ROYAL AERONAUTICAL SOCIETY
AUSTRALIAN DIVISION
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NEWSLETTER

The 2018 International Eminent Speaker is:

Dr Susan X. Ying FRAeS FAIAA

President International Council of the Aeronautical Sciences

discussing

'Innovation in Aeronautical Sciences: the Art of the Possible'

Date: **Wednesday 4th April, 2018**
Time: **18:00 for 18:30 hours**

Venue: **School New Law Lecture Theatre 101, Eastern Avenue University of Sydney**

To view map please click/copy and paste into your web browser the following:
https://www.google.com/maps/place/Sydney+Law+School/@-33.8868216,151.1889231,17z/data=!4m15!1m9!4m8!1m0!1m6!1m2!1s0x1b48b741eb860a7:0x68d80b2583f07411!2sSydney+Law+School,+Law+School+Building+(F10),+Eastern+Ave,+Camperdown+NSW+2006,+Australia!2m2!1d151.1907605!2d-33.8875005!3m4!1s0x1b48b741eb860a7:0x68d80b2583f07411!8m2!3d-33.8875002!4d151.1907604?hl=en-US

This a joint meeting with Engineers Australia

Light refreshments will be available **prior** to the commencement of the meeting. Attendance will attract 1.5 CPD hour

PROFILES: Dr. Ying is currently the President of the International Council of the Aeronautical Sciences (ICAS). During her distinguished career she has demonstrated success both at individual and team levels, and has been recognised as recipient of many honours, including the People's Republic of China Friendship Award, Asian American Engineer of the Year Award, Boeing Professional Excellence Award from the Chief Technology Office, NASA Group Achievement Award, Boeing Amelia Earhart Society Award; AIAA Applied Aerodynamics Best Paper Award and NASA Group Achievement Award.

With 35 years of aerospace industry experience including the Commercial Aircraft Corporation of China (COMAC) and the Boeing Company, Dr. Ying specialises in large-scale integration of aerospace programs, especially in international collaboration in aircraft development.

Dr Ying holds a commercial pilot license and is a FAA-Certified Flight Instructor. She earned her BA in Mechanical Aerospace Engineering from Cornell University, and received her PHD in Aeronautics and Astronautics from Stanford University and Brookings Institute in Brussels.

SYNOPSIS: The aerospace industry has given the world over 100 years of incredible innovation. Technical miracles, thought impossible at the time, have been developed including flight controls, jet engines, new materials and satellite navigation, just to name a few. These advances have moved flight from basic stick and rudder to a multitude of systems and capabilities that did not exist a decade ago

including commercial autonomous vehicles. How can the aerospace industry become even more innovative and agile to meet the challenges of the next phase of development? How can Australian innovators work with global aerospace players to embrace emerging breakthroughs as the catalyst for innovation?

This presentation provides a glimpse of aeronautical science innovation trends together with their associated challenges and opportunities. Three key components covered are: transformational tools and processes; evolutionary innovation in the near mid-term; and, game-changing products and services. For example, with the Internet of Things (IoT) and Data Analytics, value will multiply throughout the whole product life cycle. In the near mid-term future, products will trend towards "going soft" (software), going green, and going fast. Finally the presentation discusses innovations which enable further game-changing capabilities such as autonomous and intelligent systems that could find their way into application in the next decade.

The global aerospace industry is now on the cusp of its Third Revolution. The First Revolution took us to the jet age. The Second Revolution brought us to today where at any given time, there are thousands of commercial jets in the air. With the convergence of breakthrough innovations (e.g. as discussed in this presentation) potentially yielding unprecedented integrated capabilities, aerospace engineers can now open the design space beyond the traditional "tube and wings" and fossil-fuel based power plant. Building on our past successes, we must work together to seize the opportunity to innovate by leveraging the global supply chain like never before for achieving the art of the possible!

Sponsors

Australian Society for Defence Engineering

Australian Society for Defence Engineering (ASDE) is a technical society established by Engineers Australia in order to provide a forum to engage with various engineering fields and contribute to the practice of Defence engineering.

AEROSPACE AUSTRALIA LIMITED

Aerospace Maritime and Defence Found ation of Australia Limited is a not-for-profit corporation limited by guarantee and established to promote the development of aviation and Australian industrial, manufacturing and information/communications technology resources in the fields of aviation, aerospace, maritime and defence.

Agenda: 18:00 Hours: Registration | Welcome tea & coffee
18:30 hours sharp: Dr Susan X. Ying FRAeS FAIAA, President, International Council of the Aeronautical Sciences discussing 'Innovation in Aeronautical Sciences: the Art of the Possible'
19:30 Hours: Q & A Session
19:45 Hours: Light supper (pizzas) will be provided to give the speaker and attendees the opportunity to mingle and to continue discussions.

