**Fall 2016 CCSDS MOIMS/SM&C MINUTES**

**17-20 October 2016**

**Agenda**



**MONDAY 17 October 2016**

* Morning. CCSDS and MOIMS Plenary, including presentation on the development of the full reference architecture.
* The team reviewed and updated the agenda to account for those that would not arrive until later in the week.
* Review of CWE documentation status. The status and schedule for all eight current projects were reviewed. All documents are now shown as on-schedule and all eight are planned for FY17 completion!
1. [Mission Operations - Common Services](http://cwe.ccsds.org/fm/_layouts/listform.aspx?PageType=4&ListId=%7BBC2D6E0F-3242-46E3-A13D-3D907343AF44%7D&ID=147&ContentTypeID=0x0100B63160D64FE81342BE42A874DE7E703D)
2. Mission Operations - Message Abstraction Layer Binding to HTTP Transport and XML Encoding
3. [Mission Operations - Message Abstraction Layer Binding to TCP/IP Transport and Split Binary Encoding](http://cwe.ccsds.org/fm/_layouts/listform.aspx?PageType=4&ListId=%7BBC2D6E0F-3242-46E3-A13D-3D907343AF44%7D&ID=516&ContentTypeID=0x0100B63160D64FE81342BE42A874DE7E703D)
4. [Mission Operations - Message Abstraction Layer Binding to ZeroMQ Transport and CNES Binary Encoding](http://cwe.ccsds.org/fm/_layouts/listform.aspx?PageType=4&ListId=%7BBC2D6E0F-3242-46E3-A13D-3D907343AF44%7D&ID=500&ContentTypeID=0x0100B63160D64FE81342BE42A874DE7E703D)

**[UPDATE: The WG has been asked by the CESG to change the name of the document to not mention “CNES”.]**

1. [Mission Operations - Mission Data Product Distribution Services](http://cwe.ccsds.org/fm/_layouts/listform.aspx?PageType=4&ListId=%7BBC2D6E0F-3242-46E3-A13D-3D907343AF44%7D&ID=153&ContentTypeID=0x0100B63160D64FE81342BE42A874DE7E703D)
2. [Mission Operations - Monitor & Control Services](http://cwe.ccsds.org/fm/_layouts/listform.aspx?PageType=4&ListId=%7BBC2D6E0F-3242-46E3-A13D-3D907343AF44%7D&ID=148&ContentTypeID=0x0100B63160D64FE81342BE42A874DE7E703D)
3. [Mission Operations C++ API](http://cwe.ccsds.org/fm/_layouts/listform.aspx?PageType=4&ListId=%7BBC2D6E0F-3242-46E3-A13D-3D907343AF44%7D&ID=501&ContentTypeID=0x0100B63160D64FE81342BE42A874DE7E703D)

Sam to help locate the original (editable) version of the documents so that Secretariat processing may continue.

