

RTCA- 228
Summary of Plenary #32 RTCA Paper No. 041-22/SC228-093
VIRTUAL MEETING
1:00 PM EST, January 27, 2022

The thirty-second plenary of RTCA Special Committee 228 was called to order by SC-228 Co-Chair, Brandon Suarez at 1:02 PM EST on January 27, 2022 using WebEx audio and web conferencing.

1. Agenda Item #1- Call to Order: Welcome
 - 1.1. Brandon Suarez, co-chair called the meeting to order and stated the purpose for today's plenary through a review of the published and proposed agendas.
 - 1.2. Today's agenda will go in reverse WG order (4,3,2,1)
 - 1.3. EUROCAE WG-105 was unable to attend today due to meeting conflicts, but will be invited to brief at the next plenary in April.
2. Agenda Item #2- Review RTCA meeting guidelines
 - 2.1. Karan Hofmann welcomed everyone on behalf of AI Secen
 - 2.2. Karan reviewed the Anti-Trust Policy, the Proprietary Policy and the RTCA Committee Participation Membership Policy
 - 2.3. Karan also briefed some meeting tips to ensure a successful virtual meeting
 - 2.4. Karan then briefed the online self-rostering feature. Thank you to all who self-roster!
3. Agenda Item #3- Opening Remarks/ Introductions
 - 3.1. Went around the "room" and introduced participants and companies
 - 3.2. Participants on the phone stated their names and organizations, and attendance is noted in Appendix A
4. Agenda Item #4- Review and Approve the agenda
5. Agenda Item #5 - Approve meeting minutes from Plenary Meeting #31
 - 5.1. Katie Edwards, secretary, stated she received no comments for update/revision.
 - 5.2. Katie called for a motion to approve the minutes. Marv Hammond moved to approve the minutes. Jim Williams seconded.
 - 5.3. There were no objections noted, minutes approved.
6. Agenda Item #6 - Schedule review – high level overview of document work that remains for 2022-2023
 - 6.1. Schedule now kept on folder for committee reference in AerOpus
7. Agenda Item #7- WG-4 Update
 - 7.1. Joel Wichgers presenting the update for WG-4

- 7.2. The WG met virtually this week on Tuesday
 - 7.3. If anyone is interested to join the WG-4 authors team, they are open to more volunteers. Contact the leadership for more information.
 - 7.4. Joel reviewed the key sections of the document
 - 7.5. The document is on track to reach March RAC and May FRAC.
 - 7.5.1. 27 UAS Navigation Gaps have been identified
 - 7.5.2. Current draft is available on AerOpus, and an internal comment period will begin shortly.
 - 7.6. Provided an update on SC-159 for Navigation relevance
 - 7.7. ASTM F38 WK75923 update – Andrew Videmsek acting as liaison between groups.
 - 7.8. Currently no discernable conflicts or overlap in scope between SC-228 and these other groups
 - 7.8.1. Andrew is going to seek permission from ASTM to be able to distribute a copy of the draft ASTM Navigation document to RTCA SC-228 members for review.
 - 7.8.2. Cristina Seibert asked a question about the scope of the navigation gaps identified in the document. The question was whether the navigation gaps in the document were intended to be generic or limited to specific UAS CONOPS. The focus of the SC-228 material is on larger (really higher risk category) UAS, but it is important to note that some navigation gaps identified are generic and apply to smaller (really lower risk category) UAS as well. Joel and Jim Williams answered the question. Cristina added that it might be helpful to make a note that the scope is not exclusive, but it's not diving into small UAS explicitly.
8. Agenda Item #8 – WG3 Update
- 8.1. Randy Willis, co-chair shared WG 3 update
 - 8.2. Work has begun on the Guidance Material document for Lost Link
 - 8.3. Achieved consensus on scope and assumptions. Similar to WG-4, there is not an exclusive focus on large UAS, but there is not an intentional effort on small UAS.
 - 8.4. Created a draft framework for guidance document.
 - 8.5. Proposed internal RAC in advance of formal FRAC in July.
 - 8.6. Created rhythm and teaming plan. Webex breakout rooms worked great – thank you AI for setting them up!
 - 8.7. Conducted joint meeting with WG-2
9. Agenda Item #9 - ACAS Xr brief
- 9.1. Presented by Ben Zintak from JHU APL

