



RTCA No. 296-19/SC216-102  
EUR No: EUR 315-19 / WG72-134



Washington, 9 January 2020  
Saint Denis, 9 January 2020

**RTCA SC-216 joint Meeting #45 / EUROCAE WG-72 Plenary Meeting #55**  
**“Aeronautical Systems Security”**  
**Plenary Minutes**

|                                      |  |
|--------------------------------------|--|
| <b>Date</b><br><i>(all sessions)</i> | <b>Tuesday 19 to Friday 22 November 2019</b><br>9:00 am – 5 pm |
| <b>Place</b>                         | <b>RTCA</b>  |
| <b>Venue</b>                         | 1150 18th St NW, Washington, DC 20036                          |
| <b>Hosted by</b>                     | <b>RTCA</b>  |

**Attendance:**

Both RTCA SC-216 and EUROCAE WG72 members participated in this meeting as joint committee.

The following is the attendance list. Online attendance is indicated with a (\*).

| <b>Contact</b>         | <b>Organisation</b>                      |
|------------------------|--|
| Steven Bates           | Panasonic                                |
| Andy Boff*             | Helios                                   |
| Ernie Condon           | National Institute for Aviation Research |
| Frederique Dauvillaire | Thales Group                             |
| John Flores*           | Federal Aviation Administration          |
| Joacy Freitas*         | ANAC-Brazil                              |
| Mike Gahn              | Rolls Royce                              |
| Raoufou Ganiou*        | Transport Canada                         |
| Cesar Gomez            | Federal Aviation Administration          |
| Clive Goodchild*       | BAE Systems (WG-72 Secretary)            |
| Todd Gould             | The Boeing Company                       |
| Elena Gromova*         | GOSNIIAS                                 |
| Judicael Gros-Desirs   | Airbus SAS                               |
| Anna Guégan*           | EUROCAE (WG-72 TPM)                      |
| Ed Hahn                | Air Line Pilots Association              |
| Brian Hoffman          | Air Line Pilots Association              |
| Karan Hofmann          | RTCA, Inc. (SC-216 PD)                   |

|                       |  |
|-----------------------|--|
| Owen Jing*            | Department of National Defence (Canada)    |
| Mark J Kelley         | AVISTA                                     |
| Varun Khanna          | Federal Aviation Administration            |
| Marcus Labay          | Federal Aviation Administration            |
| Laurent Leonardon*    | Collins Aerospace                          |
| Philippe Marquis      | Dassault Aviation                          |
| Sam Masri             | Honeywell International (SC-216 Secretary) |
| Patrick McTernen*     | American Airlines                          |
| Kevin Meier*          | Cessna Aircraft Company                    |
| Eric Mok*             | Universal Avionics                         |
| Aleksandar Momiroski* | EUROCONTROL                                |
| Patrick Morrissey*    | Collins Aerospace                          |
| Ravi Nori             | Teledyne Controls LLC                      |
| Ted Patmore           | Delta Airlines                             |
| Mark Perini*          | Honeywell International                    |
| David Pierce          | GE Aviation Systems US (SC-216 Chairman)   |
| Cyrille Rosay*        | EASA (WG-72 Chairman)                      |
| Silva Rosemberg*      | ANAC                                       |
| Chuck Royalty*        | Aerospace Systems Cyber Security           |
| Stefan Schwindt*      | GE Aviation Systems UK                     |
| Charles Sheehe*       | NASA                                       |
| Zhang Shuang*         | AVIC- ACTRI                                |
| Peter Skaves          | Federal Aviation Administration            |
| Brittany Skelton      | The Boeing Company                         |
| Marta Skomin          | Triumph                                    |
| Kris Smith            | Triumph                                    |
| Casey Theisen         | United                                     |
| Lirong Tian*          | AVIC – ACTRI                               |
| Mitch Trope           | Garmin                                     |
| Kai Florian Tschakert | Lufthansa Technik AG                       |
| Mohammed Waheed       | Aviage                                     |
| Adrian Waller*        | Thales Group                               |
| Philip Watson         | Panasonic Avionics Corp.                   |

SC-216/WG 72 Committee meetings were held at RTCA Headquarters in Washington DC and by Webex. The meetings were used to discuss multiple topics as outlined below. Both RTCA and WG72 members participated in these meetings as joint committee.

## **Tuesday, November 19, 2019 (SG3 – DO-355A/ED204A)**

Welcome was given by Ms. Karan Hofmann.

Introductions conducted. The RTCA and EUROCAE IPR and Policy statements were displayed and read through by Ms. Karan H. and Ms. Anna G. and were accepted by the participants and recorded in minutes.

