

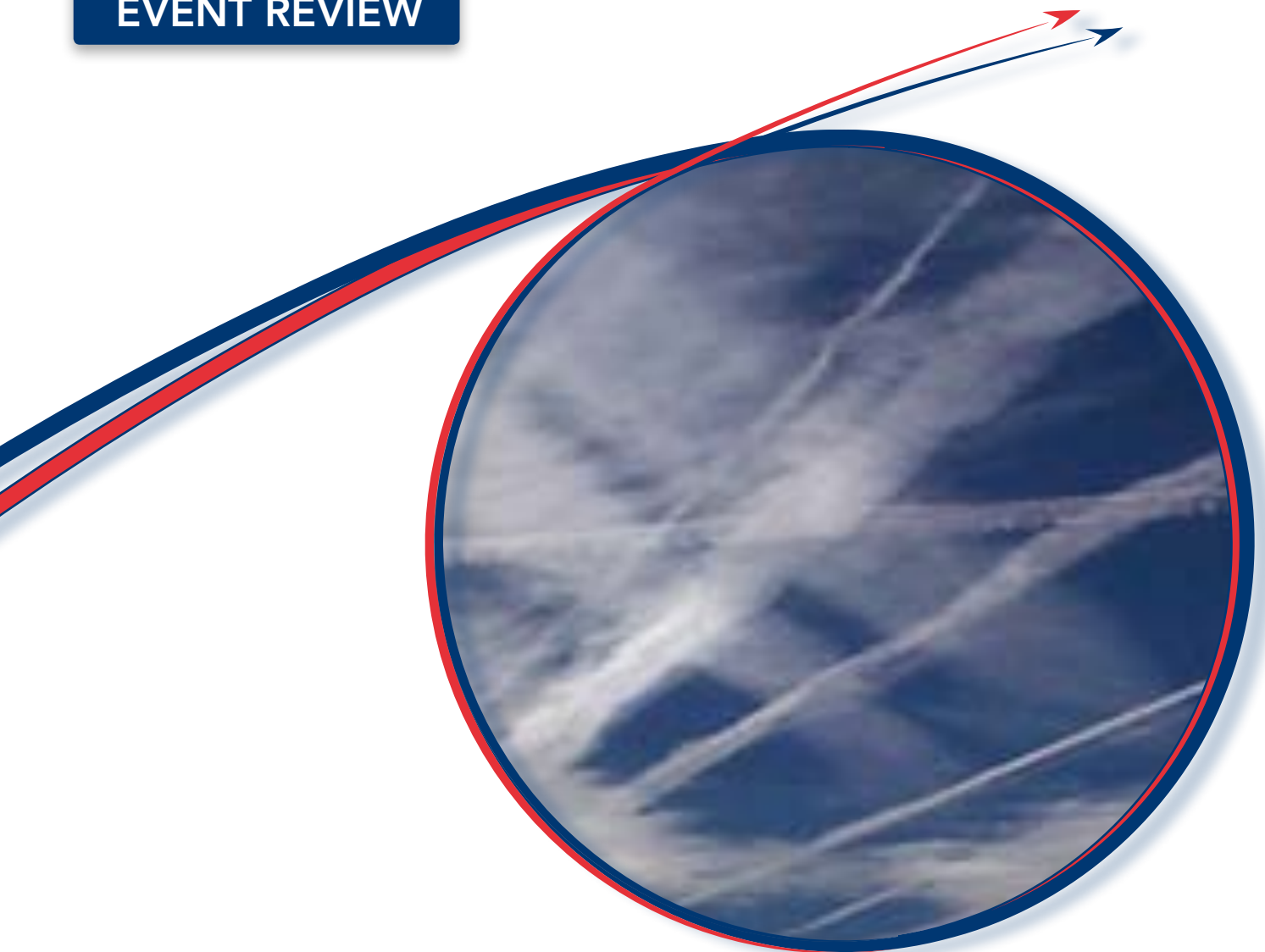
# ATM/Aircraft Data Communications Policy Conference



6-8 September 2011

Amsterdam, the Netherlands

**EVENT REVIEW**



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## ATM / AIRCRAFT DATA COMMUNICATIONS POLICY CONFERENCE

### WELCOME ADDRESS

#### ➤ GRAHAM LAKE, CANSO DIRECTOR GENERAL

*“More efficient communication between the cockpit and the controller is key to transforming ATM performance and CANSO is taking the lead in guiding this transformation.”*

CANSO’s mission is to transform Air Traffic Management (ATM) performance, which means – amongst other things – to increase the capacity of the ATM system, according to Mr Lake.

Improving the communication between the cockpit and the controller is an important way in which to realise this goal. “More efficient communication between the cockpit and the controller is key to transforming ATM performance and CANSO is taking the lead in guiding this transformation.” In this world of iPhones and emails, it is strange to imagine that ATM is still trapped in an inefficient analogue world that is dominated by voice communication. That is why CANSO brought together the experts in the industry – to shape the vision that will direct the implementation of data link communications.

At the request of the International Civil Aviation Organization (ICAO), CANSO will develop an industry position on data link that will be presented at the Global Air Navigation Industry Symposium (GANIS). CANSO accepted the challenge, because we are committed to transforming the ATM system. At GANIS we will speak with a single global, voice to the 190 plus governments that make up ICAO and report the outcomes of this policy conference.



## SESSION 1 THE BIG IDEA

➤ *NEW AIR TRAFFIC MANAGEMENT SYSTEMS INTEGRATE AIRCRAFT IN FLIGHT FOR THE FIRST TIME. DIGITAL AIR TO GROUND DATA COMMUNICATIONS IS AN ESSENTIAL COMPONENT FOR THE SUCCESS OF NEXTGEN, SESAR AND FOR OTHER REGIONS IN THE WORLD, THAT ARE IMPLEMENTING MODERN ATM.*

**BO REDEBORN, PRINCIPAL DIRECTOR, ATM  
DIRECTOR SESAR AND RESEARCH, EUROCONTROL**

Mr Redeborn spoke frankly saying: "Progress in the area of data communications is one of the most embarrassing aspects of the ATM industry." He emphasised the urgency of ANSPs to deliver performance while reducing costs. Doing everything by voice communication is an outdated, expensive way of operating and upgrading to data communications is essential. In fact, 25% of EUROCONTROL's ATM Master Plan requirements entail data link communications with important upgrades such as 4D trajectories being impossible to conceive of without it. It is essential that we time the necessary upgrades well. We need commitment to a common solution that is applied globally. In the short and medium term we may however have to accept that different flights and aircraft have different needs. There will need to be a well thought out model of transition and we may need to rethink the business model for the communications aspect of our business. Mr Redeborn called on CANSO to show leadership in helping the industry implement data link communications.



