

~ Sli.do Q&A ~
PUS C Library for TEC-SW Lab

How much of the PUS-C standard services are currently implemented in the libPUSC ?

Intelligentia implemented the following tailoring of ECSS-E-ST-70-41C. 125 standard service/sub-service plus 3 private sub-service in service 23.

Service	Description	Sub-service(s)
1	Request Verification	1, 2, 3, 4, 5, 6, 7, 8, 10
3	Housekeeping	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 27, 25, 28, 26, 31, 32
5	Event Reporting	1, 2, 3, 4, 5, 6, 7, 8
6	Memory Management	1, 2, 3, 4, 5, 6, 7, 8, 9, 10
8	Function Management	1
9	Time Management	1, 2
11	Time Based Scheduling	1, 2, 3, 4, 5, 16, 10, 17, 13, 18, 19, 20, 21
12	On-board Monitoring	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 15, 16
15	On-board Storage and Retrieval	1, 2, 3, 4, 5, 6, 9, 11, 12, 13, 17
17	Test	1, 2
18	On-board Control Procedure	1, 2, 3, 4, 5, 6, 12, 13, 17, 18
19	Event-Action	1, 2, 4, 5, 6, 7, 8, 9, 10, 11
20	Parameter Management	1, 2, 3, 4, 5, 6, 7
23	File Management	1, 2, 3, 4, 9, 10, 12, 13, 14, 128, 129, 130

Why creating an ad-hoc service to upload/download files instead of relying of standard solutions such as CFDP?

ECSS-E-ST-70-41C doesn't have an interface for download/upload of files. Moreover, the budget dedicated to this activity was not covering the implementation/integration of a new/existing CFDP library.

What is the license of the libPUS library?

Intelligentia used LibPUS library which is a part of LVCUGEN developed by CNES. ESA has an agreement with CNES which includes the ability to sublicense by ESA. Updated LibPUS – called LibPUS-C – has been provided back to CNES and it is also available to be sublicensed by ESA. The exact terms of the license would have to be studied offline.

What is the target software criticality category for this libPUS-C for TEC-SW? Was it developed in compliance with E40/Q80C reqs. for criticality category C?

LibPUS-C was intended as category D. Anyhow at UT level the 85% of decision coverage has been reached. The software is provided with tailored ECSS-E-ST-40C data pack.

How do you handle service/subservice/capability tailoring?

Tailoring of the LibPUS-C library is handled directly at compilation time by using the preprocessor flag to determine which service/sub-service include into the final library.

Are you compliant with the PUS-C population tool of the earlier presentation with ASN.1/ACN?

No. It was not the goal of this study to explore this. The top-level goal was twofold: 1) Provide the first implementation of PUS C for experiments in the TEC-SW lab and 2) make the library available for further ESA activities. The CCN extended the library with support for file-based operations.