IAF SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)
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BEYOND HORIZONS: DEVELOPMENT OF AN UNMANNED ORBITER TO CATALYZE THE INDUSTRIALIZATION OF SPACE

Abstract

The boom of the current New Space ecosystem has led to an increasing demand for access to space for a variety of experiments, tests, and simulations necessitating microgravity environments. Despite advancements in optimization and cost reduction of the access to space, the predominant business models revolve around launching satellites with no provision for payload recovery. This limits the potential for various applications such as basic and applied research, technology demonstration, biomedical and pharmaceutical studies, remote sensing, in-orbit servicing, and material production.

In response to this gap in the market, Espace® is developing an unmanned Orbiter, drawing on modernized concepts previously conceived in Ukraine for spaceplane technologies. The envisioned Orbiter is designed to maneuver in space for a specified mission duration, facilitate payload deployment or exposure to space, safely re-enter Earth's atmosphere and soft-landing. Notably, the vehicle will boast reusability and rapid turnaround capabilities for subsequent launches.

This solution is tailored specifically for small payloads, offering high flexibility, regular availability, and competitive costs. Key design features include system reusability, the integration of green propulsion technologies, and scalability to meet evolving needs.

Our vision extends beyond mere access to space; it seeks to catalyze the industrialization of outer space, positioning it as an integral component of the planetary economy. This paradigm shift towards "Industrial Space" aims to unlock new economic opportunities and ensure the reliability and safety of space-based services and products.