

SPACE SYSTEMS SYMPOSIUM (D1)  
System Engineering Tools, Processes & Training (I) (3)

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THE PROCESS CONTROL IN THE CONCURRENT ENGINEERING ENVIRONMENT FOR  
UNIVERSITY CLASS SMALL SATELLITE MISSION DESIGN

**Abstract**

Concurrent engineering has been the most influential initiative for new production in industry in recent two decades. With assistance of the high end computing tools engineers from multi-disciplinary could work simultaneously to design, verify and release a prototype rapidly for the response to customer's requirements. For space development, NASA (National Aeronautics and Space Administration of United States) and ESA (The European Space Agency) have built concurrent design facility to be beneficial from it.

The overall philosophy of concurrent engineering and its aims have been well documented, however the precise details of the form of concurrent engineering has not been well defined for the appropriate set of circumstance. This is particular true for the University Class Small Satellite Mission Design. At York, we are facing many challenges everyday in concurrent environment, particularly in space system development at the University, namely, (1) how to track and to measure the activities in the concurrent design environment? (2) how to design and build a flexible process in real time? (3) how to organize all the materials in the concurrent environment to meet the dynamical changing requirement?

Interactive web application is emerging as promising technology to organize all kinds of files. With the assistance of database and multimedia server, web application is a good choice to track and measure all the activities in the concurrent engineering environment. The concurrent engineering environment would be beneficial very much from mature web technologies such as search engine etc. By providing the suitable interface engineers could customize the web based process in real time to meet the market requirement.

In this paper, we present the development of the web based framework to meet process control requirements in concurrent design environment for the space development in Universities. We designed and provided the interface for engineers to customize the web based process easily and quickly. Other key elements provided by the project are the organization of the overall engineering files and the definition of the relationship of all engineering data. The concurrent design environment is constructed the main framework with use of JavaScript/Ajax, PHP, MYSQL and Apache.