MEETING MINUTES OF THE THIRTY-NINTH MEETING
JOINT RTCA SPECIAL COMMITTEE 217
EUROCAE WORKING GROUP 44
27st of June through 1st of July 2022, Brussels, Belgium - Hosted by EUROCONTROL

Executive Summary

RTCA SC-217 met jointly with EUROCAE WG-44 in Brussels, Belgium, from the 27th June to the 01st July 2022. The main objective of the meeting was to progress with the revision of DO-200B/ED-76A.

The working meeting and the Plenary session took place in hybrid mode - face-to-face meeting at EUROCONTROL in Brussels, Belgium with a WebEx facility available to members who participated remotely.

During the working meeting the joint group continued the work on the revision of the content of DO-200B/ED-76A. The group reviewed the change proposals on the topics of Batch 1 of the Work Plan: DPAL Levels, Quality Management and Change Management.

Significant progress was made on these topics. The discussion was based on the work done by the dedicated sub-teams. The respective sections in the document were discussed and revised accordingly.

In Plenary, the group addressed organizational and administrative items, approved the minutes from the 38th meeting, and reviewed the status of the action items. The outcome of the discussions and the decisions made during the working meeting were formally confirmed.

The group received an update on the work of RTCA SC-227 Standards of Navigation Performance and EUROCAE WG-105 UAS.

With respect to SC-227, the status report included an overall update on the work with a particular focus on WG-3, who is updating DO-257 Minimum Operational Performance Standards for the Depiction of Navigational Information on Electronic Maps. Data-Driven Charts discussions are ongoing, covering, intended function, how it is going to be organized – in single database or two databases, paper chart replacement, etc.

On WG-105, the report featured an update on the coordination between the joint group and WG-105. The group received a presentation on the overall organization of the work program with a focus on the work of SG-3 UAS Traffic Management (UTM), in particular the new task to produce a Technical Specification for Geographical Zones and U-Space data provision and exchange. The specification is expected to cover all aspects related to Data Provision and Exchange necessary to enable to implementation of regulations (EU) 2019/947 and (EU) 2021/664.

Regarding the next meetings, the joint group decided to hold the next meetings as follows:

- 40th Plenary: 29 November – 2 December 2022, hosted by Honeywell International, Inc. in Phoenix, Arizona, USA, subject to confirmation that the RTCA technical requirements for remote participation can be met.
- 41st Plenary: 27 - 31 March 2023, Location – Europe, TBD
- 42nd Plenary: 26 – 30 June 2023. Location US, TBD
- 43rd Plenary: 23 – 27 October 2023. Location Europe, TBD

All meetings are foreseen as in-person meetings with the possibility to join remotely via WebEx. In addition, three monthly 2-hour working meetings via WebEx were agreed and scheduled to take place prior to the November Plenary as follows: 30 August, 26 September and 31 October 2022.

1 Working meeting

1.1 *Introduction*

The working meeting took place on 27, 28, 29 and 30 June 2022. Brian Gilbert opened the meeting and introduced the meeting agenda. He recalled that during the working meeting the following topics would be covered: DPAL, Quality Management, and Change Management. The Plenary meeting was scheduled to take place on Friday, 1 July 2022. All participants introduced themselves.

1.2 *Attendance List*

Name	Company/Organization
Abi Gonzaga	Honeywell International, Inc.
Alain Vallée	EUROCAE
Alexander Engel	EUROCAE
Begona Martin Velayos	European Aviation Safety Agency (EASA)
Bradford Miller	Federal Aviation Administration (FAA)
Brian Belcher	U.S. NAVY
Brian Gilbert	The Boeing Company
Caroline Biarnes	Thales Group
Collin Ogden	Collins Aerospace
David Atkinson	National Geospatial-Intelligence Agency
David Baker	The MITRE Corporation
Douglas Ginty	The Boeing Company
Erik Ringnes	Honeywell International, Inc.
Eustis Gosselin	Jacobs Technology
Fabrice Perez	Navblue
Francois Germain	Thales
Frank Wigold	Lufthansa
Greg Fisher	Universal Avionics Systems Corp.
Jeff Meyers	Federal Aviation Administration (FAA)
Jeff Plantinga	GE Aviation
Joe McGrath	Jacobs Technology
Kevin Carey	U.S. Air Force
Kyle Phillips	The Boeing Company
Laurent Pomiès	DOSOFT Consulting (EUROCAE)
Max Gornish	Garmin Ltd.
Michael Sauter	Lufthansa
Philipp Rittmeyer	Jeppesen GmbH
Rebecca Morrison	RTCA, Inc.
Reuss Anderson	Garmin Ltd.
Richard Timms	National Geospatial-Intelligence Agency
Rob Keller	Jacobs Technology
Sasho Neshevski	EUROCONTROL
Scott Clewell	Garmin Ltd.