- 9.1.1. NASA paper can be found here:
<https://ntrs.nasa.gov/api/citations/20210025961/downloads/NASA-TM-20210025961.pdf>
 - 9.1.2. benjamin.zintak@jhuapl.edu
 - 9.1.3. margarete.groll@ll.mit.edu
 - 9.2. ACAS Xr. Provides DAA for rotorcraft, VTOL, and other aircraft in the NAS. Xr is focused on enabling maximum flexibility given unanswered airspace and equipage questions.
 - 9.3. CONUSE contains table
 - 9.4. SC-147 working group stood up to begin in February. 8-10th is first meeting date, with follow ups in May and August.
 - 9.5. Prepping for meeting with SC-228 and SC-147 leadership to determine gaps, overlap and plans going forward
 - 9.6. Reaching out to NASA to collaborate regarding UAM/AAM and UTM
 - 9.7. Maggie Groll briefed the ACAS Xr Operations WG
 - 9.7.1. Looking for operator participants, especially with rotorcraft pilot experience
 - 9.7.2. Initial Task list identified for the working group
 - 9.8. Reach out to Ben or Maggie with any further questions, or join the group on AerOpus.
10. Agenda Item #10 – WG-2 update
- 10.1. Amelia Mahan provided the briefing for WG-2
 - 10.2. Coordination continues for C2 Link system MASPS (DO-377B)
 - Development
 - 10.2.1. High level challenges: Small package delivery, Validity of DAA assumption, Validity of Navigation
 - 10.2.2. Air Taxi operation
 - 10.2.2.1. Integration help needed with WG-1 to scope appropriate assumptions around DAA
 - 10.2.3. Surface operations – manual and automated taxi, fixed wing operations
 - 10.2.3.1. Integration help needed with WG-4, WG-1
 - 10.3. UHF MOPS
 - 10.3.1. Partial RAC is scheduled for Feb 24-Mar4 to get internal feedback. Document has been covered in weekly meetings since November.
 - 10.4. Cellular MOPS – joint with EUROCAE WG-105
 - 10.4.1. Document writing is underway, large sections still contain gaps, planning internal RACs, deconflicted with other topics. Plan to start FRAC later this year.
 - 10.5. DO-362B: Currently FRAC is scheduled for October 2023, there is some uncertainty about what this document should become. No technical additions are being made at this time.

- 10.5.1. There is also no lead author at the moment. This topic will be revisited in the future, raising for committee awareness now.
- 10.6. Jim Williams asked if the intent is for the Cellular MOPS to be suitable for a TSO. Amelia answered that yes, that is still the goal. It's unclear how workable that is at this time.
11. Agenda Item #11 – WG-1 Update
- 11.1. Don Walker provided the update for WG-1
- 11.2. Group met for three days this week.
- 11.3. OSED document going to be its own green cover document. Internal RAC of OSED document will begin next week.
- 11.4. Received update from MIT Lincoln Labs on Terminal Encounter Model
- 11.4.1. If interested in accessing the model, contact Andrew Weinert
- 11.5. Received update on ICAO DAA SARPS material from Brandon Suarez
- 11.6. Update on DO-365B System Safety Assessment supporting TSO from MITRE
- 11.7. Update on Omni Active Surveillance sensor Modelling and Simulation from Lincoln Labs
- 11.8. Reviewed text for EO/IR incorporation into DO-365
- 11.9. Don shared the status of WG-1 Phase 3 TOR deliverables
- 11.10. Questions from the group
- 11.10.1. Marv Hammond what's the availability of DAA to support processor calculation for collision avoidance for smaller UAS?
- 11.10.2. Don answered that the scope of WG-1 remains, larger UAs, above 400', greater than 55 lb, with sensor systems designed to detect manned aircraft, and other like size UAs, when integrating within Part 91 airspace for air to air conflict detection and collision avoidance. Marv clarified that there is a difference between small and smaller.
- 11.10.2.1. Brandon Suarez stated that no companies have come forward to RTCA to request that work be scoped. Companies interested in these types of sensors are working with ASTM. Jim confirmed this and recommended that Marv and WG-2 seek out assistance from ASTM instead of WG-1 on this topic for small package delivery assumptions.
- 11.11. Safran has proposed a small revision to the EO/IR MOPS to include improvements to the tracker in the Appendix of DO-387. WG-1 requests the leadership to ask PMC permission to address this change in the same FRAC as DO-365C.
- 11.12. Boeing and General Atomics are championing OSED for traffic awareness and avoidance on the surface. WG-1 proposes that this application be added to the TOR as a separate MOPS and developed with WG. Schedule to be determined with committee leadership and stakeholders.
- 11.12.1. Brandon Suarez to comment on this in the New Business section later on.

