

# CCSDS Engineering Steering Group (CESG): Concluding Report to CMC

## CMC22 Meeting

08 December 2004

CNES, Toulouse, France

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Chairman, CESG

# CESEG Concluding Report

1. CEGS Major Issues and Comments
2. CEGS Current Resolutions to CMC
3. CEGS Internal (Pending) Resolutions

- **Relationship with OMG**
  - Potential overlap between RFP-2 and the SM&C work. Technical boundary and conditions of collaboration are not clear
- **Vulnerability of contractors in leadership positions**
  - Replacements needed for Fred Brosi (CSS AD) and John Pietras (CSS SM-WG Chair). Severe impact on SLE Service Management.
  - Chris Plummer (SOIS Deputy AD), Stuart Fowell and Paula Quintela all suffered contract discontinuities. Fowell is critical to TCOAS messaging.
- **Lack of feedback and traceability from CMC**
  - CESG passes recommendations to CMC and rarely gets any feedback, e.g.,
    - Joint CCSDS/OMG review of XTCE was never approved by CMC
    - AOS Link layer Pink Sheets and Red-2 of Encapsulation Packet service were both approved by CESG in Spring 2004 but vanished.
    - SM&C WG and Cislunar WG charters were sent to CMC but vanished.

- **Continuing issues with the Secretariat transition**

- **Technical:**

- Data Compression Red Book did not get any support for edition of technical material (e.g. graphics, equations, italicised symbols, numbering of paragraphs, ...)
- SLS-RFM: Pink sheets were not posted but mailed in corrupted file. Review closing date had to be extended.
- SLS-C&S: Secretariat has problems with “exotic” formats used by Coding people (i.e. Latex editor, eps pictures, etc.). TM Channel Coding GB could not be published.
- Polling interface: difficult to see what polls are open, would be useful to have a “reminder” a few days before poll closes, results of all voting should be visible.
- WGs should have their own ccsds.org web sites available, editable by WG personnel
- Mailing lists should be clearly accessible from ccsds.org
- Documents with tracked changes should be available on ccsds.org

- **Procedural:**

- Pink sheets for AOS Link Layer Protocol approved for agency review by CMC at Spring'04 meeting but are still not published
- Lengthy delay between approval of CFDP UCE review and publication of pink sheets.
- Dates/locations of meetings should be announced 1 year in advance

- **Relationship between System Engineering and other Areas**
  - Architecture and Security are both highly specialized and pervasive disciplines
    - Other Areas are not convinced of the benefits of RASDS
    - Concerns that Security will become an “unfunded mandate”
    - MOIMS feels that Information Architecture belongs in their Area
  - Solution may be to form a cadre of Architecture and Security experts who work with other Areas to help them, rather than imposing their will
- **Relationship between SOIS and other Areas**
  - SOIS views the world “from the spacecraft out”; others view SOIS “from the outside world in”
    - Concerns that SOIS is a microcosm and will re-invent capabilities of other Areas
  - Solution is for other Areas to permeate SOIS working groups

**CESG FALL 2004 MEETING:**  
**CESG RESOLUTIONS**  
**and**  
**ACTION ITEMS**  
November, 2004  
CNES, Toulouse, France

## **CESG RESOLUTIONS AND ACTION ITEMS FORWARDED TO THE CMC AT THE DECEMBER 2004 CMC MEETING:**

**1. Documents proposed for ISO approval**

**2. Documents proposed for CMC approval**

**3. Administrative items**

## **RESOLUTION: CESG-R-0411-001 (MOIMS-R-0411-DAI-001)**

### **The CESG resolves that:**

The CMC shall be asked to approve the transmission of the French translation of the OAIS Reference Model to ISO/TC20/SC13 for processing towards adoption as a second official ISO recognized version, once it becomes available (expected early 2005)

## **ACTION ITEM: CESG-A-0411-001 (MOIMS-A-0411-DAI--001)**

- a. CESG Chair: ask CMC to approve the transmission of the French translation of the OAIS Reference Model to ISO/TC20/SC13 for processing towards adoption as a second official ISO recognized version. Due date: 08 December 2004.
- b. Secretariat: if ISO status is recommended by the CMC, send the French translation of the OAIS Reference Model to the ISO/TC20/SC13 Secretariat once it becomes available (expected early 2005) and ask the ISO Secretariat to process the document towards adoption as a second official ISO recognized version



