IMMERSIVE TECHNOLOGIES: TRANSFORMING TRAINING AND LEARNING

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DIRECTOR’S MESSAGE

DR MICHAEL LIM
Director of SAA

The aviation industry is constantly undergoing changes and growth, and the technological developments in the past decades are proof of how innovation can lead to safer, more efficient air travel.

The next two decades will be a pivotal growth period for aviation, as air travel is projected to double – much of it in the Asia Pacific region. To keep up with the demand, we will need more skilled aviation professionals, who can adapt to these transformative technologies and changes.

At SAA, we are leveraging technologies to augment training and prepare participants for the future. We have recently integrated Virtual Reality (VR) technology into our accident investigation training, to provide learners with realistic and engaging training scenarios. Our simulators have also been redesigned to provide a more realistic environment for training in emergency situations and air traffic control.

As technology ramps up, humans will remain at the heart of aviation. The future generation of aviation professionals must be flexible and adaptable to the technological shifts.

I hope you enjoy reading this issue of SAA Review.

SAA Review is a biannual publication of the Singapore Aviation Academy — a division of the Civil Aviation Authority of Singapore. SAA Review is complimentary for SAA associates and alumni.
THE FUTURE OF THE AVIATION INDUSTRY

Did you know that air transport is estimated to double in size every 15 years? Trends suggest that passenger numbers could grow to a whopping 8.2 billion in 2037, according to the International Air Transport Association’s (IATA’s) forecast. Over the next two decades, the Asia Pacific region is set to become one of the world’s largest aviation markets.

To manage this rising demand, organisations globally are looking into new technologies and innovative solutions to streamline processes, improve efficiency, and ensure that safety continues to be upheld amidst growth. Here are some ways organisations are utilising the new technologies:

### RESPONDING TO HIGH DEMAND WITH NEW TECHNOLOGIES

<table>
<thead>
<tr>
<th>Airport Operators</th>
<th>Regulators</th>
<th>Air Navigation Service Providers (ANSPs)</th>
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<td>In airports, fast travel has become increasingly common, with the use of self-service kiosks for check-in, baggage tagging, and self-boarding, among others. Baggages can also be tracked better with the use of RFID bag tags.</td>
<td>To ensure better safety management and oversight, regulators are increasingly looking into harnessing operational data using big data analytics to predict safety risks ahead of time.</td>
<td>ANSPs are leveraging technologies such as remote and digital control towers and automatic dependent surveillance-broadcast to improve tracking of aircraft and overall safety.</td>
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Supporting the advancement of hardware and software is the “heartware” – the human capital who operates and utilises these technologies. At SAA, courses are offered to cater to the diverse group of aviation professionals, for them to progress and be able to manage the increasing demand and dawn of new technologies.

### LEADERSHIP AND MANAGEMENT

SAA, in collaboration with ICAO, conducted the 2018 edition of the Directors General of Civil Aviation Programme on Aviation Safety and Directors General of Civil Aviation Programme on Aviation Security. Designed for Directors-General (DGs), these programmes are by-invitation only.

#### Directors General of Civil Aviation Programme on Aviation Safety

The ICAO-SAA DGCA Programme on Aviation Safety was attended by 20 DGCAIs and their deputies, where they gained specific knowledge regarding national and international civil aviation safety frameworks and the underlying principles that will enable them to effectively ensure proper management of aviation safety. Topics on the Chicago Convention, State Safety Programme, and Safety Management Systems were also discussed. Participants complimented the programme, noting that speakers were experienced, and topics were insightful and tailored for DGs.

* Upcoming Programme Date/s: 21-22 Sep 2019
Directors General of Civil Aviation Programme on Aviation Security

The ICAO-SAA DGCA Programme on Aviation Security delved into specialised information about national and international civil aviation security. Speakers stressed the importance of security, and highlighted latest developments and challenges. With the advent of new technologies, issues on cybersecurity and aircraft network security were also brought to the fore.

Through the programme, DGCAs and their deputies gained insights into aviation security legislations and regulations, and were provided the required knowledge to implement appropriate aviation security initiatives. Participants expressed their gratification with the well-organised programme, commending its effectiveness for training DGs of different backgrounds.

