ON THE HORIZON:
Safer, greener, more cost-effective ATM in the Asia-Pacific

NANCY GRAHAM:
Aviation system block upgrades

PARTING THOUGHTS:
Ashley Smout’s top ten observations for ATM

PLUS: The UAS integration challenge, delivering and measuring fuel and CO₂ savings, easyJet’s views on SES, plus the latest news and comment the world of ATM.
Transforming the air traffic management (ATM) system is essential for improving safety, efficiency and the environment around the globe. Boeing is fully committed and uniquely qualified to help make ATM transformation a reality. It's the right time and Boeing is the right partner.
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Safety and flight Economy passes through us.
When I accepted the offer to join CANSO at the start of March, looking at the diary I knew it was going to be a busy initial few weeks. However, it was likely to provide immediate exposure to the issues impacting the global ATM industry and the opportunity of meeting the CANSO members and the representatives from key industry bodies. I wasn’t disappointed...

I have had some challenges in the first few weeks, not least of which has involved keeping abreast of the flood of acronyms which I have not come across before. Absorbing all the information has been a bit like ‘drinking from a fire-hose’ as one US colleague put it. It did however allow me to gain some insight into the challenges that the ATM industry is facing and not only the range of programmes and initiatives that are ongoing, but also the complexity of the solutions and the extended timeframe required to put them in place.

As what could be described as an ‘outsider’ coming back into the fold, I would suggest that there is scope to improve how the Air Transport Industry is perceived by the public at large. There is much going on that is effectively tracking ‘under the radar’ as far as the public is concerned.

The CANSO secretariat maybe a relatively small group but the experience, knowledge and gravitas of the CANSO members led by the Executive Committee as the representative voice of the ANSPs should not be underestimated. I took note when Nancy Graham at the recent CANSO Operations Conference referred to ICAO, IATA and CANSO as the ‘golden triangle’ in terms of the impact that working together these organisations could have on the industry. This was reassuring to hear.

You will be aware that the Waypoint 2013, CANSO’s strategy for 2010-2013 was unanimously endorsed at the EGM in March and CANSO will now be able to continue to nurture its members to drive towards transforming global ANSP performance.

Looking forward to the next few months there is no drop-off in the pace including the Global Runway Safety Symposium in Montreal and culminating in the ATM Summit and 15th CANSO AGM in Bangkok in July. As our focus switches to Asia-Pacific it is only appropriate that I should pass on our deepest sympathies to our colleagues in New Zealand and Japan who have had to cope with an unprecedented set of disasters to befall their countries.

So upon reflection and having joined the CANSO family for just a few weeks I am excited about the prospect for working with you in the months and years ahead, in what has the potential to be a momentous period for the ATM industry.

If we haven’t met already, I am looking forward to meeting with you soon.

Robert Hutchison
Europe

VOLCANIC ASH: REVISED PROCEDURES, THREE TIMES MORE FLIGHTS

On 13 and 14 April 2011, EUROCONTROL, EASA and EC, together with 77 airlines, 14 ANSPs, 10 regulatory authorities, the Volcanic Ash Advisory Centres in London and Toulouse participated in a major ICAO exercise simulating a volcanic eruption in Iceland. The European Aviation Crisis Coordination Cell (EACCC), which was established following the real volcanic event in 2010, also participated in the exercise as coordinator of a European air traffic management response.

Preliminary conclusions show real progress in improving operational efficiency while maintaining safety: by applying revised ICAO procedures to last year’s event, the exercise showed that 70% of all planned flights would have taken place. This is three times higher than during the actual eruption. The exercise also showed that there are still differences in the application of the aforementioned revised procedures, highlighting the need for further efforts at European level to harmonise national responses. On a positive note, the European Crisis Visualisation Interactive Tool for AFTCM (EVITA), developed by EUROCONTROL, allowed for improved decision-making and use of airspace by aircraft operators.

A detailed analysis of lessons learnt will be carried out at the start of June, with recommendations for further actions presented to the EU Transport Council meeting on 22 June 2011, as well as to the EUROCONTROL governing bodies and ICAO.

Americas

FAA ATC REVIEW

The FAA is undertaking a comprehensive review of the country’s air traffic control system following a series of incidents involving air traffic controllers sleeping on the job.

Three veteran FAA managers have been repositioned to assume oversight of critical air traffic roles and the FAA is assessing key mid-level management positions to ensure that both technical and leadership expectations are being met. Meanwhile, teams of FAA experts are in the process of examining some of the agency’s more complex facilities, including Cleveland and New York Centers, in an effort to make certain that operational policies and professional standards are being upheld.

The FAA has also announced it has placed an additional air traffic controller on the midnight shift at air traffic control towers and facilities around the country that were staffed with only one controller during that time. Additionally, changes have been made to air traffic controller scheduling practices to allow controllers more time for rest between shifts. The FAA and the National Air Traffic Controllers Association (NATCA) are working on additional changes that will help reduce controller fatigue, including a fatigue education programme.

An independent review panel is set to evaluate the agency’s air traffic control training curriculum, qualifications and placement process to make sure new controllers are properly prepared.

In brief

EU & ICAO STRENGTHEN TIES

The EU and ICAO have signed a Memorandum of Cooperation providing a framework for enhanced cooperation. The Memorandum will allow Europe to contribute to the preparatory work for policy and standard setting in ICAO in the fields of safety, security, environment and air traffic management, and to make better use of resources by sharing information and coordinating efforts. Stronger European involvement in the preparatory phases in the security area will facilitate the adoption of policy decisions to fit the needs of all ICAO regions, and is expected to help with the development of SESAR.
CANSO CALLS ON ANSPs TO LEAD INDUSTRY CHANGE

In a speech delivered at the ATC Global Conference in Amsterdam on 8 March, CANSO Director General Graham Lake called on ANSPs to take the initiative and “lead industry change”. He said that 2010 was an “annus horribilis” for the air transport industry and nothing the ANSP community did made the year stand out for positive reasons. “While it was acknowledged that terrible weather and volcanoes were outside the industry’s control”, he said, “the same could not be said for addressing the challenges those events highlighted.”

Mr Lake went on to call for:

• Regulatory support to ensure consistent levels of service across Europe at all times.
• A focus on the outcomes of SESAR and NextGen, along with the acknowledgement that ATM is a service not a product or technology.
• Giving ATM customers the tools they need to let ANSPs deliver change and improvement.

The full speech can be downloaded from www.canso.org/presentations.

INDIAN OCEAN STRATEGIC PARTNERSHIP TO REDUCE EMISSIONS (INSPIRE)

Airports Authority of India, Airservices Australia and ATNS South Africa announced the creation of the Indian Ocean Strategic Partnership to Reduce Emissions (INSPIRE) at special signing ceremony during the CANSO ATM Dinner in association with the Jane’s ATC Awards 2011 in Amsterdam on 7 March. The INSPIRE partners will pursue the delivery of ATM efficiencies to reduce the output of greenhouse gasses from aviation in accordance with ICAO Assembly Resolution A37-19. The partners will aim to work closely with airlines and other aviation stakeholders in the region to accelerate the development and implementation of operational procedures to reduce the environmental footprint for all phases of flight on an operation by operation basis, from gate to gate.

AVINOR’S NEW ARRIVAL ROUTE SYSTEM

On 7 April Avinor became the world’s first ANSP to deploy Point Merge System (PMS). PMS provides pilots and ATCOs a greater degree of predictability in the approach phase of flight. Before the meeting point (Point Merge), the system determines the most optimal order of aircraft to ensure an efficient and well-organised series of landings. The system allows engines to run practically idle as the aircraft glides down to the runway, providing an average reduction of 300 kilograms of CO₂ per flight. It can also facilitate an increase capacity when used in combination with other measures.

EUROPEAN ALLIANCES

The ANSPs of Iceland, Norway, Finland, Sweden, Estonia, Latvia, Denmark, Ireland and UK have agreed to define a formal ANSP alliance. Over the next year, a new executive management team will prepare a framework of legal and financial agreements for specific joint ventures aimed at greater operational and cost efficiency. Meanwhile, Austria, Bosnia & Herzegovina, Croatia, Czech Republic, Hungary, Slovak Republic and Slovenia have signed an agreement to create the Functional Airspace Block – Central Europe (FAB CE). The agreement targets a common FAB CE performance plan consistent with the EU-wide performance targets as from the second reference period (2015).

SIX NEW MEMBERS FOR CANSO

CANSO welcomed two new Full Members and four new Associate Members in the second quarter of 2011.

The most recent new Full Members include the Department of Civil Aviation (DCA) Cyprus and the Maldives Airports Company. CANSO’s newest Associate Members include the European Satellite Services Provider (ESSP SAS), Inmarsat Global Limited, Rohde & Schwarz and ATECH Negócios em Tecnologia S/A.
Nancy Graham
Director, Air Navigation Bureau, ICAO

Aviation System Block Upgrades

ICAO expects States to invest in excess of $120 billion in ATM performance improvements over the next ten years. Nancy Graham, Director of the ICAO Air Navigation Bureau says that the Aviation System Block Upgrades (ASBUs) will provide States, ANSPs and operators with the what, when, where, and how.