Name	Company/Organization
Scott Roesch	Honeywell International, Inc.
Stéphane Dubet	DGAC/DSNA
Stephen Moody	Jeppesen
Thomas Ciolino	U.S. Air Force

1.3 *Data Process Assurance Levels (DPAL)*

1.3.1 DPAL Levels

Reuss Anderson presented version 5.0 of WP10009. The content of the paper was discussed in detail by the group and revised accordingly. A proposal to introduce the term Data Safety Impact classification was discussed. ICAO Annex 15 defines three levels of data integrity classification. The proposal was to introduce a new "Basic" level. It was noted that other SCs in RTCA needed to be consulted on the new proposal to see if there would be acceptance on their side. It was proposed to include a diagram taken from RTCA DO-178C (Sequence of Events for Data Error Leading to Failure Conditions). Reuss took an action to update the figure to make it more relevant to Aeronautical Data rather than emphasizing 'software'.

It was considered unlikely to expect a change in ICAO terminology. The mapping between data and probability was not obvious. It was proposed to remove the existing table in Section B.1.3 of DO-200B and replace it with a new table that does not emphasize the ICAO classification of requirements on State-provided data and removes the reference to Design Assurance Level (DAL). The new table links Failure Condition Classification, Description (of the failure), Data Criticality Classification, Minimum Data Integrity Levels and Minimum Data Process Assurance Levels. Various options for replacing the term "Criticality" were discussed. It was agreed to keep the term "Criticality". It was noted that it was important to be aligned with the terminology used in other relevant industry standards, e.g. SAE and RTCA documents.

As the alphanumerical values in the Minimum Data Integrity levels and the Minimum Data Process Assurance level are the same for any given failure conditions, it was discussed if the two different concepts (Data Integrity Level and DPAL) would be better presented in two separate tables. However, this idea was not retained and the group decided to use a single table. The draft text describing the new single table was reviewed and updated.

It was discussed and decided to use input from FAA AC 23-1309-1E. The descriptions were taken from RTCA DO-178C and SAE International SAE ARP4761 and ARP4754. It was noted that if the group decides to reproduce text from an SAE document, a letter to SAE International would need to be sent to obtain permission to reproduce content.

A new definition of "Data Integrity Level" was introduced, replacing the existing "Assurance Level" definition. The Definition of DPAL was also updated. The definition of Data Quality was updated by replacing the term "Assurance Level" with the term "Integrity".

Table C-3 Examples of Validation Techniques applied per DPAL as well as the explanatory note to it were reviewed and revised.

Items 1, 2, 3, 6, 7, 8, 10, 11, 12, 13, 15, 18, and 19 from the DPAL white paper were completed.

1.3.2 Validation and Verification

Laurent Pomiès presented the status of work based on the minutes of the meeting of the sub-team.

The group discussed several questions identified by the sub-team: what are the means we have to satisfy the DPAL requirements, other than V&V activities? Put differently, is V&V the only means to achieve the required DPAL? It was noted that the "double blind" data entry procedure is considered verification.

A discussion took place on the use and relation between Integrity of data and Assurance Levels. Regarding manual processing of data, the common practice in the industry is to apply the "double blind" procedure for DPAL 2, although this is not regulated or specified in a standard. The proposal to introduce DPAL 2B and what benefits it would bring were discussed. One benefit of DPAL 2B would be in the application of TQL-5 versus TQL-4.

Examples of Validation techniques applied per DPAL were reviewed (Table C-3). It was highlighted that it needed to be clearly stated that the content were only an example and not a standard or best practice.

It was noted that Table C.1.3 provides a list of semantic consistency checks; for DPAL 3 - no validation checks are applied.

With respect to the application of basic semantic consistency checks, it was stressed that those needed to be appropriate for the intended function.

For what concerns validation, it was agreed that the level of rigor applied to the data should increase with the increase of the DPAL level. Draft text was discussed providing guidance with respect to the validation techniques that may be applied, depending on the DPAL and the type of data, e.g. navigation, terrain and obstacle, AMDB, ranging from no validation required for DPAL 3 to a combination of different robust validation techniques for DPAL 1.

In the context of data processing, V&V both have the same purpose which is Error Detection. Verification can be seen as another technique for Validation.

As for Validation, in the case of DPAL 3, there could be minimum or no verification applied, whereas in the case of DPAL 1, a combination of verification techniques are to be applied.

