

IAF SPACE SYSTEMS SYMPOSIUM (D1)  
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ANALYSIS OF CURRENT DESIGN METHODOLOGIES AND PROCESSES, AND POTENTIAL  
TRANSFER AND APPLICATIONS IN CONCURRENT ENGINEERING

**Abstract**

The department of System Analysis Space Segment of DLR's Institute of Space Systems in Bremen has successfully demonstrated the benefit of Concurrent Engineering (CE) in more than 60 studies since the implementation of the Concurrent Engineering Facility (CEF) in 2008.

Hitherto, the core competences that have been developed by DLR in relation to CE have focused on early project phase studies (0/A), analysing mission feasibility and producing high-level system designs. At present, the CE team is working on further developing the CE process to support activities in later phases, and specifically on preliminary design activities (Phase B).

Supporting the continued effort to make the work process at the CEF ever more efficient, and as part of the work being carried out to research potential processes to support Phase B activities, other design methodologies have been studied and analysed. The aim of said analysis was drawing parallels between successful processes, and deriving lessons learnt and tools from which our CE process could benefit.

This paper will provide an overview of the main design processes used in industry, as well as new paradigms and hypothesis –including trends and innovative methodologies such as Lean Design, Six Sigma, or Rapid Prototyping–, and an examination of the tools and work elements that can potentially be incorporated to the Concurrent Engineering process as currently defined, or in later phases.