**CCSDS Engineering Steering Group (CESG)**

**Fall 2018 Meeting: Monday, 22nd October 2018, DIN, Berlin**

**Attendees: MdG, BB, WT, PS, SB, JW, GM, MM, GPC, TG, TdC, EB, CH, XE**

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| **CESG Discussion on SLS Area Issues** **from the past week**Slide 7: Telemetry ranging standard will reside in 410.0-B (2.4.24). Erik Barkley raised the question about its counterpart for the uplink ranging direction. Gian Paolo Calzolari clarified that a proposal for telecommand ranging was presented but further investigation is needed because it was noted that telecommands may be sporadic and mixed with idle sequences and - in addition - the frame counter field does not increase regularly and a given value can repeat itself (e.g. due to sequence controlled service or “repetition“ technique) while frames using the expedited service do not update the value in that field.Slide 8: AOS uplink (USLP uplink) coding: The agreement by the C&S working group is to produce first a single concept paper that will address 4 CWE projects to address a) and b) below. 1. the working group will start a project to write an “application profiles” book to specify the subset of TM codes allowed for uplink of fixed length frames. Combinations of codes and protocols may be addressed too.
2. Harmonize the 3 coding books (TM, SCCC, DVB-S2) to correctly address fixed length frames uplink, USLP additions, etc. Most likely the title of the TM coding book will be changed to remove the acronym TM that may cause misinterpretation of the subject.

