



# EUROCAE WG-117 / RTCA SC-240 WG meeting minutes

**Process owner:**  
Anna von Groote

**Document owner:**  
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**Reference EUR:** 312-20 / WG117-007  
**Reference RTCA:** 290-20/SC240-007

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## EUROCAE WG-117 / RTCA SC-240 Topics on Software Advancements (TOSA) Plenary Meeting 3 WG meeting minutes

	Date	Name	Signature
Approved			
Reviewed			
Prepared	30/09/2020	Andrew Hoag Fabrice FERRAND	



[EUR 312-20 / WG117-007]  
[RTCA 290-20/SC240-007]

## **EUROCAE WG-117 / SC-240 “Topics on Software advancements (TOSA)”**

### **Meeting #3 Calling Notice**

<i>Date</i>	<i>22 – 23 September 2020</i>
<i>Place</i>	<i>15:00 – 20:00 CEST / 09:00 – 14:00 EDT</i>
<i>Venue</i>	<i>Virtual (Webex)</i>
<i>Hosted by</i>	<i>RTCA: <a href="http://rtca.webex.com">rtca.webex.com</a></i>

### **MINUTES, DAY 1, 22 SEPTEMBER 2020**

#### **1. Welcome/Introductions**

15:04/09:04 Start of meeting and introductions – Steve Cook

#### **2. Review of RTCA and EUROCAE Policies and Expectations**

15:21/09:21 Sebastian Reschenhofer and Rebecca Morrison reviewed RTCA and EUROCAE policies and expectations – copies are located at the online workspaces.

- WebEx Rules
- Anti-Trust Policy - RTCA
- IPR Policy – EUROCAE
- Proprietary Policy – RTCA
- Participation Policy – EUROCAE
- Participation and Membership Policy – RTCA

### **3. Review and Adoption of Agenda**

Steve Cook presented the agenda for adoption

#### **Tuesday 22 Sep**

1. 1500/0900 Welcome/Introductions [All]
2. 1515 Review of RTCA and EUROCAE Policies and Expectations [Sebastian/Rebecca]
3. 1520 Review and Adoption of Agenda [Ata/Cook]
4. 1530 Approval of minutes of previous meeting/s and status of action items [Ferrand/Hoag]
  - a. Compatibility with DO-178C/DO-278A suite [Soudain]
  - b. Plan for review of document text at Plenary level [Ata/Cook]
5. 1630 Break
6. 1645 Management team general information
  - a. PMC feedback from 10 Sep [Cook]
  - b. Overview of EUROCAE document editing tools [Sebastian]
7. 1745 Review of WG-117/SC-240 Work Plan, schedule, deliverables & task allocation [Ata]
8. 1815 Break
9. 1830 Special Presentation #1 – Auerion Software Lessons Learned [Meier]
10. 1915 Special Presentation #2 – 3DR Software Lessons Learned [Anderson]
11. 2000 Adjourn

#### **Wednesday 23 Sep**

1. 1500/0900 Welcome back [All]
2. 1515 Special Presentation #3 – FAA Durability and Reliability Means of Compliance [Guion]
3. 1600 Subgroup Breakouts
  - a. Separate webexes
4. 1745 Dedicated discussion on SG-1 “Lower Risk” [Ross/Nate]
5. 1815 Subgroup #1 Status Presentation [Ross/Nate]
6. 1845 Subgroup #2 Status Presentation [Mark/Patrick]
7. 1930 Review of Actions [Ferrand/Hoag]
8. 1945 Date of Next Meeting/s [Ata/Cook]
  - a. 17-18 November 2020 (Virtual)
9. 1950 Any other business [All]
10. 2000 Adjourn

**Motion to adopt agenda** – Keith Darwin, seconded by Tom Ferrell

### **4. Review of minutes of previous meeting/s and status of action Items**

15:30/09:30 Andy Hoag presented the Plenary 2 minutes and action items.

**Motion to approve minutes** – Ed Hahn, seconded by Pranav Nagarajan

15:50/09:50 SG-2 Deliverable Options - Guillaume Soudain (slides posted on workspace)

- The group discussed the different options – (1) Supplement, (2) Stand-alone, (3) Companion
- Steve Cook summarized – we will allow the group to build up a new presentation with Option 3 for the next plenary. If this is not viable, then the recommendation is Option 1.

16:16/10:16 Presentation on Deliverables – Burak Ata (slides posted on workspace)

- The group discussed the differences between subgroup review and plenary review for review – concern expressed on timeline and high-level reviews.
- Rebecca noted that regardless of schedule that approval is needed by plenary per RTCA policy. This is a risk – balance the schedule with work. This presentation closes our action from Plenary 2 on working between groups.

