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IAF SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)
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CUBESATS, MARTIAN HOUSES AND FAILED COLLABORATIONS: SEVEN YEARS OF CREATING A SPACE CENTRE AT ÉCOLE POLYTECHNIQUE

Abstract

Space is a formidable education tool to train tomorrow's engineers. In France, several universities and engineering schools carry space-related activities on campus, with various ambitions. Among them, École polytechnique in Paris - a French generalist *grande école* - has been structuring its space activities around a student space centre, triggered by the selection of a team of engineering students as a QB50 member team in 2011, out of the scope of their classes. How can a non-space university, without space-dedicated classes, maintain long-term student space projects such as a nanosatellite, with a limited student workforce and with a light supervision? How can it manage partnerships and keep the crucial student enthousiasm and leadership in phase with a long term strategy ? We provide here a feedback of seven years, based on concret examples of successes and failures, of our journey from a student association to a larger student-led organism proposing and following partnerships and projects, with a CubeSat in space and teams working with different space agencies. Some of our lessons learnt are that, in a non-space university, it is crucial that projects keep a real bottom-up dynamism: a project cannot be imposed on the students, and transition from one year to the next needs to be carried out by the students as much as possible. A nanosatellite project will need an increase in technical direction through the project, but managers need to let go of some control not to kill the student initiative, and we show how it can be done. We also know now that students can be helped with a purely objective-driven management, but greatly beneficiate from a context where they can interact with peers. To that help, our centre greatly benefits from established programs such as ESA Academy, the French rocket event C'Space, the CNES nanosatellite program, but also more confidential contests such as the Mars City Design competition. There is a middle ground between a student association and the aerospace departement of any space university: adding only one or two full time equivalent engineers can enable large ambitious projects that still mostly rely on student workforce and initiative. Our strategy led us to several industrial fundings for our centre and the creation in 2019 of two space classes for graduate students.