**CCSDS Engineering Steering Group (CESG)**

**Spring 2019 Meeting: Friday 10th May 2019, NASA AMES ARC**

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

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| This Minute of Meeting contains information that was addressed/discussed in addition to the Presentations of the individual Areas.**CESG Discussion on SLS Area Issues** **from the past week**Slide 8: Concept Paper for introduction of USLP and down-selection of codes out of the TM Blue Book for the uplink. That book will be updated accordingly, to also contain options for uplink codes and USLP. The Concept Paper is ready and has been attached to the issued resolution by the AD.A proper title for TM Blue Book will be conceived once the update is completed. Tentatively by Fall 2019 Meeting.Slide 12: Space Packets: some reserved APID have been removed. The encapsulation of higher layers’ PDUs in SPs is still possible but with mission-specific settings instead of reserved APIDs.The only reserved APID is the one for the Idle Packet.The future SPP and EPP Green Book : the work will be based on the existing draft SPP Green Book from T.Yamada. EPP material will be added.Some text may be introduced about transmission of Space Packet over Bundle Protocol.SLS Glossary : Some terms need to be checked, wrt duplications and discrepancy. Once SLS Glossary will be completed, the other SLS books will be made consistent with that Glossary, and the SANA registries will be updated accordingly. **Statement by CESG** : All Areas shall aim at having the Area-specific Glossary, and the SANA registries will be made consistent with those Glossaries. The Glossary of an Area shall be cross-checked against the ones of Areas who share the usage of some terms.SLP WG requests CESG/CMC to foster/support the introduction of USLP recommendation at the LOP-G. CESG agrees, and the relevant CESG Resolution will be introduced in the CESG report to CMC .The changes done to SPP and EPP will have an impact on CFPD over Encapsulation ( Magenta Book). To be coordinated by the two Areas.SB: it will probably be done via Corrigendum.**CESG Discussion on SOIS Area Issues from the past week**Deputy AD was not able to attend. Some topics were not addressed.Proximity Wireless Orange Book: presently it is supported ( and done) by NASA, but likely it will also be supported by CSA. Then, the work can start towards becoming a Blue Book.Management Information Base: different domains may have similar needs to represent the managed information . Topic to be further developed by joint meetings by involved Areas.Action: JW to produce a short presentation by the mid-term Telecon, to introduce the notion of MIB, data formats (template) , commonality and possible adoption by other domains (Areas).**CESG Discussion on SIS Area Issues from the past week**CFDP Interoperability testing:.Files having very large size (which were not foreseen by BB-1) may have an issue with the checksum. Introduction of checksum options. The checksum type to be registered in SANA, and the relevant ID will be part of the file’s metadata.The Blue Book-2 need to be revised. It requires update and additional Agency Review.The changes have already been addressed by the WG, and agreed upon. The book can be updated with little effort.BP sec: a similar/applicable recommendation is in production by IETF. Issues related to the adoption of ( portions of ) that text- which by the way is still in draft form – shall be assessed.SIS DTN will work jointly with SEA SEC on the finalization of the BP Sec, based on the IETF draft.It is proposed that a new joint SIS-DTN/SEA-SEC project develops a Green Book for SBSP.​Network management : similar situation w.r.t. to IETF recommendations : the Asynchronous Management Protocol from IETF can be used as basis of the Network Management Blue Book, but also this one is still in draft status.The two AMS books ( Asynchronous Message Service) require 5-years update. The WG who has produced those books is disbanded. It would be too resources-intensive to start a new WG. The update will be developed by SIS DTN. This is a general issue - to be tackled at the next CESG Telecon or meeting. It may imply changes to the Org & Proc.**CESG Discussion on CSS Area Issues from the past week** Future “shape’ of the CSTS WG : only NASA and ESA contributions are left.Services are going towards a database-oriented kind of behavior. CCSDS shall consider a different kind of “resource” for the WGs, to carry out e.g. maintenance of databases. This issue shall be addressed at next CESG telecom or meeting ( proposal by CESG to be submitted to CMC).Service Control CSTS: a Concept Paper will be produced by the Fall Meeting. Additional material (e.g. presentation) will also be produced, to support the request of project approval by the CMC – aiming at approval by Spring 2020.901.0-G-1 Architecture Description Document: it is due for 5-Years review, but the WG who produced that book has been disbanded. Initiating the WG again would be too resources-intensive (same issue as above, in SIS Area report). Alternative ways shall be considered. Question by CSS AD: where are test reports (Yellow Books) published? The answer by Secretariat is that they are put in the CESG CWE, under the “Interoperability Test Reports” folder.