## **RESOLUTION: CESG-R-0411-002 (MOIMS-R-0411-NAV-002)**

### **The CESG resolves that:**

CCSDS 502.0-B-1, Orbit Data Messages. Blue Book, Issue 1, September 2004, shall be submitted to the CMC with a request that it shall be transmitted to ISO for processing towards its becoming an ISO standard

## **ACTION ITEM: CESG-A-0411-002 (MOIMS-A-0411-NAV-002)**

- a. CESG Chair: submit request to CMC. Due date: 08 December 2004.
- b. Secretariat: if approved by CMC, forward CCSDS 502.0-B-1, Orbit Data Messages. Blue Book, Issue 1, September 2004 to the ISO/TC20/SC13 Secretariat with a request for its processing towards adoption as an ISO Standard.

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**3. Administrative items**

## **RESOLUTION: CESH-R-0411-003 (CSS-R-0411-DTS-002)**

### **Considering that:**

1. Formal Agency reviews have been completed on the five following CSS CCSDS Draft Standards (Red Books):
  - RAF
  - ROCF
  - RCF
  - CLTU
  - FSP

### **And recognizing that:**

1. All RIDS have been processed and dispositioned

### **The CESH resolves that:**

The five CSS Red Books shall be transmitted to the CMC with a request that they be published as CCSDS Recommended Standards (Blue Books)

## **ACTION ITEM: CESH-A-0411-003 (CSS-DTS-A-0411-001)**

- a. Transmit the five CSS Red Books (RAF, ROCF, RCF, CLTU, FSP) to the CMC with a request that they be approved as CCSDS recommended Standards (Blue Books). Assigned to CESH chair; Due Date: 08 December 2004

## **RESOLUTION: CESH-R-0411-004 (SLS-R-0410-RNG-001)**

### **Considering that:**

1. Revised SLS ranging recommendation 2.5.6B was subjected to formal Agency review;
2. No RIDs were received during the review period;
3. Revisions to 2.5.6B stem from current and future delta-DOR practices by ESA and NASA

### **And recognizing that:**

1. ESA and NASA are both currently supporting delta-DOR activities

### **The CESH resolves that:**

The revised SLS recommendation 2.5.6B should be issued as a CCSDS Recommended Standard (Blue Book) and inserted into CCSDS 401-0.

## **ACTION ITEM: CESH-A-0411-004 (SLS-A-0410-RNG-001)**

- a. Transmit Revised SLS ranging recommendation 2.5.6B to the CESH chair. Assigned to: SLS AD.  
Due date: 03 December 2004
- b. Request the CMC to approve insertion of revised recommendation 2.5.6B in blue book 401-0.  
Assigned to CESH chair; Due Date: 08 December 2004

## **RESOLUTION: CESG-R-0411-005 (SLS-R-0410-RFM-004)**

### **Considering that:**

1. Minor editorial changes to SLS recommendations 2.4.2 and 2.3.5 were agreed upon during the Fall 2004 meeting.

### **And recognizing that:**

1. Submitting minor editorial changes to formal Agency review is an unnecessary waste of already constrained Agency resources

### **The CESG resolves that:**

The editorially revised SLS recommendations 2.4.2 and 2.3.5 should be sent to the CMC with a recommendation that they should be published as CCSDS Recommended Standards (Blue Books) and inserted in SLS document 401-0

## **ACTION ITEM: CESG-A-0411-005 (SLS-A-0410-RFM-005)**

- a. Transmit the two sets of editorial changes to SLS recommendations 2.4.2 and 2.3.5 to the CMC with a request that they be issued as CCSDS Recommended Standards without formal Agency review. Assigned to CESG chair; Due Date: 08 December 2004

## **RESOLUTION: CESH-R-0411-006 (SLS-R-0410-RFM-003)**

### **Considering that:**

1. Technical revisions to the following 13 revised SLS recommendations were agreed upon during the Fall 2004 meeting: 2.1.3B, 2.1.4B, 2.1.7B, 2.3.2, 2.3.3A, 2.3.3B, 2.3.4A, 2.3.4B, 2.4.6, 2.4.14B, 2.4.17B, 3.1.2B, 3.3.3A.