**STEVE CREAMER, DIRECTOR, REGIONAL OFFICE EUROPE, AFRICA & MIDDLE EAST, FAA**

"Forget the Link," says Mr Creamer, "what matters is how you use it." We need to focus on the outcomes we wish to achieve. We need ATM to become an 'invisible' infrastructure with increased automation made possible through the use of data communications. Due to the cost of certifying new builds of aircraft, the electronic flight bag will become the centre for innovation making data communications key to improving ATM. Understanding this will require a paradigm shift whereby innovation is allowed to come from the controllers and pilots. "People using a tool are the first to know how they can be improved". Function must have priority over form, which means getting the best procedures in place and making sure they get certified. It is critical in our path forward that we work closely with the relevant stakeholders – particularly the regulators. We will need to coordinate this change at a global level while delivering it regionally through well defined schedules.



**EDWARD FALKOV, STATE RESEARCH INSTITUTE OF AVIATION SYSTEMS (GOSNIIAS)**

Mr Falkov explained that although we essentially have supercomputers in the air and on the ground a bottleneck is created due to the fact that they communicate via voice. The time has come to explore the use of appropriate data links for as many applications as possible. Using technologies such as VDL-4 can improve things such as situational awareness and operative weather for aircraft users. In Russia they were able to conduct joint flights of UAVs and aircraft with ADS-B without needing to implement any new techniques or equipment – a VDL-4 patch was sufficient. With data link the way we conceive of the manner in which airspace users operate will change. Rather than a binary communication between ground and air, data link will enable airspace users to communicate directly with one another creating a communication network resembling something like "an internet-like structure in the air". We need to really think about the technology to conceive of all the various applications thereof.



**MODERATOR: IACOPO PRISSINOTTI, HEAD OF INTERNATIONAL ACTIVITIES, ENAV**

Mr Prissinotti called attention to the urgency of integrating air and ground communications systems regardless of the complexity of finding a common roadmap in terms timing these much needed upgrades. He pointed out that data link has been around since the 1970s and – speaking as a former controller – asked the delegation: "When are we going to get rid of VHF?" He continued by emphasising the importance of shaping a clear industry position to present to the States at the Global Air Navigation Industry Symposium



# “Transforming ATM Performance”

## SESSION 2 WHERE ARE WE TODAY – DATA LINK SERVICE PROVIDERS

➤ DATA LINK HAS BEEN IN OPERATION FOR NEARLY 40 YEARS WITH OVER 20,000 ACTIVE AIRCRAFT TODAY. WHAT SYSTEMS ARE IN USE? WHAT LESSONS HAVE BEEN LEARNT? WHAT CHALLENGES ARE FORESEEN?

RON HAWKINS, VP, COMMERCIAL AVIATION SOLUTIONS, ARINC

Mr Hawkins explained that ARINC has a global, rapidly expanding data link network, in which it continues to invest. Working with more than 200 companies, ARINC supports 15,000 aircraft internationally with message traffic having grown by 250% between 2001 and 2010. ARINC’s highly successful Aircraft Communications Addressing & Reporting System (ACARS) was developed more than 30 years ago and airlines depend on it to maximise performance, safety and operational integrity. Both Airline Operations Centre (AOC) and ATC data link applications will be of continuing importance in maximising airspace efficiencies. He listed some of the existing applications of data link such as FANS (since 1990s) and ATN baseline 1 (since 2000s) as well as future applications such as ATN baseline 2 (due in 2013). The required software is already in place in all of its 380+ VDL Mode 2 ground stations and the entire network can operate ATN baseline 1 today. ARINC sees no significant deployment or implementation challenges with regards to incorporating ATC messages into the existing operational networks, said Mr Hawkins. The challenges are addressing the question of global harmonisation, creating a clear future roadmap, creating a business case for aircraft equipage and determining who gets the benefits and when.



*“AIRLINE OPERATORS HAVE ALREADY DONE WHAT WE SAY WE WANT TO DO – USING DATA INSTEAD OF VOICE”*

PHILIP CLINCH, VP AIRCRAFT COMMUNICATIONS & ATI MESSAGING, SITA

“Airline operators have already done what we say we want to do – using data instead of voice.” They depend on the ACARS system for aircraft maintenance, operations control and flight planning and use voice only in exceptional situations. Commenting on the challenges facing NextGen and SESAR, Mr Clinch argued that these programmes are ignoring the existing data link reality and defining a starting point that cannot be reached. Why not learn from the airlines which have already made this transition? The bottom line is that using voice for all controller pilot communications is obsolete in the 21st century. ANSPs need to make the transition to data communications and the entire world need to agree on the same minimal capability. He concluded his presentation by asking rhetorically: “If the next generation ATM system needs to justify that it is safe, should we not expect the same of the current voice system?”



DAVID COILEY, HEAD OF AERONAUTICAL BUSINESS, INMARSAT GLOBAL LTD

Inmarsat has a well-established satellite infrastructure with its 11 satellites and 250,000 terminals providing global coverage serving air transport, business aviation and governments. In 2010 the revenues generated from its aeronautical services alone increased by a third and Inmarsat continues to invest in this infrastructure. Currently Inmarsat primarily supports passenger communications with a much smaller safety demand, but from 2013 its SwiftBroadband will allow for new capabilities such as providing the future platform for aeronautical safety services. The increased capacity and performance will benefit all users reducing the cost of systems such as ACARS by at least 30%. Other important benefits for the aeronautical industry include a better use of the radio spectrum and the ability to do more with less aircraft equipage. Mission critical communications can be prioritised over other communications and will allow for reduced oceanic ATM separations. In summary data link provides better service at lower costs with continued improvements and benefits being shared by all users.



