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SYMPOSIUM ON COMMERCIAL SPACEFLIGHT SAFETY ISSUES (D6)
Enabling safe commercial spaceflight: vehicles and spaceports (3)

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THE IXV GROUND SEGMENT AS AN INITIAL APPROACH TO THE SUPPORT OF COMMERCIAL SUBORBITAL MISSIONS

Abstract

This paper describes the concept, architecture and operations of the ESA Intermediate Experimental Vehicle (IXV) Ground Segment and outlines the main operations and lessons learned during the preparation and execution of the IXV Mission on February 11th 2015. Even though the IXV main purpose as technology demonstrator were the development and flight-test of the technologies and critical systems for Europe's future autonomous controlled reentry for return missions from low Earth orbit and the collection of the overall mission data, there is no doubt that the IXV successful mission is a pathfinder to future suborbital point-to-point commercial future generation transportation. In particular, the IXV mission has shown how that, besides the vehicle technologies, certain operational challenges have to be faced, such as building up a dedicated Ground Segment for a unique mission profile, dedicated groundstation network, real-time orbit determination, tracking and monitoring a space vehicle during the flight and, in particular, along the atmospheric reentry trajectory, managing a one-shot suborbital point-to-point flight, localizing the vehicle and supporting recovery operations. This paper also evaluates the outcome of the IXV mission, bringing to the spotlight those aspects that can be more significant feeds to the on-going suborbital point-to-point studies with special emphasis to their future commercial operations. In particular, specific aspects of the IXV mission will be outlined, that can be applied to commercial transportation and may address the Operations, Technology, Safety and Regulatory requirements related to suborbital point-to-point operations and be factored in within the various roadmaps that are currently be drafted in several working tables.