

Altair® HyperWorks®

2022.2

About Representations

The CAD representation is typically the original source of information of what a physical part will look like. It forms the basis of the Common representation, which in turn is the basis of all subsequent discipline specific mesh representations. A part can contain multiple representations.

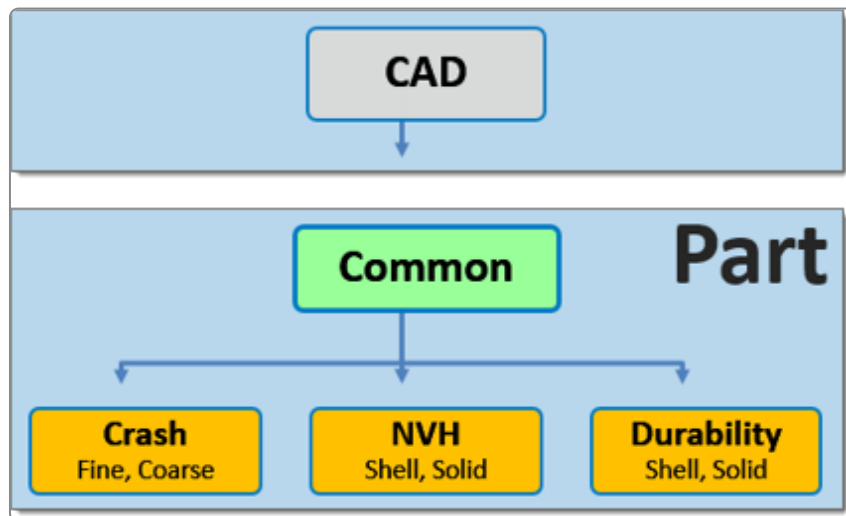


Figure 1. Hierarchical Relationship of Representations

The Common representation component typically contains geometry, though it can also consist of FE mesh.

A folder based Representation repository stores all CAE data that is required during the model build and assembly process. CAE data stored in the Representation repository includes the geometric and FE representation of the parts that comprise the subsystem specific model hierarchy.

You can import a BOM via a neutral file format such as PLMXML or manually create a part structure using the Part Browser context menu.

Common Representation

The Common representation is derived from the CAD representation and forms the basis of all subsequent discipline specific mesh representations.

For sheet metal parts, the Common representation consists of midsurfaced geometry or FE. The CAD is sent to the BatchMesher for midsurface extraction; upon completion it is saved into the repository and you can elect to immediately import the representation into the session.

HyperMesh entities are generated from the PDM metadata, if available, in the post-run procedure of the BatchMesh operation. The PDM PID is assigned to the component and property, the PDM MID and PDM material is assigned to the material and the PDM Thickness is assigned to the Thickness attribute of the property. If the PDM Thickness is blank, the CAD Thickness calculated during the midsurface operation is automatically assigned to the Thickness attribute of the property.

For parts such as castings and tailor-welded blanks, you can save CAD representations as Common models.

Alternatively, you can send solid parts to the BatchMesher. If **thin-solid detection** is enabled in the Common representation parameter file, then solids will be detected and saved as the Common representation without processing. By default, the midsurface algorithm skin is used. CAD representation does not need to be loaded into the session in order to generate the Common representation since it is sent directly to the BatchMesher for processing.

When you select a discipline specific mesh representation from the **Change Representation** dialog, Create tab, the Common representation residing in the repository is automatically sent to the BatchMesher for processing. If the Common representation does not exist it will be automatically generated.

Discipline Specific Mesh Representations

Common representations form the basis of all discipline specific representations. When you select a discipline specific mesh representation from the **Create Representation** dialog, the Common representation residing in the repository is automatically sent to the BatchMesher for processing. The Common representation does not need to be loaded in the session to generate discipline specific mesh representations.

Figure 2. PDM Column Data in Part Browser

Entities		PDM Material	PDM MID	PDM PID	PDM Thickness
Model					
Frame_Assembly_F01					
Center_Rail_F02					
	Center_Outer_F04_desc	Steel	1000	202	3
	Center_Inner_F03	Steel	1000	201	3
Left_Rail_F05					
	Left_Inner_F06	Steel	1000	301	2.5
	Left_Outer_F07	Steel	1000	302	2.5
Right_Rail_F08					
	Right_Inner_F09	Steel	1000	401	2.5
	Right_Outer_F10	Steel	1000	402	2.5