

**SUMMARY OF THE FIFTEENTH MEETING
JOINT RTCA SPECIAL COMMITTEE 217
EUROCAE WORKING GROUP 44
25th February through 1st March, 2013
Brussels, Belgium
Eurocontrol**

Executive Summary

RTCA SC-217 met jointly with EUROCAE WG-44 for the Fifteenth Plenary at Eurocontrol Headquarters in Brussels, Belgium from February 25th to March 1st, 2013.

The focus for this meeting was starting on the next revisions of DO-272, DO-276, DO-291, and DO-200. Due to widespread interest in the addition of DO-200 to our Terms of Reference, participation grew to over 50 attendees this meeting. Aside from opening and closing plenary, the committee split into two separate working groups during the meeting: Working Group 1 discussed DO-200, while Working Group 2 handled DO-272, DO-276, and DO-291.

The opening plenary session contained several presentations of general interest, including reports on the progress of ICAO AISAIM-SG and SWIM, reviews of DO-200A and FAA AC 20-153A, a preview on EASA's regulatory approach to AIS-AIM, an overview on ADQ and ADQ-2, and an update on ARINC standards related to the activities of SC-217/WG-44.

Stephane Dubet served as the provisional chair of WG1 for this meeting, and Carmen Bonillo-Martinez served as the Secretary. Open and lively discussion from many perspectives led to establishing an approach towards improving DO-200A/ED-76A, which was generally considered a sound document that needs to be updated. Review of the scoping exercise results from European members, along with FAA comments and suggested changes, resulted in 25 action items of varying complexity and six larger open issues. The requirement for forward compatibility (ensuring that current products with LOAs obtained under DO-200A should not be impacted by the creation of DO-200B) was reiterated throughout the week.

John Kasten served as the provisional chair of WG2 for this meeting, and Brian Gilbert served as the Secretary. WG2 addressed the high priority topics that were identified in the previous meeting, such as how to incorporate text notes, low visibility and preferred taxi routes, extension of the Aerodrome Surface Routing Network, supporting various taxiway and apron markings, and document consistency and organization. As time allowed, lower priority items were discussed, including ARINC 816 related items needing to be dispositioned prior to their next meeting. While no document changes were made, a path forward or set of options were defined for each of the items discussed. Sub-team leadership and membership were established, with some sub-teams being retired and others newly created.

In the closing plenary, joint discussion was held on the European Commission mandate to develop a European standard for aerodrome mapping data based on DO-99C, and on proposed changes in FAA AC 20-138C related to the loading of data on systems not equipped to use the entire data set. Action items had been reviewed within the WGs on the final day of the break-out sessions. The working arrangements for the week were considered to be a success and will be used for the upcoming SC-217/WG-44 meetings.

The next meeting will be hosted by NGA in O'Fallon, Illinois (near St. Louis) from June 17th through June 21st, 2013.

1 Introduction

1.1 Opening

The joint RTCA SC-217 and EUROCAE WG-44 Fifteenth Plenary Meeting was opened by Stephane Dubet (RTCA SC-217 co-chairman and EUROCAE WG-44 chairman) and John Kasten (RTCA SC-217 co-chairman).

Stephane thanked Eurocontrol for their help with arranging the meeting given the size of the group and the need for multiple rooms. He noted that response to this meeting has been overwhelming. Sam van der Stricht welcomed the group on behalf of Eurocontrol and presented logistical meeting information.

1.2 Schedule & Administration

Stephane told everyone that all presentations should be provided to Brian to distribute to the group and place on the RTCA Workspace site. Instructions were given for obtaining access to the Workspace site for those who still need it.

John Kasten went through the agenda. The committee is being split into two working groups: WG1 for ED-76/DO-200A, and WG2 for ED-99D/DO-272D, ED-98C/DO-276C, and ED-119C/DO-291C. The agenda calls for an opening plenary that is joint between both WGs, then break-out sessions in which WGs will be split into separate rooms, and then a joint closing plenary. For this meeting, the provisional chair for WG1 will be Stephane, and provisional chair for WG2 will be John.

Since the previous meeting was specific to the domain of WG2, those meeting minutes will be approved in the break-out session rather than in the joint plenary.

1.3 Attendance

Since this is the first meeting since the Terms of Reference (ToR) with a revision to DO-200A was approved, there were a number of new members in attendance. Around-the-room introductions were made. John distributed the registration form to sign, and reminded people to formally register for SC-217 with RTCA.

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2 Terms of Reference review

Stephane presented an overview of the WG-44 Terms of Reference (TOR). The legacy of WG-44 dates back to the 1990s with the initial User Requirements standards for Terrain and Obstacle databases, and then Aerodrome Mapping databases.

The aeronautical data chain can be thought of as divided between upstream (before publication) and downstream (after publication) activities. Standards for the regulatory framework for aeronautical data upstream activities typically come from ICAO Annex 15, ISO, and AIXM. In general, SC-217/WG-44

standards address the data quality and data exchange portions of the downstream activities, while ARINC standards address the database standards of the downstream activities.

The ICAO standards are regularly revised, as are ED-98, ED-99, ED-119, and associated ARINC standards. ED-76 has not been revised since 1998, and ED-77 has not been updated since 2000.

The scope of the current ToR is to update the terrain, obstacle, and aerodrome mapping standards. Due to the success of the committee in publishing standards, EUROCAE considers this group the experts in overall aeronautical data activities and asked WG-44 to update the standards for processing aeronautical data, taking into consideration ICAO Annex 15, EC 73/2010 (ADQ), and liaison with ADQ2. Standard EUROCAE rules and process apply, including the Open Consultation (equivalent to RTCA FRAC) process.

Due to travel budget cuts at many organizations, we will try to accomplish as much as possible through virtual meetings and correspondence. There will be three to four face-to-face meetings per year, alternating locations between Europe and the US. Coordination will be made with ICAO, ISO, EASA, Eurocontrol, etc. The schedule is aggressive, with AMDB and TOD standards due in June 2014 and ED-76A/DO-200B due in December 2014.

John presented the RTCA ToR. RTCA operates as a government advisory organization, so there is more formality and approval typically needed. The ToR for SC-217 are globally the same as for WG-44. SC-217 has a new program director: Sophie Bousquet. Sophie is also the RTCA staff liaison for SC-206, SC-214, SC-226, and SC-135. She has extensive experience in the aerospace industry. Sophie should be the primary point of contact at RTCA for SC-217.

John reviewed the anticipated scope of updates to DO-200A declared in the ToR, highlighting that existing implementations should not be impacted (DO-200B should be forward compatible) – this is very important to RTCA. That is, current LOAs obtained under DO-200A should not be impacted by the creation of DO-200B. New LOAs are expected to be subject to DO-200B.

Stephane mentioned that there had been significant debate about whether to update ED-77/DO-201, but it was decided that this consideration would be deferred until after ED-76/DO-200A is updated.

Ed Rosado asked how coordination with ICAO will be done. Stephane mentioned the ISRA process for RTCA between different groups, and EUROCAE coordination with EASA and Eurocontrol, but that ICAO coordination is historically more challenging. Stephane noted the representation of States and companies that have interaction with ICAO. John stated that ICAO expects SC-217/WG-44 to be coordinating with them, and it is stated in the ToR. Stephane is responsible for reporting the group progress to ICAO AIS-AIM Study Group.

Brian will be the Secretary for the joint plenary and WG2, but a Secretary for WG1 is needed. The WG1 Secretary will coordinate with Brian, who is responsible for the full committee minutes.

3 ICAO AISAIM-SG & SWIM progress

Paul Bosman gave a presentation on ICAO AISAIM-SG and SWIM. As manager of SWIM/EA Unit and agency focal point for AIM at Eurocontrol, Paul's group (including WG-44 members Sam and Scott) is transitioning SWIM from theory to reality.

ICAO Annex 15 is a prime target for defining AIM. The agreement for Amendment 37 is to include AIM, define roles and responsibilities, and terminology. The Annex 15 content focuses on automation and

digital data exchange. The challenge was figuring out how to include AIXM in an ICAO standard. The solution was to describe AIXM in terms of high level performance requirements in Annex 15, and refer to guidance documents and the AIXM website.

AMDBs are added in Amendment 37, as well as some minor updates to the eTOD material. Integrity numerical values (e.g. 10^{-3} , 10^{-5} , 10^{-8}) have been removed, but the classifications were kept. The State letter process was completed in 2012, and becomes applicable in Q4 2013. Some guidance material has been available since late 2012, with more being updated. There are several ICAO documents being updated along with Amendment 37.

Amendment 38 is planned to be applicable in November 2016 and the scope of the update is being defined. One proposal is to add material applicable to data and product users. Chapter 4, Data and Information, will be updated to unambiguously describe all data required. Chapter 5, Temporality and Distribution, will be updated to allow a more flexible AIRAC cycle and move NOTAMs into the 21st century. Chapter 6, Services, will be updated to define products and services. Annex 15 will become cleaner, and a new PANS-AIM document will be created. Additionally, a new AIM concept and Annex 4 updates are planned. All information on Amendment 38 plans is available online. An AIM concept paper will be published soon that attempts to address big questions related to AIM, including identifying the scope, role, functions, products, and services of AIM.

