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| meeting date | 10-13 April 2018 | ref./*réf.* | CSTS-WG-100418 | | | page/*page* | 1 |
| *date de la réunion* |  |  |  | | |  | 10 |
| meetingplace | Gaithersburg / U.S.A. | | | chairman | H. Dreihahn (ESA, holger.dreihahn@esa.int) | | |
| *lieu de la réunion* |  | | | *président* |  | | |

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| --- | --- | --- | --- |
| minute’s date *dates de minute* | 16 April 2018 | participants *participants* | W. Hell (ESA, wo\_.\_he@t-online.de)  S. Gully (DLR) ([sylvain.gully@dlr.de](mailto:sylvain.gully@dlr.de))  J. Pietras (NASA / GTS john.pietras@gst.com),  R. Neutze (NASA-MFSC robert.l.neutze@nasa.gov)  T. Pham (JPL/NASA, [timothy.t.pham@jpl.nasa.gov](mailto:timothy.t.pham@jpl.nasa.gov))  J. Liao (JPL/NASA) (jliao@jpl.nasa.gov)  M. Yoshikazu (JAXA, part time, miyano.yoshikazu@jaxa.jp) |

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| subject/*objet* | CSTS Working Group-  2018 Spring Meeting | copy/*copie* | CCSDS CSTS Working Group Members |

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| Description*/description* | action/*action* | Due date/*date limite* |
| **NOTE:**  All actions are recorded with an “A” in the MoM.  The “Workplan” (Chapter 15) identifies the responsible WG member for each product/activity. |  |  |

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# Spring Meetings Agenda



**S Statement**

**D Decision**

**A Action**

# Review of Workplan from Fall Meeting 2017

| **Work Item** | **Progress** |
| --- | --- |
| Update / finalize CSTS Concept: W. Hell (ESA) | Concept book with final changes has been put on CWE 9th of April for WG review. Requires CESG approval. |
| Update / finalize Guidelines W. Hell (ESA) | RIDs are dispositioned and document has been updated. Some changes are pending which were no RIDs. One problem with MS Word needs to be discussed with T. Gannet. |
| Update / finalize TD CSTS: W. Hell (ESA) as per RID disposition from Agency Review | TD Book finalized and with Erik, pending Yellow Book with test results. |
| Update / produce FF CSTS first draft specification: T. Pham (JPL / NASA) / J. Pietras (GST) | Official draft is on CWE. |
| Completion of data preparation for SANA Registry: W. Hell / H. Dreihahn / H. Ernst / T. Pham | Work in progress, CFDP FR has been revised, but not complete. In general FRM editing needs planning and prioritization. |
| Yellow Book for TD CSTS Prototype: T. Pham, J. Liao (JPL / NASA) | NASA committed nicely to produce the Yellow Book for TD CSTS. |
| Prepare Technical Corrigendum for CSTS SFW by collecting items. W. Hell (ESA) / J. Pietras (GST) | Wolfgang nicely prepared the spreadsheet listing the necessary SFW changes. Approach will be discussed, pink book etc. State is at the beginning of the meeting. |
| Development of TD CSTS Prototype:   * User: Jason Liao (NASA/JPL) * Provider: S. Gully (DLR) * Validation, interoperability tests: S. Gully (DLR) / J. Liao (NASA) | Testing has started, 30% of the tests are done. |

# Guidelines – Agency Review RI Processing

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| A | WH: Add a statement that eventually refined procedure PDUs have to be exported from the ASN.1 module. Will be a RID in Agency Review.  **Action Closed 10th April 2018**. |
| A | WH: The normativity of the Guidelines will be clarified in the book.  **Action Closed 10th April 2018.** |
| A | WH: Check if the Guidelines explain how to add behavior to procedures (extension).  **Action Closed 10th April 2018.** |
| S | WH presented the received RIDs and dispositions. |
| D | Add to the guidelines the requirement, that the documentation tree has to go into each CSTS book. |
| D | Wrt. the RID of adding an informative annex discussing pros and cons of the available methods for setting procedure configuration parameters, such annex will not be added to the Guidelines at this time. |
| A | Write a note addressing the RID of adding an informative annex discussing pros and cons of how configuration parameters are set: Start operation, service management etc. No assignee yet. |
| S | Guidelines without final fixes, which will be done soon, is on CWE. Then WH will prepare the archive (RIDs, answers, document, figures) needed for publication of the magenta book. |

