21 October 2021
14:00UTC
<table>
<thead>
<tr>
<th>Time (UTC)</th>
<th>Duration</th>
<th>Topic</th>
<th>Presenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>14:00</td>
<td>5 minutes</td>
<td>Welcome</td>
<td>Sami Asmar – CCSDS General Secretary</td>
</tr>
<tr>
<td>14:05</td>
<td>10 minutes</td>
<td>Introduction</td>
<td>Klaus-Juergen Schulz – CESG Chair</td>
</tr>
<tr>
<td>14:15</td>
<td>10 minutes</td>
<td>Role of the CESG</td>
<td>Peter Shames – SEA Area Director</td>
</tr>
<tr>
<td>14:25</td>
<td>10 minutes</td>
<td>MOIMS Workplan</td>
<td>Mario Merri – MOIMS Area Director</td>
</tr>
<tr>
<td>14:35</td>
<td>10 minutes</td>
<td>SIS Workplan</td>
<td>Tomaso de Cola – SIS Area Director</td>
</tr>
<tr>
<td>14:45</td>
<td>10 minutes</td>
<td>SLS Workplan</td>
<td>Ignacio Aguilar – SLS Area Director</td>
</tr>
<tr>
<td>14:55</td>
<td>10 minutes</td>
<td>SOIS Workplan</td>
<td>Jonathan Wilmot – SOIS Area Director</td>
</tr>
<tr>
<td>15:05</td>
<td>10 minutes</td>
<td>CSS Workplan</td>
<td>Erik Barkley – CSS Area Director</td>
</tr>
<tr>
<td>15:15</td>
<td>10 minutes</td>
<td>SEA Workplan</td>
<td>Peter Shames – SEA Area Director</td>
</tr>
<tr>
<td>15:25</td>
<td>5 minutes</td>
<td>Code of Conduct</td>
<td>Michael Blackwood - Secretariat</td>
</tr>
<tr>
<td>15:30</td>
<td>5 minutes</td>
<td>Spring 2022 Meetings</td>
<td>Michael Blackwood - Secretariat</td>
</tr>
<tr>
<td>15:35</td>
<td></td>
<td>Adjournment</td>
<td>Klaus-Juergen Schulz – CESG Chair</td>
</tr>
</tbody>
</table>
Members of the CESG

CESG Chair
K.-J. Schulz
Deputy
Timothy Pham

SE Area Director
Peter Shames
Deputy
Hiroshi Takeuchi

MOIMS Area Director
Mario Merri
Deputy
Marc Duhaize

CSS Area Director
Erik Barkley
Deputy
Colin Haddow

SLS Area Director
Ignacio Aguilar Sanchez
Deputy
Gilles Moury

SIS Area Director
Tomaso de Cola
Deputy
Rodney Grubbs

SOIS Area Director
J. Wilmot
Deputy
X. He
CCSDS Publications since CMC Mtg Spring 2021

Blue Books – Recommended Standards
• CCSDS 231.0-B-4, TC Synchronization and Channel Coding, July 2021
• CCSDS 509.0-B-1 Cor. 1, Technical Corrigendum 1 to CCSDS 509.0-B-1, Issued February 2018
• CCSDS 505.0-B-2, XML Specification for Navigation Data Messages, May 2021

Magenta Books – Recommended Practices
• None

Orange Books
• CCSDS 131.31-O-1, CCSDS Space Link Protocols over ETSI DVB-S2X Standard, September 2021
• CCSDS 131.21-O-1, Serially Concatenated Convolutional Codes—Extension (SCCC-X), May 2021

Green Books – Informational Reports
• CCSDS 660.1-G-2, XML Telemetric and Command Exchange (XTCE)-Element Description, August 2021
CMC Poll Statistics since CMC Mtg Spring 2021

Authorisation to publish

- CCSDS 732.1-B-2, Unified Space Data Link Protocol (Blue Book, Issue 2)
- CCSDS 732.0-B-4, AOS Space Data Link Protocol (Blue Book, Issue 4)
- CCSDS 232.0-B-4, TC Space Data Link Protocol (Blue Book, Issue 4)
- CCSDS 230.1-G-3, TC Synchronization and Channel Coding—Summary of Concept and Rationale (Green Book, Issue 3)
- CCSDS 132.0-B-3, TM Space Data Link Protocol (Blue Book, Issue 3)