It was noted that eTOD data is becoming available. There have been some issues with scoping, format, and inconsistencies between ICAO Annexes 14 and 15. People would like to have a single eTOD format rather than the current multiple formats. Travis Pike expressed interest in learning more about the current status of eTOD. Paul mentioned the eTOD WG and the presentations from that group, and cited the information available on the Eurocontrol website.

The Global Air Navigation Plan (GANP) is defined in draft ICAO Doc 9750. SWIM has its own roadmap, which includes an ATM information reference and services model. It also recognizes exchange models such as eAIP and AIXM. The message is that ICAO is serious about SWIM.

Major conclusions from the ANC last year are that ICAO is looking to expedite AIM SARPS and Guidance and is reviewing the NOTAM system. For SWIM, ICAO is expecting to develop a global SWIM/IM plan by 2014 based on requests from many member States. It is expected that industry will play a large role in this.

The concept of SWIM has been around for decades. Qualified parties exchange information through services via network and SWIM infrastructure. Domain specific standards are used for governance. Recent SWIM deliverables from SESAR are available that define the Concept of Operations, ATM Information Reference Model (AIRM) that aims at semantic interoperability and common definitions, SWIM Pioneer to describe Business to Business services, and a SWIM Registry Service.

The takeaway is that SWIM is becoming real, and there are yearly demonstration events to prove it. In the SWIM Master Class, for example, data is made available for anybody to connect to and use the information. Dozens of systems are getting connected, with more than 150 queries made a day from 200 organizations. Some benchmarks on how close SWIM is to implementing a Service Oriented Architecture (SOA) are the maturity of the ACI-IATA Aviation Information Data Exchange (AIDX) and the ACI Airport Community Recommended Information Services (ACRIS).

Global cooperation and interoperability depends on many organizations working together. Dejan asked if commercial industry was excluded, since Paul's slides showed only regulatory and industry entities. Paul

said that it was to simplify and focus the presentation, but that hundreds of commercial organizations were involved as well.

Some are proposing that global exchange models should become ISO standards, but others are concerned that approach might make things more difficult. Another challenge is that the AIRM is very technical, but ICAO does not have many resources for such types of topics. What roles will States and industry play? Who is going to provide services? Now is the time for a “high level deal” – the “what” needs to be defined before the “who” and “how”. The goal should be a truly global SWIM approach.

Werner mentioned a CANSO idea to create a global consultation panel to help different standards organizations coordinate more effectively. Paul said CANSO plays an important role in marketing the industry activities, but does not think another standards organization needs to be created.

Travis Pike asked what ICAO is doing to help unlock the access to data as part of the SWIM implementation. Paul cited the addition of AMBD in Amendment 37 (which now contains recommendations, but in the future they may become requirements). The big picture is elusive in terms of who is responsible for what.

4 DO-200A overview

Jackie Bower gave a presentation on updating DO-200A. DO-200A provides a structured approach to data quality and data integrity management. It defines how aeronautical data is processed from creation to end user. Data quality requirements include accuracy, resolution, assurance level, traceability, timeliness, completeness, and format. Data quality requirements are based on intended use.

The primary focus of DO-200A is aeronautical data preparation, including the foundation provided by a Quality Management System. Jackie outlined a conceptual roadmap from receipt of data (typically from government source) through assembly, translation, and formatting. Jackie advised not to make it more complicated than it really is: DO-200A is just a process.

DO-200A has minimum requirements and is not prescriptive. Paul Bosman said this was important because if you want to serve a global community, you can't be prescriptive. It defines DQRs and Assurance levels, describes requirements for Aeronautical Data Preparation Phases, and provides guidelines to comply with data processing requirements.

5 FAA AC 20-153A overview

Brad Miller gave a presentation on FAA AC 20-153A and its relationship to DO-200A. Prior to AC 20-153A, there were no procedures to obtain acceptance of aeronautical data processes. DO-200A includes aeronautical data processing standards to support navigation, flight planning, terrain awareness, and flight simulators, but there have been many other applications developed since its publication. The FAA hopes that DO-200B builds on linkages between upstream and downstream participants.

The state assumes the responsibility for incorrect AIP data, but in reality the downstream stakeholders end up policing the state data. Assurance Levels are not received through the AIP; the data must be verified. DQRs are defined between each link of the aeronautical data chain. They are essentially specifications for hand-off from upstream source to downstream user. The data supplier is the one who finds the compliance with DO-200A; the FAA audits the supplier to provide an LOA as evidence of compliance.

An LOA is a contract establishing the DQRs and compatibility with avionics, and establishes ability to process data per requirements. There is no regulatory basis for an LOA, and FAA does not have any enforcement teeth for Level 1, only for Level 2. Navigation database policy is harmonized with EASA.

The ultimate goal for AC 20-153A is to have it lay on top of DO-200A. The AC provides more guidance on Tool Qualification (since DO-200A doesn't provide much guidance when it comes to Tool Qualification). The new tool qualification guidelines (DO-330) and DO-178C may be useful in further developing this part of DO-200B. The AC suggests DQRs for aerodrome data from DO-272A, and for terrain and obstacle data from DO-276A. LOA can be a requirement for operational approval or maintenance tasks.

LOA audits are usually a three day (2 days of auditing, 1 day for report writing) on-site visit by a team of 2 to 5 auditors (sometimes just 1 for LOAs). The AC Data Processing Objectives Matrix is used – objective evidence is required the supplier meets each of the requirements. Auditors evaluate the evidence and document any findings. Audit reports are based on FAA Order 8110.55A, and identify non-compliance (non-conformance in the case of LOAs), deficiencies, and observations. After the audit, the supplier resolves the findings, the FAA monitors supplier error reports and process changes, and conducts recurrent audits as necessary (audits are typically event-driven).

Ed Rosado asked about the use of DERs in this process. Brad said DERs cannot approve or change LOAs. DERs may be helpful in helping with the supplier processes and submissions, but they do not get credit from being a DER when it comes to obtaining a LOA.

Travis Pike asked about airworthiness of aeronautical database products. Avionics manufacturers currently might use TSOs as umbrella for use of aeronautical data in a system. Brad said that DO-200A compliance under a TSO is not equivalent to a LOA, but a LOA should be compliant to get TSO since it shows regulator recognition of DO-200A compliance. Brad encouraged suppliers to try and work out LOA first before submitting TSO, but admits that if a supplier doesn't yet have a TSO, getting a LOA first might be a lengthy process that can delay TSO approval (much of it depends on how quickly findings are resolved). He cautioned suppliers to be mindful of how long it might take to get an LOA.

Marc Hausammann asked about how DQRs between type 1 and 2 suppliers are verified. The FAA looks for evidence that each of the DQRs have been met. Brad said the reality is that if the customer imposes greater requirements, then they should expect to pay more. Suppliers should tell customers when data has been removed and/or omitted. An agreement needs to be in place (i.e. contract or purchase order) to document the requirements between upstream and downstream participants.

Chuong Phung asked how customers can avoid paying more for data they don't want from the suppliers. Brad said most suppliers provide AIP data, that only a few of them originate their own and do full V&V of the data. If suppliers are providing less data than expected by the customer, they have to include a data modification report.

6 EASA regulatory approach to AIS-AIM

Ken Engelstad gave a presentation on EASA's regulatory approach to Aeronautical Information Service and Management. Organization-wise, the ATM/Airport department is under the Rulemaking directorate. The rulemaking task for AIS/AIM was scheduled to start in 2014, but due to some recent developments linked to aeronautical data and information, EASA decided to start in 2013. The terms of reference for the rulemaking task should be available in March or April 2013. It is expected that it will take about 2.5 years from start of task to adoption of rule.

The Basic regulation defines the essential requirements for ATM/ANS and ATC. There are only three requirements for aeronautical data in Annex Vb to the Basic regulation. Ken showed the scope of data under ED-76 and underlined that this could be a starting point for EASA. EASA is still discussing what

kind of aeronautical data could apply for rulemaking (e.g., safety critical data only?), and are happy to hear that in Paul's presentation that ICAO is trying to identify types of aeronautical data in Amendment 38.

The starting point will be ICAO Annex 15. Reg. 73/2010 (ADQ) and ADQ-2 will also be taken into account. The forthcoming NPA (Annex V) should be published by mid-April 2013 defining requirements that service and data providers need to comply with. Annex VI will incorporate the 7 data quality requirement categories. Ken said EASA needed the industries help to draft a good rule, since the rule makers don't necessarily have high technical expertise in this area. EASA is also trying to figure out what to do with ADQ regulation, and how it fits in with ICAO Annex 15.