* Upcoming Programme Date/s: 27–28 Sep 2019, Montreal

CIVIL AVIATION MANAGEMENT

30th Run of SAA’s Flagship Civil Aviation Management Programme

In its 30th run, the Civil Aviation Management Programme (CAMP) covered a wide spectrum of topics related to the civil aviation sector and its major components. The extensive two-week course covered every facet of an integral aviation ecosystem, and highlighted exemplary regulatory and operational practices.

Taught by more than 30 speakers comprising practitioners and industry leaders, this flagship course saw an attendance of 65 participants from 38 countries. They visited Changi Airport to learn first-hand of the airport’s service quality management, among others. They were also provided insights into Singapore’s experience with air transport development, through case studies and discussions on Singapore’s public governance and policies.

* Upcoming Programme Date/s: 22 Apr–3 May; 8–19 Jul; 14–25 Oct 2019
Inaugural International Air Law: Application and Practice Course

This intermediate-level course provides in-depth knowledge on the regulations and procedures of international air law. Participants are empowered to apply legal documents and instruments, and evaluate the impact of recent developments in air law on the aviation industry.

44 legal personnel in aviation-related organisations from 18 countries attended this course, led by instructors Professor Brian F. Haven from McGill University’s Faculty of Law; Professor Pablo Mendes de Leon from Leiden University; and Ms Tan Siew Huay from CAAS. Knowledge of international regulatory frameworks governing civil aviation was imparted to the participants, including air transport agreements, competition regulations in aviation, and precedents derived from ICAO and the Chicago Convention.

* Upcoming Course Date/s: 1–5 Jul 2019

“Excellent choice of lecturers! They really know their stuff and managed to share as much as they could in the short time.”
— Danielle Nicette, Seychelles

AVIATION SAFETY

ICAO STP: Operational Hazard Identification and Risk Mitigation Course

Operational personnel and regulatory inspectors involved in Hazard Identification and Safety Risk Mitigation (HIRM) processes will benefit from the ICAO Standardized Training Package: Operational Hazard Identification and Risk Mitigation (ICAO STP: OHIRM) course. The workshop provides participants with the expertise to develop and apply HIRM tools in the context of a Safety Management System (SMS) and State Safety Programme (SSP).

Led by an ICAO qualified instructor and SMS expert, participants learned how to utilise proactive, reactive and predictive methodologies for hazard identification, and established a hazard and risk management database. The HIRM course taught 19 participants how to validate hazard information and activate safety risk management projects to target specific hazards, using hands-on exercises and the HIRM tool.

* Upcoming Course Date/s: 13–16 May 2019; 11–14 Nov 2019
5th Singapore Aviation Safety Seminar

Global flight tracking systems, big data for predictive maintenance, technologies and systems addressing runway safety risks – these were but some of the topics discussed at the 5th Singapore Aviation Safety Seminar (SASS), jointly organised with Flight Safety Foundation (FSF).

More than 200 aviation professionals were in attendance for the three-day event, as they engaged in active discussions on issues centred on the theme, ‘Safety: What’s Making the Difference Today?’ Participants relooked at existing safety solutions and exchanged ideas to enhance the implementation of existing solutions, while experts shared valuable insights into the latest trends and technological developments in aviation safety. For example, speakers cited the opportunities that automation and virtual reality have brought for the training of maintenance crews, and how the use of robotics has improved the quality of maintenance performances and ensured higher safety levels.

In addition to the panel discussions and breakout session, aviation professionals also had the chance to network with both regional and international counterparts, and gained from the professional exchange of ideas and experience.

Inaugural Resolution of Safety Issues Course

Amid the rapid growth of air traffic, it is important to ensure that safety continues to be upheld as the top priority. As part of upholding high safety standards, it is therefore crucial for aviation professionals performing regulatory or auditing functions to be equipped with the competencies to develop and apply appropriate procedures and processes, prepare enforcement manuals and guidance materials, and decide on the best course of action in conducting investigations and interviews. It also provided participants with further understanding of a State’s obligations in the resolution of safety concerns.

The Resolution of Safety Issues course taught 17 participants from nine countries the skills needed to develop and apply appropriate procedures and processes, prepare enforcement manuals and guidance materials, and decide on the best course of action in conducting investigations and interviews. It also provided participants with further understanding of a State’s obligations in the resolution of safety concerns.