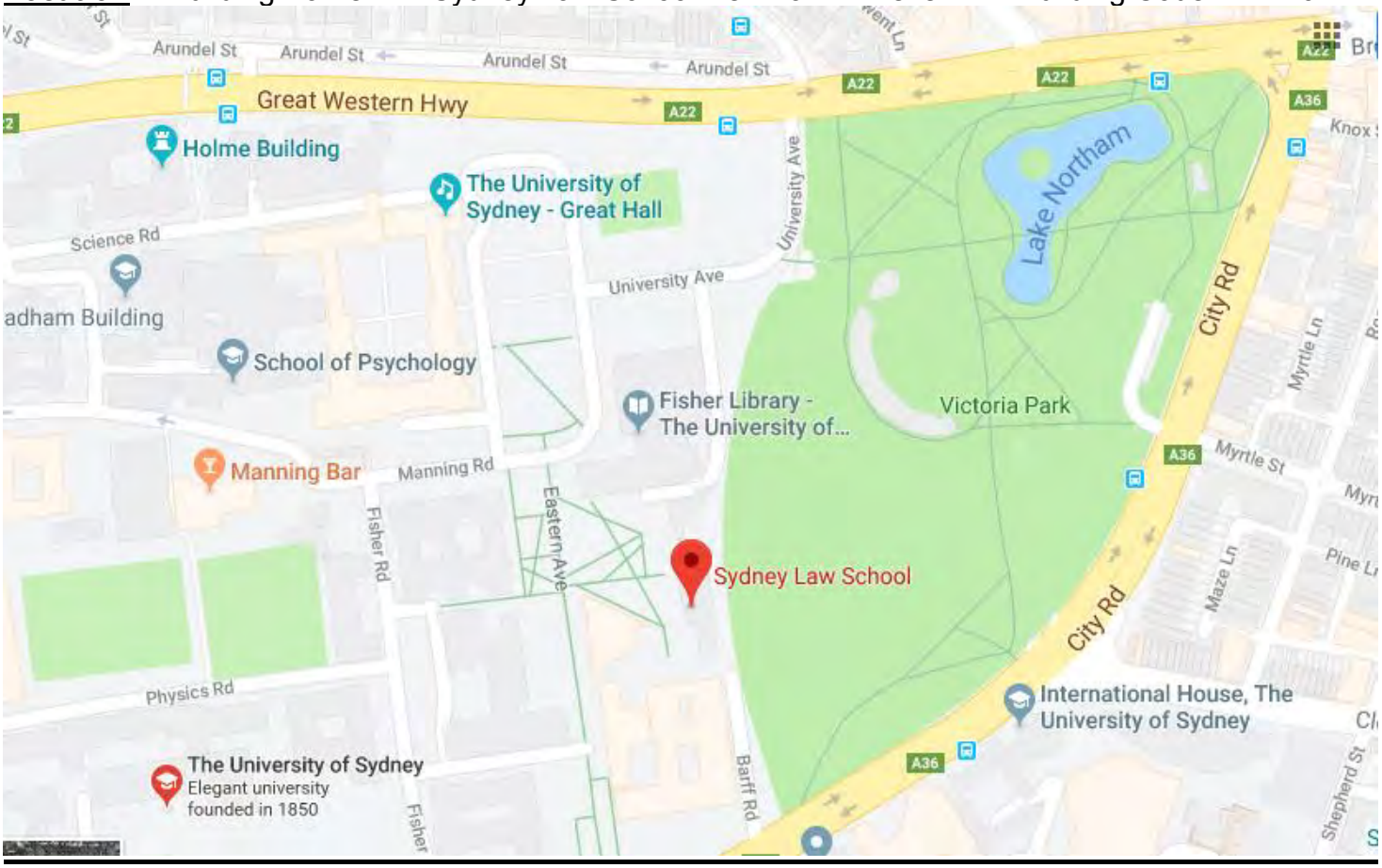
RSVP: Whilst attendance is free - registration for the evening **is required.** Please register by clicking on/copying and pasting into your URL this link: https://www.engineersaustralia.org.au/Event/sydney-focus-i-innovation-aeronautical-sciences-art-possible Your registration will be confirmed by email – please print the confirmation and bring it with you.

Parking: is available in the Shepherd Street multi-story car park, located on the corner of Cleveland St and Shepherd St and also in the New Law School car park – entry from Great Western Highway, and then follow the signs. The rate is $2 per hour (up to $6 maximum), but note that only gold coins are accepted in some machines. Parking is also available in University of Sydney On-Campus Parking for $2 per hour (up to $6 maximum). Additionally, free parking is available in surrounding streets. Please observe parking restrictions and allow time to drive to the Uni of Sydney, park, and walk to the venue.

