CCSDS CMC Draft Minutes
European Space Agency (ESA - ESOC)
Darmstadt, Germany
April 23-25, 2012

1. **Call to Order**
Mike Kearney, CMC Chair, opened the meeting at 0850 on Monday, 23 April 2012 and welcomed everyone to Darmstadt. Juan Miro welcomed everyone as well and described the ESOC operations. Nestor Peccia provided logistical information concerning lunch, coffee breaks, and the social dinner arrangements.

2. **Introduction of Delegates**
Introductions followed. Attendees were:

Anna Abrosimova (ESA – Interpreter)
James Afarin (NASA)
Peter Allan (UK Space Agency)
Erik Barkley (NASA), Joint CMC-CESG Meeting Only
Alexander Belov (FSA), Joint CMC-CESG Meeting Only
Eduardo Bergamini (INPE)
Massimo Calabrese (ASI)
Gian Paolo Calzolari (ESA), Joint CMC-CESG Meeting Only
Margherita di Giulio (ESA), Joint CMC-CESG Meeting Only
Tom Gannett (Secretariat), Joint CMC-CESG Meeting Only
Adrian Hooke (NASA), Joint CMC-CESG Meeting Only
Mike Kearney (NASA)
Yuta Kimura (JAXA)
Juan Miro (ESA)
Alexey Mutafyan (FSA)
Nestor Peccia (ESA)
Martin Pilgram (DLR)
Vladimir Romashkin (FSA), Joint CMC-CESG Meeting Only
Keith Scott (NASA), Joint CMC-CESG Meeting Only
Peter Shames (NASA), Joint CMC-CESG Meeting & Part of Tuesday
Jean-Marc Soula (CNES)
Huixian Sun (CNSA)
Nick Tongson (Secretariat)
Valery Zaichko (FSA), Joint CMC-CESG Meeting & Wednesday Only
RuSheng Zhang (CNSA)

3. **Agenda Review and Approval**
Vladimir Zaichko requested that the FSA agency report be moved earlier on the list of agency reports on Wednesday because of an early flight. IOAG reports (agenda items 5.1 and 5.2) will be given by Gian Paolo Calzolari and Erik Barkley instead of Adrian Hooke.

The draft agenda was approved as modified.

4. **CESG Area Reports, Summary from Darmstadt**
Mr. Hooke provided the summary report and it can be found here [04 - v-1.0-CESG-Report-to-CMC-Apr12](#). Mr. Kearney requested the Secretariat to include information on the total number of CCSDS books ever published including those that have been retired (as well as current documents) when providing the statistics for the CESG report.

4.1 **Area Reports**
**SEA:** Peter Shames provided his report and noted that interoperability prototyping between two or more agencies is ideal but that two independent parties within one agency is permissible. There was a brief discussion on resource issues regarding prototyping on current projects and also a report on SANA. It was
noted that the control authority needs updating (MACAO + CAO) and suggested the use of SANA to replace the CAO registry. **AI: CMC member agencies to provide updated MACAO contact points, or confirmation of existing ones, to Peter Shames [CMC-A-2012-04-14].**

The glossary serves as an advisory work but procedures for approving terms are needed. Mr. Kearney suggested that Mr. Shames to submit an area resolution to the CMC to address the update to the MACAO contact points and glossary procedures for approving terms. Mr. Shames confirmed that the terms themselves are not normative until they are included in a Blue or Magenta Book.

Mr. Kearney noted the under-representation of security experts (experts on security algorithms) on ISS/human spaceflight programs and encouraged other agencies like ESA and FSA to participate.

**MOIMS:** Nestor Peccia provided his report and there was a brief discussion on dual presentations (two projectors) but wasn't considered practical (unless someone brings another projector). There was also a discussion on a CCSDS software license agreements/repository (potentially in SANA) and also other products (hardware). The CMC also discussed the lack of process for handling multiple nominations for WG chairs and co-chairs, the documents that need to undergo systematic review, and the prioritization of documents that are undergoing review/editing.