ICAO is working on ‘Aviation System Block Upgrades’ (ASBUs). Can you explain what these are and the concept and objectives behind them?

To be clear, ICAO is providing the framework for the Aviation System Block Upgrades to be developed. As in all things ICAO, the aviation community itself does most of the work. ICAO is expecting States to invest in excess of $120 billion on Air Traffic Management performance improvements over the next ten years. Interoperability, or harmonisation, on a global scale is a stated aim of most ATM improvement programmes. Global interoperability comes from disparate programmes adhering to a strategic plan that allows them to be interoperable. ICAO typically develops a Communications, Navigation and Surveillance roadmap which provides the strategic direction for the infrastructure. Aviation System Block Upgrades are a much more comprehensive means of presenting that strategic direction. Specifically the ASBUs:

- Nominate the intended performance improvement including metrics which determine success;
- Recommend the necessary procedures, both air and ground;
- Identify the required technology if appropriate, both air and ground;
- Outline the business case;
- Propose a regulatory approval plan;
- Define any necessary transition strategies; and
- Nominate any global demonstration trials that relate to the intended operational improvement package.

The intention is that these performance improvements will not have a timeline associated with them. ICAO believes these ASBUs will provide more comprehensive guidance to States, Air Navigation Service providers and Operators on what, when, where and how to gain performance improvements in their system at a reasonable cost to their airspace users. States, ANSPs and Operators will therefore make their own decisions on when to implement performance improvements based on the evidence available to them.

Where are the ASBUs now and who is working on them?

The ASBUs are currently in an early development phase. More specifically, the scoping exercise has been done followed by an attempt to baseline industry capability at the time of the upcoming 12th Air Navigation Conference at the end of 2012. This activity, Block 0 for want of better nomenclature, has been an intriguing exercise for ICAO and has highlighted a number of performance improvements that could be made to our global ATM systems which are available now without waiting for further standards, or technical developments to be developed. While these implementation opportunities are separate to the task of defining the strategic direction of CNS and ATM through the Block Upgrades, it nevertheless serves to highlight the potential improvements we have available to us now.

We have convened a technical team of selected State and industry experts to develop proposals for the block upgrades. And this team has been working steadily since the beginning of this year on the elements of the baseline and candidates for inclusion in update modules.

Who is on this Technical Team and specifically, does CANSO have a role?

The technical team is an unusual grouping of system architects, aviation authorities and industry representatives. It includes scientists and regulators from the NextGen and SESAR programmes that are generally leading their future direction and have active R&D programmes generating business cases for future systems, as well as a wide representation of industry experts providing the input for the users and the manufacturers. So you will see experts from the FAA, JPDO, EUROCONTROL, SESAR JU, and EASA on the one hand and CANSO, IATA, IFALPA, IFATCA, ICAAIA, ACI, IAOPA, IBAC, and others on the other hand.

I would stress, however, that this is a technical team developing the initial drafts and there is a long way to go and, I am sure, many modifications to be made before we have addressed all of the likely implementation hurdles and received an international endorsement to go ahead with these ASBUs. CANSO has been an active participant since the first meeting.
and its representatives have put a lot of hard work into the development and the critique of both the Block 0 baseline elements that the Technical Team are working from as well as the crucial first block upgrade which they are expecting to be available as system performance improvements by 2018 or so. Because of the long term planning needs of the Air Navigation system architecture, CANSO also has a primary role in looking towards the longer term future of Blocks 2 and 3. The cost alone to the constituency of ANSPs of CNS and AIM infrastructure highlights the need for CANSO to be deeply involved in the determination of these blocks and the representatives on the Technical Team are doing a great job on CANSO’s behalf.

What are the next steps in this ASBU process?

The Technical Team will be working on these Block Upgrades through September at least but there are a number of significant milestones coming up for them. In order they are:

• 2020

• 20 May 2011 – Briefing to the Council of ICAO 27 June 2011 – Challenge Team meeting to consider the consequences of the ASBU methodology and the probable barriers to implementation.

• 20 – 23 September – Presentation the draft ASBUs to industry through the Global Air Navigation Industry Symposium

• 19 – 30 November 2012 – Presentation of the final version of ASBUs to States for endorsement.

There are a lot of other smaller milestones along the way mostly associated with the development work of the ASBUs themselves by the Technical Team and the work programmes of the standards making bodies such as RTCA, EUROCAE, ARINC and SAE International not to mention the ICAO standards that need to be put in place in support of the ASBUs.

Who should be interested in the Global Air Navigation Industry Symposium (GANIS) and the Twelfth Air Navigation Conference?

It is fair to say that we are talking about the short, medium and long term future of our industry here so, by and large, everybody in our business should be interested. First and foremost, we are looking for our industry’s reactions to the ASBU proposals. We will be giving them plenty of podium time to give their point of view and may expert discussions on each of the performance improvements areas we are targeting through the ASBUs. ANSPs have a direct interest because of the infrastructure costs that might be associated with upgrades quite apart from the strategic direction of the ATM improvement programmes that are driving the ASBUs. Regulators and other State authorities will also need to engage so they are not left behind in this process. At the end of the day, the States will be making the final decisions on the content of the ASBUs and endorsing them at the 12th Air Navigation Conference in 2012, and I believe it is very important for them to pay heed to the voice of industry before making those decisions. The GANIS gives them that opportunity, and I hope they take it up so that there is no scope for error by the time we deliver to the Conference.

Would you expand further on this golden triangle of IATA, CANSO and ICAO that you have mentioned from time to time?

From an implementation point of view, ICAO, IATA and CANSO have a vested interest in working together to support the aviation industry. A good example of the use of this partnership arrangement is the implementation of performance-based navigation. The FAA and EUROCONTROL have been involved in the development of PBN over a number of years and their implementation is well underway. Other States are progressing quickly as well (for example, the number of PBN approaches outside the United States has significantly increased from 70 to 575 in the past three years) but many of them need assistance. ICAO, IATA and CANSO have sponsored a series of “Go Teams” which, with the right compliment of technical staff from each of the respective organisations, can help States expedite their implementation. ICAO, IATA and CANSO have sponsored a series of “Go Teams” which, with the right compliment of technical staff from each of the respective organisations, can help States expedite their implementation. ICAO and IATA in the preparation and execution of the Go-Team visit, and CANSO, who will work with both parties, will be involved in the follow-up work with the ANSP and measure the ultimate performance improvement that PBN brings.
IF YOU COULD SEE WHAT I SEE

You would see a complete integrated suite of advanced air traffic management products, right at your fingertips.

NAVCANatm systems are developed collaboratively with controllers who trust and use our technology day in and day out. Operationally deployed at more than 80 sites world-wide, our products are designed to offer fast and reliable access to critical airport, tower and terminal information. With NAVCANSuite, we not only reinvented paper flight strips, we also combined ground and air surveillance, and improved and automated our air traffic management tools. Whether you need the full compliment of NAVCANSuite products or one of its components, all NAVCANatm solutions are built to your requirements to offer a higher level of safety, functionality, efficiency and ease of use than any other system on the market. And NAVCAN WebView products offer inventive solutions that provide all non-operational users with an “at-a-glance”, near real-time view of an airport’s radar and status anytime, anywhere.

Choose the innovative solution—the only one designed by operational ATC people—NAVCANatm.

www.NAVCANatm.ca
Air Chief Marshall Somchai Thean-anant, AEROTHAI President

In 2010, aviation in Thailand was still affected by the economic crisis and the political situation in the country. However, thanks to the great efforts of the management team, employees, and an emphasis on strategic management, AEROTHAI was able to handle the situation and surf the turbulent aviation waves smoothly and safely.

The world economy is now rebounding as predicted, and the Thai Government has initiated measures to support the growth of tourism. This will, in turn, boost the aviation industry.

For its part, AEROTHAI is installing modern technologies and implementing new airspace management concepts to increase the efficiency of air navigation services. This will reduce costs for airspace users as well as for the company, while helping to cut carbon emissions per the company’s new vision “To provide safety in air navigation services with modern management, good corporate governance with a concern for carbon emission reduction in aviation”.

The most significant projects underway include the Bay of Bengal Cooperative Air Traffic Flow Management Advisory System (BOBCAT), the implementation of performance-based navigation (PBN) in the Terminal Control Area, the development of infrastructure for air navigation services, and the enhancement of national air traffic control systems/technologies. Recognising its role as an innovative company, AEROTHAI has also been awarded projects by the Marine Department, the State Railway of Thailand, and the Ministry of Transport to further enhance Thailand as the transport hub of Asia.

