

SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)
NEW WORLDS - INNOVATIVE SPACE EDUCATION AND OUTREACH (4)

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NEXT GENERATION SPACE ENGINEERS EDUCATION

Abstract

Purpose:

For almost 10 years development and construction of student cubesats has played an important part in the engineering Master Programme within electrical engineering and information technology at Aalborg University, Denmark, This paper focuses on benefits as well as pitfalls in the process of letting students develop and operate their own satellite.

Methods:

At Aalborg University the main objective of encouraging students to construct and build satellites is to make even better engineers. Development, manufacturing, testing, launching and finally launching a satellite is very challenging. Carrying out this as an integral and major part of education students by having up to 50 students on different specializations as well as semesters working in up to 15 groups on different parts of a satellite at the same time can be even more challenging. To be sure to reach the goal the student satellites are a 100% The students are in charge and takes the necessary decisions, organize themselves in project groups as well as system engineering groups. This is not enforced on the students by staff, but due to the circumstances they quickly realize, that they need to establish such a kind of organization – like a professional engineering company. By not forcing the students to do this, but instead letting them figure it out by them selves has several proven highly beneficiary.

Results:

By letting the students experience in vivo all the possible pitfalls of developing highly complex interconnected systems, they not only learn about how to build up solid requirement specification and interface control documents to other systems, they also learn, that building such complex system is a dynamics negotiation process, where everybody needs to contribute to the solution in order for the mission to be a success. This, we believe, is the gem in doing student satellites, that the students learn how to cooperate within large groups – just as they will need to do in real life engineering.

Conclusion:

By letting the students free to develop a satellite, then, through proper guidance, then they will actually build a satellite, and often a better one than initially imagined. Furthermore they acquire qualifications and skills they cant get in any other way at the university.