**CSS:** Erik Barkley provided his report and noted the high priority items. The area is trying to develop the SSI architecture draft by summer 2012 so that they can be submitted to IOAG for consideration in time for the IOP meeting.

**SLS:** Gian Paolo Calzolari provided his report and informed the CMC that the Optical Coding and Modulation (OCM) group will move forward if this is recommended by IOAG (based on the report from the Optical Link Study Group) and this might need several working groups (there is no consensus yet on whether standardization should start now or later). He noted that input in the PLACOM meeting was limited. Most of the area working groups are using e-mail and teleconferences in-between meetings.

**SIS:** Keith Scott provided his report and noted that the AMS work is done and the WG will be disbanded. The attendees discussed a possible future study on applicability of AMS versus other commercial message busses (DDS, etc.) but that is not feasible with the current lack of resources. For Motion Imagery and Applications (MIA), it was noted that prototyping interoperability testing requirements will cite previous testing done by commercial industry. The Delay Tolerant Networking (DTN) transport layer service work will be done in CCSDS and then submitted to IETF in an effort to ensure that the space internetworking does not diverge from the terrestrial internetworking.

**SOIS:** Chris Taylor provided his report and noted the increased attendance and diversity at the Darmstadt meeting. The Application Support Services WG will publish two Blue Books while the Wireless WG is planning on a symposium for wireless technologies. Both working groups are using teleconferences and plan to increase its usage in the future. Mr. Hooke asked about the potential overlap with extra-vehicle wireless communications (especially medium range) and noted that the group needs to be vigilant about this.

### 4.2 Summary/Meeting Statistics

Mr. Hooke provided the background information and noted the concentration of attendance on all 4 days.

### 4.3 Items Brought to the Attention of the CMC

Mr. Hooke provided background information and noted that the 4-day meeting was successful and the CESG recommended going to a 4-day schedule with CESG meeting on a Friday. For further discussions, see agenda item 18 below. **AI: The Secretariat was requested to look into the possibility of getting a WebEx account that could provide webconference capabilities to CCSDS working groups [CMC-A-2012-04-01].** The resources issue was briefly discussed and deferred until the service management discussion by Mr. Barkley. Mr. Hooke noted the difficulty of developing projects over multiple years but relying on yearly agency budgets to support this work. He also noted the new model of activity derived from outside the CCSDS community (external organizations).

CMC discussed briefly the results of the IOAG Optical Link Study Group (OLSG) meeting.
Mr. Hooke also discussed two potentially conflicting standards (middleware): PUS (ESA with ECSS) vs Data Exchange Message (NASA). There might be a half-day interest meeting for DEM and PUS in Cleveland. AI: CMC requested the CESG to convene a “one-meeting SIG” to consider whether an application level middleware standard would be of standardization interest to CCSDS. As a minimum, it should evaluate the Data Exchange Message (DEM), Packet Utilization Standard (PUS), and SM&C for overlap/conflict. The SIG should convene at the Fall 2012 meeting and propose a recommendation. The “one-meeting” designation is intended to reflect the CMC concern that this activity should require approval of the CMC before persisting more than one meeting cycle [CMC-A-2012-04-02]. A proposed meeting in the past on the same topic did not take place because of two major concerns: [1] the different business models between NASA and ESA, and [2] that the PUS was coupled to the lower protocol layers.

The CMC discussed the leap second issue that was considered in the ITU. AI: CMC agreed with the CESG (and ISO) recommendation to issue a communiqué to the ITU that if leap seconds are removed, then “UTC” must be called something else besides “UTC”. The CESG will draft the communiqué to ITU for CMC approval [CMC-A-2012-04-03].

AI: In support of the above action item, the Secretariat to contact the ITU Secretariat to initiate formal communications with this body, and ask the ITU if it would consider a Liaison relationship with the CCSDS [CMC-A-2012-04-04].

