

21st IAA SYMPOSIUM ON SMALL SATELLITE MISSIONS (B4)
Space Systems and Architectures Featuring Cross-Platform Compatibility (7A)

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SMALL SATELLITE LIGHTSAT APPROACH DEFINITION, A QINETIQ SPACE AND JAXA STDRC
JOINT EFFORT

Abstract

Benefiting from the flight heritage of the successful European PROBA missions and the Japanese SDS missions, both QinetiQ-Space and JAXA STDRC have decided to focus on proposing to the space community a first joint small satellite design and development approach allowing a fast and reliable development cycle for high performance missions at a reduced cost.

From the history both JAXA STDRC and QinetiQ Space have experienced successful in-flight operations through the SDS-1 (23/1/2009), and SDS-4 (18/5/2012) missions as well as PROBA-1 (22/10/2001), PROBA-2 (2/11/2009), and PROBA-V (May 7th 2013) missions respectively. From both sides, these satellites have been developed according to a tailored version of agency standards. On one hand, the PROBA satellites have been built following a reduced version of the European Space Agency (ESA) European Coordination for Space Standardization (ECSS) standards. On the other hand, the SDS satellites applied new quality management plan for SDS with tailored versions of the JAXA standards. One has however noticed that tailoring of such standard may sometimes create issues within projects because of the lack of agreed approach between entities. For this reason, a joint activity has been initiated between QinetiQ Space and JAXA STDRC to start defining the basis of small satellite design and development approach. Such an exercise aims at sharing lessons learned from both project history as well as combining key elements that small satellite should consider in their design and their development.

The paper will cover main aspects of design and development and remind some of the wide range of applications possible with small satellites. Approach standardization aspects will be presented while focusing on key drivers which have been agreed between JAXA STDRC and QinetiQ Space. One will demonstrate how such a proposed philosophy allows a rapid but stable development intended to be from kick-off to launch a three years project. One will finally conclude on the advantages of applying the proposed recommendations and why SDS and PROBA can be used in the future of small satellite missions.