*Upcoming Course Date/s: 16–20 Mar 2020*
AIRPORT MANAGEMENT

Moving with Times: Airports of the Future

In future, technological advancements and change can be an enabler for some and a disruptor for others. The two-part Future Airport Series, jointly developed by the National University of Singapore (NUS), was introduced in 2018 to address how organisations can transform, leverage technologies appropriately in the increasingly digital age, and stay agile in navigating the increasingly complex aviation landscape. In 2019, the Future Airport Series will be expanded into a four-part series, to provide an in-depth look into how data and digital technologies can be tapped on for growth.

13–17 Aug 2018

Future Airports: Transforming Mindsets of Airport Operators and Regulators for Tomorrow Course

Targeted at leaders of the aviation industry, this course equipped director-level and senior management personnel with the skills to diagnose the state of transformation, analyse trends in the aviation industry, identify potential gaps to enable holistic transformation and develop a ‘transformation roadmap’ unique to their organisation’s vision, purpose and strengths.

17 participants from eight countries walked away from the course with a bigger picture of the aviation landscape, the purpose of transformation within the enterprise, and competencies to develop their own transformation framework back at home.

* Upcoming Course Date/s: 19–23 Aug 2019; 24–28 Aug 2020

15–19 Oct 2018

Future Airports: Technology and Digital Agility for Airport Operators and Regulators Course

This course, aimed at providing participants with the ability to rally their organisations to become more agile in the digital age, was attended by 17 middle management personnel from 11 countries.

Through learning journeys to Changi Airport, case studies and discussions, participants gleaned insights into the digital trends and challenges in the industry, identified digitisation opportunities, and learned strategies and techniques to bridge the gap between business and information technology. They also learned to better adapt to disruptive technology, and built up the digital capabilities specifically catered for the aviation sector.

* Upcoming Course Date/s: 10–14 Jun 2019; 8–12 Jun 2020
The annual International Symposium on Airfield Infrastructure of Airports (ISAIA) brings aviation professionals and academia together to discuss innovative concepts in airfield infrastructure planning and development, while providing a nexus for knowledge-sharing and networking.

The second edition of ISAIA highlighted engineering and future development. The event featured 14 renowned speakers from Changi Airport Group, Federal Aviation Administration and Airport Authority Hong Kong, among others, with 110 participants from over 10 countries. The symposium featured discussions on strategies and solutions to target engineering obstacles, panel discussions on environmental challenges in airport expansion, and sharing on the latest innovations in airport engineering.

The third edition will return this August with the theme, ‘Airfields for New Generation Aircraft’, where participants will get to glean insights into how airfields can support the possible expansion of new generation aircrafts.

* Upcoming Symposium Date/s: 28–30 Aug 2019

Collaboration among different stakeholders in the aviation landscape has always been emphasised, but increasingly so in the context of growing air traffic. With the introduction of the Airport-Collaborative Decision Making (A-CDM), stakeholders like airport operators, airlines and air traffic controllers can now share valuable information on airport and flight operations more seamlessly to enhance the overall operational efficiency of airport operations.

36 participants from nine countries embarked on a four-day A-CDM course, which included a hands-on learning journey to Changi Airport to understand how A-CDM can lead the optimal use of resources and improved predictability of events. Topics such as variable taxi time and pre-departure sequencing, as well as the roadmap to the implementation of A-CDM were discussed.

* Upcoming Course Date/s: 22–25 Jul 2019; 9–12 Mar 2020

“I got to learn more about A-CDM, namely the main concepts and how it was applied in Changi Airport. It was interesting and assuring to know that the aviation field is growing and progressing.”

— Lee Yu Xuan, Singapore
**Inaugural International Advanced Fire, Arson Explosion Investigation Training and Fire Investigation Instructor Certification Course**

This inaugural course is aimed at equipping participants with the competencies to conduct fire investigation and deliver related instructional programmes effectively. The course was attended by 15 emergency services personnel and led by Mr Ronald Hopkins, President of the National Association of Fire Investigators (NAFI) and Chair of the NAFI Certification Board. This is one of the few NAFI certification courses available in the Southeast Asian region.

Through the course, participants learned how to investigate explosion scenes, identify and preserve evidence, and determine the fire origin, among others. Learning points were also gleaned from case studies of past fire investigations.