BRIAN PEMBERTON, DIRECTOR PRODUCT MANAGEMENT,  
AERONATICAL & MARINE PRODUCTS, IRIDIUM

More than 30,000 of Iridium's 500,000+ subscribers are aviation subscribers. Iridium has FAA authorisation to provide Controller Pilot Data Link Communications CPDLC (FANS 1/A & ADS-C). The distinct advantage of its LEO constellation is that the shorter distances to the satellites mean smaller antennas and lower latency performance. Cheap antennas the size of a hockey puck is sufficient to consistently perform at more than 99.9% availability. A one year operational evaluation by the FAA demonstrated that its network is compliant with the GOLD RCP240 specifications for ADS-C and FANS 1/A. Iridium NEXT a fully financed programme to replenish their satellite constellation will ensure service life beyond 2030 with full backward compatibility reducing technology migration risks and costs for customers and service providers. Iridium will continue to invest in its infrastructure and is equipping ADS-B on all its satellites. They expect to have full global ADS-B surveillance by 2017. Iridium provides a single, fully global, service platform supporting global infrastructure harmonisation that enable cost-effective aircraft equipage with excellent operational efficiencies.



MODERATOR: COLIN GALLANT, CHAIRMAN, DATA LINK USER FORUM & TECHNICAL DATA LINK, BRITISH AIRWAYS

During the Q&A session the importance of finding a harmonised solution was discussed. It was argued that ANSPs are entering a new field, but that the 'goal posts' or targets for what they want to achieve kept on shifting: "What we want today is clear targets. What we need from this conference is to provide us [the communication service providers] with these targets," said Mr Clinch. Putting the data link system in place is not the problem; the industry needs to agree on the procedures and the implementation thereof. The European Commission has started to do this with SESAR, but the time has come to do something similar on a global level. The panel furthermore discussed the necessity of not focussing too strictly on the needs of today or simply looking at 'translating' voice into data. As data use 'skyrockets' voice based communications will become obsolete, because it is incapable of communicating what is needed for something like 4D trajectories. Mr Gallant concluded the session by stating: "We [British Airways] fly to 250 countries. We want one system and one procedure. We need this if we are to ensure the safety of our flights. This is a point of procedure between the airlines, ANSPs and communications service providers."



## SESSION 3 WHERE ARE WE TODAY – AIRCRAFT OPERATORS

➤ AIRCRAFT OPERATORS HAVE BEEN USING DATA LINK SINCE THE 1970'S. IT HAS DELIVERED CLEAR OPERATING SAFETY AND EFFICIENCY BENEFITS. TODAY ATM DATA LINK REPRESENTS JUST A SMALL PORTION OF AIRBORNE COMMUNICATIONS. HOW WELL HAS THE ATM WORLD CONVEYED ITS REQUIREMENTS? WHAT ARE THE LESSONS THAT HAVE BEEN LEARNT? WHAT CHALLENGES CAN BE FORESEEN?

KEITH SMITH, SENIOR OPERATIONS ENGINEER, FLIGHT OPERATIONS, EMIRATES

Mr Smith gave an overview of the benefits of data link with some practical examples and concluded with the challenges going forward. The vast majority of airlines will be using ACARS for operational, administrative and ATC communications with significant advances having been made in the last 30 years since it was first implemented. Data link allows for automation while improving the timely dissemination of information, but – more importantly – it improves safety by reducing workload and increasing the accuracy of information. Mr Smith supported these statements with engineering, cockpit, cabin and phase-of-flight examples. Emirates will continue to use data link and seek out even more ways in which to optimise its operations, according to Mr Smith. Increasing the automation of non-mission crucial operations is essential for the airline's continued growth. Emirates would like to share in the benefits of global harmonisation and start utilising more efficient ground-based technology. Mr Smith argued that this was essential lest we arrive at a situation whereby a passenger has better access to information than the pilot.



# “Transforming ATM Performance”

## BJÖRN SYRÉN, DATALINK FLIGHT OPERATIONS, SAS

Mr Syrén explained that SAS has been a heavy user of data link for 20 years and that they could not operate without it. Their investment into data link has however not always been supported by ground peer systems in ATM. Mr Syrén cited several examples including the Link 2000 CPDLC, which is currently only supported by Maastricht despite previous commitments by other ATC centres. In addition to calling on greater commitment from ANSPs, Mr Syrén appealed to them to work with both the communications service providers (SITA and ARINC) and not to develop their own VDL2 infrastructure. In so doing airlines could take advantage of data link capabilities without resorting to expensive alternatives regardless of the communications service provider used by their AOC. Mr Syrén lamented the fact that SESAR FCI is not using the existing AOC / ATC infrastructure and instead introducing three completely new data link systems in a ‘big bang’ approach.



## ANN HEINKE, PRESIDENT, OVERLOOK (MILITARY AIRCRAFT OPERATOR)

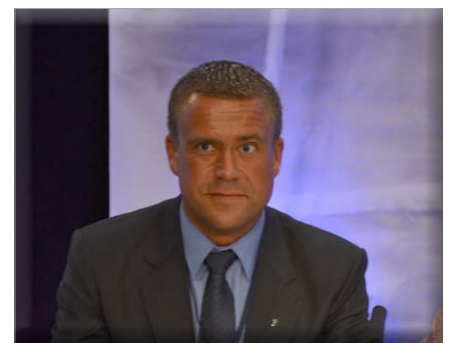
Ms Heinke looked at data link from the perspective of military aircraft operators. She identified some of the impediments to the implementation, and the lessons that can be learned from their experience. She noted that the absence of scheduled flights and the diverse technologies of FANS and ATN impacted significantly on training needs. Ms Heinke furthermore criticised the standards for being specific to certain technologies, which delayed the migration to new technology. She recommended that technology be eliminated from both the flight plan, which would enable new technologies, as well as interoperability standards. The various avionics software versions should furthermore be managed dynamically from the ground and provision should be made for upper airspace ATM to be contracted out. This will allow for the use of data communications in the airspace of States who do not yet meet the infrastructure requirements. She urged ANSPs not to reinvent the wheel and use technology such as ARINC 745 ADS and converge to TCP/IP to reduce costs. Ms Heinke also recommended the construction of an independent data link testing station.



**“UAS ARE AN INEVITABLE PART OF THE FUTURE OF ATM WE SHOULD START THINKING SERIOUSLY ABOUT HOW WE ARE GOING TO INTEGRATE THEM”**

## TORE KALLEVIG, CHAIRMAN OF EUROCAE WG73 REMOTELY PILOTED AIRCRAFT

EUROCAE WG-73 was created to analyse and develop standards which will facilitate the insertion of Unmanned Aircraft Systems (UAS) in all classes of airspace. One of the basic tenets for the introduction of UAS is that they operate in a similar manner to manned aircraft from an ATC perspective. This means the UAS pilot must be in radio contact with a controller using a standard Very High Frequency (VHF) radio. The UAS pilot must also be able to control the status of the UAS in order to follow the instructions of the Air Traffic Controller (ATCO) – even if the UAS is able to fly with a high degree of autonomy. These two functions, controlling the UAS and communication between the ATCO and the UAS pilot form the basis for the development of the Communication, Command and Control (C3) requirements for UAS.



