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OPEN SOURCE STUDENT SATELLITES: BENEFITS AND IMPLEMENTATION

Abstract

Co-operation and collaboration are fast becoming the key words in the world of space technology especially in these times of financial austerity. It has been shown time and again how satellites can play a vital role in the focused and fast development of a nation. The real-time input of the resources at hand and the ability to plan using this data has proven to be a major asset in the case of developing nations. In view of these merits it becomes even more imperative for developing nations to undertake the development of satellites. The prohibitive cost of building large satellites merits the case for small satellites. However, lack of finances is just one of the problems that plague developing nations. Developing nations face an acute shortage of adequate research and test facilities in which to design and develop such projects. In addition, there is a lack of technical know how and a proportional shortage of skilled labour. A combination of these causes proves detrimental to development. Thus, a need is felt for possible ideas to mitigate these problems. This paper, working on the experience and insights gained from the ongoing student satellite project CCOMSAT (CoEP Communication Satellite) in Pune, India tries to put forth a possible solution in the form of Open Source Student-Driven Satellites. Aiming at enhancing education, providing insight into space projects and systems development, the approach of open source satellites also promotes values of co-operation, collaboration and sharing. In this context, we will try to analyse how developing nations can benefit from the resulting technical know how of the students and how these projects can lead to the improvement of the research facilities in these countries. In addition to this, based on observations during the CCOMSAT project, we shall also try to understand the role of local academia and industry, and the positive changes that such projects can bring in them, which, in the context of developing nations is very important. We then try to look into possible implementations of this idea with the end goal of students collaborating to create a low cost, generic, modular framework which can serve as a platform for small satellite applications. Finally, the advantages and benefits of these projects is explored from the viewpoint of other nations.