Public Transport: The closest train station is Redfern station, which is a 10 minute walk away from the venue. From Railway Square near central station any 42X bus (e.g. 422, 426…) and the M30 will take you to the University of Sydney (on City Road). Please allow time to travel by public transport, including

waiting time, and time to walk to the venue. Please refer for further details: http://www.sydneybuses.info/routes/timetables-route-maps

Location: Building Name: Sydney Law School/New Law Annexe Building Code: F10A

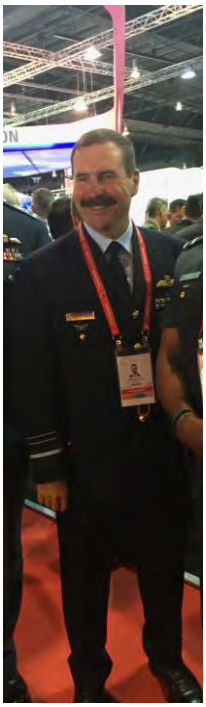


Membership Information: Annual memberships commence at only $155 or $29 for Students (but free for the first year). Being a member helps us sustain a vibrant activities programme and opens the way to access restricted 'member-only' events. For further details refer: https://www.raes.org.au/index.php/membership/2014-11-02-00-22-30/become-a-member

Closed Member Only Group on Facebook: Sydney branch is live video streaming our monthly branch lectures. Watch lectures live or at a later time, at the "RAeS - Sydney Branch - Members Only" group within Facebook. Please note that this service is only available to financial members of the Royal Aeronautical Society.

Singapore Airshow 6-11 February, 2018 - Report: On the evening of 5th February, 2018 the Singapore Airshow 2018 was declared open by Guest-of-Honour Mr Teo Chee Hean, Deputy Prime Minister and Coordinating Minister for National Security at the Singapore Airshow 2018 Opening Ceremony, held at Marina Bay Sands Grand Ballroom, who delivered an address entitled "Building a Vibrant Aviation & Aerospace Industry". He continued, 'As exhibitors, speakers and participants, your attendance contributes to building a strong network which can tap the opportunities in the Asia-Pacific region'.

The following day, Asia's largest and one of the most important aerospace and defence exhibitions in the world, was opened with the official ribbon cutting ceremony presided over by Mr Khaw Boon Wan, Coordinating Minister for Infrastructure and Minister for Transport and Dr Ng Eng Hen, Minister for Defence.



Chief of Air Force, Air Marshal Leo Davies, AO, CSC at the ribbon cutting

Singapore Airshow 2018 focussed on the latest technology innovation trends including cybersecurity, autonomous technology, unmanned aerial vehicles and smart technologies which took centre stage at this year's event. Some 1,062 companies from 50 countries & regions showcased their latest products and innovations to close to 50,000 trade visitors from 150 countries and regions.

Attendees were treated to the exhilarating aerobatics of the flying display performances including those by the Republic of Singapore Air Force (RSAF)'s integrated aerial display team, comprising of an F-15SG with a special livery to commemorate RSAF's 50th anniversary, along with two F-16Cs fighter jets. Other flying displays included the Indonesia Air Force (TNI-AU) Jupiter Aerobatic Team's KT-1B, the U.S. Air Force (USAF)'s F-16 and B-52 Stratofortress, the Sukhoi Su-30MKM from the Royal Malaysian Air Force (RMAF), and Royal Thai Air Force (RTAF)'s JAS-39 C/D Gripen, which made their first appearances in Singapore. Unfortunately on Tuesday (Feb 6) in preparation for a flying display by South Korea's aerobatic team 'The Black Eagles', a single-seater T-50 aircraft skidded and crashed into the grass verge at the side of Runway 1 before catching fire while taking off at Changi Airport. The plane was considerably damaged, and the pilot escaped with minor injuries. The accident forced the airport to close one of its two runways for about six hours, causing disruptions to both incoming and outgoing flights. The South Korean aerobatic team did not take part in the remaining flying displays at this year's Singapore Airshow. For further details refer:

http://www.straitstimes.com/singapore/transport/black-eagles-pull-out-of-singapore-airshow

Over at the Static Aircraft Display Area, attendees were given opportunities to get up-close and personal with the wide range of commercial and military aircraft. Key highlight of the static aircraft display include the F-35B Lightning II, the world's first supersonic short takeoff/vertical landing (STOVL) stealth aircraft, making an appearance at an Airshow in Asia for the first time. Other military aircraft that made their appearance at an Airshow for the first time in Asia, are the Royal Australian Air Force E-7A Wedgetail Airborne Early Warning aircraft, the Royal Thai Air Force's Gripen jet and the United States Air Force RQ-4B Global Hawk unmanned aircraft system (UAS).

There was also a range of business and commercial aircraft which appeared for the first time at an Airshow in Asia. Among them was the Gulfstream G500 and G600 aircraft, Textron Aviation Cessna Citation Longitude, and Embraer's fourth prototype of a next-generation narrow-body jet – the E-190 E2 prototype. Nicknamed the "profit hunter", the prototype features a tiger's face painted on its nose in a nod to Embraer's respect for Asia. Additionally, the HondaJet, the fastest, highest-flying, quietest, and most fuel-efficient jet in its class, made its debut at the Singapore Airshow.