Letter of Acceptance process will be used in the rulemaking task. Brad asked if they would call them Declarations of Conformity. Ken said they are debating what exactly to call the approvals since it is unclear what the impact on the certification process will be. Brad said the FAA honors EASA LOAs just as EASA accepts FAA LOAs, but asked if interchangeability will still be in place after rule goes into effect (since FAA LOA is not regulatory). The FAA wants to keep this approach. Ken said the intent is that interchangeability will be ensured and will be maintained at the technical level, and recognized the concern of the FAA. Ken said that at a certain point, the relation between EASA LoA and FAA LoA also needed to be addressed at higher levels of EASA/FAA management. Means of compliance will continue to be based on ED-76/DO-200A.

James O'Sullivan asked about impact of certification requirement on certain organizations. Ken said data providers do not need to be certified according to all conditions/requirements. There is a flexible system that allows for proportionality of the requirements.

Dejan asked for clarification on process: does data supplier need to get certification, and then seek an LOA? Ken said that was not the idea, that there would be one certificate (e.g., either the certificate would reference LOA or the LOA itself would be called the certificate). Werner advised the group not to confuse a certification against a common set of requirements for state ANSPs with requirements applicable to commercial data providers.

Brad asked if ANSPs will be certified on common requirements or ED-76. Werner said ANSPs are already certified based on common requirements. The idea was that all ANSPs were competing on the same level, and it had nothing to do with ED-76. Ken said that for the new rule, ED-76 may be referred to or used in guidance material or Means of Compliance, but EASA needs to assess what is in ED-76 and determine what is already covered in their Annexes.

EASA will be represented by Carmen for the updating of ED-76, and is happy to be participating.

7 ADQ & ADQ-2 Overview

Manfred Unterreiner gave an overview of ADQ and ADQ-2. The intent of ADQ is to help states satisfy Annex 15 requirements and prepare for digital AIS/AIM world. It applies to the upstream part of the aeronautical data chain. ADQ's key provisions are quality, interoperability and performance, and conformity assessment. The core part is interoperability and performance, and relies on a common data set and common exchange format. AIX is a means of compliance for the data use, while a DO standard is the means of compliance for the data originator. DQRs are means of compliance for all involved parties. The only end product specification in place is the eAIP means of compliance. Data Assurance Level is the means of compliance for Evidence Requirements. Dejan asked if evidence was equivalent to traceability, but Manfred clarified that evidence was related to showing how requirements were met, not traceability.

There may be some aspects of ADQ that can influence revisions made to ED-76/DO-200A. Manfred especially stressed DAL (concept of independence, deliverables, tool-related objectives, etc.).

ADQ-2 focuses on the downstream side of the aeronautical data chain. Further development by Eurocontrol was suspended in September 2012 after they ran into issues related to regulation jurisdiction, and the EC assigned EASA to take the lead through their rule making program. Werner asked if EASA was going to build off of the Phase 1 work from Eurocontrol, or if they were going to start from scratch. Manfred said it would be up to EASA, but hoped and thought that they would utilize the work done by Eurocontrol. Manfred said he would be happy to assist EASA with their rule making effort.

Brad again expressed the FAA concern that mutual LOA acceptance between FAA and EASA will be affected by a new regulatory rule in Europe. Manfred said he shared this concern, and said that the goal should be how best to serve the end users. EASA needs to ensure that the original ADQ-2 objective of interoperability is fulfilled.

Dejan asked about the schedule for updating DO-200A in comparison to the EASA rule making schedule presented today. Stephane said that the SC-217/WG-44 ToRs were made under a different set of assumptions, and that the schedule might need to be revisited pending the progress of EASA.

8 ARINC standards related to SC-217/WG-44

John Kasten gave presentations on the downstream side of the data chain and the role of RTCA/EUROCAE and ARINC documents. DO-200A exists under the umbrella of data quality. DO-201A, DO-272C, and DO-276B exist under the umbrella of process, and each refers to DO-200A. RTCA/EUROCAE will gather requirements from industry (end users) and develop standards. Documents such as MOPS, MASPS, and OSEDs use the process standards to develop implementation standards.

DO-200B needs to consider additional types of aeronautical data, and other delivery mechanisms (for example, datalink, Wi-Fi, and AeroMACS). Some types of aeronautical data might have unique data quality requirements (for example, geopolitical boundary data and meteorological data). It might not be possible to express some data quality requirements in a numerical fashion.

ARINC has current and planned standards that RTCA/EUROCAE needs to be aware of. A424 (current version is -20) is the basis of Navigation data standard DO-201A. It is delivered in a variety of methods. A424A will define an additional delivery format of XML files. NDBX has not been approved, but has been proposed. No working group has been assigned to this yet.

Aerodrome mapping data is covered in ARINC 816 (Supplement 3 is currently being developed). Dejan asked if the original ARINC 816-0 is planned to be retired. Brian said it is not.

New Terrain and Obstacle database standards (ARINC Project Paper 815) are being developed by the ARINC ADB committee. A new XML compression standard is also being developed by the ARINC ADB committee. Target completion date for both of these new standards is October 2014.

9 Working Group 1: DO-200A

On Tuesday, WG1 began its break-out session. Expected DO-200A/ED-76 updates according to the updated ToR were reviewed, and more detailed SC-217 objectives for update of DO-200A were presented. The RTCA and EUROCAE terms of reference are not completely aligned, but the objective is to have a common document. A question was raised about the possibility to update the ToR to reflect further detail about the objectives, but the ToR are not intended to be revised again.

Feedback was solicited from each of the attendees on areas of development for DO-200A. Comments included the following:

- Detail adequate activities for development of tools (depending on the applicable level).
- Include recommendations from the FAA AC in terms of alerts (time and distribution).
- Link with the safety analysis at aircraft level, including discharge of responsibilities as part of the Aircraft Flight Manual and cases where data is not originated by States.
- The standard is not inadequate. Gaps are filled by additional FAA policies. Major issues to address are tool qualification, robustness of automation, and lack of understanding on how to present evidence.
- In the future, there may be a TSO that aligns a process with a certification instrument.
- There are deliverables identified in DO-200A, but more information on plans and documents for specific activities (e.g. tool qualification) is desired.
- The objective for DO-200B is that it is easier to use by the community than DO-200A.
- Provide further details on the identification of data and communication networks.
- Update the definitions of data quality requirements. Compatibility is also a key aspect.
- Protect existing approvals based on DOAs and LOAs.
- Add more precision on the use of the document.
- Bring FAA experience with AC 20-153A, but do not add more requirements.
- Better identify of the actors: suppliers, vendors, etc.
- Address State origination: multi-source, paper and electronic, control of all the documents, and identification of discrepancies between different sources.
- Type 1 and 2 definitions not very adequate.
- Small entities have limited resources. Put all requirements in a form small entities can deal with.
- More emphasis on electronic distribution.
- Separate timeliness requirements. Statement “No ICAO recommendations have been published for ...” is no longer true.
- Highlight when data becomes information.
- DO-200A should not be specific in the quality measures to be used.
- Skills and competencies are not very detailed and there are some bad examples.
- Include experience gained with ED-12B. DO-200A/ED-76 is more appropriate than ED-12 but more difficult to follow.
- DO-200A is serving its purpose well. In relation to ADQ2, there are aspects to be covered by the regulation. Interoperability and performance are key aspects. The standard should serve without the need for specific policies for individual cases.
- The standard is 15 years old and a lot of novelties have occurred (e.g., ETOPS, PBN). This is good standard but need to be updated.
- Challenge to comply with EASA regulation and ADQ2. Industry needs a lot of resources when more complexity is added, which is subject to interpretation by different regulators.
- The document is about quality principles and it is addressing this objective well. Avoid multiple audits by showing evidence of compliance with a single standard.
- A strength of DO-200A is its simplicity - it is well laid out. Some improvements can be made to use cases and appendix updates.
- Does it have the completeness to move to SESAR? Flexibility is needed (e.g., procedures changed at short notice) for SESAR and NextGen.
- Address the case of source of data not being originated by States (commercial origination of data).
- Address the quality measures to build the confidence between originators and end-users.
- More guidance on applying for LoA, tool qualification, use of COTS for database processing. Both EASA and FAA issue LoAs using the standard, but with different conditions.

Stephane Dubet summarized the group feedback discussion with the following remarks:

- DO-200A is a good starting point.
- There is room for improvement.
- What is done in terms of SESAR is not out of scope.
- The group will trace all suggestions and determine a way forward.
- Microsoft Word versions of ED-76 and DO-200A will be available to the group but are not to be distributed externally.

Some discussion followed on the fact that the document does not exclude origination by non-State entities but that in those cases, V&V should be carried out (V&V is discharged when data come from States). The FAA does not want to add requirements or complexity, but rather to make it easier for applicants. Discharging responsibility by using State data and traceability to the originator is a key aspect. Also, it is necessary to cover “translation” of data (e.g., for use by a specific FM computer).

There are other EUROCAE/RTCA standards documents more specific on data origination which have to be referenced. It was noted that there are a lot of types of data that have not a dedicated standard.

