CAE Morphing

DEP MeshWorks | Application Sheet

Morphing enables design modifications directly on existing models by referencing comparable vehicle sections, eliminating the need for CAD redevelopment.

Control block morphing& freeform morphing → Field-based morphing → 1D Mapping → Section morphing and feature morphing

Work Flow - Driven by MeshWorks

Challenges in Changing Sedan Design

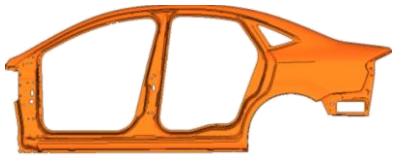
Designing and updating existing or new vehicle models is a complex, time-intensive task that traditionally requires building new CAD models and progressing through a complete development cycle from initial design to validation, resulting in extended lead times and higher costs. The challenge is further compounded by the need to accommodate structural and feature differences across vehicle types, making efficient design updates difficult without the use of advanced tools.

The Solution

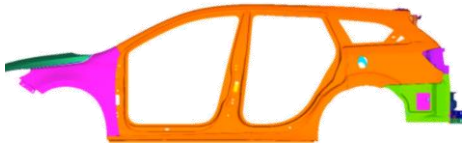
DEP MeshWorks offers advanced morphing technology that enables design modifications without requiring direct CAD interaction. For instance, the rear portion of a sedan can be modified using the rear section of a similar category vehicle. Morphing allows seamless integration between different vehicle models while preserving key features, eliminating the need to create a new CAD design from scratch. This dramatically reduces development time and costs, making the process more efficient and cost-effective.

Value

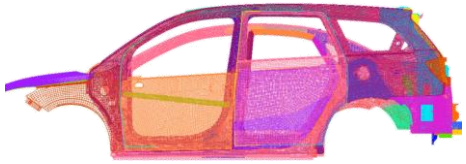
- DEP Morpher enables you to morph legacy CAE and CAD models into new design data.
- It allows you to "cut and stitch" from different topologies into a new vehicle architecture.
- It supports parameterization of both structural and CFD models with a unified modeling and morphing strategy for MDO.
- Users can achieve any new shape by treating parts or assemblies as if they were clay.
- No intensive planning or thinking is required—even for highly complex, full-system-level morphing.
- Offers significant time reduction compared to traditional morphing techniques.
- Provides extensive control over features and sections during the morphing process.
- In MeshWorks, morphing can be performed on both FE and CAD models.



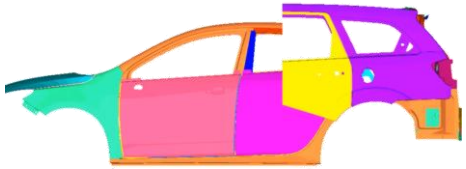
Sedan vehicle



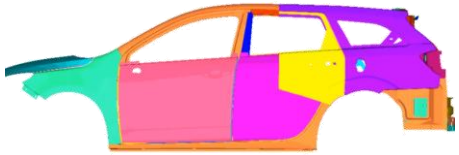
Crossover vehicle



Vehicles difference



Rare Portion Change



Morphed Sedan Model