Optimization of front row automotive seating system without performance degradation, with mass savings

About the Client

Client is one of major global Tier 1 supplier to automakers.

The Challenge

To achieve optimized and mass efficient design of the first row seating system, which accounts for 40% of the vehicle, and to perform analysis using crash, strength, and model analysis load cases.

The Solution

DEP MeshWorks was used to parameterize the seat system model. MeshWorks was coupled to optimizer like ISight and other solvers to evaluate and optimize structural performance and accomplish mass savings.

The DEP Edge

DEP MeshWorks was used to create parametric FE model of the first row seating system. The parameters included gage / thickness, material and shape parameters for the seat back structure components. Gage, shape and feature parameters were considered for cushion/ adapter components as well. MeshWorks interface with solvers like LS DYNA, NASTRAN and SIMULIA was useful for performance evaluation of parametric FE model. The interface of MeshWorks with ISight was added advantage to generate parametric models and also to optimize the seating system.

The Result

Through the MeshWorks driven process DEP was able to optimize front row seating system without performance degradation considering FMVSS 201, FMVSS 202a, Modal analysis and High Speed Rear Impact with mass savings.
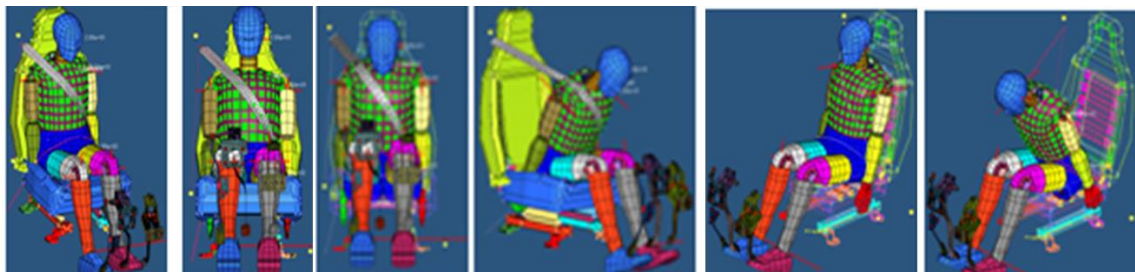
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