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STANDARDIZED SIMULATION WORKFLOWS IN THE AUTOMOTIVE INDUSTRY

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Today, products of a certain complexity must meet a wide range of functional requirements. This is reflected in the current virtual development process. The simulations of the different engineering disciplines are carried out in parallel and in certain cases also sequentially. In this case, the output of the previous simulation is often the input for the subsequent simulation. An example for this is forming simulation, which leads to internal stresses and changes in sheet thicknesses. This material progression has a significant impact on the results of NVH or strength simulations.

Standardized formats are preferred for exchanging simulation data. The established VMAP format can be used for the storage and transfer of simulation results. This format is supported by various solvers and preprocessors. SMILE (Unified Simulation Modeling Language), which describes the geometric and physical properties of the simulation object independently of the solver and the simulation discipline, is recommended for exchanging simulation models. Numerical know-how is incorporated into the solver dependent simulation input file during the translation process. Therefore, machine-readable modeling guidelines are provided by simulation experts and used in the workflow.

In this presentation the concept of the Unified Simulation Modeling Language (simulation model and modeling guidelines) on different examples in the NVH and crash simulation disciplines is presented. Moreover, three different ways on how to combine SMILE and VMAP in a workflow for crash and NVH simulation in the automotive industry is demonstrated.