A file of envisioned changes was presented by Marc Chenus. Changes considered as “major” included:

- Item 7, regarding the definition of aeronautical data and the broadness of the ICAO Annex 15 definition. The FAA agreed but considered it minor.
- Item 22, regarding section 1.5.4.2, namely the origination of data. It was noted that DO-200B should benefit from AC 20-153 and FAA experience of auditing.
- Item 30, regarding Section 1 and provisions linked to new technologies.
- Items 37-40, regarding section tool qualification.

A question was raised on whether magnetic variation data is in scope. It is not explicitly covered in DO-200A. Magvar data is received from States or National Agency. The equipment suppliers reformat the data, but verification is difficult. The supplier is accredited to complete the computation.

The Excel file used to track proposed changes and actions was reviewed at the end of the day, and the following color coding was defined: yellow indicates an action item is already allocated, orange indicates the item is on hold, green indicates the group has agreed to a resolution, and white indicates the item is pending. Some members raised concerns that the file is not easily understandable.

It was agreed that comments related to low-level details within the text will be dealt at a later stage, as some text may be superseded by other updates. Additionally, clarification proposals will be postponed to allow the group to focus on technical issues.

Stephane informed the group on several topics:

- Inputs and suggestion for improvement of the DO-200A document are welcome. Written comments are better for traceability.
- An Excel file is being used with different tabs for Scoping exercise, FAA feedback, and Suggestions for changing the document.
- Volunteers are requested for three different roles in WG1:
 - Leader to direct WG1 meetings. Tentative plan for WG1 leadership is joint leadership between FAA and EASA.
 - Secretary to record discussions during the meeting
 - Document Editor(s) responsible for incorporating all changes into the document and ensuring consistency with editing rules. English as a native language is helpful. The Master version of the document is updated during the meeting when necessary.

ED-76 is available as published in Word. Stephane proposed to use the ED-76 with editorial changes activated. Carmen should be copied in all e-mails containing action item discussion and resolution.

Items in the Excel file that had not been addressed were reviewed. Marc presented the proposed changes considered “editorial” and “clarifications”.

There was discussion on the State data not related to AIP or AIS (for example, terrain data). What is published in AIS could be delegated to non-government entities. Navigation data is an easy case, but it is not as clear for terrain and obstacle data. If it is not considered State data, the end-user has to validate the data. This could be alleviated depending on the intended use (e.g., not the same for routine as for critical). There are recognized suppliers by the State. An example is the National Geographic Institute that is the official source of geographical data for terrain. For other type data, it could be difficult to find an official source. Do we want to have the same scheme for different types of data or different schemes? There could be more than one Agency providing governmental data. V&V may not be needed when there is an official provider. In some instances, V&V is not feasible (e.g. military data with confidentiality).

The list of the actions was reviewed and there was more discussion regarding this controversial topic. Dejan has already completed an action proposing some text on distinguishable data (the text may be revisited based on this discussion). Traceability is always required - not just when the data is not provided by States. An example was given of a user-defined waypoint in comparison to a State published waypoint, and how distinguish them. Life cycle data has to cover different sources of data. If a procedure is not flyable because a waypoint has to be created, this is covered by translation. DQRs cover the capability to determine the origin of data.

A Eurocontrol group is going to meet in March 2013 to discuss the security of data transmission over datalink. They will come to the next WG1 meeting with a proposal.

Next, the group reviewed the FAA proposed changes. The objective is to make the DO-200B more standalone. Some of the issues can be addressed by policy. The FAA envisions that DO-200B should not have an impact on the guidance they already have.

The FAA initiative to move from LoA to a TSO was briefly discussed. A TSO will have to encompass some of the AC material. The issue is that a database update cycle has no impact on a LoA, but may be a minor change to the TSO. It should be kept in mind that this is a process approval. For ADQ, “Declaration of Conformity” may be equivalent to the FAA TSO.

As a project management tool, the issues which have an assigned action or put in hold will be classified in terms of their complexity.

The WG1 break-out session resumed on Thursday with Brad Miller continuing the presentation of the FAA proposed changes. There was a discussion if a dedicated section for timeliness could be required. It was concluded that timeliness is not related to errors.

There was a discussion about the resolution of notices prior to data delivery. It is not realistic for all notices to be resolved prior to the next delivery. What is the time needed to correct errors, and which are to safety? In the area of terrain data, what is considered an error? It could be difficult for the data supplier to evaluate the safety implications without knowing the intended use. In many instances, the data supplier has a good grasp of the safety or operational impacts.

There was also a recommendation from EASA regarding the time to alert and time to correct. It was highlighted that some of the errors reported by users are misunderstandings and not actually errors. There is often a need to perform investigation.

Item 70 raised a lot of discussion on origination of data versus tailoring/translation of data. The text proposed by the FAA is not related to distinguishing data not originated by States. It could be the final end-user responsibility, as in some instances the users are requesting this type of data via DQR. This would therefore be covered by operator and data supplier contract. It was claimed that creating a waypoint to make a procedure flyable according to published procedure is not originating data, it is translation. Does the visibility of the waypoint to the user make a difference? Some defended that if a waypoint is added, it cannot simply be considered coding. Part of the group is of the opinion that it is a translation since the procedure published by the State is still the same.

The objectives recorded on Tuesday during the initial feedback discussion were reviewed. There was some discussion regarding the feasibility and practicality of limiting the content of a database. While it was finally agreed that it would be possible to limit the content of a database, the final text of AC 20-138C may be clarified. The working group feels the emphasis must be placed on the operator, GNSS equipment manufacturer, and installer. Data quality requirements (DQRs) must be specified in the GNSS equipment by the manufacturer specifying the capabilities of their GNSS equipment. The installer is responsible for further specifying the capabilities and limitations for the aircraft. The operator is ultimately responsible for specifying the DQRs for their database, and is the party responsible for specifying what data they want from the data supplier.

It was noted that requests to consider appendices about implementation (e.g. use cases, including small States, transition to SESAR/NextGen, multiple temporalities) may contradict with desires to keep the document simple.

The action items table was reviewed and agreed. There is another table with open items which require further discussion or more mature text.

The fact that EASA has not yet started with ADQ2 was raised as an issue. This is complicating the situation for the working group.

10 Working Group 2: DO-272C, DO-276B, and DO-291B

On Tuesday, WG2 began its break-out session. The minutes from the previous meeting in Salt Lake City were approved as amended. Action items from Salt Lake City meeting were reviewed and stasured.

The WG2 sub-teams were reviewed, with leadership and membership identified when possible:

- Connectivity – Aside from addressing open actions, this sub-team will also coordinate with SC-214/WG-78 on an as needed basis. Jean-Etienne will determine whether or not he can lead.
 - Members: Brian, Beby, Christian, Patrick, Britta
- Content – Expand to include terrain and obstacles in addition to AMDB, but focus on features/attributes and not document format. Kaushik Raghu had previously volunteered to co-lead this sub-team, but recently left Rockwell Collins, therefore Beby will lead. There were discussions between Beby, Kaushik, and Brian to discuss how to divide up the Content sub-team work prior to this meeting, but no full sub-team teleconference.
 - Members: Patrick, Brian, Stephen, Debbie, TBD Rockwell Collins member, Vaughn, Don Nicholas, Chris, Keith Nesbit (NavTech), Dr. Mike, Britta, Christian
- Data Quality – Stephane and John will lead to ensure link with ICAO developments and WG1 coordination.

- Temporality – Main tasks are to align DO-276C and DO-272D, and coordinate with WG1. Josh Silvey is still expected to lead this sub-team.
 - Members: Sam, Vaughn, Debbie
- Consistency – Work on non-technical consistency between the family of documents (including V&V), including formatting, how requirements/rules are expressed, structure, etc. Brian will lead this sub-team. This sub-team had one teleconference prior to this meeting to discuss the high priority action items. Brian presented a report-out of the sub-team meeting:
 - The group agreed to the sub-team proposal for resolving the action item regarding use the term “Location” in AMDB feature names.
 - On the topic of splitting DO-291C into two documents (one for AMDB, one for Terrain & Obstacle), the decision was made to keep DO-291C as a single document, and if a compelling reason emerges to change this, we can revisit the decision. There are no blocking issues requirement the document to be split right now.
 - Regarding the discussion on how best to present data capture rules and geometric constraints, no firm conclusion was reached. Scott recommended to check if business rules can be put in model so these parts of document can be auto-generated. John questioned if the sub-team proposal was changing the nature of DO-272D from user requirements to developer mindset, and advised that the document focus is on user requirements, not system designers. The group agreed to make sure we consider all user perspectives. Brian stated that the goal is to have a common process and criteria for all content old and new, so we don’t impose different standards on new stuff from what was done in the past. Debbie stated that users at Digital Globe would prefer to have geometric and functional constraint rules have a different ID nomenclature (don’t overload rule number, e.g. G1 and F1). Christian reminded that we should scrub DO-291C to pull out any capture and attribute rules from there and put them in DO-272D.
 - Members: Mike Burski, Britta Eilmus, Patrick Estendorfer, Tom Evans, Debbie Garcia, Vaughn Harmon, Stephen Moody, Don Nicholas, Christian Pschierer, Ed Rosado, Sam
- Modeling/SWIM – It was decided to combine these into one sub-team. This team will focus on how to evolve DO-291C. Sam van der Strict will lead this sub-team. Scott Wilson from Eurocontrol will be the model editor.
 - FAA will have a SWIM service for Digital NOTAM (AIXM 5.1 output)
 - Need to discuss overall architecture, and how to make AMDB and AIXM as compatible as possible to reduce effort needed on the services side
 - Members: Brian, Christian, Chris
- Document editor: Debbie (with support from Scott, since some document content such as feature catalog is auto-generated)

10.1 ***D-Taxi Coordination***

Brian reported out on a joint telecon held with SC-214/WG-78 regarding inconsistencies found during D-Taxi simulation trials in April 2012. The inconsistencies related to length of holding position names, holding bays, differentiating gates from stands, and distinguishing high-speed exits from normal runway exits. SC-217/WG-44 took three actions during this telecon, and proposed resolutions to WG1.

