CCSDS Navigation WG Telecon	09-Dec-2020

Attendees: David Berry, Cheryl Gramling, Julie Halverson, Hideaki Hinagawa, Ralph Kahle, Jose Miguel Lozano, Dan Oltrogge, Brian Swinburne, Elena Vellutini, Patrick Zimmerman.

Notes	Action
1. Action Items Status	
• The Action Items from the Fall Meetings were reviewed. Items completed since the most recent telecon were highlighted. Updated target dates were assigned for overdue action items or action items that had a "TBD" at the end of the Fall Meetings.	To David: Send updated Action Items with minutes and post to CWE. To All: Work action items as applicable.
2. Approval of Fall Meeting Minutes	
• David noted that very few comments had been received on the Fall 2020 Meeting Minutes, so they were not finalized at this time. It was requested WG members review the minutes and send any comments, corrections, additions, deletions by end of December.	To All: Review Fall Meeting Minutes and send comments (if any) by 31-Dec-2020.
3. "Mangled Equations" Status	
• In the Fall 2020 Meetings report, the WG had reported its experiences with mangled equations in documents received from the Secretariat. When this topic came up in the CESG Meeting, Tom Gannett called David to discuss. The results of this discussion were that: a) David agreed the WG would no longer report this issue to the CESG, but the affected Lead Editors should contact Tom Gannett (CCSDS Lead Editor) directly at thomas.gannett@tgannett.net. b) Lead Editors should work in *.docx format, use the MS Word Equations Editor, and save as *.docx. c) The version David provides to Tom at the conclusion of development should be the *.docx version. d) (Added by WG during discussion): When it is necessary to revise a published document provided by the Secretariat in *.doc format, immediately save the copy received from the Secretariat as a *.docx, then check against what was last submitted to check the equations.	To David: Set up folder in Nav WG CWE Private folder for the *.docx versions submitted to the Secretariat.
4. ADM Annexes B4, B5, B6 to SANA Registries?	
The group discussed whether or not these Annexes should be posted in the SANA Registry, similar to analogous ODM material. After some discussion, Julie expressed a preference to leave the material in tables in Annex B, with the possible exception of the table in B5. For now these will remain in the document itself rather than in SANA.	None.

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5. Discussion of Brackets [x, y, z] on Vector Quantities	
Discussion addressed a variety of ways in which "vectors" (essentially a relatively short list of numbers) are represented in Nav WG standards. Some have shown brackets around the components of the vector, others not. Dan suggested that based on the precedent set in the OEM that there was no need for brackets on the vector quantity. During discussion, several other similar examples were shown (e.g., ephemeris lines in an AEM, data lines in a TDM, and data lines in the discontinued NHM draft). A key element in parsing such a structure is to identify the number of components (e.g., 6 or 9 in an OEM). The discussion concluded that for keywords such as TARGET_MOMENTUM or TARGET_ATTITUDE in the ACM, there would be the keyword, equals sign, then the appropriate number of components (in this case 3 for the momentum and 4 for the attitude) without brackets and with spaces between the components. Example: TARGET_MOMENTUM = 0 -10 0.	To Dan, Alain, Julie: modify OCM and ACM accordingly.
6. Proposed Floating-Point Text Changes	
During the Fall Meetings, a suggestion was made to address a perceived error in the description of the construction of floating point values. There was discussion via email and also in the meeting. However, based on Guideline 17 in the list of Working Group guidelines and a requirement for the standards to be able to accommodate older computer architectures, no change in the text is currently approved.	To David: Add to agenda for next face-to-face meeting (Juntsville) for more detailed discussion.
7. Study of Nav WG Standards Annex Order	
David showed the results of a study he had done on the order of annexes in the Nav WG standards (thanks to Jose Miguel Lozano for the idea!). The study shows (as Jose Miguel observed) that there is a great deal of inconsistency in (a) the number of annexes and (b) the ordering by subject in the Nav WG standards. This discussion was informative, not decisional, because there isn't yet enough information from which to make a decision. An Action Item to make a recommendation based on the study was proposed.	To David: Add action item to discuss how to respond to annex study To David: Send out Annex Study with minutes.
8. Other Discussion	
• David noted that it had just been announced that the current CESG Chair Margherita di Guilio will be retiring in early 2021. Her replacement Klaus-Juergen Schulz of ESA/ESOC has been appointed and will start the transition process. He is currently Deputy Chair of the Optical Communications WG. • Hideaki inquired as to who is using the various Navigation WG standards. David responded that it is not possible to know everyone that is using them, since they are freely available on the public web. However, some implementations are documented in the "Navigation Data Messages Overview" Green Book, CCSDS document number 500.2-G-2.	None.

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9. Document Status	
Documents are sorted below in alphabetical order. Action item target dates appear in the Action Items list.	To David: Report document status to Mario and Brigitte.
a) ADM: Alain was not able to attend, but provided the following status via email: "As for progress: the next version of the ADM is almost ready. Julie sent me a copy of the document with additional corrections, but I have not yet been able to find time (yet) to finalize the document and exchange with her about the last open points. But we are not far." Julie attended the telecon and participated in discussion of several items that affect the ADM.	Complete development of ADM P1.11
b) CDM: Brian reported that the CDM P1.0.1 is ready to distribute.	To Brian/Dan: Proceed with distribution of CDM P1.0.1
c) Navigation Data - Definitions and Conventions Green Book: No discussion, and no outstanding action items.	None
d) Navigation Data Messages Overview: No discussion, and no outstanding action items.	None
e) David reported that the draft NDM/XML Specification is now in Agency Review.	None
f) NEM: Alain was unable to attend, so we had no discussion. Distribution of the first NEM White Book continues to be delayed. The ADM Version 2 update has higher priority.	To Alain: Produce NEM White Book 1 as time permits.
g) ODM: There was no specific discussion of ODM topics, but the review of ODM P2.40 is complete and P2.41 is in progress.	To Dan: Continue with P2.41 and prototype test planning
h) PRM: Since Frank Dreger is still out of office, Jose Miguel has not yet been able to consult with him regarding the Corrigendum.	To David: Schedule a teleconference after the start of 2021, if possible prior to next WG telecon.
i) RDM: No discussion, and no outstanding action items.	None
j) SANA: David reported that he has a number of SANA related action items that are still deferred due to higher priorities.	To David: Resolve outstanding SANA action items.
k) TDM: No discussion, and no outstanding action items.	None
10. Next Telecons	
• 13-Jan-2021 14:00-16:00 UTC • 10-Feb-2021 14:00-16:00 UTC • 10-Mar-2021 14:00-16:00 UTC • 14-Apr-2021 13:00-15:00 UTC (local times same, except Tokyo) • Spring 2021 Meetings 10-May-2021 to 14-May-2021 (nominal dates) at Huntsville, Alabama, USA (nominal location)	To David: Send out meeting invitation and Webex info as applicable.