Annual Report 2023

January 2024

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High Level Achievements Overview

Submitted by the Executive Secretaries

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2023 has been one of the most significant years in ICCAIA's over 50-year history, ending on a high note with a signature between Montreal International (MI) and ICCAIA, to fund an expansion program for the Headquarters, backed by Montreal, Quebec and the Canadian Governments.

This strategically important development builds on a decision coming out of a series of ICCAIA's Board Meetings to expand the organisation from a permanent, full-time staff of two employees (the Vice-Presidents and Permanent Representatives to ICAO) to a full-time staff of seven employees over a three-year period. To facilitate this, ICCAIA's Board and the Vice-Presidents have worked closely with MI to develop and present a business plan that has resulted in an agreement for MI's partners to provide ICCAIA with $500,000 CAD in seed-funding to finance the expansion project. The Members of ICCAIA also agreed several financial measures to secure the continued operation of an increased ICCAIA HQ staff. Initial recruitment for the first of the positions has already been completed, with the first new employee set to join the organisation at the start of 2024.

The Board of Directors has also discussed and decided to accept the offer from the Air Transport Action Group (ATAG) of a position on the ATAG Board. ICCAIA has made direct, essential contributions to ATAG's strategy over a number of years, working alongside their Executive Director in a loose partnership. With a formal position at the Board level, ICCAIA will be well positioned to influence the strategic direction of the overarching industry efforts on sustainability topics of significance. Dan Carnelly will take the seat at ICCAIA's first ATAG Board meeting in January of 2024.

At ICCAIA's February Board meeting, a strategic discussion also resulted in an agreement to proceed with a deeper engagement in issues of the future workforce and women in aviation. With the overall approach agreed at the high level, further actions have been started by Nina Brooks in coordination with the Strategy Committee.

Finally, the Board of Directors has agreed that a future Annual General Meeting should be used as an opportunity to bring together a significant number of ICCAIA's stakeholders with the ICAO community in Montreal. A plan to host a 150-person conference to showcase ICCAIA's work and its importance to the ICAO community is being established in the 2024-2025 timeframe.

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International Coordinating Council of Aerospace Industries Associations

Strategy Committee

Annual Summary

Submitted by the Executive Secretaries

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Committee Summary

The Strategy Committee reports to the Board of Directors and provides them with recommendations and guidance for discussion during Board meetings. It brings together senior representatives of the ICCAIA Associations, the Leadership of ICCAIA Committees and the Permanent Representatives/Executive Secretaries, to arrive at consensus-based decisions that:

- Set the strategic direction of ICCAIA
- Discuss and review all areas of policy
- Highlight new and emerging issues and risks
- Provide guidance to Committee Chairs and the Permanent Representatives in interaction with ICAO and other bodies where ICCAIA is represented or interacts.

2023 Committee Highlights

Throughout the 9 regular and 1 extraordinary meetings of the Strategy Committee held in 2023, there have been important changes to the structure of the ICCAIA technical groups including the inauguration of one new technical committee and the creation of one new advisory group reporting to the Strategy Committee. The Committee also agreed on new formalized and harmonized procedures for the addition of members to ICAO Panels and advisory groups to ensure consistency and transparency of processes.

The Strategy Committee welcomed Ms Xue Zhang, a new member from the Chinese Society of Aeronautics and Astronautics (CSAA) at the beginning of the year.

Key achievements for 2023 included;

- The achievement of a strategic goal to have ICAO focus on the regulatory roadmap to facilitate the delivery of Long-Term Aspirational Goal (LTAG) technologies
- Agreement on ICCAIA's strategic objectives in preparation for the CAAF/3 meeting on Sustainable Aviation Fuels
- A new focus on issues of workforce and gender equality in accordance with ICCAIA's 5-Year Strategy
- Commencement of work on a major overhaul of the 5-Year Strategy document itself.

Key Activities

Activation of the Health, Facilitation and Crisis Response Committee

During the previous year, as a result of the lessons learned from the COVID-19 crisis and the expectation that ICAO will stand up its own crisis response group, ICCAIA began the operation of a new Health, Facilitation and Crisis response technical committee under the leadership of Nicolas Bardou (ASD, Airbus). At the start of 2023, the Strategy Committee agreed the group's Terms of Reference and guided the establishment of the group to: support the work of CAPSCA; increase focus on accessibility; provide expertise for the inclusion of health-related standards in ICAO Annexes; and begin work in anticipation of ICAO creating its own crisis response group. The members of the Strategy Committee have taken action across the year in searching for appropriate members of the Committee to answer to the increasing needs.

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Advanced Air Mobility Advisory Group

The Strategy Committee recognised the need for a group focused on Advanced Air Mobility driven by both the growth in the sector and the need to provide expert guidance to a new Secretariat Study Group established at the ICAO level. An Extraordinary Meeting of the Strategy Committee was called in February of 2023 to determine how the ICCAIA AAM group could be represented in ICAO's Study Group, with the result that Mr. Brenden Hedblom (AIAB, Eve Air Mobility) was elected to head both the ICCAIA group and be nominated as the ICCAIA Member of the ICAO group. A number of advisors from other Associations/companies have also been nominated to support Mr. Hedblom. It was decided that the ICCAIA group should not be a full technical committee, but nor should it be tasked to report to any of ICCAIA's existing technical committees since it has a cross-cutting mandate. As a consequence, ICCAIA's group has been created with a direct reporting line to the Strategy Committee with a potential future review should the work become significant enough that a full, new technical committee be warranted.

Workforce

The issue of gender equality in the industry, and more broadly the need for a sustainable and robust future workforce led to agreement of the Strategy Committee to start work in this area. ICCAIA became one of the founding members of a new global task force dealing with workforce issues, and also took an active role in ICAO work at the Gender Summit.

Regulatory Framework to Enable LTAG Technologies

A major piece of strategic work kicked off at the beginning of 2023 with the validation of an ICCAIA Strategy Committee White Paper demonstrating the need for ICAO to begin work on a Regulatory Framework to 'Enable LTAG (Long Term Aspirational Goal) Technologies'. The subject had been a cornerstone policy paper presented by ICCAIA at the 41st General Assembly, advocating that there was a need for ICAO to begin to understand how to integrate revolutionary technologies such as electric or hydrogen powerplants, or alternative configurations of aeroplane, into the Annexes, with a focus on airworthiness, certification and aerodrome standards requirements. The White Paper was a product of the Strategy Committee, prepared at the end of 2022, with the ICCAIA Chairman presenting to the ICAO Council in March of 2023. Subsequently, ICAO's 'Council Small Group on Innovation' requested more technical detail in the format of a Technology Roadmap showing what technologies were expected in what timeframe and with what level of probability. A sub-group of the Strategy Committee, consisting of the major airframe and engine manufacturers, produced such a roadmap based on the information already provided as a part of ICAO's two recent major publications - the LTAG Report and the Independent Experts Integrated Review report. This was presented to the Small Group on Innovation by the Permanent Representatives. The first result from both the White Paper and the Roadmap has been the driving of a new process in the Air Navigation Commission to decide how and when to begin the standards making process for revolutionary technologies that can be applied beyond the LTAG technology suite. The ICCAIA representative to the ANC has been placed in a leadership position to assist with the development of this "Decision Gate" process. Work will continue into 2024.

Third Conference on Aviation Alternative Fuels (CAAF/3)

Each year, ICAO hosts at least one major high-level conference and 2023 was no different, with the CAAF/3 conference in Dubai in November being a key strategic event focused on Sustainable Aviation Fuels (SAF)

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policy. The Strategy Committee began work to focus on this meeting early in the year, with SAF forming the most important building block of the 2050 Net Zero target of the LTAG. ICCAIA decided that it would be important to both be visible in supporting the CAAF/3 process with our own policies and communications, and to develop our own vision for, particularly, how quantified SAF goals could look. To manage the first block, the Strategy Committee developed an agreement amongst the manufacturing community to commit the industry to be able to operate using 100% suitably qualified SAF in 2030. For the second, internal ICCAIA agreement was reached to aim for a 2030 SAF target of a 5% reduction in carbon intensity from fuels (representing an approximate 7% uptake of SAF), and for an 80% reduction by 2050. In this, ICCAIA was the main voice of the industry when presenting the goal to September's pre-CAAF meeting. Ultimately, the CAAF/3 adopted the ICCAIA Strategy Committee recommendation of 5% reduction by 2030 but did not fix a 2050 quantified goal.

Legal Challenges and Sanctions

In follow-up to a major challenge in 2022, Strategy Committee members continued to maintain pressure on their governments to clear the path for companies to be legally able to provide CO2 and noise data to the CAEP standard setting process in compliance with international sanctions applied against Russia. Whilst not straightforward, the continued exchange of information facilitated by the Strategy Committee has helped to ensure that all possibilities are explored and helped to draw parallels between the different approaches taken in different jurisdictions. Although it went down to the wire, ICCAIA was able to supply the required data into CAEP on time.

Procedural Matters

To ensure fairness, transparency and consistency, Strategy Committee agreed new formal procedures for several ICCAIA processes, such as election of panel members and nomination of Committee Chairs.

Technical Discussions and Positions

One of the key roles of the Strategy Committee is to agree common policy and positions. Numerous papers were agreed by Strategy Committee to be submitted across all technical panels. In addition, significant items included;

True North

In response to a consultation by ICAO on a proposal to change global navigation from Magnetic to True North, the CNS/ATM Committee created a small group to study the issue, presenting a white paper to Strategy Committee for its agreement and subsequent use at ICAO. This paper will be used to inform the work of a Secretariat Study Group in 2024.

eMCO

The Strategy Committee agreed that a small group should be set up with members of both CNS/ATM and Airworthiness Committees to address minimum crew operations, find common positions and identify paths forward at ICAO.

Non-CO2 Emissions

As the year closes, the group began the discussion on a new policy paper focused on non-CO2 environmental effects. In the final Strategy Committee of 2023, a proposal for a policy was

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proposed to the Strategy Committee by the ANEC; however, the Committee felt that more work at a policy level was needed before it could be adopted since the existing paper is heavily technically focused. 2024 will see more in-depth work continued on this subject.

5-Year Strategy

The Strategy Committee has recognised that the existing 5-Year Strategy is outdated since the focus on the pandemic recovery has now moved into a phase of resilience, and also noting that the Board of Directors has authorised a significant expansion in resources for the ICCAIA headquarters staff. With this change in circumstances, it has been decided to undertake a complete revision of the document from the top down and work commenced to enable such a review.

Challenges

A key challenge remains in securing participation from a diverse range of ICCAIA's members in committees, advisory groups, ICAO panels and working groups. Examples include the need for more resource to support cybersecurity, greater participation in health and facilitation, representation from regional aircraft manufacturers and more engagement with MROs. For 2024, one important item on the Strategy Committee's agenda will be the development of a strategy to increase engagement where needed.

In addition, time needs to be allocated for Strategy Committee discussion on strategic items. With an increasing range of subjects, Strategy Committee meetings are now regularly running short on time, which restricts the ability to discuss topics where decision and direction is needed. A new format will be discussed within the Committee in 2024.

Future Work

2024 will bring a full agenda at ICAO and within the industry. One key area of focus for Strategy Committee will be the 14th Air Navigation Conference, which will lay the foundations for the 42nd General Assembly in 2025. A small group Strategy Committee will be set up early in 2024 to develop papers and review others as they are submitted, in line with practices used for previous high-level meetings.

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Aircraft Noise and Emissions Committee (ANEC)

Annual Summary

Chair: Eric Upton, Gulfstream Aerospace/AIA

Vice-Chair: Mark Huising, Bombardier/AIAC

Vice-Chair: Olivier Husse, Airbus/ASD

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Committee Summary

The ICCAIA Aircraft Noise and Emissions Committee (ANEC) seeks to reduce the environmental footprint of aviation and ensure our future "license to grow" by fostering the introduction of emerging technologies in civil aviation and minimizing adverse regulatory impact on manufacturers to avoid market distortion and ensure sustainable growth.

The ANEC functions primarily within the ICAO Committee on Aviation Environmental Protection (CAEP) providing data and technical expertise related to aircraft noise, engine gaseous emissions (NOx, HC, and CO), non-volatile particulate matter, and greenhouse gases (primarily CO_2) to help ICAO develop environmentally focused standards and recommended practices for use around the world. The ANEC provides information on how to measure the effects that are to be controlled; predicts the technology available for such control; identifies interdependencies among environmental parameters; and provides technical advice on relevant policy and regulatory frameworks.

The ANEC also examines operational approaches to reducing noise and emissions as well as technological measures (e.g., improved air traffic management) and market-based options. Finally, the ANEC also operates within the scope of the Stockholm and Basel conventions to address potentially harmful products associated with international aviation.

2023 Committee Highlights

Much of the work in 2023 supported the efforts to realize the Long-Term Aspirational Goal (LTAG) of net zero carbon emissions from international aviation by 2050, adopted by ICAO's 41st Assembly in 2022.

The ANEC increased its activities within the United Nations Framework Convention on Climate Change (UNFCCC). Building on work at ICAO in support of the LTAG and participation in the Third Conference on Alternative Aviation Fuels (CAAF/3), ICCAIA sent a small delegation to COP-28 in Dubai.

To help progress work on more than 100 items on the CAEP work programme, which addresses ICAO environmental Standards and Recommended Practices, guidance material and other ICAO strategic objectives, ANEC members attended 22 technical group meetings and more than 100 teleconferences. ANEC members also participated in ICAO regional seminars, workshops, and high-level meetings, many focused on Sustainable Aviation Fuels (SAF).

ICAO adopted a joint declaration in November, that set an updated ICAO vision and global framework for cleaner and alternative energies, as a first step to implement the LTAG, including a 5% CO_2 emission reduction goal by 2030 through the use of SAF, Lower Carbon Aviation Fuels (LCAF) and hydrogen. A high level of ICCAIA engagement and contribution proved instrumental to strike a deal amongst states by sending a strong and clear signal, at the pre-CAAF/3 meeting in September 2023, that aviation industry needs SAF as part of its decarbonisation roadmap.

The CAEP continued to develop updated stringencies for aeroplane CO_2 emissions and noise standards. The unprecedented level of effort by ANEC participants focused on providing technical data and expertise for the technical analyses of environmental impacts and costs that will inform the final decision expected in February 2025.

Restrictions on sharing data and expertise imposed by some States due to the conflict in Ukraine complicated the ability of ANEC to contribute to the work of CAEP for nearly two years. Individual solutions

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by ICCAIA member Associations were painstakingly developed, allowing the CAEP work on CO_2 emissions and noise standards to continue.

Finally, work at the Basel and Stockholm Conventions has continued, with normal meetings resuming after COVID-related disruptions impacted 2022. An aviation exemption from China from their early ban of Dechlorane Plus will hopefully provide ICCAIA manufacturers the time they need to move to alternatives.

Key Activities

Work toward implementation of the LTAG was foundational to 2023 ANEC activities. The year began with discussions on a vision for progressing toward net zero by 2050 along with policies and frameworks to support it. A select group of ANEC experts is now part of the small LTAG Monitoring and Reporting (LMR) group beginning to develop a methodology for tracking progress toward the LTAG (with completion by CAEP/13 in 2025).

ANEC experts involved in the Fuel Task Group of ICAO CAEP supported technical studies that informed ICAO Council Members, the Climate and Environment Committee (CEC) and other stakeholders before the ICAO CAAF/3 meeting. Further, ICCAIA actively contributed to the development of global industry positioning through ATAG while liaising with other industry associations such as IATA. This proved essential when industry needed to speak with one voice. At the same time, ICCAIA preserved our own voice, breaking from other industry stakeholders when needed to preserve our autonomy and make policy progress.