Airbus' all-new A350-1000: On the Singapore Airshow's static display line, Airbus' all-new A350-1000 jetliner made an extended stopover amid a 12-city tour throughout the Middle East and Asia-Pacific region. Certified in November 2017 by both the European and American airworthiness authorities (EASA and FAA), the A350-1000 will enter service in the coming weeks with launch

operator Qatar Airways. Designed with airlines' priorities in mind, the A350 XWB meets the multiple challenges of high fuel prices, rising expectations from passengers and increasing environmental concerns. As with the other A350 XWB Family members, Airbus' A350-1000 brings together the very latest in aerodynamics, design and advanced technologies for a 25 per cent step change in fuel efficiency compared to its current long-range competitor. Measuring nearly 74 metres from nose-to-tail, the A350-1000 is the longest-fuselage version of Airbus' all-new family of twin-aisle, widebody jetliners. In a typical three-class configuration, featuring the company's 18-inch-wide economy class seats for modern comfort, the A350-1000 seats a total of 366 passengers.

The A350 XWB Family cabin design proved to be so successful that it redefined Airbus' approach to cabin interiors – leading to the creation of Airspace by Airbus, a next-generation cabin concept inspired by four key attributes: comfort, service, ambience and design. Passengers on the A350-1000 can expect a spacious and quiet cabin, wider seats and elegant ambient lighting that not only contributes to a beautiful interior, but minimises the effects of jetlag, as well. The A350-1000 also can offer passengers the most modern in-flight experience available. With movies on-demand included within a range of features passengers can stay entertained throughout their flight, while the availability of email and Wi-Fi connectivity can ensure that they can stay in touch with the world below; whether it's posting to social networks, staying on top of important business emails or something else – there's no need to be out of touch when you're in the air.

The A350 XWB is truly innovative; introducing new technology throughout the entirety of the aircraft. From the design of the wings that morph and change shape in-flight to obtain optimal efficiency, to the flight controls and system that reduce the pilot's workload, this aircraft utilizes modern technology to create a better way of flying. Nowhere is this innovation more apparent than in the A350 XWB's fuselage, built with carbon-fibre reinforced plastic (CFRP). The combination of these technological advances ensures that the A350-1000 burns 25 per cent less fuel than its nearest competitor, saving money and reducing any harmful effects to the environment.

Powering the A350-1000 will be higher-thrust Trent XWB engines from manufacturer Rolls-Royce, which will allow the largest member of the A350 XWB Family to attain even greater levels of efficiency. The engine will provide additional payload capability and range, along with 97,000 lbs. of thrust on take-off – making it the most powerful engine ever developed for an Airbus aircraft. With these specially-tailored Trent XWB powerplants, the A350-1000 will be capable of supporting long-haul routes to emerging markets such as Shanghai-Boston, Paris-Santiago, Sydney-London, and Sydney-New York, as well as more traditional flight segments as Manchester-Los Angeles, and Dubai-Melbourne. To the untrained eye there is little difference between the A350-900 and the A350-1000. The easiest way to distinguish between the two models is to note the number of wheels on the main undercarriage – the 900 has 4 wheels whilst the 1000 has 6 wheels on each main undercarriage.

Whilst the aircraft did not fly at the show it left during the evening of 8th February to continue its presence in South East Asia and Australia during the week of 12 February.

Airbus Skyways UAV demo flight 1: Airbus Helicopters' Skyways unmanned air vehicle has successfully completed its first flight demonstration at the National University of Singapore (NUS). The drone took off from its dedicated maintenance centre and landed on the roof of a specially designed parcel station where a parcel was automatically loaded via a robotic arm. Once successfully loaded with the parcel, the Skyways drone took off again and returned to land, demonstrating its automatic unloading capability. This inaugural flight demonstration follows the launch of the experimental project with the Civil Aviation Authority of Singapore (CAAS) in February 2016. The collaboration was subsequently extended in April 2017 with

