Contribution ID: **50** Type: **Invited oral**

Application of Digital Engineering and MBSE Methodology to De-Risk Component Design

Thursday 11 December 2025 10:55 (25 minutes)

The presentation will show how to use a Digital Engineering Environment (DEE) to demonstrate the value of Digital Engineering (DE) across the full lifecycle of a system with a traceable digital thread. We will show the use of digital artifacts across Model-Based Systems Engineering (MBSE), Multidisciplinary Analysis and Optimization (MDAO), including the use of Digital Twins for applications like Condition Based Maintenance (CBM).

The presentation will focus on the design of a heat exchanger that includes: (1) The implementation of an acceptable design utilizing MBSE within the Ansys DEE, (2) Design space exploration using MDAO, (3) the use of digital twins within the Ansys DEE for operation optimization and condition-based maintenance, and (4) the implementation of a Simulation Process and Data Management (SPDM) system to enable simulation data and models to be preserved and managed in a structured, traceable, and reusable manner. The SPDM system also allows teams to work effectively together using the available collaboration tools even when the team is not geographically located together.

Country or International Organisation

United States of America

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