1. [XML Telemetric and Command Exchange (XTCE) 1.2](http://cwe.ccsds.org/fm/_layouts/listform.aspx?PageType=4&ListId=%7BBC2D6E0F-3242-46E3-A13D-3D907343AF44%7D&ID=159&ContentTypeID=0x0100B63160D64FE81342BE42A874DE7E703D)
* XTCE Status. Dan Smith reported that the OMG continues their approval process for XTCE 1.2 and that the OMG has reported that they should have a clean version for CCSDS approval in January although their final organization sign-off may not have yet been completed.
* For general information, Dan Smith reported on the most recent OMG meeting. The OMG, across multiple working groups, is moving towards “architecture agnostic” standards based more on message exchange formats and not on reference architectures or requirements for extensive associated infrastructure as part of the standards.
* Review of Draft Projects. Each of the 8 draft projects in CWE was discussed. We currently do not anticipate any of these beginning in 2017 unless actions are resolved, priorities considered, and resources become available.
1. [Mission Operations Automation Services](http://cwe.ccsds.org/fm/Lists/Projects/DispFormDraft.aspx?ID=152&Source=http://cwe.ccsds.org/fm/Lists/Projects/AllOpenChartersWithDraftProjects.aspx). Involves interaction with on-board systems. Lower priority.
2. [Mission Operations File Management Services](http://cwe.ccsds.org/fm/Lists/Projects/DispFormDraft.aspx?ID=156&Source=http://cwe.ccsds.org/fm/Lists/Projects/AllOpenChartersWithDraftProjects.aspx). Issue: need to clarify SM&C role and related activities of other working groups.
3. [Mission Operations Navigation Services](http://cwe.ccsds.org/fm/Lists/Projects/DispFormDraft.aspx?ID=154&Source=http://cwe.ccsds.org/fm/Lists/Projects/AllOpenChartersWithDraftProjects.aspx). Defer. Product Distribution service may meet much of the need.
4. [Mission Operations Planning Services](http://cwe.ccsds.org/fm/Lists/Projects/DispFormDraft.aspx?ID=150&Source=http://cwe.ccsds.org/fm/Lists/Projects/AllOpenChartersWithDraftProjects.aspx). Allow progress to be made by the new WG first.
5. [Mission Operations Remote Buffer Management Services](http://cwe.ccsds.org/fm/Lists/Projects/DispFormDraft.aspx?ID=157&Source=http://cwe.ccsds.org/fm/Lists/Projects/AllOpenChartersWithDraftProjects.aspx). Involves interaction with on-board systems. Lower priority.
6. [Mission Operations Scheduling Services](http://cwe.ccsds.org/fm/Lists/Projects/DispFormDraft.aspx?ID=151&Source=http://cwe.ccsds.org/fm/Lists/Projects/AllOpenChartersWithDraftProjects.aspx). Allow progress to be made by the new WG first.
7. [Mission Operations Software Management Services](http://cwe.ccsds.org/fm/Lists/Projects/DispFormDraft.aspx?ID=158&Source=http://cwe.ccsds.org/fm/Lists/Projects/AllOpenChartersWithDraftProjects.aspx). Involves interaction with on-board systems. Lower priority.
8. [Mission Operations Time Services](http://cwe.ccsds.org/fm/Lists/Projects/DispFormDraft.aspx?ID=155&Source=http://cwe.ccsds.org/fm/Lists/Projects/AllOpenChartersWithDraftProjects.aspx). Issue: need to clarify SM&C role and related activities of other working groups.
* Five Year Review Discussion. There are two documents for which a 5-year review were discussed.
1. MO Services Concept Green Book. Update is needed. ESA has planned to support the effort.

ACTION: SM&C team to review the document and provide comments by the end of December. Comments should be to help with the overall update in general, and not specific updates at this time.

New project will be requested after 1 January 2017 based on extent of comments received.

**[UPDATE: The Area Director has asked that we submit a Project entry for the Green Book update immediately. Sam Cooper updated the on-line system on 31 October 2016.]**

1. MO Reference Model. Current goal is to NOT update the document. Will ask for “Reconfirmation”.

ACTION: SM&C team to review the document by the end of December. It is hoped the determination can be made that a document update is not required.

* Considering a new book. Webservices binding book exists, but not formal. Could consider as a new book after current batch are complete, possibly Orange. Nestor later said that Orange should be used where an Agency dissents, not as a shortcut. Therefore Orange should not be the designation in this case.

**TUESDAY 18 October 2016**

Book Review

1. TCP/IP Transport and Split Binary Encoding Red Book. The table below shows the RIDs received for this document. Recommended and technical RIDs were discussed. No key issues were identified. CNES prototype is complete, ESA’s is almost done. CNES and ESA will then conduct their interoperability tests.

ACTION: **Dan Smith** to provide all RIDs, and one additional set from ESA not reflected below, to Sam Cooper.

ACTION: **Sam Cooper** to coordinate update of the document per the comments received.

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| **CCSDS 524.2-R-1. Abstraction Layer Binding to TCP/IP Transport and Split Binary Encoding Red Book. Issue 1. August 2016.**  |
| **RIDS RECEIVED** |
|   |   |   | No RIDs  | Editorial | Recommended | Technical |
| 29-Sep-16 | NASA GRC | Sandra Johnson  |   | 8 |   |   |
| 30-Sep-16 | NASA MSFC | Tom Wickline |   | 1 |   |   |
| 10-Oct-16 | CNES | JeaMarc Soula | X |   |   |   |
| 10-Oct-16 | JAXA | Yuta Kimura | X |   |   |   |
| 11-Oct-16 | ESA | Mario Merri |   | 14 | 9 | 1 |
| 11-Oct-16 | DLR | Stefan Gartner |   | 12 | 5 | 4 |
| 13-Oct-16 | INPE | Eduardo Bergamini | X |   |   |   |
| TOTAL |   |   | 3 | 35 | 14 | 5 |