Development of the integrated stringency for CO_2 emissions and noise has dominated the work of CAEP this year. Data provision from ICCAIA manufacturers began in early 2023 and concluded in October 2023. In addition, the regulatory scenarios that will be further technically analysed were selected. The simultaneous development of both noise and CO_2 stringencies has introduced complexities that were not part of previous CAEP analyses. Several new methods have been developed, some supported by ANEC members and others presenting technical inconsistencies that we continue to question. While agreement was reached on many components of the analysis, some are of concern to the manufacturing industry. Strong engagement of the ANEC will need to continue ensure reasonable outcomes.

CORSIA, managed by one of the CAEP working groups, remains an essential element of the industry decarbonisation roadmaps. ANEC experts witnessed new technical studies highlighting how changes implemented in 2022 affect CO_2 emissions offsets (supply and demand). ANEC experts also contributed to the development of the aircraft performance model (CERT) for use in reporting CO_2 emissions of airlines and operators.

Within the CAEP noise technical working group, the ANEC has supported the development of new landing and take-off noise standards for supersonic aircraft by successfully advocating for allowance variable noise reduction systems (VNRS) in the proposed text. A few items remain to be agreed in the first half of 2024.

ICAO and CAEP continue to deliver guidance and documentation to facilitate improved airport operations with regards to noise and emissions. ANEC members have been involved in creating an airport eco toolkit document on “Environmental Impacts of Unmanned Aircraft Operations at and Around Airports” (published in 2023), and the development of guidance material on “Noise Monitoring Systems Good Practices” and Community Engagement. Of note, the CAEP will also develop guidance on operational opportunities to reduced contrails and aviation induced cirrus, marking another deliverable related to

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non-CO_2 emissions and their effect on climate change. Work on aviation adaptation to climate change is also ongoing and will require some scrutiny by ICCAIA.

Non-CO_2 emissions is a new topic of interest for policy makers in some regions of the world. To avoid a patchwork of regulatory measures, ICCAIA needs to raise the topic at the international level. The CAEP Impacts and Science Group (ISG) held a non-CO_2 workshop in Montreal in November to obtain views from internationally recognized contrail science experts on contrail formation, aviation-induced cloudiness, the accuracy of the predicted climate impacts and potential avoidance and abatement strategies. The ANEC has created a non-CO_2 emissions whitepaper describing the state of the science and industry's position on the work needed by ISG and other groups before policy making decisions are made within CAEP. The ANEC expects to present extracts from the whitepaper at multiple CAEP and other venues in 2024.

Analysis of new landing and take-off (LTO) and cruise NOx metrics in CAEP continues, with a selection of candidate metrics planned for July 2024. Multiple engine-aircraft combinations have been evaluated at cruise conditions to determine ground-based (LTO) metrics that adequately capture cruise emissions. The ANEC will work to ensure the new metric remains specific to engine types only, as is the case with the current NOx metric, and not expand to require aircraft data thereby becoming an aircraft-level standard.

A landing and takeoff (LTO) cycle for supersonic aircraft was agreed along with a provisional agreement on CO, UHC and nvPM regulatory levels. Work will continue to define a NOx stringency level for supersonic engines as data becomes available. The ANEC has made numerous contributions to this work.

The ANEC has contributed to the work of the CAEP Modeling and Databases Group in its work by helping to improve full-flight NOx and nvPM modeling, improving trends input data and providing engine emissions interdependencies for the dual CO_2/noise stringency assessments.

The ANEC has continued to expand its work outside of ICAO by participating in the Stockholm Convention on persistent organic pollutants, the Basel Convention on the movement of hazardous wastes, and the negotiations for a new Convention on plastics (polymers). After a compressed meeting schedule in 2022 and 2023, the Conventions returned to their regular timelines. An expected 2026 ban of Dechorane Plus in China was accelerated to 2024. However, exemptions for aerospace, space, and defense were secured under the Stockholm Convention to allow the possibility of ongoing use and an orderly phase out over the next five years. The technical committee for the Stockholm Convention is also considering limited exemptions for the use of Medium Chain Chlorinated Paraffins (MCCP). The focus in 2024 will be finalizing the MCCP exemptions while monitoring a potential new proposal from the EU to list siloxanes, critical substances for the manufacture of aerospace products. The negotiations for the plastic treaty were stalled because of challenges due to the Russia/Ukraine conflict. Although progress has been slow, participants are reluctant to extend the negotiations due to uncertainty about the upcoming US and EU elections. Thus, the final two negotiating sessions are planned in 2024.

Challenges

The most acute challenge facing the ANEC arose during the development of the updated standards for CO_2 emissions and noise. Discussions on data sharing restrictions caused by sanctions led to a proposal for the use of third-party data to evaluate ICCAIA OEMs' products. While the sanctions data sharing issues have been resolved for the current noise/CO_2 work, the desire to use third-party data for future CAEP work continues, driven by US domestic rulemaking requirements but supported by other stakeholders.

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There is concern that third-party data will be used for new work items that would normally rely on the data collected by from ICCAIA member companies, which could lead to distorted and erroneous results.

The aggressive CAEP work schedule is an ongoing challenge. Many developments are occurring across working group boundaries while many ANEC experts have limited exposure across those groups. Even experts participating across multiple groups are challenged to keep track of the many subtasks. The ANEC is concerned that decisions needed to progress multiple work items properly lack sufficient oversight, driven by state-supported analytical teams with extensive resources. There is often insufficient substantiation of the underlying problem or the correct priorities – this is particularly true for emissions work, as it is not clear from the science whether NOx or CO_2 is the most critical climate challenge. In many cases, papers for working group meetings are not even available in a timely fashion.

A related challenge facing ANEC is the personnel levels available in certain areas. This is particularly acute in the certification of "Emerging Technology Aircraft" (ETA) for advanced air mobility and other segments and the hazardous chemicals area associated with Basel and Stockholm conventions.

Another challenge is to properly manage the integrated stringency interdependencies between noise and CO_2 emissions when considering the risk of precluding introduction of future low carbon technologies and the growth margin seen in typical development programmes.

Further, ICCAIA is advocating against further limits on individual noise measurement points for this new stringency, encouraging CAEP to focus on cumulative margin only. Other tasks supported by ICCAIA in WG1 – such as noise certification scheme improvements and ETM Vol.1 updates – have been deprioritised due to the integrated stringency. Important work could be further hindered by the unnecessary complication of developing new individual measurement point stringencies.

Finally, the solution to the ANEC Vice-Chair situation last cycle has left the identity of the next ANEC Chair in doubt. A resolution to that challenge (and selection of a new Vice-Chair) is an acute challenge for 2024.

Future Work

The future of aviation in an environmental sense is the focus of everything related to ANEC work in 2024. Parallel efforts are planned within CAEP that address the near term (CORSIA beginning to have an effect), the mid-term (new SARPs selected at CAEP/13 for implementation in the 2030 timeframe) as well as the farther future (implementation of the LTAG 2050 goal).

We expect that non-CO_2 emissions and their impact will become a priority for CAEP. Efforts are already underway to quantify these impacts better, and industry has begun to support these efforts. Existing initiatives in ICAO will be reviewed and discussions related work for 2025-2028 are expected to start soon. The ANEC is concerned that if this work is not performed thoroughly, pressure to produce non-CO_2 emissions standards may interfere with existing LTAG commitments to reduce CO_2 emissions. ANEC experts will strive to ensure developments in this area are done properly, but there are concerns that resources may not be sufficient for such a broad work scope.

In cooperation with ICCAIA HQ staff, the ANEC will continue to monitor developments at CEC and Council level. The ANEC is currently planning a potential paper to the ANC meeting later this year, and the ANEC is preparing for the ICAO Assembly in 2025, by ensuring technical studies in response to ICAO resolutions

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on climate change, CORSIA, noise and local air quality are appropriate, and by preparing positions of the association.

Finally, ICCAIA member engagement in ICAO events related to environmental protection (Green Airport Symposium, Stocktaking Seminar, Non-CO_2 emissions symposium) and other related events will need to be confirmed early in 2024.

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Airworthiness Committee

Annual Summary

Chair: Scott PEPPER, Boeing/AIA

Vice-Chair: Dan BURNS, De Havilland/AIAC

Vice-Chair: Keith CANDLINE, Gulfstream/AIA

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Committee Summary

The Airworthiness Committee covers a wide range of topics related to airworthiness of aircraft, airport technologies, accident investigation, personnel licensing and training, safety management systems and other topics. The Committee oversees several Advisory Groups consisting of technical subject matter experts. The chair of these advisory groups is normally the official ICCAIA representative to various ICAO Panels, Working Groups, and other bodies. There are also some advisory groups which do not have a one-to-one correlation with a specific ICAO entity, such as the Cabin Safety Working Group and the Cargo Compartment Halon Replacement Advisory Group.

2023 Committee Highlights

- The Airworthiness Committee met three times in 2023 (June, August, December); all meetings were held virtually.
- Keith Candline (AIA) was elected a new Vice-Chair to the Committee, joining Dan Burns (AIAC). Scott Pepper completed his Chairmanship at the end of 2023, being replaced by Keith as Chair.
- A considerable effort was made to clean up the membership records for the Committee. As part of the effort, a refresh of the Cabin Safety Working group was made – there are now thirteen members in the group. Two new members were also identified for the Cargo Compartment Halon Replacement group. The Committee itself gained four new members.
- New panel members and advisors:

  AIRP: Robert Kebel joined the Airworthiness Committee to participate in a working group of the Airworthiness panel as an expert in Electromagnetic radiation.

  AIGP: Simon Lie retired from the position of Member, AIGP, and was replaced by Albert Urdiroz nominated by ASD.

  PTLP: Five new advisors were added to PTLP to support ICCAIA's member, Jean-Michel Bigarré.

- The Health and Facilitation Ad Hoc Group transitioned into a new ICCAIA Committee in 2023.
- A new small group was created jointly under CNS/ATM and Airworthiness to look at the subject of extended minimum crew operations (eMCO).
- ICCAIA representatives participated in the Air Navigation World Symposium including several panel discussions with airworthiness implications, particularly regarding airports.

Key Activities

International Industry Working Group (IIWG)

The IIWG is a collaborative platform co-chaired by ICCAIA and ACI which looks at airport design, planning and innovation. ICCAIA's members continued to participate throughout 2023, with a particular emphasis on infrastructure needed to accommodate alternative energy sources such as hydrogen and electric.

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Aerodrome Design Operations Panel (ADOP)

Member: Evanicio Costa, Boeing, AIA

Adviser: Diego Tabares, Airbus, ASD

The 7th ADOP/WG/7 working group meeting, chaired by Andrew Badham of the UK, took place in Montreal from March 27 to 31, 2023. During this meeting, Andrew Badham announced his retirement, prompting the need for a new Chair to be elected at the next ADOP/5 panel meeting scheduled for February 26 to March 1, 2024, also in Montreal. The meeting featured presentations of 30 discussion papers from the Secretariat, States, and International Organizations, focusing on the progress of job cards related to Annex 14.

Aerodrome Design Working Group Activities (ADWG): Highlighted the need for further development in arresting system definitions, operational issues, and inconsistencies in existing provisions. Concerns were raised about the aerodrome reference code (ARC) and Aerodrome Design Group (ADG) systems, with a task force established to propose a potential substitution of ARC with ADG. Discussions also covered design and operational requirements for Runway Start Extension (RSE).

Aerodrome Operations Working Group Activities (AOWG): Focused on managing a broad work program with limited resources, emphasizing the use of best practices in emergency planning and airfield maintenance to ensure timely completion of ADOP job cards. The new ACR/PCR pavement rating system's implementation date was discussed, with a reminder of the deadline set for November 28, 2024, and the need for States to file a difference if unable to adopt the system by then. Wildlife Hazard Management also highlighted challenges in data access and quality, underscoring the importance of data sharing for mitigating risks.

Visual Aids Working Group (VAWG): Summarized research findings on various topics including LED dimming effects, failure modes, and compatibility issues, contributing to the ongoing FAA research on performance specifications for lighted X signs.

Report on Obstacle Limitation Task Force (OLSTF): Presented updates on the submission and approval of new Obstacle Limitation Surface (OLS) proposals, focusing on a comprehensive review and update of guidance materials related to OLS in the Airport Services Manual.

Remote Piloted Aircraft System/Aerodrome Design Operations joint task force (RPASP/ADOP JTF): Discussed developing proposals for changes to provisions that would be finalized at the ADOP/5 meeting in 2024, aiming for a common applicability date of November 2026 across multiple annexes for the introduction of RPAS.

Airworthiness Panel (AIRP)

The 10th meeting of the Airworthiness Panel took place in Montreal from November 13 to 17, 2023. It was the last AIRP meeting chaired by Mr. David Higginbotham (FAA). Mrs. Eugenia Diaz Alcazar (EASA) was elected as new Chairperson for future meetings and Mr. Iftekhar Ahmed (Australian Civil Aviation Authority) elected as Vice Chair.

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Regarding the Working Groups' activities, the WG1, Continuing Airworthiness, delivered proposed Changes to Annexes 1, 6 & 8 associated to the task "Approval, global recognition and reduction of duplication of AMO surveillance activities".

The WG2 on Initial Airworthiness had their proposal for a revision of the Annex 8 dealing with Reduction of Duplicative Certification activity accepted by the AIRP.

The WG 4 dealing with products made a proposal to address the Control of electromagnetic radiation risks posed by the carriage of battery-powered devices in baggage, cargo and mail that are active when inside the aircraft cargo compartment (cargo tracking devices) via updates of Circular 340, Guidelines for the Expanded Use of Portable Electronic Devices and Doc 10102, Guidance for Safe Operations Involving Aeroplane Cargo Compartments.

A revision of the initially proposed text for the requirements for continuing airworthiness and safety improvements for large aeroplanes was accepted by the AIRP and a new Job Card related to Electric and Hybrid Propulsion (EHPS) was drafted.

Meteorology Panel (MET-P)

The most significant development from the MET-P relating to ICCAIA members is the delay to the role out of quantitative volcanic ash concentration information (QVACI) as an output from the nine Volcanic Ash Advisory Centres (VAACs). All VAACs now need to have the capability to produce QVACI by November 2026; originally, the deadline was to be the end of 2024. In the meantime, work continues producing guidance and educational information on what QVACI represents and how it can be used operationally.

Safety Management Panel (SMP)

Following the fifth meeting of the SMP (SMP/5) in Nov/Dec 2021, and subsequent development of outstanding proposals during the first quarter of 2022, the package of proposals for the update of Annex 19 were published by State Letter AN8/3 23/18 in April 2023, with comments required by 5th Oct 2023. A package of ICCAIA comments was submitted against the October deadline in particular concerning alignment of service providers' safety objectives, targets, and indicators to those of the States, potentially limiting service providers' flexibility to create safety management systems to meet their own needs.

The sixth meeting of the SMP took place in May 2023 and concentrated on development of guidance material in Doc 9859 to support the Annex 19 amendments, with ICCAIA attendees contributing to the work of the different working groups., and the discussions on future work, covered below.

The next meeting of the SMP is an all-working groups meeting in February 2024, with the seventh meeting of the SMP scheduled for December 2024.

Cargo Compartment Halon Replacement Advisory Group (CCHRAG)

Development of a PIA (Proprietary Information Agreement) which allows a more detailed exchange between OEMs in terms of test and certification strategies. This approach was publicly presented and a general invitation to other OEMs was expressed in June 2023 at the International Aircraft Systems Fire Protection Forum. The PIA consortium consists of Boeing, Airbus, Bombardier, Embraer and Dassault.