**AIR TRAFFIC MANAGEMENT**

**Air Traffic Control Watch Managers Course**

Targeted at air traffic controllers in supervisory roles, this course aims to provide participants with the competencies to manage Air Traffic Control (ATC) units as a Watch Manager in an ATC operational environment. Taught by Mr Patrick Coyle, a senior ATC instructor with more than 15 years of instructing experience, the course imparted participants with the skills to lead, communicate and manage teams, as well as conduct ATC investigations, among others. It was an engaging and hands-on learning experience for the participants with the implementation of role-play and group discussions.

*Upcoming Course Date/s: 24-28 Feb 2020*
The aviation industry continues to experience exponential growth. The International Air Transport Association (IATA) predicted a 3.5 per cent compound annual growth rate for international aviation, with passenger numbers potentially doubling to 8.2 billion in 2037. The Asia Pacific region is expected to see the largest growth, contributing to more than half the number of new passengers over the next 18 years.

The International Civil Aviation Organization (ICAO) had also released its preliminary figures, noting that a total of 4.3 billion passengers were carried by air transport on scheduled services in 2018. This marked the first time that worldwide annual air passenger numbers had exceeded four billion.

The future of global aviation is promising. If this growth is successfully harnessed, it would mean a better future for aviation and the global economy. The global aviation community needs to synergise its resources, create opportunities through innovation, further leverage technologies and strengthen collaboration, so as to jointly ensure a sustainable future.

LEVERAGING TECHNOLOGIES TO ADVANCE AVIATION

New technologies can assist States and aviation organisations to collaboratively chart the next frontier of aviation. Artificial Intelligence (AI), Virtual Reality (VR), big data, and robotics are some of the technologies that the industry is harnessing now.

Singapore’s Foray Into New Technologies

SMART DIGITAL TOWER

The Civil Aviation Authority of Singapore (CAAS) is testing a smart digital tower equipped with a range of assistive functionalities and features. It is envisioned to enhance air traffic management and safety of runway and ground operations, and to increase operational efficiencies at Changi Airport.

ARTIFICIAL INTELLIGENCE (AI)

CAAS has partnered Searidge Technologies to conduct research and development into the application of Artificial Intelligence (AI) in control tower operations. AI may be applied to enable new Air Traffic Management (ATM) functionalities, such as predictive runway incursion and collision detection, which can potentially enhance the safety and performance of control tower operations.

FAST (FAST AND SEAMLESS TRAVEL)

Changi Airport has introduced a fully automated departure process, FAST (Fast and Seamless Travel) at Terminal 4. Automated check-in kiosks allow for faster check-in, bag tagging and baggage handling, while facial recognition and 3D screening technologies speed up passenger processing.
HUMAN AT THE HEART OF TECHNOLOGICAL ADVANCEMENTS

As technology continues to advance, with new innovations arising and changing the way the aviation industry operates, what remains unchanged is that humans will continue to be at the heart of aviation. Therefore, the training for future generations of aviation professionals must continue to be a priority, to ensure that it cultivates the right mindsets to harness technological advancements effectively and appropriately. Likewise, training programmes – while being augmented by technologies – must also be developed by instructors with the right expertise, and supported by knowledge-sharing through learning communities.

IMMERSIVE LEARNING AT SAA

At SAA, technologies such as VR and digital simulations have been implemented for participants to practise and build up competencies in a safe and guided environment that reflects real life conditions. For instance, air traffic training at SAA now includes an enhanced aerodrome simulator with greater digital functions, such as speech recognition, synchronised video, voice playback, tabletop trainer and part-task trainers, for more effective and efficient training of air traffic controllers.

“I see technology as a way of complementing the high-quality instructors and curriculum that SAA has, instead of replacing them. Technology is able to bring to the table what traditional methods of teaching is not able to offer to the learners.”

Mr Jason Wong, Deputy Director (Training), SAA
HONING INVESTIGATIVE SKILLS IN A GUIDED ENVIRONMENT

When it comes to training for aircraft accident investigations, Ms Chan Hui Ying, Senior Manager, SAA, highlights the value of VR in “providing a safe environment for participants to explore, make mistakes, and learn from them.”

