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PROJECT MANAGEMENT AND IMPLEMENTATION OF HARDWARE AND SOFTWARE  
INTERFACES BETWEEN SUBSYSTEMS OF SWAYAM STUDENT SATELLITE INITIATIVE

**Abstract**

Student satellite missions involve interdisciplinary engineering teams engaging in long term research and implementation. Organization and management of resources and technical know-how is critical in the execution of the project. The COEP Satellite Initiative (CSAT) is a student satellite programme, driven by undergraduate students of College Of Engineering, Pune, India started in late 2008. Mission Swayam, a 1 U picosatellite is the first project under this initiative. It houses a payload of point to point messaging in the HAM frequency band and will experiment with Passive Magnetic Attitude Control System. Swayam has cleared the final launch tests and is awaiting a launch opportunity from the Indian Space Research Organization. The team is organized in groups of functional subsystems and a systems engineering group. The subsystems develop the functional aspects of the satellite such as electrical systems and the systems engineering group oversees the cohesive planning and integration of these subsystems. For reliability of systems, Quality Assurance and Control team scrutinizes workmanship and verifies hardware and software performance. The hierarchy is set in place for delineation of responsibilities and co-ordination of efforts. However a flat management structure is maintained for open communication

and collaboration of ideas and opinions. The project has developed a culture of strong student-faculty co-operation via timely guidance and reviews. It has spanned over 7 batches of undergraduate students. Thorough documentation and systematic processes have enabled transfer of knowledge and the project to be absorbed into the system as a student project devoid individual dependence. Resource management and Risk management are employed to account for uncertainties and unforeseen failures. This project being an extracurricular endeavour, scheduling of tasks and execution is done through a centralized and modular process to meet stringent deadlines. The chief objective of administration to ensure hassle free environment for technical operations is accomplished with the implemented project management structure resulting in high motivation and sustainable progress. This paper highlights the organization of the Swayam team which has transitioned 7 batches of undergraduate students and yet delivered a system which complies with the original founding objectives.