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Access to Space for Small Satellite Missions (5)

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FOUR SPACEX RIDESHARE LAUNCH MISSIONS: FACILITATING ACCESS TO SPACE FOR FIVE
SATELLITES IN 1.5 YEARS - INSIGHTS FROM A SATELLITE OPERATOR'S PERSPECTIVE IN
THE FIRST TWO YEARS OF COMPANY OPERATIONS

Abstract

In recent years, the acceleration of new space nanosatellite missions has been remarkable, prompting companies to adopt faster action and agile processes for launch scheduling and execution. However, this surge in demand for rideshare missions to access space has made it increasingly challenging to secure launch slots on a day-to-day basis. It is crucial role of maintain pace with satellite preparations and launch missions amidst the dynamic shifts in the new space environment. Rapid adaptation to new launch systems, rocket interfaces, separation systems, and dispensers is essential, as is vigilance regarding changes among existing providers, vehicles, and opportunities arising from the expanding number of launches, launch operators, and rockets for satellite missions. Despite agile progress in designing, manufacturing, and testing satellites within short timeframes, the concurrent preparation and finalization of launch activities pose significant challenges, typically the agreements for this are completed almost a year before the launch date. Plan-S, a young company, successfully executed five CubeSat missions within its first two years, and launch missions of these satellites were completed within 1.5 years. The company adeptly navigated changes and new space trends, collaborating with launch service providers and adapting internal structures and models. Successfully launching its first satellite only eight months after the establishment of Plan-S in May 2022, despite having an engineering team with no prior experience in the space sector, was a notable achievement. Following this milestone, the company launched a test satellite in January 2023, and its third satellite (the first EO test satellite) just three months after the second mission, in May 2023. Recently, the company completed its final two satellites, both launched together in a single mission in early November 2023. Each mission has been completed within just a couple of months, aligning with the new agile practices in the space industry. Launching a satellite entails considerable risk, where minor oversights can lead to mission failure. It serves as a pivotal milestone for satellite operators, representing nearly 50This paper delves into lessons learned and challenges encountered in mission management, covering aspects such as agreements, licensing, environmental tests, technical interfaces, transportation logistics, integration, and the agile scheduling process, as well as fast adaptation to the new space launch dynamics, accomplished within a tight timeframe of 2-3 months per missions.