Ms Chan is part of the four-man team involved in the development of VR modules that was introduced this year for its Aircraft Accident Investigation Techniques course. The VR modules simulate realistic aircraft crash scenarios and allow participants to put theory into practice.

The VR training enables trainee investigators to execute investigative methodologies in a hazard-free environment, under the instructors’ guidance. Participants will be guided to identify and mitigate potential hazards similar to those in real-life crash sites, document the evidence through photography and collect exhibits for further tests. This sense of realism will also improve participants’ abilities to better react in real life scenarios.

Mr David Lim, Head (Training)/Principal Investigator, Transport Safety Investigation Bureau, said, “If I put participants in VR today, they will have a chance to practise, such that when a real situation happens, they are able to fall back on the training received, and know the steps to take.”

Instructors also have the flexibility of creating a variety of accident scenarios. This would have been difficult to achieve traditionally, where hands-on training involved setting up a physical crash site with limited artefacts, such as an old aircraft, in a constrained space. Mr Lim pointed out that the introduction of VR modules “make training faster, easier and more efficient.”

What is perhaps the most important, however, is the gamification aspect. “Participants are engaged, able to interact with the simulations, and may even forget that they are attending a course. This makes it a more appealing way of learning for them,” Mr Lim said.

As most of us have never been to an accident site before, the VR experience was useful and provided us a good opportunity to learn [in a realistic setting].”

Ms Chawannuch Wungrotjanarut, Aviation Safety Data Analyst, Nokscoot Airlines Company Limited
NAVIGATING THE DEMANDS OF AIRPORT FIRE-FIGHTING

For personnel involved in airport emergency services, training is a critical and an ongoing process to ensure operational readiness. At SAA, instructors aim to make training as comprehensive and similar to real-world conditions, so as to ensure that trainees are up-to-speed to carry out their duties in airport emergencies.

With this aim in mind, an enhanced Breathing Apparatus (BA) Simulator was introduced in 2018, replacing the earlier version commissioned in 1993. The new simulator incorporated new technologies, and was redesigned into a three-tiered training maze configured with variable orientation routes.

“This new modular design allows versatile customisation of scenarios, which ensures that trainees experience a diverse range of emergencies,” Mr Marimuthu Sivaraja, Principal Instructor (School of Airport Emergency Services), explained.

Advantages of the BA Simulator

**BETTER MONITORING**
- Control room with monitoring console
- CCTV and thermal imaging cameras record training
- Microphones allow instructors to communicate with trainees from control room

**SAFER TRAINING**
- Emergency stop function turns on all lights and ejects smoke
- Orientation lights help trainees navigate their way out

**HIGHER TRAINING REALISM**
- Black-out room creates situations with little to no light
- Distraction lights simulate glare
- Speakers create environmental noise, such as screams and explosions
- Heaters simulate fires
- Smoke machine emits realistic smoke

WHAT HAPPENS DURING TRAINING?

A typical training session comprises three stages, in which the simulated effects are progressively added. A minimum of two trainees have to:

**PRE-MISSION**
- Suit up with 25kg personal protective equipment
- Test their endurance on the Endless Ladder Simulator by climbing between 45 and 50m high

**MISSION**
- Navigate through the maze with the lights on, in total darkness and/or in smoke
- Carry out a rescue mission scenario with dummy victims

**POST-MISSION**
- Learn from the after-action review aided by a built-in recording feature

Since the redesign, the BA simulator has received positive feedback from trainees who complimented its challenging obstacles, immersive experience and heightened realism. The BA Simulator is another step towards SAA’s goal in leveraging technology to improve training, so that more aviation professionals are prepared for future challenges.”

Mr Marimuthu Sivaraja, Principal Instructor (School of Airport Emergency Services), SAA

Scan this QR code to learn more about the Breathing Apparatus Simulator on SAA’s Facebook page.

Check out SAA’s Facebook page for its series of fortnightly posts on potential technological applications for aviation. #TechThursday
47 participants attended the customised State Safety Programme Implementation course at Gambia on 19–23 Nov 2018. The same course was conducted in Tunisia on 12–16 Nov 2018.

ADVANCING AVIATION

TOGETHER AS ONE

Working closely with the Singapore Government and international funding agencies, training fellowships are provided at SAA to enable aviation professionals to pursue continual training. One such fellowship is the Singapore-ICAO Developing Countries Training Programme (DCTP).

