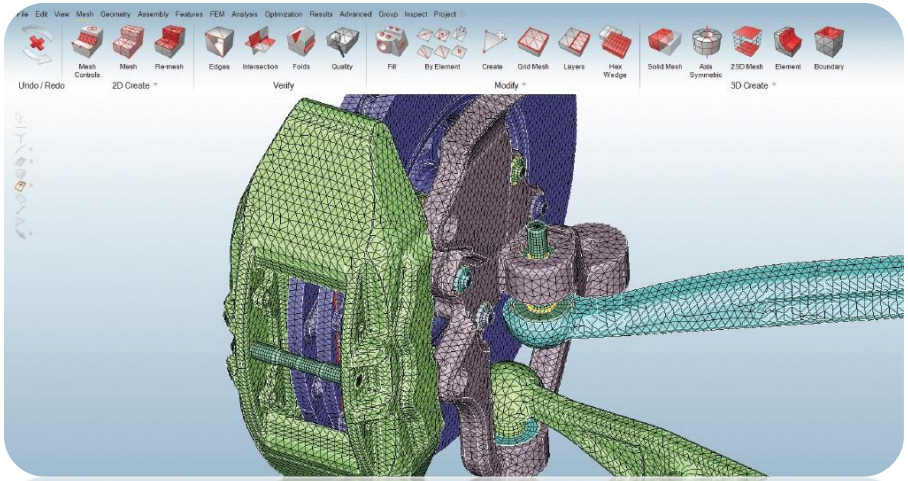

Altair SimLab 2019.3 Features

Altair

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SYSTEM

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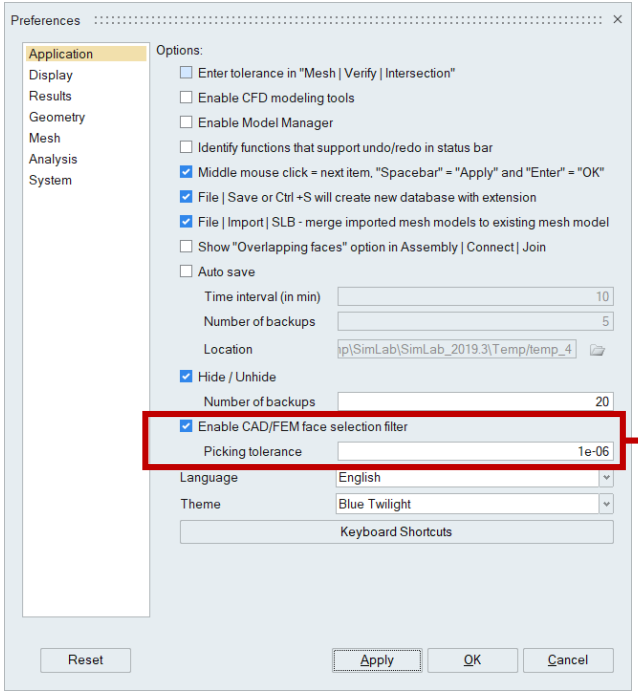
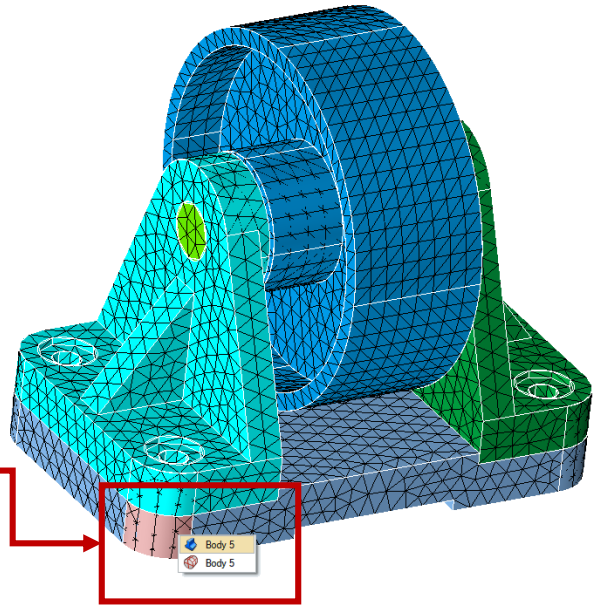
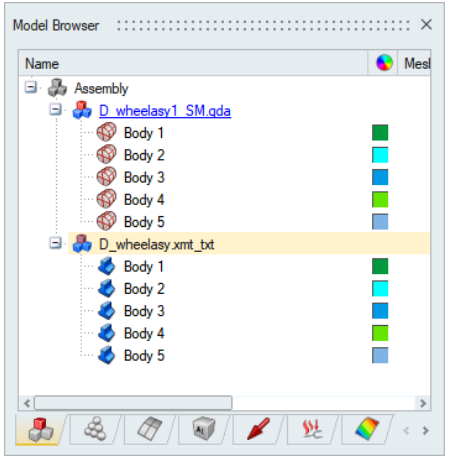
Enable CAD/FEM face selection filter

File > Preferences > Application

- Added “**Enable CAD/FEM face selection filter**” option. When the CAD body is overlapped with mesh body, it will pop up a micro dialog and ask the user to set the priority for the face selection.







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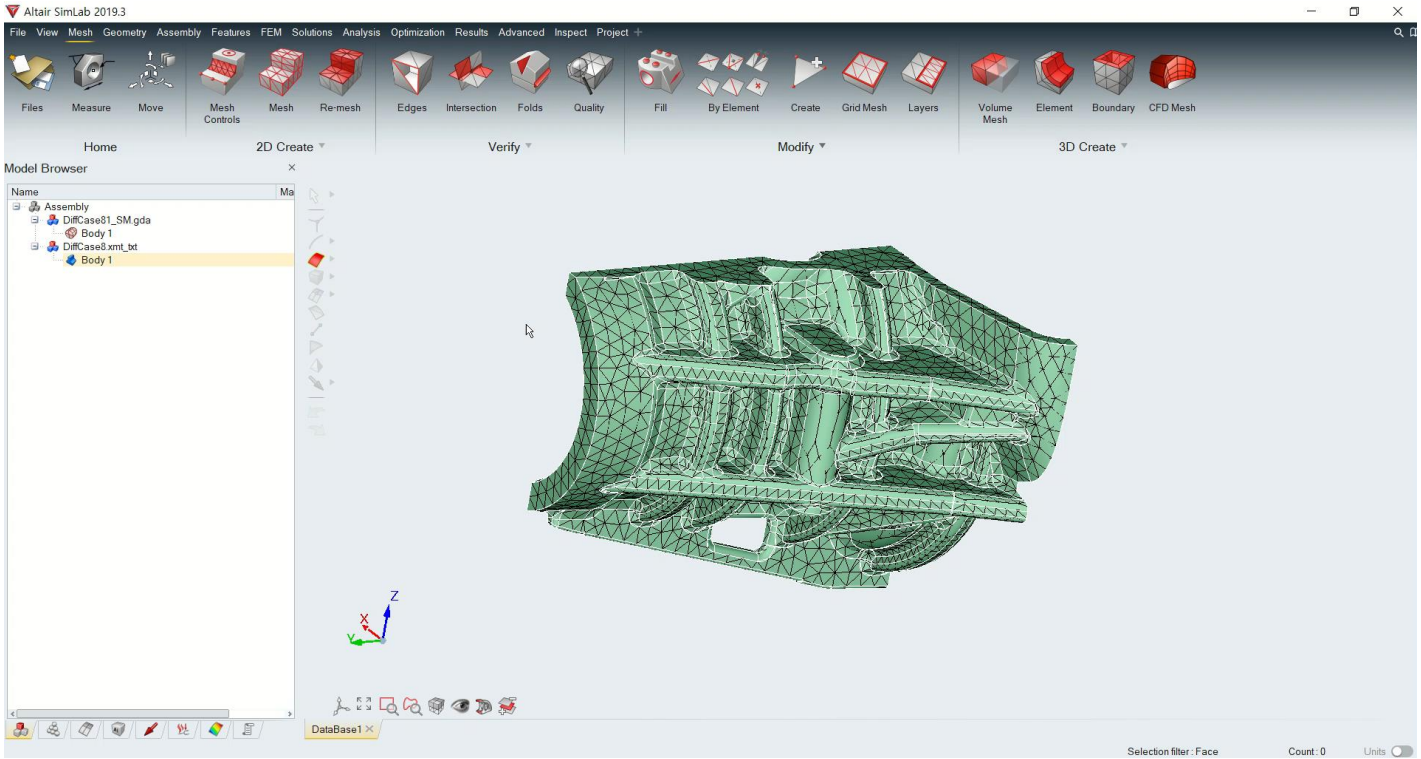
Enable CAD/FEM face selection filter - **Movie**



