**CMC Draft Minutes**

**Spring 2019 Meetings**

**Montreal, Canada**

**11-13 June 2019**

1. **Call to Order – Welcome/Opening Remarks**

Francois Alain welcomed the CMC to Canadian Space Agency Headquarters and apologized on Siamak Tafazoli’s behalf that he was unable to attend the meeting in person. S. Tafazoli was attending the launch of CSA’s RADARSAT Constellation Mission. S. Tafazoli asked his colleague, F. Alain, to represent CSA in his absence. F. Alain also serves as CSA’s representative to the IOAG. Steve Townes continued by introducing himself to the CMC as this was his first opportunity to meet many of the members in person and called the meeting to order.

1. **Roll Call of Delegates**

CMC Attendees were:

1. ESA – Nicholas Bobrinsky

2. DLR – Osvaldo Peinado

3. JAXA – Tsutomu Shigeta

4. NASA – Stephen Townes

5. INPE – Not present

6. UKSA – Chris Perry

7. CNES – Jean-Marc Soula

8. CSA – Francois Alain, Siamak Tafazoli

9. ASI – Not present

10. CNSA – Yonghui Huang, Yuxia Zhou

11. ROSCOSMOS – Dmitry Barannikov, Alexey Gulyaev

12. CESG - Margherita di Giulio, Wallace Tai, Jonathan Wilmot, Erik Barkley, Scott Burleigh

12. Secretariat – Michael Blackwood, Thomas Gannett, Brian Oliver

1. **Agenda Review and Approval** ([June\_2019\_CMC\_Agenda\_Initial\_Draft\_20190606](https://cwe.ccsds.org/cmc/_layouts/15/WopiFrame.aspx?sourcedoc=/cmc/Private/CMC%20Meeting%20Minutes%20and%20Presentations/2019%20Spring%20-%20Montreal/June_2019_CMC_Agenda_Initial_Draft_20190606.docx&action=default))

The CMC reviewed the agenda of the meeting and unanimously approved of it.

1. **CESG and Area Reports** ([CESG Report\_to CMC\_Spring 2019](https://cwe.ccsds.org/cmc/_layouts/15/WopiFrame.aspx?sourcedoc=/cmc/Private/CMC%20Meeting%20Minutes%20and%20Presentations/2019%20Spring%20-%20Montreal/CESG%20Report%20_to%20CMC_Spring%202019.pptx&action=default))
   1. **CESG Chair Introduction** [slides 2-4]

Margherita di Giulio, CESG Chair, began the CESG report with a review of the CESG organizational structure and CCSDS’s active publications and mission adoption.

* 1. **SLS Area** [6-40]

M. di Giulio presented the Space Link Services Area Report for Gian Paolo Calzolari with executive summaries for the Area and individual working Groups. During the Multispectral Hyperspectral Data Compression (MHDC) Working Group summary Osvaldo Peinado asked if the lossless data compression standard had any users. Wallace Tai and S. Townes responded that NASA, as well as other US agencies and the Department of Defense, currently utilized the standard. M. di Giulio suggested that CMC members promote the standard to their agencies. W. Tai responded that scientists tend to prefer proprietary compression algorithms they develop internally. O. Peinado agreed and noted that ESTEC is currently developing an imaging system with proprietary compression.

* 1. **MOIMS Area** [slides 41-70]

M. di Giulio also presented the Mission Operations and Information Management Services Area Report on behalf of Mario Merri. In his slides, M. Merri also included an OMG Liaison Report which was presented by M. di Giulio.

* 1. **SOIS Area** [slides 71-83]

Jonathan Wilmot presented the report for the Spacecraft Onboard Interface Services Area. J. Wilmot noted that again the Subnetwork services and Applications Support Services Working Groups met jointly for the entirety of the technical meetings and have found that doing so can be very productive. J. Wilmot stressed the importance of the request made by the Onboard Wireless Working Group that the CMC discuss with CSA the possibility of support during early interoperability testing. S. Tafazoli replied that although he could not provide an update at this time, CSA was still considering the request.

* 1. **SEA Area** [slides 84-103]

W. Tai presented the Systems Engineering Area (SEA) Area Report for Peter Shames. Attendance of the Security Working Group was particularly strong during the spring 2019 meeting with twenty three (23) attendees. The first meeting of the Time Management Birds of a Feather also experienced very good attendance. M. di Giulio inquired if the Systems Architecture Working Group project, Electronic Data Sheets/Message Abstraction Layer, would be a precursor to a later project. W. Tai responded that this yellow book was not a precursor to a later project and was intended as a reference for records.

P. Shames’ presentation also included the report of the SANA Steering Group. A concern raised by SANA was that CNSA had need of an official Agency Representative to process and approve SCID requests. Y. Huang responded that while Mr. Rusheng Zhang is the official agency representative for CNSA. He, Y. Huang, often handles administrative details and that he would be the best point of contact for approving SCID requests. O. Peinado inquired if the discrepancy in SCID frequency bin boundaries had been finalized. M. Blackwood replied that the course of action had been identified but not yet carried out. T. Gannett noted that a corrigendum for the SANA procedures Yellow Book had been completed and contained the process for rectifying the issue.

**CMC-A-2019-06-01** The CMC asks Agency Representatives to verify the frequency bands used by missions that have been assigned SCIDs. This action will be taken after the revision of CCSDS 320.0-M-7 has been published and Peter Shames has reported on the process to be used for the update.

Due Date: the next CMC meeting, Fall 2019.