SINGAPORE-ICAO DEVELOPING COUNTRIES TRAINING PROGRAMME (DCTP)

Jointly established by Singapore and ICAO in 2001, the Singapore-ICAO DCTP is sponsored by the Singapore Government and administered by the ICAO Technical Cooperation Bureau.

Another participant who benefited from DCTP is Ms Rohina Bhattarai, Deputy Manager in Management Information Systems and Research, Civil Aviation Authority of Nepal. “The training with SAA was fruitful towards learning about the new technology and systems that are being used at a global scale,” she highlighted, referring to the Future Airports: Technology and Digital Agility for Airport Operators and Regulators course that she took. “Digital innovation, intelligent empowerment of digital platforms for aviation, and improvement of customer support systems are some of the many areas taught which were relevant to us.”

Mr Kondwani Munkhuwa, Duty Fire Officer, Department of Civil Aviation, Malawi, attended the Airport Emergency Services Command Leadership Workshop under the DCTP fellowship. “SAA is one of the academies that has helped in filling the knowledge gap in the labour market,” he said. “After attending the workshop at SAA, I have learned to understand the different leadership styles, and the customer service perspective in fire services.”

COLLABORATING WITH PARTNERS TO SUPPORT AVIATION GROWTH

Beyond the training programmes offered under DCTP, SAA also partners other organisations to enhance aviation training globally. These include collaborations with the East African School of Aviation (EASA), Central American Corporation for Air Navigation Services (COCESNA), and Agency for Air Navigation Safety in Africa and Madagascar (ASECNA), to support aviation development in their respective regions. In 2019, the Customised Cabin Safety Inspectors, Customised Safety Management and Customised State Safety Programme Implementation courses will be conducted at EASA.

For more information about the courses that will be held at EASA, please contact:

Name: Ms Esther Kibuti
Email: engithi@easa.ac.ke

On-site trainings are also conducted yearly for member states under the African Civil Aviation Commission, Arab Civil Aviation Organization, and Latin American Civil Aviation Commission respectively. The Aircraft Accident Investigation Techniques course will be organised at Egypt in July 2019 and Quito, Ecuador in October 2019, under the CAAS-ACAO and CAAS-LACAC collaborations, respectively.
In his opening speech, Guest-of-Honour Mr Soh Poh Theen, Deputy Director-General (Air Navigation Services) of the Civil Aviation Authority of Singapore (CAAS) stressed the importance of fostering and maintaining international friendships within the aviation industry. With 2018 being SAA’s 60th anniversary, Mr Soh marked the milestone by sprinkling silver sand over a SAA60 Rangoli art board, a gesture that also reflected the event’s theme of Illuminance!

Drawing from Singapore’s rich heritage, the opening performances showcased a unique slice of local culture for the international guests. They included a lively Malay Kompang performance by instructors and trainees of the School of Airport Emergency Services, as well as a mysterious Chinese mask-changing act. There was also a wide array of local culinary delights and activities for guests to enjoy.

“During my short time at SAA, I’ve been exposed to so many different cultures and cuisines, which is not something I would be able to do at home in Chile.”

Mr Rodrigo Fernandez, Legal Counsel for the Civil Aviation Authority of Chile

Now in its 25th year, Cultural Night continues to be a much-anticipated annual tradition for SAA, with this year’s edition welcoming 150 guests from over 50 countries. The event encapsulated SAA’s international spirit of friendship and learning, and was a celebration of cultural diversity and exchange.
“International” was undoubtedly the evening’s buzzword. Guests hailed from various regions across the globe, such as West Africa and the Pacific Islands. It was a valuable opportunity for them to mingle and strengthen connections with their foreign counterparts beyond the classroom, building bonds across cultures and nations.

All eyes were on the crowd favourite “Cultural Runway” segment. Guests from 19 countries paraded in gorgeous ethnic wear, each representing their national origin. Not to be outdone, talented performers from Sri Lanka, Nigeria, Palau, Tonga, the Cook Islands and Papua New Guinea dazzled with three dynamic song-and-dance performances, and received rousing applause from the audience.