Mr. Hooke provided background information on the Russian new work proposal (diverse channel coding) and the Russian delegation will prepare a more detailed proposal in the near future (possibly a telecon in September before the Fall 2012 meeting) to explain the specific cross support scenario. Mr. Hooke noted that the original proposal was well-received by CESG but that the algorithm was not well understood, and potential patent issues remained a concern.

Lessons learned from the Spring 2012 Darmstadt meeting was presented by Mr. Peccia for consideration at future meetings: [1] request use of telephones for teleconferences prior to the meeting rather than onsite; [2] request WGs to indicate if they will only be meeting for 2-3 hours so that two such meetings can be scheduled for the same room rather than use two separate rooms; and [3] coffee breaks and lunch are good for networking but lunch needs to be inexpensive.

5. IOAG Report

5.1 IOAG Priorities, Product Agreements and ICPA Status (ICPA@CESG+CMC.Darmstadt.v1.0) Mr. Calzolari provided the report. There was a discussion on how the ICPA would be populated and it was agreed that it would be populated according to current status only, meaning that we would not record IOAG priorities/needs for documents that have already been published. There was an additional discussion on resource issues on trying to complete the ICPA.

5.2 Recent Communication from IOAG and CCSDS Response (CSS-ServMgmt-Report-Re-IOAG-To-CMC-21-Apr-2014) Mr. Barkley provided his report and the proposed response to the IOAG letter. The CMC also briefly discussed the resources issue on Service Management (providing the appropriate resource expertise from the different agencies). The CMC agreed with the proposed response to the IOAG, as presented by Mr. Barkley.

5.3 Report from IOAG Perspective (IOP-3 planning, etc.) Mr. Soula provided an oral report. The IOAG is working on the terms of the roadmap with IOP (next mini-IOAG meeting will be held in June in conjunction with SpaceOps 2012 in Stockholm). He said that there is a need to revive SISG to elaborate the work plan to be submitted to IOP. The IOAG will receive the final report of the OLSG in June 2012. There will also be an IOAG teleconference in September 2012 to prepare for any communication with CCSDS working groups at the October 2012 meeting in Cleveland and to prepare for a half-day joint meeting with the CMC in December 2012. Mr. Soula informed the CMC that part of the IOP-3 agenda will be Mission Operations and Optical Links.
6. **Resources Topics**

Mr. Kearney provided some background information. The CMC briefly discussed how CCSDS document releases are calculated. Mr. Kearney presented a summary schedule of the CCSDS work program and it was suggested that this summary schedule should be updated quarterly and the framework update reviewed every six months. Mr. Soula added that there also needs to be a discussion about priorities (the "big picture" concept) – possibly citing interdependencies between projects as they relate to the end-to-end/reference architecture. Mr. Miro added that he agreed with the need for some sort of mapping and understanding of the links and interdependencies between the various projects.

6.1 Secretariat Prototype of Resources Project *(06 - WG resources discussion)*

Mr. Kearney provided background information on the process for inputting data. He noted that the process would allow the WG chair to communicate with CMC members on who volunteered from their respective agencies (allow CMC members two weeks to respond/affirm the participation of the volunteer). Mr. Peccia asked if it is possible to produce a report on the FTE (whether per project and/or per agency), but it was explained that this new system will only provide enough information to approve a project and not necessarily a complete picture of FTE per project or agency. Mr. Shames suggested some tutorial on how to use the system for the WG chairs with clear instructions. **AI:** The Secretariat is requested to update the Framework Resource View presentation from this meeting to reflect decisions made. The Secretariat will then forward it to the CESG to be used to brief the WG chairs on the new resources processes [CMC-A-2012-04-08].

**AI:** The CESG will submit to the WG chairs the information on the Framework Resources View tool, with instructions to begin using it for normal operations. The WG Chairs shall populate all of the participation data for existing projects, and will populate the resources estimates fields with quantified (FTE or MM) figures when proposing new work [CMC-A-2012-04-09].