Following was a discussion of seven (7) proposed resolutions for the CMC on behalf of SANA:

**Proposed Resolution 1**: Service Site and Aperture (SSA) registry shall be open for read access to anyone with a CCSDS CWE login

J.M. Soula noted that the IOAG desired for the SSA Registry to remain unavailable to the public. KSAT and SSC operate sites in this registry; at the moment, there were no individuals responsible for keeping this information up to date. W. Tai suggested that the SSA registry could be made public if private site operators agreed to this course of action.

**CMC-A-2019-06-02** The CMC directs the Secretariat to contact the owners of sites in the SSA registry who do not have an assigned Agency Representative and:

* ask permission for this data to remain in the SSA Registry (this data will be visible to CWE users);
* determine who shall perform updates for these sites.

Due Date: the next CMC meeting, Fall 2019

**Proposed Resolution 2**: A process shall be developed to allow secure access to update SSA contents by identified ARs and WGs.

**Proposed Resolution 3**: Request that the SANA mark all Glossary entries that have a relevant, approved, document be marked as “Approved” and not “Provisional”.

**Proposed Resolution 4**: The CCSDS Secretariat (website operator) shall provide the current Organization, HoD, and PoC information in a form that can be ingested into the SANA Organization registry. The SANA registry shall be used as the authoritative source after this initialization

The CMC agreed to Proposed Resolution 4 without dissent.

**CMC-R-2019-06-01** The CMC resolves that the CCSDS Secretariat (website operator) shall provide the current Organization, HoD, and PoC information in a form that can be ingested into the SANA Organization registry. The SANA registry shall be used as the authoritative source after this initialization.

**Proposed Resolution 5**: Each Agency Representative shall be asked to review the newly imported Mission / Spacecraft from the CCSDS Website and identify overlapping, aliased, missing, and/or retired entries.

O. Peinado expressed concern that the process to update these records could be quite lengthy if Agency representatives could not directly makes changes to the registry and had to direct SANA to make the required changes.

**Proposed Resolution 6**: SANA Policy shall be that any organization using SCIDs that are “self-assigned” for active S/C operation shall be denied SANA services until all such spacecraft are properly registered in SANA SCID registry.

**Proposed Resolution** 7: The Secretariat (Chief Technical Editor) shall update the Glossary whenever a document is published or updated

T. Gannett noted that he has informally agreed to this resolution, but questioned the necessity of a resolution on this topic. Nonetheless, the CMC agreed to the resolution.

**CMC-R-2019-06-02** The CMC resolves that the Secretariat (Chief Technical Editor) shall update the SANA Glossary Registry whenever a document is published or updated.

\*Note: These seven (7) proposed resolutions on SANA were also discussed in Section 6.8 of the CESG Report on other topics.

* 1. **CSS Area** [slides 124-134]

Erik Barkley presented the Cross Support Services Area Report. Foremost in E. Barkley’s report was concern over participation in the Area. Beginning in fall 2019, only ESA and NASA were expected to be participating. E. Barkley continued noting that CSS Area standards had become increasingly reliant on SANA registries and that maintenance of the registries is a manpower requirement no previously considered.

* 1. **SIS Area** [slides 104-123]

S. Burleigh presented the report for the Space Internetworking Services Area Report. S. Burleigh noted that KARI and BITTT’s testing of CFDP was complete. A lingering question about check sums on some files had been resolved and minor changes to the pink sheets would necessitate an additional agency review. Given the minor nature of the changes, S. Burleigh hoped the review would conclude swiftly. S. Burleigh noted that many DTN working Group future work items lacked required resources and some projects had no identified resources, but there existed only one conflict for approved DTN projects

* 1. **Summary Meeting Statistics** ([CESG-Report-to-CMC-Spring19\_Report\_Of\_Attendance\_MB](https://cwe.ccsds.org/cmc/_layouts/15/WopiFrame.aspx?sourcedoc=/cmc/Private/CMC%20Meeting%20Minutes%20and%20Presentations/2019%20Spring%20-%20Montreal/CESG-Report-to-CMC-Spring19_Report_Of_Attendance_MB.pptx&action=default) & [CESG-Report-to-CMC-Spring19\_Meeting\_Demographics\_MB](https://cwe.ccsds.org/cmc/_layouts/15/WopiFrame.aspx?sourcedoc=/cmc/Private/CMC%20Meeting%20Minutes%20and%20Presentations/2019%20Spring%20-%20Montreal/CESG-Report-to-CMC-Spring19_Meeting_Demographics_MB.pptx&action=default))

M. di Giulio presented the normal statistics of meeting attendance.

1. **Agency Reports**
   1. **CSA** ([CMC CSA Report Spring 2019](https://cwe.ccsds.org/cmc/_layouts/15/WopiFrame.aspx?sourcedoc=/cmc/Private/CMC%20Meeting%20Minutes%20and%20Presentations/2019%20Spring%20-%20Montreal/CMC%20CSA%20Report_Spring%202019.pptx&action=default))

S. Tafazoli requested that he be allowed to present out of order as head had a conflicting meeting. S. Tafazoli proceeded with CSA’s Agency Report on CCSDS activities and mission adoption of CCSDS standards.

Nicholas Bobrinsky inquired if CSA had an interest in developing or utilizing KU and KA band standards. S. Tafazloi responded that he was unaware of a specific interest, but that he would make inquiries to make a definite conclusion. F. Alain added that CSA had a definite interest in the utilization of optical communciations standards.

* 1. **ASI**

Massimo Calabrese was unable to attend the CMC Meeting as he had taken ill during his travel to Montreal.

* 1. **CNES** ([CNES report to the CMC \_ Montreal\_June 2019.pdf](https://cwe.ccsds.org/cmc/Private/CMC%20Meeting%20Minutes%20and%20Presentations/2019%20Spring%20-%20Montreal/CNES%20report%20to%20the%20CMC%20_%20Montreal_June%202019.pdf))

J.M. Soula presented CNES’s Agency Report and provided an update on the organizational structure of CNES and mission operations.