Chairman of the SC-216 committee, Dr. Dave Pierce went over the agenda and proposed setting a goal of possibly getting the ED-204A/DO-355A document ready for FRAC this week.

Mr. Mark Kelly presented ED-204A/DO-355A comments and resolutions. To preserve time, Mark covered items that have not yet been addressed.

Section 2.1, Airborne SW, Boeing provided comments on the section and proposed adding anti tampering as a cyber security capability and a security measure to minimize the risk of reverse engineering. The proposal was to apply such measure for a DAL D SW and above. Mr. Varun Khanna/ FAA agreed that reverse engineering risk is a risk that needs to be addressed. He mentioned that the SC provided the framework and requirements for multi layered cyber security protection.

A discussion about requiring data-loaders to have a signature checking capability - Signature checking can be added to secure data loaders for legacy aircrafts but there are no SCs for legacy aircraft.

Another discussion about using confidentiality as a criterion if a disclosure can have a safety effect - Secure links can be used on external part of the distribution to address confidentiality. MFA and use of strong access control can also be used. Private Key and assurance levels could also be used.

Another discussion about using the word “detect” as in aircraft detecting cyber-attack. Most members believed this would be impossible now. Logging failures can be done, but detection would be hard to do. Currently, failures are reported.

Section 12.4.4.2 can be moved to ED-XXX and referenced in this document. This info is important for the operator. An action to get the paragraph updated was noted.

A member alerted that a new ICAO document on how to develop a good PKI

Boeing sees DO-355 as applicable outside the aircraft.

A need to further proof the document was identified.

All comments will be resolved for FRAC

## **Wednesday, November 20, 2019 (SG3 ISEM in AM / SG4 in PM)**

### **AM Session-SG4**

Mr. Ted Patmore went over the history of progress of the document development efforts and noted that the document covers systems that are outside the aircraft. Draft was put together. It has some missing parts. There is a need to review the TOC to identify missing parts. Mr. Patmore consolidated comments and presented them in a comprehensive table. Some of the comments were discussed.

Mr. Judicael Gros-Desirs asked to ensure no duplication of efforts between two editors (EU and US). Mr. Gros-Desirs presented the safety event management process at Airbus. Slides will be available on sharepoint. Discussions opened on the problem of over classification of security documents. The subject of how do we classify security issues was discussed. The threshold of reporting is another subject that needs to be looked at. A question was brought up on whether security logs and data bases are analysed. Not all systems need monitoring in the field. Consider all your products/assets. Currently, no requirements for such monitoring in guidelines.

Discussions to possibly update or make a better version of CVSS. CVSS should not be used as the only scoring/evaluation criteria. Other criteria must be used. Airbus is investing in tooling to help determine scoring. CVSS can be tailored for the aviation industry.

#### **PM Session-SG4**

Mr. Clive Goodchild recapped progress and presented actions from last meeting. At present only comments received from Dr. Pierce and Mr. Claudio De Castro.

Section 2 has been restructured to align with Section 3, and Mr. Goodchild has re-mapped the existing comments in the comment sheet into their new locations. Document v0.5 on the EUROCAE workspace has this restructuring applied.

Mr. Goodchild requests that future comments are made via the spreadsheet (ordered by section number) in order to defend against conflicting comments and to maintain comment linking across restructuring.

Input has been received from John Flores and via EASA STORM from the attempted use of some of the templates. A new section has also been contributed by Claudio covering acronyms and abbreviations.

With the retirement of Peter D, new section leads for Section 2.1/3.1 and 2.3/3.3. For consistency, it was suggested that the new lead of Section 2.1/3.1 should be familiar with ISEM/ED-xxx development.

Next steps for development are to complete the outstanding Section 3 subsections and develop Section 2 to align. The intent is for Section 2 to be introductory matter to introduce the principles that are used in Section 3. Section 3 needs to provide the AMC content for EASA Part-AISS, and needs to be clear on the extent of AMC and Guidance Material.

Some of the current content in Section 2.4 Risk Assessment needs to be moved into Section 3, as per comment received from Dr. Pierce. The use of Level of Threat needs to be made consistent.

Section 1 of the document will also require development, and the entire document reviewed for language consistency in light of moving from guidance material in ED-201 to AMC material in ED-201A.

We have received feedback on Appendix B content via STORM. Going forward, STORM will be joining with the regulatory group. The next meeting is scheduled in Jan.

Appendix D assurance content will be kept in ED-201A, however some additional high-level content regarding the mapping between air and ground is required. There is a dependency here on the ED-205A revision containing assurance aspects. As RTCA do not intend to issue an ED-205 joint document, this reference needs to be indicative and not essential.

ED-201A is not expecting to be covering every aspect of AMC for Part-AISS. The document will remain agnostic of ISMS implementation, and hence will only advise the need to consider confidentiality of information, and of maturity modelling. The specifics of implementation are outside the scope of ED-201A.