### **5. Break**

16:26/10:26 break until 15:45/10:45

## **6. Management team general information**

16:46/10:46 PMC feedback from 10 Sep – Steve Cook

- Update on “lower risk” definition
  - It was not agreed in current form, but PMC expressed that the SC/WG can keep working on it. PMC is satisfied that the SC/WG is headed in the right direction.
- Update on relationship between security and safety objectives – currently not recommending that security be in scope.
- Reaffirmed that COTS/Open Source applies to both “lower risk” and existing standards – DO-178C/DO-278A
- Noted the desire to attract more stakeholders in the non-traditional aviation community. (Note that the membership schedule has been changed to allow small companies to join RTCA easier.)
- There are no more option actions for SC-240 with the PMC.
- Rebecca Morrison noted that the PMC requests a chair report when not presenting. PMC will keep their eye on SC-240, but Steve will not have to make another presentation until we are ready to deliver documents.

16:50/10:50 Overview of EUROCAE document editing tools – Sebastian Reschenhofer

- New EUROCAE templates are available and posted.
- Sebastian Reschenhofer walked through the web interface for the EUROCAE workspace
- Reminder to group - EUROCAE workspace is primary and the RTCA workspace may be synchronized at times
- There were various questions regarding the tool, tech support, access, login, structure, comment sheets, and synchronization with RTCA
  - Patty Bath had a question about subgroups and comments – will there be a separate spreadsheet for each document from the subgroup? Sebastian noted that there would be a consolidated spreadsheet to send to the editor.
  - Pranav asked about synchronization between workspaces. Rebecca and Sebastian noted that this is all done manually.
  - Other members shared their experiences and technical troubleshooting related to the tool.
- Steve Cook noted that Sebastian Reschenhofer will be available to provide detailed information on the tool at the subgroup meetings.

## **7. Review of WG-117/SC-240 Work Plan, schedule, deliverables & task allocation**

17:45/11:45 Deliverable Review – Burak Ata

- No questions or comments

## **8. Break**

17:50/11:50 Break until 18:30/12:30

## **9. Special Presentation #1 - Auterion Software Lessons Learned [Meier]**

18:32/12:32 Special Presentation #1 – Auterion Software Lessons Learned - Lorenz Meier

Technical difficulties occurred with sharing the presentation. Lorenz Meier demonstrated the Auterion software dashboards and the group conducted an interactive and insightful discussion.

Discussion topics with the group included cost of development standards and methodologies, open source and comparisons to automotive industry, examples from GitHub using automated testing/conditions, tools used in development, flight control software, and test generation.

- Lorenz noted software in the loop and simulation use for guidance and navigation – to run corner cases. This is used in conjunction with real-world flight tests.
- Lorenz noted that Auterion runs hundreds of hours in different application scenarios and corner cases. The pass/fail is part of the decision for software is roll out. Auterion also continues to monitor after rollout. Lorenz also covered the concept of a partial roll out to lighter lower-risk before pushing to the higher-risk fleet.

Steve Cook thanked Lorenz for sharing his insight and expertise with the entire group.

#### **10. Special Presentation #2 – 3DR Software Lessons Learned [Anderson]**

19:30/13:30 - Special Presentation #2 – 3DR Software Lessons Learned – Chris Anderson

Chris Anderson presented “How Open Source is being used in small UAS” and the group conducted an interactive and insightful discussion. The presentation is posted on the workspace.

Discussion topics with the group included flow-based programming to focus on component interfaces, gap with DO-178, definition of done for testing, and use of failure mode testing and stress testing.

- Chris Anderson illustrated that components and interfaces are centered on APIs and there is checking and control on both ends of the interface.
- Chris Anderson noted a combination of failure modes and stress tests are used in the 3DR processes.

Thank you to Chris for sharing this information and participating in the discussion.

#### **11. Adjourn**

20:00/14:00 – Day 1 review and meeting closure – Burak Ata and Steve Cook

Thank you to our special presenters, meeting adjourned

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End of Day 1, 14:00/20:00

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## **MINUTES, DAY 2, 23 SEPTEMBER 2020**

### **1. Welcome/Introductions**

15:07/09:07 Start of meeting and introductions – anyone who was not present for Day 1

15:09/09:09 Agenda review

### **2. Special Presentation #3 - FAA Durability and Reliability Means of Compliance [Guion]**

15:11/09:11 Andrew Guion from the FAA Kansas City office presented along with Mike Vukas. The presentation is posted on the workspace.

Discussion and comments from the group

- Quality and tie back to system-level, flight tests, and configuration management
- Case where a failure results in a loss of flight and mitigations (auto landing, parachute)
- Various UAS sizes and applications
- Part 107

Thanks again to Andrew and Mike for the presentation and discussion

### **3. Subgroup Breakouts**

16:01/10:01 The plenary split into the two subgroups using the WebEx breakout feature. Each subgroup reviewed and prepared to share status presentations with the plenary.

### **4. Dedicated discussion on SG-1 “Lower Risk” [Ross/Nate]**

17:47/11:49

- This presentation is a hypothetical use case (based on SORA ‘medium risk’ category) to show a possible proportionality scheme => so it may look very different in the end depending on the EASA Drones regulation development
- Such a potential mapping of IDAL ‘C-’ to a Hazardous FC (as an example) cannot be done without a compelling argument from SG1 on how C- has been created => need to capture the rationale of the levelling of objectives keeping in mind the use case we try to address
- In order to be usable in a fully “stand-alone” manner, the lower risk standard should still keep adequate levels from the existing standards (e.g. level C, D and E from DO-178C/ED-12C) => else it may not be fully usable for a lower-risk product, as an applicant may need to open the DO-178C/ED-12C in addition to the lower risk software standard.