### **And recognizing that:**

1. The proposed revisions are to bring such 'old' recommendations in line with current CCSDS agencies' practice

### **The CESH resolves that:**

These 13 SLS recommendations (2.1.3B, 2.1.4B, 2.1.7B, 2.3.2, 2.3.3A, 2.3.3B, 2.3.4A, 2.3.4B, 2.4.6, 2.4.14B, 2.4.17B, 3.1.2B, 3.3.3A.) shall be transmitted to the CMC with a request that they be issued as "Pink Sheets" and that they should be submitted for Agency review

## **ACTION ITEM: CESH-A-0411-006 (SLS-A-0410-RFM-003)**

- a. Transmit the 13 sets of Pink Sheets to the CMC with a request that they be issued for formal Agency review. Assigned to CESH chair; Due Date: 08 December 2004

## **RESOLUTION: CESG-R-0411-007 (SLS-R-0411-Prox1Build2-001)**

### **Considering that:**

1. SLS Prox-1 data rate offset and short and long term rate stability requirements need to be addressed in the specification

### **And recognizing that:**

1. Without such requirements, implementations may not be able to acquire signals at the specified Prox-1 data rates
2. Draft Pink Sheets have been prepared that reflect this new capability.

### **The CESG resolves that:**

The CMC should be asked to approve the publication of Pink Sheets to the SLS Prox-1 Physical Layer Blue Book to address data rate offset and stability requirements and to issue these for formal Agency Review

## **ACTION ITEM: CESA-A-0411-007 (SLS-A-0411-Prox1Build2-001)**

- a. Transmit draft Pink Sheets to the SLS Prox-1 Physical Layer Blue Book to add Prox-1 data rate offset and short and long term rate stability requirements to the CESG chair. Assigned to: SLS AD. Due date: 03 December 2004
- b. Request the CMC to approve publication and formal agency review of the Pink Sheets. Assigned to CESG chair; Due Date: 08 December 2004

## **RESOLUTION: CESH-R-0411-008 (SLS-R-0411-SLP-001)**

### **Considering that:**

1. Hardware commands, Packets, and user defined data will be interchanged between Agency spacecraft operating in proximity

### **And recognizing that:**

1. There is a need for a standardized way to route these data types between agency spacecraft in proximity
2. Draft Pink Sheets have been prepared that reflect this new capability.

### **The CESH resolves that:**

The Pink Sheets to the Space Link Identifiers BB to add Prox-1 Port ID values for interoperability should be approved by the CMC and issued for formal Agency review

## **ACTION ITEM: CESH-A-0411-008 (SLS-A-0411-SLP-001)**

- a. Transmit draft Pink Sheets to Space Link Identifiers BB to add Prox-1 Port ID values for interoperability to the CESH chair. Assigned to: SLS AD. Due date: 03 December 2004
- b. Request the CMC to approve publication and formal agency review of the Pink Sheets. Assigned to CESH chair; Due Date: 08 December 2004



## **CESG RESOLUTIONS AND ACTION ITEMS FORWARDED TO THE CMC AT THE DECEMBER 2004 CMC MEETING:**

**1. Documents proposed for ISO approval**

**2. Documents proposed for CMC approval**

**3. Administrative items**

## **RESOLUTION : CESG-R-0411-009 (SLS-R-0410-RFM-005)**

### **Considering that:**

1. The SLS Green Book containing Earth station characteristics (411.0-G-3) dated May 1997 does not reflect current capabilities and may mislead users.
2. The document represents a resource used by many organizations planning new missions.
3. In the past, NASA/JPL provided the document rapporteur function and would consider doing so again, provided that the necessary funds were made available.

### **The CESG resolves that:**

The CMC should be alerted about status of SLS document 411.0-G-3 with a request that the necessary resources should be made available to update it.

## **ACTION ITEM: CESA-A-0411-009 (SLS-A-0410-RFM-007)**

- a. Ask the CMC to consider obtaining necessary resources within an appropriate organization to update SLS 411.0-G, Earth Station characteristics. Assigned to CESA chair; Due Date: 08 December 2004.

