



EUROCAE Paper No EUR 249-22 / WG79-91
RTCA Paper No. 178-22/SC213-139

June 1-2, 2022

Minutes of Meeting
EUROCAE WG-79 #44 meeting / RTCA SC-213 Joint Plenary #50
Enhanced Vision Systems (EVS) and Synthetic Vision Systems (SVS)

Date	<i>June 1-2, 2022</i>
Place	<i>RTCA - 1150 18th St. NW, Suite 910 - Washington DC 20036 USA and Virtual</i>
Venue	<i>RTCA and Virtual</i>
Host	<i>RTCA</i>
Contact Persons EUROCAE RTCA	<i>Alain Vallée</i> alain.vallee@eurocae.net <i>Phone: +33 6 07 52 77 69</i> <i>and</i> <i>Rebecca Morrison</i> rmorrison@rtca.org <i>+1 202-330-0654</i>

Attendance: Please see end of document for an attendance list.

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Agenda

Wednesday, 1 June (0900 – 1200 Eastern Time) - Plenary

1. Check-in
2. Welcome, Introductions, administrative items, agenda review
3. EUROCAE/RTCA Policies
4. Review and approve minutes from May 2022 Plenary
5. FAA/EASA/Regulator Updates
6. Review and Approve TOR updates
7. Review work by Working Group 4 (WG-4) at May Plenary
8. Review and Approve TOR updates for SC-213 (During meeting this was combined with Agenda Item 6)
9. Schedule for Next Plenary
10. Other Business
11. Adjourn

Wednesday, 1 June (1300 – 1700 Eastern Time) – Working Groups

1. WG1 Discussions
2. WG2 Discussions
3. Adjourn

Thursday, 2 June (0900 – 1530 Eastern Time) – Working Groups

1. WG1 Discussions
2. WG2 Discussions
3. Review and establish follow on bi-weekly WG1 and WG2 Virtual meeting schedules to continue work on new documents
4. Picture Taking
5. Adjourn

Welcome and Introduction

Patrick Krohn, Thea Feyereisen, and Carlo Tiana facilitated introductions with participants attending in person at RTCA's facility and those virtually attending introducing themselves. There were 24 in-person and virtual participants in attendance at the start of the meeting.

Rebecca Morrison reviewed and briefed the RTCA anti-trust, proprietary and membership policies along with the EUROCAE IPR, participation, and privacy information policies.

The May 2022 Plenary and WG meeting minutes were presented by Carlo, and then reviewed and approved by attendees.

Carlo's briefing included a summary of work accomplished by WG-4 during the May 2022 joint Plenary/WG-4 meetings, and additional work and considerable help that is needed by WG-4 to continue progress.

eVTOL/VTOL/UAM/AAM (electric Vertical Take-Off and Landing / Vertical Take-Off and Landing / Urban Air Mobility / Advanced Air Mobility)

A fallout from the review of WG-4's recent and future work was considerable time spent discussing whether to include and address eVTOL, VTOL, UAM, and/or AAM operations and applicability within context of WG-4's rotorcraft EVS/EFVS/SVS/CSV documents currently in

development. See below Action Items section for UAM/AAM focused action items resulting from plenary discussion which will require coordination outside of just RTCA SC-213/EUROCAE WG-79.

General consensus was that potential eVTOL/VTOL/UAM/AAM operators will be reaching out to regulators around the world for guidance required for air worthiness and certification to operate. Most current rotorcraft operations entail an onboard pilot. Some eVTOL/VTOL/UAM/AAM operations initially may be accomplished by pilots onboard, but industry and regulators are expecting the vast majority to eventually be remote piloted operations.

One key thought shared, and general consensus reached was that the documents resulting from WG-4 work may be applicable/can be applied to VTOL/UAM/AAM, however none of its work and efforts are focused on just VTOL/UAM/AAM.

Rebecca stated that at a previous PMC, another RTCA Special Committee (SC) had been identified that was already engaged in and doing VTOL/UAM/AAM related work. Rebecca agreed to review notes and minutes from previous PMCs to identify the specific SC.

FAA updates (Sean Flack)

Sean Flack reported that the FAA AC 90-106B, titled Enhanced Flight Vision System Operations, was formally released, and published on May 5, 2022. FAA AC 90-106B is available at:

https://www.faa.gov/regulations_policies/advisory_circulars/index.cfm/go/document.information/documentID/1040987

EASA Updates (Chris Misiak)

Chris Misiak reported that CS-AWO Issue 2 was released in May 2022 by EASA. CS-AWO Issue 2 is a significant update and has been in work for 6 years since release of Issue 1. It has been completely restructured, shifting from a focus on operational approvals to initial airworthiness approvals. This re-structuring allows the CS to be “technology agnostic”. For example, Subparts 1-4 are replaced by Subparts A, B and C:

- Subpart A in Issue 2 now includes all of the technology-dependent elements that were spread across various Subparts in Issue 1,
- Subpart B contains all of the performance-based elements but without any of the technology-dependent elements,
- Subpart C contains only the certification elements of take-off in low visibility operations (TOO).

Some highlights of changes incorporated include:

- head-up displays (HUDs) and HUD landing systems,
- enhanced flight vision systems (EFVSs) (requirements based on FAA AC 20-167B and DO-315B, and DO-390),
- synthetic vision guidance systems (SVGs) (requirements based upon DO-359);
- combined vision systems (CVSs),
- special authorisation Category I (SA CAT I) landings (based upon amended CAT II requirements, provides examples of eligible technologies).

In addition, Issue 2 updates the certification specifications related to Category II and Category III landings and automatic landing systems (ALSs).