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Challenges

Safety Management Panel (SMP)

No specific challenges, though, as noted below, the new work items will need appropriate levels of involvement from ICCAIA.

Aerodrome Design Operations Panel (ADOP)

Agreement was not reached on a change regarding documents on the removal of disabled aircraft and airport recovery.

Halon Replacement

The current Halon replacement agent (Verdagent) has been selected by the industry as a promising halon replacement agent because it passed the FAA minimum performance standard tests. On-aircraft development tests reveal additional challenges further to be investigated like material compatibility and procedural/technical coverage of toxicity issues.

Many candidate Halon replacement agents, as well as already-approved substitutes for halon in other aircraft fire protection applications, are at risk of being subject to the proposed ECHA (European Chemical Agency) PFAS (Per- and PolyFluoroAlkyl Substances) regulation which, in the mid-term, will be extended on a global scale.

Future Work

The Committee plans to review and collaboratively consult with the CNS/ATM Committee on ICAO's draft proposal for an amendment to Annex 6 on Operation of Aircraft, Part IV — International Operations — Remotely Piloted Aircraft Systems.

The International Civil Aviation Organization (ICAO) has developed a survey to seek feedback from Member States and the aviation industry on the level of support for ICAO to commence work on changing from a magnetic to a True North reference system for heading and tracking in air operations. If a "True North" reference is implemented among States, it would mean the discontinuation of the traditional practice of converting aeronautical data from its original format in TRUE reference into a magnetic reference. The ICCAIA response will address the need for a well-defined Concept of Operations (CONOPS), including how the transition period will be dealt with and how exceptions will be handled.

Aerodrome Design Operations Panel (ADOP)

Vertiport Design Sub-Group (VDSG): JC025, the scope of the VDSG covers vertiports for the operation of new VTOL aircraft (aircraft different from conventional helicopters with distributed propulsion and innovative energy systems – hybrid or electric), it excludes operation of small cargo or aerial work drones.

Water Aerodromes Working Group: JC026, working on developing materials for an ICAO Circular to support the creation of international standards for water aerodromes.

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Total Airport Management System (TAMs): JC024, led by Nicholas Ratledge from ACI, this task force is drafting guidance material for airport management, with contributions from CANSO and France, without intending to create new SARPs or PANS.

International Industry Working Group (IIWG)

Members of ICCAIA's Airworthiness Committee, and particularly those involved in the Aerodrome Design and Operations panel (ADOP) will continue to participate in the task force on alternative fuels under the IIWG. The next face to face meeting of the will be the week of 13 to 16th May in Singapore.

So far, the work is focused on producing a Concept of Operations that can be presented to the ICAO ADOP panel. There is a first draft available and is progressing well.

Airworthiness Panel (AIRP)

The AIRP will keep on developing its work programme in 2024. In particular, the following items will be addressed: Electric and Hybrid Propulsion (EHPS), Acceptability of Commercial / COTS Parts, State Responsibilities in Case of Third-Party Modifications and Repairs, Harmonization of certification procedures and specifications, Increase of the maximum take-off mass from 5700 kg to 8618 kg for the new Annex 8, part VB.

The AIRP will also have to address the outcomes of the ICAO General Assembly and the Working Papers with proposals affecting the Airworthiness domain.

ICCAIA's small group on AMO recognition will take an active role in commenting on the proposed Annex changes and the content of guidance material.

Meteorology Panel (MET-P)

There is a meeting in New Zealand in February 2023 to discuss further the exact QVA delivery timescales over the coming few years.

Safety Management Panel (SMP)

Two significant pieces of new work for the Panel were agreed at SMP/6: the amendment of an existing Job Card (SMP.021) to review the appropriateness of ICAO SARPs for risk management, with the potential for a revision of the definition of 'safety risk'; and the creation of a new Job Card (SMP.025) to revisit the Standards relating to the assignment of 'key safety personnel', this last one being a result of ICCAIA proposals in previous Panels.

Both these new taskings are likely to require significant levels of ICCAIA input – the first being to preserve consistency with existing manufacturers approach to certification and product risk, the second to develop more flexible provisions to allow organisations to manage their own structure and roles, without prescription from States.

The anticipated cross-Panel Secretariat study group on Integrated Risk Management has yet to be launched, for which the ICCAIA SMP team have already expressed interest, but a State Letter requesting participation is expected within the first few months of 2024.

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Health, Facilitation and Crisis Response (HFCR) Committee

Annual Summary

Chair: Nicolas Bardou, Airbus/ASD

Vice-Chair: Vacant

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Committee Summary

The Health, Facilitation and Crisis Response Committee is responsible for the consolidation, formulation and expression of coordinated industry positions as necessary concerning aviation facilitation, and public health as well as health aspects covered under the safety domain.

- Contribute to the development of a crisis response framework and response mechanism at ICAO
- Offer industry expertise to expand on guidance material to ensure that safety concerns and best practices are adequately represented
- Contribute to the development of passenger health related Standards and Recommended Practices (SARPS)
- Contribute to the creation of a framework to respond to future health crises
- Model experience on virus transmission for future use
- Advocate on topics such as health measures for air travel including disinfection and disinsection, identification of key workers, risk assessment and travel restriction

2023 Committee Highlights

Key Activities

Members of the committee represented ICCAIA in various ICAO Working Groups;

- Attendance to CAPSCA monthly meetings (on health matters in aviation)
- Participated in Working Group on Annex 9 update proposals which will be discussed / validated at next Facilitation Panel meeting. Main improvements were collocating health-related SARPS in Chapter 10 notably:
    - Compliance with WHO International Health Regulation (IHR)
    - Health measures to be based on scientific principles and evidence seeking guidance from WHO
    - Consultation of WHO and health authority (of the state of occurrence of the disease) when a deciding an exceptional air transport services suspension or measures impacting another contracting State
    - Acceptance of the International Certificate of Vaccination or Prophylaxis prescribed in the IHR.
    - Support for interoperable digital vaccination certificates in line with Visible Digital Seal for Non-Constrained environments (VDS-NC).
    - Establishing a national aviation plan in preparation for any outbreak of communicable disease posing a public health risk or public health emergency of international concern.
- Task force on Health Issues Outbreaks in Aviation (TF-HIOA):
    - The task force reviewed the High-Level Conference on COVID-19 Facilitation Stream recommendations addressed to ICAO, and developed proposals for a plan of action to implement relevant recommendations. Its ongoing mission is to support the Secretariat's work related to public health emergencies as required.

- New Working Group on Assistance to Accident Victims & their Families (1st meeting Dec 2023) where the terms of reference were agreed and 2024 planning defined:

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  - develop relevant guidance material in line with Standard 8.47 in Annex 9 and other relevant ICAO Annexes to assist States implementing the relevant provisions;
  - assist the Secretariat in organizing a symposium on assistance to aircraft accident victims and their families, for convening in 2024;
  - develop a template to assist Member States in developing family assistance plans in support of assistance to aircraft accident victims and their families;
  - develop relevant training material and provide expertise as required, to facilitate capacity building assistance to Member States;
  - provide technical expertise, as required, to facilitate States' assistance projects on assistance to aircraft accident victims and their families;
  - in coordination with relevant ICAO expert groups, assist with the review and update of ICAO Doc 9998, *ICAO Policy on Assistance to Aircraft Accident Victims and their Families,* and Doc 9973, *Manual on Assistance to Aircraft Accident Victims and their Families*;
  - in coordination with relevant ICAO working groups and other expert groups, consider best practices of insurance companies and their relationship with victims and families, in order to balance the needs of airlines and victims and families; and
  - conduct a review of the provisions relating to assistance to aircraft accident victims and their families in relevant ICAO Annexes, identify any gaps and formulate recommendations for new and revised Standards and Recommended Practices, as required.
- New Working Group Accessibility (to meet 2024)

Reinforce ICCAIA messages regionally:

- Health, Facilitation and Crisis Response Committee participated in the Africa CAPSCA regional meeting: promoting research and modeling work completed during the pandemic and the industry-wide effort and recalling the ICCAIA position on the need for a global framework.

Challenges

- A key challenge is identifying sufficient resource for the committee. Specifically;
  - No Vice Chair
  - Low diversity in participation
  - Lack of resources from OEMs

Future Work

- Alongside the continuation of participation in groups listed above, from 2024 onwards, Health, Facilitation and Crisis Response Committee will participate to:
  - ICAO Medical Provisions Study Group (MPSG)
  - WHO Preparedness and Resilience for Emerging Threats initiative (PRET)
  - WG on Accessibility in international civil Aviation

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- Health, Facilitation and Crisis Response Committee will participate to the Facilitation Panel (Feb 2024):
    - Recent Facilitation developments in ICAO
    - Proposals for new and revised SARPs, including proposals for relocating existing health-related SARPs to Chapter 10 for Amendment 30 to Annex 9 — Facilitation.
    - Reports from its WGA9 and WGGM, the ATC's TF-HIOA, the Facilitation Section's activities to assist States in implementing Annex 9

Annex

A significant milestone for ICAO for 2024 is the publication of the 2nd edition of the Facilitation Manual – Doc 9957. 2024 is also recognized as "The Year for Facilitation" at ICAO with associated events.

The Manual provides a detailed explanation of the Standards and Recommended Practices (SARPs) of Annex 9 from both a historical and current perspective. It aims to enhance knowledge of air transport facilitation issues and concepts. Additionally, it seeks to improve the outcomes of facilitation programmes in States while increasing the implementation of Annex 9 SARPs. The Manual is also an instructional and reference tool for States and other interested parties. It covers various immigration, health, customs, and quarantine civil aviation-related aspects of Annex 9 and can be used for preparing and delivering training sessions.

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Security Committee

Annual Summary

Chair: Xavier Depin, Airbus/ASD

Vice-Chair: Sean Sullivan, Boeing/AIA

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Committee Summary

Security committee deals with both Physical security (referred as Aviation Security/ AVSEC within ICAO) and Cybersecurity[1] in a context where a comprehensive approach to security issues, including Cyber-security is now globally recognized as an essential component of the Aviation System[2]. With members representing manufacturers of leading providers of aerospace systems and security equipment as well as Cybersecurity and AVSEC experts from all aspects of aerospace, the committee works to develop and express a coordinated industry position on all matters relating to security. Committee members participate in person or virtually in ICAO AVSEC and Cyber-security related activities.

2023 Committee Highlights

After a year 2022 during which Security-related work was affected by the difficulty of restarting operations following the health crisis, work has resumed with renewed momentum. Committee members prioritized their efforts, in line with ICCAIA strategy, doing their best to follow the numerous activities carried out by the two main cyber-security related ICAO panels, namely the Trust Framework Panel (TFP) of the Air Navigation Commission and the Cybersecurity Panel (CYSECP) of the Aviation Security Committee.

It should be noted, however, that despite best efforts, not all the Cybersecurity initiatives of these two panels nor some Cybersecurity initiatives carried out in other ICAO entities could be supported due to a lack of available workforce. Also, due workforce shortage and the departure of the ICCAIA observer on the AVSEC Panel, physical security activities were reduced to a minimum, and the committee confined itself to responding to solicitations.

In the area of leadership and appointments, 2023 saw the departure of the ICCAIA observer to the AVSEC Panel, who has still not been replaced, and the appointment of Nathalie Feyt as co-chair of the Restricted Forum (rForum).

Key Activities

As in 2022, the Security Committee was kept very busy in 2023 with activities relating to Cybersecurity, which are becoming increasingly important as players become more aware of the issues and risks involved in a context of digital transformation and growing hyperconnectivity.
These activities, framed by the Cyber-Security Action Plan and carried out mainly by the **TFP** and **CYSECP**, have seen the development of guidance materials and initial reflections on the need or otherwise to amend the provisions of the ICAO annexes, or even to create a new one.
In parallel with the activities carried out by these two main ICAO panels devoted to Cybersecurity, more local cybersecurity work has been carried out within the Communication Panel and the Navigation

[1] Note that for the clarity of this report the term Cybersecurity is to be understood as encompassing the activities referred to as 'Information security' even if they are not fully interchangeable.
[2] Assembly resolutions A41-19: Addressing Cybersecurity in Civil Aviation and 41-18: Consolidated statement on continuing ICAO policies related to aviation security.

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Systems Panel to work on securing Aviation sector communications and Satellite-Based Navigation capabilities.
Despite this focus on Cybersecurity activities and the departure of the appointed ICCAIA observer to AVSEC Panel, AVSEC activities have not been ignored, and in the current geopolitical context, which could see a resurgence of more traditional malicious acts, the security committee provided ad hoc support for a number of initiatives (i.e. update of the document ''Risk Assessment Manual for Civil Aircraft Operations Over or Near Conflict Zones' / Doc 10084 , quite extensively commented by the security committee).

Regarding events, the year saw the first session of the Ad Hoc Cybersecurity Coordination Committee (AHCCC), the ICAO Council's cybersecurity coordination body.
Committee members also took part in ICAO's cybersecurity week, contributing to a panel discussion and a crisis management exercise, and ICCAIA made a briefing to the ICAO Council regarding all aspects of Cybersecurity to lay the foundation for 2024's Industry Consultative Forum.

Finally, as regards the committee's interactions with other ICCAIA committees or working groups with other associations, we can mention:

- The 2 presentations made by the Security Committee to the Airworthiness committee about the need for collaborative work on interactions between safety, AVSEC and Cybersecurity disciplines; Collaboration that must start with the Integrated Risk Management (IRM) initiative that is slow to be dealt with within ICCAO;
- Support to the CNS/ATM committee in ongoing discussions with IATA on Global Navigation Satellite System / GNSS RFI interference (jamming/spoofing);
- The contribution of committee members to the IATA-ICCAIA joint restricted Forum (rForum).

Challenges

Key challenges are:

- Encouraging and contributing to the effective operation of the ICAO Ad-hoc Cybersecurity Coordination Committee (AHCCC)
- Getting industry associations more involved in supporting the ever-increasing work related to AVSEC and Cybersecurity
- Recognition and referencing of industry standardization work related to Cybersecurity (EUROCAE/RTCA)
- Successfully engaging in multi-disciplinary work, both internal and external to the ICCAIA, with a primary focus on addressing:
    - Interaction between security and airworthiness/safety activities, starting with the interaction between the Safety management system and the civil aviation Cyber-security management system (Integrated Risk Management/ IRM),
    - Consideration of cyber-security risks in all ANC activities in relation to Communication, Navigation and Surveillance (CP: ATN/IPS, NSP: SBAS authentication, ICNSS TF).

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Future Work

The committee's roadmap mainly includes Cybersecurity activities and some AVSEC activities in support of working groups and panels, as well as support for the 14th Air Navigation Conference and preparation for the next General Assembly meeting.

Cybersecurity

- Cybersecurity activities in 2024 will essentially continue the activities undertaken in 2023 in accordance with the security resolutions approved by the last General Assembly. The main topics will be the implementation of elements of the Cybersecurity action plan, namely:
    - The maturation of the International Aviation Trust Framework (Manual on Information security Manual, Digital Certificates Policy, CONOPs);
    - The development of guidance on information sharing, risk and incident management;
    - Continued reflection on the need to modify or add security provisions in the ICAO annexes;
    - The identification and assessment of Cybersecurity risks for air transport, an activity hitherto neglected by the ICAO Working Group on Threats and Risks (WGTR) and now taken over by the WGCTR.