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USER INTERFACE

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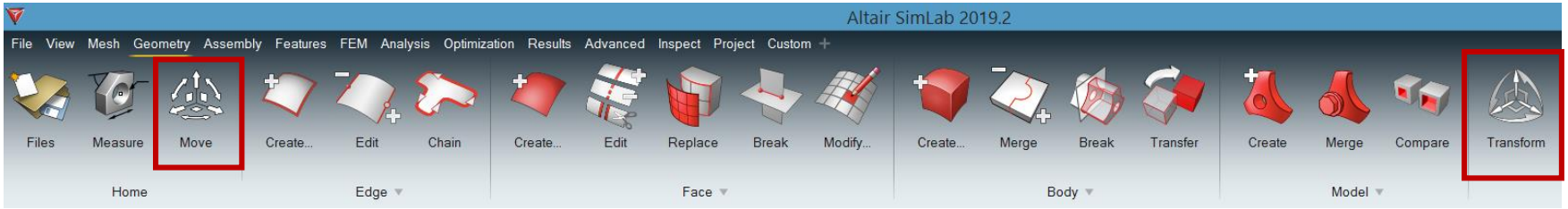
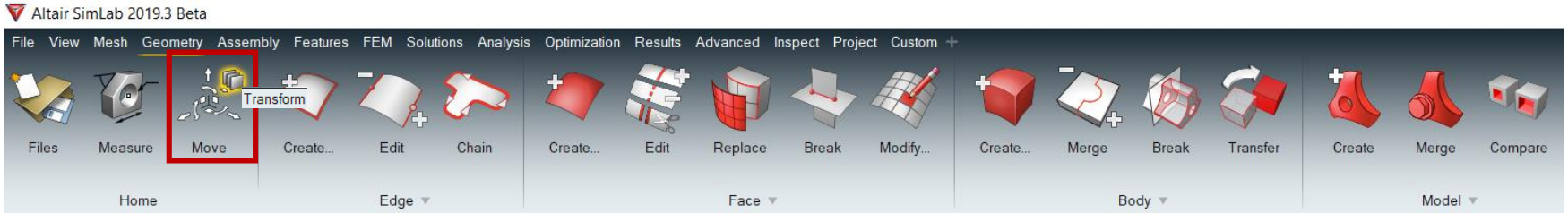
Move Tool

- Combined move and transform tool.



SimLab 2019.2



SimLab 2019.3

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Move Face

Home > Move

- Support added to translate the face using move tool.
- Supported for mesh and Parasolid bodies imported using “Save Geometry in database”.

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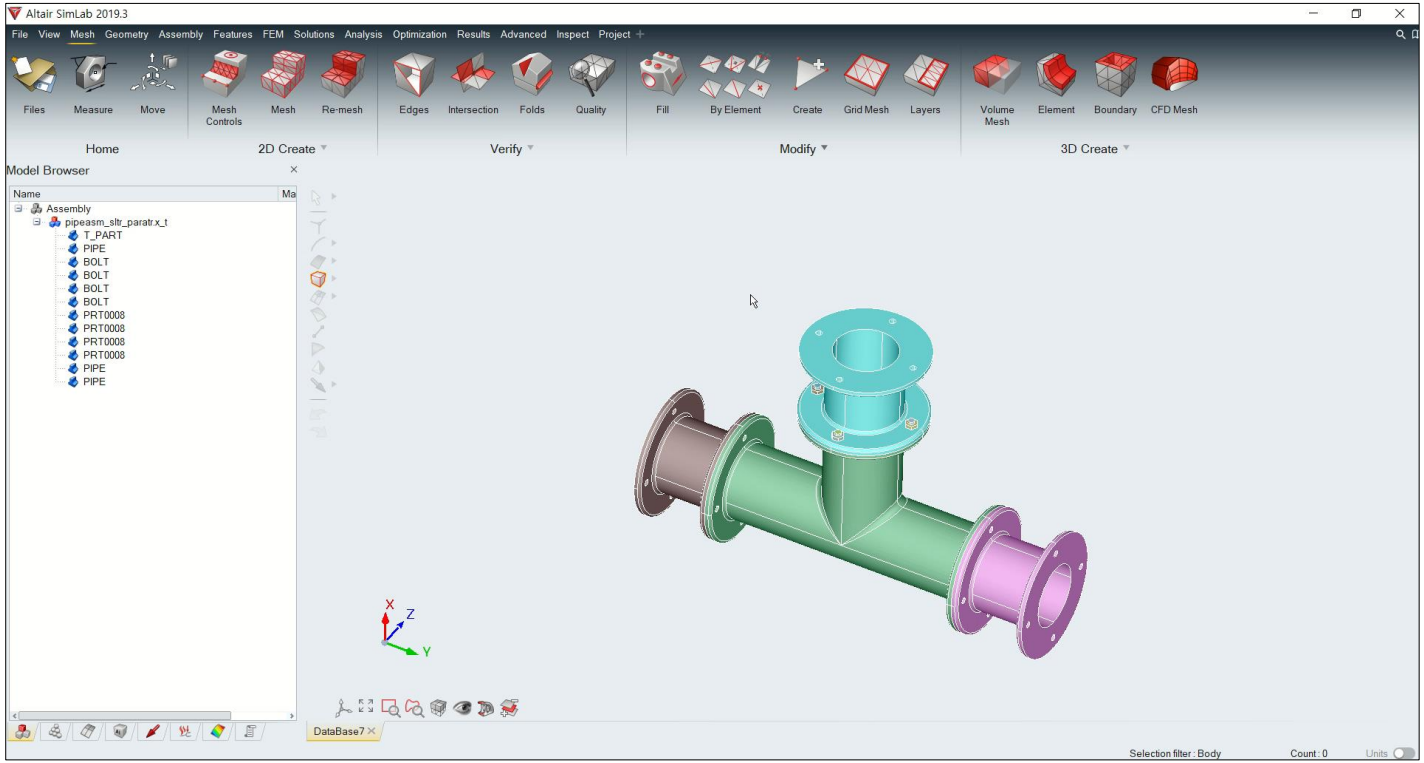
Move Face - Movie



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User Interface

Bottom Toolbar > Cutting Plane

- Rotation performance is improved in cutting plane mode for solid bodies.