CCSDS IT support questions that will be posed to Brian Oliver: [1] can the headers on the resource framework be seen if one scrolls down, [2] can one do a spreadsheet export with FTE numbers, [3] is it possible to set up a CMC alert (i.e. an automated notice alert to the CMC member to eliminate WG chair notifying the CMC member directly via e-mail)?

Mr. Peccia proposed giving the WG chairs clear guidance on how to input the data. This system is a degree of control but not a complete control because there is no complete control of resources and schedule. This system is only for new projects and re-planning (i.e. change in agency support). Also, if there is a change to an agency commitment, then the WG chair must contact the appropriate CMC member. Mr. Miro reiterated that planning resources in the future is difficult because of budgeting on a year-to-year basis only. Measuring the resource commitment to a project is difficult because it's based on the complexity of the document and not necessarily FTE units. Also, if the CMC representative doesn't respond (in two weeks) then the project can still move forward.

This new system will use the Service Management and Telerobotics groups as examples for a new project. The Secretariat will inform all other WG chairs to complete all current projects but to exclude the FTE information for now. FTE information would only be needed for book author, prototype 1 volunteer, and prototype 2 volunteer. Mr. Kearney plans to send this resources prototype to the CMC for a one-week affirmation and then to the CESG for implementation in Fall 2012. **AI:** CMC instructed the Secretariat to document any changes to the CCSDS procedures at the Fall 2012 meeting, based on the new online resources framework system [CMC-A-2012-04-05].

6.2 Discussion - “Big Picture” Integration of New Projects/WGs/Interdependencies

There was a brief discussion on how this integration should be tackled. It was noted that CCSDS has a problem with technical integration across the board. Mr. Soula also reiterated that this "big picture" integration is needed in order to make decisions about resources (i.e. whether new projects would affect the resources of current projects). Juan Miro presented his perspective of the "big picture". Mr. Shames commented on how he interpreted the comments from Messrs. Soula and Miro and painted a picture of a 3-D table with layers representing the different technologies.

Based on these discussions, the CMC identified a need to update the CCSDS strategic plan. **AI:** CMC instructs the CESG Chairs and Area Directors to review the current strategic plan and update as
necessary to include strategic planning for each area, an overview of CCSDS activities, how the Area/WG activities are “wired” (interdependent) and how they support other activities. There should be an emphasis on the capabilities that result from the activities of the areas, in order to support decisions about starting new work or continuing existing work [CMC-A-2012-04-07]. It was suggested that a status on this action item should be included in the CMC mid-term teleconference in September 2012 because a November 2012 mid-term teleconference (after the October technical meetings) might be too close to the CMC face-to-face meeting in December 2012 at the Kennedy Space Center.

7. Procedures Topics
7.1 Review List of Projects for Systematic Review and the Process (Systematic Review)
Mr. Kearney provided some background information and the CMC discussed the process. However, the CMC acknowledged that there needs to be resources to do this systematic review. There might be an issue with documents developed by a working group that no longer exists. There was also a discussion on how to synchronize with the ISO systematic review process (when appropriate). Mr. Peccia requested a list, based on priorities, of the documents that Mr. Gannett is working on (the CESG co-chair will contact Mr. Gannett). There is a need to get the supplemental editor more involved in the editing process to reduce the burden on Mr. Gannett.

7.2 Procedures Manual Status
It was reported that this document was already published in July 2011. Mr. Soula will provide Mr. Gannett with comments not incorporated in the current edition for the Fall 2012 meeting. He also requested resolutions to past decisions regarding the Procedures Manual revision.