The Security Committee will also:

- Continue to pay close attention to the security implications of digital technological innovations/evolutions needed to achieve the commitments of sustainable aerospace for a safer & united world, and;
- Continue to develop with airlines, through the joint rForum initiative with IATA, a common understanding of the problems and risks associated with aircraft operations, and to discuss solutions to be put in place. The year's activities will cover topics such as Aircraft and interconnected Systems Risk Environment, Incident response and vulnerability disclosure.

AVSEC

AVSEC Panel activities are likely in the areas of innovation, Integrated Risk Management and the management of risk in a health and environmental context full of challenges.

Support for the FLTOPS Panel security group in updating the Annex 6 Security Manual (Doc 9811) is planned to help it take account of emerging issues relating to Chemical, Bacteriological and Radiological threats, as well as other changes to security arrangements.

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CNS/ATM Committee

Annual Summary

Chair: Claude Pichavant, Airbus/ASD

Vice-Chair: Tim Murphy, Boeing/AIA

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Committee Summary

The CNS/ATM Committee was Chaired by Claude Pichavant (Airbus), supported as Vice Chair by Tim Murphy (Boeing), along with over one hundred ICAO panel Members and their advisors, and covers a wide range of topics in air traffic management, flight operations and communication, navigation and surveillance infrastructure, as well as in Frequency Spectrum.

ICCAIA CNS/ATM Chair and vice-chair new nominations have been completed on 1st January 2024 as per ICCAIA By laws;

- Tim Murphy, AIA (Boeing), is now Chair for two years.
- Laurent Azoulai, ASD (Airbus), is nominated as new Vice-Chair for two years .

Overall, ICCAIA members were still very engaged, with monthly meetings of the CNS/ATM Committee held virtually and work ongoing in Panels, Ad-hoc, Working Groups and Task Forces.

Some major accomplishments of the CNS/ATM Committee in 2023 among many others:

- True North Ad Hoc Advisory Group created with a 3-years duration.
- IATA/ ICCAIA Working Group created to deal with GNSS Jamming/spoofing item
- eMCO (extended Minimum Crew Operations) Ad Hoc Working Group creation under CNS/ATM Committee.
- Frequency Spectrum Management Panel: ICAO Positions delivered vs Agenda Items for the 2023 World Radio Conference, the WRC-23 results are fully conformed to the ICAO Positions.
- Navigation System Panel: Another significant update to Annex 10 SARPs was finished and distributed for approval by State Letter (Expected applicability in 2025). Additional GNSS SARPs modifications are in progress (SBAS Authentication, DFMC GBAS)
- Communication Panel: Amendments of ATN/IPS SARPs, Global Operational Data Link Document [GOLD] Manual, Second Edition and ICAO Based Communication and Surveillance [PBCS]) Manual.
- Clarification of requirements related to the carriage of automatic ELT (Emergency Locator Transmitter).

Key Activities

Activities continued to be focused around several key themes, such as digitization of aviation, demand for airspace access and rising demand for resources driven by new flying platforms and airspace users, for example, UAVs and other new entrants as illustrated by the introduction of AAM (Advanced Air Mobility) panel. Sustainability and decarbonization are now key objectives for the aeronautical industry and the CNS/ATM committee is able to contribute by bringing some enhancements through Flight Optimization, Flight Management and efficiency (such as 4D and trajectory-based operations). Air traffic is largely back to pre-pandemic levels now, and there is a need to accommodate the foreseen traffic growth.

All ICAO panels and working groups are continuing full work programs; details are provided in the Annex to this report.

To be noted, at ICCAIA level, synergies are in place: CNS-ATM/ IATM with AAM; FLTOPS / IFPP / NSP; and CNS with Cybersecurity.

Among the broad landscape of CNS/ATM subjects, two key items can be emphasized:

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CNS Resilience to Interference

The concern regarding interference on CNS is increasingly reported by Airworthiness Authorities, Air Navigation Service Providers, Operators and Airframers. Occurrences of interference against CNS systems and global navigation satellite system (GNSS), both jamming and spoofing (i.e. counterfeit signals) in particular, have significantly increased; more recently 5G C-Band deployment in the USA led to the Radio Altimeter retrofit of tens of thousands of aircraft. This retrofit will probably continue in other countries such as Canada, Brazil, India.

According to recent outcomes from WRC23, International Mobile Telecommunication community has still a very big appetite for additional spectrum for 6G. Aeronautical safety spectrum is still under very high pressure and work will be required to protect this spectrum for future use.

The utilization of the 1030/1090 MHz frequencies has greatly increased in certain areas of the world and if no action is taken, the situation will reach an unacceptable level that will result in the corruption or loss of information from aircraft surveillance and collision avoidance systems.

True North Navigation

ICAO has started work within True North Navigation Study Group about changing from a magnetic to a True North reference system for heading and tracking in air operations.

ICCAIA True North An ad-hoc group was created in October 2023 under the CNS/ATM Committee, supported by the Airworthiness Committee, to provide its views with associated impacts and possible practical timelines for implementation. Terms of Reference were raised mid-November. A white paper, first version, has been developed to identify all repercussions of such implementation such as cost, equipage and operational impacts, schedule, transition period planning and stakeholder impacts.

Challenges

Regarding the ICAO cycle, we note increased delays in activities. Due to the current Panel meetings cycle, and the process for implementation of an Annex amendment (ANC review, State Letter consultation, etc.), it may take up to 4 years between the approval by the Panel of a proposed amendment and the applicability date of this amendment. Taking into account the time required to complete the drafting of the proposed amendments, it means that at least 5 years would typically be expected between the launch of the rulemaking effort and its completion.

It is hoped that the Direct Submission process, being formalized by ICAO early in 2024, may help to facilitate progress.

Another aspect is the need for greater ICAO inter-panel coordination. One example is the LDACS SARPs proposal by Communication Panel which was rejected by Surveillance and Navigation Panels. ICCAIA may have a role to assist in this inter-panel coordination.

Future Work

Alongside the ongoing work of the panels and working groups, work in 2024 will include preparation for the next AN-Conf/14 and ICAO General Assembly 25, with a focus on some items such as Wake Energy Retrieval, Extended Minimum Crew Operations, Hyper Connected ATM and Connected aircraft.

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All activities are more and more interrelated, so we will need to ensure the transverse consistency with all activities managed in ICAO (i.e. GANP, GASP, CNS/ATM, AAM) and contribute in an aligned way to the relevant working groups in ICAO supporting policies and practices on CNS/ATM .

Some examples of items, among many others, identified within the CNS/ATM Committee to be worked in 2024:

- eMCO (extended Minimum Crew Operations) Ad Hoc Working Group, definition of a harmonized approach from a safety perspective to standardize the eMCO development and implementation in relationship with Airworthiness Committee.
- Technical “Challenges”: Frequency spectrum, new IMT threats on CNS (5G, 6G..); GNSS jamming and Spoofing, new Radio Altimeter SARPs
- Link with AAM will be paramount as many implications are foreseen in almost all CNS/ATM panels
- New Space based VHF SARPs
- Wake Energy Retrieval with associated level of priority
- Hyper Connected ATM and Connected A/C, definitions with associated roadmaps
- Long Term Opportunities: ICNSS roadmap with Long Term ICAO Spectrum strategy
- Development of long-range voice communications improvement strategy, including one or more RCP specifications for voice communications, and an implementation strategy for using SATVOICE as a sole LRCS means.

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Annex – CNS/ATM Related Panel and Working Group Reports

Air Traffic Management Required Performance Panel

Member: Steve Altus, Boeing

Scope

ATMRPP is engaged in developing concepts, SARPs, and guidance material to implement elements supporting trajectory-based operations (TBO). These include:

- Flight/Flow Information for a Collaborative Environment (FF-ICE)
  - Provisions
  - Implementation guidance
  - Benefits analysis and associated outreach, including sharing experiences in regional validation/education efforts
  - Implementation strategy, including global outreach and sunset strategy for FPL2012
- Trajectory-Based Operations (TBO)
  - Elaboration of concept and transition into FF-ICE (release 2 and beyond)
  - Continued evolution of TBO ideology in GANP, in provisions and guidance, and in inter-panel coordination
- Connected Aircraft (exchange of information between ground systems/actors and the aircraft)
- Update of the Global ATM Operational Concept (GATMOC)

2023 Highlights & Accomplishments

During 2023 ATMRPP held a panel meeting in June and a Working Group in November. In addition, eight Work Groups conducted business remotely by teleconference.

FF-ICE/R1 has entered initial operational use in Europe, ahead of the effective date of the associated provisions. The proposed amendments have been updated by the ANC with input from the 2022 State Letter, and are expected to become effective on 28 November 2024. To encourage more implementation worldwide, ATMRPP will conduct regional workshops with airlines and ANSPs, and continues to discuss a future sunset date for FPL2012, which might be needed by some states to acquire funding to upgrade to FF-ICE.

Meanwhile, the first draft implementation guidance for FF-ICE/R2 (post-departure trajectory negotiation, but not involving the current ATC sector) has been created. Based on the panel's experience with /R1, we will mature the guidance before developing amendments. States are encouraged to continue elaboration and validation activities, including operators if possible, and international organizations such as ICCAIA are invited to assist and have indicated our support.

More broadly on the topic of TBO, the panel is maturing a definition of "levels of TBO", since the topic is broad and can be overwhelming. Four levels have been described and are being fine-tuned. The panel has consensus that the levels of TBO are independent of ASBU blocks, but certain ASBU elements are enablers for each level.

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The panel has approved the Connected Aircraft Concept, and agreed to develop a job card for implementation activities. Development of provisions and guidance material is expected to require substantial coordination with other panels.

The panel is updating the Global ATM Operational Concept (GATMOC). The Global Air Navigation Plan (GANP), developed to implement the GATMOC, has diverged somewhat from the original GATMOC due to elaboration and technological advances, and the primary objective of an updated GATMOC is alignment with the current GANP. In addition, the GATMOC was evaluated for applicability and support of new entrants, and some explicit references are being added to sustainability (one objective of operational efficiency) and artificial intelligence (among emerging technologies). ATMRPP intends to approve the updated GATMOC by Q4 2024, ahead of inter-panel coordination in 2025 leading to approval in November 2025.

Key Activities (SARPs and Amendment material)

- FF-ICE/R1 (amendments to various Annexes and PANS) to become effective Q4 2024
- Connected Aircraft Concept (concept document complete, implementation job card proposed)
- FF-ICE/R2 (initial draft of implementation guidance created)
- GATMOC update
- GANP updates – FICE and TBO

Implications to Industry

- Development of TBO concept and R2 enables further benefits in efficiency and capacity while minimizing implementation cost and effort.
- Connected Aircraft concept provides justification for more confident investment in both R&D and implementation, and encourages more global harmonization leading to more efficient equipage and procedures.

Communications Panel – Data Communications Infrastructure Working Group

Member: Stephane Tamalet, Airbus

Scope

DCIWG oversees updates to radios and associated systems used for voice and data communications. Focus is on improving the capacity of systems to handle anticipated demand (both data and voice).
These include:
Maintenance of provisions on Legacy systems (VHF/HF/SATCOM/, ATN/OSI)

- Aeronautical Telecommunication Network - Internet Protocol Suite (ATN/IPS)
- Aeronautical Mobile Airport Communication System (AeroMACS)
- L-Band Digital Aeronautical Communication System (LDACS)
- Solutions for security of the aeronautical communications

DCIWG works alongside OPDLWG under the Communications Panel to support ongoing communications needs**.**

2023 Committee Highlights

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The Chairperson of CP-DCIWG is M. Brent Phillips (FAA). He was elected in 2022 as the successor to M. Noppadol Pringvanich who had resigned from IATA. No CP-DCIWG meeting took place in 2023. The last meeting was in October 2022. The next meeting will be in June 2024.

The Working Groups and Project Teams that compose the CP-DCIWG held several meetings:

1. WG-I (internetworking (ATN/IPS)) held 2 physical meetings (April in Montreal, October in Bangkok)
2. PT-T (Terrestrial) held 3 physical meeting (January, June and November) in Montréal
3. PT-S (Satcom) held 3 physical meeting (February, September and November) in Montréal
4. WG-M (Maintenance) was reactivated in 2023 with a virtual meeting held in June, and held one physical meeting (October) in Bangkok. The Rapporteur is Mr. Yanbo Zhu from China

Many virtual meetings were also held by these composing Working Groups and Project Teams, and by their subgroups.

Key Activities

In 2023, the amendments to ATN/IPS SARPs have been reviewed by ANC and circulated for review by States. The ATN/IPS SARPs validation report was completed. The Doc 9896 Ed 3 (ATN/IPS Manual), and several ATN/IPS security manuals (Doc 10090, Doc 10095 and Doc 10145) have been completed and delivered to the Secretariat for publication in 2024.

The proposed amendments to the AMS(R)S SARPs, updates to the Satcom Manual (Doc 9925) and Satvoice Operation Manual (Doc 10038) have been developed.

The LDACS Manual (Doc 10172) is being developed, and new plans for LDACS compatibility testing with Navigation and Surveillance systems have been developed. The new compatibility testing campaigns have started and results are planned to be presented to Surveillance Panel in March 2024. In case of a positive outcome, it is envisaged that the LDACS Proposal for Amendment (PfA) could potentially be endorsed by DCIWG/7 in June 2024.

The demand at WRC 2023 for an assignment of the VHF-band for satellite-based VHF communications was prepared in cooperation with the FSMP.

The WG-M has been reactivated to produce amendments on the AeroMACS, VDL Mode 2 and ATN/OSI SARPs and Manual.

Challenges

In 2023, the Joint WG between SP and CP-DCIWG has been unable to develop an agreed test plan. During its recent meeting the SP has suggested to suspend the JWG and is currently concentrating on an update to Doc 9924, which will include the Interference Tolerance Criteria (ITC). This will provide an essential element to the LDACS test plan. However, the update of Doc 9924 is planned for October 2024, after CP-DCIWG/7 (in June 2024).

The amendment to SATCOM SARPs had been postponed due to a disconnect between the amendment developed by DCIWG and the expectations of OPDLWG. The OPDLWG comments need to be successfully resolved prior to the DCIWG/7 meeting in June 2024.

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Future Work

In 2024, the group will support the secretariat for the publication of the ATN/IPS and SATCOM SARPs and Manuals, and work on the completion of the LDACS Manual and validation report. It will develop the updates to the AeroMACS, VDL Mode 2 and ATN/OSI SARPs and Manuals, and start working on potential addition to next ATN/IPS standards, such as accommodation of the Hyperconnected ATM concept.

Communications Panel – Operational Data Link Working Group

Member: Mike Matyas, Boeing

Committee Summary

CP-OPDLWG seeks to advance the use and performance of data link and voice communications while addressing the operational aspects of air traffic services that use those technologies.

Several project teams exist within the working group to accomplish this: the Air-Ground Data Link Project Team, the Ground-Ground Data Link Project Team, the Performance-Based Communications and Surveillance Project Team, and the Voice Communications (previously SATVOICE) Project Team. The working group also coordinates with other working groups and panels, including CP-DCIWG, ATMOPSP, ATMRPP, FLTOPSP, RPASP, and SASP.

2023 Committee Highlights

CP-OPDLWG held two in-person meetings during 2023: CP-OPDLWG-JPT/05 was hosted by Eurocontrol in Maastricht, Netherlands in May and CP-OPDLWG-JPT/06 was hosted by Nav Canada in Ottawa, Canada in December.

During 2023 CP-OPDLWG also continued to make progress towards completing its in-work deliverables, primarily ICAO Doc 10037 (Global Operational Data Link Document [GOLD] Manual) Second Edition and ICAO Doc 9869 (Performance-Based Communication and Surveillance [PBCS]) Manual) Third Edition.

