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IAF SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)
Future Space Transportation Systems Verification and In-Flight Experimentation (6)

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CALLISTO VS. STANDARD ELV : WHAT DOES MATTER WHEN SYSTEM IS AT STAKE

Abstract

The CALLISTO Vehicle is a flight demonstrator for future reusable launcher stages. The program involves three countries and their space organizations : CNES for France, JAXA for Japan and DLR for Germany. The flights will be conducted from the CSG, Europe's Spaceport for commercial launches in French Guiana. One challenge is to develop the skills of all three partners during the course of the project. This knowhow includes products and Vehicle design, ground segment set-up and post-flight operations for Vehicle recovery and reuse. This paper is devoted to primary differences in between CALLISTO and a standard mid or heavy-sized ELV focusing to system matters, especially: (i) size (CLT much smaller than a standard mid or heavy ELV class),(ii) "recover" features : mechanical engineering, aero-based flight control during descent (Aerosciences FCS/A), additional transient phases (especially unfolding and touchdown ALS), GNC relevant accuracy for landing target, (iii) "reuse" features : post-landing phase operations and Maintenance Repair Operations, and (iv) the so-called Payload of CALLISTO. Beside matters listed above, status of the program from System (design) standpoint will be addressed. Content of the paper will benefit from maturity of the Project with some products being "ready for flight" status and others being pretty matured.