Singapore Post (SingPost) becoming the local logistics partner to the project. Airbus Helicopters is the overall Skyways system architect and provider, contributing its capabilities in drone platforms as well as its concept of capability. “Today’s flight demonstration paves the way positively to our local trial service launch in the coming months. It is the result of a very strong partnership among the stakeholders involved, especially the close guidance and confidence from the CAAS,” said Alain Flourens, Airbus Helicopters’ Executive Vice President of Engineering and Chief Technical Officer.
Airbus Helicopters is at an advanced stage of the Skyways project. The research and development phase is progressing well, with equipment and facilities installed at the NUS campus. Various tests are already underway, and the unmanned air system will be demonstrated in the university when the trial service commences this year. Campus students and staff will be able to make use of Skyways to have small parcels between 2kg and 4kg delivered to designated parcel stations within the campus, which is the size of 150 football fields.
“The Skyways project is an important innovation for the aviation industry. CAAS has been working closely with Airbus on the project, with an emphasis on co-developing systems and rules to ensure that such aircraft can operate in an urban environment safely and optimally.” said Mr Kevin Shum, Director-General, CAAS.
“The urban logistics challenge is complex and an ecosystem of parcel lockers and autonomous vehicles will be a key piece to solving this puzzle,” said SingPost Group Chief Information Officer, Alex Tan. “The trial service that is taking off later this year will be an important step forward for SingPost in our efforts to develop solutions for the future logistics needs of Singapore and other cities of the world.”
“Project Skyways aligns with NUS’ vision of serving as a living lab to pilot innovative technologies and solutions. The NUS community is very excited to be the first in Singapore to experience this novel concept of parcel delivery by drones – an endeavour that could redefine urban logistics,” said NU Senior Deputy President and Provost, Professor Ho Teck Hua. “Students from the NUS Faculty of Engineering also have the opportunity to gain valuable experience as interns with Airbus for this project. We look forward to working closely with Airbus, CAAS and SingPost to carry out the campus-wide trial.”

Leo Jeoh (design office head at Airbus Helicopters Southeast Asia, seen at centre), and his team pose around the Skyways unmanned aerial vehicle

Rolls-Royce Launches “IntelligentEngine” Concept: British engine manufacturer Rolls-Royce launched a new “IntelligentEngine” concept at the Singapore Airshow, continuing its push towards utilizing “Big Data.” The IntelligentEngine vision is based on a belief that the worlds of product and service have become so closely connected that they are now inseparable, said the company. According to Richard Goodhead, senior v-p marketing for Rolls-Royce Civil Aerospace, the Intelligent Engine is “the confluence of three concepts—product, services and digital—coming together.” He said that when Total Care started for Trent engines, “the [three] circles started to overlap” and now Rolls is “taking far more data and doing far more with it.” Goodhead also said it can be represented by the “Three Cs—connected, contextually aware and comprehending," meaning the engine can learn from its own experiences and those of other engines. “In addition to designing, testing, and maintaining engines in the digital realm, the IntelligentEngine vision sets out a future where an engine will be increasingly connected, contextually aware and comprehending, helping to deliver greater reliability and efficiency,” said Goodhead. Refer further details: https://www.rolls-royce.com/media/insights/richard-goodhead-introduces-the-intelligentengine.aspx

In summary: Despite robust growth in passenger traffic, blockbuster commercial aircraft deals were missing in action at the Singapore Airshow. The world's biggest plane-makers Boeing and Airbus did not unveil any plane orders, even as global passenger traffic is projected to expand at 6 per cent this year. No major deals were announced on the defence side either. Instead, the first commercial aircraft order inked this week was from turbo-prop manufacturer ATR, which signed a contract with Bangkok Airways for four new ATR 72-600s worth over US$100 million. The European plane-maker also announced

another deal worth between US$15 million and US$20 million with Berjaya Hotels & Resorts for two pre-owned ATR 42-500 aircraft.
Meanwhile, light business-jet maker Honda Aircraft unveiled its largest order so far for 16 aircraft, estimated to be worth up to US$80 million, from European air taxi company Wijet. A string of deals were also signed for components such as Pratt & Whitney engines, as well as for maintenance, repair and overhaul (MRO) works and services. Boeing landed nearly US$1 billion worth of services orders, while ST Aerospace subsidiary, Elbe Flugzeugwerke (EFW), secured a contract to convert 10 A321 passenger aircraft to freighters.
Nonetheless, aircraft manufacturers at the Singapore Airshow continued to trumpet their bullishness on the region's prospects, citing an emerging middle class and growing travel demand. IATA estimates that by 2036, this region will clock 3.5 billion trips, with nearly half the 7.8 billion people expected to travel worldwide. Orders aside, though, the Singapore Airshow also serves other purposes, such as bringing together industry heavy-hitters, senior government officials and military chiefs to explore disruptive technologies and startups, and to discuss pressing issues facing the industry. Showcases around the digital-data revolution included Airbus' Skywise Predictive Maintenance Services for advanced predictive analytics, and Rolls-Royce's IntelligenceEngine (as previously mentioned).

Report 29 November, 2017 Lecture - Capt Matt Gray – 21st Century Airline Flight Training

Creating better pilots for tomorrow

Flight training has changed dramatically over the decades, and another change is underway, potentially pushing the industry towards an even safer and more predictable future. The flight simulator is one facet of training that has seen the greatest movement, but perhaps is also the first to stagnate. Capt. Gray said that the repetition practised in flight simulators is perhaps not the best use of the technology, although it may lend itself to such practices. The power and the potential of a top-of-the-range flight simulator has much greater use beyond ticking a few boxes for a pilot to retain their licence. More immersive, and proactive approaches to learning takes cues from technology such as virtual reality, or VR. With each pilot already armed with an iPad, a virtual reality headset may provide a pilot with the opportunity to practice, and refine skills anywhere, any time; pairing it with more technology makes for an even more powerful training tool.