**CESG Discussion on MOIMS Area Issues from the past week**DAI : the three books that were requested by CESG to be updated, in order to include the Control Authority SANA-related aspects, are now proposed by the WG to be reconfirmed as–is, due to the lack of resourcesAction: DAI WG to find out and list the Control Authority offices that are active and functioning ( due date: by Fall Meeting).A set of CESG instant Poll have been proposed throughout the MOIMS Area presentation. These took place later, and are listed below under **CESG Instant Polls.**SM&C WG : IOAG-directed effort to develop an inter-agency interoperability demonstrator: the aim of this demonstrator is to validate some of the services introduced by IOAG Catalogue 3, including experimentation to demonstrate the possible coexistence between services and data- formats in inter-agency cooperations.MOIMS/SM&C are working on a website to group all the resources and information about the MO Services. It is publicly accessible. Use of SCIDs : SM&C WG claims that it is problematic for mission operations to have multiple SCID assignment for the same spacecraft (only distinguished by the frequency band) as today the SCID is used in several systems to identify the data from that particular spacecraft. However, it was clarified that the SCID is intended for communication aspects: it is embedded in the Frame header, not even in the Packet header. It is not supposed to be used for mission operations. For this purpose, there is no strict requirement to standardize it.Option for SCID in operation services :- (Agency)-Local convention- Usage of the Global OID to be looked up in SANA Longer SCID field has been adopted with USLP (16 bit). But this is, again, to be used for communications aspects (a mission may use USLP in the downlink but not to in the uplink).Action: MM to raise the matter with the IOAG Chairman ( Michael Schmidt) to increase the awareness of this issue and limitation.**Coordination with and participation to the LOP-G decision process about adoption of CCSDS standards**.Action : MM to draft a letter for the CMC that, if approved, will be sent by the CMC to the "Gateway Management" to make them aware of the desire of CCSDS to be available to support such a large international endeavour with effective interoperability standards. Practically, the letter shall propose opening a special channel between CCSDS and Gateway (modalities to be agreed) to discuss priorities on standards production in order to foster their adoption by the Gateway. **CESG Discussion on SEA Area Issues from the past week**Time Management BOF : finalization of Charter, production of Concept Paper. All involved agencies participated at the WG meeting that discussed the finalization of Charter. All comments have been discussed and agreed upon.Charter is ready to be submitted to CESG and CMC.Time Coordination on-board is a service defined by SOIS area, but there shall be coordination with this BOF.SANA: the website database is synchronized with the SANA database, which is the only repository of data. When accessing that data on the website, a query gets issued to the SANA database.SANA : Any change to the set of data of an Agency, shall be communicated to the CCSDS Secretariat. They will, in turn, have the information updated in the SANA database.SANA, SCID frequency bins : alignment of frequency bins with ITU. SANA will contain the precise frequency range values ( as well as the commonly used names).Issue to the attention of CMC: an official Agency representative of the Chinese Space Agency shall be appointed to be the (only) SANA interlocutor. **RID Template – presentation by M. Blackwood**MB showed the set of requirements established for the RID tool. No prototype is available yet.Some CESG members objected that the Bugzilla approach ( as proposed at the Gaithersburg meeting) is far too complex, therefore it shall not be pursued.It was agreed to re-assess the RID tool based on excel, that was produced by David Ross, and discuss its suitability at the mid-term Telecon.