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IAF SPACE TRANSPORTATION SOLUTIONS AND INNOVATIONS SYMPOSIUM (D2)
Launch Services, Missions, Operations, and Facilities (2)

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AN EXPLORATORY STUDY ON THE POSSIBILITY OF THE SMALLSAT LAUNCH SERVICE IN S. KOREA

Abstract

A fully-fledged space industry is yet to come in S.Korea while quite a few reconnaissance and communication satellites have been developed and operated by state-owned companies and government-subsidized research institutes since the first technology demonstrator was placed into orbit in 1992. Across the globe, a growing number of startups pursuing new space business out of micro- or nano-satellites have been emerging at the prospect of low-cost access to space, as well as miniaturization of high-performance mission payloads, the use of standardized satellite designs, and mass-production assembly line for low-cost small satellites. Recently, the similar wave has been witnessed in Korea, as well. These small satellite companies need more flight opportunities now irrespective of piggyback-, rideshare- or dedicated- missions. A domestic launch service, however, is not available yet in Korea as we are lagging behind the rest of space Powers. In fact, KARI is about to complete the development of a medium-lift satellite launch vehicle with a mission objective to place 1.5 tons to the sun-synchronous orbit at an altitude of 700 km. For this, a newly developed 75-ton liquid rocket engine was tested on a suborbital vehicle in 2018. In order to capitalize on this unprecedented growth of the small satellite market and to serve the imminent needs of newly emerging satellite and component manufacturers for In-Orbit Demonstration (IOD) with their sensors, antennas, and transmitters, we can leverage this new rocket engine now to layout a business model for small satellites launch service. In this paper, we investigate the possibilities of the technologically competitive and cost-effective launch service through smallsat launch vehicles in Korea.