Second Global Air Navigation Industry Symposium GANIS/2

ICAO Montreal December 11-13, 2017

IFALDA Directors Bernard Gonsalves and Dave Porter were invited by ICAO to attend and participate in the Second Global Air Navigation Industry Symposium in Montreal in December. The GANIS event was one of two ICAO events that week, the other event (which IFALDA chose not to attend) was the First Safety and Air Navigation Implementation Symposium, held later in the week.

The GANIS/2 event was an opportunity for industry groups like IFALDA to meet with members of the ICAO Air Navigation Commission to discuss evolving technologies and standards. Beyond the "big picture" outlined during plenary, my report will concentrate on those sessions with issues of interest to the flight dispatcher community.

Plenary

The 2 ½ day event started with a Plenary Session Monday morning chaired by Steve Creamer, the Director of the Air Navigation Commission.

During the Plenary Session ANB Director Steve Creamer outlined the 2016-2030 Global Air Navigation Plan (GANP), highlighting the need for air navigation alignment through ASBU (Aviation System Block Upgrades). He observed the air transpoprt industry doubles in size every 15 years with flight deck, ATC and operations procedures constantly evolving.

Steve noted that because of the increased complexity of the system, areonautical decisions will be largely data-driven through assessing the current-state, identifying solutions while evaluating the needs of the aviation system.

ABSU will consist of:

1. Operator improvements using metrics
2. Procedures
3. Technology
4. Regulatory approval
5. Business cases
6. Must be well-understood.

ABSU will be the result of evolving standardization by industry and organizations (*like IFALDA*) to develop SARP-ready proposals and identifying candidates for further proof of concept work through an interface with industry and organizations, performance-based standards as well as industry standards.

Sessions

After the lunch break, on Monday afternoon the event was divided into four different conference rooms, each dedicated to a specific topic, carrying over to Tuesday morning. The four topics were: .

Monday afternoon/Tuesday morning

1. Innovative and Emerging Operations
2. Future of CNS and Avionics
3. Information Management
4. The Future of Covil-Military Cooperation

I opted to stay with the Information Management sessions for the entire time while Bernard focused on other sessions. Bernard's report follows as Apopendix A. . On Wednesday morning I attended the Global Forum on PIRGs and RASGs.

The GANIS2 event ended Wednesday afternoon.

Information Management – SWIM

The theme of the Information Management sessions was System-Wide Information Management (SWIM).

SWIM is the overarching collection of data and information passing through the environments of the air traffic service system and the operator's information management system. SWIM is an ICAO protocol with the underlying concept that any data that can be collected, will be collected and shared through the "Cloud" and made available to all users and stakeholders in the system, including pilots and flight dispatchers. Data includes aeronautical data ad meteorological data as well as air traffic data.

Dave Vogt, Delta's General Manager ATM made a presentation about how dispatchers, pilots and others in the Delta Operations Control Center (OCC) acquire and use this information.

Rick Heinrich of Rockwell-Collins described the need for SWIM data integrity as it goes to aircraft for CDM (collaborative decision-making). Rick noted that the airplane (and the crew) is both a provider as well as a consumer of areonautical data insofar as system-wide information management (SWIM) is concerned,
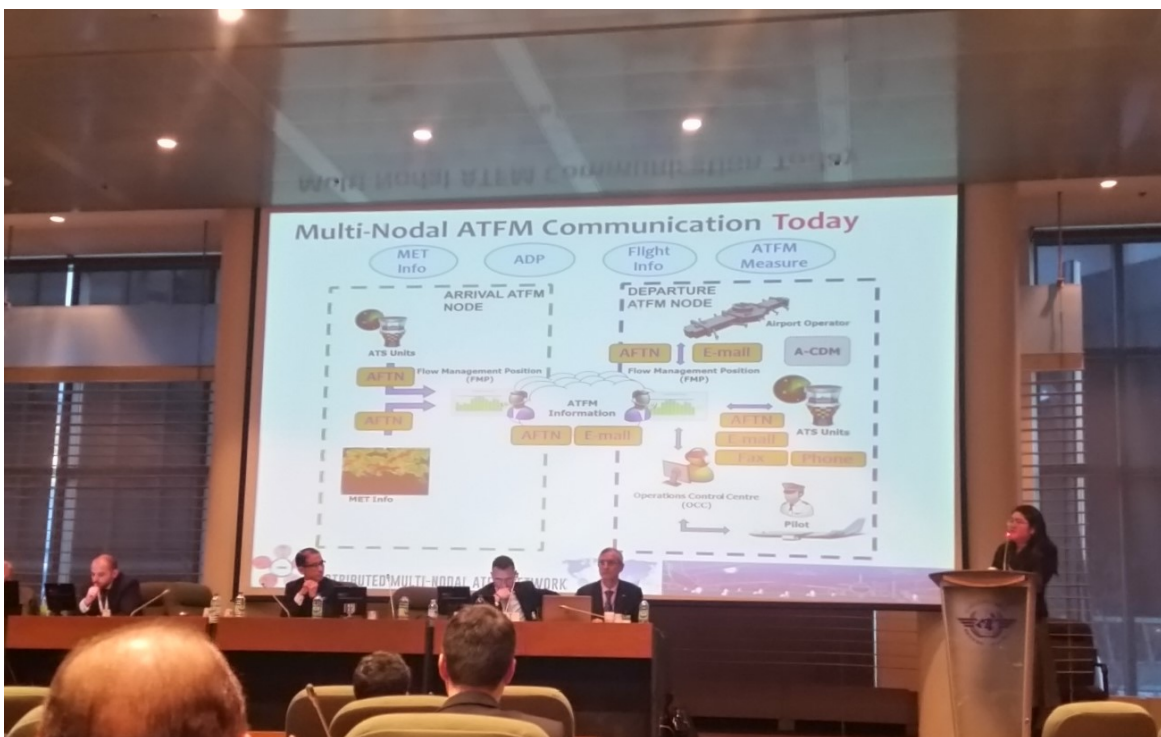