EASA CS-AWO Issue 2 and related documentation is available at:

- <https://www.easa.europa.eu/document-library/agency-decisions/ed-decision-2022007r>

An online EASA All Weather Ops Rules Webinar that was held on 5/19/2022 is available for playback on YouTube at: https://www.youtube.com/watch?v=oSCFojW_nSg

The above links were provided by Chris Misiak in an email dated 6/2/2022 sent to Rebecca and Thea.

An action item resulting from the TCCA briefing and discussion is provided in below Action Items section.

TCCA Updates (Benoit Saulnier Flight Ops)

Benoit Saulnier from TCCA Flight Ops provided following updates/status and responses to questions and concerns:

- EFVS rules update in process, to be done incrementally/in phases
- Initially allow operators to request an exemption
- Then eventually to codify and provide an accompanying AC
- Some attendees/participants expressed concerns that currently there is no way for an operator to use EFVS for credit in Canada.
- TCCA stated that initial exemption would be a global exemption covering all operators, and the only action each operator will have to do is to apply/request to be included in the global exemption.
- Two action items resulting from the TCCA briefing and discussion are provided in below Action Items section.

Review and Approve SC-213 TOR updates

Three (3) new documents listed in current TOR are overdue by a year. After review and discussion about work and progress to date for each new document and subsequent anticipated work and expectations, the following consensus was reached for each:

- WG-1 (All things SVS/SVGS, SVS-ASA, CVS (fixed wing)) – Ready for FRAC by May 2023
- WG-2 (All things EVS/EFVS (fixed wing)) – Ready for FRAC by May 2023
- WG-4 (All things EVS/EFVS/SVS/SVGS/CSV – Rotorcraft) – Proposed to be ready for FRAC by May 2024, with caveat that it can be completed earlier than new proposed date if WG-4 is able to obtain and incorporate needed help and resources.

The TOR updates for the above date changes were discussed and agreed that these would be presented to the PMC in December. If any TOR changes result from the UAM/AAM workshop, those would also be presented at the December PMC.

Next Meeting

The next plenary is planned for late October or early November 2022 at RTCA in Washington, D.C. (in person and virtual). A poll has been posted by Rebecca for RTCA SC-213 / EUROCAE WG-79 members to vote and provide their preferred meeting week.

Other Business

Randy Bailey (NASA Langley) provided an informative briefing and overview of the X-59 External Vision System, simply titled as XVS. The briefing titled “XVS Technical Overview – Short” is available for viewing and download on RTCA AerOpus SC-213 workspace.

Actions Items

1. Rebecca Morrison (RTCA) was tasked to setup an RTCA (possibly in collaboration with EUROCAE) UAM/AAM Workshop in Fall 2022 with involvement and participation of leadership from all potentially applicable existing Special Committees (SC’s) to define roles and responsibilities within existing SC’s for UAM/AAM, and/or to possibly establish one or more new SC’s.
2. UAM/AAM Workshop pre-meeting coordination committee assignment and tasking.
 - Composed of Carlo Tiana, Patrick Krohn, Thea Feyereisen, Glenn Connor, Rebecca Morrison, and Janet Greenwood (FAA)
 - Tasking:
 - Meet offline/independent of SC-213 to create an agenda for the RTCA facilitated Fall 2022 UAM/AAM Workshop. Hopefully joint with EUROCAE.
 - Identify date and location
 - Date should coincide with SC-213 Fall 2022 Plenary and Working Groups.
 - Coordinate with industry and regulators (and others?) to help initially identify what each party/participant is expecting and needs from standards and regulatory groups.
 - Each workshop participant is to provide 1-2 slides (no proprietary or export controlled information) 2 weeks prior to the workshop to be compiled with other participant inputs and made available to all participants at least one week ahead of the Workshop. This is to foster transparency, insights as to what others are concerned about, and hopefully result in engaging and meaningful discussions during the workshop and follow on actions.
3. Per request of some SC-213 meeting participants, Chris Misiak will provide SC-213 with information, anticipated dates, and status on any current or future Notices of Proposed Amendment (NPAs) that are applicable to EASA CS-AWO, especially subparts A, C, and D.
 - Chris Misiak provided in an email dated 6/2/2022 to Rebecca and Thea, a response to the action item stated here.
4. Benoit Saulnier from TCCA to provide SC-213 with date of open comment period for proposed codified language and AC.
5. TCCA was asked about EFVS credit reciprocity for foreign operators and TCCA said they would provide a response later.

Working Groups 1 and 2

Time was evenly split the afternoon of June 1 and all day June 2, 2022, between WG-1 and WG-2 making progress in respective documents. WG-1 focus and most of time was spent reviewing and reaching consensus on definitions. WG-2 focus and most of time was spent reviewing and reaching consensus on test requirements. The WG leads and participants agreed that work on both documents should be done in parallel, since each document makes frequent references to the other document, and where possible harmonize and reuse work/inputs of other to the maximum extent possible.

Attendance

Benoit Saulnier	Transport Canada (TCCA)
Carlo Tiana	Collins Aerospace
Christopher Misiak	EASA
Daniel Chiew	Collins Aerospace
Glenn Connor	Discover Technology
John Waddle	Badger Technology Group
Larry Pine	Boeing
Manny Belanger	Transport Canada (TCCA)
Mark Schlegel	Textron Aviation
Mike Melssen	FAA
Natalie Wong	Transport Canada (TCCA)
Patrick Krohn	Universal Avionics
Paul Kenward	Lockheed Martin
Peter Fisher	Textron Aviation
Peter Neumeier	Lockheed Martin
Philippe Salmon	Collins Aerospace
Randall Bailey	NASA
Rebecca Morrison	RTCA
Ronald Hrabak	FedEx
Sean Flack	FAA
Sherwin Chen	Boeing
Thea Feyereisen	Honeywell
Trish Ververs	Honeywell
Troy Niles	Universal Avionics