

SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)
In Orbit - Postgraduate Space Education (4)

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DTUSAT THE IDEAL CDIO PROJECT

Abstract

The CDIO concept was conceived by MIT, KTH, Linköping and Chalmers University to meet the changing demands of industries employing engineers. In real life engineering a theoretical model or a design is only half the picture, actual implementation and operation of a given design or technical solution is likewise challenging. The conceiving, designing, implementation and operation phases in the CDIO education aims to bring the student through a scenario simulating real life engineering.

A satellite mission constitutes an ideal case for a CDIO project. Designing, building, launching and operating a satellite is not possible for any single individual nor for any single institute of expertise. Not only is inter-disciplinary collaboration mandatory, but a tight control of system interfaces all the way from the conceptual phase to the operational phase is paramount. This calls for substantial documentation throughout the project that could drain valuable man-power resources from a student satellite project yielding the actual satellite construction impossible. From the very onset of the DTUsat-2 project we acknowledged this dilemma and chose a strategy in which we simplified and standardized both documentation and knowledge management.

The engineering education brings the student skills within mathematics, physics, specific engineering disciplines and the ability to dissolve and analyze any technical challenge. This however is only half the picture of a real life engineering job. The other half; inter-disciplinary collaboration and all the devils buried in the details of realizing any theoretical project is barely touched upon. The CDIO approach aims to simulate this and thereby prepare the students to meet the challenges of an engineering job. Whereas the standard student project at DTU involves one to three students and ends with a report or more rarely a prototype the DTUsat project involved +90 students over 9 years, achieving more than 1100 ECTS and ended with an orbiting satellite.

In this paper I will go through the challenges faced and our solutions to the creation of the DTUsat-2 project.