The promising waves began this year when AEROTHAI proudly received the Jane’s ATC Award 2011 for our BOBCAT system, in recognition of its capacity and safety related performance. Since 2007, AEROTHAI has provided the BOBCAT service free of charge to airlines whose flights transit westbound from Southeast Asia through the Kabul FIR in Afghanistan on their way to Europe. Between 2007 and 2010, BOBCAT saved airlines 50 million kilograms of fuel, reduced CO2 emissions by 205 million kilograms and cut costs by 50 million U.S. dollars. This clearly demonstrates AEROTHAI’s commitment to the safety and efficiency of the aviation industry.

AEROTHAI is also continuing its ‘Partnering for Success’ policy for international collaboration; signing memoranda, hosting international conferences, and contributing to collaborative initiatives with Asian organisations regarding the Seamless ASEAN Sky. In the most recent meetings, the ASEAN community agreed to progress further by implementing the Seamless ASEAN Sky concept.

The series of CANSO conferences that AEROTHAI is hosting from 8-15 June is further testament of our commitment to the industry. Together with CANSO, we are welcoming aviation stakeholders to discuss all aspects of aviation. The meetings start with the Safety Seminar, followed by the Asia-Pacific ANSP Conference and the Global ATM Summit and 15th AGM. In between, we’ll have the ASPIRE signing ceremony and the Honorary Wing decoration for our benefactors. We expect to have all the Director-Generals of Civil Aviation from the region, together with CEOs from CANSO Members around the world. Most importantly, we’ll have the presence of CANSO’s Founding Fathers, Mr. Roberto Kobeh Gonzalez, the President of ICAO Council and the Prime Minister of Thailand to celebrate the 15th anniversary of CANSO. This will be one of the most memorable events from CANSO and AEROTHAI.

2011 and beyond looks really promising to AEROTHAI and the entire aviation industry. I am confident that we will all have a brighter and better future, surfing the waves together.
The skies over the Pacific Rim are more environmentally friendly today thanks to the start in February of regularly scheduled flights from Auckland in New Zealand to San Francisco in the United States using best practices whose value was proven during earlier “Green Flight” demonstrations.

The daily Air New Zealand flights are just the beginning of what the Federal Aviation Administration and its partners in ASPIRE – the Asia and Pacific Initiative to Reduce Emissions – intend to accomplish as we work together to improve efficiency and reduce fuel consumption and carbon emissions. The heart of this effort, called ASPIRE-Daily, is identifying and implementing more city-pair routes to make the benefits of these best practices available to as many regularly scheduled daily trans-Pacific airline flights as possible.

The FAA is pleased to be the project coordinator for ASPIRE-Daily and to take the lead in collaborating with our partners to increase usage of these successful procedures, practices and services. This partnership is a great example of how members of the international aviation community can come together to harmonise their improvement efforts, and we expect that more city pairs will be certified in the coming months. The FAA is especially committed to the success of ASPIRE-Daily because the technology and procedures it champions are also key components in the ongoing transformation of the National Airspace System in the United States through the Next Generation Air Transportation System, or NextGen.

To qualify as an ASPIRE-Daily city pair, at least three of the seven current best practices must be available. The inaugural city pair from Auckland to San Francisco uses four best practices: User Preferred Routes, 30/30 Reduced Oceanic Separation, Arrivals Optimisation and Departure Optimisation. The other three best practices are Dynamic Airborne Reroute Procedure, Time-based Arrivals Management and Surface Movement Optimisation.

All seven best practices minimise fuel burn, resulting in significant cost savings and decreased greenhouse gas emissions. For example, User Preferred Routes allow airlines prior to departure to request a specific routing tailored to the conditions that the flight will encounter. Dynamic Airborne Reroute Procedure enables pilots to revise their approved flight paths once airborne to take into account factors such as updated wind projections. Reducing the required 100-nautical-mile lateral and longitudinal separation of aircraft over oceanic routes to 30 nm permits the tighter spacing of aircraft. This reduction in minimum separation improves both capacity and efficiency as more aircraft can safely fly closer to optimal tracks and altitudes in oceanic airspace where ground-based navigation, surveillance and voice communications are not available.

The best practices were identified through a series of five gate-to-gate ASPIRE “Green Flights” that took place beginning in 2008. The cumulative fuel savings of the five ASPIRE demonstration flights was 32,386 kilograms, leading to an overall reduction in carbon emissions of 101,986 kilograms. Extrapolate these numbers over multiple flights each day, and it is clear that significant annual benefits are possible, both in cost savings and reduced emissions.

Several additional city pairs are expected to be identified and validated at the ASPIRE annual meeting in June.

ASPIRE comprises both air navigation service providers (ANSPs) and airlines. The ANSP partners are

Letter from America
Carey Fagan, Executive Director of International Affairs, Federal Aviation Administration

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ASPIRE comprises both air navigation service providers (ANSPs) and airlines. The ANSP partners are
the FAA, Airservices Australia, Airways New Zealand, the Japanese Civil Aviation Bureau and the Civil Aviation Authority of Singapore. The newest member, Aerothai of Thailand, will be joining in June. Airline partners are Air New Zealand, United Airlines, Qantas Airways, Japan Airlines, Singapore Airlines and, beginning in June, Thai Airways International.

When ASPIRE was formed in 2008, its three founding partners pledged to adopt and promote best practices as well as develop work programmes that promote environmental stewardship. Since then, the number of participants in the initiative has increased, and the group’s positive impact on aviation has grown. City pairs provide a proven way for airlines to improve aviation’s environmental footprint while saving time and money.

I encourage all ANSPs and airlines in the Pacific region to learn from ASPIRE and consider adopting procedures and operations that will improve their traffic flows. The FAA looks forward to working with our international partners to bring the benefits of these environmentally friendly procedures and best practices to the aviation industry worldwide.

Five ASPIRE ‘Green Flight’ demonstrations reduced carbon emissions by 101,986 kilograms
Well we have the Airbus 380, we have one of the best safety records of any mode of transport, we have explosive growth in the Middle East and China, and we have much more aircraft in the same airspace, flying more efficient routes. But the industry remains financially “broken” with the airlines losing over $50 billion in that period. So what are my parting thoughts – my observations after six years as Chairman of CANSO, and CEO of Airways? Here’s my ‘top 10’ areas that in my opinion, the industry needs to focus on.

10 CANSO needs to become globally relevant

CANSO has done a tremendous job in Europe fuelled by the federating goal of Single European Sky. We are a credible voice in the industry in Europe, and now we need to become as relevant in other key areas of the world – Asia, Eastern Europe, South America in that order. And how do we do that? We need to be seen by ICAO as critical to helping them deliver on their agenda, we need to speak with the same authority as IATA, and we need a strong financial base on which to build a strong and healthy organisation.

9 Speak as one industry to Governments

I was at an IATA meeting recently where a Government Minister pointed out how effective the automobile industry was in lobbying Government compared to the aviation industry. The former put aside their differences to lobby for better industry outcomes, whereas the aviation industry couldn’t get its act together and was divided and ineffective. As a result the automobile industry in that country had much better Government support. In this very tough environment we need airlines, airports and ANSPs to be a more professional united force in front of Government. CANSO can obviously play a key role here. We are the voice of global ATM and can help our members formulate their positions.

8 A seamless global ANS – a real possibility or ‘pie in the sky’?

This is absolutely a real possibility. My definition of seamless global ANS, is simply that aircraft can cross different FIRs without affecting fuel efficiency. A global interoperability standard, is in my opinion more important than amalgamation of FIRs which presents massive political and legal hurdles. I will not see a single Asian Sky in my lifetime, but if we can get ADS-B coverage across greater parts of Asia we will have delivered most of what the airlines need in that continent.

7 Airlines and ANSPs – a difficult but increasingly productive relationship

I think without exception most if not all members of CANSO are genuinely working hard to deliver what their customers want, i.e. fuel-efficient routes, with better safety outcomes. However in Europe the political and legal hurdles of the FABs, together with the challenges of SESAR, are no doubt dominating the agendas of most ANSPs, and frustrating the airlines. Elsewhere my sense is there is genuine progress, albeit slower than most airlines want. CANSO can work with IATA to address the operational priorities of their members, much as we have done with the ADS-B project in the South China Sea. CANSO must always have at least 2-3 key operational programmes underway with IATA, otherwise we will lose their support and become marginalised.

6 Cost recovery model needs to somehow incentivise performance

The cost recovery model does not incentivise ANSPs to continually seek ways to reduce costs and improve the outcome for airlines. I spent a long time debating this issue with the Board of Airline Representatives of New Zealand (BARNZ) and IATA. The starting point for many
of my colleagues in these forums was that ANSPs need to do whatever we (the airlines) want, whenever we want. And the response of many ANSPs is to dig their toes in – there’s no end to the airlines’ demands, and no incentive to perform.

In a world where the price of fuel is so high, and where emissions reduction is so important, there has to be a way to incentivise ANSPs to continue to find ways to help airlines fly the perfect flight. We could for instance, receive carbon credits from the fuel savings we generate for the airlines, and sell these to offset the need for increased ANS charges.