- 11.13. Don provided a schedule update
 - 11.13.1. Stand alone OSED is on schedule to enter FRAC in April
 - 11.13.1.1. Intent to close it in July and ask for plenary approval
 - 11.13.2. GBSS MOPS is behind schedule from TOR, about 1 quarter. Same FRAC cycle as OSED.
 - 11.13.3. EO/IR update to DO-365C is ahead of schedule
 - 11.13.4. Proposed EO/IR MOPS update DO-387 change 1
 - 11.13.5. ACASxu OSED is on schedule, for SC-147 MOPS

12. Agenda Item #12 - New Business

- 12.1. On Wednesday afternoon SC-228 held a mutli-WG meeting on Taxi operations, and how those operations could be incorporated into the work of the community. There was a discussion on work going on outside of RTCA.
 - 12.1.1. Quick discussion to plan future work today following the plenary.
 - 12.1.2. Contact Brandon if you are interested in being part of the scoping discussion.
 - 12.1.3. Randy noted that WG-3 did include taxi operations as part of the Lost Link scope.
- 12.2. NASA is organizing a technical interchange meeting for digital flight
 - 12.2.1. Link is available in Plenary slides
- 12.3. GAMA published V2V White Paper
- 12.4. Jim Williams called for a motion from the plenary to add a change to DO-387 and/or revision, depending on the data described by Don.
 - 12.4.1. Don Walker moved to to modify the TOR. Brett Fedderson seconded. Motion carried.

13. Agenda Item #13 – Adjourn

- 13.1. No other business
- 13.2. Brandon called for a motion to adjourn the meeting. Andy Thurling moved. Craig Bloch-Hansen seconded. Motion carried.
- 13.3. Adjourned the meeting at 3:40 PM ET

SC-228 Leadership

Jim Williams	SC-228 Co-Chair	Aura Network Systems
Brandon Suarez	SC 228 Co-Chair	General Atomics Aeronautical Systems, Inc
Katie Edwards	SC-228 Secretary	Boeing
Al Secen Rebecca Morrison	SC-228 Program Director	RTCA
Don Walker	SC-228 WG1 for DAA, Co- Group Lead	A3 by Airbus
Fabrice Kunzi	SC-228 WG1 for DAA, Co- Group Lead	General Atomics Aeronautical Systems, Inc.
Matt Spanos	SC-228 WG1 for DAA, Secretary	Transport Canada
Steve Van Trees	SC-228 GAR, WG2 for C2, Co- Group Lead	FAA, AIR-130
Amelia Mahan	SC-228 WG2 for C2, Co-Group Lead	Amazon Prime Air
Jennifer Ledford	SC-228 WG2 for C2, Secretary	FAA
Randy Willis	SC-228 WG3 for Lost Link, Co-Group Lead	Northrop Grumman
Paul Albuquerque	SC-228 WG3 for Lost Link, Co-Group Lead	FAA
Kerry Bowers	SC-228 WG3 for Lost Link, Secretary	FAA
Joel Wichgers	SC-228 WG4 for Navigation, Co-Group Lead	Collins Aerospace
Matt Harris	SC-228 WG4 for Navigation, Co-Group Lead	Boeing
Andrew Videmsek	SC-228 WG4 for Navigation, Secretary	General Atomics Aeronautical Systems, Inc.