## **RESOLUTION: CESG-R-04-11-010 (SLS-R-0410-RFM-006)**

### **Considering that:**

1. A very difficult situation with the engineering of SLS recommendation 2.4.18 is being solved by a CCSDS Proposed Standard 2.4.18 (White Book) written along the lines of SFCG recommendation 14-3R6;
2. SFCG recommendation 14-3R6 is up for final approval at SFCG-25 (October 2005);
3. The activities of the RFM WG on this topic are presently scheduled to be completed by August 2005

### **And recognizing that:**

1. The present problems with the current 2.4.18 are in the inconsistencies with the SFCG

### **The CESG resolves that:**

The CMC should be asked to extend the RFM WG schedule until the end of November 2005, with no commensurate increase in resources needed.

## **ACTION ITEM: CESG-A-0411-010 (SLS-A-0410-RFM-008)**

- a. Ask the CMC to extend the schedule of the RFM-WG for SLS Recommendation 2.4.18 by 3-months . Assigned to CESG chair; Due Date: 08 December 2004.

## **RESOLUTION: CESG-R-0411-011 (SLS-R-0411-DC-002)**

### **Considering that:**

1. The SLS Data Compression Red Book is currently under review and Green Book under preparation, and reference software is being produced.

### **And recognizing that:**

1. The current SLS Data Compression WG charter schedules the Blue and Green Books to be issued July 2004
2. Reference software should be made available at the same time as document finalization.

### **The CESG resolves that:**

The Data Compression WG should modify its charter to reflect the actual plan, and the revised charter should be submitted to the CMC for approval.

## **ACTION ITEM: CESG-A-0411-011 (SLS-A-0411-DC-002)**

- a. The SLS Data Compression WG shall update its charter to reflect the new schedule and plans envisioned for completing RED-2, GREEN BOOK, BLUE BOOK and reference software.  
Assigned to: SLS AD. Due date: 03 December 2004
- b. Transmit the updated SLS Data Compression WG draft charter to the CMC for approval.  
Assigned to CESG chair; Due Date: 08 December 2004

## **RESOLUTION: CESG-R-0411-012 (SLS-R-0411-DC-001)**

### **Considering that:**

1. Reference software is essential to:
  - Enable “prospective” missions to evaluate CCSDS Recommended Standards in real mission configurations.
  - Later, to facilitate rapid production of implementation in compliance with published recommendations

### **And recognizing that:**

1. There are licensing and liability issues with distributing open software.
2. A few ad-hoc CCSDS mechanisms already exist to perform such distribution.

### **The CESG resolves that:**

It is highly desirable that a centralized system should be developed whereby open source reference software should be made available to users via the CCSDS website.

## **ACTION ITEM: CESG-A-0411-012 (SLS-A-0411-DC-001)**

- a. Ask the CMC to task the Secretariat to recommend the mechanisms for hosting the distribution of open-source reference software via the CCSDS website, including physically distributing from CCSDS.org, or physically distributing from other sites with appropriate pointers from CCSDS.org. Assigned to CESG chair; Due Date: 08 December

## **RESOLUTION : CESG-R-0411-013 (SEA-R-0411-001)**

### **Considering that:**

1. The process by which the results of CMC polls are transmitted back to the CESG and the technical WGs is unclear,

### **And recognizing that:**

1. The CESG Areas and Working Groups need unambiguous feedback on the results of CMC review,

### **The CESG resolves that:**

The CMC should be asked to develop a clear process for transmitting back to the CESG the detailed results of CMC polling of any item that is sent to them by the CESG.

### **ACTION ITEM: CESG-A-0411-013**

- a. Ask the CMC to update and harmonize the CMC polling process so that the results of CMC polls are captured and sent back to the CESG. Assigned to CESG chair; Due Date: 08 December 2004

# **CESG INTERNAL (PENDING) RESOLUTIONS AND ACTION ITEMS, NOVEMBER 2004 CESG MEETING**

**1. Document and Charter approval**

**2. Administrative items**

## **RESOLUTION: CESG-R-0411-014 (SEA-R-0411-SANA-001)**

### **Considering that:**

1. CCSDS has identified the need to have a defined SANA services and processes

### **And recognizing that:**

1. The SEA-SANA BoF has developed a draft SANA-WG charter, set of requirements, and proposed approach,

### **The CESG resolves that:**

The CESG shall review the draft SANA-WG charter and, if approved, shall forward it to the CMC for a decision with respect to initiating the WG.