It was decided that Content sub-team actions be created to update an aprontyp codelist name to resolve the holding bay issue. For the gate vs. stand issue, the group decided to propose the use of the jetway attribute, with no changes to the AMDB standards. On the rapid exit topic, the group could not reach a consensus, so a Content sub-team action was opened. It was agreed that the group needs to provide guidance for how to deal with operational data.

10.2 ***D-NOTAM Issues***

Chris Criswell identified some needs for additional granularity in capture rules to support D-NOTAM. Items included ATC call locations or “spot numbers” typically found on aprons, Surface Movement Guidance and Control System (SMCGS) features, and markings separating movement from non-movement areas. Some of these are covered by existing Content sub-team actions, and the remainder will become new tasks for the Content sub-team.

No other requirements to support D-NOTAMs were identified, but Chris stated that he will likely have more information in St. Louis.

The SESAR project on D-NOTAM for airborne use of AIS/MET (9.48) began in October 2012. The project is defining functional requirements right now, and will complete this in October/November 2013. Therefore, they should have requirements to share at the December 2013 meeting. Alex is the project leader for the D-NOTAM digital encoding project (13.2.2), which will work on digital briefing. They are working with pilots on the format of digital briefings, but not directly on applications.

SC-206 is still working D-NOTAM for AIS/MET, but EUROCAE WG-76 is dormant.

10.3 ***High Priority action items***

The high priority action items listed in the agenda were addressed in order.

For the Taxiway Marking discussion, Brian showed a presentation given to the group back in 2009 on the same topic. Back then, the group concluded that a point feature with attributes that describe the marking were preferable to trying to capture the marking as polygons. This meeting, the group agreed that we need to collect application requirements to determine what types of markings should be handled in the standards, and what should be left to be developed outside the standard as supplemental data.

The action to develop requirements for Runway feature attributes related to surface conditions (e.g. rubber on runway) was changed to low priority due to recognition of difficulty to collect this temporary data.

Requirements for expressing the directionality of hold positions were proposed by Brian on behalf of Rockwell Collins. An alternative option was proposed to update the capture rules of TaxiwayHoldingPosition to avoid having to add content to the AMDB. However, it might not be obvious without a new attribute whether a given AMDB was created with the new capture rules or not, although this distinction could be made in metadata on the ARINC side, for example to distinguish between which version of capture rules was used. Four competing ideas were generated by the group for the Content team to consider further.

On the topic of ATC Requirements, no representatives from ATC were present at this meeting. WG2 does expect to have ATC participation at the St. Louis meeting in June 2013, so we will address this then. It was noted that ASDE-X needs every vertical structure within a wider range than our current Vertical structure capture rules require for their line-of-sight analysis. This is more for system installation planning than the ATC ground display application. Herve Drevillon is the project leader for SESAR 6.7.2 (developed the ground simulation for D-Taxi).

Debbie presented an issue where the 15 character limit for idrwy in DO-291B is insufficient for markings that span more than two intersecting runways. The group recommendation was that markings on intersections should reflect on the ID of the primary runway, and should not incorporate the IDs of all overlapping runways (no change to the standards).

John presented a concept for how to link notes to features. It would use a “join table” to tie note IDs to feature IDs (e.g., note 123 with idrwy “10L.28R”). Notes can then be queried by feature IDs. Jeppesen uses 80 character strings joined together by sequences (which means that words can be broken up across sequences). When notes referring to features are changed, the links are updated to ensure consistency between the two sets of data. Blocks of notes versus individual notes needs to be considered; in AIXM, each feature has a note object, but there is no structured language (it is just pure text).

Source of notes is a combination of official published information, data supplier originated, and customer requested. Much of it comes from AFD, which may come from procedures or NASR. Sam wondered how consistency across different data suppliers could be achieved with notes, especially ones that are instructions (e.g., “CAUTION – No aircraft are permitted to stop on the Bridge Taxiways A and B”). This leads back to the discussion of what the limits of the AMDB should be. How much operational content should we include? We can always point to other databases, or have other databases point to the AMDB. A generic field that holds a pointer to whatever source is used (in AIXM format, for example) could be sufficient to provide the capability without having to embed the text in the AMDB.

A “smart note” concept would use links to data in place of text representations. For example, rather than hard-coding a frequency in text, there would be a link to the data containing the frequency. It is unclear if this is a requirement for AMDB notes. Chris said that in some cases, the notes were previously NOTAMs. Much of the information is durable. The goal is to move towards paperless conveyance of information.

A question was raised whether notes should correspond to a geographic location. John’s proposal does not support this, but it may be something needed for certain applications. How would geospatial information be attached to the note? Identifying geometry only when source identifies geometry could prove difficult. It could require re-segmenting AMDB features.

Brian advocated that regardless of the overall note approach, Hotspot text be in the AMDB itself, since it is a special case where there is always a one-to-one mapping between feature instance and note. In AIXM, the Hotspot feature has an instruction field. Sam and Scott proposed that we focus on Hotspots, determine how best to model them, and see if this approach can be made generic. This is being moved to the Modeling/SWIM team for this initial phase of work.

Thales and Airbus have concerns regarding the inclusion of text notes directly into the databases because they can make the database very large. Thales and Airbus fear that too large of a database will make applications harder to manage, and increase airline costs associated with purchasing the databases. Boeing agreed with this and stated that they are only in favor of this for Hotspot text.

The notes discussion relates back to the question of how much operational information we want to capture in the AMDB versus keeping it limited to mapping data. It seems like the time has come to move beyond just mapping data, but it is unclear how much of a shift can be made for the next revisions given the schedule constraints.

Brian presented a proposal for a new way of numbering requirements in the documents. It was made clear that we are not looking to rearrange document in this proposal - requirements would remain where they are, they would just be identified and numbered in a more consistent, identifiable, and traceable way. Overall, there was support for the concept. The group agreed to look into putting requirements in the model or requirements management tool and auto-generating document content. The nomenclature should be such that requirements can lead to proper auto-generation (e.g. AMDB-<Topic1>-xxx).

Jean-Etienne made the point that we shall make sure IDs don’t change arbitrarily between document versions, and show better change tracking at individual requirement level between versions. It is up to the

group to determine when a change merits changing the requirement ID (i.e., delete the old one and add a new one) versus just keeping the same ID.

Brian presented materials questioning the use of “classes” in DO-272C. The group agreed with the proposal, with the caveat that features that should logically be defined in the same document subsection remain together (e.g., runway related features will be in the same document subsection, but the concept of a Runway class will be eliminated). The implementation was assigned to the Consistency team.

Brian presented findings from an analysis of the use of the terms “contained in” and “overlapping” in DO-272C. Christian suggested that the group consider the OGC Simple Feature specification ISO 19125 for definitions of these terms. The group agreed to modify wording of some of the geometric constraint rules and capture rules to make their intent clearer.

A Rockwell Collins proposal to add data identifying the type of hold short line was discussed. The group accepted the Rockwell Collins proposal for a new attribute for the TaxiwayHoldingPosition feature, but decided to only include “runway” and “ILS” values for this attribute. TaxiwayIntersectionMarking features already cover taxiway type markings, and it was agreed that movement area boundary markings should not be captured as TaxiwayHoldingPosition (the taxiway marking action items will determine the fate of boundary markings).

Brian presented some requests from the ARINC 816 committee. One proposal was to add a new attribute that identified crossing taxiway IDs for taxiway intersections. The group agreed to consider the consequences of changing the idlin attribute rules to reflect all crossing runways instead of adding a new attribute. If the consequences prove to be too onerous, a new attribute will be added per the proposal.