# FRM Model – Approach to Parameter Definition

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| D | OID update for MD-CSTS:   * Annex B of the MD-CSTS Blue Book assigns the OID {crossSupportFunctionalities  17} to mdCstsProvider * Annex C of the TD-CSTS Red Book assigns the OID {crossSupportFunctionalities  19} to tdCstsProvider   SANA Registry assigns these FR Types OIDs ending in 46 (MonitoredDataCSTSProvider) and 38 (RealTimeTrackingDataCSTSProvider)  Align the SANA registry for MD-CSTS and TD-CSTS. Action open until SANA is updated, TD book has to be checked. |
| S | Conceptual discussion about FRM configuration parameters and parameter selection by CSSM configuration profiles. The Service Agreement of a given mission further down-selects the P / D / E of the FRM. |
| S | Brainstorming on FR concepts. Some FR concepts have been re-confirmed. |
| S | The FRM is a collection of all possible P/D/E ground stations can offer. Providers and missions have to select what is actually supported / used. |

# Concept Book – Status and Discussion of Changes

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| A | WH: Align to the guideline change that the guidelines are a recommended practice and should be followed unless there is a compelling reason that they can’t be followed.  **Action Closed 10th April 2018.** |
| S | WH has provided an overview of the changes applied to the Concept Book to the WG. |
| D | The concept book is done and uploaded to CWE. WH prepares the package required for CESG review and passes it to the Area Director with the goal to go green. |

# Joint Session – CSS Area Architecture incl. Control Service

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| S | EB has presented an overview how standards and information models should (could) relate. |
| S | Service Control (real time control) architecture was touched on, there is a relation (need for coordination) with Sequence of Events (executing directives at predicted times / based on observed events).  A concept needs to be developed to initiate the project. |
| S | FRM Magenta book: resources need to be identified, scope needs to be agreed. Most likely FRM Sets are defined within the book. Rationale is that the number of FRs is ‘stable’, what varies are the P/E/Ds of the FRs. |

# Forward Frame CSTS

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| A | MDG: **Question to SLS:** What are the milestones for that AOS forward magenta book? Most likely the CSTS FF needs to rely on it.  **Action Closed 10th April 2018**:  Discussion in SLS has been started. Will not be addressed before Fall 2018. The proposal to use TM sync and channel coding on the uplink has been rejected (who?). SLS shall study all feasible coding and modulation combinations for the uplink. |
| D | For FF CSTS we assume the existence of a forward sync and channel coding spec. FF CSTS does not depend on the publication of that book. |
| A | HD: Make CESG aware of the FF CSTS independence of the forward and sync and channel coding in the report at the end of the meeting.  Done in preparation of the CESG meeting on 13th of April, EB is aware. |
| A | JP: Email to Ken Andrews to pass FF CSTS requirements. |
| A | WH: Check if there is a way to handle the latest processing start time in a ‘better way’ than FSP.  **Action Closed 10th April 2018**.  Has been discussed, but gets to complicated. |
| S | JP presented the latest changes of FF CSTS. Presentation is on CWE. |
| S | SFW changes imposed by FF CSTS have been discussed and agreed. See also section 8. |
| S | In two weeks JP will pass an updated FF CSTS to review to WH, who will return the changes (tracked). |
| S | FF CSTS Agency Review is envisaged for October 2018.  For CESG review in September 2018, an SFW pink book implementing the changes imposed by FF CSTS is needed. |

# Update of SFW – Approach and Changes

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| A | Discussion of ‘**Procedure PDUs ASN.1 irregularities’** email thread between JP and WH. Update for **Procedure PDUs ASN.1 irregularities** to clean the ASN.1  See email WH 27/10/2017  **Action Closed 10th April 2018.** |
| A | Invalid PDU handling: State machine presentation shall be consistent  **Action Closed 10th April 2018.** |
| S | WH presented an overview of pending SFW changes. After a consolidation of these changes a spreadsheet listing all changes has been created. All open items have been dispositioned WG internally. |
| A | WH to implement the agreed SFW updates until June in a draft pink book format. |
| A | **JP/TP/JL:** Analyze if the SFW changes can be tested by FF CSTS by June 2018 (FF CSTS Test Plan completion) |
| A | **HD:** Discuss with EB / MDG before 2018 spring CESG how to update the SFW: If we go for SFW B-2, can we claim the SFW prototyping is covered by the FF CSTS prototyping exercising all the procedures and operations affected by the framework changes.  The SFW test approach by CSTS FF has been presented to EB. He has no problem with that. |

