

On-board Software Reference Architecture for Payloads (OSRA-P)

The goal of this GSTP study is to identify an architecture for payload software allowing to harmonise the payload domain, to enable more reuse of common/generic payload software across different payloads and missions and to ease the integration of the payloads with the platform.

The definition of the OSRA-P software architecture was based on two classes of inputs:

- (1) On the one hand, a domain analysis was performed, in which existing payload systems were investigated. This resulted in the *Payload Catalogue* describing 12 payload instruments as well as a *Capability Matrix* listing specific characteristics of each payload. In addition, a functional decomposition of payload software was prepared which contains functionalities typically found in payload systems.
- (2) On the other hand, results from earlier activities on platform software side, like COrDeT3 and SIFSUP, were analysed in the light of the payload domain analysis in order to identify if and how they could be used to meet the demands of payload software.

This definition of OSRA-P was evaluated by performing case studies and organising a dedicated OSRA-P workshop to gather feedback from the payload community. The proposed OSRA-P architecture was used to reconstruct the functionalities of two current payload software. These case studies investigated both the technical architecture of payload software built with OSRA-P and the process-oriented aspects of actors, roles, and responsibilities. Feedback from both the case studies and the workshop was used to improve the definition of OSRA-P.