The bridge point discussion resulted in the conclusion that a new feature type would be added to sufficiently define bridges if it were deemed necessary to add bridge data at all. Airbus and Thales were asked to clarify their needs and requirements for capturing bridge points at the next meeting.

The group discussed extending the ASRN to non-movement areas. Jean-Etienne asked if we should we wait until the current ASRN is more fully validated (e.g., via the SESAR project) before we start to extend it. Or do we proceed at risk with the extension knowing that there may need to be redesign later once lessons are learned from the first development projects? Four options were identified for dealing with ASRN extension:

1. Extend it in DO-272D, and use DO-272E to apply lessons learned from initial implementations to the whole ASRN
2. Update ToR to remove extension of ASRN in DO-272D, apply lessons learned from initial implementations in DO-272E, and extend the ASRN in DO-272F
3. Update ToR to remove extension of ASRN in DO-272D, apply lessons learned from initial implementations and extend ASRN in DO-272E
4. Push out due date of DO-272D to leave us time to pull in lessons learned and do the extension in RevD

The direction from John was to proceed with Option 1, and fall back to Option 4 if needed. This would be a much easier to digest than changing the ToR and deferring the work.

Some deicing areas have stop bars that are likely not captured in AMDB right now. These may need to be added so that they can be used for ASRN. Other deicing areas have no distinguishing “stop” points, so defining where the “node” associated with that deicing area is can be trickier. One suggestion was that in the latter cases, the ASRN will extend to the start of the deicing area (e.g., put a node on the taxiway/deicing attached side), but not inside the deicing area. That is, we will handle cases where we

have information to extend inside an area, but where we don't it is just left out similar to the current ASRN implementation.

10.4 **Helicopter application requirements for terrain & obstacle data**

Thomas Schanne gave a presentation on Terrain and obstacle data needs for helicopter operations. Cassidian (an EADS company) is working on a research project funded by German government to improve situational awareness in helicopters. Jean-Etienne asked if Cassidian planned to use open standard databases on project. Clemens said that it is just a research project, so there is no direct link with a Eurocopter program.

Unique helicopter considerations include low operating altitudes, short distance flights, flight near terrain and obstacles, very slow (requiring higher detailed data), normally must fly in VFR conditions (below clouds), and land in very low visibility. Line obstacles are a special risk (although it is not normal for a helicopter to try and fly below a line obstacle). In 2009, the FAA proposed a HTAWS for all HEMS helicopters. The goal is to provide effective and reliable terrain and obstacle warnings since 35% of helicopter accidents are due to insufficient pilot SA.

The accuracy of data they can get today is much higher than what is defined in DO-276B. John asked about what kind of changes to DO-276 they are looking to make. Thomas thought that perhaps a supplement for helicopters (treat as a separate requirements set like ICAO does) might be useful. Cassidian would like to contribute to the user requirements derived from helicopter needs to DO-276B/ED-98A.

Travis Pike stated that often multiple eTOD data sets need to be combined. This can result in a mixture of resolutions depending on the geographic location. Travis also said that obstacle data is often not complete, especially for line obstacles, which requires type 2 suppliers to have to originate and verify this data themselves. It is better to have obstacles with less accurate vertical information than to not have them at all. AIP cannot necessarily be counted on, so type 2 suppliers have to add it in order to support helicopter applications. Sometimes very accurate terrain data is needed to better define obstacles. Comparison between terrain and obstacle data is a valuable method to improve the quality of obstacle data. Verifying that merged data sets meet the intended functions is a type 2 LOA task.

Vaughn brought up that it could be desirable to have Area 2 level data beyond the aerodrome areas. Some RNP AR approaches, for example, require flying in the terrain and obstacle environment rather than above it. In DO-276B, SC-217 made suggestions to ICAO that met a lot of resistance due to the cost and effort required to provide the data. Either user requirements can be created to require Area 2 data for helicopter applications, or helicopter applications have to take into account whether they have Area 1 or 2 data in their operations.

Sam asked about how many helicopter operations are across state borders, calling in to question the role of ICAO in supporting helicopter requirements. Thomas said it was few, so this was a good point.

Cassidian will be able to share their requirements for databases. Travis said that DO-276B is not only used to drive state data supply, but used by data providers to originate data as well. John wondered if we needed to define a new surface (e.g. Area 2h) for helicopter needs.

John asked about what kind of data sources Cassidian is using. Thomas said they get data on power lines, for example, from electricity companies. They also use high-resolution satellite images for terrain. Obstacles are a bigger problem in terms of acquiring data, which is why they would like obstacle data providers to be more aligned.

Our ToR leaves it open for us to make changes to DO-276C to accommodate new applications such as this, although currently we had not planned on doing this. John said we should add it to our scope. How it would ultimately impact ICAO is to be seen and may be challenging (since we normally try to be aligned with ICAO). We would have to differentiate between fixed-wing and rotorcraft to ease ICAO alignment.

The framework for what they need is there and what exists is relevant, but the coverage and accuracy differences for helicopter could be handled separately – most of what is there is applicable and reusable.

11 Closing Plenary Session

11.1 *Working Group 1 conclusions*

Stephane presented the WG1 report-out. He emphasized good participation and opinions from many perspectives in the group. Exchanges were open and lively. We have a constructive approach towards building consensus and works toward improving DO-200A/ED-76.

Pending approval from their organizations, Brad Miller from FAA will chair the group, and Carmen Bonillo-Martinez from EASA will be the Secretary and document editor.

Initial round-table discussions came to the general feeling outcome was that the document is sound, and nothing is wrong with it, but there is room for improvement. As the group reviewed scoping exercises with FAA comments and suggested changes, each item was dispositioned as either an easy fix, no action required, action assigned, or open item (typically a major topic, or one best saved for the end). Scoping material review resulted in 25 action items varying from low to high complexity. There are 9 open items, including the following big issues:

- Scope of aeronautical data: ICAO Annex 15 opens scope to all types of data, but existing definition is limited to some types of data
- DQR expansion: provide further details about the DQR, relate assurance level and integrity, clarify how assurance levels are applied to data vs. the process, decide whether to consider data formats, and consider update to traceability definitions
- Origination of data: non-state originated data needs to be discussed, decide whether to add definition of “authoritative data source”, and consider mentioning “State or authorities designated by States”
- Data security: add provisions for data security (e.g. authentication), clarify security applied to data as opposed to security considerations for SW, personnel, etc.
- Timeliness considerations: Consider possible new transmission methods and timeliness (e.g. datalink) and assess whether new provisions are required; an ISRA with SC-206 and/or SC-214 may be considered in the future if the group feels it is appropriate
- Type 1/Type 2 applicability: may elevate to plenary for future discussions to get broader discussion, especially from perspective of airframers

The forward compatibility requirement in the RTCA ToR was reinforced. It is well understood that changes in DO-200B should not affect current approvals.

The conclusion is that WG1 is off to a good start, and the momentum needs to be kept. The group had great knowledge of the document. There is still a long way to go, but we have a set direction and know what needs to be done. Arrangements need to be formalized (for example, lead and secretary). Individual

action resolutions should be started as soon as possible – progress ahead of the St. Louis meeting is dependent on the group members. Web meetings and telecons should be held for group actions.

Stephane thanked everybody for the passionate and constructive WG1 efforts this week.

11.2 *Working Group 2 conclusions*

John Kasten gave the report-out for WG2 activities. John noted good participation throughout the break-out session. There was some discussion that the schedule is too aggressive, but no changes to the ToR will be made at this time.

The work process was re-initiated, with subgroups being defined and leadership and membership identified in most cases (only the Connectivity team lead position is unclear at this point).

A list of 16 high priority action items were discussed, all related to AMDB. We have not yet started editing the document, but reached agreement on how to move forward on all high-priority items. We also addressed some low and medium priority items as time permitted. ARINC 816 requested items were discussed to allow disposition ahead of their meeting the following week.

Noted discussion highlights include documentation standardization and consistency efforts, how to evolve or split up DO-291C/ED-119B (Stephane mentioned that EUROCAE is generally opposed to combining documents, and there must be a very good reason to move the material in an established published document; John said RTCA has the same opinion), how to handle incorporation of operational data, best approach for extending the ASRN into parking, apron, and deicing areas, and concepts for providing textual information (e.g. Aeronautical Information in Textual Format (AITF)).

Sixteen new action items were created, and most of the actions from the Salt Lake City meeting in December 2012 were closed. Two actions related to WG1 activities were identified:

- Standardize the use of the terms “data”, “data set”, and “database”; Sam identified another term (“data product”) for consideration
 - Dejan proposed using only “data” in DO-200B and user requirements documents, and only “database” in DO-291C, but this was met with some opposition since some feel DO-291B does not define databases per se, among other reasons
- Update DO-272D, DO-291C regarding integrity, accuracy, and resolution wording to be consistent with DO-276C

John mentioned that long-term leadership of WG2 is still TBD, since he will be retiring after the next meeting in St. Louis, but he may still be able to participate in his current capacity after his retirement.