## MODERATOR: ANDREW CHARLTON, MANAGING DIRECTOR, AVIATION ADVOCACY

Mr Charlton asked each of the speakers to summarise their presentation in one sentence. Mr Kallevig said that UAS are an inevitable part of the future of ATM and that we should let go of our fear and start thinking seriously about how we are going to integrate them. Ms Heinke called for a single global data link standard while Messrs Smith and Syrén focussed on the cost justification for aircraft equipage. Airlines want to be rewarded for equipping, but cannot build a business case when their equipage benefits are shared equally by their competitors. Mr Charlton concluded by pointing out that there are many lessons to be learnt from other industry stakeholders and that we need to find solutions that are platform-driven rather than technology-driven.



## SESSION 4 WHERE ARE WE TODAY – AIRCRAFT MANUFACTURERS

➤ AIRCRAFT ARE BEING DELIVERED TODAY WITH DATA LINK SYSTEMS DESIGNED TO SUIT THE NEED OF THE AIRCRAFT OPERATOR. WHAT DIRECTION IS BEING PROVIDED BY THE ANSP COMMUNITY FOR ATM DATA LINK? WHAT ARE THE LESSONS THAT HAVE BEEN LEARNT? WHAT CHALLENGES CAN BE FORESEEN?

ROB MEAD, CHIEF ARCHITECT, ADVANCED ARRIVALS, BR&T, ADVANCED ATM, BOEING

Mr Mead gave an overview of Boeing's ATC capabilities and outlined the advantages of data communications. He suggested that ground implementation is the key direction ANSPs provide, because aircraft operators will not buy solutions that are not supported by ground systems. He also made a case for working towards convergent solutions as equipping aircraft with multiple packages is both costly and inefficient. ANSPs need to show a believable return on investment for equipment in a 12 to 18 month timeframe and accept that some aircraft will not be upgraded. He added that ANSPs should not expect multiple upgrades and need to establish standards if they wish to encourage airlines to invest. Mr Mead argued for taking a global approach warning that: "If procedures are not global, mistakes will be made."



BRUNO LEPLINGARD, ATM SERVICES – HEAD OF BIDS, AIRBUS PROSKY

Mr Leplingard introduced the Airbus product line and the possible migration paths. He explained that retrofit campaigns are complex and expensive, and because of the time it takes to develop and certify a new product, the first new line-fitted products will only be available in 2017/2018. Due to these timelines it is essential that new solutions are introduced progressively and that there is close coordination between the aircraft manufacturers, airspace users and ANSPs from the development phase. This is the only way to ensure that the different stakeholders enable one another. Mr Leplingard concluded his presentation by arguing that it is vital to demonstrate the benefits of best-equipped best-served, as the implementation rule alone does not solve everything.



***"DATA LINK IS NOT ABOUT REPLACING VOICE WITH DATA, IT IS ABOUT CONCEIVING OF A DIFFERENT FORM OF OPERATION THAT IS MORE EFFICIENT."***

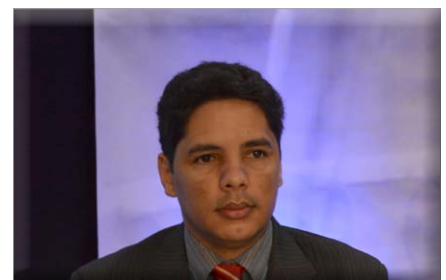
OKKO BLEEKER, DIRECTOR, EUROPEAN R&D, ROCKWELL COLLINS

Mr Bleeker criticised the fragmentary nature of the current ATM communications process whereby each sector functions in relative isolation. Each time the aircraft enters a new sector it is detected, the relative separation is analysed and any impending shortfall is rectified by means of a vector analysis. This makes ATM a reactive, labour-intensive process with the same processes being repeated over and over again. He went on to say that data link enables the communication of complex information while enabling processes such as trajectory or time-based operations (TBO). With TBO the entire trajectory is shared a priori with all sectors and each sector merely verifies conformance, making adjustments as and when required. Each sector is pre-organised, thus eliminating all reactive processes – including the need for voice communications. This means a reduction in spectrum and link load as well as improved capacity and fuel savings. "Data link is not about replacing voice with data, it is about conceiving of a different form of operation that is more efficient."



MARCELO EDUARDO DE OLIVEIRA, COMMUNICATIONS SYSTEM SPECIALIST, EMBRAER

Mr de Oliveira gave an overview of the Embraer product range and the status of the data link capabilities of their fleet. He said that while VHF ACARS has a solid business case this is not always true for other solutions. Furthermore, the European Commission (TEN-T) incentives do not guarantee the attractiveness for early implementation. Mr de Oliveira argued that the early involvement of the certification authorities and the coordination between air-ground implementation are essential. He said that the industry needs to take into account the time it takes to implement new technologies and recommended that standards be 'frozen' for 3-5 years before expected entry into service.



# “Transforming ATM Performance”

**MODERATOR:** PAUL MCCARTHY, ICAO REPRESENTATIVE, IFALPA

Mr McCarthy reminded the delegation of the importance of taking the human factor into consideration. Data link will be used by pilots and controllers who need to be involved early on. During the Q&A session some recurring themes were captured and discussed in more detail, such as the absolute need for global harmonisation, fixing standards and the importance of solving the problem of best-equipped-best-served. Mr Bleeker emphasised that the industry needs to start by thinking about the functionality it needs and be more application-focused. He drew an analogy between the current ATM system and the postal service: “Nobody asked the mailman if email would be possible and he would have responded negatively if they did.” He argued that the ATM industry needs to stop fixating on standardisation and the problem of equipage and ask itself what is possible. He noted that email was not the postman’s vision and the industry did not wait for the whole world to buy PCs. The ATM industry needs to look to a new way of doing business. “The technology is already there. It is a matter of ingenuity and finding the courage and the intention to use it,” said Mr Bleeker.