**CMC-R-2019-06-03** The CMC resolves to send letters of appreciation to CSA and NASA Ames Research Center for the excellent support provided in hosting the CCSDS Spring Technical Meetings and CMC Meeting. Siamak Tafazoli and Michael Blackwood will provide the necessary contact information.

**CMC-A-2019-06-03** The CMC directs the Secretariat to send letters of appreciation to CSA and NASA Ames Research Center for the excellent support provided in hosting the CCSDS Spring Technical Meetings and CMC Meeting.

Due Date: 30 June 2019.

* 1. **CNSA** ([CMC Agency Report – CNSA – Spring 2019](https://cwe.ccsds.org/cmc/Private/CMC%20Meeting%20Minutes%20and%20Presentations/2019%20Spring%20-%20Montreal/CMC%20Agency%20Report%20-%20CNSA%20-%20Spring%202019.pdf))

Yonghui Huang presented CNSA’s Agency Report.

* 1. **DLR** ([CMC DLR Report-june 2019](https://cwe.ccsds.org/cmc/Private/CMC%20Meeting%20Minutes%20and%20Presentations/2019%20Spring%20-%20Montreal/CMC%20DLR%20Report-june2019.pdf))

Osvaldo Peinado presented DLR’s Agency Report. O. Peinado provided an in depth report on current DLR missions. O. Peinado noted that although the Telerobotics Working Group is now dormant, the home page of the CWE still displays the WG as active.

**CMC-A-2019-06-04** The CMC directs the Secretariat to remove the Telerobotics Working Group from the front page of the CWE.

Due Date: 21 June 2019

* 1. **ESA**

Nicholas Bobrinsky presented ESA’s Agency Report. After an update on ESA participation in CCSDS, standards adoption, and ongoing missions, N. Bobrinsky noted that ISO/TC 20/SC 14 has begun new activity on automated collisions avoidance. N. Bobrinsky questioned if this would be a field of common interest with CCSDS.

* 1. **INPE (**[INPE-Report.to.CCSDS-CMC.Meet-St.Hubert.CA.12.Jun.19.V.7.Jun.19.pdf](https://cwe.ccsds.org/cmc/Private/CMC%20Meeting%20Minutes%20and%20Presentations/2019%20Spring%20-%20Montreal/INPE-Report.to.CCSDS-CMC.Meet-St.Hubert.CA.12.Jun.19.V.7.Jun.19.pdf))

Eduardo Bergamini was unable to attend the CMC meeting as a family member had taken ill immediately prior to the meeting. INPE Report was submitted to CMC Secretariat on June 7, 2019.

* 1. **JAXA** ([JAXA report to Montreal CMC](https://cwe.ccsds.org/cmc/Private/CMC%20Meeting%20Minutes%20and%20Presentations/2019%20Spring%20-%20Montreal/JAXA%20report%20to%20Montreal%20CMC.pdf))

Tsutomu Shigeta presented JAXA’s Agency Report. Tsutomu Shigeta noted that the members of the JAXA CCSDS Working Group would initiate an internal discussion on JAXA’s future priorities and presented the agency’s current priorities on approved projects.

* 1. **NASA**

S. Townes provided the NASA Agency Report.

* 1. **ROSCOSMOS**

ROSCOSMOS will present an Agency Report at the fall 2019 CMC Meeting.

* 1. **UKSA**

Chris Perry presented UKSA’s Agency Report.

1. **CESG Report on other topics** ([CESG Report \_to CMC\_Extra Items\_ Spring 2019](https://cwe.ccsds.org/cmc/_layouts/15/WopiFrame.aspx?sourcedoc=/cmc/Private/CMC%20Meeting%20Minutes%20and%20Presentations/2019%20Spring%20-%20Montreal/CESG%20Report%20_to%20CMC_Extra%20Items_%20Spring%202019.pptx&action=default))
   1. **Poll statistics since last CMC Meeting and status of activities** [slides 2-7]

M. di Giulio the status of CMC and CESG polls since the previous CMC meeting.

* 1. **Report on resources status, prioritization of resources (new projects and 5-year revisions), new type of resources** [slides 8-12]

After presenting on the current distribution of resources, M. di Giulio introduced the topic of a new resource type. As new standards increasingly utilize SANA registries, the ongoing database maintenance requirements have typically not been accounted for. A database maintenance resource type would be used for initial data entry and lifecycle maintenance. The CESG was considering options and would propose a resolution to the CMC when a decision was reached.

M. di Giulio also raised the question of whether resources, when limited, should be utilized for 5-year revision projects or for new projects. M. di Giulio noted that some Area Directors felt that CMC members should assign resources according to their agency’s priorities. J.M. Soula noted that the CCSDS had always followed a bottom up approach with new projects and M. di Giulio noted that the ICPA is another source of requirements for new projects. N. Bobrinsky noted that the CMC is not always provided the rationale behind new projects. S. Townes agreed and replied that he consulted NASA’s responsible rapporteur to gather all relevant background material.

O. Peinado agreed and noted that the CMC members trust the judgment of the CMC and that if resources are reported as present for a new project, there is no reason to doubt that this is the case. W. Tai noted that it is often difficult to predict the resources required by a project. S. Townes agreed and pointed out that agencies were free to set priorities as they see fit. The CESG has to confirm that required resources are available before approving a project. M. di Giulio agreed and asked that the CMC members consider a WG’s other open projects when voting on new projects.