Appendix A- List of SC-228 Plenary Participants

ATTENDEES

Company	Name
A3 by Airbus Group	Donald Walker
AcceleratUM	Brett Fedderson
ACES, Inc.	Al Malaga
	Michael Neale
ACR Artex	Tom Pack
Adaptive Aerospace Group	Keith Hoffler
	Devin Jack
	Paul Volk
Air Line Pilots Association (ALPA)	Mark Reed
Aircraft Owners and Pilots Association	Christopher Cooper
Amazon	Tyler Barney
	Amelia Mahan
Archangel Aero	Rose Mooney
ARCON Corporation	Siva Sivananthan
Aura Network Systems	Ally Ferguson
	Jim Williams
	Virginia Stouffer
AviaGlobal Group	Hal Adams
Collins Aerospace	Randy Jacobson
	Joel Wichgers
Constellation Aviation Solutions, LLC	Salim Janjua
dlr.de	Stefano Caizzone
Esterline CMC Electronics	Jean-Pascal JOARY
EUROCAE	Raphael De Courreges
Federal Aviation Administration (FAA)	Kerry Bowers
	Brian Richardson
	Matt Haskin
	Matt Harmon
	Paul Albuquerque
	Paul Campbell
	Keith Carver
	David Chen
	Mark Ellis
	James Foster
	Ferne Friedman-Berg
	Alex Fu

	Jose Fuentes
	Geme Gel-gelu
	Arthur Hinaman
	Ruth Hirt
	Mack Horton
	Neysa Isler
	Ravi Jain
	Anthony Long
	Ray Mei
	Rose Merchant-Bennett
	Don Nellis
	Ronnie Parks
	Mohammed Rahman
	Guillermo Sotelo
	Christopher Swider
	Stephen Van Trees
Federal Communications Commission (FCC)	Tim Maguire
Fedex	Doug Kirkpatrick
GDMS-C	Sebastien
	Alex Capodicasa
	Tony Nitti
General Atomics Aeronautical Systems, Inc.	Tim Grebe
	Fabrice Kunzi
	Xavier Redondo
	Brandon Suarez
	Andrew Videmsek
Honeywell International, Inc.	Sara Bauman
INMARSAT	Jerry Hancock
	Kristen Mineck
Iridium Satellite LLC	Joseph Darden
Iris Automation Inc	Akaki Kunchulia
JMF Consults	Stephen Lloyd
Joby Aviation	Greg Belaus
L3Harris	Kevin Dimond
MIT Lincoln Laboratory	Matthew Edwards
	Maggie Groll
	Randal Guendel
	Ian Jessen
	Wesley Olson
	Maria Picardi Kuffner

	Ngair Underhill
	Andrew Weinert
	Samuel Wu
NASA	Evan Dill
	Aaron Duple
	Husni Idris
	Elliot Lewis
	Jeffrey Maddalon
	Conrad Rorie
	Jordan Sakakenny
	Kurt Swieringa
	Steve Young
National Research Council of Canada	Iryna Borshchova
NextNav	Cristina Seibert
NIAR	Armando DeAbreu
Northeast UAS Airspace Integration Research Alliance (NUAIR)	Andy Thurling
Northern Plains UAS Test Site (NPUASTS)	James Cieplak
	Erin Roesler
Northrop Grumman Corporation	Lance King
	Randy Willis
NZ CAA	Brendan Shanley
Reliable Robotics	Louis Beaulieu
	A.C. Charania
	Mark Mondt
	Chris Schulenberg
	Michael Westenhaver
	Martin
RTCA	Karan Hofmann
	Rebecca Morrison
Sagetech Corporation	Rudy Johnson
SAIC	Neil Masco
	Barbara
Seamatica Aerospace Limited	Siu O'Young
Technology Providers, Inc.	Marvin Hammond
Thales Group	Jeffrey Richards
The Boeing Company	Scott Blum
	Katie Edwards
	Dan Ellis
	Martin Kearney-Fischer

	Matthew Moser
	Upekesha Nguigi
	Andria Schweiger
	Taji Shafaat
	John Vian
	Christina Westover
	Stephen Yun
The Johns Hopkins University	Charles Leeper
	Josh Silbermann
	Benjamin Zintak
The MITRE Corporation	Joseph Boyd
Transport Canada	Craig Bloch-Hansen
	Enzo Diodati
	Tom Hastie
	Matthew Spanos
uAvionix	Jim Davis
Wisk	Garv Stephenson
Xwing, Inc.	Anna Dietrich
	Robert Frazier
	Evan Wilson