## SESSION 5 WHERE ARE WE TODAY – ANSPS

➤ *THE FIRST ATM DATA LINK MESSAGES WERE SENT IN 1985. WHAT APPLICATIONS ARE IN USE TODAY, AND WITH WHICH AIRCRAFT OPERATORS? WHAT IS THE CONTROLLER EXPERIENCE? WHAT ARE THE LESSONS LEARNT? WHAT CHALLENGES CAN BE FORESEEN?*

**CHRIS MOULAND, GENERAL MANAGER, GANDER FIR, NAV CANADA**

NAV CANADA has been using data link since 1985 and the Gander FIR is the heaviest data link user over the North Atlantic. Operations would be impossible without it, according to Mr Mouland. He added that using data link has many advantages that ultimately outweigh the disadvantages and they find they have less errors and have been able to introduce reduced longitudinal separation from March 2011. NAV CANADA learnt that even though data link is complex, they are part of a global community of ANSPs, airlines and communication service providers who work together to find common solutions. Mr Mouland also stated that it was important to remember that delivering a better service is more expensive and that there are human factors that need to be considered. He complained however that the flight planning process is slow and causing problems, because of the inability to accurately reflect aircraft equipage. He said that data link is complex and it has management implications. His management question now is how long do you maintain fallback infrastructure.



**“HOW LONG DO YOU MAINTAIN FALLBACK INFRASTRUCTURE?”**

**MARTIN ADNAMS, DATALINK PROGRAMME MANAGER, EUROCONTROL**

Mr Adnams argued that the key to successful data link implementation is a synchronised commitment / investment in the air and on the ground. He reported that EUROCONTROL is planning to introduce a central Reporting Office for data link that will coordinate with other regions and facilitate data link conversions in ATM. With reference to the LINK 2000+ implementation, he explained that using data link increased capacity by 11% through a decrease in the ATCOs’ workload. It furthermore increased safety by reducing misunderstandings. According to Mr Adnams, ATCOs can see the advantages of using data link and the initial resistance to using it is relatively easy to overcome. Mr Adnams concluded by emphasising the importance of incorporating all the stakeholders as soon as possible and getting stable regulation and standards in place.



PHILIP HUGHES, DIRECTOR, TECHNOLOGY & TRAINING, IAA

Mr Hughes gave an overview of the IAA's use of data link explaining that it could reduce ATCO workload by 50% during the first wave of departures in the morning. The capacity gains are however dependant on aircraft equipage and some airlines are still reluctant or unwilling to retrofit. A simulation conducted to assess the impact of CPDLC on the Shannon ACC showed that voice is still preferred for time critical communication and that work is needed in to develop contingency measures in case CPDLC fails. An interesting development is the way in which it affects the way the traffic is managed by the ATCO. Mr Hughes then cited the experience of one ATCO who suggested that because of data link, the role had changed from being "an ATC manager to an information manger". Mr Hughes is convinced that data link will form a valuable part of the future of ATM and it will be a key enabler for the future ATM system. He commented on the advantages of working with other stakeholders citing that the IAA will save approximately 30% in costs thanks to the COOPANS agreement, where ANSPs have collaborated on system planning and procurement.



JIM ECK, DIRECTOR PROGRAMS TECHNICAL OPERATIONS (ATO), FAA

Data communications is a transformational programme that is critical to the success of NextGen, according to Mr Eck. Its complexity however, should not be underestimated and it is vital to align all the pieces of the puzzle in order to succeed. "The key is balance," said Mr Eck. "Forget optimal when you are dealing with complex systems." Mr Eck went on to argue that stakeholder buy-in is essential for building a system the airspace users will utilise. This means building a roadmap based on the needs of the airspace users while taking advantage of what is already in place. Timing investments is essential so that "you know when to do what and how much of it." Highlighting the need for action, Mr Eck concluded by stating: "If we say it costs too much, we are saying our future costs too much and we cannot go forward."



**MODERATOR: ROB MEAD, CHIEF ARCHITECT, ADVANCED ARRIVALS, BR&T, ADVANCED ATM, BOEING**

During the Q&A session Mr Mead identified one of the most important themes as the need to create clear, realistic implementation guidelines that can inform synchronised investment. The difficulty of coordinated investment and implementation on a global level was also discussed. The relationship between the airlines and the ANSPs was identified as being vital to the successful implementation of data link, but the difficulty of managing this relationship was also recognised. It was agreed that data link is a highly useful ATM tool with clear safety and capacity benefits, but political objectives are interfering with good business practice and industry progress.



## SESSION 6 THE WAY FORWARD

➤ 20 YEARS AGO ICAO PUBLISHED A GLOBAL PLAN FOR CNS ATM, WHICH INCLUDED WIDESPREAD USE OF THE ATN AND ATM DATA LINK. THAT PLAN FAILED, HOWEVER, WHO CAN QUESTION THE SUCCESS OF FANS 1/A! EFFECTIVE GLOBAL POLICY, CLEAR ACTIONS AND ACCOUNTABILITIES ARE REQUIRED.

PHILIPPE DOMOGALA, CONFERENCE EXECUTIVE, IFATCA

Mr Domogala emphasised that IFATCA supports the development and implementation of new technologies and ATCOs share in the benefits they entail. He cautioned against marginalising the importance of the human factor by being too technology-focused. Progress often carries a cost and the blind approval of quick wins with flawed designs is not acceptable. Mr Domogala called for global harmonisation supported by a common standard that would prevent misunderstandings, and appealed for improved interoperability due to the fact that incompatible technologies increase ATCO workload and frustration. Meeting these requirements is vital to ensuring the safe operation of ATM, he said.



# “Transforming ATM Performance”

AKHIL SHARMA, GLOBAL HEAD SALES, MANAGED SERVICES,  
NOKIA SIEMENS NETWORKS

Mr Sharma explored the dis(similarity) between the telecommunications and aviation industries. The global vision of the telecommunications industry is supported by the adoption of a single standard that can be implemented in as short a time as two years. The key to the success for the telecoms industry is the fact that standards are being driven by the industry. Mr Sharma argued that the same basic principle applies to the world of ATM, which is why FANS 1/A succeeded while the ICAO process did not. He recommended that the aviation industry conduct a detailed analysis to assess the suitability of using Long Term Evolution (LTE) for aeronautical communication. LTE is becoming the World Wireless Telecommunication Standard and early adoption could be an important enabler for the future air traffic management communications system. Being an IP network LTE could also facilitate the integration of data between airports, ATM and airlines.



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*“TAKING A GLOBAL APPROACH TO DATA LINK IS ESSENTIAL FOR THE REALISATION  
OF THE NEXT GENERATION OF ATM.”*

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MIKE WATSON, ATM OPERATIONAL AUTHORITY, THALES

The experience and expertise of ATM systems suppliers can be of great benefit in the process of setting standards, according to Mr Watson. He argued that although standards can be loose and ambiguous in the conception stage, they need to be fixed before implementation. He cautioned against the desire for customised solutions that contravene the standards. “The standards are there for a reason,” he said. Mr Watson pointed out that currently ATM has two major regionally focused programmes defining advanced solutions, but what about the rest of the world? Taking a global approach to data link is essential for the realisation of the next generation of ATM.