In an age where “data is king”, Capt. Gray reminds us of the necessity to use it, and use it well. The synthesis of data and training can be found in the example of eye tracking. The heat map, produced by where the pilot is looking, is a valuable use of this tool; a junior pilot, with only a few hundred flight hours, may have a different heat map compared to a senior pilot, with a few thousand hours. It is then possible to identify if the junior pilot is scanning the wrong areas on an instrument panel, and the maps from senior pilots can be overlaid onto the aforementioned VR devices, to assist in training a junior pilot to shift their focus on the panels.

Technology, however, is only as good as the pilot using it. Some can pick up a text book, read, and digest, whereas others may be averse to that, instead, preferring a more hands-on approach. A tailored approach to training, then, is yet another aspect that can assist in better equipping pilots. It also begins to weed out “outdated” training techniques. Capt. Gray asks, “How often do you hear of an engine falling off?” or similar these days, very rarely. So, begs the question, why do we continue to train for situations in the past which have long been, mostly, mitigated by improved engineering?

Technology and pilots could also be considered a “two-way street”. Why? If there are discrepancies that are noticed between how a pilot performs on the simulator, compared to in flight, what is, and where does the problem lie? Take for example, sound in the cockpit, an issue often raised by pilots. What is second nature in reality, may not be as accurately replicated in the simulators, or even VR. In such cases, better replicating, even training to listen to noises, may be another facet of future training practices.

21st century flight training is clearly something that pushes the boundaries, but the peculiar thing to note, is that it is not just pushing the boundaries, but breaking down the barriers, that we have put up, at first not recognising, but only now, coming to realise the potential of and the variation between individuals, accounting for it, and creating better pilots for tomorrow. (Reporter Mr Henry Thai)

Report 7 March, 2018 Lecture - Capt Allen Dickenson – Flight Planning – Yesterday, Today, & Tomorrow

"Oliver and Wilbur Wright - I doubt whether they had flight planning… well… their flight plan was probably 'don't crash because I want a go'".

Flight planning in the early days was quite rudimentary. The status quo however starkly contrasts the early days, especially the Wright Brothers, however, it hasn't necessarily reflected the dynamic nature of flight today. There are umpteen different factors for consideration, and as emphasised, not just by Capt. Dickinson, but also in the vote of thanks by Capt. Brian Greeves, that it is not as simple a matter as fuel conservation, but the most cost effective solution.

Qantas, placed in the unique circumstance of being unable to utilise a "commercial off the shelf" [COTS] system, needed to develop an in-house solution to address the challenges they faced, and would face. The flight planning systems of today, though more advanced than those of yesterday, are perhaps rudimentary by "today's standards". Considering the different policies and strategies that Qantas employs, a more dynamic and bespoke system was required to keep the company highly competitive.

In partnership with companies and organisations such as the Australian Centre for Field Robotics (The University of Sydney), Smart4Aviation, and Frequentis, Qantas developed a planning system that found the optimal flight route, with a focus beyond the simplistic factor of low-fuel burn. Perspective and "intuition" are perhaps sometimes the main barriers to discovery, and indeed the solutions developed can sometimes be offensively simple; it is not just, to use a cliché, thinking outside of the box, but also thinking how to get back in, and so was the case, in part, in Qantas' flight planning solution. The algorithms not only considered the innumerate paths into an airport before entering a single route of descent, but also the reverse. Those departures, rather than arrivals, then factored into the equation opens the doors to more potential solutions to use.

With the unfortunate, but necessary, use of the words dynamic, proactive, and paradigm shift, ad nauseam, it cannot be stressed enough the notion of treating flight planning as a living, breathing, animate entity. As flight conditions change, as fuel prices change, and as the traffic changes, in some cases, down to the minute, if not second, flight planning must be able to factor in, and accommodate such elements. It is not uncommon to hear and recognise the "data rich" time in which we live, data of course, lending itself to these more fluid, and complimentary practices, which moves towards, and can achieve a lower cost flight plan, not just a lower fuel burn.

Data, with the ability to track flights and conditions real time, allows for pilots better adjust to the circumstances they are faced with as they fly, especially events such as storms, or holding patterns. Data history and the statistics derived from that, also provides the opportunity to better prepare a pilot, and provide the most appropriate amount of fuel for the flight, rather than the classic "and some extra for the wife and children".

