Private Pilot's Licence (PPL) to 17-year-old Réshé Harrison. The scholarship is part of the airport's Aviation to Education program that informs and educates local schools and colleges about aviation. Sponsored by the Honourable Company of Air Pilots' scholarship program, TAG Farnborough Airport grants one young person a scholarship each year, supporting individuals who might not have the necessary resources to gain flying experience and achieve their PPL.

Harrison is currently studying for a BTEC Extended Diploma in Aeronautical Engineering at Kingston College and is training for his PPL at Redhill Aviation Flight Centre. With the support of the scholarship, Harrison can attend a university to study Air Transport with Commercial Pilot Training.

SOFTWARE

PBCS Training Courseware

infoWERK has launched its Performance Based Communication and Surveillance (PBCS) training courseware that concentrates on the performance-based communication and surveillance specifications applied to the air traffic service provision. The online, multimedia-based training provides a framework for stakeholders including regulators, air traffic service providers, operators, communication service providers and manufacturers to collaborate and optimize the use of available airspace while identifying and mitigating safety risks.

The training covers the PBCS concept, differences between PBCS and Performance Based Navigation, RCP/RSP specification application, PBCS operational authorization, operator eligibility / aircraft system, operational procedures, flight planning and PBCS in the North Atlantic/ High Level Airspace.

CABIN CREW

Passenger Cabin for DLR

RST has supplied and installed a multi-functional passenger cabin on behalf of the German Aerospace Center (DLR) to be used for research at the DLR simulator center AVES (Air Vehicle Simulator) Braunschweig.

With the goal of investigating the dynamic interaction between humans and aircraft, AVES has been operating with two high-quality simulation cockpits for each type of aircraft and helicopter. To achieve realistic environmental factors in future tests, the structure of the simulator is modeled to that of a classic aircraft cabin, with rows of seats, luggage racks, operational controls, displays and air conditioning in their usual positions. Essential additions to the basic configuration include components and systems that enable DLR specialists to conduct targeted research into the development of cabin layouts and functionalities.

MAINTENANCE

EASA Part 147 B737 MAX Approval

KLM UK Engineering has achieved European Aviation Safety Agency (EASA) Part 147 approval to offer training courses for the Boeing 737 MAX aircraft.

Ray Flower, head of Technical Training, said: "KLM UK Engineering is delighted to have gained the approval for the Boeing 737 MAX. This was the natural progression for us, after delivering Boeing 737 training for over 15 years on the Classic, followed by the Next Generation. With significant demand for both type and practical training for this product we look forward to offering solutions for 2019 onwards.

The Company's training facility recently relocated to the International Aviation Academy Norwich, which is adjacent to the main base maintenance operation. This facility has been purpose built to accommodate aviation engineering training, with a live Boeing 737 aircraft, fully equipped workshops and state of the art classrooms.

COMPANY NEWS

AeroStar Partners with ECA Group

AeroStar Training Services, LLC has finalized an agreement with ECA to bring iPad-based FMS free play training technology to Airbus A320 and Boeing B737 type rating candidates. This is ECA Group's solution to training centers' need for FMS familiarization tools. It offers a free play and accurate simulation for cost effective pricing. Pilots' transition to complex flight management system is smoothly performed thanks to an easy-to-use interface and a complete set of available functions.

Looking to expand on this mutually beneficial relationship, the two organizations are discussing plans to expand their agreement and provide AeroStar with their full-line of aviation simulation training products.

ARRIVALS & DEPARTURES

RSi Visual Systems

RSi Visual Systems has named Tai Duong as the company's new president, succeeding Jeff Everett. Duong joined RSi in 2005 and played an instrumental role in the innovation and growth of the database and engineering initiatives. He most recently served as RSi's managing director, leading the company's global project strategy and management teams. He was also a key architect of the company's latest expansion which doubled manufacturing capacity.

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PILOT TRAINING

Cessna Trainer for AAG

Alpha Aviation Group (AAG) has purchased eight Cessna 172S G1000 trainer aircraft that will increase its fleet to 24. The purchase is part of AAG's expansion program to help meet its demand for pilot training, which also includes an $11 million investment into a new A320 full flight simulator and the construction of two new training centers.

The A320 device will increase AAG's fleet of simulators to six and it is expected to be ready for training (RFT) by 2019, and comes with full Upset Prevention and Recovery Training (UPRT) capability and A320 New Engine Option (NEO) and Current Engine Option (CEO) capability.

The AAG Simulator Training Centre will house four additional simulator bays. The AAG International Training Centre for Aviation Training (AICAT) will include a hangar to accommodate the new Cessna aircraft, offices, operations rooms, classrooms and dormitories.

SOFTWARE

Implementing EBT

Jetstar Airways (Australia) has selected PRODEFIS TPMS for the implementation of evidence-based training (EBT) and to have a paperless training organisation.

PRODEFIS TPMS is an all-in-one IT solution for airlines that implement EBT, Advanced Qualification Program (AQP) and Alternative Training and Qualification Programme (ATQP). TPMS covers all training-related activities for training managers, instructors/examiners and trainees while streamlining the coordination and communication with the planning and scheduling teams.

ADVERTISING CONTACTS

SIMULATOR

Frasca Contract

Frasca International has received a contract to supply a TBM910 Level 5 flight training device (FTD) to SimCom International's training center located in Scottsdale, Arizona.

The FTD will be built in an aircraft cockpit and equipped with G1000Nxi with two PFD's and one MFDs including TAWS, weather radar, synthetic vision, traffic advisory system, ESP/SUP/EDM, real MD302 electronics standby instrument and enclosed Instructor Operator System (IOS) cab. The FTD will include an RSi visual system with projected 220° spherical display system.

CALENDAR

Simulation & training events organised by Halldale Group and CAT Magazine

26-27 March 2019
STRS 2019 – Simulation & Training for Resilience & Safety Symposium
4 Hamilton Place, London, UK
www.strs-event.com

30 April-2 May 2019
WATS 2019 – World Aviation Training Summit
Rosen Shingle Creek Resort, Orlando, Florida, USA
www.wats-event.com

27-28 June 2019
AAETS 2019 – Asian Aviation Education and Training Symposium
Conrad Hotel Seoul, Republic of Korea
www.aaets-event.com

3-4 September 2019
APATS 2019 – Asia Pacific Airline Training Symposium
Marina Bay Sands, Singapore
www.apats-event.com

29-30 October 2019
EATS 2019 – European Airline Training Symposium
Estrel Hotel, Berlin, Germany
www.eats-event.com

Other simulation & training events

4-7 March 2019
2019 HAI Heli-Expo
Atlanta, Georgia, USA
www.rotor.org/home/heli-expo

14-16 March 2019
2019 International Women in Aviation Conference
Long Beach, USA
www.wai.org/2019-international-women-aviation-conference

STRS 2019

MAYFAIR, LONDON • 26-27 MARCH 2019

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