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

Author: Mr. Jose Mariano Lopez Urdiales
Zero2infinity, Spain

Mr. Aeneas Weckenmann
Germany

IO A UNIQUELY EUROPEAN SOLUTION TO THE SUPERHEAVY LAUNCH PROBLEM

Abstract

After decades of dominance in the commercial launch market with the Ariane 4 and 5, Europe finds itself struggling to keep pace with Falcon 9 as an operational program and the state-of-the-art upcoming launch vehicles such as Starship, Stoke Space's rocket, and Long March 9. The institutional response has been to emulate the successes of Falcon 9, leading to a narrow focus and the cancellation of potentially promising concepts, such as the Adeline program. We propose that instead of replicating the results achieved by others, Europe should recognize that SpaceX's success lies not in its choice of propellant or leg-folding mechanisms, but in its ability to approach problems from first principles. Europe has a centuries-old tradition of such first-principles thinking. By embracing this tradition, we can develop innovative and unique solutions that complement those presented by others around the world. Europe will not regain its leadership by copying, but by being innovative once again. The IO is a super heavy launcher concept developed in Europe as an evolution of some of the discoveries made in Zero 2 Infinity's Bloostar program. It leverages existing capabilities from companies within the continent, requiring significantly less public investment than is customary for heavy launchers. The IO launches from a platform in the sea and features two concentric stages. This innovative design enables wider diameter satellites to be launched while also offering lower cost reusability and an excellent environmental pedigree. For example, entire rotating modules of space stations could be launched without requiring assembly. The vehicle is powered by biomethane and liquid oxygen, further enhancing its eco-friendly credentials. The name IO, inspired by Jupiter's moon, symbolizes the launcher's ability to reach new heights and explore new frontiers even beyond Mars.