In a metaphor then, the Boy Scout motto is "be prepared", but that doesn't necessarily mean when in the bush, taking an extra tin of food, or an extra bottle of water, but to be prepared, by foresight, by intelligent planning, and by being smart. (Reporter Mr Henry Thai)

Report on the 2017 AGM held 7 March, 2018: Branch Chairman, David cox FRAeS, reported another successful year as follows: **Lecture and Events Program**

2017	**Speaker/Event**	**Topic/Purpose**	**Venue**	Numbers attending	**Streaming**	**EA CPD** (hrs)
22 Feb	Martyn Potts	AGM & Qantas Fleet Powerplants	USyd, PNR	40	-	1.5
29 March	Aero in the Pub	Short Presentations	3WM Hotel	31	-	1.5
3 May	Warwick Holmes	European Space Agency Rosetta Mission	USyd Mech Eng	42	9	1.5

31 May	John Ehret	Aircraft Cabin Fume Detection & Assessment	USyd Mech Eng	30	9	1.5
28 June	Peter Foley, Alex Talberg	ATSB: The Science behind the Search for MH370	UNSW, Ainsworth G03	160	10	1.5
26 July	Brian Greeves, Manny Phull, Ron Barsch, Roger Chambers.	Safety Forum	USyd Mech Eng	40	9	1.5
16 Aug	Senior Business Leaders Lunch	Kerrie Mather CEO Sydney Airport	Intercontinental Hotel	90		1.5
29 August (Tuesday)	Capt Alex Passerini, Qantas	B787 Intro, Perth- London	UNSW, Ainsworth G03	150		1.5
21 Sept	*AIAA Astronaut Event*	*Astronaut Stories / Q and A*	*USyd*	*500*		*1.5*
10 Oct	Qantas Safety Day	-	SCG	-		-
18 Oct	Jayne Hrdlicka	KS: CEO Jetstar	Power House Museum	108		1.5
29 Nov	Capt Matthew Gray, Qantas	21st Century Airline Flight Training	UNSW	45		1.5

1. **Deliver services in accordance with the Branch Purpose that members value:**
   Our principal activity through the year as a service to members is our lecture program. From the table above members will be able to see that we had another strong year with attendances of over 100 on four occasions. This included a very large activity shared with AIAA relating to the visit to Sydney by NASA astronauts. Not only did this generate large numbers but it was a particular success in reaching out to young people, especially females, and encouraging them to embark on a STEM career.
   The Kingsford Smith lecture was also a success featuring Jane Hdlicka, CEO of Jet Star. Once again we used the Powerhouse as a venue and this contributed to it being a very high quality event.
2. **Build the Branch brand to be a respected part of the Sydney aerospace community:**
   Through the year we once again worked closely with our partner organisations AIAA and the various student organisations. We also had a high-profile presence at the Qantas Group's Safety Day. Through SADIG and the Western Sydney Airport Alliance we also contributed to the ongoing drive to build the aerospace industry and community in the Sydney basin. We also continued our very successful industry network function aligned with the Kingsford Smith lecture, with this year's attendance being the most senior ever.
3. **Recruit members to ensure the ongoing health and sustainability of the Branch:**
   Our close coordination with the new GM continues and we have seen a steady stream of membership applications. Pleasingly these run across the full range of membership including fellows.
4. **Build and sustain an active committee to support the Branch:**
   As the Secretary will report we have once again have a full committee for 2018. A number of our student members have reached the end of their degrees and so are seeking replacements from their various organisations. Congratulations to them and I would like to thank them for their contribution. I would also like to thank Abhijeet Kumar, who leaves the committee this year and has been an extremely active member especially with the lectures sub-committee.

Finally I would like to thank the committee and all our volunteers for their efforts through the year.

Treasurer's Report: The Treasurer, Jeff Lock reported that the Branch increased its balance sheet by $1400 to $57,000 with Stock in Hand (Off balance sheet) of $3200. An Audited copy of the Financials will be forwarded to members in due course.

2018 Committee: Refer to page footer.

Qantas Indigenous Dreamliner: Qantas has showed off its latest Boeing 787-9 – the airline's fourth - which features a unique Indigenous livery. Following its 7,020nm (13,000km) ferry flight from Boeing's Seattle facility, the Dreamliner touched down in Alice Springs, just after dawn on 2 March. The livery showcases the artwork of the late Northern Territory artist and senior Anmatyerre woman, Emily Kame Kngwarreye and is based on her 1991 painting, Yam Dreaming. Adapted by leading Indigenous owned design studio Balarinji, this special livery took a team of 60 people more than 10 days to complete.

Qantas Group chief executive Alan Joyce says: “It is a privilege to welcome home this special aircraft together with Emily’s family, close to her home Country. We’re thrilled to showcase her striking artwork on our newest Dreamliner. “As the aircraft enters our international fleet, we believe this Dreamliner, through colour and image, will tell a story of our unique Australian landscape and, by sharing our Indigenous culture with the world, the important story of reconciliation,” said Alan.

