IAF BUSINESSES AND INNOVATION SYMPOSIUM (E6)
Interactive Presentations - IAF BUSINESS INNOVATION SYMPOSIUM (IP)

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FEASIBILITY FOR THE COMMERCIALIZATION OF CUBESAT DEVELOPMENT AND MISSIONS

Abstract

Standard solutions for CubeSat projects, with their pre-existing flight heritage and proven reliability, ultimately drive costs down in the long run for researchers and space missions. By leveraging standardized components, subsystems, and payloads, researchers and mission leads can significantly reduce development costs, procurement expenses, and mission risks associated with CubeSat projects while assuming a more supervisory role to ensure mission success and readiness. This provides an opportunity for private companies to operate in an underdeveloped market by streamlining the standard solutions for CubeSat projects, enabling researchers to benefit from economies of scale and bulk purchasing discounts offered by suppliers.This reduces the overall cost of CubeSat development and makes space-based research more affordable and accessible to a broader range of institutions and organizations. Moreover, the use of standard off-the-shelf (OTS) solutions for CubeSat projects minimizes the need for custom development and engineering work, which can be time-consuming, costly, and introduce additional risk to the mission. By selecting OTS solutions with preexisting flight heritage, researchers can avoid the expense of designing, prototyping, testing, and qualifying new components or subsystems for flight.Standard solutions for CubeSat projects also mitigate the risk of technical failures or anomalies during mission operations, which can lead to costly mission delays or failures. This allows researchers and mission leads to focus more on the global research-oriented objectives of the mission by accelerating the CubeSat development process, shortening project timelines, and reducing volatility in project costs, enabling researchers to achieve their scientific objectives more efficiently.The opening of the privatized solutions for CubeSat projects will also foster competition among suppliers, encouraging them to innovate and optimize their products to meet the evolving needs of the market while driving down prices through competition and improving value. Ultimately, the turn to the privatized market for standardized solutions in CubeSat design makes space-based research more accessible, affordable, and sustainable, unlocking new opportunities for scientific discovery and exploration in the final frontier.