Model size (Node count)	SimLab 2019.2 (Cutting plane ON)	SimLab 2019.3 (Cutting plane ON)	Performance improvement
43 Million	10 FPS	50 FPS	80%
6 Million	15 FPS	60 FPS	75%
2 Million	35 FPS	60 FPS	42%
Note : FPS (Frames per second)			

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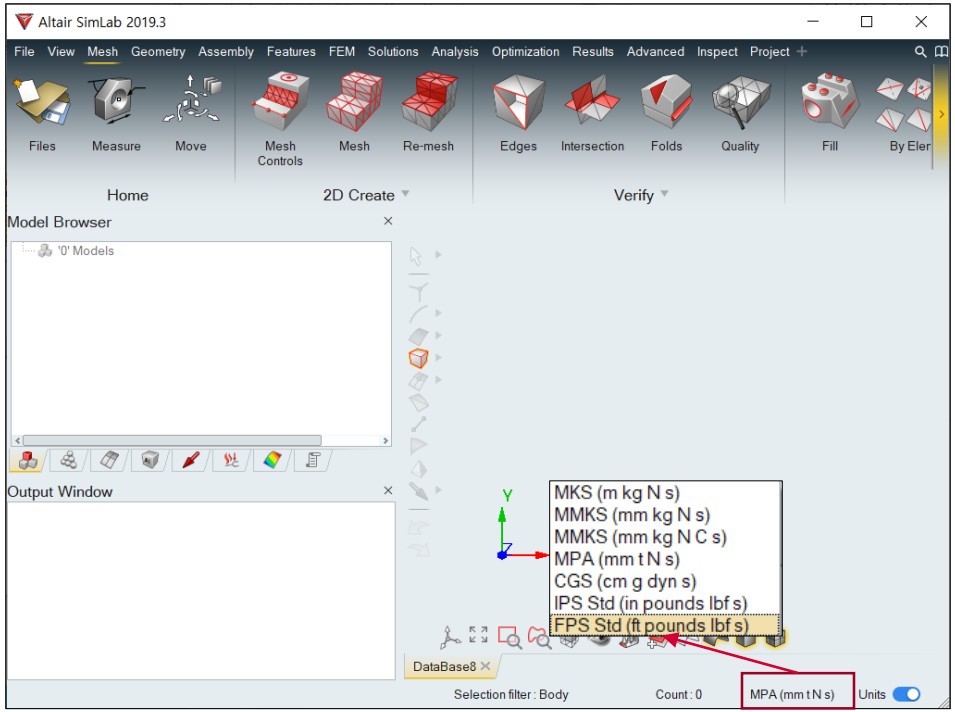
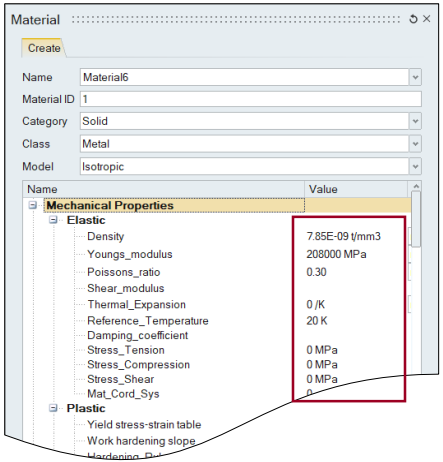
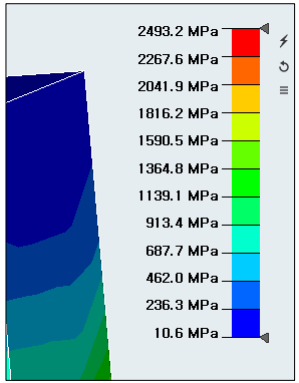
UNIT SYSTEM







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IMPORT

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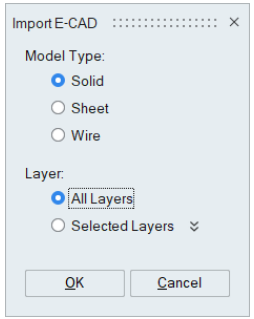
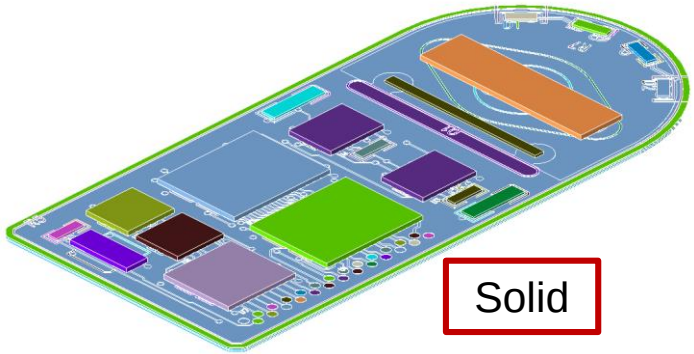
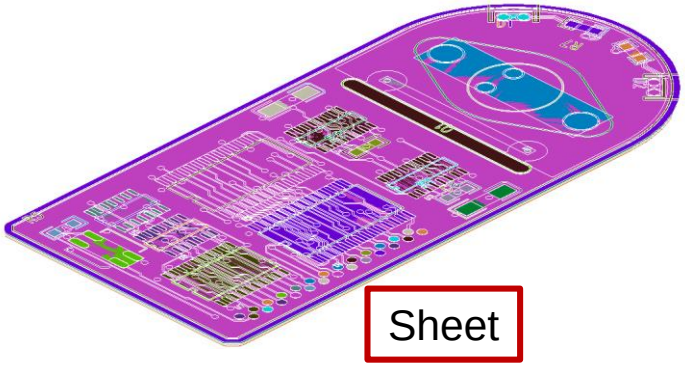
ECAD

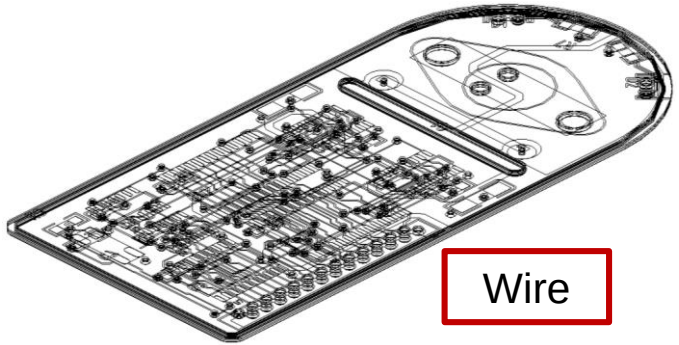
File > Import > CAD

- Support added to import ECAD (ODB++) files.









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GEOMETRY

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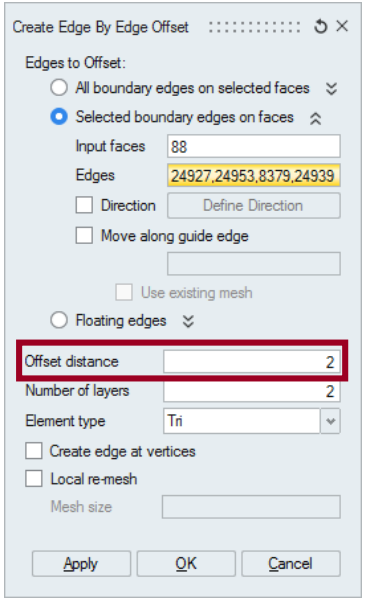
Edge Offset

Geometry > Edge > Create

- Improvements done in Edge offset tool to maintain the offset distance consistent in arcs/circles on planar faces.

