

**Minutes of SC186 WG2
December 9, 2003
Trios Inc., Washington DC**

Attendees

Andrew Zeitln (co-chair)	MITRE/CAASD
Ken Staub (co-chair)	Trios
Larry Bachman	JHU APL
Mike Castle	JHU APL
Roxaneh Chamlou	MITRE/CAASD
Bill Harman	MIT Lincoln Lab (by telephone)
Stan Jones	MITRE/CAASD
Todd Kilbourne	Trios
Chris Moody	MITRE/CAASD
Tom Mulkerin	Mulkerin Assoc.
Ron Staab	Trios
Rob Strain	MITRE/CAASD
Gene Wong	FAA

1. Andy reported that the ASA MASPS was complete following a walkthrough meeting. The RTCA PMC was expected to grant final approval later that day. He had informed the SC186 Plenary that it should be possible to complete our Revision A of TIS-B MASPS in August for ballot, allowing time for Plenary approval at its September meeting.
2. Rob Strain presented a new concept for communicating service status to TIS-B user aircraft. By broadcasting a report for a user with NACp set to zero, a special meaning could be conveyed: that the user's ADS-B broadcast was received by TIS-B, but that the aircraft is outside of surveillance coverage (and hence should not expect to see all proximate targets via TIS-B). Rob showed the operation for various combinations of a user inside or outside of RF and Surveillance coverage zones. The attendees were supportive of this concept, which would replace the one using TQL=0 advanced at the preceding meeting.
3. Mike Castle gave a briefing on the analysis work done at JHU/APL modeling the TIS-B system. APL has developed simulations that model the behavior of both network delays/statistics and RF performance of the TIS-B system. Discussion centered around the RF performance of the TIS-B service using UAT. Results for a Core Europe 2015 scenario, using several worst-case bounding assumptions, showed that a single UAT TIS-B ground station at Brussels could broadcast up to 800 uplinks per second before violating the DO-242A requirements for A3-A3 (i.e., between high-capability aircraft equipment) performance. Bill Harman commented that the interference from full ADS-B equipage had previously been assumed to be a worst case, and that the results presented here suggested that this principle may not be true.

In a scenario set in LA with multiple (22) ground stations each broadcasting approximately 20-90 uplinks per second, performance of UAT was also simulated to evaluate methods of scheduling TIS-B uplinks. The results showed that state vector update times from TIS-B uplinks are dependent on the uplink rate, and may not meet the ASA requirements for certain applications in a near-term implementation in "worst-case" locations, due in part to the low detection rates from radar. Results from an ADS-B rebroadcast scenario set in 2020 indicated that any scheduling method for TIS-B over UAT allows for frequent TIS-B updates that enable ASA applications (assuming TIS-B uplinks are made once/second in this case).

4. Roxaneh updated the status of four open issues:
 - a. In ASA MASPS, spec. for 1 s Report Time Accuracy is inconsistent with spec for 3.25 s Max. Latency. Status: still open, issue paper for WG4 is needed, also related to Tony Warren issue paper on Latency Compensation
 - b. ASA MASPS required $NAC_v=1$ as part of $TQL=1$, which in turn was required for Visual Acquisition. After WG2 commented, ASA MASPS was revised to allow $TQL=0$. However, this is not specific with respect to which parameters don't meet $TQL=1$ requirement. Status: WG2 believes it can work with this, being more specific in TIS-B MASPS (e.g., requiring all other parameters to meet levels corresponding to $TQL=1$).
 - c. WG4 requested that we require a TIS-B Rebroadcast to be distinguishable from a TIS-B report derived from ground surveillance. Status: We haven't seen a compelling operational or technical reason to require this.
 - d. ASA MASPS specifies interface points for system integrity spec. that are inconsistent between TIS-B and corresponding ADS-B requirement. A note was added, but it seems unsatisfactory. Status: Roxaneh to develop an issue paper for WG4.

5. The group reviewed and updated the list of writing assignments needed to revise the MASPS. These would improve compatibility with the ASA MASPS, enhance detail for Enhanced Visual Acquisition and Surface Situational Awareness applications, and provide requirements for the Rebroadcast Service.

6. The group reviewed a section on Security requirements provided by Jim Chen, who was not present. No changes were agreed, as it was felt the present requirements covered the same concerns at an adequate level for MASPS.

7. Roxaneh and Rob presented slides and rationale for the 2.1 s budget for latency within the Surveillance Processing subsystem. This included an allowance for out-of-sequence measurements, and recognition that corrections are made after a processing "wedge" of surveillance input.

8. Future meetings were scheduled as follows (with locations to be determined):

February 17-18

May 4-5

July 13-14