Key Activities

CP-OPDLWG intends the in-work edition of the PBCS Manual to validate RCP130 for data link in domestic airspace and potentially define one or more RCP specifications for voice (including SATVOICE) communications, both of which represent positive developments for ICCAIA members and our aircraft operator customers. RCP130 will allow application of PBCS in US, European, and other domestic airspace with airplane allocations that are no more stringent than for RCP240 today and RCP specifications for voice communications will further support varying airplane configurations with SATCOM systems.

CP-OPDLWG has also been coordinating with EUROCAE WG-78 and RTCA SC-214 to ensure that their products published in 2023-2024 are harmonized with ICAO Doc 10037 (Global Operational Data Link [GOLD] Manual) Second Edition and ICAO Doc 9869 (Performance-Based Communication and Surveillance [PBCS] Manual) Third Edition. Items of particular note include the RCP130 and RSP160 specifications, revised technology-independent safety requirements for CPDLC and ADS-C, the Baseline 2 (B2) CPDLC message set, and Baseline 2 (B2) ADS-C requests and reports.

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Challenges

CP-OPDLWG is not experiencing any significant challenges. Many participants are stretched between other responsibilities, however.

Future Work

- Job Card CP-OPDLWG.001: ICAO Doc 10037 (Global Operational Data Link [GOLD] Manual) Second Edition and resulting proposed amendments to Annexes and PANS-ATM

- Job Card CP-OPDLWG.002: ICAO Doc 9869 (Performance-Based Communication and Surveillance [PBCS] Manual) Third Edition; no amendments to Annexes and PANS-ATM expected Job Card CPOPDLWG.003: Development of guidance material for ground-ground data link, which could potentially become an ICAO document

- Job Cards CP-OPDLWG.005 and CP-OPDLWG.006: Development of long-range voice communications improvement strategy, including one or more RCP specifications for voice communications, an implementation strategy for using SATVOICE as a sole LRCS means, andrevision of unpublished ICAO Doc 10038 (Satellite Voice Operations Manual [SVOM]) First Edition

Instrument Flight Procedures Panel

Member: Dave Zeitouni, Boeing (and IFPP Vice Chairman)

Scope

The IFPP is responsible for developing and updating design criteria SARPs, associated operations guidance, and addressing a variety of implementation and integration issues for instrument and visual flight procedures. The group's primary deliverable is amendment material to Annexes 4, 10 and 11, PANS OPS (ICAO Doc 8168), updates to the RNP AR Procedure Design Manual (ICAO Doc 9905) and the Quality Assurance Manual for Flight Procedure Design (Doc 9906). These documents contain the detailed design processes and criteria for creating all instrument and visual enroute, terminal and approach flight procedures.

2023 Highlights & Accomplishments

The Panel met twice this year, once in March (Interlaken, Switzerland) and once in September (Montreal). The March meeting was a Working Group of the Whole meeting to mature material for the September Panel (IFPP/16) meeting.
The September Panel meeting did approve and forward a package of amendment material to the ANC for consideration. The IFPP also received a preview of the True North ICAO survey data. The IFPP is one of the most impacted panels if a global Magnetic to True North conversion takes place.

Key Activities (SARPs and Amendment material)

- SID and STAR Procedure Transitions
- SBAS Criteria Modernization
- Path Terminators (database coding) for PBN Procedures

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- Revision and Update of ICAO Provisions for Quality Assurance for Flight Procedures
- Merging the ILS, MLS and GLS Chapters in Doc 8168 Vol. II (PANS OPS)
- Maintenance of Existing Procedure Design Criteria
- Collision Risk Model (CRM) testing and update of CRM Manual

Performance-Based Navigation Study Group (PBNSG)

Member: Dave Zeitouni, Boeing

Scope

The PBNSG is responsible for developing and updating standards and recommended practices (SARPs) for Performance-Based Navigation (PBN). The group's primary deliverable is the fifth (5th) edition of the ICAO PBN Manual, Doc 9613. The PBN Manual contains SARPs for PBN operations including aircraft qualification criteria, operational applicability and pilot training information. PBN operations are categorized into Navigation Specifications (Nav Specs) covering enroute, terminal and approach PBN operations.

With its study group status and a large number of subject matter experts, the PBNSG acts as the ICAO secretariat's clearing house or sounding board for all PBN matters with the aim of ensuring global interoperability and harmonization.

2023 Highlights

The Study Group had no activities in 2023. ICAO did finally formally publish ICAO Doc 9613, PBN Manual, 5th Edition. This was the key product of the Study Group.
The 5th Edition made a number of improvements to the document including adding RNP (Required Navigation Performance) AR (Authorization Required) Departures, revising criteria for Advanced RNP and making a number of other smaller changes to improve understanding and implementation of PBN procedures.

No further activities for the PBNSG are currently planned.

Navigation Systems Panel

Member: Tim Murphy, Boeing

Scope

NSP is responsible for the development and maintenance of SARPs for navigation systems. The panel deals with conventional navigation systems, Global Navigation Satellite Systems and spectrum issues associated with navigation systems.

Key Activities / Accomplishments

NSP recently completed and approved a set of Annex 10 changes to introduce Advanced Receiver Autonomous Integrity Monitoring (ARAIM) in support of Dual Frequency Multi-Constellation (DFMC) GNSS into the SARPs. This change package was the basis for State letter AN 7/62.1.5, AN 7/66.1.2-23/67 "Proposals for the amendment of Annex 10, Volume I and Volume V related to the global navigation satellite system (GNSS) and other navigation aids". The proposed amendments to Annex 10, Volumes I

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and V are likely to be accepted with minimal change and are envisaged for applicability on 27 November 2025. The first SARPs amendment package introducing multiple core constellation did not include any standards for A-RAIM- which is required to use the multi-constellation data when outside the coverage of a DFMC capable SBAS system. (No DFMC SBAS system currently exists and the first such system is projected to be available in 2026). The most recent proposed SARPs amendment adds these much needed A-RAIM standards.

Although there are now two amendment packages for DFMC GNSS, it will still be some time before DFMC avionics will be developed because RTCA and EUROCAE are still working on Minimum Operational Performance Specifications (MOPS) for airborne equipment.

Since NSP/7 (January of 2023) the focus of NSP has been on the development and validation of SARPs for SBAS authentication services. In addition, NSP has been working on an update for DFMC Ground Based Augmentation Systems (GBAS) as well as several important maintenance tasks such as an update to the GNSS Manual and an update to Doc 8071 which gives guidance on flight inspection of Navigation Aids.

On-going / Future Work

A list of the current job cards is given below. The activities receiving the most attention from ICCAIA are related to updates supporting dual frequency, multi-constellation GBAS (shown in bold face font). SARPs development for A-RAIM and DFMC SBAS standards are essentially complete. Additional SARPs development for SBAS authentication continues. In addition, the spectrum working group will continue to be very active in working on GNSS interference issues as well as evaluating interference between LDACS and DME.

- NSP001 – Nav Roadmap; (Little activity)
- NSP002 – GNSS Multi-Constellation; (Dual Frequency Multi Constellation (DFMC) GNSS)
- NSP003 - SBAS Evolution; (DFMC SBAS)
- NSP004 – ARAIM; (Advanced Receiver Autonomous Integrity Monitoring - enables DFMC without SBAS or GBAS)
- **NSP005 GBAS Evolution; (DFMC GBAS)**
- **NSP006.02 GNSS RF Interference;**
- NSP007 Space Weather; (Little Activity – some coordination with Met Panel)
- NSP 008.02 Rationalization; (Rationalization of conventional navigation aids)
- NSP009.03 APNT; (Alternative Position Navigation and Timing) (Little Activity)
- NSP010.01 GANP Update 2016; (Support Global Air Navigation Plan)

Implications to Industry

DFMC GNSS will eventually improve robustness and availability of GNSS services for all operations and potentially enable new operations. However, there are difficult issues around the Concept of Operations that are yet to be solved. (For example, key management for SBAS authentication.) SARPs for the new core constellations are complete, and MOPS development is underway. Several more years of work will be required before the MOPS can be completed and equipment can be designed, certified and fielded. NSP will continue to develop standards for authentication of SBAS. ICCAIA should remain engaged as the envisioned algorithms could have substantial impact on GNSS receivers as well as implications with respect to new requirements around key management.

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With the completion of the SARPs for DFMC core constellations and SBAS, the next major area of interest to ICCAIA is development of DFMC GBAS. In the last year the following events relative to DFMC GBAS occurred:

- ICCAIA continues to lead a coordination effort between ICAO and RTCA/EUROCAE to determine a realistic schedule for the development of DFMC GBAS SARPs and MOPS.
- ICCAIA made significant progress in validating an alternative architecture proposal for DFMC GBAS. The GBAS Working Group (GWG) has converged on an architecture that adopts the best aspects of the previously proposed architectures. This proposal should achieve much better performance and support single frequency fall back modes capable of supporting CAT III operations.
    - ICCAIA instigated the formation of an ad-hoc group tasked with continuing the development of the DFMC GBAS architecture and the development of SARPs. ICCAIA leads this ad-hoc activity.
    - A standing ad-hoc was formed for this purpose and met virtually many times throughout the year. A compromise on the architecture (combining the strongest elements of both competing paradigms) was reached this year and a first draft of SARPs was developed. A significant multi-national effort to mature these SARPs is underway.

Various navigation system related spectrum issues such as GNSS interference, DME interference from LDACS and 5G interference into Radio Altimeter also have the potential to significantly impact industry.

Flight Operations Panel

Member: Eric Fortunato, Airbus

Scope

The FLTOPSP is responsible for new/updated Annex 6 SARPs with a focus on Flight Operations. Emphasis is on Safety and Efficiency, and disciplines/topics covered include All weather operations (AWO), Low visibility operations (LVO), Extended Diversion Time operations (EDTO), Electronic Flight Bag (EFB), Performance-based Nav (PBN), Security (incl. CBR Threats), Runway Safety (RSOTI) and Safe Carriage of Goods (incl. Dangerous Goods).

2023 Highlights & Accomplishments

The Panel met twice this year (typical): in May (Luxembourg) for the Working Group of the Whole meeting, and in October (Montreal) for the formal meeting of the Panel. The purpose of the Working Group of the Whole meeting is to mature material for the Panel (FLTOPSP/10) meeting.

The FLTOPSP/10 meeting approved and forwarded the following material:

- Draft guidance relating to the change in ELT provisions and supporting the end of flight location, was provided to the Secretariat for publication in the GADSS Manual (doc 10165). Accordingly, the Panel requested the ANC to indicate related job card FLTOPSP.049 as delivered.
- Draft Circular for Helicopter All-Weather Operations (containing information on Point in Space procedures and Low-Level Routes) provided to the Secretariat for publication. Accordingly, the Panel requested the ANC to indicate job card FLTOPSP.029 as delivered.
- New job card on Areas of Authorized Operations submitted for approval by the ANC

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- Minor edits to Annex 6 presented to the ANC and as an amendment proposal.

The FLTOPS Panel also agreed:

- to coordinate with the NSP on their work to update the GNSS Manual (Doc 9849) and provide operational guidance as appropriate.
- to support the need to further promote awareness of BARO VNAV QNH setting errors, and current mitigations.
- that a harmonized approach led by ICAO would be beneficial from a safety perspective to standardize the eMCO development and implementation.

FLTOPSP/11 meeting is planned for Q4 2024 in Montreal. Final dates to be determined based on availability.

On-going / Future Work

As of Jan 2024, the FLTOPS/P has 14 active Job Cards. The main activities currently identified as requiring ICCAIA support or follow-up are the following:

- **OPSP.009.06** (runway safety): completed work on proposed standards to Annex 6 Part II, and revised procedures in PANS OPS Vol III related to Runway Overrun Awareness and Alerting Systems (ROAAS). New task postponed on means to address incorrect performance calculations to prevent take-off acceleration performance issues.
- **OPSP.018.08** (Use of terms such as authorization approval and acceptance): remaining item is related to the review of guidance material to ensure consistency with the proposed amendments of Annex 6 presented at FLTOPSP/8. This guidance, planned for the next update of Doc 8335, is now targeted for Q4 2026.
- **FLTOPSP.0xx.01** (Areas of Authorized Operations): new proposed Job Card for the drafting of guidance on Areas of Authorized Operations such as Polar areas.
- **FLTOPSP.024.05**: Flight Operations in the presence of Volcanic Contamination. There had been little progress on this task, and resource was identified as an issue in further progressing the work. Panel agreed to further coordinate with the METP on all relevant work relating to volcanic ash. Job card timelines have been reviewed and extended.
- **FLTOPSP.038.05** (PBN approaches): need for further updates to the PBN Operational Approval Manual (Doc 9997) to align it with Annex 6 and the recently delivered 5th Edition of the PBN Manual (Doc 9613).
- **FLTOPSP.044.02** (Performance-based Aerodrome Operating Minima): work on Phase 2 update of AWO Manual (Doc 9365).
- **FLTOPSP.045.01** (Security Doc 9811): update of Doc 9811. Progress has been made on the review and update of Chapter 1, but additional expertise required, specifically in the areas of training, flight crew compartment procedures, search procedures and coordination and response. An extension of the timelines to Q4 2025 was agreed.
- **FLTOPSP.046.01** (Ramp Inspections): guidance intended to be included in Manual of Procedures for Ops Inspectors, Certification and Continuous Surveillance (Doc 8335) as well as other manuals. Timelines have been aligned with other work planned to update this manual, with delivery from Q4 2024 to Q4 2027.

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- **FLTOPSP.047.01** (Use of electronic certificates): the task is to propose means aiming at standardization and acceptance of electronic documentation. A dedicated multi-disciplinary EDC-SG (Electronic Documents and Certificates subgroup) has been set-up, with 3 sub teams to address the different disciplines (AIR, OPS and Registration). It gathers members from the FLTOPSP, AIRP, PTLP and XBT-TF. The EDC plenary group, covering OPS, AIR and Registration, agreed that as an initial focus work should be limited to those documents requiring authentication – for OPS this means the AOC and Ops Specs. It was further proposed that the work should proceed based on the already adopted provisions of Annex 1 relating to electronic personnel licenses. Timelines of the Job Card have been reviewed and extended.
- **FLTOPSP.048.01** (PANS OPS Vol III): review and update/restructure. No progress was reported in respect of job card FLTOPSP.048, however work is planned to commence in early 2023 with the formation of a subgroup to consider how to address the review of existing material.
- **FLTOPSP.050.01:** Review and revision of the Manual of All-Weather Operations (MAWO) to advance helicopter specific guidance.
- **FLTOPSP.051.01:** Development of Annex 6 Part III Provisions for Additional / Technical Crew Member
- **FLTOPSP.052.01:** Development of helicopter specific safety risk management
- **SCG-SWG (Safe Carriage of Goods Specific Working Group):** work is on-going on JC SCGSWG.002.01 (Dangerous goods risks introduced by entities in the cargo supply chain) and SCGSWG.003.01 (Procedures for preventing and responding to incidents involving lithium batteries carried by crew or passengers onboard the aircraft).

Implications to Industry

FLTOPS/P work may impact the OEMs and in particular the aircraft configuration and system design needed to support the operations in compliance with Annex 6. The rulemaking work of FLTOPS/P may also be key in supporting the implementation of new technologies (e.g. eMCO).

Challenges

Due to the current Panel meeting cycle, and the process for implementation of an Annex amendment (ANC review, State Letter consultation, etc.), it may take up to 4 years between the approval by the Panel of a proposed amendment and the applicability date of this amendment. Taking into account the time required to complete the drafting of the proposed amendments, it means that at least 5 years would typically be expected between the launch of the rulemaking effort and its completion.