Other presenters included:

Jim Crabbe from Boeing – discussed use of the "Cloud" for data collection.

Stephane Mondoloni from Mitre discussed Trajectory-Based Operation (TBO) with ATM information devivered via collaboration.

At the Q&A after the SWIM presentations IFALDA took the floor to point out that while much of this information within the SWIM protocol could be used for situational awareness, operators, pilots and flight dispatchers are limited by their OpSpecs (A09 and A10) as to the source of aeronautical data and meteorological information when they are used for aeronautical decision-making. I asked the ICAO ANB if they were going to review SWIM-acquired data and information in terms of OpSpecs compliance in Annex 6 and other ICAO guidance material. It does not appear that they have seriously considered that and they thanked IFALDA for putting the issue on the table and they would add it to their work program.

Attached are several slides from the program that may be of interest to the flight dispatcher community.

While we were attending the symposium, we had a chance to meet with Capt. Miguel Marin who is our point of contact at ICAO for the Flight Dispatcher Training Manual project. Capt. Marin advised he was very pleased with the progress, particularly with Jórn Sellhorn-Timm's efforts on the Competency Working Group.

From left: Bernard Gonsalves IFALDA Director – Global ATM, Dave Porter – IFALDA Director – Professional and Technical Standards and Capt. Miguel Marin – ICAO Air Navigation Board

We also had an opportunity to meet with Asgeir Pálsson, Head of the North Atlantic Systems Planning Group (NATSPG) which is a part of the ICAO Paris EUR/NAT PIRG (Planning & Implementation Regional Group). IFALDA had previously contacted ICAO EUR/NAT requesting standing and participation within the NATSPG as an approved ICAO NGO. Other international professional organizations such as IATA, IFALPA and IFATCA are already participating as observers. Asgeir advised that he had put forward our request which was approved by the executive of the EUR/NAT office and we would receive a letter of confirmation shortly. He suggested that IFALDA would be most effective in several of the NATSPG working groups that actually delevop policy and procedures. We recommend that we discuss this at our IFALDA Winter Board meeting and recruit 2-3 working group members from our membership.

Respectfully submitted,

David H. Porter

Director – Professional & Technical Standards

IFALDA

Appendix A Report by Bernard Gonsalves IFALDA Director – Global ATM

Following the Plenary, Day 1, I broke off to attend the "Future of CNS & Avionics" stream. CNS being Communication, Navigation & Surveillance systems that deliver safe & efficient Air Traffic Management (ATM) – my portfolio. Key topics included:

» **Topic**: **Communications** - Planning for CPDLC message sets & FMS compatibility/recertification to support ICAO's Trajectory Based Operations Concept in the Global Air Navigation Plan (GANP). There were also discussions on the COM transportation layer- i.e. VDLM2 & OSI, AeroMACS, Satcom or using commercial vendors for 'safety of life' services.

» **Takeaway:** The airlines stated that benefit cases will drive equipage. Europe in particular have taken the punitive stance of mandates- which ironically have forced the airlines to equip or face exclusion. The ATC authorities have been lacking in supporting services from the ground-ostensibly blaming it on investment costs. The aircraft manufacturers are in a state of apparent confusion mainly due to supporting a known data sets, links & protocol required for initial applications such as terminal and route clearances and eventually TBO. The cockpit configs required for COM in Europe & the US are different as are the oceanic and domestic COM protocols. A feeling of wasted technology to the current point in time and 'loose' R&D type thinking of how SWIM will fit the TBO concept. Dispatchers will need to keep abreast of the varying performance levels of avionics in flight plan filing, complying with airspace mandates (such as RNP4- PBCS in the NAT) and providing the appropriate Item 10 & 18 FPL suffixes. Important also to understand the data implications of correlating FPL data from flight planning systems into the FMS – given different naming conventions.

