

RTCA- 228
Summary of Plenary #20- RTCA Paper No. 190-19/SC228-063
Washington, DC
1:00 PM EST, July 25, 2019

The twentieth plenary of RTCA Special Committee 228 was called to order by SC-228 Co-Chair, Paul McDuffie at 1:00PM (EST) on July 25, 2019, using Webex audio and web conferencing.

1. Agenda Item #1- Call to Order: Welcome
 - 1.1. Paul McDuffie and John Moore, co-chairs welcomed everyone to the Plenary and stated the purpose of the meeting was to review status of working groups.
2. Agenda Item #2- Review RTCA meeting guidelines
 - 2.1. Al Secen reviewed the Anti-Trust Policy, the Proprietary Policy and the RTCA Committee Participation Membership Policy.
 - 2.2. Al asked all in attendance to sign in via the roster or provide contact information on the new member sheet.
3. Agenda Item #3- Opening remarks
 - 3.1. Roll Call- the complete list of session participants is listed in Appendix A.
4. Agenda Item #4- Approve meeting minutes form Meeting #19
 - 4.1. Reviewed the key points of plenary #19 Minutes as documented.
 - 4.2. Acceptance of plenary #19 minutes; moved by Marvin Hammond, seconded by Mark Reed. Unanimously approved.
5. Agenda Item #5- WG1 Status Report
 - 5.1. Presented by Ted Lester, WG1 Co-chair
 - 5.2. DAA 365A MOPS will enter FRAC August/September 2019 (No later than September 2, 2019) as it will be ready upon completion of the five outstanding items listed below
 - Operations and OSED – None
 - Tracker and I/O Sections –
 - Display, Alerting, Guidance - Incorporation of changes plus
 - Modeling and Simulation – Test vectors for updated Section 2.4 test procedures
 - V&V – Final requirement-to-test mapping table and requirement-to-class mapping (Appendix O)
 - 5.2.1. Expect a 30 day FRAC starting September 2
 - 5.3. DO-TBD Ground Based Surveillance (GBS) MOPS
 - 5.3.1. Estimate 3-6 months to prepare for FRAC, ECD to enter FRAC October Plenary

- 5.3.2. Discussion on when to schedule in TOR to avoid PMC redo on sliding and suggestion was to go 2 cycles
- 5.4. Enter FRAC in August/September 2020:
 - 5.4.1. DO-365B MOPS
 - 5.4.2. DO-366A Air-to-Air Radar (ATAR) MOPS
 - 5.4.3. DO-TBD Airborne EO/IR Sensor MOPS
- 5.5. Requested plenary approval to enter DO-365A FRAC subject to completion of five identified outstanding items.
 - 5.5.1. Discussion regarding link, performance, capacity and data classes for tracks (uplink/downlink)
 - 5.5.2. Document appears to be unclear in many areas regarding how the system works. **ACTION:** Jonas Trego took action to provide clarity on classes 6 and 7.
 - 5.5.3. To close FRAC, a plan to close on all comments is required. Concern WG1 will not be able to complete to support closing of FRAC. **ACTION:** Ted Lester took action to work with sub-committees to clean-up the document for clarity of definitions and architecture.
 - 5.5.4. Motion made to approve by Don Nelis, seconded by Bruce Eckstein. No opposed. Motion carries to enter FRAC upon completion of actions by September 2.
- 6. Agenda Item #6- WG2 Status Report
 - 6.1. Jim Williams and Steve Van Trees provided status for WG2.
 - 6.2. Update on progress for completion of DO-377A
 - 6.2.1. Sections 1 (Introduction) and 2 (Approach) Initial revisions made; further updates needed as remaining sections and all appendices are finalized
 - 6.2.2. Sections 3 (System Requirements), 4 (Verification), and 5 (Membership) to be updated next year
 - 6.2.3. Appendices A (CONOPS) and Appendix B (OSED): 2nd revision completed -- minor revisions expected from iterative efforts with OSA and OPA
 - 6.2.4. Appendix D (OSA): Initial pass through HAW completed for expanded scenarios in OSED; draft due in October 2019
 - 6.2.5. Appendix C (OPA): Candidate new approach proposed; draft due April 2020
 - 6.2.6. Appendices E-I: Appendices moved from DO-362; addresses related terrestrial aspects. All appendices updated.
 - 6.2.7. Appendices J-M: New for SATCOM MASPS: Drafts nearly complete except for Link Budget; that appendix and Service Level Agreement Appendix include terrestrial aspects.
 - 6.2.8. Appendices N (Interworking) and O (Security): Appendices moved from DO-362; drafts include minor expansions plus inclusion of control station handovers.

