Managing Engineering Knowledge

Web-based solution is aimed at hosting and integrating simulation data, processes and tools for more effective Simulation Driven Product Development.

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Managing simulation processes and data is a specialized subset of the larger product lifecycle management (PLM) vision. But it is often overlooked or poorly addressed, since managing simulation processes and data is more demanding than the file/document-centric approach of PLM and related product data management (PDM) systems. Simulation data is both richer and typically many orders of magnitude larger than other types of product data: It can be many gigabytes in size and can require sophisticated data reduction techniques. In addition, to extract the true value and knowledge represented by simulation data, a user must capture both the content and the context associated with the product being simulated.

The complexity of the task notwithstanding, the need to manage simulation data and processes is now more important than ever. Robust data management systems have the potential to provide significant benefits to companies by enabling users to access and reuse historical design information and expertise for speeding creation of new designs, providing ways to capture and leverage existing engineering knowledge, and addressing the problems of loss of engineering expertise and protection of intellectual property.

Process management in the context of product engineering essentially means optimizing the design workflow through more effective use of computer-aided engineering (CAE) simulation tools. This can result in a wide range of improvements, including enterprise standards for work procedures, consolidation and automation of best practices, and increased quality and reduction in errors.

Data or knowledge management applies an archiving system to allow for searches based on relevant and descriptive tags that help identify files and their contents. Thus, what is involved is knowledge management — capturing both data content and context — rather than just file or data management. This information can later be mined for insight into the how and why of a design or simulation. A managed simulation environment can address this issue by automating much of the uploading and data entry steps.

The ANSYS Engineering Knowledge Manager (EKM), scheduled for initial release this year, is aimed at meeting these challenges with capabilities for backup and archival, traceability and audit trail, process automation, collaboration, and capture of engineering expertise and IP protection. It is a Web-based design and simulation framework aimed at hosting all simulation data, processes and tools (whether in-house or commercial) while maintaining a tight connection between them. It provides three services: access management to address deployment and collaboration, process management to address integration and process automation, and knowledge management to address the issues associated with simulation data. Adding ANSYS EKM to the capabilities of the ANSYS, Inc. family of simulation products empowers organizations to create enterprise systems and achieve the goal of Simulation Driven Product Development. ■

Web browser

Firewall

Application server

Compute cluster

Executes simulations and extracts data using a batch system as RSM, LSF, PBS

Stores meta data

ANSYS EKM

Content management repository

Relational database

Desktop application

File server

Repository of all files and applications