EUROCAE Paper No EUR 242-23/WG79-94
RTCA Paper No 133-23/SC213-142   7th June 2023

<table>
<tr><td colspan="2">Minutes of Meeting SC-213 Meeting 51st & EUROCAE WG-79 Meeting#45

Enhanced Flight Visions Systems/Synthetic Vision Systems (EFVS/SVS)</td></tr>
<tr><td><i>Date</i></td><td><i>November 9-10, 2022</i></td></tr>
<tr><td><i>Place</i></td><td><i>Hybrid – Virtual/In Person</i></td></tr>
<tr><td><i>Venue</i></td><td><i>RTCA, Inc
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Washington, DC, 20046</i></td></tr>
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Attendance: Please see end of document for complete attendance list.

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Agenda
November 9-10, 2022, Plenary Session
1. Introductions and Welcome
2. EUROCAE/RTCA Policies
3. Review and approve minutes from June 2022 Plenary
4. Report on the Workshop on UAM and Vision Systems held November 8, 2022
5. FAA/EASA/Regulator Updates
6. Review and Approve TOR updates
7. Review work by Working Group 1, 2 and 4 Status
8. Industry Updates
9. WG1 document review
10. WG2 document review
11. WG4 document review
12. Schedule for Next Plenary
13. Other Business
14. Adjourn

9 November 2022

Welcome and Introduction

Co-chair's Thea Feyereisen and Patrick Krohn opened the plenary meeting and participants (physical and virtual) introduced themselves (see appendix).
Rebecca Morrison covered RTCA and EUROCAE policies (anti-trust, IP, membership). Paul Kenward briefed Meeting Minutes from the June Joint Plenary meeting (#50). Paul Kenward made a motion approve the minutes & Glenn Connor seconded the motion, with unanimous approval.
Dates for WG1 and WG2 work products were notionally discussed. Patrick Krohn requested briefings on minutes Action Items 2, 3, 4, and 5 from the prior plenary meeting (#50).

UAM/AAM Vision System Workshop Summary

Daniel Chiew (Secretary) summarized yesterday's UAM/AAM Workshop and captured Action Items. See separate minutes for additional details.

Other Business

Discussion of recent FAA Engineering guidance for vertiports and airworthiness criteria for Joby that were recently released for comment (comments due 12/8).

Regulator Updates

TCCA. Manny Belanger & Natalie Wong (for Benoir Saulnier, not present) provided an update regarding outstanding TCCA action items from prior plenary meeting.
- *Plenary #50, ACTION #4*: No dates identified for the EFVS operations consultation period
- *Plenary #50, ACTION #5*: Still open. Re: EFVS reciprocity credit for foreign operators

FAA (Airworthiness). Trent Prange: AC 20-167B status. Following public comment resolution, the AC was re-submitted to FAA legal in June. Still awaiting exit from legal. It was noted that sample FHAs were removed from the AC.

EASA Vincenzo Pennetta: Reminded group that CS-AWO Issue 2 (link), 8 June 2022 was published as was the accompanying AMC (link). EFVS-A and EFVS-L approaches are now available to be authorized in Europe, applicable 30 October 2022.

FAA (Ops) Sean Flack: EFVS AC 90-106B published in May. Rewritten to be easier to read, improved document structure, and to read like guidance vs regulation. FAA Inspector guidance was also updated, to align with this AC.

Working Groups Status
WG-1/WG-2: Thea Feyereisen summarized the ongoing progress in telecons.
WG-4: Philippe Salmone (Collins) briefed status. Slower than expected progress and a need to regain momentum. WG-4 is currently targeting May 2024, with scope including the following operations: Off-shore, SAR, Med-services.

Next Plenary & Working Group Meetings

Primary target is week of 5 June 2023 in Europe, need to secure a host (EUROCAE, EASA, Airbus)
Secondary is week of 12 June 2023.

