MINUTES OF RTCA SC-223 (PLENARY #34) / EUROCAE
WG-108 (MEETING #11) / JOINT MEETING #6
“Internet Protocol Suite (IPS) and AeroMACS”

Date: September 30 – October 4, 2019
Time: 9:00am – 5:00pm, Monday – Thursday
       9:00am – 12:00pm, Friday
Hosted by: The Boeing Company
Venue:
Boeing Flight Services Training Center
Conf Room 11C9/757
1301 SW 16th Street Renton,
Washington 98055
Lobby: 1-206 662 3422
Contact:
Michael Vanguardia – Boeing
michael.r.vanguardia@boeing.com
Rebecca Morrison, Program Director, RTCA
(202) 330-0654 or rmorrison@rtca.org
Adrian Cioranu, Technical Program Director, EUROCAE
+33 1 49 46 19 72 or adrian.cioranu@eurocae.net

Attendees:

<table>
<thead>
<tr>
<th>Name</th>
<th>Role</th>
<th>Affiliation</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>d'Humières, François</td>
<td>Member</td>
<td>FREQUENTIS A.G.</td>
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<tr>
<td>Dlouhy, Ron</td>
<td>Member</td>
<td>Collins Aerospace</td>
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<td>Drášil, Pavel</td>
<td>Member</td>
<td>Honeywell International, Inc.</td>
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</tr>
<tr>
<td>Name</td>
<td>Role/Position</td>
<td>Organization/Office</td>
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<tr>
<td>Graefe, Jonathan</td>
<td>Member</td>
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<tr>
<td>Vaughn, Maiolla</td>
<td>Member</td>
<td>International Civil Aviation Organization</td>
<td>WebEx</td>
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<tr>
<td>Morrison, Rebecca</td>
<td>Manager</td>
<td>RTCA, Inc.</td>
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<tr>
<td>Nisbet, David</td>
<td>Member</td>
<td>Thales Group</td>
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<td>Nguyen, Lee</td>
<td>Member</td>
<td>Federal Aviation Administration (FAA)</td>
<td>WebEx</td>
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<tr>
<td>Pelleschi, Stephane</td>
<td>WG-108 Chair</td>
<td>Collins Aerospace</td>
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<tr>
<td>Phillips, Brent</td>
<td>Government Authorized Representative</td>
<td>Federal Aviation Administration (FAA)</td>
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<td>Popescu, Liviu</td>
<td>Member</td>
<td>EUROCONTROL</td>
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<td>Rossi, Nicolas</td>
<td>Thales</td>
<td>Guest</td>
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<td>Roy, Aloke</td>
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<td>Solery, Michel</td>
<td>Member</td>
<td>DSHA-DTI</td>
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<td>Tamalet, stéphane</td>
<td>Member</td>
<td>Airbus</td>
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<tr>
<td>Vanguardia, Michael</td>
<td>Member</td>
<td>The Boeing Company</td>
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<tr>
<td>Xu, Xiangyu</td>
<td>Member</td>
<td>Thales Group</td>
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<tr>
<td>Zeng, Dongsong</td>
<td>SC-223 Secretary</td>
<td>The MITRE Corporation</td>
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**AGENDA**

1. Welcome, Introductions, EUROCAE and RTCA Policy Statements, Administrative Remarks
2. Review and approve the Agenda
3. Review of previous meeting notes and action items
4. Review of Current State of Industry Standards
   a. ICAO WG-I
   b. AEEC IPS Sub Committee
   c. Alignment of ICAO, RTCA/EUROCAE, & AEEC timelines and dependencies
5. Current State of Activities
   a. SESAR Presentation
   b. ESA IRIS
   c. ICAO TFSG update
   d. Any Other Activities
6. Aviation IPv6 Address Framework and Extended Port Number Reservation
7. IPS MASPS Development
   a. Scope and Methodology of MASPS
Agenda Items 1. Welcome, Introductions, EUROCAE and RTCA Policy Statements, Administrative Remarks

Aloke Roy, Chair of SC-223, and Stephane Pelleschi, Chair of WG-108, welcomed the participants. Rebecca Morrison, Program Director, RTCA, presented the RTCA/EUROCAE policy statements.

