

PUS C Library for TEC-SW Lab

This activity's focus was the design and development of a PUS library compliant to the ECSS-E-ST-70-41C standard in ANSI C language, to be integrated into EagleEye v7 CSW. The main objective of this activity was to have a PUS C library implementing at least the tailoring of PUS C required by the EagleEye mission, with few extensions to fulfil the needs of future demonstrators in the TEC-SW Avionics Lab roadmap.

We implemented not only the services indicated in the Statement of Work, but also additional services and sub-services (overall more than 100 subservices). The starting point for the LibPUS C library was the CNES LVCUGEN LibPUS library. It is a PUS A library implementing few services/sub-services used by CNES in its applications and demonstrators. We reused as much as possible from the CNES library in terms of architecture, requirements, code and tests. The main advantage of this choice has been that in EagleEye v7 the CNES library has been already integrated and used to replace the Ada implementation of the PUS library present in EagleEye v5.

Although we started from the CNES LibPUS library, a strong rework has been necessary to upgrade the library from PUS standard A to C, as a lot of differences exist between the two standards not only in the packets structure but also in the handling of the request of verification. In addition, as stated above, we largely extended the set of supported services and subservices.

In the last part of the activity we integrated the LibPUS C library into EagleEye v7. We needed to adapt the EagleEye CSW in order to use PUS C rather than PUS A. The integration in EagleEye represent the first test bench for the newly developed library.