

IAF HUMAN SPACEFLIGHT SYMPOSIUM (B3)
Advanced Systems, Technologies, and Innovations for Human Spaceflight (7)

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SPACESHIP FR'S PROGRESS AND CONTRIBUTIONS TO SPACE EXPLORATION AND HUMAN
SPACEFLIGHT

Abstract

To achieve our collective objectives for this new era of Space Exploration, multiple actors across the Space Sector have launched initiatives to support the advancement of scientific research and technology development. These advancements have allowed the space industry to thrive under new development environments, increasing the Technology Readiness Level (TRL) of innovative space technology concepts that will have a critical role in future space missions.

In 2019, CNES (French Space Agency) decided to support these efforts through "Spaceship FR", establishing a collaborative effort with ESA (European Space Agency) under the Exploration Preparation Research and Technology (ExPeRT) initiative, which is part of the European Exploration Envelope Programme (E3P). This action created a network of working groups, "Spaceships", that operate as agile innovation environments, efficiently studying new operational concepts and technologies with controlled and shared costs, connecting experts from space agencies, research entities, academia, and the private sector. Also, due to the wide range of multidisciplinary collaborators, Spaceship FR acts as a liaison between the space and non-space sector, enabling Earth applications for Space Technologies and vice-versa.

Today, the Spaceship FR team stands strong, continuously learning, and fastly increasing in relevance as an essential European asset for advancing space exploration technologies, alongside its counterparts in Germany (Spaceship EAC) and the UK (Spaceship ECSAT).

This paper aims to present the progress made by the Spaceship FR team, including how Spaceship FR contributes to Space Exploration and Human Spaceflight based on its three core objectives (Inspire, Federate and Support). Also, it would describe how the team collaborates with different space actors through RT studies and incubation initiatives, discussing the progress accomplished and future projects. Lastly, this work will describe the experience gained from multiple student projects and internships in Spaceship FR's Technical Areas: Habitat, Robotics, Life Support, Human Health Performance, Energy, In-Situ Resource Utilization, and Digital Technologies.