Agency Reviews

- CCSDS 876.0-P-1.1, Spacecraft Onboard Interface Services-XML Specification for Electronic Data Sheets
- CCSDS 131.0-P-3.1, TM Synchronization and Channel Coding
- CCSDS 131.2-P-1.1, Flexible Advanced Coding and Modulation Scheme for High Rate Telemetry Applications
- CCSDS 414.1-P-2.1, Pseudo-Noise (PN) Ranging Systems
- CCSDS 653.0-R-1, Information Preparation to Enable Long Term Use
- CCSDS 355.0-P-1.1, Space Data Link Security Protocol
- CCSDS 502.0-P-2.1, Orbit Data Messages (Pink Book, Issue 2.1)
Approval of new Projects

New Projects of the SEA Area
  • Secure Software Engineering for Space Missions - Magenta Book

New Projects of the SLS Area
  • Robust Compression of Fixed-Length Housekeeping Data Packets - Summary of concept and rationale - Green Book
  • Space Data Link Security Protocol--Summary of Concept and Rationale - Issue 2 - Green Book
  • Pseudo-Noise (PN) Ranging Systems - Issue 3 - Blue Book
  • Simultaneous Transmission of GMSK Telemetry and PN Ranging - Issue 2 - Green Book

New Projects of the MOIMS Area
  • Navigation Data Messages Overview Green Book (V.3) - Green Book
New Appointments

- Appointment of new SLS Area Director: Ignacio Aguilar Sanchez (ESA)
- Appointment of new SIS Area Director: Tomaso de Cola (DLR)
- Appointment of new Deputy SIS Area Director: Rodney Grubbs (NASA)

- (CESG Poll) Appointment of new SIS CFDP Working Group Chair: Felix Flentge (ESA)
<table>
<thead>
<tr>
<th>Area</th>
<th>WG</th>
<th>C</th>
<th>Co</th>
<th>BB</th>
<th>P1</th>
<th>P2</th>
<th>GB</th>
<th>MB</th>
<th>YB</th>
<th>BB</th>
<th>P1</th>
<th>P2</th>
<th>GB</th>
<th>MB</th>
<th>BB</th>
<th>P1</th>
<th>P2</th>
<th>GB</th>
<th>MB</th>
<th>BB</th>
<th>P1</th>
<th>P2</th>
<th>GB</th>
<th>MB</th>
<th>OB</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEA</td>
<td>SA</td>
<td>NASA</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SEA</td>
<td>Security</td>
<td>NASA</td>
<td>ESA</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SEA</td>
<td>Time</td>
<td>NASA</td>
<td>ESA</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SEA</td>
<td>D-DOR</td>
<td>ESA</td>
<td></td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MOIMS</td>
<td>DAI</td>
<td>UKSA</td>
<td>NASA</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MOIMS</td>
<td>NAV</td>
<td>NASA</td>
<td>ESA</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MOIMS</td>
<td>SM&amp;C</td>
<td>ESA</td>
<td>NASA</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MOIMS</td>
<td>MP&amp;S</td>
<td>ESA</td>
<td>CNES</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CSS</td>
<td>SM</td>
<td>NASA</td>
<td>ESA</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CSS</td>
<td>CSTS</td>
<td>ESA</td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SOIS</td>
<td>APP</td>
<td>NASA</td>
<td>UKSA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SOIS</td>
<td>WIR</td>
<td>NASA</td>
<td>FSA</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SOIS</td>
<td>SNW</td>
<td>NASA</td>
<td>ESA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SLS</td>
<td>RDM</td>
<td>ESA</td>
<td>NASA</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SLS</td>
<td>CB&amp;S</td>
<td>ESA</td>
<td>NASA</td>
<td>3</td>
<td>2</td>
<td></td>
<td></td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SLS</td>
<td>MHDC</td>
<td>NASA</td>
<td></td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SLS</td>
<td>SLP</td>
<td>NASA</td>
<td>UKSA</td>
<td>4</td>
<td></td>
<td></td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SLS</td>
<td>SDL</td>
<td>CNES</td>
<td>NASA</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SLS</td>
<td>OPT</td>
<td>NASA</td>
<td>ESA</td>
<td>2</td>
<td></td>
<td></td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SIS</td>
<td>MA</td>
<td>NASA</td>
<td>DLR</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SIS</td>
<td>DTN</td>
<td>NASA</td>
<td>JAXA</td>
<td>5</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SIS</td>
<td>VOICE</td>
<td>DLR</td>
<td>FSA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SIS</td>
<td>CFDP</td>
<td>NASA</td>
<td>UKSA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Percentage Distribution:**
- **64%** at **42.38 %**
- **50%** at **33.11 %**
- **11** at **7.28 %**
- **12** at **7.95 %**