Registered as VH-ZND, the 787-9 is the only one of its five-strong Flying Art aircraft dedicated to international flights. To view the video of the ‘Emily Kame Kngwarreye’ featuring ‘Yam Dreaming’ visiting Alice Springs against the wonderful backdrop of the MacDonnell Ranges click: https://www.youtube.com/watch?v=YM-FYFPvfSY

Wings Awards Nominations are Open: The Wings Awards take a panoramic view of the general aviation (GA) industry by recognising the achievements of aviators, aero clubs, instructors and training organisations that form the backbone of the GA industry. Excellence will be recognised across four categories: “Col Pay Lifetime of Service to General Aviation”, “Aero Club of the Year”, “Flying Training Organisation of the Year” and “Flying Instructor of the Year”. Nominations close on the 2nd July. For more information, or to nominate an outstanding contributor to general aviation, see the website for details at http://www.australianflying.com.au/wings-awards **Winners announced in Australian Flying Nov/Dec 2018. Week of 29 October**: **Awards to be presented in RAeS branches.**

Society Merchandise for Sale: Sydney branch has a selection of Society Merchandise for sale at its regular monthly meetings. Items include Society Ties, Pins, Lapel Badges, Silver Kestrel Brooches, and Mugs.

Our Sales Director, David Adkins accept cash, cheques and credit cards through PayPal.

Aerospace Websites: www.57rescuecanada.com : Follow Capt. Karl Kjarsgaard’s adventures to recover Halifax bomber LW170 which is resting beneath 5000ft of water off the Irish coast; www.adastron.com/707/updates/updates.htm : Diary of Boeing 707-138B XBA formally Qantas EBA. www.airshow.com.au www.atsb.gov.au www.aviationmuseum.com.au - Temora Aviation Museum; http://boxkite2014.org/book/book.htm - The Boxkite project. https://en.wikipedia.org/wiki/Rolls-Royce_Trent http://hars.org.au/ Historical Aircraft Restoration Society https://herox.com/SpacePoop The Space Poop Challenge www.powerhousemuseum.com/whatson https://qfom.com.au/ Qantas Founders Museum, Longreach, Qld http://www.singaporeairshow.com/

Diary: **April 5:** Society’s Senior Business Leaders Lunch, Sir Rod Eddington AO FRAeS (ex CEO Cathay, Ansett, BA, chaired Infrastructure Australia for six years), Four Seasons Hotel Sydney, 199 George Street, Sydney. For further details refer: https://www.eventbrite.com.au/e/lunch-with-sir-rod-eddington

April 30-May 3: AUVSI XPONENTIAL 2018 is the largest, most comprehensive trade show for unmanned systems and robotics and will be held at the Colorado Convention Center, Denver - your opportunity to hear from industry leading experts across every domain - air, ground and maritime. Refer details at: https://www.xponential.org/xponential2018/public/enter.aspx

May 5-6: Wings over Illawarra – **Australia's best Annual Airshow!! Right on Sydney's doorsteps!!**. For further details refer: https://www.wingsoverillawarra.com.au/

May 30: Dr Warwick Holmes FRAeS, Building Rosetta.

June 27: Australian Division Safety Event – RPAs, Skill Shortages, Security - Four Seasons Hotel Sydney, 199 George Street, Sydney – further details to be advised.

July 3-6: Abstracts containing no more than 300 words are now invited for the 2018 Aircraft Airworthiness and Sustainment (Australia) Conference, a non-profit event for the benefit of all those involved in sustaining our fleets, both Civil and Military, safely and economically through their lifecycle. The Conference will be held at the Brisbane Convention and Exhibition Centre. Closing date for abstracts is 13 April. For further details refer: http://www.ageingaircraft.com.au

Sept 9-14, 2018: 31st Congress of the International Council of the Aeronautical Sciences, Belo Horizonte, Brazil. Refer details: http://icas.org/media/ICAS2018CallforPapers.pdf

Oct 1-5, 2018: 69th Annual International Astronautical Congress will take place in Bremen, Germany. Call for Abstracts is now open and closes 28 February 2018. For further details refer: https://iafastro.directory/iac/browse/IAC-18/catalog-technical-programme

Oct 16-18: Call for Papers (close 1 July, 2018) for the 10th Asia-Pacific International Symposium on Aerospace Technology (APISAT 2018) to be held in Chengdu, China. APISAT is an initiative by the national aerospace societies of Japan (JSASS), Korea (KSASS), China (CSAA) and Australia (RAeS Australian Division). Founded in 2009, the conference has grown steadily over the past decade and is an important regional conference in the aerospace calendar. Refer details: www.apisat2018.com

Feb 9, 2019: The fiftieth anniversary of the first Boeing 747 flight.

July 20, 2019: The fiftieth anniversary of the first men walking on the moon.