* 1. **New WG on Time Management – Introduction Charter, status of activities, relation with IOAG services** [slides 13-14]

M. di Giulio continued to the subject of the proposed Working Group for Time Management under the Systems Engineering Area. The Time Management Birds of a Feather held its first meeting at the fall 2018 Technical Meetings and arranged a few teleconferences leading up to the spring 2019 Technical Meetings. At the spring meetings, the Time BoF met for three quarters (3/4) of a day and was attended by twenty-four (24) individuals representing six (6) agencies. At this meeting, a draft charter was finalized and submitted to the CESG.

Despite the strong interest, only NASA had committed resources to the Green Book in work. M. di Giulio reported she was unsure if any other agencies were prepared to commit resources. M. di Giulio noted that the Charter for the Time Management Working Group was currently in CESG polling and was expected to proceed to CMC polling soon.

* 1. **On-going assessment of MOIMS and SOIS “intersection” and deployment scenarios** [slides 15-16]

M. di Giulio began stating that there existed different understandings of the nature of MO services. The MOIMs and SOIS Areas could not resolve their differences themselves. M. di Giulio detailed three (3) possible cases:

* MOIMS deployed only on ground with the interface to the spacecraft being handled by standard TM/TC;
* MOIMS deployed also on the spacecraft by the use of a “façade” or proxy. MOIMS compliant application would be present on the spacecraft that would interface to the hard real-time applications. The S/C appears to the ground to be MOIMS-compliant with the actual details of the spacecraft functionality being hidden behind the façade;
* MOIMS compliant applications being embedded into the hard real-time systems on the S/C.

The first two (2) options were considered feasible while the third was not a considered a good option by the CESG. The CESG assigned actions to MOIMS and SOIS that will hopefully lead to a mutually beneficial agreement. The results of the actions were expected by the fall 2019 Technical Meetings.

J.M. Soula questioned why MOIMS would be opposed to SOIS’s position and noted his surprise at the development and was glad the CESG had agreed a path to resolve the disagreement.

* 1. **Status of ICPA** [slide 17]

M. di Giulio noted that the ICPA had been updated with regards to Service Catalogue 1 and Service Catalogue 2. All projects were linked to the relevant approved or draft CCSDS projects. Some services did not yet have a draft CCSDS project and/or assignment to a Working Group.

* 1. **CCSDS and relation with Lunar Gateway’s management** [slide 18]

M. di Giulio noted that the CESG would prepare a letter for the CMC to, if they agree, send to Lunar Gateway’s management with the intention of informing them of CCSDS’s interest in supporting the endeavor. J.M. Soula added that the IOAG Lunar Architecture group had already submitted a lunar framework to Gateway and a separate letter from CCSDS could cause confusion.

* 1. **Introduction of USLP into LOP-G – CCSDS Resolution**

**CMC-R-2019-06-04** The CMC resolves that the CCSDS Liaison to IOAG shall approach IOAG for clarification on the interaction between the IOAG and Lunar Gateway and recommend that CCSDS be involved in that interaction

**CMC-A-2019-06-07** The CMC directs the CCSDS Liaison to IOAG to convey these messages to IOAG:

CCSDS is prepared to assist IOAG in convincing Lunar Gateway project to adopt those standards they have selected but may not fly (USLP, Optical Communications, DTN, SLE);

CCSDS is prepared to assist IOAG in advertising other CCSDS standards to Lunar Gateway (MO Services, Service Management).

Due Date: 1 August 2019

* 1. **SANA Registry**
     1. **Status, outstanding polls, etc.** [slide 20]

M. di Giulio again introduced the outstanding CMC polls about SANA.

**Proposed Resolution 1**: Service Site and Aperture (SSA) registry shall be open for read access to anyone with a CCSDS CWE login

M. Blackwood noted that the CMC had agreed previously to confirm a course of action with SSA site operators before read access was granted.

**Proposed Resolution 2**: A process shall be developed to allow secure access to update SSA contents by identified ARs and WGs.

J.M. Soula noted that only Agency Representatives should be allowed to update the contents of the SSA registry. M. di Giulio agreed to present the resolution to the CESG again with the reference to Working Groups removed.

**Proposed Resolution 3**: Request that the SANA mark all Glossary entries that have a relevant, approved, document be marked as “Approved” and not “Provisional”.

**CMC-R-2019-06-05** The CMC resolves that the all SANA Glossary entries that have a relevant, approved, document be shall be marked as “Approved” and not “Provisional”

**Proposed Resolution 4**: The CCSDS Secretariat (website operator) shall provide the current Organization, HoD, and PoC information in a form that can be ingested into the SANA Organization registry. The SANA registry shall be used as the authoritative source after this initialization.

The CMC agreed with this resolution and the required action item had already been assigned to the Secretariat.

**Proposed Resolution 5**: Each Agency Representative shall be asked to review the newly imported Mission / Spacecraft from the CCSDS Website and identify overlapping, aliased, missing, and/or retired entries.

O. Peinado reasserted the need for Agency Representatives to be able to update information in SANA themselves. M. Blackwood noted that this could not be completed until Proposed Resolution 2 had been passed.

**CMC-A-2019-06-05** The CMC asks that Peter Shames report to the CMC the process for reassigning SCID frequency bins.

Due Date: 30 June 2019

**CMC-A-2019-06-06** The CMC asks Peter Shames to report to the CMC when the SCID frequency bins in SANA have been updated.

Due Date: 31 July 2019

* + 1. **CNSA representative to be appointed as “SANA Agency Representative (AR)”** [slide 19]

M. di Giulio raised the need for CNSA to assign a SANA Agency Representative. Y. Huang replied that he would send the decision of CNSA to SANA.