**Other:**
- **9.27%** in CNES, CNSA, UKSA, AFRL, NASA, JAXA, Japan, DLR

**Total Entries:** 151

21 October 2021
# Area Directors / Area Directors Overview

**Area Directors (AD)**
- NASA: 3
- ESA: 2
- CNES: 2
- DLR: 1
- UKSA: 1
- CNSA: 1
- JAXA: 1

**DAD**
- NASA: 16%
- ESA: 17%
- CNES: 33%
- DLR: 0%
- UKSA: 0%
- CNSA: 17%
- JAXA: 17%

**Total**
- AD: 6
- DAD: 6

**Pie Chart**
- NASA: 50%
- ESA: 33%
- CNES: 0%
- DLR: 17%
- UKSA: 0%
- CNSA: 0%
- JAXA: 0%
### WG Chair / Deputy Chair Overview

<table>
<thead>
<tr>
<th>Area</th>
<th>WG</th>
<th>C</th>
<th>Co</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEA</td>
<td>SA</td>
<td>NASA</td>
<td>0</td>
</tr>
<tr>
<td>SEA</td>
<td>Security</td>
<td>NASA</td>
<td>ESA</td>
</tr>
<tr>
<td>SEA</td>
<td>Time</td>
<td>NASA</td>
<td>ESA</td>
</tr>
<tr>
<td>SEA</td>
<td>D-DOR</td>
<td>ESA</td>
<td>0</td>
</tr>
<tr>
<td>MOIMS</td>
<td>DAI</td>
<td>UKSA</td>
<td>NASA</td>
</tr>
<tr>
<td>MOIMS</td>
<td>NAV</td>
<td>NASA</td>
<td>ESA</td>
</tr>
<tr>
<td>MOIMS</td>
<td>SM&amp;EC</td>
<td>ESA</td>
<td>NASA</td>
</tr>
<tr>
<td>MOIMS</td>
<td>MP&amp;ES</td>
<td>ESA</td>
<td>CNES</td>
</tr>
<tr>
<td>CSS</td>
<td>SM</td>
<td>NASA</td>
<td>ESA</td>
</tr>
<tr>
<td>CSS</td>
<td>CSTS</td>
<td>ESA</td>
<td>0</td>
</tr>
<tr>
<td>SIS</td>
<td>APP</td>
<td>NASA</td>
<td>UKSA</td>
</tr>
<tr>
<td>SIS</td>
<td>WIR</td>
<td>NASA</td>
<td>FSA</td>
</tr>
<tr>
<td>SIS</td>
<td>SNW</td>
<td>NASA</td>
<td>ESA</td>
</tr>
<tr>
<td>SLS</td>
<td>RFM</td>
<td>ESA</td>
<td>NASA</td>
</tr>
<tr>
<td>SLS</td>
<td>C&amp;S</td>
<td>ESA</td>
<td>NASA</td>
</tr>
<tr>
<td>SLS</td>
<td>M00C</td>
<td>NASA</td>
<td>0</td>
</tr>
<tr>
<td>SLS</td>
<td>SLP</td>
<td>NASA</td>
<td>UKSA</td>
</tr>
<tr>
<td>SLS</td>
<td>SOL5</td>
<td>CNES</td>
<td>NASA</td>
</tr>
<tr>
<td>SLS</td>
<td>OPT</td>
<td>NASA</td>
<td>FSA</td>
</tr>
<tr>
<td>SIS</td>
<td>MIA</td>
<td>NASA</td>
<td>DLR</td>
</tr>
<tr>
<td>SIS</td>
<td>DTN</td>
<td>NASA</td>
<td>JAXA</td>
</tr>
<tr>
<td>SIS</td>
<td>VOICE</td>
<td>DLR</td>
<td>FSA</td>
</tr>
<tr>
<td>SIS</td>
<td>CFDP</td>
<td>NASA</td>
<td>UKSA</td>
</tr>
</tbody>
</table>