Agenda Item 2. Review and approve the Agenda

The group reviewed and approved the meeting agenda.

Agenda Item 3. Review of previous meeting notes and action items

The group approved the SC-223 P32 meeting minutes and updated the status of action items.

Action Item P34-1: Rebecca Morrison to provide an initial MASPS authors list based on SC-223 roster and the group will review and determine the final authors list at the completion of the MAS development.

Action Item P34-2: Rebecca Morrison to provide instructions of change proposals on the Profile standard.

Agenda Item 4. Review of Current State of Industry Standards

4a. ICAO WG-I

Liviu Popescu, EUROCONTROL, updated the group on ICAO WG-I activities (see DCIWG WG-I Internetworking overview v0.2.pptx for more details).

- WG-I activities are supporting the work areas defined by CP/DCIWG
  Job Card CP-DCIWG.006.02 - Provisions on the exchange of information using the aeronautical telecommunication network over the internet protocol suite
  Job Card CP-DCIWG.007.03 - SARPS and guidance on Air Navigation (Cyber) Security.
- Main Deliverables:
Annex 10 / IPS SARPS
- ICAO DOC 10090: Manual of Security Services for Aeronautical Communications
- ICAO DOC 10095: Manual of Public Key Infrastructure (PKI) Policy for Aeronautical Communication

- Under consideration for DCIWG-3 (October 2019) meeting approval
  - Security Risk Assessment for Aeronautical Communications

- WG-I identified as priorities for the development of ATN/IPS, the ATN/IPS Security and the ATN/IPS Mobility including the support of Multilink operations.
  - To better focus on its priorities, WG-I set-up two subgroups:
    - WGI IPS Security Subgroup lead by FAA
    - WGI IPS Mobility Subgroup lead by INMARSAT

WG-I plans to complete all IPS standards development work by the end of 2020 and publish the standards by the end of 2022.

4b. AEEC IPS Sub Committee

Stephane Pelleschi, Collins Aerospace, provided an update on AEEC IPS subcommittee. AEEC IPS is now progressing on the development of ARINC 858 document. AEEC IPS plans to collaborate with ICAO, RTCA and EUROCAE to figure out how to organize different IPS topics into different standard documents.

4c. Alignment of ICAO, RTCA/EUROCAE, & AEEC timelines and dependencies

To better facilitate the coordination between ICAO, RTCA/EUROCAE and AEEC, joint meetings are planned for late 2019 and early 2020.

David Robinson, Inmarsat, asked the group what are the security requirements that satellite subnetworks should meet in order to support IPS.

Action Item P34-3: Alok Roy and David Robinson to initiate ISRA between SC-222 and SC-223.

The group discussed the AEEC “A658-Section5_IPS Roadmap,” provided by Rebecca Morrison. Stephane Pelleschi, Collins Aerospace, brought to the group’s attention that the schedule of VDL2 standards update for IPS support may slip to 2023. The group believes that the VDL2 IPS support standardization should be completed by 2022 in order to support IPS deployment schedule.

Action Item P34-4: Alok Roy to coordinate with SC-214 on ISRA between SC-214 and SC-223.

Agenda Item 5. Current State of Activities

5a. SESAR FCI update
François d’Humières, Frequentis, presented an update on SESAR 2020 PJ14-02-04 FCI technical validation (See SESAR2020_PJ14.02.04_FCI_validation_results_v2.pdf for more details).

The key objectives of FCI validation include:

- Evolution of the SESAR1 concept of operations to support future service concepts such as multilink, ATN/IPS, mobility and trajectory-based operations with sector-less voice communications,
- Create technical architecture, FCI requirements, and data link gateway interface documents,
- Development and verification of prototypes,
- Address transversal topics including security, safety, and civil-military interoperability, and
- Support to standardization activities.

The validation is planned to be carried out in two waves: Wave 1 from Q2 2018 to Q3 2019, and Wave 2, from Q4 2019 to Q4 2022. By the end of Wave 1, the technology readiness is expected to be TRL4. Figure 1 shows an overview of the validation plan.