* 1. **Mandatory Concept Papers for New Projects** [slide 21]

M. di Giulio introduced the possibility of making concept papers mandatory for all new projects. At the moment, Working Groups themselves decide whether or not to produce concept papers for new projects. N. Bobrinsky questioned if there was a possible solution between the simple project description and a full blown concept paper. S. Townes suggested that if a project without a concept paper proceeds to CMC poll and there is insufficient detail to reach a conclusion, the review process prior to this final step had not functioned as intended. CMC members may request a concept paper if they require additional information to reach a conclusion. The CMC declined to make a change to the current policy of not requiring a mandatory concept paper for new projects.

**CMC-R-2019-06-07** The CMC resolves to reconfirm the following projects as requested by the CESG.

RF and Modulation Working Group

–CCSDS 211.1-B-4, Proximity-1 Space Link Protocol—Physical Layer (Blue Book, Issue 4, December 2013)

–CCSDS 414.0-G-2, Pseudo-Noise (PN) Ranging Systems (Green Book, Issue 2, February 2014)

–CCSDS 414.1-B-2, Pseudo-Noise (PN) Ranging Systems (Blue Book, Issue 2, February 2014)

Next Generation Uplink Working Group

–CCSDS 230.2-G-1, Next Generation Uplink (Green Book, Issue 1, July 2014)

**CMC-R-2019-06-0**8 The CMC resolves to reconfirm the following MOIMS projects as requested by the CESG.

Data Archive Ingest Working Group

CCSDS 610.0-G-5, Space Data Systems Operations with Standard Formatted Data Units: System and Implementation Aspects (Green Book, Issue 5, February 1987)

CCSDS 620.0-B-2, Standard Formatted Data Units—Structure and Construction Rules (Blue Book, Issue 2, May 1992)

CCSDS 621.0-G-1, Standard Formatted Data Units — A Tutorial (Green Book, Issue 1, May 1992)

CCSDS 622.0-B-1, Standard Formatted Data Units—Referencing Environment (Blue Book, Issue 1, May 1997)

CCSDS 641.0-B-2, Parameter Value Language Specification (CCSD0006 and CCSD0008) (Blue Book, Issue 2, June 2000)

CCSDS 641.0-G-2, Parameter Value Language — A Tutorial (Green Book, Issue 2, June 2000)

CCSDS 643.0-B-1, ASCII Encoded English (CCSD0002) (Blue Book, Issue 1, November 1992)

CCSDS 647.1-B-1, Data Entity Dictionary Specification Language (DEDSL)—Abstract Syntax (CCSD0011) (Blue Book, Issue 1, June 2001)

CCSDS 647.2-B-1, Data Entity Dictionary Specification Language (DEDSL)—PVL Syntax (CCSD0012) (Blue Book, Issue 1, June 2001)

CCSDS 647.3-B-1, Data Entity Dictionary Specification Language (DEDSL)—XML/DTD Syntax (CCSD0013) (Blue Book, Issue 1, January 2002)

Spacecraft Monitoring and Control Working Group

CCSDS 521.0-B-2, Mission Operations Message Abstraction Layer (Blue Book, Issue 2, March 2013)

CCSDS 521.1-B-1, Mission Operations Common Object Model (Blue Book, Issue 1, February 2014)

CCSDS 523.1-M-1, Mission Operations Message Abstraction Layer—JAVA API (Magenta Book, Issue 1, April 2013)

**CMC-R-2019-06-09** The CMC resolves to release CCSDS 660.0-P-1.1, XML Telemetric and Command Exchange (XTCE) (Pink Book, Issue 1.1) for CCSDS Agency review.

1. **USLP Infusion for International Lunar Exploration**

W. Tai presented a report on the Infusion of Unified Space Link Protocol (USLP) into International Lunar Exploration. W. Tai noted that slide 4 of his presentation is the real topic of note, the threat to standards infusion. Newly released standards give new opportunities for infusion in missions. The 2024 Human Landing System (HLS) had planned to use USLP in place of AOS. The new schedule for activities beginning in 2024 had forced HLS to plan not to infuse USLP and Optical Communications standards and additional standards may later join them. O. Peinado asked if infusion of USLP was realistic given the approximately five (5) year time frame. W. Tai responded that the infusion should be easily achievable at minimal cost and suggested that CCSDS should make the case for USLP to the involved parties. N. Bobrinsky suggested that each agency representative would have to consider the implications and costs involved and that no final decision could be made at this time. N. Bobrinsky also noted that the IOAG’s objective is to have the architecture a fully adopted as possible and suggested that the IOAG should be asked for their opinion as well.

**CMC-A-2019-06-12** The CMC asks that all CMC members participating in Lunar exploration engage with their Lunar project management in advocating the proposed USLP infusion approach and report to the CMC.

Due Date: the mid-term CMC meeting, 28 August 2019.

1. **Meeting Planning**
   1. **Fall 2019 Technical Plenary & CMC Meetings (ESA-ESOC)**

N. Bobrinsky announced to he was pleased to welcome CCSDS to Darmstadt and ESOC for the fall 2019 Meetings. A contract with the location of the Technical Meetings, the Darmstadium, had been finalized and all arrangements made. ESA will provide coffee breaks during the meetings and had arranged an optional lunch for attendees at a reduced cost. ESA would arrange for a dinner for CESG and CMC members as well. J. M. Soula noted that the IOAG Chairman, Mr. Michael Schmidt, resided in Darmstadt and that it may be appropriate to invite him to participate in a session of the CMC’s meeting there.

