

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

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CALLISTO: A PROTOTYPE PAVING THE WAY FOR REUSABLE LAUNCH VEHICLES IN EUROPE AND JAPAN

Abstract

Japan and Europe are getting ready for the maiden flight of their new workhorse launch vehicles: H-3 and Ariane 6. While both vehicles are following an expendable design, reusable concepts are successfully tested and operated in USA. This evolution has shown that reusability could be a solution for further improvement of competitiveness, versatility and sustainability of future launch system.

In order to understand the specificities of reusable launch vehicles in terms of design, optimization and operations, and mature the required key technologies, CNES, DLR and JAXA have decided to join their competences in the project CALLISTO (Cooperative Action Leading to Launcher Innovation in Stage Toss - back Operations). The project aims at developing, building and testing a prototype vehicle which shall, without a technological precursor, demonstrate the mastering of flights and operations representative to a reusable launch stage. Along all project phases, data and knowhow are being gained about design, manufacturing, operations and maintenance solutions, which are essential for the development of future operational vehicles.

This paper intends to give an overview about the current status of the project, which is now in Phase C. Recent development progresses will be highlighted and discussed in context of the upcoming steps towards the flight test campaign starting in 2024 at Europe's Spaceport CSG in Kourou. Besides the maturation of the vehicle design, also the transformation of the former Diamant launch pad, next to the Ariane 5 and Vega launch pads, to the CALLISTO ground segment will be described.