SimLab 2019.2



SimLab 2019.3

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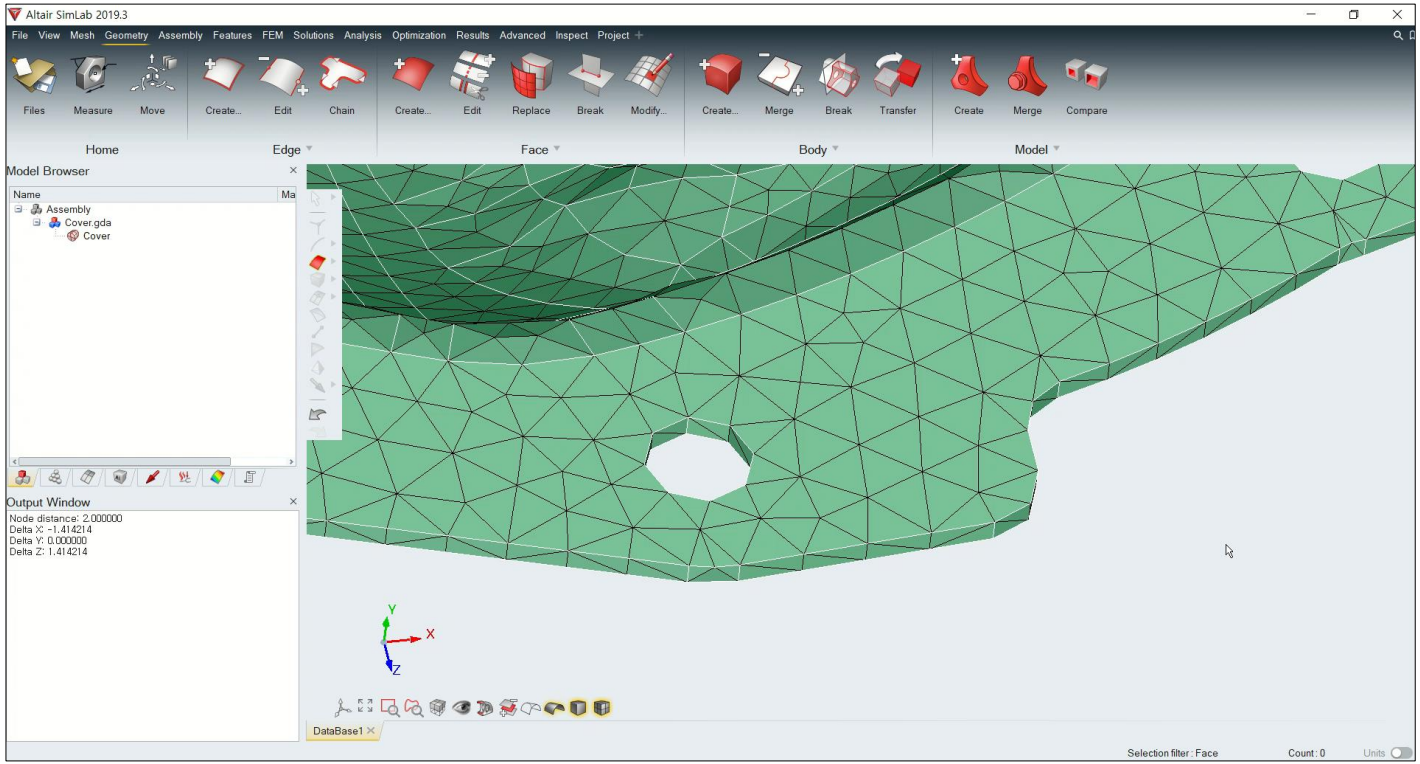
Edge Offset - Movie



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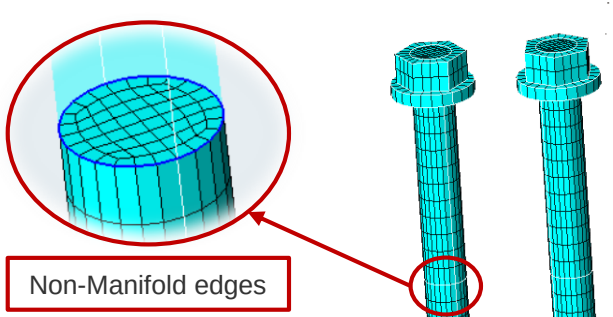
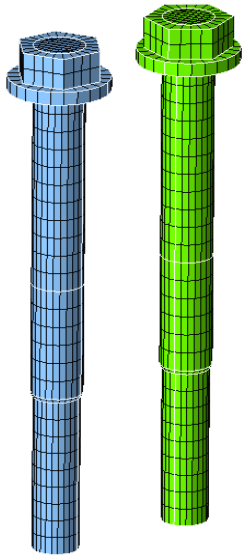
Disconnect

Geometry > Body > Drop Down

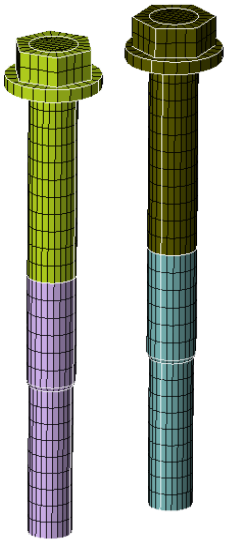
- Added support to disconnect bodies containing solid elements.



Input Body



Break at non-manifold edges OFF



Break at non-manifold edges ON

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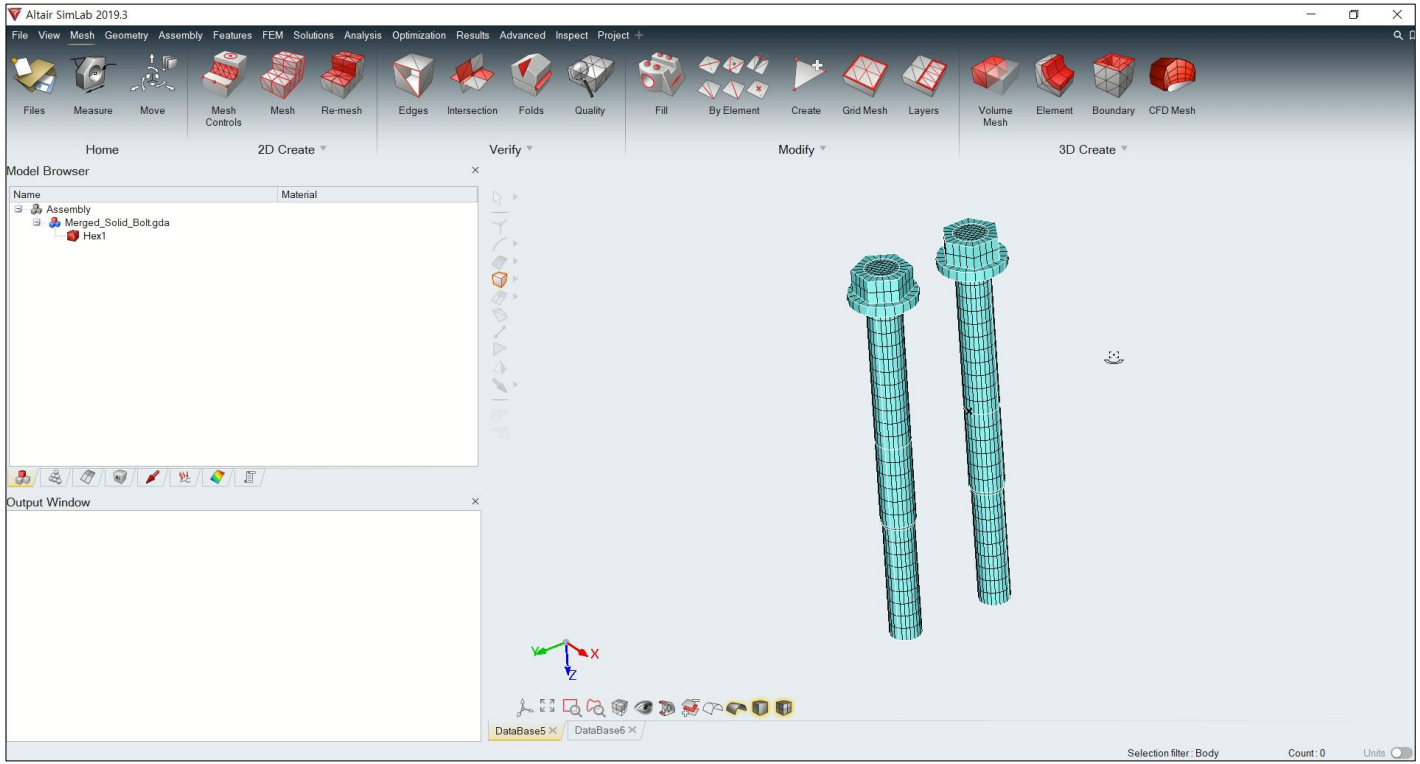
Disconnect - Moive