**CMC-R-2019-06-06** The CMC resolves to invite the IOAG Chair to attend a session of the fall 2019 CMC meeting.

**CMC-A-2019-06-09** The CMC directs the Secretariat to extend an invitation to the Chair of the IOAG to attend a session of the fall 2019 CMC meeting in Darmstadt, Germany. The Secretariat will draft a meeting agenda and include an agenda item for the IOAG on the second or third day of the meeting.

Due Date: 30 June 2019.

* 1. **Spring 2020 Technical Plenary & CMC Meetings (NASA/JAXA)** ([CMC2020\_JAXA](https://cwe.ccsds.org/cmc/Private/CMC%20Meeting%20Minutes%20and%20Presentations/2019%20Spring%20-%20Montreal/CMC2020_JAXA.pdf))

M. Blackwood reported NASA’s intention was to host the spring 2020 Technical Plenary in Huntsville, Alabama and was currently exploring dates for the meetings as well as local venues. J.M. Soula remarked that as many CCSDS participants will also attend SpaceOps 2020, care should be taken to avoid conflicts with those dates. SpaceOps 2020 is scheduled for 18-22 May 2020. T. Shigeta also noted that The first week of May 2020 will be part of a Japanese national holiday and could also cause significant conflicts for Japanese attendees. M. Blackwood confirmed that NASA would do its utmost to avoid any conflicts and that he would provide additional information when it became available.

T. Shigeta presented JAXA’s plans for hosting the CMC’s spring 2020 meeting in Tokyo, Japan. JAXA proposed dates of 9-11 June 202 for the meeting with alternate dates of 3-5 June or 16-18 June 2020. JAXA intended to arrange a dinner reservation for the CMC on the second evening of the meetings at a nearby restaurant. JAXA agreed to attempt to arrange a block reservation at the Remm Akihabara hotel nearby.

**CMC-A-2019-06-08** The CMC directs the Secretariat to confirm the CMC member’s availability for the proposed dates of the spring 2020 CMC Meeting, 9-11 June 2020. In the event CMC members are unavailable for these dates, the Secretariat will confirm availability for the other dates proposed by JAXA. The Secretariat will provide this information to JAXA.

Due Date: 30 June 2019

* 1. **Fall 2020 Technical Plenary & CMC Meetings (CNES)** ([CNES report to the CMC \_ Montreal\_June 2019](https://cwe.ccsds.org/cmc/Private/CMC%20Meeting%20Minutes%20and%20Presentations/2019%20Spring%20-%20Montreal/CNES%20report%20to%20the%20CMC%20_%20Montreal_June%202019.pdf))

J. M. Soula presented CNES’s plans for hosting the fall 2020 CCSDs meetings. J.M. Soula noted that he had little new to present. CNES was pursuing a contact to host the meetings at the Mercure Hotel in Toulouse with additional meeting rooms at the nearby Novotel. The planned dates were 26-30 October 2020 for the technical meetings and 2-5 November 2020 for the CESG and CMC meetings.

* 1. **Spring 2021 Technical Plenary & CMC Meetings (NASA/INPE)**

M. Blackwood reported that NASA was exploring options for hosting the spring 2021 Technical Plenary and hoped to have further news soon.

1. **IOAG Liaison Report/Topics** ([CMC IOAG Update 20190612](https://cwe.ccsds.org/cmc/_layouts/15/WopiFrame.aspx?sourcedoc=/cmc/Private/CMC%20Meeting%20Minutes%20and%20Presentations/2019%20Spring%20-%20Montreal/CMC%20IOAG%20Update%20201906012.pptx&action=default))

S. Townes provided the IOAG Liaison Report. First, S. Townes noted that IOAG-23 would be hosted by UKSA at Goonhilly Station 16-20 September 2019 with industry exchange days on 16 and 17 September 2019.

**CMC-A-2019-06-10** The CMC directs the CCSDS Liaison to IOAG to inquire if any actions (inputs to ICPA, extension of mission operations to onboard) will be requested from CCSDS in Service Catalogue 3.

Due Date: 1 August 2019.

1. **Secretariat Report**
   1. **Action Items Status (only open items)**

M. Blackwood reviewed open CMC Action Items.

* CMC-A-2018-02-02 - The CMC directs the Secretariat to address how additional information can be requested when users request to be added to mailing lists.
  + M. di Giulio commented that, upon conversing with Brian Oliver on the subject, it is not possible to request additional information when subscription requests are made. The CMC agreed to close this Action Item.
* CMC-A-2018-05-03 - The CMC requests that the CCSDS Secretariat conduct a review of the contact information for the list of Observers, Liaisons, and Associates on the CWE.
  + M. Blackwood noted that the effort to review all contacts was ongoing and that updated contacts received to date would be included in the SANA contacts registry. This Action Item will remain open.
* CMC-A-2018-08-01 - The CMC directs CCSDS Tech Support to address the proposed RID template with the CESG Chair and resolve the issue.
  + M. di Giulio stated that the CESG was currently considering a template in Microsoft Excel or another format and that the issue in this Action Item had been resolved. The CMC agreed to close this Action Item.
* CMC-A-2019-02-01 - The CMC directs the Secretariat to add an agenda item to the June 2019 CMC Meeting to discuss the questions raised by the CESG Chair about resource prioritization between new projects and 5-year reviews and the question of whether concept papers should be made mandatory for new project proposals.
  + M. Blackwood noted that this Action Item had been completed and the agenda item was included in the CESG Chair Report earlier in the meeting. The CMC agreed to close this Action Item.
* CMC-A-2019-02-02 - The CMC directs the Secretariat to contact ROSCOSMOS and confirm that the contact details for their Agency Representative are Correct.
  + M. Blackwood reported that he had contacted Dmitry Barannikov and Anna Vasilenko and confirmed that Mr. Kirll Borisov was the correct representative and that his contact information was correct. The CMC agreed to close this Action Item.
* CMC-A-2019-02-03 - The CMC asks that P. Shames reword resolutions for the five (5) outstanding CCSDS Polls regarding SANA to reflect their current status and provide these resolutions to the Secretariat.
  + M. Blackwood noted that these five (5) reconsidered resolutions were presented to the CMC in the SEA Area Report earlier in the meeting. The CMC agreed to close this Action Item.
* CMC-A-2019-02-04 - The CMC directs the Secretariat to initiate a poll for the approval of the Norwegian Defence Research Establishment as a CCSDS Observer Agency.
  + M. Blackwood responded that The poll to approve the Norwegian Defence Research Establishment as a CCSDS Observer Agency was initiated on 28 February 2019 and concluded 13 March 2019. The NDRE was approved unanimously. The CMC agreed to close this Action Item.
* CMC-A-2019-02-05 - The CMC directs the Secretariat to complete the transition of CCSDS Contacts to the SANA Registries.
  + M. Blackwood reported that the Secretariat had continued to coordinate with SANA and had created the final production webpages displaying CCSDS contacts drawn from the SANA registry. This Action Item was kept ongoing.
  1. **Document Status Report** ([CCSDS Document Status](https://cwe.ccsds.org/cmc/Private/CMC%20Meeting%20Minutes%20and%20Presentations/2019%20Spring%20-%20Montreal/CCSDS%20Document%20Status.pdf))