Mr John Hosking, Secretary of Transport at Ministry of Transport, the Cook Islands was one of the performers who was thrilled to showcase his country’s culture. “SAA Cultural Night 2018 was awesome and enjoyable,” he enthused. The performance aimed to showcase the Pacific culture with the rest of the world and received positive responses from the crowd.

Mr R.T. Liyanaarachchi, Assistant Manager (Planning) at Civil Aviation Authority of Sri Lanka had high praises for the staff at SAA whose friendliness encouraged him to perform on stage without hesitation. “The SAA Cultural Night presented a valuable opportunity for me to perform in front of a diverse crowd.” He looked forward to more of such events in the future.

SAA staff also had their own opportunity to shine, performing two classic songs and an LED drumming performance. The brilliant colours generated by their enthusiastic drumming were a fitting conclusion to a night that exemplified Illuminance!

Look out for SAA Cultural Night this October!
I’ve always been impressed with the SAA instructors. Not only are they very competent in teaching, but they bring with them a wealth of experience.”

Mr Abdul Rahman Alharthi, Safety Officer at Air Traffic Control & Navigation Services, Oman
There is tremendous value in people coming together to share expertise and resources and tackle complex safety challenges.

Mr Tay Tiang Guan
received the Laura Taber Barbour Air Safety Award at the 71st Flight Safety Foundation (FSF) International Air Safety Summit (IASS 2018) held in November 2018 in Seattle, UAS. Mr Tay is an SAA alumnus since 1988, and he had also guided SAA’s development over the years.

When asked about his takeaways from his decades of work in the aviation industry, Mr Tay emphasised the importance of building human capital and fostering a strong safety culture, one where individuals, teams and organisations demonstrate positive attitudes and behaviours towards safety.

As Deputy Director-General of the Civil Aviation Authority of Singapore, Mr Tay led the modernisation of Singapore’s safety regulatory framework, moving away from a traditional compliance-based approach, to one that focuses on establishing a robust and progressive safety oversight system. His extensive efforts and work with various stakeholders and industry partners have enabled the growth and development of Singapore’s aviation industry.

Recognised for his efforts in enhancing global aviation safety, Mr Tay has been awarded the prestigious Laura Taber Barbour Air Safety Award for his outstanding achievements in advancing aviation safety in the Asia Pacific region. This is the first time a Southeast Asian has received the award.

In her introductory remarks at the IASS 2018, Ms Margaret (Peggy) Gilligan, the 2017 award recipient and former FAA Associate Administrator for Aviation Safety, commended Mr Tay for his efforts in building human capital globally through SAA, in collaboration with States and international organisations.

She further went on to express her appreciation towards Mr Tay’s humble and down-to-earth approach in leading teams to drive initiatives that contribute to the advancement of aviation safety. She also highlighted Mr Tay’s relentless efforts in pioneering the Asia Pacific Data Collection, Analysis and Information Sharing for Aviation Safety (AP-SHARE), a regional data sharing initiative aimed at harnessing data analytics to help mitigate safety risks in aviation operations.

Mr Tay recounted that in the ICAO Asia-Pacific Regional Aviation Safety Team, he sought to enhance the effectiveness of the team to focus on addressing key safety issues in the region.

He firmly believes that the proper use of big data holds great potential to uncover safety vulnerabilities in aviation operations. With predictive analytics, one could go further to anticipate issues and mitigate potential safety risks and reduce aircraft incidents.

Ultimately, Mr Tay said that the success factors of regional initiatives lie in strong collaboration and trust among key stakeholders across the aviation sector. He dedicated his award to those who have worked closely with him, stressing that advancing aviation safety cannot be a single person’s effort.

Established in 1956, the Laura Taber Barbour Air Safety Award recognises and celebrates original and remarkable worldwide contributions in the field of aviation safety, be it civil or military, in method, design, invention, study, or other advancement.
Mr Chan Wing Keong likens accident investigation to solving mysteries – gathering evidence, speaking to witnesses, running analyses, making logical deductions and working backwards to reconstruct the events and determine the probable cause.

The 66-year-old is a veteran air accident investigator with more than three decades of experience in aviation safety. He led the establishment of the Air Accident Investigation Bureau of Singapore, an independent investigation unit, since 2002. From an initial two-man team, the unit has expanded to become the Transport Safety Investigation Bureau, under the Ministry of Transport, an 18-man stronghold that looks into both air and marine safety investigations.