1. HTTP Transport RID Review. Lengthy discussions held regarding one key remaining RID. How do we see if being used? Difficult to cross fire walls. Some deployments OK, others not. Many cases you should not really use HTTP anyway. Could use WebSockets, could be an easy specification. Should we do a REST API? With REST API, would not need MO. One issue is the handling of pub/sub. Could add information on the limitations and deployment restrictions instead of explaining websockets or other solutions. ESA indicated a willingness to possibly develop a REST API as a student project. DECISION: Keep the book essentially as it is; add information on the limitations and deployment applications.

Second prototype needed. NASA/JPL is a candidate, but no commitment has been made.

1. Product Distribution. Should proceed with Agency Review. NASA has overall concerns with the document, but has no intentions of blocking it or slowing it down. CNES has committed to do the second prototype, WG chair is to notify the AD so that the CWE can be updated.
* RID System Requirements Review. Comments added to the requirements document and passed to the Area Director. Action closed. Nestor Peccia later mentioned that there is a high probability that the resources will not be available to allow for implementation.

WEDNESDAY 19 October 2016

* IOAG/MOSSG Discussion
* Dan Smith tried to represent the MOSSG, SM&C, and NASA. Every meeting member represented at least two groups.
* Dan (MOSSG) explained that the report and Catalog #3 were given to CCSDS for review prior to even being presented to the IOAG. It is expected that the approved versions will take another year to complete.
* **CCSDS WG’s are to take no actions from the IOAG/MOSSG**. There is a full process still to follow and any actions will come from CCSDS management (will not be soon).
* Mars lunar joint missions will be covered by a new IOAG group and may eventually involve MOSSG and reflect back to MOSSG products.
* MOSSG noted that it heard many reasons for the perceived slow development and adoption of MO Services. Although Sam noted that the comment of slow adoption was not fair since the books are just now being released, the perception is out there.
	+ Mehran emphasized that we should finish books now so we can advertise it is ready to go! Nestor – CCSDS agrees, too bad we spent so much time on all the bindings and left the main book for the end. It was a mistake.
* Nestor strongly suggested that the MOSSG team look at Catalog #1 and #2 in more detail. Marc noted that Cat 3 is different than the other catalogs since we are higher on the stack.
* The MOSSG recommends the use of both services and formats and they like the model planned for planning and scheduling – having both, and having them compatible. Maybe SM&C can move to a similar model. Sam and Mehran noted that we have formats for the SM&C MO services, we just have not highlighted them.
* Joint Meeting – SM&C, SOIS, SEA
	+ Peter Shames presented the overall architecture to a packed house. The SOIS team then presented an very good overview of their efforts.
	+ Both SOIS and MO services are reaching a maturity point that allows for real trade-offs and prototyping.
	+ It was explained that the MAL includes a Service Interface Description Language that seems to overlap greatly with the SOIS EDS. It would be interesting to try an effort within SOIS and SM&C to solve a similar problem (e.g. camera control) so we can all better understand the similarities, differences, and limitations.
	+ ACTION: Sam to followup with SOIS regarding information and links to MO software and XML.
* Work Plan – See list at end of minutes. Telecon will be needed to refine priorities.

THURSDAY 20 October 2016

* DAI Joint Meeting.
* Opening comments. DAI, SM&C, NAV are all part of MOIMS; but SM&C and NAV do not see DAI as integral to their solutions. Long-term preservation is key to DAI, but that phrase never mentioned in SM&C.
* Mike Kearney. Google is supporting Mike as they all look at concepts of long-term preservation and open archive systems. They looked at other standards groups, but came back to CCSDS. Mike presented a set of charts.
* DAI does not address the near-time archives.
* Planetary Data System and other similar systems are actually very close to being compliant with many aspects of DAI.
* DAI needs some level of architecture and would like to consider an MO services framework.
* Sam asked whether they support JDBC-style? Response was that could be one aspect of one portion.
* Sam pointed out that the MO MAL includes a Service Interface Description Language that DAI may find more beneficial than the MAL message abstraction layer functions.
* Archive information package is key for long-term and ability to transition to newer systems and technologies.
* DAI asked that Mario, as their Area Director, push for approval of the project plan and ask for resources from the CESG.