### **5. Subgroup #1 Status Presentation [Ross/Nate]**

18:13/12:13 Ross and Nate presented the SG-1 status

- Propose to replace the temporary C Minus and D Minus with LR1 and LR2
- The definition of “Lower Risk” has been opened up again - no major concerns were raised by PMC – although some members suggested AND should be OR (but it is not as simple as that)
- Schedule is to have a full draft for review within SG-1 by W/C October 26
- Ideally we will target the final draft for full committee review by W/E November 20 after Plenary – this supports the timescales discussed yesterday and the overall timescales for delivery to EUROCAE and RTCA

### **6. Subgroup #2 Status Presentation [Mark/Patrick]**

18:30/12:30 Mark and Patrick presented the SG-2 status

- Decision pending on the format of the document : Is it a supplement to ED-12C/DO-178C and ED-109A/DO-278A or a standalone document
- Scope: ED-12C/DO-178C Level B & A or ED-109A /DO-278A AL1&AL2 are they part of the scope ?
- Next steps: Review members proposal on SH, COTS/OSS , and UAS use cases

### **7. Review of Actions [Ferrand/Hoag]**

18:50/12:50

**8. Date of Next Meeting [Ata/Cook]**

18:55/12:55 Steve Cook reviewed plans for next meeting.

Given COVID situation the next plenary meeting will continue as virtual.

The next plenary meeting is 17-18 November 2020. A calling notice with WebEx meeting information will be distributed via e-mail prior to the meeting.

**9. Any other business [All]**

18:56/12:56 No other business was noted for the minutes

**10. Adjourn**

18:57/12:57 Adjournment and close of plenary

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End of Day 2, 18:57/12:57

End of plenary

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**Action items**

The meeting reviewed the action list and updated the following list:

<b>Number</b>	<b>Action</b>	<b>Responsible</b>	<b>Due By</b>	<b>Status</b>
<b>6</b>	SG-2 deliverable – Supplement, Stand-alone, Companion option 3 investigation for next plenary (or propose #1)	<b><i>Soudain</i></b>	Next meeting	





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## ATTACHMENT A

### WG-117/SC-240 Plenary 3 – Virtual Attendance

Last	First	Organization
Adams	Theresa	Pratt & Whitney
Anderson	Chris	(Special Presenter) 3DR
Ata	Burak	Velocopter
Auzary	Odile	Safran
Bath	Patty	AVISTA, Inc
Beecher	Scott	Pratt & Whitney
Berry	Andrea	RTCA
Beyer	Jeff	Aireon
Blankenberger	Martha	Rolls-Royce
Bourdeau	Julien	Aviadal
Chelini	Jim	VEROCEL
Chenu	Emmanuel	Thales
Conner	Blake	Collins Aerospace
Cook	Steve	Northrop Grumman
Daniels	Dewi	Software Safety
Darwin	Keith	Garmin
Daud	Samir	Agência Nacional de Aviação Civil (ANAC-Brazil)
Decker	Christian	GE Aviation
Dörhöfer	Christoph	Amazila Aerospace GmbH
Dutle	Aaron	NASA
Dykes	Matthew	Textron
Eliahoo	Sharon	Elbit Systems
Fabre	Louis	Airbus
Ferrell	Tom	Joby Aviation
Fisch	Johannes	Lufthansa
Freese	Dietmar	EASA
Graniero	Giueseppe	Enav
Hahn	Ed	Air Line Pilots Association (ALPA)
Hannan	Ross	Sigma Associates
Hoag	Andy	Aireon
Holman	Jeremy	Garmin
Iwaszkiewicz	Tomasz	VEROCEL
Lint	Brandon	Federal Aviation Administration (FAA)
Melles	Amanda	Mannarino Systems & Software
Meyer	Lorenz	(Special Presenter) Auterion

Meyers	Scott	Collins Aerospace
Casteret	Jerome	CS Inc.
Momberg	Martin	Airbus
Morrison	Rebecca	RTCA
Nagarajan	Pranav	University of Munich
Nakao	Haruka	JAMSS
Rai	Malkit	General Atomics
Reschenhofer	Sebastian	EUROCAE
Rodriguez	David	Abionica
Romine	Nate	GE Aviation
Sakugawa	Benedito	Agência Nacional de Aviação Civil (ANAC-Brazil)
Scarrott	Nik	GE Aviation Systems UK
Serrot	Patrick	Thales
Snider	Tom	Honeywell
Soudain	Guillaume	EASA
Spencer	Richard	Federal Aviation Administration (FAA)
Stempel	Todd	ENSCO
Thurling	Andy	NUAIR
van de Sluis	Edwin	NLR
Vida	Jan	Honeywell
Vukas	Mike	Federal Aviation Administration (FAA)
Waddle	John	Astronautics Corporation of America

**1. Records and control of the document**

Revision	Description of changes	Author	Location	Comments
1.0	Initial version	Andrew Hoag Fabrice Ferrand		