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Separation and Safety Panel (SASP)

Member: Sheila Conway, Boeing

Scope

The SASP undertakes specific studies and develops and/or reviews technical and operational ICAO provisions that result in increased airspace and airport capacity while maintaining or improving safety. The resultant Standards and Recommended Practices, Procedures for Air Navigation Services and/or related guidance material employing reduced separation minima, consider:

- agreed minimum levels of safety to achieve
- available communication, navigation, and surveillance systems
- current and forecast demands on airspace and airport capacity

Key Activities / Accomplishments

Newly implemented separation standards developed by SASP continued to demonstrate benefits in 2023, as highlighted by several papers brought to the panel. The panel worked to expand the applicability of these reduced separations based on improved Comm, Nav and Surveillance technology availabilities in various types of airspace.
Key Job Cards for the development of reduced separation standards address both well-established traffic (improving capacity/efficiency):

- SASP002.04 PBN Sep for Terminal
- SASP005.04 RNP for Parallel APCH
- SASP006.04 Long and Lat Sep for Oceanic and Continental based on A-RNP
- SASP015.02 PBN separation for SID STAR
- SASP016.02 Operational Trials
- SASP.018.001 RVSM Extension
- SASP.020.01 (approved 2023) Improving the sustainability and efficiency of terminal operations and provisions for newer entrants (affording or expanding access):
- SASP007.03 PBN Sep for SUA
- SASP008.03 Implementing PBN tracks
- SASP010.03 Helicopter RNP0.3 Terminal and en route operations
- SASP013.03 Unmanned Free Balloon separations
- SASP.021.01 (approved 2023) Updated guidance for airspace planning methodology for the determination of separation minima

The panel was challenged this year by a loss of its ICAO secretariat support.

Future work

As reflected in the Job Cards, the Panel has two primary foci for future work: finding additional capacity in existing airspace and infrastructure based on continued technology improvement (e.g CNS from space-based technologies), and determining appropriate separation standards that afford safe integration of new entrants. Advanced Air Mobility (AAM) and the energy around new Flight Rules and new entrants will likely affect SASP work plan for several years to come.

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Air Traffic Management Operations Panel (ATMOPS)

Member: Sheila Conway, The Boeing Company

Scope

ATMOPSP is responsible for developing and maintaining Standards and Recommended Practices (SARPs), Procedures (PANS) and guidance material to address the safety, efficiency, and harmonization of ATM and related sub-domains airspace management. The panel develops air traffic services, air traffic flow management, procedures and phraseology for air traffic control and civil-military coordination.

2023 Committee Highlights

ATMOPSP conducted its 7th formal meeting in May of 2023. Key topics included:

- Air Traffic Flow Management (ATFM)
- Cold Temperature Altitude Corrections (CTC)
- Radio Communication Failure (RCF)
- Digital Air Traffic Services for Aerodromes (DATS)
- Aerodrome Flight Information Service (AFIS)
- RPASP-ATMOPSP Joint Task Force (RA-JTF)
- Guidance for Air Traffic Services Planning and Implementation (ATSPI)
- Global Aeronautical Distress and Safety System (GADSS)

Challenges

The integration of a variety of new entrants remains a challenge for the panel. To address one of these entrants, the RA-JTF partnership with the RPASP was initiated to formulate appropriate ICAO equipage and operational standards for integration. However, mature technologies and opportunities for operational testing remain limited, thus preventing a clear and complete picture of required standards. With automation envisioned to develop beyond RPAS (e.g. those promulgated by the Advanced Air mobility Study Group AAM SG), the lack of an on-board pilot may necessitate the modification of existing flight rules or creation of new flight rules. There is pressure for the panel to develop a comprehensive set of flight rules as quickly as practical, though a recognition that further maturation of the technology is needed before a full scope of the necessary rules and regulations can be understood.

Future Work

The panel will continue work on the introduction of RPAS aircraft, and more generally provision airspace and standards to accommodate a broad array of “new” entrants such as commercial space launches and AAM. This work will result in a comprehensive set of Flight Rules and commensurate traffic management practice that afford automated flight. Future documentation for ATFM will be addressed, including evaluating training standards and the potential for inclusion in ASBUs/GANP. ATFM will be refined with additional considerations including Flexible Use Airspace (FUA), TBO, and performance metrics (e.g. CCO/CDO, flight time/fuel, etc.).
Continued development of Digital Air Traffic Services for Aerodromes will be progressed. Developing clarification of which SARPs and PANS are applicable to DATS. Updated DATS PfA will be circulated to appropriate groups for comments before being returned to ATMOPSP.

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Surveillance Panel

Member: Vincent Capezzuto, Aireon

Committee Summary

The Surveillance Panel (SP) was tasked by the Air Navigation Commission to undertake specific studies and to develop technical and operational ICAO provisions for aeronautical surveillance systems, collision avoidance systems and their applications as outlined in the Global Air Navigation Plan. The SP focuses on Surveillance subjects: Secondary Radar, ADS-B (Out and IN), Wide Area Multilateration, Mode S Transponders, ACAS and is made up of 2 Working Groups:

1- ASWG -Aeronautical Surveillance Work Group
2- AIRB WG - Airborne Surveillance Work Group

2023 Committee Highlights

Surveillance Panel Chairperson, Mr. Doug Arbuckle has retired. The new SP chair is Mr. Stuart Mckay, Stuart.Mckay@caa.co.uk and ASWG rapporteur is Mr. Alex Rodriguez, Alejandro.Rodriguez@faa.gov. Mie Utsunomiya (ICAO) remains as Secretary Surveillance Panel.

2023 Surveillance Panel (SP) working group meetings:

1- 15th meeting of the Surveillance Panel Airborne Surveillance Working Group (SP-AIRB WG/15) scheduled from 28 February to 3 March 2023 to be held in Singapore
2- 17th meeting of the Aeronautical Surveillance Working Group (SP-ASWG/17) scheduled from 6 to 10 March 2023 to be held in Singapore
3- The 25th meeting of the Performance Based Surveillance Subgroup (SP-PBSSG/25) scheduled from 13 March to 15 March 2023 to be held in Singapore
4- The Fifth meeting of the Surveillance Panel (SP/5), Montréal, Canada, 20 to 29 September 2023

Key Activities

GNSS RFI: To improve both the operational and technical capabilities of mitigating the impact of GNSS radio frequency interference (RFI), new equipment functions are proposed for next generation avionics, enabling on-board detection of GNSS RFI and status downlink to ANSPs through ADS-B. GNSS is the primary enabler for PBN and ADS-B applications and is therefore an essential technology used in air navigation systems. Analysis of GNSS outages in Europe has shown that most of the outage reports are most likely the result of RF interference (RFI).
The detection of GPS RF interference is being added to the functionality of SBAS GNSS receivers. The new ED259A SBAS MOPS is planned to be available by end 2023 with a second version ED-259B which will include ARAIM and institutional scenarios by mid-2024.
The first receiver prototypes are planned during the first part of 2024. The GNSS RFI status information is proposed to be passed to the ground via the ADS-B messages. The SP plans to start work on a proposal to integrate the GNSS RFI information in ADS-B messages for further processing by EUROCAE/RTCA combined surveillance committee.

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ADS-B version 3 will be providing new capabilities that include:

- autonomous distress tracking support (ADS-B)
- information to support future ADS-B In interval management operations
- broadcast of aircraft–based weather data
- Lost C2 link state for UAS/RPAS
- broadcast of 1030/1090 MHz spectrum monitoring data
- functionality to support commercial space and hypersonic aircraft operations

Introduce ACAS III technical provisions, based on ACAS Xu (Unmanned Aircraft System) avionics standards:

- provides RPAS with a Detect and Avoid (DAA) capability including a Collision Avoidance (CA) function that will be the first implementation of an ACAS III
- builds on ACAS Xa collision resolution optimization technology to overcome vertical maneuvering limitations by also issuing horizontal advisories
- can also use non-cooperative sensors to detect and avoid traffic

EUROCONTROL Network Manager testing in terms of 1030/1090 MHz transponder MOPS capability and European legislation, reported majority of traffic within Europe experiences over-interrogation.
Mitigations include radar quantity reduction, optimize radar interrogation rates for various parameters, networking radars.

Challenges

The Communications Panel (CP) is developing L-band Digital Aeronautical Communications System (LDACS) SARPs and is seeking approval from the various Panels in ICAO as part of the inter-panel coordination in introducing new SARPs. Through ongoing coordination between the Surveillance Panel (SP) and the Communication Panel (CP), tests were conducted to validate that LDACS proposed performance requirements are compatible with surveillance receivers. Further compatibility testing is required.

Future Work

Required Surveillance (RSUR) Manual: The Performance Based Surveillance Subgroup (PBSSG) has undertaken specific studies and identified requirements on the surveillance system per applications in specific operating environments, to include both continental and oceanic airspace. The scope of the documentation for the Performance Based Surveillance specification includes oceanic environments, en-route and terminal environments, high density high complexity airspaces and low-density low complexity air spaces and surface surveillance applications. The resulting Performance Based criteria shall be measurable and verifiable. The PBSSG delivered a draft RSUR manual for review by the SP due November 2023 with a final due Q1 2025.

Upcoming Surveillance Panel (SP) working group meetings to be held at the ICAO Headquarters in Montréal, Canada from 6-15, March 2024:

1- The 17th meeting of the Airborne Surveillance Working Group (SP-AIRB WG/17) scheduled from 6 to 8 March 2024

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2- The 19th meeting of the Aeronautical Surveillance Working Group (SP-ASWG/19) scheduled from 11 to 15 March 2024

Working Groups

The Surveillance panel consists of two work groups: Airborne Surveillance Work Group (AIRBWG) & Aeronautical Surveillance Work Group (ASWG) focused on interoperability of secondary surveillance radars, multilateration and ADS-B systems / services with aircraft / remotely piloted aircraft systems avionics.

Key Activities / Accomplishments

ASWG

Key activities:

- Inter-panel coordination: 1030/1090 MHz, GNSS, and L-band Digital Aeronautical communications System (LDACS)
- Doc 9924 – Aeronautical Surveillance Manual: Updates on lockout behavior to improve RF pollution

Spectrum Interoperability:

- The Communications Panel (CP) is developing L-band Digital Aeronautical Communications System (LDACS) SARPs and is seeking approval from the various Panels in ICAO as part of the inter-panel coordination in introducing new SARPs. The SP is focused on verifying LDACS prototype interoperability and airborne/ground interfaces. The objective of testing is to determine the impact of LDACS signals on victim surveillance system receivers (Mode A/C, Mode S, Multilateration, DME, TACAN, ACAS, TCAS, Mode 5). The LDACS group has requested that the ASWG endorse their request to the ANC and approve their testing as sufficient. Discussions are ongoing regarding test methods.

AIRBWG

Key activities:

- Doc 9994 Manual on Airborne Surveillance Applications: Interval Management (IM) continues to mature through proposed trials based on American Airlines large scale IM equipage. Manual on Airborne Surveillance Applications (Doc 9994) change proposal for adding sample operator guidance for interval management (IM). The sample operator guidance includes a description of IM and the five IM clearance types, IM terminology, and documentation to be submitted to the operator's State regulator when seeking operational approval. It is intended to provide a harmonized collection of information that mirrors the requirements by which each State regulator would evaluate an operator's qualification to conduct IM.
- New equipment functions are proposed for next generation avionics, to improve both the operational and technical capabilities of mitigating the impact of GNSS radio frequency interference (RFI), enabling on-board detection of GNSS RFI and status downlink to ANSPs (Job card NSP006.04).
- Provisions for remotely piloted aircraft DETECT AND AVOID (DAA) capabilities consider the issues relating to Detect and Avoid, Command and Control, Lost Link, and Navigation.

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- Detect and Avoid: recently published RTCA DO-398 Phase III Operational Services and Environmental Definition (OSED) that covers UAS use cases such as Cargo, High-Altitude Platforms, and Survey operations. A revision to DO-398 is currently underway: this revision, slated for publication in February 2024, will ensure DO-398 accommodates DAA solutions for rotorcraft and early UAM/AAM use cases, such as ACAS Xr.

General Observation:

- The multi-year remote panel meetings undermined the efficiency of developing working papers towards progressing the work defined in the job cards.

Frequency Spectrum Management Panel

Member: Joe Cramer, Boeing

Scope

The FSMP manages ICAO's involvement in aeronautical radio frequency spectrum issues to ensure sufficient access to, and protect as best as possible, the critical resource to enable aeronautical communication, navigation and surveillance services (CNS) in an efficient and safe manner. The FSMP met two times in 2023. The next meeting will occur in February,2024**.**

Key Activities / Future Work

The ICAO Position to the 2023 World Radiocommunication Conference (WRC-23) was finalized and submitted to the International Telecommunications Union (ITU). WRC-23 was the most recent international treaty meeting where updates to the ITU Radio Regulations (RR), the international instrument governing the use of radio frequency spectrum on a worldwide basis is changed.

WRC23 made several decisions of importance to the aviation industry.

- New aircraft VHF using satellite capability to complement terrestrial communication when operating in oceanic or remote areas.
- Resolution addressing GPS jamming and spoofing that recommends countries take measures to avoid the proliferation, circulation and operation of jammers, and encourages cooperation between aeronautical, maritime, security authorities and spectrum regulators, to address interference risks.
- New rules for data relay between geostationary satellites and new LEO constellations will provide flexibility for future aircraft connectivity to transition between satellite systems.
- Aeronautical HF channelization changes to accommodate digital technologies.
- UAS C2 via non-safety satellite service: ITU regulatory actions paused due to layered regulatory complexity along with satellite operator opposition.
- WRC-23 also decided on Agenda Items for the next treaty level conference in 2027.Several of these agenda items will impact aviation:
  - The ITU will "study" if cellular systems can utilize the frequency bands 4400-4800MHz (which would significantly impact radio altimeters), 7125-8400 MHz, 14.8-15.35GHz (which could impact airborne weather radars).
  - Potential allocation to the Earth Exploration Satellite Service (passive) in the frequency bands 4200-4400 MHz and 8400-8500 MHz to study ocean levels rise/fall.
  - Update regulations to allow non-safety aeronautical HF communications.

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- The FSMP will develop the ICAO position for WRC-27 over the course of the next several years.
- Advise the ANC on issues that impact aviation's usage of radio frequency spectrum.
- Develop and maintain the ICAO Spectrum Strategy and the ICAO Policy on Radio Frequency Spectrum. Given ICCAIA's proposal regarding Hyper-Connectivity Air Traffic Management (HCATM) there is likely to be a need to educate and convince the FSMP to accept ICCAIA's position to permit non-aviation safety spectrum to be used for safety-related communications.
- Develop and maintain SARPs and guidance to prevent WAIC / Radio Altimeter interference.
- Develop radio frequency and interference rejection characteristics for radio altimeters that also includes interference from non-aviation safety sources. There is a need for ICAO to expand its traditional standards practices and consider non-aviation interference in ICAO standards and recommended practices (SARPs).

Implications to Industry

- The FSMP and its regulatory activities is important in supporting the implementation on new technologies, ensure coexistence of new aviation and non-aviation systems with existing operations, and develop interference rejection requirements from non-aviation transmission sources.
- The FSMP and its members worked with states to address several agenda items important to, and of concern to, aviation at the 2023 World Radiocommunications Conference. ICCAIA will continue this tradition during the upcoming WRC cycle.

