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THE DIGITAL CONCURRENT ENGINEERING PLATFORM DCEP

Abstract

In the field of aerospace applications, a wide spread of highly specialized domains exists, with data and expertise being distributed among different institutes and companies due to product complexity and diversity. Providing easy and secure access to shared and individual resources during product development is a significant challenge. Additionally, the necessity of exchanging design documents and specifications as well as data in different formats contributes to development costs and time. Digital platforms can provide a solution for these issues by allowing different institutions and experts to securely and remotely share their tools and knowledge and by providing a common data base during development.

The Institute of Structures and Design of the German Aerospace Center (DLR) is currently developing the Digital Concurrent Engineering Platform (DCEP) in the project IRAS (Integrated Research platform for Affordable Satellites) to enable cooperative, distributed development of satellites. The DCEP provides a web-based software platform for model-based engineering in the form of a parametrical representation of the design tree. Concepts and technologies to allow faithful collaboration between potentially competing companies are developed and adopted. This includes indirect access to connected software tools and databases as well as secure traceability of modifications and contribution authorship. The current focus of the DCEP platform are the early design phases, with support for automated design tools and algorithms developed within IRAS. Long-term goal of DCEP development is the creation of a platform that manages digital data and collaborative development through all phases of a satellite life cycle, from early design to production and operation up to decommissioning. For this, the DCEP platform design is based on a distributed, modular concept, which enables future extensions and additionally provides opportunities for the DCEP to be used for a wide range of other potential applications outside of satellite development.

This paper will provide an overview of the platform's concepts, methods and technologies and present the current state of development as well as planned future steps.