**Safety – Just Culture and “an eye for an eye”**

Safety is one area we can be justifiably proud of what we’ve achieved. Serious incident levels of 2 per 100,000 movements represent world’s best practice, and make flying the safest form of transport by a long shot. A major threat to our safety culture is the media’s thirst for blood after a serious incident or accident. Barring the very rare case of criminal negligence, the only purpose to be served by prosecuting those who contribute to an accident is to satisfy the public’s need for an eye for an eye. Perversely this will make the system less safe as controllers and pilots will be less disposed to admit mistakes and opportunities to prevent a recurrance will be lost. CANSO can play a key role here in working with IATA and the Flight Safety Foundation to impress upon politicians and the legal system the importance – and the fragility – of a just culture in aviation.

**The relationship with technology providers needs to be changed**

Walking around ATC Global this year, I think there were almost as many ANSP stands as there were industry stands. And some of them were very substantial. In an industry with only 180 customers worldwide and 4-5 major competitors, it’s not surprising that margins are razor thin, and that there’s little or no development work being undertaken by the major players, outside contracts they win. This is not a good omen for the future of the industry. Couple this with the specialised requirements of each ANSP and you have a recipe for industry players to exit. I acknowledge there is a history of mistrust, loss of IP, and perceived overcharging, but a more mature ANSP-industry relationship is critical.

**Our people – love ‘em or hate ‘em we’re stuck with each other**

This is probably the area that ANSP CEOs like the least – dealing with militant ATCOs. I spent 12 years trying to make Airways a better place to work, by introducing a values-based organisation, and by working with my HR team to improve the leadership skills of our frontline managers. I think it got us somewhere – at least nobody in the company wants to go back to the bad old days of industrial action. I don’t think the maxim “We’ll show you who’s boss” works in the long term. Like it or not our workforce has significant bargaining power and we have to work with them to get change. We’re never going to come out of contract negotiations feeling very good, so I’ve taken the advice of a prominent Kiwi ATCO “Yes we’re overpaid prima donnas – get over it!”

Having said that we need to reduce the bargaining power of the unions. How? Well in my mind it comes down to automation. Automated systems will change the controller’s job, enabling for instance flow management into the terminal areas, and automated optimised descents. Controllers will intervene only in the event of emergencies. This will make them more productive, but it will also change the skill-set required, and reduce the number of ‘prima donnas’ we see today.

**Direct commercial relationship between ANSPs and their customers**

I don’t believe that an industry funded by central government can have a long term strategy, competing for funds against more politically-sensitive sectors such as health and education. The only commercial relationship that works is user pays – the airlines, the major customer group, should pay ANS charges direct, and then have a say in prioritising ANSP programmes. Any other system is sub-optimal.

**Separation of service provision from regulation**

There’s nothing new here, but after a strong start in the 1990s the pace of reform has slowed, and many countries still have combined ANS and regulatory responsibilities. In Asia for instance it is very difficult to make rapid progress as ANS typically reports into a Director General whose two customers are the Minister and ICAO. The airlines are not true stakeholders. Service provision and regulation are fundamentally different and require separate governance and management.

I think we’ve come a long way since 1999 with huge improvements in safety, a far more commercial approach, a commitment to the environment and significant operational initiatives such as ADS-B. We know that ANS inefficiency is responsible for approximately 4% of the airline fuel bill, and this is where we must focus our attention – helping airlines fly the most direct routes with the least delays. I hugely enjoyed my time in the industry and look forward to hearing about CANSO’s successes in the future. I do hope you will continue to support Graham Lake and the team.
Asia-Pacific states accelerate ADS-B work
Enabling greener, safer operations

Australia began a new era in airspace surveillance when it became the first country in the world to provide nationwide ADS-B coverage at the start of 2010. The culmination of six years’ work, Airservices Australia installed 43 ground stations to provide radar-like coverage across the continent. The system includes 29 ADS-B ground stations and a wide area multilateration (WAM) network of 14 sensors with ADS-B capability. Data broadcast from ADS-B-compliant aircraft includes identity, position, altitude, velocity and other information twice a second. Australian controllers now provide 5nm separation for suitably equipped aircraft in place of procedural separation (30nm), resulting in improved flow management, less restrictive weather diversions, quicker access to preferred routes and a reduced cockpit workload. However, only some 1,500 aircraft are certified to take advantage of the programme, with the majority of domestic flights non-compliant. Airspace users have to wait until 2013 to realise full benefits, when a mandate requires all aircraft flying above 29,000ft (FL290) to carry ADS-B avionics.

Airservices is keen to move away from the current environment where controllers operate a mixed environment handling ADS-B compliant and non-compliant aircraft on the same screen in upper level airspace. “The challenge we have just now is to make sure people understand the consequence of turning up at the boundary and only being allowed to fly at FL 280 or below,” says Greg Dunstone, Airservices Surveillance Programme Leader. “Airlines have had ample time to prepare but we need to broadcast this to national and foreign aircraft.” While over 70 per cent of international flights already meet Australia’s Civil Aviation Safety Authority (CASA) standards, 20 per cent of domestic and even fewer general aviation aircraft comply. In addition, CASA’s recent discussion paper proposes extending the mandate down to 10,000ft around Perth in 2015, and the remainder of the country in 2017, in response to rising traffic driven by a surge in mining industry activity. “We want to bring the benefits to all fleets in addition to high flying jets and we are looking at ways to support the general aviation community,” adds Dunstone.

However, the delays that Airservices experienced in implementing ADS-B has obliged the service provider to commit to a new generation of en route radars to replace infrastructure first installed in 1990. “We’ve run out of time for the fleet to equip with ADS-B so we now have to replace all our en route radars. A contract for en route radars is due to be announced in the coming later this year.” explains Dunstone. This is in addition to the AUD80 million Australian Mode S Terminal Area (AMSTAR) programme awarded to Thales in 2009. Over the next five years we need to commission 25 radars; some en route, some AMSTAR and some temporary radars to support transition,” says Dunstone.

Airservices had hoped to divert funds to pay for the acquisition and installation of ADS-B avionics onboard the smaller aircraft fleet, but abandoned these cross-industry funding plans because of tax and other issues. “A fair percentage of the industry agrees it was a lost opportunity,” adds Dunstone.

Australia’s schedule is now more in line with other ADS-B programmes around the world. Canada was the first to introduce a mandate in 2010 that enables aircraft equipped with 1090ES data link to fly with 5nm separation over Hudson Bay. Europe requires new aircraft to be capable of broadcasting ADS-B ‘out’ from 2015, followed by all aircraft from 2017. Several Asian states have signalled their intention to provide ADS-B services within this time frame including trunk routes across the South China Sea involving Indonesia, Singapore and Vietnam. The US expects many airspace users to voluntarily equip ahead of its 2020 based on improved operational benefit.

Meanwhile other Asia-Pacific states have launched their own ADS-B programmes, encouraged by investment costs that are a fraction of those associated with conventional radar systems. In 2010, Fiji is nearing completion of installing 6 ADS-B ground stations and 5 ADS-B ground stations with multilateration support, supplied by Era, who is the prime contractor and teamed with Adacel, to provide wide area surveillance where no radar infrastructure existed previously. The data will be displayed on Adacel’s Aurora ATM system at Nadi control centre and control towers at Nadi and Nausori airports. The system is designed to enable the future implementation of radar-like separation throughout Fiji’s domestic airspace. Operational trials are due to start in 3rd quarter calendar 2011 using the ADS-B and MLAT system integrated with the Aurora ATM as the surveillance tool for Fijian airspace. Adacel’s Aurora system has been controlling all of the Fijian oceanic airspace since May 2010.

Indonesia initiated its ADS-B programme in 2006 in partnership with SITA and Thales, and now has 30 operational ground stations across the archipelago. In November 2010, the Directorate General of Civil Aviation (DGAC) and Airservices began exchanging and operationally using ADS-B data across the two flight information regions. The agreement allows controllers to track ADS-B equipped aircraft up to 150nm each side of the border, adding to safety and situational awareness. Data from four Australian ADS-B stations is transmitted to Makassar centre in Sulawesi, while Brisbane centre receives data from four
Indonesian ground stations. Indonesia, like Australia, has upgraded its Thales Eurocat system to display ADS-B data and expects to use the surveillance information to provide separation services once it has completed safety and operational concepts and procedures. Airservices has also delivered safety management system awareness training to more than 100 Indonesian controllers and supervisors as part of the Australian government’s Asia-Pacific safety initiative.

Sharing ADS-B data is a feature of other programmes in the Asia-Pacific, such as the South China Sea initiative. Indonesia, Singapore and Vietnam have agreed to share ADS-B data and VHF communications to establish two trunk routes in this busy region. A CANSO cost benefit study carried out in 2009 concluded airspace users could save up to USD4 million and 3 million pounds of fuel per year as a result of more efficient routing. The group plans to start monitoring ADS-B aircraft during 2011, using ground stations supplied by Thales and Comsoft, on completion of VHF stations and communications links. Ground stations in Indonesia and Singapore have been commissioned, Vietnam plans installation, and an AIP supplement on aircraft equipage mandate for full ADS-B operations by the end of 2013 has been published. Priority for suitably equipped aircraft is proposed in the second half of 2012.