The four projects are planned to start in parallel.Slide 12: Removal of Space Packet from Encapsulation Service: The removal simplifies the interface for using either Space Packets (SPs) or Encapsulation Packets (EPs). Both EP and SP can still be used to encapsulate protocol data units from upper layers protocols, but for SP the APID value used will be mission-managed with no reserved APID value. The CESG agrees that the term “service” used in the book title is not adequate, because what actually defined in this book is a “shim” which in fact is a very simple protocol.USLP blue book publication approved by the CMC. It will be published any moment.Slide 17: Lossless data compression – To support the creation of file format for the compressed data in a standard fashion, add an optional header structure to produce output as a file. Metadata in the header. At present, the standard use the space packet grouping flags to tie up all packets.Slide 20: HPE C&S layer BB Agency Review completed. – OPT Coding and Physical layer books for High Photon Efficiency (HPE) Scnario ready but waiting for prototype to be completed. SLS-OPT is now going to address a low complexity scenario named Optical On/Off Keying (O3K). Peter Shames reported the possible C&S layer violation contained in the JAXA proposal addressing creation/usage of Ethernet Compatible Frames. However, now the WG has consensus only for the Optical communications physical layer BB to include O3K in Issue 2. This is a new CWE project.Slide 33: “New policy on glossary” is changed to “Policy on glossary” since PS states that the policy has been in place for some time. The WGs will have to review the policy itself and glossary at the 5-year cycle revision cycle. All working groups will be reminded of the following: (a) for new books in work, ensure the correct definition of terms and re use terms already present in CCSDS Glossary; (b) for books already published, at the 5-year revision cycle check the use of terms against glossary and make necessary updates. **CESG Discussion on SOIS Area Issues from the past week**Significant number of new participants from CNSA. Slide 4: CAST presented software architecture use cases. LOP-G progress by using SOIS EDS for avionic software implementation. Extension of SPP name space secondary header. A concept paper started on this (but not provided yet to SLS Area). The use of secondary header of SPP for a NASA use case (LOP-G) – follow the format, but not necessary standardizing the contents and semantics. It is proposed to register the secondary header extension in SANA registries. CNSA: suggest the use of secondary header version number to keep track the different secondary headers used/defined by a project. SLS AD reminded that it can be expected that ESA will object to any proposal that would make illegal the “PUS Header” flavor of the Packet Secondary Header.Yellow book for the SMC MAL-SOIS EDS relationships: SEA-SA working group will address the RIDs (Poll conditions) raised by MOIMS to the Yellow Book.Two EDS-based implementations for flight software: CNSA and NASA (all documented in orange books).Slide 7: SOIS Wireless – is an orange book on the specific use of LTE. No plan for moving toward blue book.Slide 9: Roscosmos’ SpaceWire (SpW) STP-ISS transport protocol: not CCSDS standard, but need a SpW protocol ID. CAST subnet service presentation.Slide 10: The document schedule table – some end dates are unrealistic, to be reworked. SOIS subnet synchronization service, e.g. GPS time service – how to get time synchronization. Mario suggested the use of MO services.Slide 12: Deterministic subnetworks and data sheets. “Deterministic” is to mean the transfer and delivery of packets at deterministic time or timing (rate). Slide 12: SOIS packet store service: Is it a service or application on board? Are these just APIs? Regarding “packet” store, it is to mean the transfer/receive of packets, and put them into a named file. SOIS file store service: management of files, i.e., delete, create, etc. They are now envisioned to be “subnetwork interfaces”. The intention of “packet” approach is to depart from the conventional “frame” store approach. The two service books may be suitable for blue book standards.Slide 12: The use of SEDS is for defining the application services and with the tool to translate the command and telemetry into PUS services. Adaptor for binding.**CESG Discussion on SIS Area Issues from the past week**Slide 4: On-line Cloud testing – BITTT agreed to this approach along with KARI.Slide 10: DTN – Some SABR capabilities to be placed in informative annex. Will also add some use cases to the informative annex. SBSP: will need a green book. Work more closely with SEA-SEC. SABR and SBSP both will be on track for publication in late 2019. Slide 10: Relations between DTN Network Mgmt and MO services: Network Mgmt is purely a protocol, so binding for MO services may be the solution.Slide 10: The ‘CCSDS Delivery Agent’ standard (as correctly shown in ICPA) for First-Hop / Last-Hop (FHLH) services is becoming increasingly urgent and important. It helps accelerate the infusion of DTN. The right place for deploying the FHLH is the ground station - it behaves like a spacecraft. But no resource for FHLH is available now. SIS Area propose to be worked by a separate working group since the DTN working group is already loaded. SLS AD commented that however it should be checked which experts should work on this as it could happen that there two WGs sharing 90% are created.**CESG Discussion on CSS Area Issues from the past week** CSTS-Tracking BB: prototype delayed to 3/2019.CSTS working group by fall 2019 may have only ESA and NASA participants due to the departure of CNES and DLR.Functional resources are actually information model. The work in this activity is not in the form of a blue book/magenta book or any book production. It is a different type of product (and effort). WG requests consideration for more dedicated resources and/or consideration for a different type of project.Abstract Event Definition (MB): e.g., navigation group is abstract eventCSS standards development could benefit from CM tool. Need a CCSDS Github or Git. Host the CM tool server (Git server) at CWE. Need for maintenance of information asset .**CESG Discussion on MOIMS Area Issues from the past week** Slide 4: Lack of access to ISO webex has been a problem to DAI working group and others. Slide 5: MOIMS asks to approve the DAI resolutions to re-confirm 13 books at the 5-year review cycle. Since most of these books are very old, the CESG agreed the following:* The three books about SFDU Control Authority (630.0-B-1, 631.0-G-2, and 632.0-B-1) need revision to align them with the SANA RMP (Registry Management Policy, CCSDS 313.1-Y-1).
* For the others, the DAI WG shall produce a short justification on their request for “confirmation”. This justification will be included in the MOIMS AD resolution to “confirm”.