Figure 1. SESEAR FCI Validation Plan Overview

PJ14-02-04 will reach TRL4 for the main enabler CTE-C04 FCI - ATN/IPS and Multilink by end of 2019. The solution validated the integration of other related system enablers (SWIM and ATN B1 applications). And it fulfils the essential operational Use Cases of the FRD – including backward compatibility with OSI. PJ14-W2-77 will aim to achieve TRL6 by further validating performance aspects and testing the solution in a larger and more realistic environment.

5b. ESA IRIS

No update was reported on ESA IRIS.
5c. ICAO TFSG update

ICAO Air Navigation Commission formed a Trust Framework Study Group (TFSG) to develop a globally harmonized aviation trust framework of a resilient aviation network. TFSG has three working groups: global resilient aviation interoperable network (GRAIN), current and future operational needs (CAFON) and digital identity working group (DIWG).

5d. Any Other Activities

No other activities were reported.

**Agenda Item 6. Aviation IPv6 Address Framework and Extended Port Number Reservation**

Aloke Roy, Honeywell, presented his aviation IPv6 address framework information paper (IPS-Addressing-Framework-ARoy-080119.docx) and port number reservation information paper (IPS-Port-Number-Reservation-ARoy-072319.docx). The group reviewed both papers and made a couple of suggestions for improvement.

**Action Item P34-5**: Rebecca Morrison and Aloke Roy to coordinate with RTCA WAIC on aviation IPv6 address framework.

**Action Item P34-6**: Aloke Roy to update IPv6 address format paper, changing platform type to type, changing type bits from 2 to 4, changing subnet ID to 10 bits.

**Action Item P34-7**: Aloke Roy to work with Liviu Popescu to identify the process of administration and maintenance of IPv6 addresses.

**Agenda Item 7. IPS MASPS Development**

**Decision 1**: The group decided to wait for initial ICAO WG-I SRA results until May 2020, and meanwhile the group expects periodic updates by WG-I on the SRA progress.

Stephane Tamalet, Airbus, presented his MASPS development process slides (Thoughts on IPS MASPS development methodology.pptx). Based on this process, Stephane Pelleschi, Collins Aerospace, further assigned each section to certain member(s). The detailed assignments are documented in the spreadsheet “MASPS development progress V2.xlsx”.

**Action Item P34-9**: Members to complete the assigned MASPS sections by next meeting, as assigned in the MASPS progress spreadsheet.

The group also discussed the following input papers:

- “Inputs for MASPS.docx,” provided by Stephane Pelleschi,
- “15.02.04- D04 - QoS and Classes of Service_dissem.pdf,” provided by Stephane Tamalet,
- “SESR2020_PJ14_2_4_D5_1_020_1_Initial_Concept_Description_v00 01 02 (1_0).pdf,” provided by Stephane Tamalet,
- “IP02 Security Risk Assessment.doc,” provided by Rebecca Morrison,
- “IPS OSED Outline draft3.docx” provided by Dongsong Zeng
- “ISRA Instructions 06-19-2013 - PMC Approved.pdf,” provided by Rebecca Morrison.
Decision 3: The group agreed to limit plenary discussions to one or two days at the face-to-face meeting and reconvene as working group for the rest of the week. Security risk discussion will be held in working group sessions. Agreed to keep all security related information on a RTCA protected workspace with restricted access to security members only.

Decision 5: The group appointed Stephane Pelleschi as the editor of the MASPS document.

Action Item P34-8: Alok Roy to work with PMC to create a special workspace for security information papers storage.

Action Item P34-10: Alok Roy and Liviu Popescu to bring IPS transition and deployment strategy to ICAO DCIWG and request feedbacks from stakeholders of member states.

The latest MASPS draft by the end of the meeting is saved on the RTCA workspace with file name “WG108 SC223 MASPS_Oct 3rd.docx”.

Agenda Item 8. Any Other Topics of Interest
Rebecca Morrison, RTCA, reported that IEEE P1920 submitted a request to RTCA/EUROCAE of referencing IPS Profile standards (i.e., DO-379/ED-262) in their standard development.

Decision 2: The group agreed that we should encourage IEEE P1920 to reference our IPS Profile standards.