Meanwhile, Adjacent states like the Philippines and Brunei are participating in regional discussion groups that could lead to more partners joining the group and IATA is supporting efforts to establish the ADS-B routes.

Likewise, Malaysia is in discussion with Indonesia regarding ADS-B data sharing over the Bay of Bengal, a congested area for long haul flights en route from Asia to Europe. Malaysia’s Directorate of Civil Aviation (DCA) is installing an ADS-B station in the region and upgrading its controller displays to integrate ADS-B data on screen. Meanwhile New Caledonia completed installation of three ground stations in 2010 to provide controllers with better surveillance data and proposes to share data with neighbouring states for search and rescue purposes.

China already monitors aircraft over the South China Sea via an ADS-B ground station in the south of the country, and is installing five ground stations to cover the mountainous area between Chengdu and Lhasa. The twelve five year plan published by the Civil Aviation Authority of China (CAAC) includes a programme to deploy a nationwide ADS-B network and upgrade controller

![ADS-B ground station at Woomera.](image)
Promoting ADS-B in the Asia-Pacific

In recognition of the financial and operational benefits, CANSO and IATA are working together to promote the implementation of ADS-B across the region. A recently published progress report summarises the milestones relating to the initial phase of ADS-B installation covering two routes over the South China Sea. It also describes the potential application of ADS-B surveillance for additional high traffic density routes over the South China Sea and the Bay of Bengal. CANSO presented the slides below at the ICAO ADS-B Task Force meeting in Singapore, April.

Displays to integrate ADS-B data. More specific is Hong Kong’s published intention to mandate ADS-B carriage by the end of 2013 for aircraft flying on trunk routes over the South China Sea and within Hong Kong’s upper airspace by the end of 2014.

These projects follow close on the heels of Australia’s ADS-B programme – the first to highlight the benefits of the technology in the Asia-Pacific region. Their progress will accelerate as states call for airborne equipage and ADS-B compliance. In addition, many Asia Pacific states are in the unique position of being able to deliver immediate benefits to airspace users in a mixed equipage environment. Several ADS-B programmes look set to overtake those underway in Europe and America by making ADS-B the primary surveillance source. The challenge is to provide early benefits to airspace users that equip on a voluntary basis. Airlines should be able to receive the best service as a result of carrying the best equipment, says IATA. Otherwise these ADS-B programmes will experience the same delays as Australia coupled with rising avionics costs.

One system, many benefits

In addition to receiving aircraft data, ADS-B ground stations also have the ability to determine aircraft position by comparing information collected by a group of ground stations. By using triangulation, or multilateration, a network of stations can provide highly accurate surveillance data at lower cost than conventional radar. The multilateration system also serves as a real-time backup to ADS-B surveillance, providing a level of redundancy and validation. Multilateration offers particular advantages in mountainous and remote locations where it operates in specialised niche applications. However, it is not always the cheapest option. Installing a wide area multilateration (WAM) system can be more expensive than radar when one takes full lifecycle costs into account such as lease, power, cost of communications, transmitter licences and the large number of sites required. For this reason WAM projects remain niche.

Airservices expects to complete the certification process on Australia’s second Wide Area Multilateration (WAM) system later this year at Sydney Airport. A network of 16 ground stations supplied by Sensis provides enhanced surveillance in the terminal area and precision runway monitoring to replace the existing E-Scan system at the airport. The programme includes two safety cases, one to approve WAM and ADS-B surveillance to support 3nm separation in the Sydney Basin, and the second to support precision runway monitoring (PRM). Sensis also supplied the WAM system in Tasmania, where a network of 14 ground stations provide surveillance from the ground up to 18,000ft between Launceston and Hobart Airports, enabling Melbourne controllers to provide 5nm separation in place of procedural separation measures. A WAM system also operates at Beijing Capital Airport, where the airport opted to use ADS-B and multilateration to provide PRM capability ahead of the 2008 Olympic Games. Era supplied a network of ground stations to deliver high precision coverage of the approach to the airport’s two parallel runways.
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How are things at easyJet?

The past six months have been tough for all airspace users with sharply rising fuel costs combined with cautious behaviour by consumers and an adverse impact from taxes on passengers. In addition, following a severely disrupted 2010, our first half was again affected by renewed Air Traffic Control (ATC) strike action in France and Spain. Despite this difficult environment we have made progress in implementing our new strategy, with our new management team under the strong leadership of Carolyn McCall. We have maintained a robust operation with significant investments in operations while continually reducing operating costs, looking at new revenue opportunities, and maintaining a robust and safe operation. Passenger numbers keep growing month on month, with 59% now originating outside the UK which shows us to be a truly European operation. We are now well placed to successfully deliver our summer flying programme, which we hope will be free of any ATC disruption.

How impacted were you by the ATC industrial action across Europe?

As Europe’s leading air transport network, easyJet operations were severely impacted. Last summer through to December was a big hit for us. It was horrible for travellers and damaging for tourism and aviation during difficult economic times. We must never see a repeat of unplanned events such as the Spanish walkouts. Our disruption costs in the first half of 2011 amounted to £31 million making efficiency savings through better airspace management important.

In addition, cost recovery from ANSPs for the disruption caused has been absent – this has to change! Looking forward it is difficult to predict, but it would seem that governments expect less disruption than of late and are much better at managing it. For our part, we will continue to cooperate, and aim to forge closer links with European ANSPs as Single Sky moves forward.

How is the Single European Sky working for an airspace user like easyJet?

As a point to point short haul European carrier we stand to benefit from a successful Single Sky. It will make our operations more efficient, speed up travel times, reduce costs, reduce our environmental footprint, and allow our passengers to travel more effectively.

Single European Sky, and hopefully its successor SESII, has been positive. One of our biggest costs is fuel and improved procedures such as Continuous Descent Approaches, Airport CDM, PBN, and many of the other early deliverables from the SESAR IP1 programme all link very well with our ambition to improve safe and improved operational performance.

However, while the existence of FABs has taken airspace efficiency in the right direction it is not enough and we feel that SES is not progressing rapidly enough. On top of this the unit rates for most of the major states seem to be increasing. One step in the right direction would be to have a radical and a very detailed review of the ATM costs right across Europe. For example why do we have over 60 Area Control Centres (ACCs) in the European Network, when there are only nine FABS?

What are the impediments to change? What improvements are needed?

There is clear resistance from certain ANSPs to weaken the current targets (SES II) and for delaying the process until this is done. In our view it couldn’t be in place fast enough as the benefits are clearly there, but understandably all parties need to be carefully consulted. We recognise the complexity of the ATM domain involving a lot of different stakeholders with diverging interests, different cultures and different business models.

However for Single Sky to work properly it has to drive through cost-efficiency which it currently isn’t doing. Nevertheless, we are pleased that Commissioner Kallas has made Single Sky his absolute priority and he must maintain the pressure on national authorities.

The existence of FABs has taken airspace efficiency in the right direction but progress is not rapid enough.
Manager will have any impact on managing disruption – for instance how will the effects of severe weather or industrial action events be managed any better than they are today?

Is easyJet seeing evidence of more efficient routes and fewer delays?

Efficient operations are at the core of our business model. Whilst there has been positive activity to consolidate the European Airspace into the 9 Functional Airspace Blocks and there have been some improvements in a few of the European States, we are yet to see any significant cost or operational improvements across the entire network. A lot of work remains to be done and the airlines need to see further push from the European Commission and European governments for improvements.

How is easyJet participating in SESAR development work and what are the challenges it faces?

While we are not full members we have closely supported the development of SESAR and it has our backing. One of its main successes to date is the way it has brought the entire aviation industry together into a single and clearly focused entity to drive forward the radical changes needed to modernise the European ATM network. However, it is unclear what governance structures will be put in place to ensure that SESAR is delivered on time, and it is unreasonable to expect airlines to meet the costs of deployment upfront. Also being the lead customer for new technologies is a very high risk strategy for the airlines and a further reason for the European Commission to support the future funding of the SESAR Deployment Phase. Finally, we believe that SESAR should be driven through the SES performance regime.

What can the EU do in the air traffic management domain to offer additional tangible benefits to all airspace users, passengers and citizens?

The European ATM Network is about to transition through one of the biggest changes ever seen in history. This is a one off opportunity to get it right! The current system is over complicated, inflexible and surrounded by unnecessary cost, working practices and restrictions. This is the opportunity to drive for change, stop this over regulated and capacity restrained environment. Remove the vulnerability of the network to external influences and drive for a performance based environment.

Offer the Airspace Users the opportunity to grow and build successful transport networks between cities, and do not over regulate and penalise passengers through various EU and national tariffs that currently stifle many from travelling. Aviation has the fantastic ability to bring financial, social and business benefits to all states, cities, regions if it is left to flourish. Regulation and restrictive financial penalties will prevent this from happening.