Criteria for Tool Qualification were discussed (Figure 2-1 in DO-200B). It was recalled that the Tool Qualification is a dedicated topic in Batch 2.

It was highlighted that the emphasis needed to be put on the process rigor which comprises the following means: Tool Qualification, V&V activities, and training and competency management.

Appendix C, Section C2.3 was reviewed, revised and new text was added to further clarify and specify the requirements on Organizations in terms of V&V in order for the data process to achieve the various DPAL levels.

1.4 *Quality Management*

Richard Timms presented the status of the work of the Quality Management (QM) sub-team. The QM sub-team had prepared an outline for the QM Section and submitted it for discussion within the joint group. The outline contains Introduction, Quality Control, Quality Assurance, Quality Training, and Quality Planning.

Scott recalled that when DO-200B was developed, it was decided purposefully that there would be no prescriptive requirements on QM and was against including any metrics on QM in DO-200C. The decision at that time was to keep it open to individual implementation without being prescriptive.

Jeff P. was of the opinion that it would be useful to distinguish between activities applicable to QM departments and Data Processing teams.

Frank recalled that DO-200 is not the single reference for certification – in Europe there is Regulation 2017/373.

Philip recalled the fact that there are obsolete provisions coming from ISO standards (not state of the art), like for example preventing the use of obsolete data.

Reuss suggested that we needed to decide whether we want to keep the requirements high-level and give references to other requirements, e.g. relevant regulations, ISO Standards, etc.

It was suggested to do a clean-up, revision of the current text, but keep the non-prescriptive approach, i.e. the means used to satisfy the QM requirements is not intended to be prescriptive

It was agreed to state the need for a QMS in place and mention the main aspects that are important for the aeronautical data domain. Text was revised with the objective to harmonize and clarify the relationship between QM procedures in general and the DQRs.

The sections on Quality Management Control requirements, Event-Driven Review requirements and Periodic Review Requirements were reviewed and revised.

It was noted that the revisions to requirements in DO-200 containing "shall" have implications on the Compliance Plans. Once the revision is complete, the Compliance section will have to be updated in order to make it consistent with the updated "shall" requirements.

It was suggested that a Guide on updating the Compliance matrix would be useful for the whole community. The group could consider producing such a guide.

The Document Control Requirements section was reviewed. It was noted that the source of the content comes from ISO 9001 2008. A new edition of ISO 9001 2015 revision has been published in the meantime. The focus of document control has changed.

It was agreed that Philip will prepare a comparison between current Section 2.5.4-2.5.6 text, which was based on ISO 9001 2008 and newer ISO 9001 2015 content for the group to discuss and decide if these sections would need to be revised. All other tasks in the Quality Management theme were completed.

1.5 *Change Management*

Frank Wigold gave a presentation on the European Union (EU) Implementing Regulation (IR) 2017/373 and how its requirements regarding managing changes to functional systems are implemented in Lufthansa Systems FlightNav.

An important distinction is made in the Regulation regarding changes; those could be either routine or non-routine. Only non-routine changes are subject to approval by the oversight authority and require approval prior to implementation.

Stephane Dubet shared his experience in DSNA on the implementation of the Change Management process, including the safety assessment, risk assessment, etc. in DSNA. This is not only for DAT, but all functional systems in the other ATM/ANS domains. At management level this process is seen as beneficial for managing changes in particular and continuous improvement in general.

A discussion took place in particular on the difference between routine and non-routine changes.

Section 3.3 was reviewed and revised. All tasks in the Change Management theme were completed.

1.6 *Next Steps*

The Work Plan was confirmed as follows. Since themes 2 (Quality Management) and 3 (Change Management) were completed, it was agreed to start work on themes 4 (Tool Qualification) and 6 (Error reporting).Theme 5 (Data processing) will be merged in with theme 1 (DPAL).

Batch 1 – target completion December 2022
1. **DPAL**
   o Levels - already a mature draft prepared and ready to review
   o Verification and Validation (V&V) expectations/minimum requirements

Participants

Reuss Anderson - Lead (DPAL granularity)
Laurent Pomiès - Lead (V&V)
Jeff Plantinga, Jeff Meyers, David Atkinson, Stephen Moody, David Baker, Frank Wigold, Brad Miller, Max Gornish, Eustis Gosselin

2. **Quality Management**
   o References to ISO9001- type quality management techniques, but 2.5(1) seems to be incompatible with that
   o DO-200B does not go in adequate details regarding what Quality Management has to look like and what it must accomplish.
   o *Review* related requirements should be moved to Section 2.5. In Section 2.5.3, concept of *Reviews* are significantly more onerous than the value they provide; should these be pared back?