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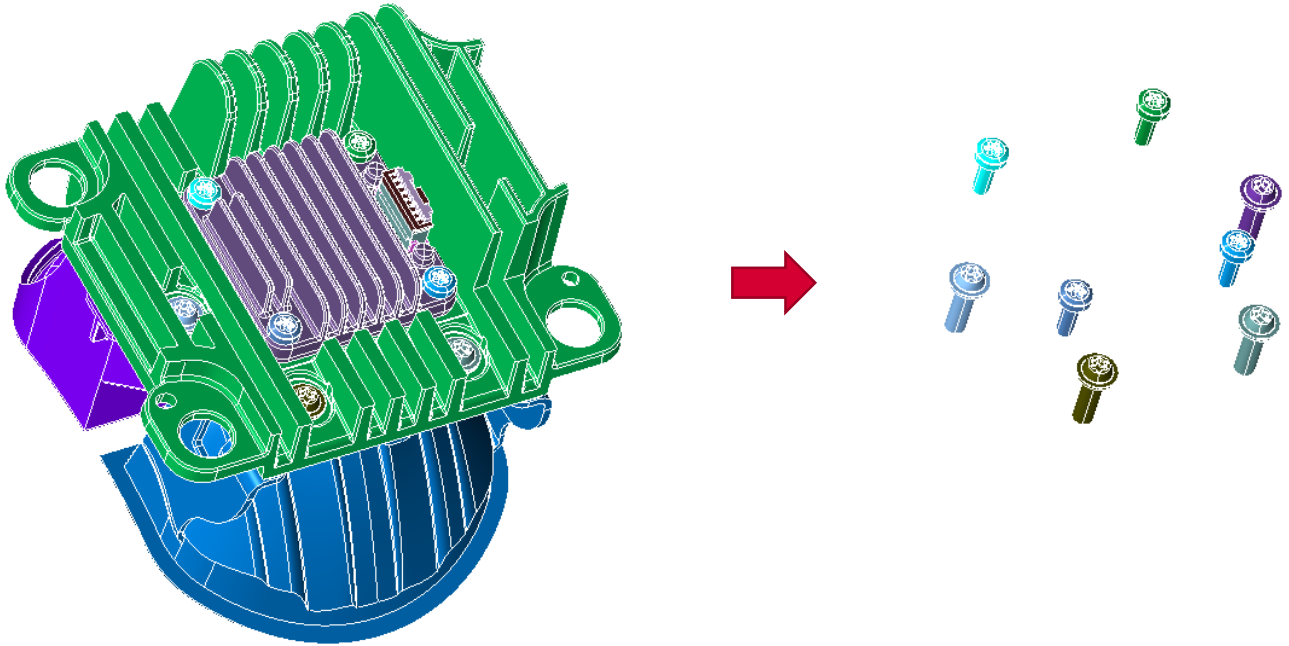
Identify Screw / Bolt

Geometry > Body > Drop Down

- Support added to identify & select screws and bolts.



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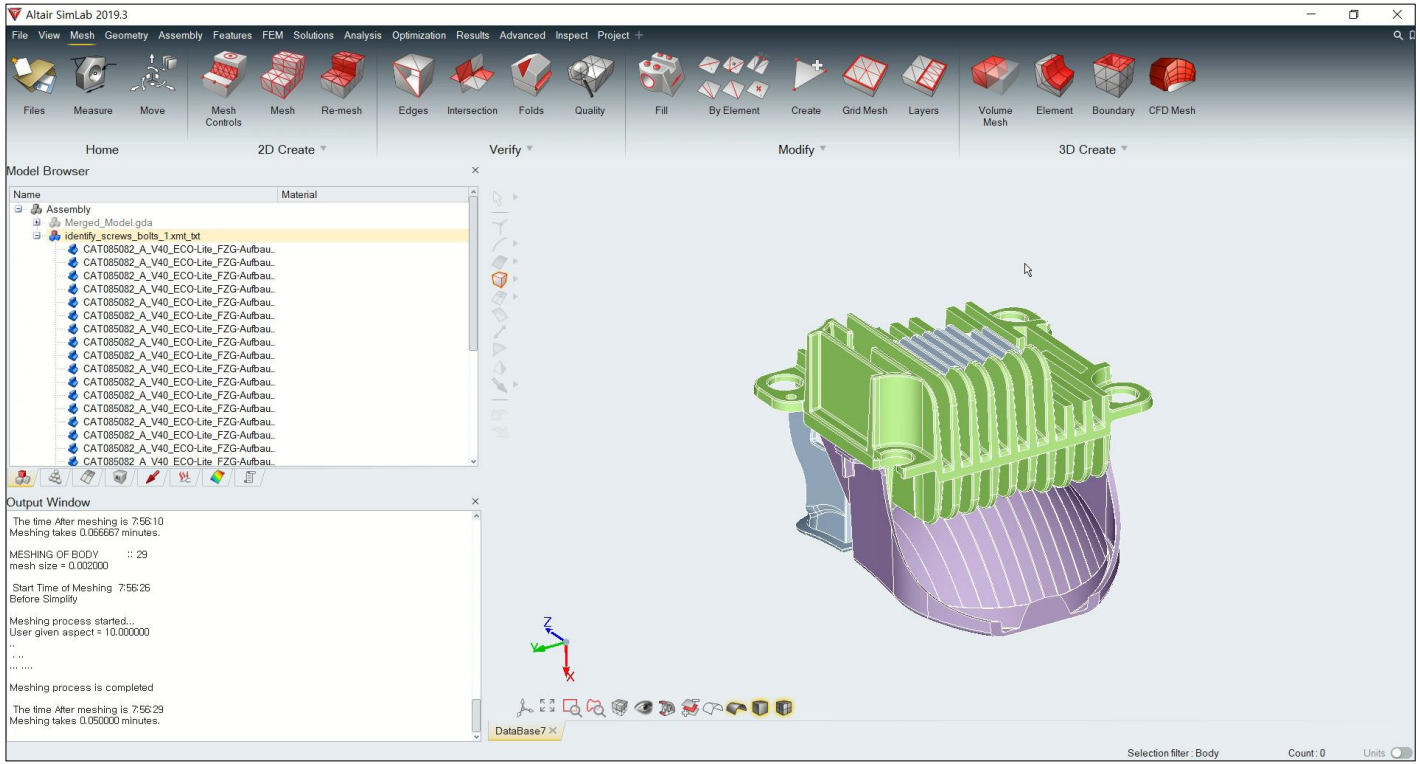
Identify Screw / Bolt - Movie