**WG Chair**

- NASA: 61%
- ESA: 26%
- CNES: 5%
- DLR: 5%
- UKSA: 4%
- JAXA: 4%
- FSA: 11%

**WG Deputy Chair**

- NASA: 26%
- ESA: 32%
- CNES: 5%
- DLR: 5%
- UKSA: 16%
- JAXA: 5%
- FSA: 11%
Fall 2021 Virtual CCSDS Meetings
Role of the CESG
CCSDS Technical Organization

CCSDS Engineering Steering Group
- CESG Chair and Deputy
- 6 Area Directors & Deputies
- Review and approve documents for technical content (and other criteria)

CCSDS Working Organization
- 6 areas of work
- Total of 22 Working Groups (Fall 2021)
- Create projects & produce documents

But … just what does the CESG do?
“The CCSDS Engineering Steering Group (CESG) is responsible for technical management across CCSDS domains and for the top-level coordination of the overall international standardization process.”

“A candidate for selection as CESG chair, Area Director, or their deputies must have demonstrated the ability to function independently of his/her own agency’s agenda and to be able to fairly lead the development of international consensus. “

“Providing the CCSDS-wide forum where the work programs of the Areas may be coordinated and synchronized in the context of an overall architecture for space-mission cross support and the needs of individual customers”
Role of the CESG
Defined in CCSDS Organization and Processes – A02.1-Y-4

• “Ensuring that all CCSDS work follows the set of architectural principles agreed to by the CESG and is properly synchronized with work in other areas and with the smooth evolution of the large installed base of CCSDS-compatible mission-support infrastructure”

• Identifying “red flag” items where technical work in a proposed CCSDS document is not of the required quality or nature … or where significant issues exist

• Final technical approval before release for agency review or publication
MOIMS inputs to CCSDS Opening Plenary

CCSDS Meeting Fall 2021

Mario Merri (ESA), Marc Duhaze (CNES)

21/10/2021
**Data Archive Interoperability WG (DAI)**

- MB: 650.0 Open Archival Information System (OAIS): 5y revision
  - Completed AR, disposing RIDs
- MB: 652.0 Audit and Certification of Trustworthy Digital Repositories: 5y revision
  - Under CMC poll for AR
- MB: 652.1 Requirements for Bodies Providing Audit and Certification of Trustworthy Digital Repository: 5y revision
  - Under CMC poll for AR
- MB: 653.0 Information Preparation to Enable Long Term Use (IPELTU)
  - Under AR, RIDs due 22Nov
- MB: 671.0 Open Archive Information Systems Interoperability Framework (OAIS-IF) Architecture Description
  - On-going

**Navigation WG (NAV)**

- GB: 500.2 Navigation Data Messages Overview: refresh
  - New project approved
- BB: 502.0 Orbit Data Message (ODM - NASA, ESA): 5y revision
  - Under AR, RIDs due 14Dec
- BB: 503.0 Tracking Data Message (TDM - NASA, ESA): 5y revision
  - Lower priority because of workload
- BB: 504.0 Attitude Data Message (ADM - CNES, ESA): 5y revision
  - Almost ready for polls for AR
- BB: 505.0 Navigation Data Message XML Specs (NDM - no prototype): 5y revision
  - Published. New project for corrigenda approved
- BB: 507.0 Navigation Events Message (NEM – CNES, ESA)
  - Lower priority because of workload
- BB: 508.0 Conjunction Data Message (CDM): 5y revision
  - Disposing comments from internal review
- BB: 509.0 Pointing Request Message (PRM)
  - Corrigenda published
**Spacecraft Monitor & Control WG (SM&C)**
- **GB:** 520.0 MO Services Concept (ESA): 5y revision
  - Slowed down to reflect MO 2.0
- **MB:** 520.1 Mission Operations Reference Model (DLR): 5y revision
  - Disposing CESB poll conditions for AR with the support of the Security WG
- **BB:** 522.2 Mission Product Data Distribution Services (ESA, CNES)
  - Slowed down to reflect MO 2.0
- **BB:** 522.x File Management Services (ESA, ?)
  - Slowed down to reflect MO 2.0
- **GB:** 660.1 XTCE Element Description (NASA): 5y revision
  - Published

