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EDUCATIONAL LESSONS LEARNED FROM THE FIRST-MOVE CUBESAT MISSION

Abstract

The First-MOVE satellite is a single unit CubSat developed at the Institute of Astronautics at the Technische Universität München. Development was started in the summer of 2006 with an initial launch date set for early 2010. Since then the launch date has been postponed several times and is currently set for late 2013. Like most CubeSat projects, First-MOVE is heavily focused on student involvement on all project levels, with over 70 students participating in total. During the long course of the project, several key lessons were learned by the faculty supervisors regarding the management of large student projects. These lessons learned are described in this paper. They include planning the project around student's schedules rather than in a traditional, linear fashion, the careful selection and distribution of team members to subsystem teams and the deviation from traditional systems engineering process flows in order to retain student motivation. This deviation seems necessary since most students joining a satellite project are eager to create something tangible, be it actual hardware or software code, rather than going through the rather theoretical, albeit necessary, process of setting requirements and deriving system functions and specifications. Further lessons learned include the importance of large milestone reviews and kickoff events as short term goals and as a means to recruit new team members. Along these lines a one week summer school performed in 2011 is described as a means to achieve both of these goals in a short time period. Another more basic lesson learned concerns the student's motivation to join the project in the first place. A difference was observed between students who joined out of interest or fun and those who joined for the prospect of receiving a form of academic credit for their contribution. This matter is discussed with all advantages and disadvantages together with the above mentioned lessons. The paper includes an outlook to a future project at the Institute, MOVE 2, and how the described lessons learned are applied here.