In what way is easyJet reducing its environmental footprint and optimising its flight performance?

easyJet has a very good environmental record and has consistently supported credible environmental measures and initiatives such as ETS and Single Sky. As an airline we are significantly more efficient due to high density seating, high load-factors, and our fleet is only 3.9 years old. An easyJet passenger is responsible for 22% fewer emissions than a passenger on a traditional airline, when they fly the same route and use the same type of plane.

We are always considering ways to be more efficient e.g. reducing weight in the aircraft – lightweight carpets, magazines, electronic route manuals, continuous descent approaches, lighter seats, lightweight trolleys. We also invest billions in the latest technology and are the first commercial airline to trial a revolutionary nano-technology coating on our aircraft aimed at reducing drag and increasing fuel efficiency. This will allow us to operate more competitively as a low fares airline as well as being more environmentally friendly.

In fact, over the last 10 years, easyJet reduced CO₂ emissions per passenger km by 25%. If anything, we are redefining environmental flying through our business model.

easyJet operates 196 aircraft on more than 540 routes across Europe. In 2010 the airline carried 48.8 million passengers, an increase of 7.9% over the previous year.
Unmanned Aerial Systems: The integration challenge
Rocky Gmeiner & Osman Saafan, CANSO Operations Standing Committee

UAS have clear potential for both civil and military applications, but how will their increasing numbers affect the demand on airspace capacity?

Once UAS can meet the airspace requirements to be allowed to fly alongside manned aircraft in non-segregated airspace, they should be able to be handled like any other aircraft that is using the airspace. In the large UAS category, these aircraft will probably fly above the normal manned aircraft altitudes and not impact normal airspace capacity, except when climbing to altitude or descending for landing. There will be some larger UAS that will need to orbit at altitudes where normal manned aircraft now transit, and these orbiting operations will significantly affect normal operations as they will not be point to point operations, but orbiting in a section of airspace other aircraft may need to fly through. These operations will have a large effect on controller procedures and time to ensure separation from point-to-point aircraft. Additionally, these mid-altitude aircraft fly at slower speeds than normal point-to-point airliners, cargo carriers, and business jets so they will impact controller spacing operations due to the speed differential. To be profitable, these larger UAS will operate on missions of long duration, so their effects will be felt for long periods (from a day, to a week, to a month in some cases) rather than just a transient situation of a few minutes. Since they will not likely be passenger carrying aircraft, and the number of passenger operations is expected to increase each year, they will be added aircraft to the airspace system. Some cargo operations are looking at UAS as a way to replace manned aircraft on cargo flights. In these cases, the UAS will probably replace some of the existing cargo aircraft, but as cargo operations are also increasing, they may be additive to the system and increase controller workload.

ANSPs are working to integrate UAS into controlled airspace while maintaining high levels of safety. What are the main factors at play and what challenges do they face?

There are five main issues related to UAS operations in non-segregated airspace alongside manned aircraft.

The first issue is a ‘sense and avoid’ system to be able to know where all aircraft in the vicinity of the UAS are located and a system to avoid them in a potential collision situation. Also, the system will allow the UAS to avoid other obstructions in the flight path like buildings, wires, mountains, and any other structure that the UAS would have to avoid for safe flight.

The second element is standards for airworthiness so the UAS can meet requirements for airworthiness that will allow safe flight in the airspace system. Elements of redundancy and other airworthiness parameters will need to be met in order for safety of flight operations.

The third element is operating standards and procedures. Since UAS, especially for high altitude operations, have different aircraft and flight parameters than common business, airline, and cargo aircraft due to the need to operate in the thin air at high altitudes, speed, rate of climb and decent, turn radius will have an impact on operation in the airspace system. Standards and procedures will need to be developed to accommodate these differences. Smaller UAS normally fly at lower speeds that most manned aircraft, these differences will also have to be accommodated.

The fourth element is equipage. UAS will have to be equipped for flight in the airspace system. Radios, transponders, sense and avoid systems, and a host of other equipment will have to be incorporated on the UAS to meet normal airspace requirements to talk with and be seen by controllers and other aircraft. Some of these systems may not be able to be accommodated on smaller UAS due to size, weight, and power requirements, so procedures will have to be developed to handle these UAS. In other cases, some of the larger UAS cannot follow existing procedures (Example: some large UAS cannot follow the TCAS resolution alert change of flight path requirements) so they cannot use existing safety systems.

The fifth element is pilot qualifications. Since the UAS pilot will normally be on the ground in the ground control station, the requirements for training and medical might be different than manned aircraft. These differences will have to be specified so UAS pilots can be certified to fly in the airspace system. There are other important elements that need to be worked out for UAS to have access to non segregated airspace, but these are the primary concerns.

What progress has been made for UAS to ‘sense and avoid’ other aircraft?

Sense and avoid is probably the most important aspect of allowing UAS operations in non-segregated airspace. The ability of the UAS pilot to avoid all obstacles and aircraft similar to manned operations is critical for the safety of the airspace system. There are many organisations around the world...
Unmanned Aerial Systems: The integration challenge
Rocky Gmeiner & Osman Saafan, CANSO Operations Standing Committee

standards and operations for UAS to fly in national airspace. Using this guidance and direction, ICAO countries can develop their national UAS procedures and standard operations.

CANSO has a big role to play in developing these ICAO SARPS. As the leading organisation representing Air Navigation Service Providers, CANSO involvement in and support for the ICAO UASSG will ensure that the procedures and concepts of operations for controller procedures to handle UAS are compatible with existing rules and regulations. CANSO has been involved from the first meeting of the ICAO UASSG and has been instrumental in helping put the ICAO Circular on UAS guidance together. In addition, CANSO has stood up the UAS Integration Team to help ICAO write the SARPS and operational Concepts of Operations that will be required in future ICAO ANNEX changes to accommodate UAS operations.

A number of technologies are being developed specifically to aid the navigation of UAS. Which of these have the potential to make their way to manned aircraft/ATM systems?

Once a sense and avoid system is developed for UAS, the concepts used to alert the UAS pilot may support helping a pilot in a manned aircraft. This could increase the ability of a pilot in a manned aircraft to find potential traffic conflicts early and hence make a much better avoidance manoeuvre. It has the potential to reduce the manned aircraft to manned aircraft conflicts and reduce accidents.

What are the next steps for the UAS industry? How can CANSO assist?

The UAS industry is working hard to develop the equipment and standards that will allow UAS to meet the requirements to fly in non-segregated airspace. To that end, many CANSO Members are actively involved in the ICAO Unmanned Aircraft Systems Study Group, the EUROCAE Working Group 73 UAS organisation, RTCA Special Committee 203 on UAS, The JARUS UAS Workgroup, ASTM F38 supporting UAS Standards, the NATO Standard NATO Agreements on UAS (UAS STANAG), among others.

The CANSO UAS Workgroup, which is part of the Operations Standing Committee, is tackling the other major problem: the procedures and concept of operations needed for air traffic controllers. The Workgroup is therefore developing a guidance document for ANSPs and controllers to allow UAS flights in non segregated airspace. This information can be used by ANSPs and countries to develop the procedures necessary to allow these UAS flights. It will also support the work going on in the ICAO UASSG so that these procedures have worldwide acceptance and are harmonised around the world.
Leading Runway Safety Improvement – Rising to the Challenge
Mark DeNicuolo, CANSO Safety Programme Manager

It’s no secret that runway safety has been targeted by the international aviation community as an area of focus for research, data collection and performance improvement. Improving runway safety is achievable, but it requires change. Change to arguably the most complex area of aviation operations because it is the place where everyone and everything, airport operators and ground personnel, pilots, controllers, regulators, aircraft and equipment must work simultaneously and seamlessly. Given that many different people and organisations carry responsibilities for different aspects of runway safety, real improvement can be successfully attained only if aviation partners focus on the overall effect that any change will have on operations. Therefore collaboration, communication and commitment amongst aviation partners are key. And of course, as with any change to the airspace system, effective safety risk management must accompany those changes.

CANSO is at the forefront of the runway safety initiative as evidenced by the various Workgroup and collaborative efforts that are ongoing with the Safety Standing Committee. At last year’s CANSO Annual Global Safety Conference SSC Chairman Stephen Angus clearly identified runway safety as a focus area and challenged the group to lead the ANSP industry in this area. The response from the members was unanimous leading to the formation of the Safety of Operations Workgroup. Under the leadership of Max Bice of Airservices Australia and Graham Wadeson of UK-NATS this group will focus initiatives to improve runway safety performance. Already, the Safety of Operations Workgroup is developing and has delivered some ground breaking initiatives.

Runway risk modelling
Charging down the path of runway safety improvement with the intent of fixing the areas of greatest perceived concern sounds gallant but may not be the most practical strategy... especially if you’re charging down that path alone. Also, expending valuable resources inventing a solution to an issue that already has wide visibility and where an effective resolution is imminent or even implemented in some places wouldn’t be the wisest course of action either. What’s needed is a collaborative, pragmatic approach that first answers questions such as:

- What is the runway safety risk picture?
- How will we validate that picture?
- How do we ensure that there is a common understanding and all aspects are considered?
- What processes and techniques will be most effective to identify, verify, communicate and implement improvements?
- How do we ensure the work isn’t redundant to other activities?