8. SANA, Glossary, and Registries Report

9. Discussion of CMC Minutes from Prior Meetings (2012-02-02 CMC Minutes mid-term telecon)
The CMC requested that closed items since the last meeting should be included in the review of the action items. AI: CMC members are to confirm or revise their prior inputs on Nestor Peccia’s resource table for cross support projects (Service Management and Transfer Services), to include agency resources/support for book captains and prototyping. Member agencies should respond even if to indicate that they will not provide any resources [CMC-A-2012-04-06], Response deadline: 31 May 2012 (a table will be included in the action items list to keep track of responses).

The minutes from the February 2012 meeting were approved by all the agencies present in Darmstadt.

10. Secretariat Report
10.1 Action Items Status
CMC reviewed the action items. The updated version can be found at Open Action Items - CMC - Jul2012.

10.2 Document Status Report (CCSDS Document Status as of April 6, 2012)
Mr. Pilgram noted the action dates that are past due in the report and he informed the CMC that Mr. Gannett has responded to him already.

10.3 Resolution Report (Summary of CMC Polls Spring 2012)
The CMC requested that only polls containing provisions or no votes should be reported.

10.4 WG and Project Overview (Project Report Spring 2012 04222012)
Mr. Kearney reminded the CMC that this agenda item is to review projects with schedule changes. The CMC briefly reviewed the projects with schedule changes and agreed to a poll to approve the changes in the report.

AI: Secretariat will contact all SC13/CCSDS liaisons to confirm their interest in maintaining the liaison relationship based on the work already initiated by the SC13 Chair [CMC-A-2012-04-10].

12. Online Software Library Update (Action Item)
The Secretariat will circulate the updated information from Leo Hartman to the CMC after the Darmstadt meeting.

Mr. Kearney provided the background information and reviewed the web sites. James Afarin suggested that a post-report of the CCSDS technical meetings should be placed on the blog. Mr. Afarin recommended using Mr. Hooke's cleaned-up CESG report for the NASA SCaN blog as the basis for this post-report. The CMC liked the two new sites and approved them. **AI: Considering that the CMC approved the new CCSDS NWI page and Blog site for public exposure, the Secretariat will announce, via CCSDS-All, that these two new sites will be going live [CMC-A-2012-04-11].** Mr. Kearney also noted that the comments function was not turned on so that it does not have to be moderated.

The CMC requested that the CMC Meeting Minutes and Presentations folder in the CWE should be moved to the private area of the CWE.

14. **CCSDS Secretariat IT development priorities (16 - CCSDS Secretariat IT development project priorities)**
Mr. Kearney presented the CCSDS IT support project prioritization list. Eduardo Bergamini requested, if possible, to retain the capability of the old RID system (ASCII) into the new RID system being developed. **AI: Mr. Soula will submit to the Secretariat a template of the infusion table in order for the Secretariat to update with the most current books and circulate to the agencies for them to populate [CMC-A-2012-04-12].**

15. **Standard Infusion Table of all CCSDS standards and all missions (JAXA_input_CMCTelecon_Feb.2_2012)**
Yuta Kimura provided the JAXA report on this topic. Mr. Soula provided a brief history of the infusion table and how CNES populates it. This table is for the agency report to the CMC and Mr. Soula asked if this information is useful. The CMC agreed that it was and that it was also helpful internally, within the agency, to support its work in CCSDS. There was a suggestion that this information should be compatible to the IOAG mission model. Some agency infusion tables contain active and future missions while other agencies have past missions as well. The CMC agreed to circulate the infusion table template to all agencies for them to populate, as appropriate. **AI: Mr. Soula will submit to the Secretariat a template of the infusion table in order for the Secretariat to update with the most current books and circulate to the agencies for them to populate [CMC-A-2012-04-12].**

16. **CMC Voting History (17 - CMC Voting History)**
Mr. Kearney provided background information but did not present the slide with the details. Any CMC member who wishes to review the details can contact Mr. Kearney directly.

17. **Agency Reports**
17.1 ASI (ASI CMC Agency Report v2 – Mcalabrese)
Massimo Calabrese gave the ASI presentation.

