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ADDRESSING COMPLEXITIES AND OVERCOMING CHALLENGES FOR NEW CUBESAT MISSIONS

Abstract

Opportunities for students and young professionals to design, build, and launch small satellites have never been as numerous as they are today. With schools, private companies, and government organizations around the world taking part, novel applications of the CubeSat standard are continually being identified and implemented. Using cutting-edge technology, small satellite missions have demonstrated significant contributions to the understanding of topics ranging from astronomical phenomena to Earth observation. While small satellite missions have decreased the costs and timelines necessary for access to space, their complexity remains considerable. For student organizations and young "NewSpace" companies, the challenge of establishing their own comprehensive mission design techniques is immense.

Taking a CubeSat from design specifications to orbit, this paper highlights the challenges that commonly plague first-iteration models and the successful, agile approaches used by various student organizations to reach their mission targets. This demonstration includes comment on key lessons learned on topics such as effective team communication, motivation, mission objective definition, and responsive management personnel.