» **Topic**: **Navigation** – The two competing technologies in this domain are both aircraft & GNSS based. Ground-based Augmentation currently will take airlines down to CATI minimums and eventually CAT3 with curved & segmented approaches. So effectively a real-time approach procedure being linked by ATC directly into the FMS. The new FMS's are now being built multi-mode to accommodate GBAS receivers as well so that crews will train and fly to a standard ILS 'lookalike'. Space-based Augmentation is a regional program (WAAS in the US, EGNOS in Europe, GAGAN in India etc.) receivers for which are more common on Part 91 operator aircraft. The benefits of this system is that it provides ILS capability of 200' DH where ILS's do not exist or are cost-prohibitive to install. The safety benefits are significant by providing vertical guidance (especially in poor vis/ceiling conditions) and making redundant circling or MDA approaches.

» **Takeaway**: This was more of an insight to the evolving technology. Dispatchers would need to stay current with the different nomenclatures being marked up on the approach plates and MEL conditions requiring both crew training & authorizations as well as equipment serviceability.

Care needs to be taken in providing RAIM assurance checks especially for the 'older' GPS receivers with SA ON and such airports for use as alternate filings.

» **Topic: Surveillance** – This 1st segment focused entirely on the latest developments on TCAS (ACAS in ICAO speak). A variety of versions 7.0, 7.1 etc. in different parts of the world and new capabilities such as TCAS-III and TCAS-X which provide lateral & vertical resolution advisories as well. A 2nd segment focused on the two flavors of ADS-B … OUT being the baseline for ATC services that are currently mandated in Australia, parts of the South China Sea, etc. and in 2020 in the US & Europe. The OUT functionality allows aircraft to broadcast their signal to ATC in a 'cooperative' manner- i.e. without interrogation. The lower latency (end-to-end time) and update rates (several updates in a second compared to 6 seconds on a radar sweep) provides the operational advantage. In the longer term, enabled by cockpit software aircraft could 'self-separate' rather than needing a controller as their intermediary- the biggest gain from ADS-B technology.

» **Takeaway**: All in all the TCAS segment was a bit confusing that TCAS is now being considered for reduced ATC separations – quite different from its initial design and intent as a "safety Net" feature. Dispatchers should stay well abreast of the developments of ADS-B technology for both MEL requirements and also compliance with regional mandates & FPL filing elements. The dependency on the GNSS (GPS) signal is critical as the position source. Care should be taken to consider GPS outage Notams.

» **Cyber Threats, SWIM and Resilience** – A clear & present risk both from external attackers (via TCP/IP) communication links with the airplane but also from within the airplane due to inter-connected Passenger, Cabin & Cockpit systems and eventually to Navigational guidance and Surveillance data.

» **Takeaway**: This should be an area that impacts the Operational Control function of Dispatchers where it applies. Ops.Control oversight will become crucial to detect either faulty or lack of 4D tracking data being generated by the airplane and consequent dispatcher actions.

» **Topic Evolution of Aeronautical MET Services** – The stream particularly applicable to Dispatchers will be the large changes upcoming to Annex 3 and the publication of the PANS-MET Manual. Based on these changes, 4 key topics of discussion were:

1. The ICAO Meteorological Information Exchange Model (IWXXM) and the transition to a System Wide information Management (SWIM) Environment. The difficulties to Dispatchers will be in the <u>backward compatibility</u> of using existing legacy products such as the TAF, METAR, SIGMET, SNOWTAM etc. in their new IWXXM format. The other difficulty would be in subsequently working with MET Office products internationally as they are issued in XML (or machine readable format) as data for consumption by machines. So it begs the question – how will Dispatchers adapt to work with these changes, will they have the right tools and enhanced decision-making capability?

2. The WMO as a complementary UN body is working in R&D mode to enhance WX products – i.e. space weather, volcanic ash advisories, AMDAR using 'now casts' from the airplane,

probabilistic forecasts and new/scientific weather modeling – to name a few. They also spoke (not too convincing) on measuring the long-term impact on climate change.

3. Delivery of future MET information products. The SWIM focus of Eurocontrol was conceptual, complex and overburdened with onerous data sharing requirements not only within Europe but aligning them with other parts of the world. The takeaway for Dispatchers is to prepare for a tsunami of data – especially through commercial vendors in their chosen delivery mechanisms. Dave also brought up a critical point about what & how much of that data is approved by the Regulator for use in the live operational environment of a Dispatch & Operational Control function. How is the governance of this data managed?

4. The NCEP & UK MET office products (the only two approved World Area Forecast Centers by ICAO) for upper weather such as SIGWX charts, Wind and Icing charts, GRIB weather for wind, temperature, pressure for flight planning systems and introducing Shear and Turbulence accuracy into the models is welcome news for the Dispatcher community. The upper weather Grid will soon be narrowed down from a 1.25 degree (80nm) resolution to a 10km resolution providing huge accuracies in forecasts but also leveraging data sets to determine humidity, precipitation, shear etc. New reporting barometric levels are also being introduced. They believe that the accuracy of upper weather data will help depict sigwx phenomena very accurately and also reduce fuel burn.