11.3 *Working Arrangements*

Ed Rosado provided details of the NGA-hosted meeting in June 2013. It will be held at the Hilton Garden Inn in O’Fallon, Illinois. Flying into St. Louis Lambert airport and renting a car is advised.

Stephane and John felt that the working arrangements used this week worked well and the same will be done in St. Louis: a joint opening plenary (likely only half a day in St. Louis), working sessions through Thursday with a brief mid-week cross-session, and a closing plenary on Friday morning.

11.4 *EC mandate*

Stephane presented a mandate from the European Commission to develop a standard for aerodrome mapping data by the end of 2014. A call for experts was released in February 2013, with participants

identified by March 13, 2013, and a kick-off meeting planned for April 2013. The assumption is that no changes or impacts to our documents or work will occur.

11.5 AC 20-138C

Brad presented a document that summarized feedback received in the discussion of AC 20-138C. The consensus was that the AC focused on the wrong stakeholders. WG1 feels the emphasis must be placed on the operator, equipment manufacturer, and installer. DQRs must be specified in the GNSS equipment by the manufacturer specifying the capabilities of their GNSS equipment. The installer is responsible for further specifying the capabilities and limitations of the aircraft. The operator is ultimately responsible for specifying what data they want from the data supplier.

There was some confusion as to whether AC 20-138C was being revised, or if an AC 20-138D was being proposed. The draft that Brad shared is a revision to AC 20-138C which is out for open consultation.

John presented a dissenting opinion he wrote. The concern is that the end user has no way to tell what type of data should not be included. Brad stated the issue is that some end users may be using data that they are not necessarily approved to use, so they want to put the onus on the operators to prevent this – they are ultimately responsible for making sure they are not flying with something with which they should not be flying.

It is not clear how an operator would be able to identify if a procedure included a certain leg type, for example, in a procedure. The data suppliers can check this, but not the operator unless there are tools provided to allow them to do this. It would also have large impact on the data suppliers and end users to have to have tailored databases depending on their aircraft and avionics capability, possibly even down to the tail number.

Brad said that it isn't intended to burden the data suppliers. Dejan said the responsibility has always been on the operator to not use data it isn't qualified for, but that if it gets to the point where it has to be excluded at the maintenance/loading level, it would be a much larger impact. Brad said that it can probably be handled via limitations at installation time, and granted that perhaps his draft wording does not accurately reflect his intentions. Travis said that with regards to installation, they have been asked for formal statements that they meet DQRs, but depending on the DQRs and intended function, this determination can be less than straightforward.

Brian brought up the desire of airlines to be able to use the same database across their fleet, and that is a big reason for the recent development of open standards for aeronautical databases, and that the direction of AC 20-138C seems to contradict this.

Members of the group are advised to respond to the AC 20-138C during open consultation.

11.6 ADQ-2 arrangements

It was noted again that the recent change in arrangements for ADQ-2 could complicate updating DO-200A.

11.7 Next meetings

- June 17-21, 2013, US, hosted by NGA in St. Louis (John will send out the logistical information soon)
- September 9-13, 2013 in Dublin (hosted by IAA)

- December 2-6, 2013 in US (location TBD since RTCA office in DC is booked that week; we are seeking a weather friendly location on the East coast)

11.8 WG2 Actions Opened during Brussels Meeting

Requestor	Assigned To	Task	Status
WG2	Chris Criswell	Provide briefing on D-NOTAM project at St. Louis meeting in June.	Open
John Kasten	Brian Gilbert	Coordinate with AOS WG to make sure proposed resolution to "Location" terminology action item resolves their concerns.	Open
John Kasten	John Kasten	Does RTCA have a mechanism for dividing documents into "parts"? (e.g., like ARINC, ICAO)	Open
Scott Wilson	Model/SWIM sub-team	Is there a way to capture business rules in the model and auto-generate these parts of the document?	Open
Sam van der Stricht	WG2	Brainstorm how to handle inclusion of operational information as data (e.g., with the SC-214 actions of gate vs. stand, rapid exit, etc.); should be considered within context of larger picture (such as D-NOTAM)	Open
John Kasten	John Kasten	Send Word versions of DO-272, DO-291, and DO-276 to Debbie	Open
John Kasten	Brian Gilbert	Send Table 4-3 and 4-4 spreadsheet to Debbie	Open
Sam van der Stricht	Debbie Garcia & Scott Wilson	Work out how to coordinate document and model changes	Open
WG2	Chris Criswell	Present SOP-digitization material that was pitched to NextGen (related to preferred taxi route action). Material has already been sent to John.	Open
Brian	Chris Criswell	Check if Cynthia DeBisschop or somebody else familiar with FAA SOP project is available to assist with preferred taxi route development	Open
WG2	Content team	Assess impact of changing TaxiwayElement <i>idlin</i> naming rules to incorporate crossing taxiways into names for instances representing taxiway intersections on non-ASRN aspects.	Open
WG2	Connectivity team	Assess impact of changing TaxiwayElement <i>idlin</i> naming rules to incorporate crossing taxiways into names for instances representing taxiway intersections on the ASRN.	Open
WG2	Cassidian	Draft requirements for helicopter applications for consideration in DO-276/ED-98 updates.	Open
John Kasten	Stephen Moody Patrick Estendorfer	Develop data requirements needed to support SMGCS operations (beyond just the surface markings). FAA Flight Standards group has identified data needed for charting.	Open
Chris Criswell	Chris Criswell	Provide documentation describing required features and attributes for SMGCS.	Open
Mike McNerney	Mike McNerney	Provide information on runway status lighting	Open

The following action item tables are grouped by sub-team, and provide a notional schedule for what meeting(s) the tasks will be addressed. Red cells indicate the action is expected to be discussed at a particular meeting, while gray cells indicate the action is not expected to be addressed. White cells mean the action is not a priority for that meeting, but may be accommodated based on available time. The last three meetings are currently red for all items because these are expected to be the FRAC draft preparation and FRAC resolution meetings.

Additional information such as additional description detail and affected features for each task is available in an Excel spreadsheet that collects the following tables into a single list that can be filtered by sub-team, priority, level of effort, affected documents, affected features, or meeting agenda.

11.9 WG2 Open Action Items – Application sub-team

Requestor	Task Description	Priority	Level of Effort	DO-272	DO-291	DO-276	V&V	Feb '13	Jun '13	Sep '13	Dec '13	1Q '14	2Q '14	3Q '14
WG2	What "use of airport data" do we not currently address, i.e. Airport GIS, Environmental, ATC, All type of Airport Databases that are not necessary "mapping", SWIM Services (European)	Low	High	X										

11.10 WG2 Open Action Items – Connectivity sub-team

Requestor	Task Description	Priority	Level of Effort	DO-272	DO-291	DO-276	V&V	Feb '13	Jun '13	Sep '13	Dec '13	1Q '14	2Q '14	3Q '14
Jeppesen	Revisit potential concatenation of multiple nodes occupying the same location	Low	Low	X										
WG2	Add Deicing Areas to ASRN	High	High	X	X			In work						
WG2	Add Apron/Parking Areas to ASRN	High	High	X	X			In work						
WG2	Changes based on feedback from Rev C	High	TBD	X	X									

11.11 WG2 Open Action Items – Consistency sub-team

Requestor	Task Description	Priority	Level of Effort	DO-272	DO-291	DO-276	V&V	Feb '13	Jun '13	Sep '13	Dec '13	1Q '14	2Q '14	3Q '14
Jeppesen	Assess the use of the term "movement area" in DO-272 and make sure usage is consistent.	Low	Low	X										
Brian Gilbert	Further develop the FRAC comment on Class "I don't really see what benefit the "class" distinctions are providing"	High	Med	X	X			In work						

Requestor	Task Description	Priority	Level of Effort	DO-272	DO-291	DO-276	V&V	Feb '13	Jun '13	Sep '13	Dec '13	1Q '14	2Q '14	3Q '14
Boeing Eurocontrol	Revisit how best to present the data capture rules and geometric constraints.	High	High	X		X		In work						
Boeing	Address DO-272C FRAC comments linked to the numbering of rules (shalls) and the issue of multiple shalls group in one numbered section.	High	Med	X		X		In work						
WG2	Define and align the use of Data, Data Set, and Database	Low	Low	X	X	X								
WG2	DO-272/291 Integrity, Accuracy, and Resolution wording needs to stay consistent with DO-276	Low	Low	X	X	X								
Boeing	Consider changing title of Section 1.2.1 of DO-272C.	Low	Low	X	X	X								
WG2	Add definitions of Node and Edge (ASRN) to glossary.	Low	Low	X			X							
AOSWG	Use of "Location" in feature names	High	Low	X	X			Closed						
WG2	Attribute Data Rules Clean-up	High	Medd	X										
WG2	Ensure DO-276 and DO-291 are aligned with regard to line 2365 (276 FRAC version), definitions.	Low	Low		X	X								
WG2	Ensure any use of obstacle defined using words "permanent and temporary" in DO-291 matches new wording in DO-276	Low	Med		X									
WG2	Investigate splitting DO-291 into two documents	High	High		X			In work						