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MESH

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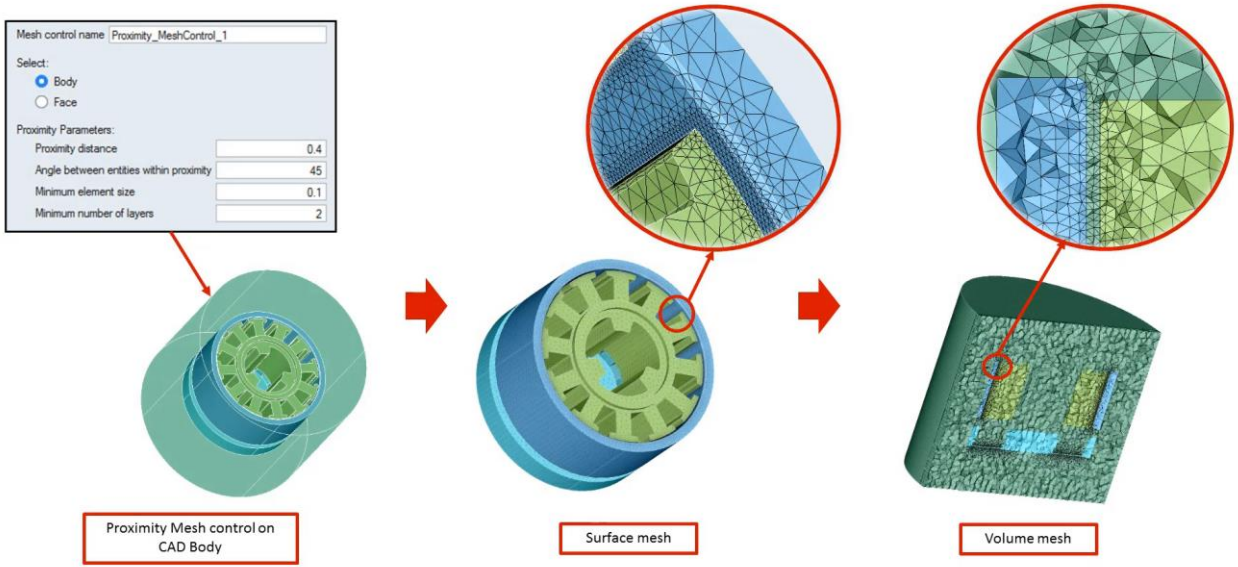
Proximity Mesh Control

Mesh > 2D Create > Mesh Controls

Sample model

- Added a new mesh control for proximity meshing.
- This will be useful in CFD, Electronics applications etc.



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Surface Mesh : Creo

Mesh > 2D Create

- Meshing performance is improved for large Creo assemblies.

Body Count	Meshing Time		Performance improvement
	SimLab 2019.2 (Mins)	SimLab 2019.3 (Mins)	
60	15	5	65%

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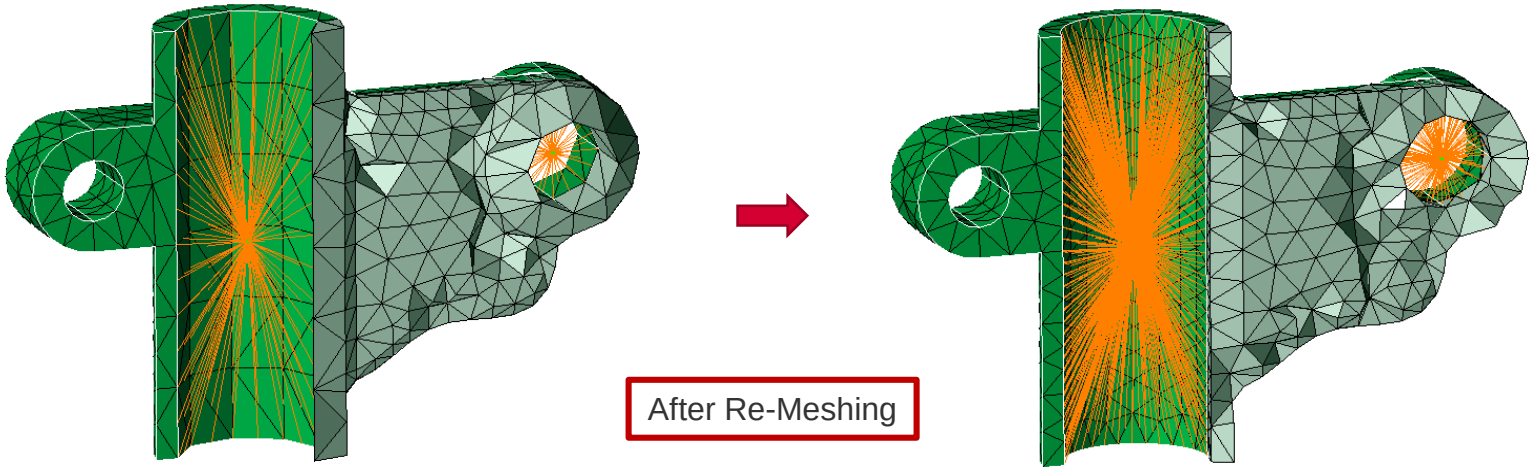
Local Re-Mesh

Mesh > 2D Create

- Enhanced the tool to retain the rigids connected to the faces of solid body after re-meshing.



Note: The Rigid the should be connected to entire face.

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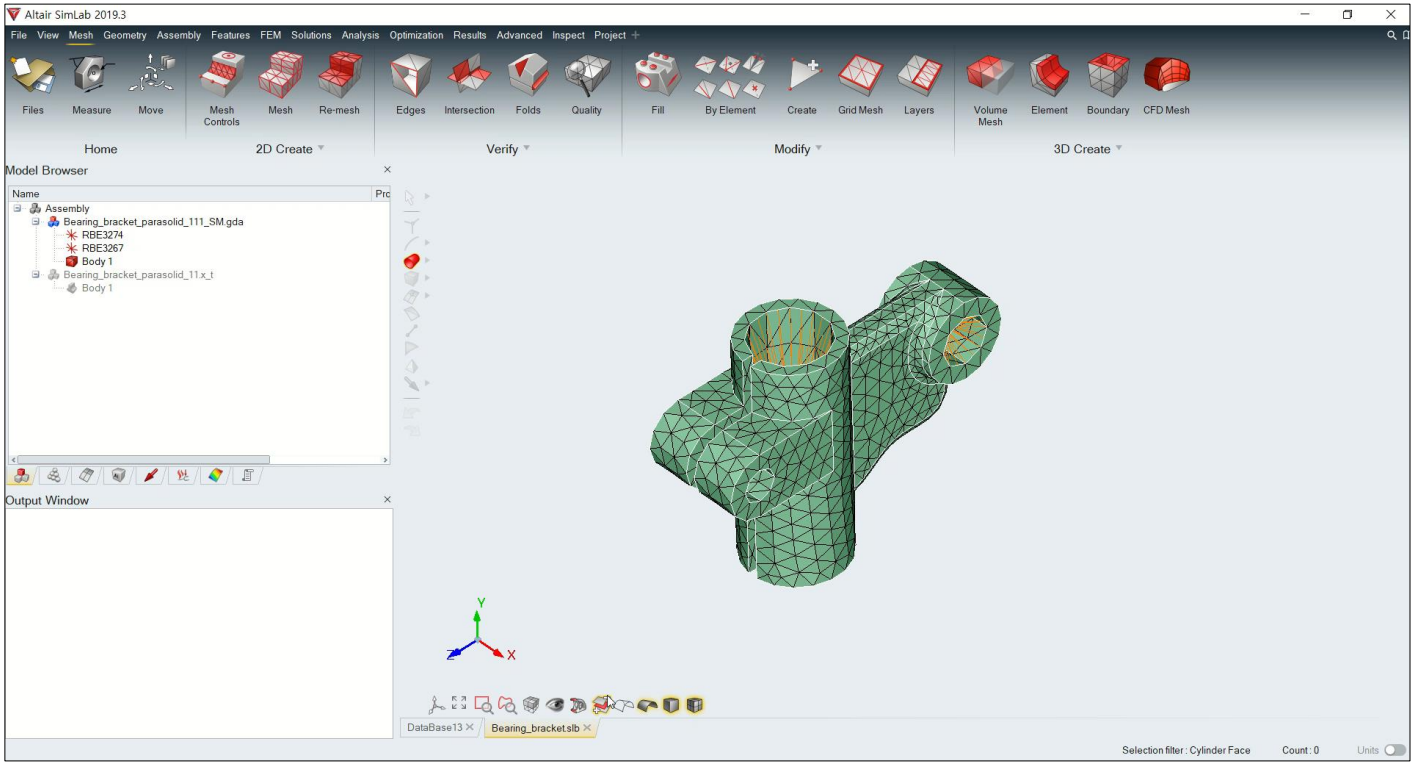
Local Re-Mesh - Movie