## **ACTION ITEM : CESG-A-0411-014 (SEA-SANA-A-0411-001)**

- a. Establish a 14-day poll for the CESG to review and comment on the draft SEA-SANA WG charter. Assigned to CESG chair; Due Date: 02 December 2004



## **RESOLUTION: CESC-R-0411-015 (SEA-R-0411-SecWG-002)(SLS-R-0410-001)**

### **Considering that:**

1. CCSDS agencies generally have their own private policies and approaches for providing mission security where that is required,

### **And recognizing that:**

1. There are potential requirements for cross support and interoperability of security mechanisms
2. Not all mechanisms may need to be the object of interoperability

### **The CESC resolves that:**

The SEA-SecWG shall submit a concept paper defining the proposed scope and requirements for the development of security services and protocols (e.g., encryption and authentication/integrity standards) in cross-support configurations. This paper shall be transmitted to the CMC members with a request that it shall be reviewed by their agency security policy and technology experts and their comments shall be received prior to prior to formulating any draft program of work.

## **ACTION ITEM: CESC-A-0411-015 (SEA-A-0411-SecWG-002)(SLS-A-0410-001)**

- a. Submit a concept paper for CESC polling approval defining the proposed scope and requirements for a program of security development in cross-support configurations. Assigned to: SEA-AD; due date 11 December 2004
- b. Set up a 21-day poll to review this concept paper and transmit to the CMC if approved, with a request for comments by Agency security policy experts. Assigned to CESC chair; due date 24 December 2004

## **RESOLUTION: CESG-R-0411-016 (CSS-R-0411-DTS-00)**

### **Considering that:**

Agencies have requested additional cross support services e.g. Return Unframed Telemetry, Radiometric Data

### **And recognizing that:**

1. A cost efficient approach is required
2. A suitable 'generic framework' can be derived from the existing data transfer services

### **The CESG resolves that:**

1. The current CSS BOFS are retired (RAD, Navigation, Monitor, Expanded commanding)
2. The CSS Area is tasked to draft a charter for a new WG to specify a generic framework as a basis for future transfer services;

## **ACTION ITEM: CESG-A-0411-016 (CSS-A-0411-DTS-001)**

- a. Draft a charter for the proposed new 'Generic Services' WG. Assigned to Yves Doat (ESA), due date 03 December 2004.
- b. Set up a 14-day poll to review this draft charter and transmit to the CMC if approved. Assigned to CESG chair; Due Date: 03 December 2004

# **CESG INTERNAL (PENDING) RESOLUTIONS AND ACTION ITEMS, NOVEMBER 2004 CESG MEETING**

**1. Document and Charter approval**

**2. Administrative items**

## **RESOLUTION: CESG-R-0411-017 (SEA-R-0411-002)**

### **Considering that:**

1. Several CCSDS areas are developing or have developed domain specific reference architectures and service sets, some of which interact,

### **And recognizing that:**

1. Some of these architectures do not follow any common approach for defining, describing, or identifying these architectures or service interfaces,

### **The CESG resolves that:**

The Area Directors shall provide information on such domain specific reference architectures and service sets to the SAWG and work with the SAWG so that the SAWG may review them to ensure that they and their cross area interactions are correctly understood and properly documented.

## **ACTION ITEM: CESG-A-0411-017 (SEA-A-0411-002)**

- a. Area Directors shall provide information on such domain specific reference architectures and service sets to the SAWG and shall work with the SAWG to ensure that they are properly understood and documented. Assigned to: ADs; Due Date: 23 December 2004

## **RESOLUTION : CESG-R-0411-018 (SEA-R-0411-001)**

### **Considering that:**

1. The process by which the results of CESG polls are transmitted back to the Areas is unclear,

### **And recognizing that:**

1. Areas and Working Groups need unambiguous feedback on any major technical issues identified during CESG review,

### **The CESG resolves that:**

It will develop a clear process for transmitting back to the Areas a set of detailed comments on any major technical issues that arise during CESG polling of any document that is sent to them.

## **ACTION ITEM: CESG-A-0411-018 (SEA-A-0411-001)**

- a. Update and harmonize the CESG polling process so that detailed CESG review comments are captured and sent back to the Areas. Assigned to CESG chair; Due Date: 17 December 2004
- b. Update the CCSDS Procedures Manual to reflect this CESG polling review loop with feedback to the Area. Assigned to: Secretariat. Due Date: 31 December 2004