# Functional Resources Technical Note and FR Model.

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| A | SANA to fix the "1.3.112.4.4.2.1" (Functional Resources) sub-tree not loading in the OID tree browser.  The issue might be caused because there are gaps between the FRs’ OIDs and their children’s OIDs.  Potential fixes discussed:  - Display the full tree by skipping missing OIDs;  - As there is semantic embedded in the OID for these entries, generate specific records. conversion) that will represent this meaning in the FR registry.  **Action Closed 10th April 2018.** |
| A | HD to update SANA FR ICD with description of the OID bits until 15/11/2017. *Done, ICD 1.1 available.*  **Action Closed 10th April 2018.** |
| A | SANA will provide a hierarchical organization of the FR table / tree.  **Action Closed 10th April 2018**. |
| A | SANA will provide a link to the input XML file of the FR and the stylesheet to produce the internal HTML format (if possible). *Not yet done.*  **Action Open.** |
| A | SANA will change the order of the columns (OID first) according to the SANA FR ICD table 2-1.  **Action Closed 10th April 2018.** |
| S | Suggested to maintain at CWE a spreadsheet with all identified FRs, state and assigned author – discuss with WG. Spreadsheet has been created. Way forward, resources (availability) and deadlines need to be agreed. |
| A | Add a functional resource to cover [**CCSDS 415.1-B-1**](https://public.ccsds.org/Pubs/415x1b1.pdf) (TDRS FR mod and ranging) and extend the existing FRs as needed.  Action Open: FR is in the FR TN. FRM model in SANA not yet covered. |
| S | The CFDP FR approach has been presented. A controversial discussion if mapping CFDP requests and indications to FR directives and FR events is the right way, has been enjoyed by the participants. |

# Monitored Data CSTS

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| A | HD: Check why the Yellow book of MD-CSTS is not on CCSDS publications Yellow Book.  **Action Open.** |

# Joint Session CSS Architecture II

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| S | Architectural concepts of the upcoming SC CSTS and Sequence of Events have been discussed. EB presented the (updated) Event Sequence presentation from Den Hague 2017 Fall meeting. |

# Tracking Data CSTS – CCSDS-922.2

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| A | WH: All RIDs have been discussed and answered. WH has all dispositions and will prepare formal RID responses. *All RIDs have been answered and agreed, the publication is blocked by the prototyping and production of the yellow book.*  **Action Closed 10th April 2018.** |
| A | TP: JPL (JL / TP) consider to take over the authoring of the Yellow Book from DLR. *JPL has agreed to produce the Yellow Book. Action can be closed.*  **Action Closed 10th April 2018.** |
| S | SG presented the status of the TD CSTS testing. Presentation is on CWE. |
| S | SG / JL report 30% processed test scenarios. |
| S | SG / JL: End of TD CSTS testing is planned for end of June. |
| A | WH: pACresponderPortId OID is missing in the framework. |
| A | WH: Remove pACresponderPortId from the default list in the TD CSTS book. |
| A | WH: correct the statement that Notify Invocation is part of the prime procedure. Correct the ICS table. |
| D | For TD CSTS prototyping the IQ reporting on SIID shall use a sequence of TypeAndValue. |
| S | For the IQ (CR – cyclic report) procedure, services may want to report complex parameters with ASN.1 types known to the SFW. For such complex types it is recommended to use the TypeAndValue.typeAndValueExtension(embedded), instead of encoding these types into sequences of TypeAndValue. The TypeAndValue.typeAndValueExtension(embedded) would carry the encoded type and the OID of this type as defined in the SFW.  It has been discussed to extend TypeAndValue with another embedded choice to distinguish types added by the service definition or when the embedded is used for SFW types. |
| S | The PICS of TD CSTS have been discussed / reviewed. |