Mr Chan strongly believes that investigation is a team effort. “An investigator is not a superman who knows everything,” he said.

Investigation is a multifaceted activity requiring many steps and involving many specialities. The pursuit must be backed by a well-equipped investigation team with diverse expertise, and rooted in training to carry out investigations carefully and methodically. This is especially true in today’s context, where the air transport industry has become more complex, technologies more sophisticated, and stakeholders more demanding.

At the same time, Mr Chan also stressed the importance for investigators to be inquisitive and keen on lifelong learning – picking up skills from peers, and keeping themselves up-to-date with the latest technologies.

In 2017, Mr Chan received the Jerome F. Lederer Award of the International Society of Air Safety Investigators, for his contributions to technical excellence in furthering aviation accident investigation and for promoting international networking, investigation training and the sharing of knowledge and experience. He is the first Asian to be recognised with this honour.

A key international initiative of Mr Chan’s is the TSIB’s hosting of the triennial International Accident Investigation (IAI) Forum. Inaugurated in 2010, the IAI forum brings together the world’s top government investigation officials and experts to discuss issues relating to the organisation and management of accident investigation. It also serves as a platform for ICAO to inform, explain, and discuss with the safety investigation community developments and issues being pursued by ICAO.
EXPLORE

Upcoming Courses at SAA

06 – 10 MAY 19
NEW Strategic Airport Management Programme
Learn to formulate policies effectively to drive business growth in airports and achieve the desired strategic outcomes required by stakeholders.

13 – 17 MAY 19
NEW Safety Case Development and Review
Gain knowledge and skills to develop and evaluate safety cases for safety projects, as well as assess safety case arguments and explain the regulatory context for a safety case development.

06 – 10 OCT 19
NEW Airport Commercial Development Programme
Understand more about airport business, the different types of commercial business models, and the success factors in growing non-aeronautical revenue.

22 – 26 JUL 19
NEW Air Traffic Safety Electronic Personnel (jointly organised with Temasek Polytechnic)
Learn to appreciate the Air Traffic Management (ATM) environment and the key principles of Communication, Navigation, Surveillance (CNS) systems, and be equipped with knowledge to maintain and manage the complexities of the CNS/ATM systems.

29 JUL 19 – 02 AUG 19
NEW Establishing and Operating an Independent Aircraft Accident and Incident Investigation Authority
Learn how to increase your State’s capability to adopt the strategies and actions needed to establish and operate an independent Air Accident and Incident Investigation Authority, or review its investigative system.

07 – 11 OCT 19
NEW Airport Security Operations Managers
Learn how to manage the response action necessary in security emergencies involving aircraft, terminal building and airport facilities, and apply basic concepts of management to aviation security.

14 OCT 19 – 8 NOV 19
NEW Junior Airport Fire Officers
Enhance and upgrade your knowledge and skills in fire-fighting and emergency management. Developed in accordance with ICAO and IATA regulations, the course is beneficial to junior aircraft rescue and fire-fighting personnel.

For the full list of SAA’s courses, visit https://saa.caas.gov.sg/courselist

SAA Journal of Aviation Management

About the Journal
The Journal of Aviation Management is a regular publication that aims to provide an intellectual forum for the sharing of views and experiences on new developments and topical management issues in civil aviation by leading experts from Singapore and around the world.

Preparing Changi Airport for Climate Change Resilience
As climate change and its effects become increasingly apparent, the Civil Aviation Authority of Singapore embarked on a Climate Change Study for Changi Airport, to ensure that Changi Airport continues to be resilient. The study looked into identifying and assessing the vulnerability of critical airport assets, as well as defining a long-term, incremental and flexible adaptation pathway for Changi Airport, among others.

Safety Risk Mitigation — Barrier Strength to Likelihood Correlation
The Safety Risk Mitigation (SRM) process seeks to reduce the likelihood/severity values of a credible consequence, that may be projected from specific hazards, threats or latent conditions. However, a common challenge within the SRM process is the absence of an objective methodology to derive the likelihood component of an occurrence’s risk index (severity x likelihood value). In this paper, the Consolidated Barrier Strength Value methodology is introduced to enhance the objectivity and consistency of proactive SRM tasks, and allow for a better assessment of the Likelihood value of a credible occurrence.

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