With these questions in mind the Safety of Operations Workgroup is building a “Bow Tie” risk analysis model to identify a fully integrated risk picture with respect to Runway Safety. But to make sure the risk analysis is valid, holistic and outputs are verifiable industry partners have been included from the onset. Thus far CANSO has collaborated with Qantas, Virgin Blue, the Civil Aviation Safety Authority and the Australian Transport Safety Bureau. Even at this early stage the effort has produced an extensive set of Barriers, Controls, Escalation Factors, and Escalation Factor Controls, that all play a role in affecting or managing Runway Safety. Collaboration with additional industry partners in the near future will further strengthen and validate the risk model.

Next, mitigations will be identified through collaboration with CANSO’s Operations Steering Committee and its members as well as our industry partners. Recommended changes that have been subject to safety risk management processes can be
implemented in the operation to help reduce risks associated with runway operations. In this manner a global Runway Safety view from the aviation industry, not just ATC, can be attained and performance improvement recommendations can be confidently identified and safely implemented.

**ATC impacts on runway excursions**

Sometimes performance improvements don’t require a highly technical, expensive solution. Granted, the most effective means of mitigating risk in any system is to design it out, however, often that isn’t possible or practical. That’s where education and awareness can be very effective. For instance, the events that lead to an unstable approach can begin to transpire during the initial descent, long before glide slope intercept. Awareness of those causal factors can help reduce the likelihood of unstable approaches and ultimately excursions. CANSO has developed and published an educational booklet titled: “Unstable Approaches, ATC Considerations”. The purpose of the booklet is to increase the knowledge of Air Traffic Control personnel about stabilised approaches and to increase their awareness of the part that ATC can play in contributing towards an approach becoming unstable.

The booklet is available on the CANSO website and is already being used by members to increase the awareness of how ANSPs can help reduce the likelihood of runway excursions and improve runway safety. The booklet has gained rapid acceptance by the aviation community, and is a welcome addition to the latest version of the IATA Runway Excursion Risk Reduction Tool Kit. It will be highlighted during the ICAO Global Runway Safety Symposium in May of this year and available to all of the symposium participants. CANSO has been invited to join with EUROCONTROL and the Flight Safety Foundation (FSF) in helping to develop their runway safety toolkit, specifically on the subject of unstable approaches. The CANSO booklet perfectly complements the work that has already been undertaken and the Safety of Operations Workgroup will continue to liaise with these partners to help develop the material further and promulgate it through the EUROCONTROL Skybrary website. This effort is an excellent example of how CANSO collaboration with industry partners can ensure that contributing factors to runway safety are well understood by pilots and controllers alike so the risks can be appropriately mitigated.

**Performance measurement**

Data collection on the number and severity of runway incursions is a typical performance metric for ANSPs. However its usefulness is limited unless there are complementary metrics, trends and causal analyses. Counting the number of incursions is not going to reveal the specific information needed to confidently determine if the safety performance improvements expected by implemented initiatives have indeed been realised. What’s needed is a data set that enables us to compare causal factors that potentially lead to runway incursions. The Safety Standing Committee has had a runway incursion metric in place for several years, however in 2011 work has begun to develop a process that enables a comparison of similar airport configurations and system states that have a higher potential to lead to incursions. The plan is to phase in the data collection requirements and build a continuously improving runway incursion trend analysis that identifies hazards and leads to effective mitigations. This work will help populate the Bow Tie risk model with real data, to drive evidence based solutions.

**Runway state reporting**

Another challenge taken by the Safety Standing Committee is to develop a process capable of better assessing, predicting and communicating to pilots meaningful information relating to runway braking action. Again, through collaboration with our industry partners the goal is to improve the classification and communication of runway conditions and ultimately improve performance.

CANSO is, and will continue to play a vital role in the improvement of Runway Safety performance not only through the work being produced by the Safety Standing Committee, but also by collaborating with our partners. Collaboration; that’s how we are most effective, that’s how we will be successful in meeting the challenge.
In 2010, air transport in the Middle East grew by 21 per cent while in the Asia-Pacific region, this figure stood at 12.9 per cent. The outlook is also positive for Africa, India and airspace over the Arabian Sea and Indian Ocean. But while such growth is welcome news, not least for the aviation industry and the economies it supports, the increased number of flights will have a less welcome effect on the environment.

Recognising these factors, Airservices Australia, ATNS South Africa and the Airports Authority of India (AAI) recently signed an agreement – the Indian Ocean and South Pacific Initiative to Reduce Emissions (INSPIRE) – to work together to address these challenges and lessen the environmental impact of aviation.

The agreement, which was signed during a special ceremony at CANSO’s ATM Dinner in association with the Jane’s ATC Awards on 7 March 2011, commits the partners to develop and implement operational procedures for all phases of flight on a gate-to-gate basis. INSPIRE is in accordance with the ICAO Assembly Resolution A39-17, which urges States and relevant organisations to achieve a global average fuel efficiency improvement of 2 per cent every year until 2020, and an aspirational global fuel efficiency improvement rate of 2 per cent per year from 2021 to 2050, calculated on the basis of volume of fuel used per revenue tone kilometre performed.

**Inaugural demonstration flight**

The inaugural INSPIRE demonstration flight took to the skies just three days after the signing ceremony. South African Airways flight 281, operated by an A340-300 (ZS-SXD), departed Perth’s Runway 21 bound for Johannesburg shortly before midnight.

ATNS played an integral role in optimising air traffic management, while the ATNS INSPIRE coordinator, Leon Altree accompanied the flight having spent time coordinating activities with Perth and Melbourne air traffic control.

The inaugural INSPIRE test flight saved 400kg of fuel, which prevented the emission of approximately 1.2 tons of CO₂.
The Gate-to-Gate phases of flight

The INSPIRE demonstration flights will, wherever possible, utilise a range of gate-to-gate operating initiatives.

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<th>PHASE</th>
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<tr>
<td></td>
<td>Just-in-time fuelling</td>
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<td>Single engine taxi</td>
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<td>Minimised use of APU</td>
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<td>No-delay taxi to the Gate</td>
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<td>Continuous Climb Departures (CCD)</td>
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The A340 was supplied with clean power while at the gate in Perth, along with unrestricted taxi and take-off and an uninterrupted climb to its initial cruise level of 34,000ft. Block altitudes were provided as per the pilot’s requests for the entire flight, and upon arrival to Johannesburg the flight was offered an unrestricted descent directly to final approach RWY03L with the shortest taxi to the gate (A4).

Although the flight needed to rely on ground power at Johannesburg due to a technical issue, ATNS is confident this will be corrected in the near future. In total, the flight saved 400kg of fuel, which prevented approximately 1.2 tons of CO₂ emissions.

Perfect flight

The flight was the first of a series of gate-to-gate demonstration flights across the Arabian Sea, Indian oceanic airspace and adjoining TMA/Enroute continental airspace in 2011. The flights aim to establish the best-case fuel and emissions scenario and facilitate the development of the ‘perfect flight’ benchmark. It is anticipated that four airlines will participate in the initial round of demonstration flights during 2011 subject to final company approval. These include:

- Emirates Airline: Dubai – Sydney
- Etihad Airways: Abu Dhabi – Melbourne
- South African Airways: Perth to Johannesburg
- Virgin Australia: Abu Dhabi – Sydney
Measuring fuel and CO$_2$ savings

Tim Rees, CANSO Environment Programme Manager

International aviation plays an essential role in driving social and economic development, but in order for this to continue the industry needs to have sustainability at its core. We need to understand how competition, social pressures and political pressures mould together to produce an economically and environmentally acceptable outcome.

The Kyoto Protocol commits more than 160 States to a target of stabilising greenhouse gas (GHG) emissions, and while States are obliged to meet this target through national measures, the Kyoto protocol offers additional means to meet the targets through market based mechanisms.

To help States understand their progress, they need the ability to record and monitor emissions. Under Kyoto, this is achieved through the use of precise records, registry systems and international transaction logs, consistent with the rules of the Protocol. A compliance system also ensures that States meet their commitments and offers assistance if they run into problems.

While the need for globally approved methodologies and frameworks for measuring and reporting CO$_2$ emissions within State boundaries is well-recognised, the need for similar mechanisms to cover cross-border operations is equally important. Since international aviation is not subject to the targets set out under the Kyoto protocol, the industry needs a global framework to set targets and report progress.

The responsibility for such a framework sits with ICAO. This has been acknowledged by the UNFCCC and much emphasis has been placed on developing a framework of measures to assist States with this task.

The ICAO 37th Assembly Resolution A37-19 “Consolidated statement of continuing ICAO policies and practices related to environmental protection – Climate change” outlines the necessary steps needed to address this. While much commentary has been made about the complexities of such a system, including the fundamental ideology of Common but Differentiated Responsibility (CBDR), ICAO is committed to leading the process and is working to develop the necessary components by the 38th Assembly. One of these is States’ ability to measure and report the effects of operational changes to the ATM system.