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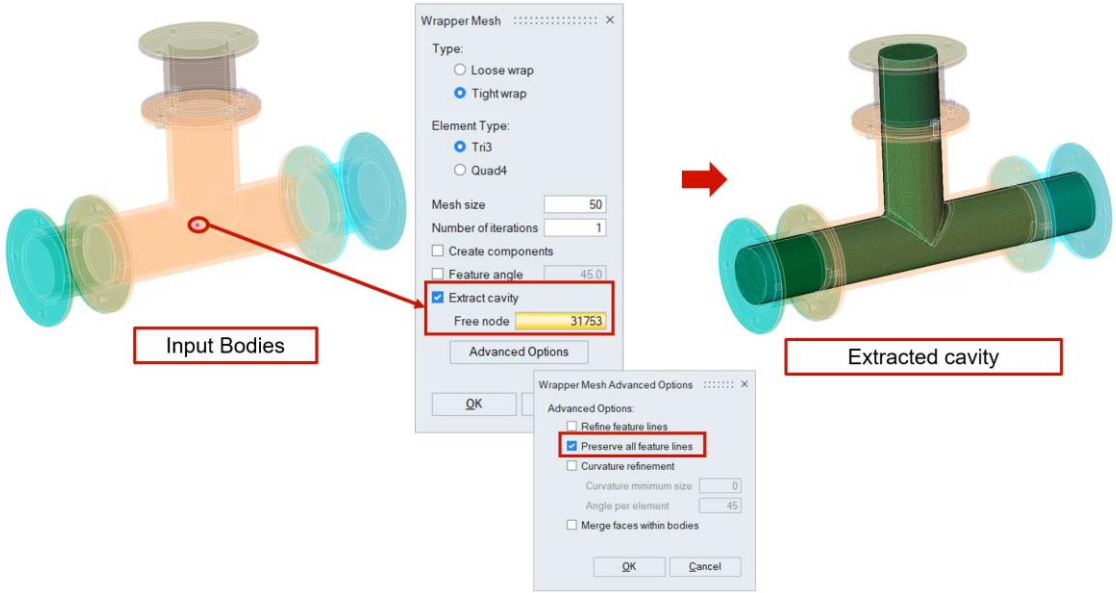
Wrapper Mesh

Mesh > 2D Create > Drop Down

Sample model

- Added ‘Extract cavity’ option to extract the cavity from the selected bodies by defining the node.
- To capture the fluid geometry better, turn on ‘Preserve all feature lines’ in Advanced options.
- It would be useful in CFD to extract the fluid domain.



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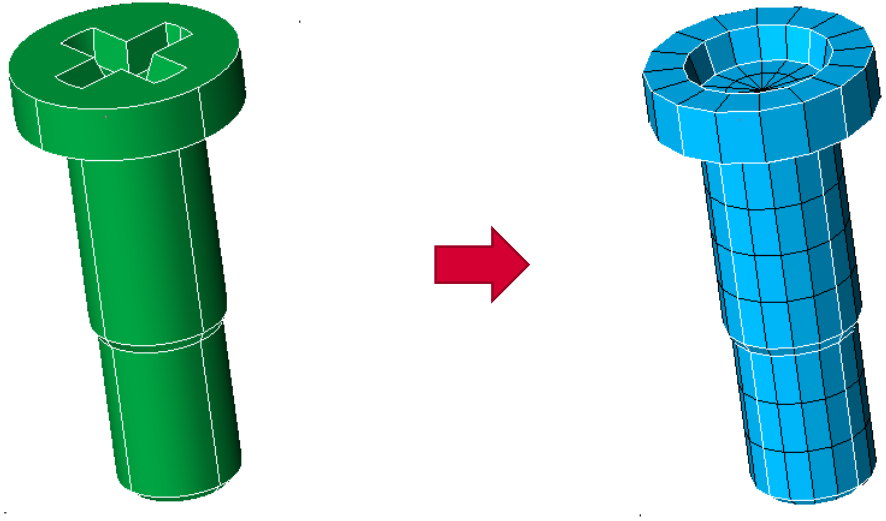
Axis Symmetric Mesh

Mesh > 3D Create > Drop Down

Sample model

- Enhanced this tool to mesh screw bodies.



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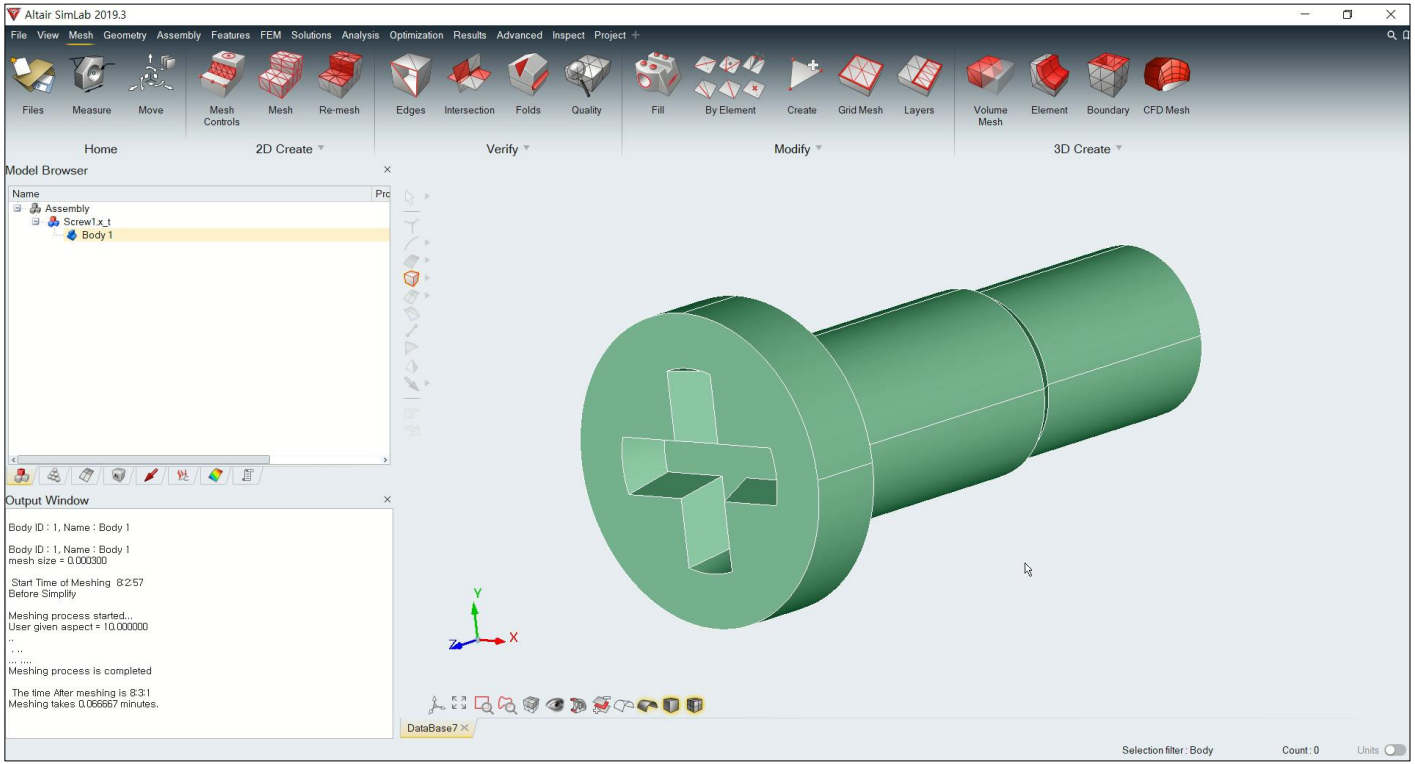
Axis Symmetric Mesh – Movie



