

INTRODUCING A NEW FRAMEWORK FOR EFFECTIVE DATA, RESOURCES AND CAE WORKFLOW PROCESS MANAGEMENT

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ABSTRACT

The demand for using and accessing simulation models has increased in number and complexity and simulation has taken a leading role over the last decades, increasing dramatically the size and the amount of simulation data. As a consequence, the growing complexity of simulation and analysis for new products has created new challenges in improving CAE productivity and effectiveness. In many cases, the information required to downstream CAE processes is unavailable, untraceable, outdated, or susceptible to human errors and the information of past best practices is not usually captured as applicable knowledge for future use.

Moreover, the plethora and heterogeneity of tools and systems combined with the need for effective communication between users and departments, which are focused on different areas of the CAE cycle, are the main factors giving rise to issues such as misunderstandings and wrong interpretations of data and conveyed information. Especially in the preliminary stages of projects, interoperability and integration of engineering systems becomes essential in order to set up an efficient partnership and ensure the time and cost reduction at all stages throughout the process. The CAE cycle is a collaborative process involving not only data but engineers, departments, suppliers, and other non-human resources, rendering substantial the use of a system with a holistic approach.

This work describes how these challenges can be addressed by a consistent framework which integrates CAE data and CAE activities with the available resources into a well-defined process workflow environment.

By illustrating a real-case industry scenario concerning the model build of a subsystem (from the extraction of respective CAD data from the PDM system to the generation and archival of the validated solver include file), the importance of orchestrating all CAE workflow actors in a common Simulation Process, Data and Resources Management (SPDRM) environment is highlighted.

The system provides a user friendly environment which is tailored to the needs of CAE simulation engineers and allows them to manage simulation input data

and assemble sub-system models to full simulation models for any number of predefined load cases and simulation analyses. With a rich client concept, new approaches are realized with respect to the organization and the structure of data management. The deployment of the automotive simulation scenario has proven that the SPDRM approach has a strong, positive effect on the development of a methodological referential and on the implementation of a collaborative platform for multi-users and multi-engineering tasks concerning a CAE workflow process.

SUGGESTED THEMES

Simulation Process, Data and Resources Management, Simulation Workflow Management, SPDRM, CAE Workflow Improvement, Process Monitoring and Profiling, SPDRM Software Solution for CAE Industry