SPACE SYSTEMS SYMPOSIUM (D1)
Lessons Learned in Space Systems (5)

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## CONFIGURATION MANAGEMENT IN NANOSATELLITES PROJECTS: EVALUATION OF DELFI-C3 AND CONSEQUENT ADAPTATION FOR DELFI-N3XT.

### Abstract

This paper provides an evaluation of the configuration management that was applied at the Delfi-C3 nanosatellite project. Furthermore it presents the improved configuration management approach for its successor, Delfi-n3Xt, more specifically for the design of its electrical power subsystem (EPS). These student-projects are conducted at the Delft University of Technology as a corporation between the Aerospace Engineering Faculty, the Faculty of Electrical Engineering, Mathematics and Computer Science and several industrial partners.

The development of complex systems by students requires a dedicated systems engineering approach. These educational projects often have specific challenges: workforce discontinuity, inexperienced people, schedule-constraints, lack of consistent documentation, etcetera. Also, the acceptance of an approach by the rest of the team is often based on the practicality and usefulness of the chosen approach Taking all these factors into account and correspondingly tailoring the systems engineering approach in a pragmatic way before starting the development of the satellite avoids inconveniences and inefficiencies in later stages of the project.

As the Delfi-C3 was launched in April 2008 and the development of it successor is ongoing, an evaluation of the configuration management is appropriate. This is done by comparing the initial intentions with the final implementation and their relation to the success of the mission. More specifically, the interface control, configuration control, requirements management and the documentation management are discussed. The need for simplification and increased consistency on all the aspects of the configuration management is the main conclusion. Basically, deciding on a configuration-strategy and controlling its consistency as early as possible creates a framework on which the rest of the systems engineering tasks can be build. Consequently, it is shown how the lessons learned are incorporated in the configuration management strategy of the Delfi-n3Xt project. The EPS is used as an example to demonstrate the effectiveness of the approach. It is an excellent test-case, as its distributed nature increases the need for consistent configuration control.