17.2 CNES (CNES report to the CMC _ Darmstadt April 2012)
Jean-Marc Soula gave the CNES presentation.

17.3 CNSA (CNSA-CMC-report)
Huixian Sun gave the CNSA presentation.

17.4 CSA
No report was submitted.

17.5 DLR (DLR CMC Agency Report 4-12)
Martin Pilgram gave the DLR presentation.

17.6 ESA (ESA Report to CMC Darmstadt April 2012)
Nestor Peccia gave the ESA presentation. It was noted that Wolfgang Hell is retiring and Mr. Pilgram suggested that Mr. Hell be recognized at the Fall 2012 Technical Working Group meetings.

17.7 FSA (FSA rpt to CMC)
Valery Zaichko gave the FSA presentation.
Eduardo Bergamini gave the INPE presentation. There was a proposal from INPE that, as possible, CCSDS Secretariat may compile and maintain available to CCSDS Members a list of CCSDS prototype and application softwares, with the corresponding contacts. It would be understood in respect to any item drawn from the proposed list that, provided it will not be commercialized by the requesting Member Agency, that the corresponding software package may be made available to the requestor by the providing CCSDS Member Agency, after some type of license agreement is instrumented between the involved parties, case-by-case, may it imply or not in a complimentary or free nature license.

17.9 JAXA (JAXA CMC Agency Report)
Yuta Kimura gave the JAXA presentation that was prepared by Tsutomu Shigeta.

17.10 NASA (17 - NASA CMC Agency Report v1)
Mike Kearney gave the NASA presentation.

17.11 UK Space Agency (UKSA report to the CMC Darmstadt Apr 2012)
Peter Allan gave the UK Space Agency presentation. It was noted that the template for inputting agency investment in each CCSDS working group needs to be updated because some working groups have been removed.

AI: Secretariat will provide to the CMC members a better template for the agency investment in each CCSDS WG contained in the agency report [CMC-A-2012-04-13].

18. Meeting Planning (22 - Meeting Planning April 2012)
Mr. Kearney provided background information and the CMC discussed the pros and cons of a 4-day vs 5-day schedule. They discussed whether the schedule should be determined by the CMC or the host agency but no decision was reached. Expert overlap in certain working groups should also be considered when determining the schedule. Next NASA hosting will consider the CMC preference, based on the CESG recommendation, for a 4-day schedule under advisement.

18.1 Fall 2012 Technical Plenary (US)
There was a request to have a tour of the Glenn Research Center for those who wish to go.

18.2 Fall 2012 CMC (US)
The Fall 2012 CMC meeting will be held at the Kennedy Space Center (KSC) on 10-12 December 2012, in conjunction with the IOAG meeting. There is an interest in providing a technical tour of KSC. Nick Tongson (CCSDS) and Barbara Adde (IOAG) will coordinate the security list of foreign nationals attending the meetings at KSC.

18.3 Spring 2013 Technical Plenary (France)
Mr. Soulou discussed plans for the meeting in France and will provide additional information after a few weeks. The two venue options are: Biarritz and Toulouse with the CMC meeting the following week.

18.4 Spring 2014 Technical Plenary (Europe)
The CMC was informed by ESA that the meetings will be held at ESTEC (Noordwijk, Netherlands).

19. Overflow Topics
No overflow topics were identified.

20. Review of Resolutions and Action Items
The April 2012 Darmstadt resolutions and action items were accepted with minor edits. See the ResolutionsAction Items - CMC - Apr2012 - draft 1 for the edited version.

21. Adjournment
The CMC chair, Mr. Kearney, once again thanked Messrs. Peccia and Miro for the excellent meeting arrangements and for the social dinner.
AI: Secretariat to draft a letter to thank ESA/ESOC for the excellent hosting of the CCSDS Technical Working Group and CMC meetings [CMC-A-2012-04-15].

There being no other business to discuss, the CMC adjourned at 1435 on Wednesday, 25 April 2012.