CANSO Members are committed to reducing aviation’s effect on the environment, and they are working to deliver ATM operational changes that improve efficiency and deliver reductions in CO$_2$ emissions. Much progress has been made, but are we accurately measuring the benefits of our work? Have we been able to quantify the savings that have been delivered in fuel burn and CO$_2$ and if so, what have we done with this information?

The ICAO Air Navigation Bureau has been working towards this type of reporting for several years. At present, the Global Air Navigation Plan gives States ‘rules of thumb’ in measuring efficiency improvements to the ATM system. It provides background information on the global concerns around aviation and emissions, and it encourages States to accurately measure their performance. At the 35th Assembly the Council was directed to “regularly assess the present and future impact of aircraft noise and aircraft engine emissions…” and “disseminate information on the present and future impact of aircraft noise and aircraft engine emissions…” Since the 35th Assembly many States have been working with ICAO on improvements to airspace, routes and ATM technology, and ICAO is encouraging all States to report fuel and CO$_2$ savings.

To assist States, ICAO is developing its Fuel Savings Estimation Tool (IFSET), which will be rolled out through 2011-2012. The tool aims to assist States which currently lack the ability to model and/or measure fuel savings from operational improvements. Specifically, the tool estimates the effects of:

- shortening or eliminating level segments on departure and arrival
- shorter routes (either in time or distance)
- cruising at different altitudes
- reduced taxi times

Next steps

CANSO is very proud to be supporting ICAO in the roll-out of the tool. The CANSO Environment Workgroup is currently using the draft version of the software, and will provide feedback to ICAO. The next steps include supporting ICAO workshops to provide opportunities for CANSO and non-CANSO Members to learn more about its capabilities.

CANSO will continue to work with ICAO throughout the IFSET development and deployment process, encouraging the world’s ANSPs to regularly report operational improvements and fuel savings to ICAO. By doing so, CANSO Members will support ICAO in tracking global efficiency improvements, assessing operational goals and highlight ANSPs’ efforts in reducing the impact of aviation on the environment.

IFSET assists states measure fuel and CO$_2$ savings

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PNGASL formally became a self-funded and state-owned subsidiary of the Civil Aviation Authority of Papua New Guinea in 2008. It is a certified ANSP, responsible for providing air navigation services throughout the country’s airspace. Apart from meteorological services, PNGASL provides communications, navigation, surveillance and air traffic management services. The organisation is also responsible for providing aeronautical information services and the coordination of search and rescue operations.

PNGASL is a key player in developing the country’s economy and promoting unity among the many ethnic groups.

The company’s vision is “to become a world-class air navigation-service provider”. In order to achieve this vision, PNGASL has embarked on a number of critical projects aimed at implementing state-of-the-art CNS/ATM systems which are compatible and operable with our neighbours, and aircraft systems to provide a higher level of service to the industry.

Improving efficiency
PNGASL is working hard to improve every aspect of its operations and offer ever more effective and efficient CNS/ATM services. It is installing the latest communications infrastructure, reinforcing the coverage of ground-based radar surveillance, and introducing ADS-B surveillance systems to manage the increasing volumes of traffic in PNG’s airspace. Progress is also being made to introduce Global Navigation Satellite Systems (GNSS) technology as the primary means of navigation. These projects, which will effectively upgrade and modernise the navigation infrastructure have already commenced and will take three to five years to complete.

The objective is to create a “seamless airspace,” to keep abreast with our neighbours, the industry and the global aviation community at large. PNG needs to implement a fully integrated, modern, regionally compatible and expandable air navigation system that will allow the provision of safe and efficient air traffic services to both domestic and international aircraft within PNG airspace now and into the future.

Plans to modernise PNGASL Air Traffic Management system has already commenced with the concept design phase recently completed. The supporting Communications, Navigation and Surveillance systems infrastructure is also undergoing major changes aimed at keeping abreast with the region and the world. Once completed, the new systems will be able to provide the level of services required by our domestic and international customers.
CANSO Members

CANSO – The Civil Air Navigation Services Organisation – is the global voice of the companies that provide air traffic control, and represents the interests of Air Navigation Services Providers worldwide.

CANSO members are responsible for supporting over 85% of world air traffic, and through our Workgroups, members share information and develop new policies, with the ultimate aim of improving air navigation services on the ground and in the air. CANSO also represents its members’ views in major regulatory and industry forums, including at ICAO, where we have official Observer status.

For more information on joining CANSO, visit www.canso.org/joiningcanso

Full Members – 61

- Aeronautical Radio of Thailand (AEROTHAI)
- Air Navigation and Weather Services, CAA (ANWS)
- Air Navigation Services of the Czech Republic (ANS Czech Republic)
- Air Traffic & Navigation Services (ATNS)
- Airports Authority of India (AAI)
- Airservices Australia
- Airways New Zealand
- Austro Control
- Avinor AS
- AZANS Azerbaijan
- Belgocontrol
- Bulgarian Air Traffic Services Authority (BULATSA)
- CAA Uganda
- Civil Aviation Authority of Singapore (CAAS)
- Civil Aviation Regulatory Commission (CARC)
- Department of Airspace Control (DECEA)
- Department of Civil Aviation, Republic of Cyprus
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- Entidad Pública Aeropuertos Españoles y Navegación Aérea (Aena)
- Estonian Air Navigation Services (EANS)
- Federal Aviation Administration (FAA)
- Finnair
- FRA
- Georgia
- GCAA United Arab Emirates
- General Authority of Civil Aviation (GACA)
- Hellenic Civil Aviation Authority (HCAA)
- Irish Aviation Authority (IAA)
- ISAVIA Ltd
- Kazaeronavigatsia
- Latvia’s Gaisa Satiksme (LGS)
- Letové prevádzkové Služby Slovenskej Republiky, Štátny Podnik
- Luchtverkeersleiding Nederland (LVNL)
- Luxemburg ANA
- Maldives Airports Company Limited (MACL)
- Malta Air Traffic Services (MATS)
- NATS
- NATS UK
- NAV CANADA
- NAV Portugal
- Navair
- Netherlands Antilles – Curaçao ATC (NAATC)
- Nigerian Airspace Management Agency (NAMA)
- Office de l’Aviation Civile et des Aéroports (OACI)
- ORO NAVIGACUJA, Lithuania
- PNG Air Services Limited (PNGASL)
- Polish Air Navigation Services Agency (PANSA)
- Pristina International Airport JSC
- ROMATSA
- Sakaeronavigatsia Ltd
- SENEAM
- Serbia and Montenegro Air Traffic Services Agency (SMATSA)
- Serco
- skyguide
- Slovenia Control
- State Airports Authority & ANSP (DHMI)
- State ATM Corporation
- The LFV Group
- Ukrainian Air Traffic Service Enterprise (UKSATSE)

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- Boeing ATM
- Era Corporation
- FREQUENTIS AG
- Group/ED Europe S.L.
- ITT Corporation
- Lockheed Martin
- Metron Aviation
- Raytheon
- SELEX Sistemi Integrati S.p.A.
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- Skyguide
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- Adacel Inc.
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- ATC Global (UBM Information Ltd)
- ATC Network

- ATCA – Japan
- ATECH Negocios em Tecnologia S/A
- Aviation Advocacy Sarl
- Auvit Data Processing GmbH
- Avitech AG
- AZIMUT JSC
- Barco Orthogon GmbH
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- Bruel & Kjaer EMS
- Comsoft GmbH
- Dubai Airports
- EADS Cassidian
- EIZO Technologies GmbH
- European Satellite Services Provider (ESSP SAS)
- Emirates
- Entry Point North
- Etihad Airways
- Fokker Services B.V
- GE Aviation’s PBN Services
- Harris Corporation
- Helios
- HITT Traffic
- Honeywell International Inc /Aerospace
- IDS – Ingegneria Dei Sistemi S.p.A.
- Indra Sistemas
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- SITA
- Ubitech Systems, Inc.
- U.S. DoD Policy Board on Federal Aviation
- WIDE
For more than 60 years, Raytheon has delivered the most innovative Air Traffic Management (ATM) solutions. We invented or perfected many of the technologies that form the backbone of today's global ATM infrastructure, and continue to pioneer innovations that provide the safest transportation for more passengers than any other company in the world. Raytheon solutions are helping to deliver NextGen and SESAR regional systems that modernize the airspace — and enhance customer safety.
Proven Air Traffic Management Solutions

Next Generation Solutions

- Performing Acclaimed Systems Integration Services
- Delivering Proven Multilateration & ADS-B Solutions Worldwide
- Implementing Cyber Security Protection, Detection and Response
- Providing Cutting-Edge Green IT

The World Depends on Era

With customers in over 40 countries around the world, Era a.s. is committed to delivering proven solutions for the world’s most challenging air traffic management needs. Era is a leading provider of systems integration, cyber security and green IT solutions and is the pioneer and world leader in next generation surveillance and flight tracking solutions.