SPACE SYSTEMS SYMPOSIUM (D1)
System Engineering Tools, Processes and Training (2) (6)

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ESTABLISH THE ENVIRONMENT TO SUPPORT COST-EFFECTIVE AND RAPID DEVELOPMENT OF MICRO-SATELLITES

Abstract

Recently, the development of Micro-satellites weighing 100 kg or less has been paid great attentions. The Space Robotics Laboratory of Tohoku University has three 50kg Micro-satellite projects. The first satellite "SPRITE-SAT" has been successfully launched into Earth orbit, and also been operated. The flight model of the second satellite "RISING-2" has been assembled and its software development is now finalized, being ready for the launch planned in next year. The third satellite "RISESAT" project is during the EM (Engineering Model) development phase at the time of writing. The launch is planned in the second half of 2013. Because of their easy handling characteristics, Micro-satellites are expected to be tools for orbit demonstration of latest engineering technologies and science observations with latest high-performance instruments. To meet these expectations, enhancement of cost-effective and rapid development capability of Micro-satellites becomes essential. Space Robotics Laboratory aims to establish a cost-effective and rapid development environment for microsatellites through the RISESAT project. After the establishment of this environment, it can be applied for future microsatellite missions. We have established basic functional requirements of this environment and named it as MEVIμS: Model-based Environment for Verification and Integration of μ-Satellite. MEVIμS will be capable of supporting model-based SILS (Software in the Loop Simulation), HILS (Hardware in the Loop Simulation) with satellite's various hardware components and even operation. The paper will discuss detail of composition and development progress of MEVIμS in conjunction with ongoing RISESAT project.