- 6.3. Update on progress for completion of DO-362A
 - 6.3.1. C-band Terrestrial MOPS completed actions
 - 6.3.1.1. Terrestrial C-band can't realistically cover everything, but comes close
 - 6.3.1.2. Previous efforts evaluated how good the C2 link must be to operate with existing waveform
 - 6.3.1.3. Multi-slot TDD based on altitude solution yields reasonable requirements
 - 6.3.1.4. Alternate waveform identified, work in progress
 - 6.3.1.5. Tiger team launched to determine acceptable reduced CONOPs for terrestrial C2 systems
 - 6.3.2. Next Steps
 - 6.3.2.1. Refine fading margin numbers, update link margin calculations
 - 6.3.2.2. Refine coverage limits based on fading margin updates
 - 6.3.2.3. Feed final terrestrial C2 operational capabilities back to WG2 and tiger team
 - 6.3.2.4. Begin work on remaining tasks
 - 6.3.3. FCC rejected use of L-band. No ECD for FCC rules to enable any production beyond experimental/prototypes.
- 6.4. Scope Recommendation
 - 6.4.1. Supports all CONOPS Defined for DO-377A
 - 6.4.2. Use -50dBm/kHz Tx noise floor, Multi-UA per Location, Two-Slot TDD
 - 6.4.2.1. Much work will be required to validate
 - 6.4.2.2. This work will not impact WG1
- 6.5. Status of ISRA with SC-222 (L-Band SATCOM C2 Link MOPS)
 - 6.5.1. SC-222 has review pending of DO-377.
 - 6.5.2. SC-222 industry participants to work (schedule TBD) on following:
 - 6.5.2.1. Evaluate MOPS to accommodate C2 Data Classes 1 – 4
 - 6.5.2.2. Manage PPP function (Priority over non-C2 safety services)
 - 6.5.2.3. Capacity considerations for high data demands from UAS
 - 6.5.2.4. System Installation and operation considerations
 - 6.5.2.5. C2 and Payload using one LRU – just like manned aircraft for aircraft and cabin domain
 - 6.5.3. Cobham volunteered to lead SC-222 L-Band Satcom MOPS effort. Iridium Next volunteered to collaborate with Cobham. Cesar Suarez encourage Thales to participate.
 - 6.5.4. EUROCAE WG-105 will review DO-377 at their next meeting.
 - 6.5.4.1. **ACTION:** Al Secen will contact Technical project manager to clarify their intentions.

7. Agenda Item #7- TOR Update
 - 7.1. Requester- proposed to add Jay Merkel
 - 7.1.1. Should be Jim Williams, FAA UAS Integration Office and original request date
 - 7.2. Leadership Contacts- proposed to add new secretary, Christina Westover
 - 7.3. WG1 proposed change to rename Ground-based Non- Cooperative Radar MOPS to Ground-based Surveillance System MOPS and committee completion date to support planned Plenary date to April 2020.
 - 7.3.1. Suggestion made to hold to September 2020 date for three documents. Documents are independent, but requirements are coupled together.
 - 7.3.2. Leadership team will discuss offline and bring back to October plenary.
8. WG2 proposed change to Consolidate SATCOM MASPS into C2 Link MASPS into DO-377A.
 - 8.1. Move DO-377A schedule from December 2019 to October 2020
9. Motion to approve revisions by Bruce Eckstein, Marvin Hammond seconded. No objections, motion carries.
10. **ACTION:** Christina Westover will incorporate all agreed to TOR revisions and send to AI Secen.
11. Agenda Item #8- New Business- Future Plenary Dates
 - 11.1. Proposed Future Meetings
 - 11.2. 24-25 October 2019 21st Plenary
 - 11.2.1. DO-365 DAA MOPS Rev A Exit FRAC
 - 11.3. 30-31 January 2020 22nd Plenary
 - 11.3.1. Ground Based Surveillance MOPS Enter FRAC
 - 11.4. 23 April 2020 23rd Plenary
 - 11.4.1. C2 Link MOPS (Terrestrial) Rev A Enter FRAC
 - 11.4.2. Ground Based Surveillance MOPS Exit FRAC
12. Agenda Item #9- Adjourn
 - 12.1. Jonas Trego called a motion to adjourn and Mark Reed seconded.
 - 12.2. John Moore adjourned the plenary at 2:53 PM EST.