DAVID BOWEN, HEAD OF ATM SYSTEMS, SESAR-JU

SESAR is a research and development programme rather than an implementation programme, explained Mr Bowen. It is developing solutions that address the needs of all airspace users taking a holistic approach. The future ATM system will be a ‘system of systems’, according to Mr Bowen. He argued that a standardisation framework needs to capture the requirements of the entire system. This point is essential, because it is acceptable to implement changes at different rates so long as we know we are moving in the same direction. A significant challenge in the European environment is retrofitting avionics and incentivising equipage, according to Mr Bowen. The question of ownership of infrastructure and the role of ANSPs with regards to their business models also need to be addressed. Business models may vary based on technology requirements (terrestrial/remote-oceanic) and infrastructure investments.



KEITH SMITH, SENIOR OPERATIONS ENGINEER, FLIGHT OPERATIONS, EMIRATES

Mr Smith gave an overview of the history of FANS 1/A and Emirates’ data link operations. The benefits of using data link include increased efficiency, reduced CO<sub>2</sub> emissions, improved safety, fewer navigational errors, and a decrease in workload thanks to automation. Based on their experience with the use of data link, Mr Smith argued that the way forward was implementing CPDLC / ADS in every oceanic and remote area including low density domestic areas such as the Sahara and the Saudi Arabia ‘empty quarter’. He called for common global standards and procedures and argued that ‘best-equipped best-served’ was an attractive incentive from the operator perspective. It was furthermore important to maximise the use of existing equipment and minimising retrofits to keep costs reasonable.



**MODERATOR:** MATTHEW RILEY, HEAD OF OPERATIONAL POLICY EVOLUTION, NATS

During the Q&A session, SESAR was discussed in greater detail focusing on the need for a research and development programme to take business cases into consideration. Mr Bowen explained that the businesses – the ANSPs – are SESAR and cannot be wholly separated from it. He went on to qualify his position explaining that SESAR needs to understand the reality of business cases and not work them out.

Mr Riley affirmed the importance of taking business cases into account by explaining that without them we cannot ensure that we will progress with the right things at the right times.



## SESSION 7 JUSTIFICATION AND FUNDING

**➤ AIRLINE USERS MANAGED TO MAKE A VIABLE BUSINESS CASE FOR AIRLINE APPLICATION OF DATA LINK. ATM HAS BEEN LESS SUCCESSFUL. WHY THE DIFFERENCE?**

**RICK HEINRICH, DIRECTOR, STRATEGIC INITIATIVES, COMMERCIAL SYSTEMS, ROCKWELL COLLINS**

From the perspective of an avionics supplier, Mr Heinrich identified the regulator as an increasingly important stakeholder. This is a result of a shortened technology refresh cycle and the migration to an integrated software platform requiring re-certification. For the success of data link implementation, Mr Heinrich argued that it is crucial to create strong partnerships with the standard-setting bodies. He reiterated the importance of finding a harmonised, global solution and getting buy-in from all stakeholders. Mr Heinrich ANSPs could benefit from exploring alternative forms of funding such as buying vs. leasing. He argued that we need to learn from the successes and challenges faced by each ANSP and identify clear transition plans going forward. The industry needs to move beyond limited budgets and truly commit to implement data link, which is a cornerstone of its future. This requires the industry to get motivated by demonstrating its commitment.



***“DECISIONS NEED TO BE MADE THAT TRANSCENDS INDIVIDUAL STAKEHOLDERS,  
BUT THAT CANNOT BE TO THEIR DETRIMENT”***

**FRED MESSINA, VICE PRESIDENT, BOOZ ALLEN HAMILTON**

It is generally accepted that data link is a keystone component of programmes such as NextGen and SESAR. The challenge is however to know when to invest in which upgrades. This requires all the relevant stakeholders to make some serious business decisions. Business cases vary depending on whether upgrades are mandated, but they all generally entail considerations such as equipage, training, impact on competitiveness and return on investment. ‘Freezing’ standards and requirements lower risk and make it easier to measure the resulting benefits of implementation. Past ATM programmes have shown that early adopters do not always realise the same benefits as late adopters. Success is therefore dependant on synchronised implementation by operators and ANSPs with clear time schedules and accountability (incentives and rewards). Mr Messina urged the delegation to think of the aviation industry as a megacommunity of disparate, interdependent stakeholders that need to work together to deliver a service. Decisions need to be made that transcends individual stakeholders, but that cannot be to their detriment as buy-in from all stakeholders is required for success. On this basis a societal level business case can be constructed on operationally measurable outcomes, realistic timelines with individual stakeholder accountability.



# “Transforming ATM Performance”

CHARLES STEWART, FIT TECH PILOT, UNITED AIRLINES

Mr Stewart explained that airlines are in favour of data link, but there is a noticeable lack of harmonisation when one contrasts the US and European programmes. In terms of the global operating environment this adds financial risks to airlines which choose to equip for both programmes and the risk of not meeting the necessary requirements in time if they choose not to. The operator perspective clearly leans towards starting small and ‘cheaply’ with the currently federated architecture of available avionics components.

Mandates are unpopular and a ‘big-bang’ approach will never deliver unless it is supported by a harmonised global standard so that crews can be trained on a single platform. The challenges to a successful business case will be resolved to some extent with the ‘best-equipped best-served’ approach backed by frozen standards that can be applied globally. Commitment to implementation from ANSPs has always been lagging and synchronising the ‘ground mandate’ would reaffirm the confidence in the business case and incentivise equipage, according to Mr Stewart.



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*“DATA LINK WILL DRIVE THE INDUSTRY FORWARD. IT UNDERPINS NEXTGEN AND SESAR, WHICH CANNOT BE REALISED WITHOUT IT”*

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MATTHEW RILEY, HEAD OF OPERATIONAL POLICY EVOLUTION, NATS

Mr Riley compared the different business drivers for airlines and ANSPs. The cost/benefit relationship for implementing data link is not always as clear for the ANSPs as for the airlines. The technology to support data link on the ground is expensive and slow to certify, and the operating cost will increase significantly as voice services will be required to be maintained in parallel. These costs cannot readily be recovered solely through increases in capacity and reduced workload and will eventually be reflected in airspace user charges. This will have to be managed carefully through good collaboration between the different stakeholders. From the ANSP perspective it is therefore primarily safety and capacity benefits that are driving the implementation of data link. Mr Riley argued that data link will drive the industry forward and that it underpins aviation system upgrades such as NextGen and SESAR, which cannot be realised without it. It is therefore essential to move forward with data link albeit in a collaborative way.