**CESG Instant Polls:**The following resolutions were approved by raise of hands (instant poll):SLS Reconfirmation: 211.1-B-4 Proximity-1 Physical Layer” Blue Book, “CCSDS 414.0-G-2 PN Ranging” Green Book, and “CCSDS 414.1-B-2 PN Ranging” Blue Book230.2-G-1 Next Generation Uplink” Green BookMOIMS Reconfirmation:DAI WG :651.2-G-1 Producer-Archive Interface Specification (PAIS) - A Tutorial 610.0-G-5 Space Data Systems Operations with Standard Formatted Data Units: System and Implementation Aspects 620.0-B-2 Standard Formatted Data Units — Structure and Construction Rules 621.0-G-1 Standard Formatted Data Units — A Tutorial 622.0-B-1 Standard Formatted Data Units — Referencing Environment641.0-B-2 Parameter Value Language Specification (CCSD0006 and CCSD0008) 641.0-G-2 Parameter Value Language — A Tutorial 643.0-B-1 ASCII Encoded English (CCSD0002) 647.1-B-1 Data Entity Dictionary Specification Language (DEDSL) — Abstract Syntax (CCSD0011) 647.2-B-1 Data Entity Dictionary Specification Language (DEDSL) — PVL Syntax (CCSD0012) 647.3-B-1 Data Entity Dictionary Specification Language (DEDSL) — XML/DTD Syntax (CCSD0013)SM&C WG :521.0-B-2 MAL Blue Book  521.0   521.1-B-1 COM Object Model Blue Book 521.1  523.1-M-1JAVA API  Magenta Book  523.1   Also the following resolution has been approved: 660.0-P-1.1 Initiate Agency Review of OMG’s XTCE 1.2 as an adopted CCSDS standard | **AI/S19-1****JW****AI/S19-2** **MM (DAI)****AI/S19-3****MM****AI/S19-4****MM** |
| **TIME Services BOF - Definition of Charter –Status**During this meeting the finalization of Charter, and production of the Concept Paper was concurred by all participating agencies ( as per SEA Report)Charter to be submitted to CESG and CMC.**AOS Uplink: status of Action on C&S WG about coding and modulation options. Progress from the Berlin Meeting**As per SLS Area Report (see above) the TM Code & Synch Book will be updated, to also contain options for uplink codes and USLP.**CCSDS 870.10-Y-1, MO Services and on SOIS Electronic Data Sheets – Deployment scenarios.**This topic has been extensively debated, and the discussion showed that there are still different understanding of e.g. the nature of the MO services, the deployment scenarios of the MO services, the interactions/boundary/intersection with the SOIS-defined on board services.MM outlined that MO services were not conceived for on-board systems or payloads requiring tight real-time control.With respect to the deployment of MOIMS, 3 scenarios were discussed:1. MOIMS deployed only on ground with the interface to the spacecraft being handled by standard TM/TC.
2. MOIMS service interfaces extended across the space link to a Proxy interface on-board. In this case, a MOIMS compliant application would be present on the spacecraft that would interface to the hard real time applications controlling the spacecraft functionality. In this scenario, the S/C would appear to the ground to be MOIMS compliant with the actual details of the spacecraft functionality being hidden behind the proxy.
3. MOIMS compliant applications being embedded into the hard real-time systems on the S/C.

It was generally accepted that scenarios 1 and 2 above were feasible. For scenario 3, a number of parties expressed severe concerns about both the feasibility and desirability of embedding MOIMS compliant applications directly into the hard real-time systems on the S/C. Of particular concern was that the interaction patterns specified in the MAL may not be suitable for the needs of hard real time systems. Regarding case 3, it was recalled by MOIMS AD that the MO services are equivalent to the PUS services, which have been widely demonstrated operationally, and are used to facilitate and harmonize operation management. In this context, selected on-board applications (non-hard real-time) could be operated via MO Services.Scenario 3 may also be considered in cases of e.g. clear separation of the services, with no interference between MO and real-time service - e.g. even by physical separation, where a dedicated processor is deployed to host the MO service(s).The following way forward was agreed:* PS to assess the comments to the Yellow Book provided by the MOIMS Area, in the light of the 3 a.m. scenarios, and update the Yellow Book. The book shall then be re-assessed by the MOIMS and SOIS first and then by the CESG.
* Organize/schedule a telecom focused on sorting out outstanding issues (if any) and come up with an agreed concept.
* Develop one example of mapping/interfacing of one MO service to one board service. JW to propose one on board SOIS service (e.g one instrument), MOIMS and SOIS to develop the relevant mapping example.
 | **AI/S19-5****PS****AI/S19-6****PS/MM/JW****AI/S19-6****MM/JW** |
| The following topics were not addressed due to the lack of time:**Proposed changes to Org&Proc in view of a Corrigendum.** **Adoption of external specifications****Documents with due date for R/U/S****CTE Document Queue** |  |
| **General:** CESG presentation for CMC: it will include the Executive Summary for each Area, but for info only. It will be skipped during the oral presentation. |  |