**Mission Planning & Scheduling WG (MP&S)**
- **BB:** Mission Planning and Scheduling (ESA, DLR)
  - Progressing nominally
**SIS Meeting Objectives (1 of 2)**

- **Motion Imagery and Applications WG**
  - November 4\(^{\text{th}}\)-5\(^{\text{th}}\)
    - Specifications for Real-time Protocol as transport for audio & video over DTN
    - Review Interoperability Testing status
    - Update Yellow Book documentation of testing if no further testing is needed
    - Prepare for publication of Blue Book
    - Review research conducted by DLR on Video Quality Assessment as potential future work for the group

- **CFDP Revisions WG**
  - Not meeting

- **VOICE WG**
  - Not meeting
SIS Meeting Objectives (2 of 2)

• Delay Tolerant Networking WG
  • **October 25**th
    • LTPv2 Review
    • Orange Block Discussions
    • Protocol Naming
    • LTP Sec Comments Review
  • **October 29**th
    • ESA Compressed Status Reports
    • BP Custody Discussion
  • **November 2**nd
    • BPv7 Update
      • Current Status Review
    • Formal Naming of Protocol Elements
      • IETF / IANA URI scheme
      → Joint meeting w/ CSS on FRM second week of November
  • **November 3**rd
    • BPsec:
      • Joint Meeting w/ SEA-SEC
      • Operational Concerns / Work-Arounds
SLS Meeting Objectives: 1/2

- **RF & Modulation WG (E. Vassallo & D. Lee)**
  - 401.1-B RF & Modulation:
    - 22 GHz Earth-to-space
    - 26 GHz channel model
    - 26 GHz space-to-space
    - Applicability of 131.2-O (SCCC-X) and 131.1-O (DVB-S2X)
  - 211.1-B Proximity-1 Physical Layer:
    - Frequency plan
  - 414.1-B PN Ranging
  - Wide-band PN DDOR recommendation
  - RFM Charter and projects
- **Space Link Code/Sync WG (A. Modenini & K. Andrews)**
  - 121.0-B TM Coding:
    - randomizer
    - CADU and CSM terms unification
    - Agency Review RIDs
    - Variable Length Frames
  - 431.1-B VCM Protocol:
    - Technical corrigendum on header and randomizer
  - 131.2-B Flexible ACM Scheme for HR TM
    - Agency Review RIDs
  - 732.0-B AOS SDL Protocol
- **Space Link Protocols WG (G. Kazz & M. Cosby)**
  - 121.0-B TM Coding:
    - Variable Length Frames
  - 130.0-G Overview of Space Communication Protocols
  - 732.0-B AOS SDL Protocol
  - FHEC
  - Common Terms within SLS Area
  - Encapsulation Packet and Space Packet GBs
  - CCSDS 232.1-B COP-1

Discussion of draft recommendation
Discussion
Agree on recommendation
Discussion (with C&S WG)
Discussion on changes (in cooperation with SFCG)
Disposition of Agency Review RIDs
Discussion of new draft recommendation (with SEA-DDOR WG)
Review in light of new requirements (lunar missions, RA protection, Proximity-1 PL changes)
Discussion
Discussion of proposal
Disposition
Discussion on new project
Discussion
Disposition
Discussion of technical corrigendum on FHEC
Discussion on path forward
Discussion about its future
Discussion about its removal
SLS Glossary Magenta Book update
Review progress
5-year review
SLS Meeting Objectives: 1/2

- **Space Data Link Security (SDLS) WG (G. Moury & H. Weiss)**
  - 355.0-B SDLS pink sheets
  - 350.11-G SDLS Extended Procedures
  - 350.5-G SDLS Core Protocol
  - 911.5-B SLE ROCF and 912.1-B SLE F-CLTU

- **Multispectral & Hyperspectral Data Compression (MHDC) WG (M. Wong)**
  - 120.2-G Near-Lossless Extension of CCSDS-123.0-B
  - 124.0-G Robust Compression of FL HK Data
  - 125.0-B Raw SAR Compression