An objective of the next meeting in Jan is to determine the elements of Part-AISS AMC which are outside of scope for ED-201A and need to be supported by alternative standard(s).

An area of concern is possible dependence on SAE supply chain activities. EUROCAE has agreed cooperation with SAE, however RTCA does not. This may cause a disconnect. SS is currently investigating the implications of this and is optimistic of resolution this calendar year.

No volunteers to take on the ownership of Section 2.1/3.1 and 2.3/3.3 were identified during the meeting.

Section Ownership:

Here is a list of current section leads:

Section 2.1 / 3.1: Owner TBD (previously P Davis)

Section 2.2 / 3.2: C Goodchild

Section 2.3 / 3.3: Owner TBD (previously P Davis)

Section 2.4 / 3.4: P Marquis

Section 2.5 / 3.5: C Goodchild

Request was made for the following actions:

- 1) Request RTCA/EUROCAE SC-216 committee members review section 3 onwards.  
To be complete by 10th Dec.
- 2) Action for section leads to update Section 2 content. Due by 31st Dec
- 3) Action for section leads to update Section 3 content based on comments received. To start 10th Dec onwards
- 4) C Goodchild – provide updated draft to Section 1. Complete by 14th Jan.

Next Meeting:

17th Jan 2020, Following STORM meeting in Brussels

Initial Agenda:

- 1) Feedback from STORM meeting
- 2) Agree the AMC and GM material

### **Thursday, November 21, 2019**

The meeting was dedicated to the ISEM document. A question was raised about moving forward with identifying gaps in the ISEM document. The idea is to have a draft presented at the March 2020 meeting. A question about if the FAA special condition identify domain or domain boundaries. Mr. Varun Khanna said that the event should be about the function and the effect of the intrusion on the aircraft. No security event should cause or prevent the aircraft from being able to safely land. The FAA rule will not mention domains and boundaries. The means of compliance (The DO documents) talks about the aircraft domain.

Mr. Patmore added that we should protect critical software.

The focus of the document is event management. Event detection was discussed. Event detection should look at all events and all events should be assessed.

Using domain as a criterion is not the perfect solution. We should also use criticality.

Mr. Marquis took an action to write a paragraph that will better clarify detect/domain section

Mr. Gros-Desirs has the action to provide a picture and some text to add to section 1 to solve one of the comments. (Pic of the entire Aircraft eco system)

Mr. Patmore will add a section describing the structure of the document and update the title of section 1.3 to "Structure of Document".

Pilot association presented a proposal to add real time cyber scanning, detection and warning to allow the pilot to react to a cyber event. Industry consensus was that failures are already reported.

### **Friday, November 22, 2019 (Plenary)**

Welcome and Introductions conducted. The RTCA and EUROCAE IPR and Policy statements were displayed and read through by Ms. Karan H. and Ms. Anna G. and were accepted by the participants and recorded in minutes.

Approval of Minutes of SC216, September Plenary meeting was completed with a comment to update the dates for the next SC-216 meeting in Brussels and complete an editorial completion of a sentence. Action was taken by Sam Masri.

Mr. Varun Khanna and Mr. Peter Skaves of the FAA discussed SC-216 responsibilities and urged members to look at alternate methods and to make sure industry members work with authorities to get engines cyber security done. The new AC will be used as the means of compliance for the FAA. It is currently in internal reviews.

Mr Cyrille Rosay of EASA talked about harmonization with ED-XXX, the importance of coordination with authority, and engines cyber as a topic for the next meeting in Brussels. EASA will rely on industry standards as a guide for AMC for making the rules. Expect publication of rule 648 before the end of the year.

Dr. Dave Pierce posted the SC-216 and WG-72 and sub groups organizations structure charts. Dr. Pierce discussed the tasks ahead including actions for the documents editors to continue work. Members voted to have the DO-355A document go to FRAC.

Planned dates for publication were presented.

Meetings schedule was presented. Next meeting will be at EASA in Brussels.

- January 17, 2020 – WG72 SG4 meeting for ED201A/DO-yyy (Brussels EASA)
- January 29, 2020 – Telecon for ISEM Gaps and Overlaps
- February 1, 2020 – DO-355A/ED204A FRAC/OC deadline
- February 26, 2020 – Telecon for DO-355A / ED204A Disposition
- March 12, 2020 – Telecon for Brussels Prep
- March 16-19, 2020 – SC216/WG72 Plenary and working groups in Brussels EASA
- June 30, 2020 – ED201A submission to OC/FRAC: Target Date
- October 31, 2020 – OC/FRAC closed for ED201A
- December 31, 2020 – ED201A Publication date