

IAF SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)
Small Launchers: Concepts and Operations (7)

Author: Mr. Rasmus Bergström
Spain

Mr. Xavier Llairo
Spain

THE RRTB PROJECT: RELEVANCE, IMPACT, INNOVATION, & VIABILITY

Abstract

The Recovery and Return-To-Base (RRTB) European Reusable Micro-Launcher project, part of the European Commission's H2020 programme, has come to a close. The project aimed to develop and investigate an architectural design of a novel reusable micro launcher system to bring independent and cost-effective access-to-space for the European small satellite market. The project was split into three topics covering the development of reusable cryogenic tanks, first stage reentry, and landing systems for a micro-launcher first-stage. The project objectives, scope, and implementation were tuned to answer to the H2020 SPACE-17-TEC call work program, and furthermore the expressed needs of the European Commission's space strategy. The change in the industry since the project's conception in 2019 can however have affected both the relevance and applicability of the work, and the progress and results made during the work performed as part of the project has also somewhat changed the concepts which were envisioned to answer to the objectives, along with their evaluation. An analysis of the project's stated objectives, the effect on the objectives of the project's change in scope and concept, the applicability of the project to the former and current industry situation, as well as to Europe's space strategy, will be investigated. The impact of the projects outputs in relation to these objectives, and potential future applications of the results, will be discussed. The innovation and novelty of the project will be highlighted, compared with historic solutions and state-of-the-art, and how the project's innovation could be useful, applied, or spun-off in the future. Lastly an analysis of the economics involved will be presented, analyzing the factors which are driving to the economic implementation of a reusable system, and therefore are also driving for the system's design and operations. The viability of the competitive operation of such a system will be discussed, together with the factors that need to be taken into account. The recent developments in the industry and new conclusions which can be drawn as a result will be considered.