

CCSDS Fall 2022 Toulouse Meetings

CSSM WG Meeting Summary

02 Nov 2022

Agenda/Agenda Status for Fall Meetings

Monday, October 17

- 1) Introduction
- 2) Recap of Spring meetings
- 3) Survey of progress since Spring meetings
- 4) Agenda approval
- 5) Action items check
- 6) SMURF Prototype status, review
- 7) Service Agreement Parameters
- 8) SANA Service Sites and Apertures registry review

Tuesday, October 18

- 1) GitHub repositories for XML, UML
- 2) XML Schema versioning discussion, esp given use of GitHub
- 3) SACP white book status, project initiation discussion
- 4) FRM vs service management configuration levels discussion
- 5) Configuration profile model + XML Schema
- 6) Management service — state machines
- 7) Management service — APIs + cloud computing considerations

Wednesday, October 19

- 1) EVSQ white book status, review (postponed)
- 2) Inter-recommendation tracking spreadsheet review, update
- 3) Joint session: SE Area D-DOR WG — discussion of proposed approach for standards development where there are overlaps between DDOR and CSSM
- 4) CSS Area plenary (Joint meeting with CSTS WG, Cloud BOF)
- 5) Concept book revision discussion (postponed)
- 6) ~~CDE, SMURF, and SPDF agency reviews~~

Thursday, October 20

- 1) Agency surveys re plan for adoption of CSSM standards
- 2) AOB
 - a. Accountability standard
 - b. Engagement with commercial service providers
 - c. IOAG service catalog update (M. Gnat)
 - d. Service Agreement XML Schema
- 3) Action Items review
- 4) Work plans, teleconference schedule to spring meetings
- 5) **CSS Area Dinner**

Friday, October 21

- 1) Closing area plenary (8:45 — 10:30)
- 2) Closed WG Chairs session (10:45 — 12:30)
- 3) ~~Boot camp (entire afternoon)~~

SMURF Prototype Status/Review (also SPDF)

- SMURF prototyping between ESA and DLR is essentially complete
 - “modResParm” (pass specific configuration profile parameter modification) not yet prototyped
- Most of the issues are not SMURF issues per se but related to interpretation of various parameters referenced via the SMURF
 - Service agreement reference – project vs spacecraft?
 - Aperture names can coordinates (we still have issues with SANA Service Sites and Apertures registry)
 - SICF identifiers – pass by pass vs “permanent” identifiers
 - Current operational practice tends to be with “permanent” identifiers
 - Trajectory reference – pass by pass vs “permanent” identifier
 - Current operational practice tends to be with “permanent”
- DLR prototype is able to generate SPDF

Service Sites and Apertures Registry Review

- Spot checked multiple site and aperture definitions
 - Many service sites have the same coordinates (for western Siberia)
 - Frequency band information is often lacking – indicated as “other” for many apertures
 - Short names generally do not look like real operational names
 - The list of services listed for the apertures tend to be cut-and-paste of services from the IOAG service catalog
 - E.g, forward and return file which was always a rather fanciful service definition and does not exist at all
 - CNES aperture definitions for Aussaguel site are generally in good shape

Service Agreement Parameters

- We walked through the spreadsheet designed by M. Gnat
- Inputs have been provided by DLR and UKSPACE/Goonhilly
- WG membership is requested/reminded to please provide inputs on the **spreadsheet** (cwe login required)
 - https://cwe.ccsds.org/css/docs/CSS-SM/CWE%20Private/Book%20Production/Blue/Service%20Agreement%20and%20Service%20Config%20Profile/White%20Book/Planning%20and%20Dev%20Materials/Service_Agreement_collection_2022-10-13.xlsx?d=wb080ab900784442c965b291713e48019
 -

GitHub repositories

- Looked at repositories for UML Model, XML Schema, and XML instances that have been set up in github (see <https://github.com/cssAreaGH>)
- Added A. Crowson, M. Gnat, and E. Barkley as collaborators for the 3 repositories
 - Others are welcome to become collaborators as well
 - Requires creation of a github account if not already done
- A. Crowson and M. Gnat to be added to the CCSDS CSS Area github email distribution list