# SANA Registry Joint Session

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| S | Some comments have been given to SANA and the registry looks much better now. Pending:   1. Download of source XML and the XML schema governing the format 2. Show only ‘the tree’ for the Functional Resource registry. 3. Add the short description in addition to the classifier? 4. String Identifier is missing (ICD update) 5. The details of an FR, P/D/E should be more compact to improve readability 6. Can we add something which makes a distinction between Parameters/Events/Directives (additional label, indentation, etc.) 7. Can we add in the tree view the ‘Configuration’ attribute of the parameter? 8. Remove markup in the FR registry text 9. Can we add a little FR introductory text what FRs P/E/Ds are (with picture)? CSTS WG can include that introduction in the SANA FRM ICD. Use section 2.1 of MD CSTS. 10. For IE (others?) when navigating back to the FRM tree, the tree is collapsed, to as it was when entering the FR record. |
| A | HD: Update the SANA ICD to include the String Identifier and the FR explanation as of MD-CSTS B-1 in the ICD to be but in the FRM registry and comments above. |

# SLE Books

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| S | Impact of the LDPC encoding on the SLE / FF CSTS forward books:Impact on CLTU book  * Updated reference can go into the next regular update of the book. Email to Tom Gannet that the TC Sync and Channel Coding reference changed is enough.  Impact on FSP book  * Updated reference * Explanation about the coding options * Production configuration of the coding option – SI configuration: Not really? * Monitored parameter for the current encoding. * LDPC shall be an option of the FSP   Impact on FF CSTS   * LDPC is one of the supported by the FF CSTS book   The current idea is to leave the SLE book updates to the regular 5 year cycle. USLP will be addressed once the blue book is available, unless a special need for USLP support is communicated to the WG. |
| A | Impact of Space Data Link Security Protocol on SLE / FF CSTS, the date is next regular update cycle of the SLE Books: [**CCSDS 132.0-B-2**](https://public.ccsds.org/Pubs/132x0b2.pdf) and [**CCSDS 732.0-B-3**](https://public.ccsds.org/Pubs/732x0b3e1.pdf)  RAF, RCF, ROCF: Text needs an update to explain that the security protocol is supported  [**CCSDS 232.0-B-3**](https://public.ccsds.org/Pubs/232x0b3.pdf)  **CLTU**: not affected, CLTU is transparent.  **FSP**: Suggested not to apply the security protocol to FSP. The WG sees it unrealistic that in cross support scenarios the FSP provider is entrusted the ‘secrets’ to encrypt data and generate security header and trailer on behalf of the mission.  **FF CSTS**: no impact, FF is transparent wrt. the security header, encrypted data and trailer. |

# Workplan

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| CSTS Guidelines | WH will implement the changes discussed during this meeting. Book will be passed to AD and WG, then CESG package will be prepared. |
| CSTS Concept Book | WH prepares the package required for CESG review and passes it to the Area Director with the goal to go green. |
| FF CSTS | WG will update and review, then pass to secretariat RED-1 in June.  Prototyping will proceed based on the current draft book. Start the yellow book incl. WG review.  Track the validity of the statement: For FF CSTS we assume the existence of a forward sync and channel coding spec. FF CSTS does not depend on the publication of that book. |
| CSTS Framework | WH to implement the agreed SFW updates until June in a draft pink book format.  Perhaps a B-2 project needs to be initiated – pay attention to the proposed prototype approach, where prototyping is covered by FF CSTS. |
| TD CSTS | The agreed changes as required by prototype testing will be integrated.  Completion of TD prototype testing. |
| SANA Registry | Update the SANA ICD and check that changes are implemented by SANA as agreed. |
| Functional Resource Model | Editing and reviewing of Functional Resources will continue. Resources for editing and reviewing are too tight. Has to be discussed.  Part of the problem is that populating a SANA registry is not a formal project and as a consequence it has no official resource allocation. |
| SLE Books | Changes are collected for the regular 5 cycle. |
| SC CSTS | Propose a BOF maybe for the Berlin meeting.  Tentatively create a minimal SC based on SFW Throw Event Procedure and an architecture with a SC system, hosting multiple SC Service Instances, potentially for several missions at the same time. |

# Schedule of Teleconferences

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| --- | --- |
| **07th June 16:00 / 7:00** | Working Group Telecon – Affirm FF CSTS and SFW pink book, TD testing |
| **06 September 16:00 / 7:00** | Functional Resource editing and review, checking of FF CSTS and SFW |

**All Presentations given at the 2018 Spring Meeting can be found at:**

CW folder 2018/Spring