**ACHIEVEMENTS:** 124.0-B Robust Compression of FL HK Data Blue Book: (submitted for Agency review);

- **Optical Communications WG (B. Edwards & C. Heese)**
  - Optical Communications C&S for Optical On/Off Keying (O3K)
  - CCSDS 141.1-M Atmospheric Characterization and Forecasting for Optical Link Operations
  - NASA’s Optical Communications Terminal on Orion and the ISS
  - NASA’s Terabyte Infrared Delivery (TBIRD) project
  - Japanese Data Relay Satellite

- **Space Link Code/Sync WG**
  - Review final draft and agree on request for Agency review
  - Review draft and make writing assignments

- **Space Link Protocols WG**
  - Receive an update
  - Receive an update

- **Agency Review RIDs disposition**
  - Review contributions and produce final draft
  - Update document to include new standards (USLP, SDLS-EP,...)
  - Discussion of SDLS impact

- **Optical Communications C&S for Optical On/Off Keying (O3K)**
  - Finalize recommendations
  - Agency review RIDs disposition
  - Receive an update
  - Receive an update
Spacecraft Onboard Interface Services (SOIS)
Opening Plenary

Jonathan Wilmot (Area Director)
Xiongwen He (Deputy Area Director)

Fall 2021 Meetings
• **Activities - Last Six months**
  - Participated in a series of technical reviews of Artemis/Gateway XTCE and SEDS requirements documents
    - Review limited to NASA, US industry, and Artemis partners: ESA, JAXA, CSA
    - Feedback incorporated as part of recent Pink sheet review
  - SEDS pink sheet agency review complete
  - Submitted SOIS/MIOMS orange book for publication
  - Created SEDS DTN operational interfaces and MIB data sheet
  - Coordinated with Cross Support Services (CSS) area on Functional Resource Model/SEDS

• **Upcoming Meeting goals**
  - Finalize 870.1, 876.1, 870.0 with inputs from Pink sheet review and Artemis feedback
    - Discuss SEDS application to configuration data (Tables, files, memory loads,…)
    - Discuss SEDS tooling needs (Use cases)
      - Artemis Mission Control Center (MCC) looking for editing and display tools
  - Develop green book material on relationship of component SEDS and deployment SEDS
  - Present DTN SEDS to SIS-DTN WG during fall meeting, work DTN Network Management group
    - DTN BP encoding in SEDS has highlighted issues in the IETF DTN standard
  - Coordinate with Cross Support Services (CSS) area and SEA on Functional Resource Model/SEDS mapping of operational interfaces and MIBs
  - Access resources and discuss WG future plans
• Activities - Last Six months
  - Minimal
  - Staff supporting higher priority flight projects
  - 5-year reviews are late

• Upcoming Meeting goals
  - Develop plan to address staffing issues
  - Discuss book priorities
  - Analysis of upcoming mission needs highlight a disconnect between
    useability/applicability of some existing books and future mission
    requirements
  - Significant mission use case for updating Synchronization Service book (in
    5-year review).
    - Coordinate with SEA-Time
• **Activities - Last Six months**
  - Processed Agency RIDs for CCSDS 883.0-R-1,
  - Processed CESG poll conditions for CCSDS 883.0-R-1 publication
  - Began on 3GPP band survey for lunar surface spectrum trade study (via NASA 3GPP WG)
  - Conducted bi-weekly WG tagups
    - Document editing
    - Interoperability testing progress review
    - Stakeholder coordination (e.g., Nokia lunar LTE demonstration team, NASA spectrum)

• **Meeting Objectives**
  - Finalize resolution of CESG poll conditions for 883.0-R-1
    - Primarily DTN adaptation profile diagram details
  - Begin composition of follow-on pink sheets to add roaming scenarios
  - Plan post-pink sheet SOIS-WIR activities with international partners (primarily CSA)
  - Continue 3GPP band survey for lunar surface spectrum trade study
# CSS Virtual Fall 2021 Meeting Objectives

## Cross Support Transfer Services WG
- Monitored Data Service (BB-2)
- Tracking Data Service (BB-2)
- All SLE Books
- Functional Resource Model (MB)
- Functional Resource Model (SANA+)
- SANA Functional Resource Registry (Tier 1)