ACTION 51-1: Daniel Chiew to confirm Carlo Tiana's (WG-79 chair) availability for next plenary meeting

Randy Bailey led a "roadmap to FRAC" planning discussion, with a RAC notionally complete by early April. To accelerate progress and to meet this schedule, a Working Group face-to-face meeting is targeted for 27 February 2023 – 2 March 2023.

TOR Updates

WG-1: SV MASPS 12/2023 FRAC Closure, March 2024 Publication.
WG-2: EV MASPS 12/2023 FRAC Closure, March 2024 Publication.
WG-4: CVS Rotorcraft 12/2024.
Motion to approve: Patrick Krohn, Second: Randy Bailey, with Unanimous consent.
ACTION (51-2): EUROCAE: Alan Vallée and Carlo Tiana to align EUROCAE documents with updated TOR.

Randy Bailey brought up discussion about standards gap for electronic vision, including windowless flight deck, remote pilots, RPAS. Patrick Krohn voiced support for "fly-by-video" and suggested incorporation into TOR. Subsequent discussion revolved around authoring a white paper, to support future TOR updates and UAM/AAM involvement.

ACTION (51-3): Trent Prange to dialogue feasibility with FAA Management chain

ACTION (51-4): Patrick Krohn & Thea Feyereisen, in SC-213 Chair report to describe "fly-by-video" technologies. Should also describe UAM workshop and ongoing activities.

Takeoff Operational Credit, Scott McClellan (FAA AFS-410)

In early-mid 2023, FAA is expecting to authorize lower than standard takeoff minima via revised C078 and C079. Requires an EFVS capability 2 system (for EFVS-TD/EFVS-L). Expected to require Natural Vision visibility as low as 500RVR and Enhanced Visibility of at least 1600ft.

WG-2

Adjourned to working group 2 discussions, led by Randy Bailey. Vigorous collaboration and discussion around ConOps and definitions of Capability 1, 2, and 3 systems. ConOps updated to remove specific RVR values and replaced with *unaided rollout* (Capability 2) vs *aided rollout* (Capability 3). Continued reviewing EVS Requirements.

WG-1

Adjourned to working group 1 discussions, led by Thea Feyereisen.
ACTION (51-5): Vincenzo Pennetta to confirm EASA availability to host spring plenary, by end of December.

10 November 2022

WG-1

Plenary adjourned to WG-1 discussions Thea Feyereisen led working group 1 document writing and review for the SV MASPS.

Airbus EFVS (Fabrice Bousquet)

Fabrice Bousquet presented a summary and roadmap of Vision System capabilities at Airbus. This included a discussion of PFD harmonization, HUD equipage, EFVS capability, and EFVS ConOps. The Airbus ConOps included: 1) EVS for situation awareness; 2) EFVS-200 for non-precision approaches; and 3) EFVS with Autoland for precision approaches.

Closing
Daniel Chiew, Secretary, reviewed Action Items.

Plenary meeting adjourned.

Attendence
- Thea Feyereisen, Honeywell (Co-chair, WG-1 lead)
- Patrick Krohn, Universal Avionics (Co-chair)
- Daniel Chiew, Collins Aerospace (Secretary)
- Randy Bailey, NASA (WG-2 lead)
- Manny Belanger, TCCA
- Fabrice Bousquet, Airbus
- Sherwin Chen, The Boeing Company
- Glenn Connor, Discover Technologies
- Jack Cross, SNC
- Peter Fisher, Textron Aviation
- Sean Flack, FAA/SAIEC
- Ron Hrabak, FedEx
- Paul Kenward, LMCO
- Josh Larson, ALPA
- Chris Martin, Bombardier Aerospace
- Scott McLellan, FAA
- Rebecca Morrison, RTCA
- Peter Neumeier, LMCO
- Troy Niles, Universal Avionics
- Vincenzo Pennetta, EASA
- Mel Pereira, Mitre
- Larry Pine, The Boeing Company
- Trent Prange, FAA
- Philippe Salmon, Collins Aerospace
- Chris Scherer, Collins Aerospace
- Mark Schlegel, Textron Aviation
- Mariusz Wisniewski, FAA
- Natalie Wong, TCCA