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

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THE SPACE RIDER PROGRAMME: END USER'S NEEDS AND PAYLOAD APPLICATIONS SURVEY AS DRIVER FOR MISSION AND SYSTEM DEFINITION

Abstract

Space Rider is an ESA Programme whose objective is to define and develop an affordable reusable European space transportation system to be launched by VEGA-C, to be used as a platform for several types of payload applications. Space Rider builds on the success of IXV, which has demonstrated the maturity of key technologies for atmospheric re-entry, pursuing the development of an operational vehicle strongly focused on applications. In the frame of the phase A/B1 project phase the Co-Primes, CIRA and TAS-I, together with the Agency have performed a thorough analysis of potential payloads and related applications with the twofold objectives of identifying the key requirements to answer the user's needs and to verify the robustness of the related business case. Therefore, the paper reports a survey and an analysis with respect to the following payloads classes: 1- Free-Flyer (Micro-gravity experimentation and Radiation exposure); 2- In-Orbit Demonstrations and Validation for several technologies (Exploration, Orbital infrastructures servicing, Earth observation, Earth science, Telecommunication, Reentry); 3- In-Orbit applications (Earth monitoring and Satellites inspection). In particular, the analysis has been carried out with investigation of the current microgravity platforms and payloads needs, IOD flight opportunities status and demand from different stakeholders both on scientific and industrial side. Key assets of the Space Rider platform with respect to payload have been defined and the results of the work has been flowed down into the identification of a set of requirements for the Space Rider mission and system focusing on main aspects as operations, mass, power, volume and interfaces.