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*“YOU HAVE TO SOLVE BEST-EQUIPPED BEST-SERVED”*

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MODERATOR: RUSS CHEW, MANAGING PARTNER, NEXA CAPITAL PARTNERS

Mr Chew emphasised the importance of justifying investment and funding saying: “If it does not improve things for the customer then it’s not going to happen. You have to solve best-equipped best-served.” Mr Chew furthermore identified the importance of building accountability into this model so as to restore the confidence required for mutual stakeholder commitments.

Airlines are businesses and they won’t be persuaded without good business cases, he explained. The lack of a global approach among ANSPs was also discussed. While industry suppliers and operators are global businesses that can make global decisions, ANSPs tend to think in national, regional terms. Incorporating a more global approach can be as simple as thinking in terms of city pairs instead of sectors. The success of the INSPIRE programme was cited as an example.



## SESSION 8 THE BIG IDEA – WHAT NEEDS TO CHANGE?

➤ *WHAT ARE THE TOP PRIORITIES TO BE ADDRESSED BY THE INDUSTRY TO ENSURE THE TIMELY AND EFFECTIVE IMPLEMENTATION OF ATM DATA LINK?*

RON HAWKINS, VP, COMMERCIAL AVIATION SOLUTIONS, ARINC

Safety stands at the centre of our industry and perfection is expected of us, argued Mr Hawkins. We need to strive to be informed and train our abilities to think in a more commercial way building strong business cases.

Mr Hawkins explained that we have talked a lot about what we will be investing in, but have said nothing about what we are not going to invest in. Do we – for example – really need to be backwards compatible? Does this make business sense?



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*“ANSPS SHOULD NOT BE WORRIED ABOUT COMPETITION,  
THEY SHOULD COMPETE AGAINST IRRELEVANCE”*

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PHILIP CLINCH, VP AIRCRAFT COMMUNICATIONS & ATI MESSAGING, SITA

“ATC is losing control,” cautioned Mr Clinch. When we look into the future of ATM, we realise it needs to become silent and invisible. The ANSP should not be telling planes where to go; it should enable them to go where they want to go. This is what can be achieved with data link. It is true that a safety case needs to be made for the future ATM system, but what about the current voice system? Would we have been able to certify it if we were to develop it today? Mr Clinch said that if ANSPs do not find a way forward they run the risk of being subject to a disruptive technology that could make them obsolete. “ANSPs should not be worried about competition, they should compete against irrelevance,” said Mr Clinch.



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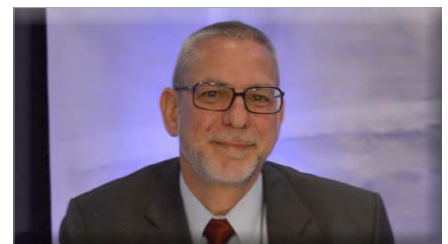
*“THE REAL PROBLEM THAT NEEDS TO BE ADDRESSED IS THE ISSUES OF LEADERSHIP”*

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TOM KRAFT, CHIEF SCIENTIFIC AND TECHNICAL ADVISER FOR AERONAUTICAL COMMUNICATIONS, FAA

Mr Kraft argued that the issues we have been addressing so far are merely symptoms. The real problem that needs to be addressed is the issues of leadership, common policy and the lack of a shared vision with regards to the implementation of data link.

It is only by having the courage to address these issues that the ATM industry will move forward, argued Mr Kraft.



**MODERATOR:** NEIL PLANZER, VICE PRESIDENT, ATM STRATEGY, BOEING

Mr Planzer spoke frankly saying that ANSPs are suffering from ‘victim think’ by focussing on what the airlines and regulators need to do. Even ‘privatised’ ANSPs tend to be protected monopolies. The time has come for ANSPs to take charge of their destiny and lead industry change. “CANSO’s role is neither regulatory nor political. It is to generate the willingness amongst ANSPs to step out of the ‘victim think’ mentality and to become the masters of their own destiny.” Mr Planzer warned that although NextGen and SESAR are currently the ‘centres of gravity’ in the ATM industry, this could very well change. Unless ANSPs step up they may very well become the victim of a disruptive technology. According to Mr Planzer, the ATM industry should show leadership by pushing the safety case onto the regulators and giving the airlines what they need. CANSO’s role is to be the advocate of this change.



## ➤ DISCUSSION

During the ensuing discussion, the topic of disruptive technology was also discussed in more detail. “Disruptive technologies do not come from those being disrupted,” said Alex Bristol, “If aircraft manufacturers were to create a form of self separating, ANSPs run the risk of becoming irrelevant.” Mr Graham Lake argued that transforming the ATM system means delivering capacity, and that if we fail to do so we run the risk of becoming the single point of failure in the aviation system. The success of the FANS programme can be ascribed to the fact that they started with the desired outcomes. For us that outcome is clear, argued Mr Lake: “Transform or become irrelevant.”

The national, regional perspective of ANSPs was contrasted to the global perspective of other aviation stakeholders, such as the airspace users and communication service providers both of whom run their business globally. It was argued that ANSPs need to stop thinking in terms of controlling fragmented sectors and start thinking in terms of routes supported by automated processes. When we think about the future of ATM, voice is not a viable option, argued Mr Philip Clinch.

The delegation also discussed the issue of UAVs arguing that we should not be reluctant to introduce them. Instead we need to be proactive and create a case for ‘sense and avoid’. Instead of arguing against the inevitable the industry needs to show leadership and enable new technological developments through the use of data link.

## SESSION 9 CALL TO ACTION

CHRIS DALTON, CHIEF, AIR TRAFFIC MANAGEMENT SECTION,  
AIR NAVIGATION BUREAU, ICAO

Mr Dalton explained that while ICAO is re-positioning itself to become more relevant. It is time for CANSO to take a strong industry position and the upcoming GANIS event is the perfect opportunity to do so. The event brings together the States and the industry making it the perfect forum to publish and role out its policy. He challenged CANSO to unite the regulators and industry so as to ensure that the right decisions are made in the coming years. If the industry can present ICAO with a common policy, ICAO can mobilise its Working Groups but this requires the industry to speak with a single ‘voice’. The industry needs to communicate to ICAO the direction in which it needs to go.