Slide 7: MP&S working group - High momentum. The MOIMS complained since, for the second consecutive meeting in the US, the chair of the MP&S WG (and as a consequence the entire WG) is not allowed to access to the meeting venue because of his birthplace. A waiver has been sought by NASA, but so far unsuccessfully. As a backup, the Secretariat is looking for a room for a 4-day meeting in 2019 Spring workshop.Slide 9: New Project for revision of the Tracking Data Message v3, the schedule overlaps to some extent with that for the Tracking Data Message v2. This is the result of the pressure put in past years on the NAV WG for the production of CDM that caused the delay of TDM v2. It was the decision of the NAV WG to publish TDM v2 asap, despite some changes have been already identified which will be included in v3.Slide 10: The new project for revision of Conjunction Data Message and that for Tracking Data Message: will these all need a concept paper in order to start each project/book? The purpose of concept papers (see CCSDS A02.1-Y-4 section 6.1.3) is to provide a description for the work to be done by the project, so that the CMC could review it for approval/disapproval. That said, an AD could request the CMC to approve the formation of a project without submitting a concept paper. In this scenario, it is up to the CMC to approve the project or request a concept paper before the approval process.*(Note from after the CESG Meeting: about 5-year-review, if this requires only reconfirmation, obviously no concept paper is required.)**<<<I suggest to give an action to the CESG chair to propose a RID to the Procedures YB to improve the text on the requirements for 5-y review. This RID will be implemented at the next opportunity>>>*Slide 13: ESA/JPL “shadow” project – Mars Express emergency support to the Curiosity rover. Overlap between MO services and OMG C2MS.Slide 14: MOIMS resolutions, SM&C-1 and -2, to approve publishing the two books, 524.4 (MO MAL binding to ZMTP Message Transport Protocol BB) and 523.2 (C++ API MB).Slide 17: Liaison rules, responsibilities, and reporting channels – e.g., OMG Liaison reporting at CESG meetings, not plenary meetings. How about CCSDS’ liaisons to other organizations of standardization? Will be discussed at the next CESG meeting: the roles of these liaisons and names.Slide 17: SM&C non-consensus on CCSDS MO vs. OMG C2MS: DLR/ESA/CNES performed the analysis of the two identifying the overlapping aspects. Non-consensus exists on their overlapping/complementary nature between NASA and ESA/DLR/CNES. The SM&C chair is viewed by ESA/DLR/CNES as being in a position of conflict of interest. The conclusions:1. Task Dan Smith to produce his analysis of the complementary nature between the MO services and C2MS and how the two capabilities could play together
2. SM&C WG Chair, with the support of selected WG members, shall contact NASA JSC FOD/MCC-21 personnel (Steve Beisert) to promote their adoption of the MO services for Lunar Gateway flight operations.

**CESG Discussion on SEA Area Issues from the past week**Large attendance at the SEA System Architecture working group meeting.Slide 4. SM&C should consider at the next opportunity the Security WG recommended authentication and key mgmt approach. Same for SIS bundle security.Slide 4: IOAG service catalog – security is almost completely absent (only SDLS). The IOAG service catalog does not consider security service as an explicit IOAG service.Slide 5: planning and schedule – end dates not realistic.Slide 7: MOIMS and SOIS reviewed the Applications and Support Architecture GB.Slide 7: MOIMS conditions raised on CESG poll for MAL/EDS YB – SAWG to analyse inputs and recommend resolution using the “3 deployment cases” as criteria. Slide 7: Concerns about the SLS Optical O3K Ethernet approach - layering violation. Gippo: Since the SLS report did not include this item as the input from the Optical WG, the SLS report to the CMC will omit this item too. See also SLS Area reporting part.Slide 10: Delta DOR WG concern about the TGFT approach because of its large files. Question about how large these files are.Slide 11: Plan and schedule of books – unrealistic end dates.Slide 12: Time BoF will proceed with the formalization of this BoF activity after a telecon (to be held soon). Depending on interest and resource. P. Shames to send out a MoM. The whole time distribution/exchange touched upon multiple Areas. There are ramifications pertaining to the interfaces and functionality of other Areas.Slide 13: SANA registries vs. flat files at CCSDS website. Site and Aperture registry: concern about lack of entries with actual data and contentsSlide 14: SANA CMC Resolutions 4 and 5 are outstanding issues to the CMC. |  |
| **Topics for discussion** Streamlining the CCSDS Plenary presentation: to be addressed at next meeting (or telecom). |  |
| **IOAG - ICPA and Status of activities.**It has been shortly addressed that the ICPA has been completed with all IOG projects requited visa (updated) SC#1 and SC#2.All ICPA entries have been linked to (draft or approved) projects, and have been mapped to IOAG services.To be done: * CCSDS comments and prioritization
* Update projects dates.
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| **General:** CESG presentation for CMC: will include the Executive Summary, but for info only. It will be skipped during the oral presentation. |  |
| **Documents with due date for R/U/S** Will be assessed by mid-term Telecon. |  |