11.12 WG2 Open Action Items – Content sub-team

Requestor	Task Description	Priority	Level of Effort	DO-272	DO-291	DO-276	V&V	Feb '13	Jun '13	Sep '13	Dec '13	1Q '14	2Q '14	3Q '14
Boeing Jeppesen	The geometric concepts of “overlapping” polygon & “contained in” polygons need to be clarified	Med	Low	X				In work						
ISICNS	Review use of “heliport threshold” terminology	Low	Low	X										
Avitech Jeppesen	rwyslope: Runway slope definition	Low	Med	X	X									
Airbus	Draft proposal for the density of RunwayCenterlinePoints.	High	Med	X										
Stephen M.	Define value of accuracy for RunwayCenterlinePoints.	Med	Med	X										
Honeywell	Write requirements for low-vis and preferred taxi routes.	High	High	X	X									
AOSWG	Revisit the naming of the Arresting Gear Location feature	Low	Low	X	X			Closed						
WG2	Revisit definition of Runway Width	Low	Med	X	X									
Airbus	Define and add new attributes for airport element restrictions	Med	High	X	X									
Airbus	Review turnpad for restacft attribute	Low	Low	X	X									
Boeing	DO-272D: fix up Figure 4-8. DO-291C: fix up Figures 4-1 and 4-2.	Low	Low	X	X									
A816	TaxiwayElement feature that lists all IDs associated with a taxiway intersection (e.g., like idbase)	High	Med	X	X			In work						
A816	Resolve issues with PaintedCenterline feature capture rule for unidirectional runways	High	Low	X				In work						
A816	Discuss taxiway intersection identifier issues and how it affects containers	High	Med	X	X			In work						

11.15 WG2 Open Action Items – Temporality sub-team

Requestor	Task Description	Priority	Level of Effort	DO-272	DO-291	DO-276	V&V	Feb '13	Jun '13	Sep '13	Dec '13	1Q '14	2Q '14	3Q '14
WG2	DO-272/DO-291 needs to be reviewed based on DO-276, paragraph 3.4.1	Medium	Low	X	X	X								
WG2	Changes based on feedback from RevC	High	TBD	X	X									
T&O FRAC	"interp" attribute not in DO-291 for terrain and obstacle.	Low	Low		X									

11.16 WG1 Open Action Items

Num	ACTION	LEAD	ASSIGNEE	SECTION	PARAGRAPH	REF	COMPLEXITY	DUE
Bx11	Consider adding some text about the feedback loop in the main body of the document. Look at potential impact on appendix C and on tool qualification level - and the various figures (especially Fig. C6)	Marc C	Marc C + Ronald	2	2.3.3 + Appendix C	EUR3-51	Medium	ASAP
Bx12	Consider adding text to Executive Summary and a new short section in 1.1 mentioning the link with SESAR / NextGen and PBN, SWIM, etc.	Mike B	Mike B	1	1.1	EUR5	Low	ASAP
Bx13	Include text and possibly a figure (e.g. Allan Hart figure) about the link between this standard ("umbrella") that applies to the process and the other documents (eg 201, 272, 276) which state the data quality requirements. Plus revisit which standards need to be referenced	Scott	Scott	1	1	EUR6	Medium	ASAP
Bx14	Remove the whole commentary but add in 1.5.4.1 the figure of the data chain with upstream / downstream phases (use the "CHAIN" figure)	Manfred	Manfred	1	1.5.4.1	EUR23	Low	ASAP

Bxl5	Update the means of electronic transmission (wrt "diskettes", "floppy disk")	Amanda	Amanda	1	1.5.4.3 and 1.5.4.5	EUR2 5-26	Low	ASAP
Bxl6	Add provisions linked to new technologies for the transmission of aeronautical information: tablets, use of Internet for data transmission (data uploads and downloads) and AIS data-link services	Amanda	Amanda	1	1	EUR3 0	Medium	ASAP
Bxl7	Address inconsistencies between various source data (eg AIP, Internet, data sets) and between non-State originated data and State data. Consider terrain, obstacle and AMDB when no "authoritative source" can be identified (eg several State sources)	Marc H	Marc H + Jackie + Travis	1	1.5	EUR3 1	High	St Louis
Bxl8	Split the compliance plan into 2 sections (requirements / deliverables) and specify that the requirements need to be documented into specific deliverables.	Brad	Brad + Carmen	2	2.2	EUR3 2	High	St Louis
Bxl9	Clarify that data quality requirements are negotiated between user and supplier, especially in the cases where some user-defined quality requirements cannot be met by a supplier. Stress that this negotiation ("mutual agreement") should be documented. <i>[Reuse AC20153A as required]</i> .	Scott	Scott + Marc H + Jackie	2	2	EUR3 4-43	Medium	ASAP
Bxl10	Organize telecon with affected parties (volunteers: HLL, JEP, LH, EC, DG, TH) in order to make a proposition about the Tool Qual section. Also consider new data integrity definitions in ICAO material (Annex 15). Consider (an)other confidence level(s) ("non-200A" or "casual", e.g. restaurant telephone number, etc). Casual data do not equal "non ICAO defined data" but data that have no impact on safety of operations. Tool qualification sections should be reviewed in light with the latest developments in DAL / SWAL.	Carmen	Brad + Carmen + team of affected parties (HLL, JEP, LH, EC, DG, TH, ECTL)	2	2.4.5	EUR3 7-38-39-40	High	St Louis
Bxl11	Review of the definitions highlighting whether there is an ICAO def. For the term and if they are the same or not.	George	George	App A	Appendix A	EUR4 5	Low	ASAP

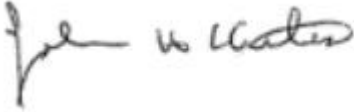
Bxl12	Add examples for T&O + AMDB in Appendix B	Travis	Travis + Dejan	App B	Appendix B.1.7.2	EUR4 7	Low	ASAP
Bxl13	Consider the latest DAL documentation and assess its impact on the method described in Appendix B. Add more detail and variation in levels of rigor for V&V against their assurance levels. Could distinguish between major and minor within Level 2 data.	Brad	Brad	App B	Appendix B.1.3	EUR4 8	High	ASAP
Bxl14	Update data format considerations considering the latest data format international developments (e.g. use of XML, etc.)	Manfred	Manfred (through Eddy P.)	App B	Appendix B.1.7.2	EUR4 9	Low	ASAP
Bxl15	Clarify application of "design assurance level" applicability (to the process or to the applications?). The appropriateness of the term "design assurance level" is to be confirmed (no definition found yet)	Brad	Brad	App B	Appendix B Table B2 + Appendix C.2.3.1	EUR5 0-53	High	St Louis
Bxl16	Add some information about data error management (differences in process between minor and major errors, etc.) + fix inconsistency on whether data can or cannot be delivered with an error (C7 vs section 2.3). Also Consider distinctions made by data providers between error reporting levels (alerts - erroneous data - and information - e.g. procedures missing) and define clear criteria.	Amanda	Amanda + Manfred	App C	Appendix C.7	EUR5 2	High	ASAP
Bxl17	Import the tables in 20-153A appendix 3 to the document for compliance demonstration. Elements included in DO200A to be included, elements only in AC20-153A and EASA compliance checklist to be discussed (so that at the end it is consistent)	Brad	Brad + Carmen	2	2.2	FAA4 4	Medium	ASAP
Bxl18	Add in 2.3.4 a statement that notification of errors should be made in a timely fashion, that timely fashion depending on the criticality of the data (details to be defined in another section)	Manfred	Manfred + Stephane	2	2.3.4	FAA5 2	Medium	ASAP
Bxl19	Compare a QMS (as defined eg in ISO) and DO200A - list differences	George	George + Ralf	2	2.5	FAA6 8	Medium	ASAP

Bxl20	Propose new text for the FAA proposed changes not covered by other actions	Brad	Brad	2	2-3- appendices	FAA 36, 71to7 8, 85	High	St Louis
Bxl21	Propose text about how a State or originator could use this standard "upstream"	James	James	1	1	Round table	Medium	ASAP
Bxl22	Propose text that acknowledges that this document does not address information but just data	George	George	1	1	Round table	Low	ASAP
Bxl23	Propose some text to expand provisions about skills and competencies	George	George	2	2.4.4	Round table	Medium	ASAP
Bxl24	Write a paper explaining and illustrating with examples the problems to make the link between ED12 (DO178) and ED76 (DO200)	Ronald	Ronald	TBD	TBD	Round table	Medium	ASAP
Bxl25	Propose some text to mention that sampling is a potential method for V&V	Ronald	Ronald	App C	Appendix C	Round table	Low	ASAP

Certified as a true and accurate summary of the meeting.



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John Kasten
Chairman, RTCA SC-217



Stephane Dubet
Chairman, EUROCAE WG-44