SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)
Future Space Transportation Systems (4)

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THE SUBORBITAL SPACEPLANE PROJECT OF EADS ASTRIUM AND OTHER APPLICATIONS

Abstract

EADS Astrium initiated the development of its suborbital vehicle "Astrium Spaceplane" early 2006 and addresses since then all the perspectives related to such vehicle and its applications : service standpoint (commercial, scientific, homeland security,e.g.), legal matters and engineering as well. At the inset of the program the set of possible concepts were addressed : • Rocket-like architecture ; • Aircraft-like architecture with possibly an aircraft carrier and a dedicated rocket propelled plane. The various options were traded according to a check-list of criteria including marketing standpoint, operations related costs, service added value, environmental footprint and safety as well. In the end the concept of a single spaceplane performing the core mission of sending 4 passengers to 100 kilometers of altitude in a cabin large enough for getting direct experience of weightlessness was down-selected : this is the Astrium Spaceplane project featuring a propulsion combining standard aeronautical propulsion and rocket propulsion technology (liquid oxygen and methane) as well. Then level-0 requirements were derived : • Passenger related requirements (passengers-centric) ; • Design related requirements (Design-to-Safety oriented) ; • Operations related requirements (Design-to-operations oriented). Beyond developing the vehicle itself, such programme is also the opportunity to gain a set of enabling technologies relevant for many different applications. Among them : a) Highly responsive Launch Systems to orbit ; b) Highly safe high speed passanger transport for point-to-point missions ; c) Long time duration mission vehicles for space exploration purposes. As such this paper will deal with on-going activities demonstrating how this program is the opportunity to make an enabling step towards more ambitious missions.