T. Gannett presented the status of CCSDS documents. Specific issues T. Gannett needed to address had been discussed during previous agenda items.

* 1. **IT Project Status** ([ITUpdate](https://cwe.ccsds.org/cmc/_layouts/15/WopiFrame.aspx?sourcedoc=/cmc/Private/CMC%20Meeting%20Minutes%20and%20Presentations/2019%20Spring%20-%20Montreal/ITUpdate.pptx&action=default))

B. Oliver presented the IT Project Status Report. B. Oliver highlighted the higher than usual level of support for the Spring 2019 Technical Meeting cycle driven by a record number of registrants, 203 in total. CCSDS Tech Support was also engaging in a final round of data verification for the task to integrate CCSDS public website and SANA contacts and create new webpages that reference the SANA contacts registry. Following performance testing, the new webpages will be deployed.

B. Oliver also provided a brief review of upcoming projects. CCSDS Tech Support will begin a project to redesign the public website later in 2019. The current CCSDS public website was designed in 2004 and is not compatible with mobile web browsers and is not reactive, leading to poor high resolution formatting. In late 2019 or early 2020, the CCSDS Collaborative Working Environment (CWE) will be migrated from SharePoint 2013 to SharePoint 2016. A similar task as completed in 2016 upgrading the CWE from SharePoint 2010 to SharePoint 2013

1. **Schedule for the Next CMC Midterm Telecon**

The CMC discussed scheduling a Midterm Telecon and concluded that Wednesday, 28 August 2019 would serve attendees best.

**CMC-A-2019-06-11** The CMC directs the Secretariat to schedule the mid-term CMC meeting for 28 August 2019 and send a meeting invite to the CMC members.

Due Date: 30 June 2019

1. **CMC Review of Resolutions and Action Items**

The CMC reviewed the Resolutions and Action Items generated during this meeting.

* **CMC-R-2019-06-01** The CMC resolves that the CCSDS Secretariat (website operator) shall provide the current Organization, HoD, and PoC information in a form that can be ingested into the SANA Organization registry. The SANA registry shall be used as the authoritative source after this initialization.
* **CMC-R-2019-06-02** The CMC resolves that the Secretariat (Chief Technical Editor) shall update the SANA Glossary Registry whenever a document is published or updated.
* **CMC-R-2019-06-03** The CMC resolves to send letters of appreciation to CSA and NASA Ames Research Center for the excellent support provided in hosting the CCSDS Spring Technical Meetings and CMC Meeting. Siamak Tafazoli and Michael Blackwood will provide the necessary contact information.
* **CMC-R-2019-06-04** The CMC resolves that the CCSDS Liaison to IOAG shall approach IOAG for clarification on the interaction between the IOAG and Lunar Gateway and recommend that CCSDS be involved in that interaction.
* **CMC-R-2019-06-05** The CMC resolves that the all SANA Glossary entries that have a relevant, approved, document be shall be marked as “Approved” and not “Provisional”.
* **CMC-R-2019-06-06** The CMC resolves to invite the IOAG Chair to attend a session of the fall 2019 CMC meeting.
* **CMC-R-2019-06-07** The CMC resolves to reconfirm the following projects as requested by the CESG.

**RF and Modulation Working Group**

–CCSDS 211.1-B-4, Proximity-1 Space Link Protocol—Physical Layer (Blue Book, Issue 4, December 2013)

–CCSDS 414.0-G-2, Pseudo-Noise (PN) Ranging Systems (Green Book, Issue 2, February 2014)

–CCSDS 414.1-B-2, Pseudo-Noise (PN) Ranging Systems (Blue Book, Issue 2, February 2014)

**Next Generation Uplink Working Group**

–CCSDS 230.2-G-1, Next Generation Uplink (Green Book, Issue 1, July 2014)

* **CMC-R-2019-06-08** The CMC resolves to reconfirm the following MOIMS projects as requested by the CESG.