XML Schema Versioning & GitHub

- We agreed that the file naming conventions for blue book schemas will be retained
- The blue book file name will be used from the start of development of particular schema
- For subsequent blue-2, etc., a new repository will be established
- Agreed on having a service management version
 - Implies a management configuration file to indicate what versions of the XML Schema files constitute which version of service management
 - E.g., Service Management 2.0 has SMURF Version X, SPDF Version Y, etc.
 - Management configuration file also to be maintained in github
- Agreed on using namespace versioning for different blue book releases
- Agreed to use native xsd version attribute numbers
- E. Barkley, A. Crowson, and M. Gnat agreed to an action to set up a github “sandbox” repository to prototype the versioning approach outlined and report on how it does and/or does not work

SACP White Book Status/Project Initiation

- Review of white book
 - M. Unal requests that the service agreement include a list of parameters that cannot change as part of a service request (i.e. modResParm)
 - Terminology such as “customParameter” needs to be make consistent with “established” terminology such as “extensibility point”
 - The “dependency configuration profile” (i.e., wiring diagram from the original FRM concept material) does not really seem to have a point any more
 - To be left in the book for the time being
 - Noted that SMURF indicates the mapping to the SICF (i.e., the SLE transfer services), not the configuration profile
 - The SMURF SICF reference is to a single file, implies that the SICF is required to have all of the SLE instances needed represented)
 - Noted that, if using “permanent” SICFs, that the information can be kept in the service agreement
- SACP project initiation
 - DLR offered a preliminary commitment for prototyping
 - NASA/GSFC offered a preliminary commitment for prototyping
 - ESA offered to investigate feasibility for supporting prototyping
 - Action to E. Barkley to update the draft project schedule definition in the CWE

Management Service – State Machines

- Reviewed presentation from Spring 2019 (Mountain View)
- Discussion re service package request re-surfaced considerations as to standing order being too complex in a cross support environment
 - Some agreement in principal that request could be reduced to just a single service request
 - But also noted that consideration of going to another agency review (given the fairly significant change likely) was not desirable

Management Service -- APIs

- Reviewed a presentation from E. Barbieri on internal DLR scheduling, service package states, and APIs
 - Shows use of ReST POST re SMURF and SPDF exchanges
 - Both client and server have webserver running to allow for POST exchanges
- Looked at the API definitions for AWS (Amazon) Ground Station
 - Similarity with CCSDS SM S-1 noted
 - Various states are implied by the API definitions
- Agreed that we start work on a management services book outline
 - Conceptually this consists of state machines with the APIs being the transition edges along the states (of the state machine)

Inter-recommendation Tracking Spreadsheet

- Reviewed the inter-recommendation tracking spreadsheet, noted the following
 - Book model to add book abbreviations (e.g., SSF, SPDF, etc.)
 - Has been updated with latest referential framework diagram
 - Service management header is out of date – E. Barkley to update
 - State machine models are out of date – M. Gnat to update
 - Sana registry types is out of date – update needed but at a low priority
 - ADD terms referenced – needs to be checked – but at a very low priority
 - XML Schema Conventions – E. Barkley to update re “rules of engagement” in using GitHub, etc.
 - Behavioral considerations – a reminder that we are collecting these in the spreadsheet

Joint Session with DDOR WG

- See presentation “221019-ProposedApproach-DOR-CSSM-Std.pptx” for details on the proposed approach
- Recognized that SE D-DOR standards need to operate where CSS CSSM standards are not implemented
- Recognized that SE DOR standards need to also operate in a context where CSS CSSM standards are implemented
- Conclusion of the joint session
 - SE D-DOR WG will continue with work on the DDOR Magenta 3 book
 - CSSM WG will indicate where, in the case of conflict, the CSSM information will take precedence in the case that both the DOR and CSSM standards are being used simultaneously; this includes
 - Configuration profile DOR tones
 - Spacecraft DOR tone on/off times
 - Ground observation sequence
- CSSM WG agreed to provide sample language when available to indicate how SE D-DOR standards are being treated in CSSM standards context
- CSS AD agreed to provide information to SE D-DOR WG on DOR related parameters that are being captured in the CSS Area FRM (Functional Resource Model)

CSS Area Plenary

- Discussed the FRM and event definitions and event sequence
 - H. Dreihahn observed that the events at the level of the FRM offer a confirmation of the state changes in the event sequence
- Discussion re FRM and configuration levels
 - Agreed that a level 5 definition can be added which implies configurable, in a managed service context, during tracking pass execution (SC-CSTS)
 - Agreed that CSSM WG will continue developing the configuration levels spreadsheet and then send to the CSTS WG for considerations re level 5 definitions