Issues requiring assistance

- ICCAIA should consider obtaining an "Associate Member" or industry organization membership at the ITU in order to allow ICCAIA to better represent industry at the ITU. Current industry representation is limited to companies either working within the limitations of their national administrations or representing their interests individually with their own association membership.
- Develop ICAO communications regarding protecting public safety from new cellular systems. The interference issues to aviation systems is an issue in every country, and ICAO's participation is important.

Information Management Panel

Member: David Almeida, LS Technologies

Scope

The Information Management Panel (IMP) works on the development of a global and harmonized interoperable approach for the effective management of information, on a system-wide basis, within the air navigation system. The IMP is investigating and developing solutions supporting the planning framework on information management contained in the global air navigation plan (GANP, Doc 9750), including further development of system-wide information management (SWIM). The IMP continues being the Panel overseeing Aeronautical Information previously managed by under Aeronautical Work Group.

The current working group (WG) structure is as follows:

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WG-A: Aeronautical Information Management (AIM) addresses AIM Global Implementation Support, NOTAMs, Aeronautical Charts and Digital Data sets;
WG-I/S: WG/I Information Architecture, WG-S Services (now combined), discovery of information services and do not include requirements on how an information service should be implemented;
WG-G: Governance addresses the wide range of information service providers and consumers, the means to carry out oversight should be described and the exchange of proprietary information;
WG-Vocab: Effort to harmonize terminology related to data and information management.

The 2023 IMP work efforts saw progress in Aeronautical Information Service Manual (Doc. 8126), considerable progress on the NOTAM replacement system, now called DORIS, and the publication of of Procedures for Air Navigation Services for Information Management (PANS-IM), along with guidance and implementation documentation.

The next major IMP meeting will be a Working Group meeting (IMP-WG/12) in Montreal, April 16-19, 2024.

Implications to Industry

The activities around AIM and the NOTAM Replacement Concept (DORIS) will be more significant, and have broader industry implications to software developers, CAAs ANSPs (system lifecycle planning), etc., but as well as to improve the quality of the internal aeronautical data process.
The PANS-IM and SWIM documents are long awaited documents to help CAAs/ANSPs and aviation information management stakeholders (including data vendors, manufacturers, etc.) on standards, governance and technical capabilities for information exchange.

Doc 10039 also introduces Connected Aircraft (A/G SWIM) and the exchange of information between entities connecting to the aircraft. This may have particular interests to the industrial base. 2024 appears to be poised to be a significant year for document delivery.

Key Activities / Accomplishments

- **Work Group – WG/A**

  WG-A made good progress in 2023. The team Completed Doc 8126, Volume IV draft. Coding specifications for digital aeronautical data set, provides information about coding rules and recommendations for each data set, by reference to existing formal specifications and standards. For the AIP, Obstacle, Airport Mapping and Instrument Flight Procedures data sets, the guidelines refer to the AIXM web site. Appendix F of the document includes Data Product Specification of AIP Data Set, using Latvia (Excel) as an example. Updated version of the document should be consulted for coordination with IFPP, ATMOPSP and FLTOPSP.
  Additionally, the team made significant progress on the NOTAM Replacement concept document. Established a new acronym suggested for the new NOTAM concept now referred to as Digital Operational Reporting Information Service. The Concept of Operations is currently in review by the broader IMP member group. The team is also reviewing the SARPs and other aeronautical products that reference NOTAMs.

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Activities for coordinating cross-panel and their respective working groups has been initiated by the WG/A delivering the NOTAM Replacement concept document to IMP chair. The IMP chair is circulating the document and socializing with these panels.

- **Work Group – WG-I/S**

  In November, the ANC completed its review of the PANS-IM and approved all provisions that IMP panel members worked through during IMP/2, with minor changes. Detailed security framework provisions (an appendix to Chapter 6 of the PANS-IM) were removed by the secretariat ahead of the ANC review, based on internal secretariat coordination. References to IPv6 and a dedicated block of address were also removed as considered not fully supported yet.

  The IMP also requested support to finalize the Manual on SWIM Implementation and to provide some clarifications to the comments received during the consultation process of the proposals for amendment, related to SWIM, arising from IMP/2.
  Air/Ground (A/G) SWIM efforts were initiated under Job Card IMP-011.01. The A/G SWIM job card team was very active, holding 7 working sessions in 2023.
  The tasks ranged from performing further assessments and identifying updates to information services, technical infrastructure, governance, and information security to address the requirements for implementing A/G SWIM.
  IMP 11th Working Group meeting (IMP-WG/11) was held on 08 September 2023, Air/Ground SWIM Job Card Status Summary was presented by FAA Technical Advisor as team lead. After the working paper was presented, an engaged discussion helped clarify two topics that were previously discussed:

  3rd Party Service Provider, and the Use of the FF-ICE Trial Request Service. Most notably, the term 3rd Party Service Provider is no longer being considered as part of the A/G SWIM work. The FF-ICE Trial Service and its relationship to a requirement being included for the information service consumer in the information service overview. The FF-ICE Trial Service was selected as an operational application that could leverage A/G SWIM. The Job Card team determined this application could leverage a well-defined operational service to analyze the differences that may be needed in the A/G SWIM context. The performance requirement needed by the information service consumer in the A/G SWIM context was one of the differences identified.
  At the same IMP 11th Working Group meeting (IMP-WG/11) on 08 September, Air Ground SWIM Job Card Assessment Report was also presented by the Team Lead, an FAA Technical Advisor. This working paper introduced the SWIM Concept Assessment Report, which serves as the IMPs Deliverable #1 under the IMP-011.01 and presented an annotated outline for that deliverable.
  This WG I/S is also working collaborative with the WG/G on defining SWIM Service Registry Interoperability. Another FAA Technical Advisor is leading this effort, which has yielded a Global SWIM Service Registry Interoperability Concept paper. The concept paper was well received, and additional work will continue to include addressing OpenAPI considerations between SWIM registries.

- **Work Group – WG/G**

  The WG/G Governance group made progress on governance enhancements made progress a key area where SWIM oversight is required, the protection of proprietary data and information. The team has worked to highlight existing information flows, such as Flight Ops Center data transmitted over ACARS,

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and the implications of SWIM as a new transmission paradigm, which have proprietary concerns. Such implications include the notion of getting some data from the aircraft (e.g. through A/G SWIM) which can be quite useful to apply some principles, such as machine learning, to facilitate optimizing trajectories.

There are, however, proprietary concerns with the usage of data. The team proposed guidance for information service providers and consumers to ensure that constraints on the use of information provided via information services are comprehensively passed on to downstream qualified parties by inclusion in the bilateral Service Level Agreements (SLAs) throughout the whole SWIM eco-system. Work product in development includes guidance that could be included in ICAO documentation and the team has identified and proposed an approach to integrate information protection considerations into the PANS-IM and supporting guidance material.

- **Work Group – WG/V**

  Effort in working towards a consistent understanding of the terms and definitions related to data and information management and use contained in the Annexes and PANS. The ultimate outcome of this work would be a consolidated “digital vocabulary” as an online system with all terms and definitions used in ICAO Annexes, ICAO PANS and in the separate Vocabularies and lists. The team has identified the need to develop a slide deck to communicate with other Panels. Work efforts also helped to uncover potential overlap between this job card and other initiatives such as the AIRM or the fact that the ICAO’s terminology database had been included in a UN one (UNTERM) as explained in EB 2023/38.

Inter-Panel Coordination

Efforts supported collaboration between MET Panel on the topic of information management, including weather information. Safety Management updates were presented to the IMP. The Ad Hoc Cybersecurity Coordination Committee, whose charter is to support cross-panel coordination on cybersecurity concerns, was also introduced to the IMP.

Challenges

1. WG/A work scope is significant, hosting five (5) focus groups and in addition overseeing the AIXM CCB. Additionally, the group is responsible for general Annex 4, 15 and PANS AIM amendments. Given the connectivity to SWIM, WG/A was aligned to IMP and all deliveries go to IMP. However, it could be considered that WG/A work should be elevated to a panel level, as an AIM Panel, for example. IMP is working on general SWIM provisions which the domains shall use. This would align AIM with MET (for weather information) ATM (for flight and flow information) and allow a broader visibility that could help draw more.
2. WG/A Focus Group (FG) Participation in both FG-Digital Data Sets (FG- DDS) and FG- Aeronautical Charts (FG-AC) continues to be an issue. Lack of AIS/AIM Technical Expertise is hampering progress.
3. WG/A FG-AC opened a second stream Concept Aeronautical Data Visualization Data Driven Charting. In parallel Annex 4 review is running. This will put further drain on limited resources.
4. WG/A: Concerning the Instrument Flight Procedures Data Set, it has been proposed that no guidance material is included in the first published edition of the ICAO guidance material for Digital Data Sets. Guidance material based on AIXM 5.2 is expected to be developed in the next two years and published

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on the same AIXM/Confluence platform as the current detailed guidance for the AIP, Obstacle and Airport Mapping data sets. Once this is available, an update of the ICAO AIS Manual will be proposed.

5. WG I/S: There is a scoping issue in scoping out exchanges between aircraft and Flight Operations Centers, and scoping based on the use of the ATM Service Providers information (e.g., SWIM)

On-going / Future Work

The following are additional efforts, organized by working group:

- **WG/A: Aeronautical Working Group**

  There will be considerable effort applied to creating and updating NOTAM related documents. The WG/A will be developing implementation guidance for those implementing NOTAMS for the Aeronautical Information Services Manual (Doc 8126). Work to propose amendments for SNOTAM and ASHTAM for PANS-AIM (Doc 10066), Annex 15 and developing amendments (exc. InsAppPro-IAP, SID/STARS).
  The team will propose amendments for Aeronautical Charts for SWIM compliance in Annex 4 and Annex 15, and develop guidance from Amendment 40, Annex 15 and PANS-AIM to support the Aeronautical Chart Manual (Doc 8697).
  Additional actions will require effort in 2024. Evaluating the need to update the AIM Roadmap, to include Digital Data Sets. Evaluate PANS-TRG Competency Framework and the need to update the Competency Framework. The team is planning to develop amendments for PANS-OPS (IAP, SID, STARS) and developing guidance for Doc 9881, from Amendment 40, Annex 15, PANS-AIM.

- **WG/I-S: Information Architecture Services**

  The work group will provide updates to the SWIM Concept Manual (Doc 10039) and SWIM Implementation Manual to address SWIM information services used for Air/Ground SWIM. PANS-IM activities include cross-panel coordination and State Letter release.

- **WG/G: Governance**

  The Governance work group will also provide PANS-IM updates to amend Information Services (IS) metadata model and update the governance chapter to reflect governance enhancements developed in 2023. Amendments and updates will also be developed for the SWIM Concept Manual (Doc 10039) and the SWIM Implementation Manual, for governance chapter updates, additional oversight, practical guidance, and proprietary rights protection.

- **IMP Technical Advisory Team:**

  There has been a significant addition to the Technical Advisory support on IMP in the last week of the year. The following are Technical Advisors, with their respective assignments.
  - Bob Lee (GXA Consulting) Tech Advisor to IMP/inter-panel coordination
  - Marko Zoricic (Boeing) Tech Advisor IMP support
  - Peter Rudolph (ASBU-4-Future) (WG/A) Leads Aeronautical Charting Focus Group
  - Michael Velasquez (Boeing) (WG/A) AIM Technical Advisor

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- Sherry Yang (Boeing) (WG-I/S, WG/G) Info Svcs/Governance Technical Advisor
- Aaron Jacobson (Boeing) (WG-I/S) Governance Technical Advisor
- Scott Roesch (Honeywell) (WG/G) Governance Technical Advisor
- Christian Pschierer (Boeing) WG/G) Governance Technical Advisor
- Ndiwa Wachina (NAVBlue) (WG/G) Governance Technical Advisor

Remotely Piloted Aircraft Panel (RPASP)

Member: Fredrik Nordström, AIRBUS

Scope

The panel's scope is IFR international flight. The main focus of the ICAO panel is to develop SARPs and guidance material in accordance to the first ideas in the RPAS manual, Doc 10019, from 2015.

Key Activities / Accomplishments:

Key Job Cards for the development of proposals are related to:

- Airworthiness (Ref: Job card RPASP.001.04)
- Command and control(C2) (Ref: Job card RPASP.002.03)
- Detect and avoid (Ref: Job card RPASP.003.03)
- Remote pilot license (Ref: Job card RPASP.004.02)
- Operations (Ref: Job card RPASP.007.02)
- ATM integration (Ref: Job card RPASP.006.03)
- Safety management (Ref: Job cards RPASP.003.03 and RPASP.007.02)
- Human in the System

With the exception of Annex 1 provisions which became applicable on 3 November 2022, all RPAS provisions have an applicability date aligned at 26 November 2026.

Challenges

In order to meet the applicability date of 26 November 2026 several steps need to be performed before (preliminary review; state consultation; final review; adoption; effective date). The preliminary review is planned to take place on 4Q 2024. Taking into consideration the need for drafting and internal (Secretariat) coordination of the ANC working paper leading to preliminary review on 4Q 2024, the last opportunity for RPASP to endorse the material would therefore be during the meeting of March 2024. This would require finalization of relevant packages, completion of intra- and inter-panel coordination, as well as submission of working papers by mid-February 2024.

At the upcoming March 2024 meeting a decision on adjustment of the applicability dates and job cards will be done.

Future work

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Definition of future work is ongoing to cover e.g. Advanced Air Mobility Study (AAM), aerodrome operations and risk-based, fit-for-purpose provisions etc.

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Advanced Air Mobility (AAM) Advisory Group Annual Summary

Chair: Brenden James Hedblom, Eve Air Mobility/AIAB

Vice-Chair: Ben Ivers, Boeing/AIA

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Summary

In 2023, ICCAIA formed an AAM Advisory Group (AG) composed of select members for the purpose of formulating official strategies and positions in support of the ICAO Advanced Air Mobility Study Group (AAM SG) and related activities. The AAM AG is responsible for the consolidation, formulation, and expression of coordinated industry positions as necessary concerning AAM.

The ICAO group aims to develop a holistic vision and framework related to AAM servicing as a focal point to AAM-related work. It is tasked with performing an assessment of the AAM ecosystem and the necessary enablers. Based on the outcome of the assessment, the AAM SG will perform a gap analysis between existing practices and the provisions that may be required, including those from ICAO. The AAM SG will develop initial guidance material and the outline of a global framework for AAM, as deemed necessary, and support ICAO's AAM strategy on future work through recommendations.

The AAM Advisory Group is not yet a full Committee of ICCAIA, since is it not supporting ICAO panels. However, as work matures, this may become necessary and will be discussed with the Strategy Committee.

2023 Highlights

2023 marked the creation and kickoff of both the ICAO AAM Study Group and the ICCAIA AAM Advisory Group founded in part to support the work under ICAO. The ICCAIA AAM AG experienced an enthusiastic level of participation from the 40+ members spanning industry globally. This level of engagement will be essential to ensure the industry perspective, which is on the leading edge of AAM, is integrated throughout the work produced by the ICAO AAM SG.

Below are the key committee meetings for both the ICAO AAM SG and the ICCAIA AAM AG.

Meeting	Date
ICCAIA AAM AG Introductory Call	4 Apr. 2023
ICAO AAM SG/1	1-5 May 2023
ICCAIA AAM AG Monthly Call – Jun	6 Jun. 2023
ICAO AAM SG/2	11-15 Dec 2023

ICAO AAM SG/1

The first meeting of the ICAO AAM Study Group was held at the ICAO Headquarters in Montreal. ICCAIA was represented by Brenden Hedblom (Member, Eve Air Mobility), Ben Ivers (Advisor, Boeing), and David Oord (Advisor, Wisk). In total, 28 Members and 15 Advisors from 15 Member states and 16 international organization attended the meeting.