**Data Archive Ingest Working Group**

CCSDS 610.0-G-5, Space Data Systems Operations with Standard Formatted Data Units: System and Implementation Aspects (Green Book, Issue 5, February 1987)

CCSDS 620.0-B-2, Standard Formatted Data Units—Structure and Construction Rules (Blue Book, Issue 2, May 1992)

CCSDS 621.0-G-1, Standard Formatted Data Units — A Tutorial (Green Book, Issue 1, May 1992)

CCSDS 622.0-B-1, Standard Formatted Data Units—Referencing Environment (Blue Book, Issue 1, May 1997)

CCSDS 641.0-B-2, Parameter Value Language Specification (CCSD0006 and CCSD0008) (Blue Book, Issue 2, June 2000)

CCSDS 641.0-G-2, Parameter Value Language — A Tutorial (Green Book, Issue 2, June 2000)

CCSDS 643.0-B-1, ASCII Encoded English (CCSD0002) (Blue Book, Issue 1, November 1992)

CCSDS 647.1-B-1, Data Entity Dictionary Specification Language (DEDSL)—Abstract Syntax (CCSD0011) (Blue Book, Issue 1, June 2001)

CCSDS 647.2-B-1, Data Entity Dictionary Specification Language (DEDSL)—PVL Syntax (CCSD0012) (Blue Book, Issue 1, June 2001)

CCSDS 647.3-B-1, Data Entity Dictionary Specification Language (DEDSL)—XML/DTD Syntax (CCSD0013) (Blue Book, Issue 1, January 2002)

**Spacecraft Monitoring and Control Working Group**

CCSDS 521.0-B-2, Mission Operations Message Abstraction Layer (Blue Book, Issue 2, March 2013)

CCSDS 521.1-B-1, Mission Operations Common Object Model (Blue Book, Issue 1, February 2014)

CCSDS 523.1-M-1, Mission Operations Message Abstraction Layer—JAVA API (Magenta Book, Issue 1, April 2013)

* **CMC-R-2019-06-09** The CMC resolves to release CCSDS 660.0-P-1.1, XML Telemetric and Command Exchange (XTCE) (Pink Book, Issue 1.1) for CCSDS Agency review.
* **CMC-A-2019-06-01** The CMC asks Agency Representatives to verify the frequency bands used by missions that have been assigned SCIDs. This action will be taken after the revision of CCSDS 320.0-M-7 has been published and Peter Shames has reported on the process to be used for the update.
  + Due Date: the next CMC meeting, Fall 2019.
* **CMC-A-2019-06-02** The CMC directs the Secretariat to contact the owners of sites in the SSA registry who do not have an assigned Agency Representative and:
  + - ask permission for this data to remain in the SSA Registry (this data will be visible to CWE users);
    - determine who shall perform updates for these sites.
  + Due Date: the next CMC meeting, Fall 2019.
* **CMC-A-2019-06-03** The CMC directs the Secretariat to send letters of appreciation to CSA and NASA Ames Research Center for the excellent support provided in hosting the CCSDS Spring Technical Meetings and CMC Meeting.
  + Due Date: 30 June 2019.
* **CMC-A-2019-06-04** The CMC directs the Secretariat to remove the Telerobotics Working Group from the front page of the CWE.
  + Due Date: 21 June 2019.
* **CMC-A-2019-06-05** The CMC asks that Peter Shames report to the CMC the process for reassigning SCID frequency bins.
  + Due Date: 30 June 2019.
* **CMC-A-2019-06-06** The CMC asks Peter Shames to report to the CMC when the SCID frequency bins in SANA have been updated.
  + Due Date: 31 July 2019.
* **CMC-A-2019-06-07** The CMC directs the CCSDS Liaison to IOAG to convey these messages to IOAG:
  + - CCSDS is prepared to assist IOAG in convincing Lunar Gateway project to adopt those standards they have selected but may not fly (USLP, Optical Communications, DTN, SLE);
    - CCSDS is prepared to assist IOAG in advertising other CCSDS standards to Lunar Gateway (MO Services, Service Management).
  + Due Date: 1 August 2019.
* **CMC-A-2019-06-08** The CMC directs the Secretariat to confirm the CMC member’s availability for the proposed dates of the spring 2020 CMC Meeting, 9-11 June 2020. In the event CMC members are unavailable for these dates, the Secretariat will confirm availability for the other dates proposed by JAXA. The Secretariat will provide this information to JAXA.
  + Due Date: 30 June 2019.
* **CMC-A-2019-06-09** The CMC directs the Secretariat to extend an invitation to the Chair of the IOAG to attend a session of the fall 2019 CMC meeting in Darmstadt, Germany. The Secretariat will draft a meeting agenda and include an agenda item for the IOAG on the second or third day of the meeting.
  + Due Date: 30 June 2019.
* **CMC-A-2019-06-10** The CMC directs the CCSDS Liaison to IOAG to inquire if any actions (inputs to ICPA, extension of mission operations to onboard) will be requested from CCSDS in Service Catalogue 3.
  + Due Date: 1 August 2019.
* **CMC-A-2019-06-11** The CMC directs the Secretariat to schedule the mid-term CMC meeting for 28 August 2019 and send a meeting invite to the CMC members.
  + Due Date: 30 June 2019.
* **CMC-A-2019-06-12** The CMC asks that all CMC members participating in Lunar exploration engage with their Lunar project management in advocating the proposed USLP infusion approach and report to the CMC.
  + Due Date: the mid-term CMC meeting, 28 August 2019.

J.M. Soula noted that SpaceOps 2020 would be held in Cape Town, South Africa 18-22 May 2020. The deadline for paper abstract submission was rapidly approaching in July 2019. J.M. Soula remarked that a topic of particular interest was cross support and interoperability of standards.

1. **Adjournment**

S. Townes thanked the CMC members for the many contributions and CSA for their hospitality and the excellent facilities they provided and adjourned the meeting.