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Author: Dr. Alison Gibbings
OHB System AG, Germany

Mr. Stefan Nordmann
OHB System AG, Germany
Mr. Mark Fittock
OHB System AG, Germany

# BENEFITS OF REUSE FOR FUTURE SCIENCE MISSIONS AT OHB SYSTEM

**Abstract**

The reuse of different design and approaches at platform, system and subsystem level can be an efficient method to reduce the mission cost, schedule, complexity and risk. Reuse spans from the selection of the mission architecture through to component level selection. It is particularly effective when combined with company critical heritage and expertise. Future low-risk and low-cost missions (and proposals) can be leveraged, with a reduced work effort. Reuse is commonly applied to Telecommunication and Earth Observation missions, where their recurrent nature at unit, subsystem and system level, is of a particular benefit. This can be seen in the product lines for different spacecraft currently available from large system integrators. However, implementing reuse for space-science missions can pose a number of challenges, often caused by the sporadic opportunities for developing the spacecraft and the unique nature of many of the missions. Performance of the prechosen architectures, units and interface limitations must also be considered. Reuse might result in the over-design of the spacecraft with respect to the original mission profile and requirements. Nevertheless, in the field of space-science missions, there is much to be gained from developing the future capability for reuse, and most importantly, the tools by which reuse can be evaluated quickly and efficiently for the different usage cases. This paper will evaluate on the applicability of platform, subsystem and subsystem reuse, and demonstrate its potential implementation in a typical science mission (by ESA, Cosmic Vision Programme). It addresses the relative benefits, costs, schedule and risk of reusing existing product lines. Essential performance and design parameter are compared against the scalability, sensitivity and modification of the spacecraft design.