- Convince the AD to submit for AR polling
- Revise and re-submit for AR polling
- Assess readiness for agency review; plan for book captain succession
- Review Tier 2 resource definitions
- Approve publication of registry

## Cross Support Service Management WG
- Service Management Concept (GB)
- Communications Planning Information Format (BB)
- Terrestrial Generic File Transfer (BB)
- Service Management Utilization Request Format (BB)
- Service Package Data Format (BB)
- Event Sequence
- Configuration Profile, Service Agreement

- Survey for refresh
- Review prototype report; release for publication polling
- CESG publication poll condition resolution
- Convince the AD to submit for agency review
- Convince the AD to submit for agency review
- Review examples from consistent with current draft outline/direction
- Review auto schema (from FRM) generation progress; discuss service agreement content

## CSS (Area Level)
- CSTS & CSSM

- Discuss, coordinate: re
  - FRM classification metadata
  - FRM & use of Eclipse modeling framework (EMOF)
  - CSS Area standards & cloud computing
  - Use of GitHub

## CSS + SIS DTN WG
- Overview of FRM and discussion – this is a follow up to discussion with SOIS Area earlier this year
Fall 2021 Virtual CCSDS Meetings
SEA Plenary – Workplan
SEA Meeting Objectives: 1/1

• Security WG (Chair: Howie Weiss)
  • Key Management (GB, MB)  MB sent to CESG for approval to publish, application being worked in SDLS, GB in work
  • Threat GB  GB sent to CESG for approval to publish
  • Algorithm GB Updates  In work
  • Intergovernmental Certificate Authority  MB In development
  • Bundle Protocol Security (BPSec)  Joint with DTN WG, agree to base on IETF
  • **Standard security section**  **Mandatory**

• Delta-DOR WG (Chair: Javier de Vicente)
  • Delta-DOR Architectural Guidelines (MB)  MB in process
  • Delta-DOR Raw Data Exchange update (BB)  BB in progress
  • Delta-DOR Operations update (MB)  MB in progress

• System Architecture WG (Chair: Peter Shames)
  • RASDS MB Extensions  Updates in development, joint with TC20 / SC 14
  • SCCS Architecture Reqmts MB  Updates for new standards, in development
  • CCSDS Ontology  Glossary issues noted, TC20/SC14 meetings held

• Time Exchange / Sync Standards WG (Chair: Jon Hamkins)
  • Time Management GB  GB in progress, expected soon
  • Time Management BB & MB  In planning, waiting on GB completion

• SANA Steering Group (SSG) (Chair: Peter Shames)
  • SANA Steering Group (SSG)  Active, meeting this month
  • CCSDS Registry Interfaces  Working on improving access & controls for SANA Registries
  • **Standard SANA section**  **Mandatory**
# CCSDS Code of Conduct

<table>
<thead>
<tr>
<th>Clause</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work for the net benefit of the international community</td>
<td>We recognize that the development of International Standards is for the net benefit of the international community, over and above the interests of any individual or organization. We are committed to advancing International Standards within their agreed scope and we will not hinder their development.</td>
</tr>
<tr>
<td>Uphold consensus and governance</td>
<td>We will uphold the key principles of International Standardization: consensus, transparency,openness, impartiality, effectiveness, relevance, coherence and the development dimension.</td>
</tr>
<tr>
<td>Agree to a clear purpose and scope</td>
<td>We are committed to having a clear purpose, scope, objectives, and plan to ensure the timely development of International Standards.</td>
</tr>
<tr>
<td>Participate actively and manage effective representation</td>
<td>We agree to actively participate in standards development projects. We will make our contributions to the work through the official procedures in accordance with the ISO/IEC Directives.</td>
</tr>
<tr>
<td>Escalate and resolve disputes</td>
<td>We will identify and escalate disputes in a timely manner to ensure rapid resolution. We will uphold the agreed dispute resolution processes.</td>
</tr>
<tr>
<td>Behave ethically</td>
<td>We will act in good faith and with due care and diligence. We will avoid collusive or anticompetitive behaviour. We will promote a culture of fair and ethical behaviour.</td>
</tr>
</tbody>
</table>
| Respect others in meetings | We are committed to respecting others and the professional culture of international standardization within ISO. In meetings we are committed to:  
  • conducting ourselves in a professional manner  
  • respecting others and their opinions  
  • accepting group decisions  
  • ensuring that the views of all (including those whose first language is not that of the meeting) are heard and understood |
Further, CCSDS adopted the following items to augment the ISO Code of Conduct:

<table>
<thead>
<tr>
<th>Respect Intellectual Property</th>
<th>We will not plagiarize the work of other working group colleagues that is revealed during the standards development process. We will notify our colleagues of our intent to publish and provide them with a courtesy summary of the content before proceeding with any publication related to our standardization work.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Confidentiality of pre-decisional technical discussions</td>
<td>We will keep internal group discussions/tradeoffs/disputes in confidence, and will not publish such tradeoffs in public fora until agreed to by the technical working group community. When such matters are publicly represented, the individual positions of our technical staff will not be personally identifiable without their permission.</td>
</tr>
</tbody>
</table>
The Spring 2022 CCSDS meetings will be hosted by Marshall Space Flight Center in Huntsville, AL.

- Technical Meetings: 9-13 May 2022
- CESG Meeting: 16 May 2022

The venue for the meetings is the Westin Hotel at Bridge Street Town Center: https://www.marriott.com/hotels/travel/hsvwi-the-westin-huntsville

Bridge Street Town Center offers multiple options for dining and shopping and is a centrally located in Huntsville.
# Future Meetings

<table>
<thead>
<tr>
<th>Date</th>
<th>WG/CESG</th>
<th>Host</th>
<th>Location</th>
<th>Date</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring 2022</td>
<td>WG/CESG</td>
<td>NASA</td>
<td>Huntsville, Alabama, USA</td>
<td>9-16 May 2022</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CMC/SC13</td>
<td>JAXA</td>
<td>Tokyo, Japan</td>
<td>TBD</td>
<td></td>
</tr>
<tr>
<td>Fall 2022</td>
<td>WG/CESG</td>
<td>CNES</td>
<td>Toulouse, France</td>
<td>TBD Date</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CMC/SC13</td>
<td>CNES</td>
<td>Toulouse, France</td>
<td>TBD Date</td>
<td></td>
</tr>
<tr>
<td>Spring 2023</td>
<td>WG/CESG</td>
<td>NASA</td>
<td>TBD</td>
<td>TBD Date</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CMC/SC13</td>
<td>INPE</td>
<td>Sao Jose dos Campos, Brazil</td>
<td>TBD Date</td>
<td></td>
</tr>
<tr>
<td>Fall 2023</td>
<td>WG/CESG</td>
<td>ESA</td>
<td>TBD, hosted by ESTEC</td>
<td>TBD Date</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CMC/SC13</td>
<td>ESA</td>
<td>TBD</td>
<td>TBD Date</td>
<td></td>
</tr>
<tr>
<td>Spring 2024</td>
<td>WG/CESG</td>
<td>NASA</td>
<td>USA</td>
<td>TBD Date</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CMC/SC13</td>
<td>ROSCOSMOS</td>
<td>TBD</td>
<td>TBD Date</td>
<td></td>
</tr>
<tr>
<td>Fall 2024</td>
<td>WG/CESG</td>
<td>UKSA</td>
<td>TBD</td>
<td>TBD Date</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CMC/SC13</td>
<td>UKSA</td>
<td>TBD</td>
<td>TBD Date</td>
<td></td>
</tr>
</tbody>
</table>
The Secretariat wishes to thank NASA Marshall Space Flight Center for providing the information on the location of the Spring 2022 CCSDS Meetings.
All information about the CCSDS Spring 2021 Meetings can be found on the CCSDS Public Website page: https://public.ccsds.org/meetings/2021Fall/default.aspx.

Individual Working Group Agendas may be found on the CCSDS Public Website at: https://public.ccsds.org/meetings/2021Fall/2021FallAgendas.aspx.

A schedule of individual meeting sessions is available on the public website in two versions. As a List or a Table.

To find contact information for each Area Director and Working Group Chair and request a meeting invitation visit the CWE at: https://cwe.ccsds.org/default.aspx.

If you have any questions about the meetings or require any other assistance, please let us know at secretariat@mailman.ccsds.org.