

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

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THE PRIDE PROGRAMME: AN APPLICATION DRIVEN APPROACH FOR THE DEFINITION OF
AN AFFORDABLE REUSABLE SPACE TRANSPORTATION SYSTEM

Abstract

The Programme for a Reusable In-orbit Demonstrator for Europe (PRIDE) is an ESA programme whose objective is to define and develop an affordable reusable European space transportation system to be launched by VEGA-C, able to perform in-orbit operations, experimentation and demonstration of technologies for application missions, de-orbit, return from orbit and precision land on ground for re-flights, addressing progressive technological challenges with limited risks and minimal financial efforts for Europe. The objective of the PRIDE Programme, as presented and subscribed during ESA Council at ministerial level held in Luxembourg on 2nd December 2014, is a direct prosecution of the IXV that demonstrated the European independent capability to return from space with its successful flight of February 2015. Therefore, PRIDE will build on the significant heritage developed with IXV, while considerably extending system capabilities and mission scenarios with respect to three main aspects: 1- in-orbit operation capabilities including but not limited to payload retrieval from ISS, microgravity experiments, IOD of technologies for free-flying applications as exploration, orbital infrastructure servicing, telecommunication; 2 – System Reusability in order to significantly reduce mission costs; 3 – Precise Ground Landing capability in order to drastically cuts recovery operation costs, payload retrieval time (fundamental for biological experiments). After the completion of Institutional activities between ESA and National Space Agencies in 2015, for the finalization of the high level requirements, and for the investigation of harmonization and cooperation opportunities, PRIDE is currently undergoing Phase A/B1 with the objective to have a Preliminary Requirement Review by September 2016 and a System Requirement Review by July 2017. The Industrial Consortium in charge of PRIDE implementation is led by a Co-Primership between the Italian Aerospace Research Center (CIRA) and Thales Alenia Space – Italia and involves a large number of industries from participating states: Italy, France, United Kingdom, Spain, Switzerland, Sweden, Romania, Portugal, and Ireland. Phase A activities are strongly focused on the identification of mission scenarios and potential payloads with the objective at maximizing the flexibility of the platform, the available cargo mass and volume, while minimizing the development cost. In particular for what concern this latter aspect, PRIDE Programme strongly relies on the exploitation of synergies with the on-going development of VEGA-C with the twofold objectives of: 1-reducing new technologies development cost; 2 – develop an integrated launch system with the VEGA fourth stage (AVUM+) used as service module for the orbital phase and operation of PRIDE platform.