   Participants
   Richard Timms, David Baker - Lead
   Kevin Carey, Brad Miller, Jeff Meyers, Reuss Anderson

3. **Change Management**
   o Section 3.3 states that major changes trigger audits. This may be deemed disproportional. EASA has been using the concept of "Change Management" since 2018. Alignment may be necessary.

   Participants
   Frank Wigold - Lead
   Begona Martin Velayos, Brad Miller, Jeff Meyers

Batch 2 – target completion July 2023
4. **Tool Qualification**
   o DO-330 Tool Qualification issues
   o Appendix D.2 gives the impression that those DO-330 activities are mandated
   o Appendix D, Table D-1

   Participants
   David Atkinson - Lead
   Laurent Pomiès, Reuss Anderson, Jeff Plantinga, David Baker, Eustis Gosselin, Kevin Carey

5. **Data processing**
   o Section 2.4.1(5) is confusing (confirming that locally originated data has not been corrupted prior to being stored); this is not testable
   o Sections 2.4.1(1 & 10) are not clear; what is the difference between "means" and "methods"? Are 1 and 10 duplicates?
   o Section 2.4.1(11.b) – it is not clear what kind of method is expected (release statements?), use of "user" terminology; could be redundant with Section 2.4.1(6.b). Are these the only places that discuss the need to comply with quality standards?

6. **Error reporting**
   o Clarify statement about user of data informing their supplier of perceived errors (lots of cases where user and supplier don't have that kind of relationship, like terrain)

Batch 3 – target completion December 2023
7. **Data quality requirements guidance**
   o What is the value of Appendix B.2? No need to separate it from B.1

8. **Authorized deviations**
   o Should Section 2.5.2 address the concept of "authorized deviations"?

9. **Batch 4 – target completion December 2023Alteration/origination**
   o Fold DO-394 into DO-200C?
   o Revisit Sections 2.3, 2.4.2, other sections in light of the Data Alteration document

Batch 5 – target completion December 2023
10. **Document mechanics/organization**
    o Apply Requirements numbering (like user requirements documents)?
    o Review the use of "shall" vs. "should"; investigate current statements that use "need", "must", etc.

11. **Terminology/consistency**
    o Replace "data supplier" with "data processor" (limited in scope to those terms, can add new action items if other terminology tweaks/harmonization topics arise)

    Participants
    Reuss Anderson – Lead

12. **WG-114 Artificial Intelligence in Aviation needs**
    o Coordinate with WG-2 and WG-3
    o Statement of Concerns, roadmap available for review

    Participants
    Laurent Pomiès - Lead

2   Plenary meeting

2.1   *Welcome, Introductions, and review of the RTCA/EUROCAE Policies*

The Plenary Session took place on the 1st of July 2022 in hybrid mode - face-to-face meeting at EUROCONTROL HQ in Brussels, Belgium, with WebEx facility available to members who connected remotely. The main objective of the meeting was to progress with the revision of DO-200B/ED-76A.

Rebecca Morrison and Alain Vallée presented the RTCA membership policy, RTCA Anti-Trust Policy, the RTCA Proprietary Information Policy, the EUROCAE IPR Policy Call, and the EUROCAE membership policy with regard to participation in EUROCAE Working Groups, and the General Data Protection Regulation (GDPR) and Privacy policy.

The meeting was opened by Brian Gilbert (RTCA SC-217 co-chair), who introduced the agenda for the Plenary.

Attendees introduced themselves.

2.2   *Review and Approve minutes from the 38th Joint Plenary (March 2022)*

Sasho Neshevski reported on the status of the draft meeting minutes of the 38th Joint Plenary. The draft meeting minutes had been uploaded on AerOpus on April, 2022. No comment had been received to the draft meetings. No comment was raised during the meeting. The group approved the minutes from the 38th Joint Plenary.

2.3   *Proposals related to revisions to DO-200B/ED-76A*

The outcome of the discussions and the decisions made during the working meeting were formally confirmed.

2.4   *Review of action items*

There following action items are open:

- Action Item Id 10009: Prepare a Working Paper (WP) on DPAL

- Action Item Id 10020: Prepare a Working Paper (WP) on Verification and Validation

- Action Item Id 10022: Prepare a Working Paper (WP) on Tool Qualification

- Action Item Id 10023: Coordination with EUROCAE WG-114 Artificial Intelligence in Aviation

- Action Item Id 10078: Comparison between current Sections 2.5.4 and 2.5.6 text, which is based on ISO 9001 2008, and newer ISO 9001 2015 content

It was noted that Data Processing topic will be tackled within the DPAL action item

2.5   *Any other business*

2.5.1   **RTCA SC-227 Standards of Navigation Performance: status update**

Erik provided status update, covering the three SGs.

