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BUSINESS INNOVATION SYMPOSIUM (E6)
New space individuals, projects, programs, or business units: innovation, entrepreneurship & investment at the microscopic level of analysis (1)

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MONITORING OF NATURAL DISASTER BASED ON SYNTHETIC APERTURE RADAR SATELLITE IN SOUTHEAST ASIA

Abstract

Southeast Asia is a region that is severely affected by a variety of natural disasters, such as typhoons, heavy rain, earthquakes, and volcanic eruptions. The Japanese synthetic aperture radar (SAR) satellites, DAICHI series, have high performances of mapping and precise regional coverage for disaster monitoring. Moreover, SAR satellites also have a large advantage in speed of data acquisition and observation. For example, their use is possible even in the night, cloudy weather, and even in volcanic dusts. DAICHI series have contributed to disaster monitoring in various disasters in Southeast Asia as well as in Tohoku Earthquake in 2011. However, because Japanese government always has had just a SAR satellite on a SSO, highly frequent and robust observation systems had not been constructed or provided.

SAR technologies have been realized only by large satellites so far. However, recently, several Japanese research institutes are conducting researches and developments of a new concept of SAR and a high-speed downlink system using single small satellites. This technology drastically decreases development costs of SAR satellites, increase frequency of observations using constellation of SAR satellites, and enables many developing countries to have SAR satellites. Moreover, this technology enables Southeast Asian countries to internationally construct a shared rapid disaster observation system.

On this paper, a possible business model from the viewpoints of Japanese manufacturer and governments that utilize a feasible SAR satellite system based on MicroXSAR is described. A cost-benefit analysis is conducted and presented from the perspective of the manufacturer. Besides, the price of

the whole observation systems is also calculated using a cost-estimation method of satellites and that is evaluated from the aspects of economic powers of Southeast Asian countries.