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SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)
Launch Vehicles in Service or in Development (1)

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THE CHALLENGES OF THE ARIANE 6 LAUNCHER SYSTEM DESIGN

Abstract

Following the decision of the 2012 European Ministerial Conference to initiate the Ariane 6 programme, the European Space Agency implemented its phase A/B1 with Airbus Defence and Space as Prime Contractor for the Launcher System. This first phase shall get the information needed for a decision on the development of the Ariane 6 Launch System at the next MC, end of 2014. The overarching aim of the European new Launch System is to provide guaranteed access to space to Europe requiring no public sector funding for the support of its exploitation. The major challenge is then to offer a competitive launch service for the period 2025 to 2050, targeting a cost of less than 70 MEuro for a 6,5 tons payload in GTO and setting up a new paradigm in the European launch service. This paper first discusses the context, the objectives and the major requirements applying to the development of the Launcher System which aims at offering a high level of service to the end customer. It identifies the drivers and it presents the innovative approach applied by Airbus DS to tackle the exploitation cost from the very early phases. The A6 Launcher System architecture is then presented, driven by the recurring cost and the time-to-market objectives. It relies on a single launcher configuration with four identical Solid Rocket Motors of 145 tons class and with a Liquid Propulsion Module using the VINCI engine, developed as a common product with Ariane 5 ME, and an A6 specific architecture with separated tanks. Five major architecture Elements have been defined within the Launcher System and beside the propulsion systems. These allow Airbus DS to propose successive consolidation steps in the System requirements and definition and in the set-up of an efficient industrial organisation, following a strict design-to-cost process. The next milestone is the System Requirements Review, end of 2014. The System definition and industrial organisation shall then be consolidated until the PDR in 2015, triggering the development and the qualification. First flight of Ariane 6 is expected in 2021, followed by a transition phase of joint exploitation with Ariane 5 ME until full operational capability from 2025.