- WG-1: DO-236D Minimum Aviation System Performance Standards: Required Navigation Performance for Area Navigation was published in June 2022. Prominent points currently under discussion are:

  o Lateral turn performance - 16 and 23 degree bank angle

  o TOAC – it is still an optional requirement, controllers are not using it; it is deemed a fairly complex item.

  o Update to the leg-types

- WG-2: The revision of DO-283B Minimum Operational Performance Standards for Required Navigation Performance for Area Navigation RTCA is ongoing

- WG-3: DO-257 Minimum Operational Performance Standards for the Depiction of Navigational Information on Electronic Maps is to be updated. Data-Driven Charts discussion is ongoing: intended function, how it is going to be organised – in single database or two databases, paper chart replacement, etc. work continues, however slower than scheduled.

2.5.2   **Coordination with EUROCAE WG-105 Unmanned Aircraft Systems (UAS)**

Alain Vallée gave a presentation on the activities of WG-105 UAS. It was noted that the activities of the working group encompass RPAS. WG-105 is not joint with the RTCA, but the content is coordinated. WG-105 is organized in Sub-Groups, covering the following Focus Areas (FA):

- SG-1: Detect and Avoid (DAA);

- SG-2: Command, Control, Communication, Spectrum and Security (C3&S);

- SG-3: UAS Traffic Management (UTM);

- SG-4: Design & Airworthiness Standards (D&AW);

- SG-5: Enhanced RPAS Automation (ERA;

- SG-6: Specific Operation Risk Assessment (SORA).

The work of SG-3 UAS Traffic Management (UTM) is of particular relevance to SC-217/WG-44, as it deals with the subject of Geographical Zones and U-Space data provision and exchange.

Stéphane Dubet complemented the presentation with details on the work being conducted by SG-3.

The work on the new Technical Specification for Geographical Zones and U-Space data provision and exchange is ongoing. The specification is expected to cover all aspects related to Data Provision and Exchange (i.e. data scope, quality requirements, data format and model, exchange of data through information service) as necessary to enable to implementation of regulations (EU) 2019/947 and (EU) 2021/664.

Stéphane Dubet will continue to provide progress report to the group on this topic at the next plenary meetings.

2.6 *Dates of next meetings*

The dates and locations of those were agreed as follows:

- 40th Plenary: 29 November – 2 December 2022, hosted by Honeywell International, Inc. in Phoenix, Arizona, USA, subject to confirmation that the RTCA technical requirements for remote participation can be met.
- 41st Plenary: 27 - 31 March 2023, Location – Europe, TBD
- 42nd Plenary: 26 – 30 June 2023. Location US, TBD
- 43rd Plenary: 23 – 27 October 2023. Location Europe, TBD

Members should address any proposals to host a meeting to Brian and Stéphane.

Philip proposed for the 43rd meeting to be hosted by Jeppesen in Frankfurt.

The 41st Plenary could take place in Prague, hosted by Honeywell. Scott will look into this possibility and inform the group accordingly.

It was noted that the RTCA and EUROCAE offices in Washington, DC and Paris respectively are, in principle, always available to host the meetings.

The Group discussed the idea of moving to 4-day meetings instead of 5-day onesto avoid having only the Closing Plenary on the final day. A decision will be made at the next Plenary.

All meetings are foreseen as in-person meetings with the possibility to join remotely via WebEx.

Three monthly 2-hour working meetings via WebEx were agreed and scheduled to take place prior to the November Plenary as follows:

- 30 August 2022 10:00 – 12:00 EST
- 26 September 2022, 10:00 – 12:00 EST
- 31 October 2022, 10:00 – 12:00 EST

Brian reminded the group that the position of Document Editor is still vacant and invited members to volunteer for this role.

Post meeting note: At the WebEx meeting on 30 August 2022, Richard Timms volunteered for the position of Document Editor

2.7 *Adjourn*

Brian Gilbert thanked all members for the participation, in particular Sasho Neshevski for hosting of the meeting, and closed the plenary meeting.

Certified as a true and accurate summary of the meeting:

Sasho Neshevski
Secretary, RTCA SC-217, EUROCAE WG-44

Brian Gilbert   Stéphane Dubet
Chairman, RTCA SC-217   Chairman, EUROCAE WG-44