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***“IT IS TIME FOR CANSO TO TAKE A STRONG INDUSTRY POSITION”***

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GUS NEZER, DIRECTOR AIR TRAFFIC ORGANISATION CENTRAL SERVICE CENTRE, FAA (CO-CHAIR CANSO OPERATIONS  
STANDING COMMITTEE)

We need to find agreement on the way going forward, according to Mr Nezer. He proceeded by listing some of the key messages and issues that were discussed during the course of the conference:

- Data link is an indispensable part of the future ATM system and will replace voice communications
- We require a single global standard for data link
- Change needs to be coordinated on a global level
- Investment needs to be synchronised
- The industry needs to drive the implementation of data link
- The problem of best-equipped-best-served needs to be solved

Mr Nezer argued that going forward the main challenges are to:

- define a global policy for the implementation of data link
- show leadership with regards to steering industry change
- create a global industry vision for data link communications

ALEX BRISTOL, COO, SKYGUIDE  
(CO-CHAIR CANSO OPERATIONS STANDING COMMITTEE)

Mr Bristol commented on the fact that while the conference is on data link communications, the industry is facing a more fundamental problem. The lack of progress in the field of data link communications is the result of a more fundamental lack of leadership in the industry. He added that ICAO was ready to listen to the industry and that the time has come to lead industry change.

## ➤ CLOSING REMARKS AND CONFERENCE OUTCOMES

The conference was an unprecedented event in terms of the diversity of people in attendance and the delegation heard views from a wide range of stakeholders. It was clear that data link is used widely – and very successfully – by a multitude of customers for many years and that there is already a global, fully redundant infrastructure in place. The main impediments to the implementation of data link within the ATM industry were identified and discussed. These impediments were however shown to be only symptoms of a larger more fundamental problem – the need for real leadership. The upcoming GANIS event was identified as the perfect opportunity to show this leadership and CANSO has committed to the following projects to lead industry change.

1. CANSO accepted a challenge to look at the North Atlantic as the basis for a transformational ATM system through its Operations Standing Committee. Over the next three years it will examine how data link can be used to address the capacity problems in this region and work on a model to solve the problem of best-equipped-best-served
2. CANSO created a Workgroup to work on a vision for the implementation of data link that can be presented at the upcoming GANIS event.

## CANSO MEMBERS

### Full Members - 64

- Aeronautical Radio of Thailand (AEROTHAI)
- Aeroportos de Moçambique
- Air Navigation and Weather Services, CAA (ANWS)
- Air Navigation Services of the Czech Republic (ANS Czech Republic)
- Air Traffic & Navigation Services (ATNS)
- Airports and Aviation Services Limited (AASL)
- 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
- DFS Deutsche Flugsicherung GmbH (DFS)
- DSN France
- ENAV S.p.A: Società Nazionale per l'Assistenza al Volo
- Entidad Pública Aeropuertos Españoles y Navegación Aérea (Aena)
- Estonian Air Navigation Services (EANS)
- Federal Aviation Administration (FAA)
- Finavia Corporation
- GCAA United Arab Emirates
- General Authority of Civil Aviation (GACA)
- Hellenic Civil Aviation Authority (HCAA)
- HungaroControl Pte. Ltd. Co.
- Irish Aviation Authority (IAA)
- ISAVIA Ltd
- Kazaeronavigatsia
- Latvijas Gaisa Satiksme (LGS)
- Letové prevádzkové Služby Slovenskej Republiky, Štátny Podnik
- Luchtverkeersleiding Nederland (LVNL)
- Luxembourg ANA
- Maldives Airports Company Limited (MACL)
- Malta Air Traffic Services (MATS)
- NATA Albania
- National Air Navigation Services Company (NANSC)
- NATS UK

- NAV CANADA
- NAV Portugal
- Naviair
- Netherlands Antilles - Curaçao ATC (NAATC)
- Nigerian Airspace Management Agency (NAMA)
- Office de l'Aviation Civile et des Aeroports (OACA)
- ORO NAVIGACIJA, Lithuania
- PNG Air Services Limited (PNGASL)
- Polish Air Navigation Services Agency (PANSNA)
- Prishtina International Airport JSC
- ROMATSA
- Sakaeronavigatsia Ltd
- S.E. MoldATSA
- SENEAM
- Serbia and Montenegro Air Traffic Services Agency (SMATSA)
- Serco
- skyguide
- Slovenia Control
- State Airports Authority & ANSP (DHMI)
- State ATM Corporation
- The LFW Group
- Ukrainian Air Traffic Service Enterprise (UkSATSE)

### Gold Associate Members - 14

- Abu Dhabi Airports Company
- Airbus
- Boeing ATM
- Era Corporation
- FREQUENTIS AG
- GroupEAD Europe S.L.
- ITT Corporation
- Lockheed Martin
- Metron Aviation
- Raytheon
- SELEX Sistemi Integrati S.p.A.
- Sensis Corporation
- Telephonics Corporation, ESD
- Thales

### Silver Associate Members - 53

- Abu Dhabi Department of Transport
- Adacel Inc.
- ARINC
- ATC Global (UBM Information Ltd)
- ATC Network
- ATCA – Japan

- ATECH Negócios em Tecnologia S/A
- Aviation Advocacy Sarl
- Avibit Data Processing GmbH
- Avitech AG
- AZIMUT JSC
- Barco Orthogon GmbH
- Booz Allen Hamilton, Inc.
- Brüel & 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
- Guntermann & Drunck GmbH
- Harris Corporation
- Helios
- HITT Traffic
- Honeywell International Inc. / Aerospace
- IDS – Ingegneria Dei Sistemi S.p.A.
- Indra Sistemas
- Inmarsat Global Limited
- Integra A/S
- Intelcan Technosystems Inc.
- Jeppesen
- LEMZ R&P Corporation
- LFW Aviation Consulting AB
- Micro Nav Ltd
- The MITRE Corporation – CAASD
- M.L.S. International College
- Nokia Siemens Networks
- Northrop Grumman Park Air Systems AS
- NTT Data Corporation
- Quintiq
- Rockwell Collins, Inc.
- Rohde & Schwarz GmbH & Co. KG
- Saab AB
- SELEX Systems Integration Inc.
- SITA
- STR-SpeechTech Ltd.
- Ubitech Systems, Inc.
- U.S. DoD Policy Board on Federal Aviation
- WIDE