* DAI (Mike) asked whether SM&C could adapt a prototype for DAI needs. Sam pointed out that we already have prototypes available as open source and that some technical support could be available.
* Mike asked that everyone in the room advocate within their Agencies for the DAI effort – please help identify resources and interest. This is some of the most important work in CCSDS.
* Example missions – We did not have the discussion shown in the agenda regarding the types of missions that we should use to see how our standards would provide support. Dan Smith will talk to Peter Shames to see if there is a standard mission set that CCSDS recognized.

**FRIDAY 21 October 2016**

* MOIMS Plenary – reporting on the week’s work. Presentation will be posted.

**ACTION SUMMARY**

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|  | **Action** | **Assigned to** | **Due Date** | **Closed** | **Notes** |
| 20161020-1 | Review MO Concept Green Book and provide comments as inputs to the 5-year refresh. | ALL | 12/31/2016 |  | Planning on a significant update. |
| 20161020-2 | Review MO Reference Model and provide comments if there are critical issues to fix. | ALL | 12/31/2016 |  | It is hoped the determination can be made that a 5-year document update is not required. |
| 20161020-3 | TCP/IP book - provide all RIDs, and one additional set from ESA not reflected below, to Sam Cooper. | Dan Smith | 10/27/2016 |  | Provided to Sam Cooper on 10/31/2016 except for the missing ESA additional comments. |
| 20161020-4 | TCP/IP book - to coordinate update of the document per the comments received. | Sam Cooper | 11/15/2016 |  |  |
| 20161020-5 | HTTP Transport – Second Prototype. Determine whether your Agency can develop Prototype 2. | All, but especially Brian Giovannoni/NASA | 11/15/2016 |  |  |
| 20161020-6 | Identify second prototype source for Data Product Distribution | Dan Smith | 10/31/2016 | 10/31/2016 | CNES has agreed to do 2nd prototype. Resolution provided to the Area Director. |
| 20161020-7 | Pursue the formats extraction and documentation effort | Dan Smith, Sam Cooper | 1/31/2017 |  |  |
| 20161020-8 | Consider trying an effort for SOIS and MO to each show how they could use their approaches for camera control. | Dan Smith to discuss with SOIS WG Chair | 12/31/2016 |  |  |
| 20161020-9 | Get back to a schedule of regular WG telecons. | Dan Smith | 11/15/2016 |  |  |
| 20161020-10 | Prioritize books in the Secretariat queue | Dan Smith, Sam Cooper | 12/31/2016 |  |  |
| 20161020-11 | Review and Prioritize 2017 Work Plan | All | At next telecons |  |  |
| 20161020-12 | Followup with SOIS regarding information and links to MO software and XML. | Sam Cooper | 10/30/2016 |  |  |
| 20161020-13 | Review the restrictions of the current ESA public license agreement. Section 3.2 | Mario Merri/AD | 12/25/2016 |  | Note that this issue impacts the ability of NASA and others to use the ESA software in the development of prototypes. |
| 20161020-14 | Contact the Systems Engineering Area to see if there is an established list of reference missions or types of missions against which our ideas should be vetted. | Dan Smith | 1/31/2017 |  |  |

SM&C 2017 Workplan and Roadmap IDEAS

[for discussion at upcoming WG telecon]

Existing Projects

All, per CWE, are on track with publication to be completed within the next 12 months

Draft Projects

None of the currently defined draft projects will be started in the next 12 months.

Prototypes (per CWE)

Need one HTTP prototype. Candidate identified.

Data Distribution. CNES will do second prototype. WG to notify Mario.

Actions

IOAG/MOSSG – No SM&C action until report and catalog are officially released (may be a year or more)

Time – Overlap

File management – Overlap

Events – multiple WGs. Continue.

Initiatives for Consideration

MO Services Green Book – New Project after WG review

Reference Architecture. 5-year reconfirmation review

EDS – MAL examination

MO Services – Format Definitions

Interaction with OMG. XTCE 1.2 finalization.

Interoperability PICS

Improved advocacy

Next Services to Work On?

Planning – Wait for their WG to get further

Navigation – Could initially rely on Product Distribution Service