Agency Adoption Plans

- **JAXA provided a presentation on developing a generic ICD for implementation of service management**
 - **Presentation illustrates the various service management parameters and JAXA' approach re implementation**
 - **Agreed that this needs further consideration, examination by the WG**
- **ESA and DLR already have significant SMURF implementations**
 - **Various white book versions are supported**
 - **ESA: v0.6 and v0.9**
 - **Willing to support v0.10 if that is what JAXA wants**
 - **DLR: v0.9 and v 0.16**
 - **Both DLR and ESA have implemented the SSF**
- **Discussed when SMURF blue book might be available**
 - **If there are no subsequent agency reviews, July 2023 is likely the earliest date**
 - **JAXA representatives indicated that they want to implement the SMURF now**
- **NASA/NSN**
 - **Sees accountability standards as a ripe area for adoption as some of their commercial providers have nothing in place for this**
 - **W. Eddy provided a presentation on potential applicability of management service for NSN (slides cannot be released until permission is granted)**
- **NASA/DSN**
 - **SSF implemented**
 - **Supported CPIF prototyping**
 - **Some preliminary discussions have occurred internally re adoption of SMURF and SPDF**

AOB – Accountability Standard

- W. Eddy noted that commercial providers that NSN deals with tend lack any real kind of accountability report and/or don't provide anything
- Agreed to look at some existing material including
 - ESA ICD on accountability
 - NASA/DSN post pas report
 - A general request/action to the WG to provide relevant material for eventual accountability standard into the Service Accounting/White Book/Planning and Dev Materials directory
 - More specific request/action to E. Barkley, E. Barbieri, M. Unal to provide inputs for NASA/DSN, DLR, ESA/ESTRACK respectively

AOB – Engagement with Commercial Providers

- Discussed publishing a success story
 - ESA and DLR significant SMRUF implementations
 - ESA, DLR, NASA/DSN – SSF implementation
 - SSC (Swedish Space Corporation) SSF implementation, supports SMURF request for SSF
 - Action to E. Barkley to find out what happened to CCSDS press room
- Noted that as management service begins to be developed we can create a publicly viewable GitHub repository for API definitions

AOB – latest IOAG Service Catalog 1 draft

- M. Gnat walked through the latest updates for IOAG Service Catalog 1, especially section 5 on management service
- The WG had no objections to the revised section
- Noted that the updated service catalog will likely be available sometime in January 2023

AOB – Developer's Forum

- **Prototype findings, management service, and agency adoption plans led to a discussion of the different ways in which the data formats and ReST APIs are being implemented**
- **Some sort of forum among the interested agencies could help in promoting interoperability by settling on common methodology for API/implementations**
- **Idea is to get the lead engineers/developers to discuss during a multi-lateral technical interchange meeting different implementation considerations and techniques**
- **This could also help to speed standards infusion**
- **Difficulty of arranging such a face-to-face meeting was noted**
 - **An option discussed was to set aside 1 to 1.5 days at the Spring 2022 meetings (assuming they will be in-person) if a sufficient number of leading engineers can be confirmed and/or travel arranged**

Current Book Status

CSSM Document	Document Number	Current Status
Concept Green Book	CCSDS 902.0-G-1	Published/overdue for 5Y refresh
Simple Schedule Format Specification	CCSDS 902.1-B-1	Published; 5Y refresh due 2023
Planning Information Formats	CCSDS 902.2-B-1	Published
Service Package Data Formats	CCSDS 902.4-B-1	In agency review
Service Agreement and Service Configuration	CCSDS 902.5-B-1	Project initiation in progress
Space Link Event Sequence Data Format	CCSDS 902.6-B-1	Pre-project draft in progress
Service Catalog	CCSDS 902.7-M-1	Pre-project draft completed
Service Accounting	CCSDS 902.8-B-1	Not started
Service Management Utilization Request Formats	CCSDS 902.9-B-1	In agency review
Management Services (Automation)	CCSDS 902.10-B-1	Initial scope identified
Best Practices	CCSDS 902.11-M-1	Not started
Terrestrial Generic File Transfer	CCSDS 927.1-B-1	Published
CSSA Service Management Common Data Entities	CCSDS 902.12-M-1	Published; M2 in agency review
Abstract Event Definition	CCSDS 902.13-M-1	Published