13. Offline Actions

- 13.1. Leadership team shall meet (8/2) to review feasibility of having four documents enter FRAC in October 2020.
- 13.2. Draft recommendation to the PMC for TOR changes
- 13.3. Review items on website for currency
- 13.4. Discuss value of co-located WG1/WG2 meetings & Plenaries.
- 13.5. Westover to revise slides before posting to website
- 13.6. Westover to draft a schedule after 8/2 leadership meeting

A special thank you to Donna Clemens, for helping me with who was speaking.

Respectfully Submitted by,
Christina Westover
Secretary, RTCA SC-228

CERTIFIED as a true and accurate summary of the meeting.
Paul McDuffie
SC-228 Co-Chair
July 29, 2019

Appendix A- List of SC-228 Plenary Participants

John Moore	SC-228 Co-Chair	Collins Aerospace
Paul McDuffee	SC 228 Co Chair	Boeing Company
Jonas Trego	SC-228 Plenary, WG1 Secretary	General Atomics- Aeronautical Systems Inc.
*Don Walker	SC-228 WG1 for DAA, Co- Group Lead	Honeywell International Inc.
Ted Lester	SC-228 WG1 for DAA, Co- Group Lead	MITRE
Steve Van Trees	SC-228 GAR, WG2 for C2, Co-Group Lead	FAA, AIR-130
Jim Williams	SC-228 WG2 Co-Group Lead	
Al Secen	SC-228 Program Director	RTCA
Christina Westover	SC-228 Plenary, Secretary	The Boeing Company

* Not in attendance

ATTENDEES

Company	Name
ALPA	Mark Reed
ARCON Corporation	Dennis Colbert
	Siva Sivananthan
The Boeing Company	Amelia Wilson
	Stephen Yun
	Cesar Suarez
Cavan Solutions	Sean Ghazavi
Cobham Aerospace Communications	Jeff Knickelbein
Collins Aerospace	Tyler Barney
	Randy Jacobsen
FAA	David Chen
	Peter Georgiou
	Larry Cowles
	Rose Merchant-Bennett
	Michael Neal
	Don Nellis
	Anthony Long
	Ruth Hirt
	Art Hinaman
	Ravi Jain
	Tom Farrier
	Paul Campbell
	Lee Nguyen

FirebirdSe LLC	Bruce Eckstein
Garmin Ltd	Ben Peetz
General Atomics Aeronautical Systems, Inc	Tyler Miles
	Naiel Askar
	Tim Grebe
	Brandon Suarez
Honeywell International, Inc.	Al Malaga
	Lisa Fern
IMMERSAT	Anthony Spouncer
Iridium	Michael Hooper
Johns Hopkins University	Sam Smearcheck
Kitty Hawk	Nate Fisher
The MITRE Corporation	Joe Boyd
	John Ashley
	Frank Box
	Greg Thibeault
	Dongsong Zeng
NASA	Donna Clements
	Conrad Rorie
	Daniel Eng
	Jack Connolly
	Mohamad Refai
	William Johnson
	Summer Brandt
Northeast UAS Airspace Integration Research Alliance (NUAIR)	Andy Thurling
Northern Plains UAS Test Site	Erin Roesler
Northrup Grumman Corp	William Walker
RDRTec, Inc.	Michael Matuson
Regulus Group	Shelly O'Leary
	John Paranzino
	Tom Pagano
SAIC	Neil Masco
Technology Providers, Inc..	Marvin Hammond
Transport Canada	Mark Malo
uAvionx	Jim Davis
UPS	Bill Reese
US Navy	Roger Burton
Unknown Affiliation	Travis Hank
	Todd Lewis
	Sean ?
	Gilbert ?
	Sagar Kc