Rebecca Morrison, RTCA, presented RTCA sMOPS (scalable MOPS) concept slides, which can make the MOPS structure flexible. In the sMOPS concept, a Special Committee wanting to create a scalable MOPS would be responsible for tailoring the drafting guide. PMC approval would be necessary to proceed with the tailored content. Regulatory Authorities would need to incorporate the tailoring in their plans for TSOs, ACs, or other documentation. Integrators and TC/STC holders would need to be aware of the consequences of the scaling.

Decision 4: The group assessed the proposed sMOPS and agreed that IPS standard will remain in the course of MASPS development although the benefits of sMOPS may be realized in other environments. The committee may propose customization to the MASPS outline to the PMC in the future.

Agenda Item 9. Plans for Next Meetings
- Joint SC-223 P35 / WG-108/AEEC meeting, December 9 - 13, 2019, EUROCONTROL, Brussels (Inform Liviu before December 1 if you plan to attend).

Agenda Item 11. Review of Action Items and Meeting Summary
Dongsong Zeng, The MITRE Corporation, presented the out-briefing (SC-223 P33_WG-108 Meeting OutBriefing_Oct_2019.pptx) which summarizes the decisions and action items that were made during this meeting. The work group reviewed and agreed on the out-briefing.

Agenda Item 12. Adjourn when plenary business is complete
The meeting adjourned around 12:00 PM, October 4, 2019.

**List of Action Items**

<table>
<thead>
<tr>
<th>Action Item #</th>
<th>Action Content</th>
<th>Responsible</th>
<th>Due Date</th>
<th>Status</th>
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<tbody>
<tr>
<td>P29-2</td>
<td>Reach out to SC-228 to verify whether IPS will be used by C2 link</td>
<td>Alok Roy</td>
<td>Dec. 3, 2018</td>
<td>12/10/2018 – done. The dependency is still to be defined. 3/25/2019 – keep it open. 6/17/2019 – keep open. 9/30/2019 – Closed. Yes. IPS is recommended by SC-228 for C2 Link BLOS use cases. Any potential extensions by WG-105 will be on case by case basis.</td>
</tr>
<tr>
<td>P32-1</td>
<td>Update the Profile to include all FRAC/OC resolutions and Rebecca to distribute the file to the group</td>
<td>Dongsong Zeng</td>
<td>April 8, 2019</td>
<td>4/24/2019 – Done and closed</td>
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<tr>
<td>P32-2</td>
<td>Work out a consented resolution on row reduction in Appendix B-6 RFC 2597 detailed profile</td>
<td>Alok Roy and Stephane Tamalet</td>
<td>April 1, 2019</td>
<td>4/24/2019 – Done and closed</td>
</tr>
<tr>
<td>P32-3</td>
<td>Review the updated Profile to make sure all FRAC/OC resolutions are correctly executed</td>
<td>All members</td>
<td>April 1, 2019</td>
<td>4/24/2019 – Done and closed</td>
</tr>
<tr>
<td>P32-4</td>
<td>Update the MASP schedule and draft corresponding TOR revision</td>
<td>Stephane Pellieschi and Alok Roy</td>
<td>June 17, 2019</td>
<td>6/17/2019 – keep open 9/30/2019 – Done. The TOR has been approved by PMC and TAC.</td>
</tr>
<tr>
<td>P32-6</td>
<td>Resolve Alistair’s comment</td>
<td>Alok Roy</td>
<td>April 1, 2019</td>
<td>4/24/2019 – Done and closed</td>
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<tr>
<td>P32-7</td>
<td>Members who were assigned to work on specific MASP sessions will start to develop the corresponding MASP annexes</td>
<td>Assigned Members</td>
<td>June 17, 2019</td>
<td>6/17/2019 – keep open</td>
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<tr>
<td>P33-2</td>
<td>Schedule a telecon to advance IPS security risk assessment.</td>
<td>Madhu Niraula</td>
<td>Sept. 30, 2019</td>
<td>9/30/2019 – Closed. Vic Patel will lead this activity. A telecon with ICAO WG-I SSG is planned on Nov 8, 10AM EST.</td>
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<td>Dec. 9, 2019</td>
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-S-
Dongsong Zeng
Secretary

CERTIFIED as a true and accurate summary of the meeting.

- S-
Alok Roy
SC-223 Chairman

- S-
Stephane Pelleschi
WG-108 Chairman