Brenden Hedblom (ICCAIA) was elected as Chair and Vice-Chair, with a Term of Office ending on 31 December 2024.

The meeting focused on how the Study Group would function and the approval of the proposed Working Groups (Vision WG, sUAS & UTM WG, and Explore WG), which are defined in their respective ToR provided in Annex C. Information Papers from the Member states and international organizations on their respective AAM activity were also presented.

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ICCAIA AAM Advisors

Following the Study Group meeting, advisors were selected to participate in ICAO WG meetings, brief the ICCAIA AAM AG during the monthly meetings, and contribute to WG deliverables on behalf of the AG by facilitating comments and feedback across the ICCAIA members. The following ICCAIA members were selected as Advisors to each of the WGs.

Vision WG	sUAS & UTM WG	Explore WG
Ben Ivers, Boeing	Fabrice Ancey, Heron Tech.	David Oord, Wisk
Kristen Mineck, Inmarsat	Frederik Lehners, Wingcopter	Jia Le Koh, Skyports
Saskia Horsch, Lilium	Rob Eagles, Airbus	Leo Jeoh, State Aviation

ICAO AAM SG/2

The second meeting of the ICAO AAM SG focused on the progress made by the three respective WGs, next steps, and alignment around a cohesive schedule (provided in Annex E) defining the milestones and deliverables for the SG. During this session an additional Work Program Element (full list of WPEs provided in Annex D) and the formation of a small task force were agreed upon by the SG. The new WPE established was the Guidance material on eVTOL operations in the current ATM environment incorporated under the Guidance Development WG (renamed from sUAS & UTM WG to be more inclusive with a focus on developing guidance material). The small task force that formed was in response to the Pilot Training & Licensing Panel draft job card that was presented to the SG with implications to AAM. The small task force will focus on supporting this work through recommendations as appropriate.

Additional Highlights

Following SG/2 an election for Vice Chair to the ICCAIA AAM AG was held with Ben Ivers (Boeing), Jay Merkle (Supernal), and Marilyn Pearson (CAE) volunteering for the position. Following the ICCAIA voting process, the AG elected Ben Ivers to Vice Chair role.

Additional Advisors to the ICAO AAM SG were added following SG/2 to support the new work established. Scott Blum (Boeing) was added as an Advisor to provide additional support the Task 1.3 of the Guidance Development WG to advance the UTM Guidance Material. Jay Merkle (Supernal) was added as an Advisor to represent ICCAIA on Task 1.5 of the Guidance Development WG for eVTOL operations in the current ATM environment. Marilyn Pearson (CAE) was added to support the small task force to support and align with work from the PTLP.

Key Activities

The key activities of the ICAO AAM SG are distributed across the three WGs formed, the small task force to support the PTLP, and the coordination across ICAO necessary to ensure an aligned and harmonized approach to AAM. The key activities are supported by the full ICCAIA AAM Advisory Group through opportunities to contribute content and feedback to all ICAO AAM SG initiatives by the leadership of the ICCAIA Advisors and further supported by the Monthly ICCAIA AAM AG Meetings to provide regular briefs on the progress of the WGs and an opportunity to discuss the various topics under consideration.

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The table below provides an overview of the key activities within each of the respective WGs, which are further detailed in their Terms of Reference and the Work Program Elements provided in Annex C and D respectively.

Working Group	Key Activities
Vision WG	Develop a global and holistic vision of the AAM ecosystem with a sufficient level of detail that can serve as the basis for future work, including the Gap Analysis WPE of ICAO AAM SG and as an essential reference to support alignment across all Work Program Elements within the Study Group as well as for other ICAO Panels and Groups. A primary focus of the Vision WG going into 2024 is defining the key enablers for AAM, both in the short, medium, and long-term. These key enablers are expected to support early alignment with other WG within the SG, in particular the Guidance Material for eVTOL operations within the current ATM environment which focuses on the near-term implementation of eVTOL operations.
Guidance Development WG	**Task 1.1: Literature Search** – Establish a repository of key reference material to support the Gap Analysis, UTM Implementation Guidance, and Guidance Material on initial eVTOL operations in the current ATM environment. **Task 1.2: Gap Analysis** – Identify potential areas of improvement in ICAO model UAS regulations based on States' existing select regulation and guidance. **Task 1.3: UTM Implementation Guidance Material** – Develop a UTM implementation guidance manual to support UTM implementation globally. **Task 1.4: Lexicon** – Develop description of key terms within the ICAO AAM SG that can be used as part of the Guidance Material developed and the other WGs. **Task 1.5: Guidance Material on eVTOL Operations in the Current ATM Environment** – Develop an early implementation guidance on eVTOL operations to support Day 1 operations, leveraging existing services and the introduction of new services that will support AAM to scale safely towards the Vision.
Explore WG	The Explore WG aims to amplify the understanding, and potentially clarify, the known-unknowns as well as the unknown-unknowns of the AAM ecosystem and what will be necessary to enable AAM to scale safely. The following subgroups have been established to focus on specific areas. Subgroup 1: Automation / Autonomy / New Flight Rules Subgroup 2: Digital Information and Data Management Subgroup 3: United Nations Sustainable Development Goals Following the completion of the Working Papers of the above topics, the Explore WG will pursue additional areas of consideration to support the broader SG.
PTLP Task Force	The Task Force formed within the ICAO AAM SG to support the PTLP intends to provide continuous support and guidance necessary for eVTOL aircraft and respective operations to ensure industry knowledge and requirements are considered accordingly.

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In addition to the key activities of the respective WGs, the ICAO AAM SG Leadership has also established quarterly alignment meetings with the Panels within ICAO that are actively working on items considering AAM. At the moment, this includes the RPASP and VFIWG leadership. If and when other Panels within ICAO establish Job Cards related to AAM the intention is for those leads to also join the quarterly alignment calls.

Challenges

A few challenges presented themselves during the first year of the ICAO AAM SG and ICCAIA AAM.

1) Coordination across the various ICAO Panels and Advisory Groups was identified as a top concern by the SG. As the breadth of scope for AAM is far reaching, the other established groups naturally view elements of it as their responsibility. However, the established panels and groups see only a component of AAM influenced through the lens of their respective subject matter and not the holistic view. Instances of panels advancing work on AAM was seen through the formation of the Vertical Flight Infrastructure WG (VFIWG) under the Aerodrome and Operations Panel (ADOP) to look at vertiports and the draft job card of the Pilot Training and Licensing Panel (PTLP) related to emerging technologies. The ICAO AAM SG drafted a matrix for internal use to map out areas across ICAO that require intense collaboration as well as a reoccurring leadership call with the RPASP and VFIWG to support alignment.

2) The ICCAIA AAM AG is large with over 40 participants. With size of the AG not all members are able to be formal advisors to the SG. The challenge then becomes how to encourage participation and ensure all members can contribute to the work across all initiatives. This is currently being managed through Advisors prioritizing their effort in specific WGs and subtasks serving as a lead for that particular area by providing updates on the Monthly Meeting and facilitating contributions.

3) The timeframe of the ICAO AAM SG is ambitious and will require a lot of effort and contributions from people who have other responsibilities they will need to prioritize. While much of 2023 was focused on establishing and aligning around a plan and scope of work, 2024 will focus on the execution and delivery of key work packages. A slowdown in development has already been seen in the Guidance Development WG (previously the sUAS and UTM WG) where the development of the UTM Framework Guidance Material is progressing more slowly than initially planned. Simultaneously, the ICAO AAM SG emphasized the importance of not sacrificing quality in order to deliver a rushed product.

4) AAM will not only require advancements in technology but also in how the aviation community approaches problems. This will require ICAO AAM SG members that come with a more conventional aviation mindset to think more broadly about the approaches that can be adopted to implementing and scaling AAM safely. It will largely be the responsibility of ICCAIA to push the ICAO AAM SG to adopt the more innovative approaches necessary to enable AAM to scale safely as the primary industry representative.

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Future Work

The activities planned for 2024, captured in the Program Schedule provided in Annex E, focus on the deliverables across the three Working Groups.

The Vision WG intends to have a final document prepared and submitted for review by the November deadline for Working papers ahead of the fourth meeting of the SG. Given the challenges described, it may prove difficult to have a final version of the Vision document, but a mature draft should at least be achievable. The Vision WG planned to have an initial draft completed by the third meeting of the SG but with the limited time before the next session, the focus of the Working Paper is likely to focus on key areas that will make up the document as opposed to a complete initial draft to review.

The Guidance Development WG is being pushed to finalize the UTM Guidance Material as soon as possible, ideally by the third meeting of the SG, as this was considered the first deliverable to come out of the SG and relatively straightforward as it is building off the work conducted by the UAS Advisory Group, which has since concluded. The schedule initial targeted the completion of this deliverable by SG/3 but this is unlikely and will most likely be completed prior to SG/4 in December of 2024.

The Guidance Development WG is also tasked with the completion of the Guidance Material for eVTOL operations in the current ATM environment by the end of 2024. However, as this Working Group was just formed, it remains unclear how attainable this deliverable will be within 2024, but significant progress should be made to advance the respective guidance material.

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Annex – Work Program Elements

AAMSG.001.01	**Support the Secretariat to develop a holistic vision and framework related to AAM**				
Source of the main task	AAM SG ToRs dated 30 November 2022				
Description	The overall objective of the AAM SG is to support the Secretariat in developing a holistic vision and framework related to AAM in order for the Secretariat to adequately advise ICAO's governing bodies.				
Work Programme Element	**Deliverable/action**	**Description of the deliverable/action**	**WPE responsible**	**Status**	**Delivery**
001.A	Support the Secretariat in developing a holistic vision and framework related to AAM.	Provide the Secretariat with continuous information and recommendations related to AAM.	AAM SG	*Continuous*	n/a

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AAMSG.002.01	**Serve as a focal point for ICAO AAM-related work with the aim of ensuring global interoperability and harmonization**				
Source of the main task	AAM SG ToRs dated 30 November 2022				
Description	The study group serves as a focal point for ICAO AAM-related work, ensuring that while development work may be undertaken by different ICAO expert groups, a single group develops an overall understanding of AAM across the Organization.				
Work Programme Element	**Deliverable/action**	**Description of the deliverable/action**	**WPE responsible**	**Status**	**Delivery**
002.A	Monitor ICAO's expert groups work related to AAM.	Continuously monitor the work of appropriate expert groups and consider the need to establish liaison in order to obtain information from the expert groups.	All AAM SG active WGs.	*Continuous*	n/a
002.B	Act as a focal point.	Consider the work of other expert groups related to AAM in order provide appropriate guidance to those groups to ensure global harmonization and interoperability of AAM.	AAM SG.	*Continuous*	n/a

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AAMSG.003.02	**Perform an assessment of the AAM ecosystem**				
Source of the main task	AAM SG ToRs dated 30 November 2022				
Description	The scope of AAM is intrinsically wide, considering that AAM is neither an aircraft type or a self-contained technology, but rather a new ecosystem composed of many components that will interface with each other, as well as with legacy aviation components and systems. Therefore, a deep understanding of not only the different components of the AAM ecosystem, but also the interaction and interdependencies of all those components with each other is crucial to identify gaps within ICAO provisions. That will require the study group to address the gaps and develop an AAM strategy and associated recommendations for future ICAO work.				
Work Programme Element	**Deliverable/action**	**Description of the deliverable/action**	**WPE responsible**	**Status**	**Delivery**
003.A	*Global and Holistic Vision of the Advanced Air Mobility (AAM) Ecosystem document*	Describe, with a sufficient level of detail the AAM services and its operations from a global perspective, potentially using the maturity and risk-based approach. This document will be comprehensive enough to perform the gap analysis and serve as a reference for future work related to AAM.	VISION WG	Open	Nov 2024
003.B	Ensure that working groups fully consider new paradigms and approaches, where necessary.	When deemed necessary, challenge deliverables and assumptions emanating form WG.	All active WG and the AAM SG plenary.	Continuous	*n/a*

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003.C	Exploratory work.	Explore matters that are known to be critical for AAM to be realized with the aim to better frame those within the AAM context, including, *inter alia*: • autonomy and automation, and its impact on the role of the pilot; • flight rules; • digital information and data management; and • AAM considerations supporting United's Nations SDG's.	EXPLORE WG	Open	May 2024

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AAMSG.004.02	**Perform a gap analysis between existing practices, ICAO provisions and what might be required from ICAO**				
Source of the main task	AAM SG ToRs dated 30 November 2022				
Description	On the basis of the *Global and Holistic Vision of the Advanced Air Mobility (AAM) Ecosystem* document, and potentially, the early outcomes of the exploratory work, a gap analysis will need to be performed. This gap analysis will form the basis for recommendations on an AAM strategy and future ICAO work on AAM.				
Work Programme Element	**Deliverable/action**	**Description of the deliverable/action**	**WPE responsible**	**Status**	**Delivery**
004.A	UAS implementation guidance gap analysis	Based on existing ICAO guidance, and existing regulatory material from States, identify the gaps in terms of guidance material for States to implement a UAS regulatory framework, and propose recommendation for guidance material development.	Guidance Development WG	Open	May 2024
004.B	*Gap analysis*	*To be described at later stage on basis of the description of the Global and Holistic Vision of the Advanced Air Mobility (AAM) Ecosystem document and other deliverables.*	*TBD*	*Pending WPE 003.A and 003.B early conclusions, or completion.*	*TBD*

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AAMSG.005.02	**Develop initial guidance material and the outline of a global framework**				
Source of the main task	AAM SG ToRs dated 30 November 2022				
Description	Guidance material is critical to support implementation globally. It is a common ICAO practice for novel subjects to be initially considered in implementation guidance material, while being matured.				
Work Programme Element	**Deliverable/action**	**Description of the deliverable/action**	**WPE responsible**	**Status**	**Delivery**
005.A	UTM implementation guidance.	Based on the UTM framework, the current developments, deployments and implementation experience, develop a UTM implementation guidance manual to support UTM implementation globally.	Guidance Development WG.	Open	May 2024, or as soon as possible after AAM SG/3
005.B	Outline and concept of the regulatory framework.	Develop the outline and concept of the regulatory framework in support of AAM, as deemed necessary.	*To be determined at a later stage.*	*n/a*	*To be determined at a later stage.*
005.C	Monitor and identify, guidance material to be developed.	Monitor and identify the need for – early – guidance material for AAM to be developed, as work progresses.	AAM SG and all AAM SG active WGs.	Continuous monitoring	As soon as deemed necessary

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005.D	Guidance material on eVTOL operations in the current ATM environment	Develop an early implementation guidance on eVTOL operations in the current ATM environment	Guidance Development WG.	Open	Dec 2024

AAMSG.006.01	**Develop recommendations for an AAM strategy and future work**				
Source of the main task	AAM SG ToRs dated 30 November 2022				
Description	ICAO will need to develop an AAM strategy and agree on the future work related to AAM. The AAM SG will provide the Secretariat with critical input to inform the preparation of the strategy and future work.				
Work Programme Element	**Deliverable/action**	**Description of the deliverable/action**	**WPE responsible**	**Status**	**Delivery**
006.A	Recommendations for an AAM Strategy.	As work progresses, identify early and intermediate recommendations that need immediate action. A list of recommendations for an ICAO AAM Strategy.	AAM SG and all AAM SG active WGs	Open.	As soon as deemed necessary
006.B	Recommendations for future work.	As work progresses, identify early and intermediate recommendations that need immediate action. A list of recommendations for an ICAO future work related to AAM..	AAM SG and all AAM SG active WGs.	Open	As soon as deemed necessary

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