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ASSEMBLY

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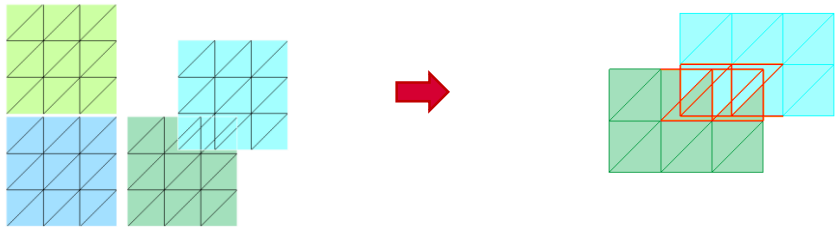
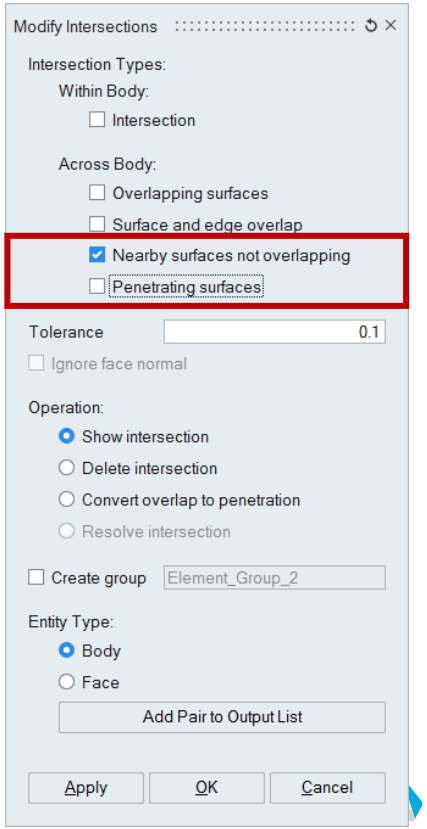
Intersections
Assembly > Modify

- Penetration option is divided into two options.
  - ✓ **Nearby surfaces not overlapping**
    - This option will find all penetrating surfaces based on given tolerance.

  - ✓ **Penetration surfaces**
    - This option will find only the true penetrating surfaces irrespective of the given tolerance.





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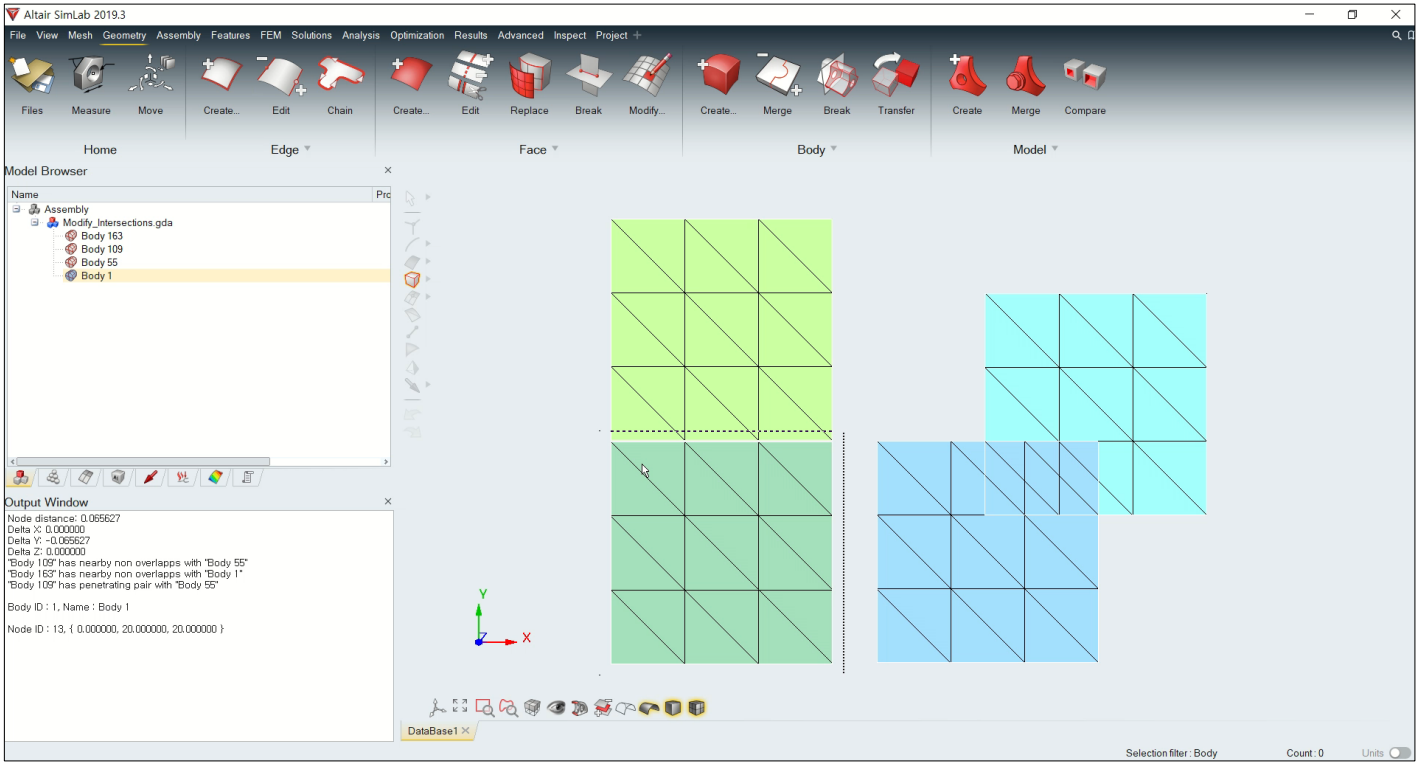
Intersections



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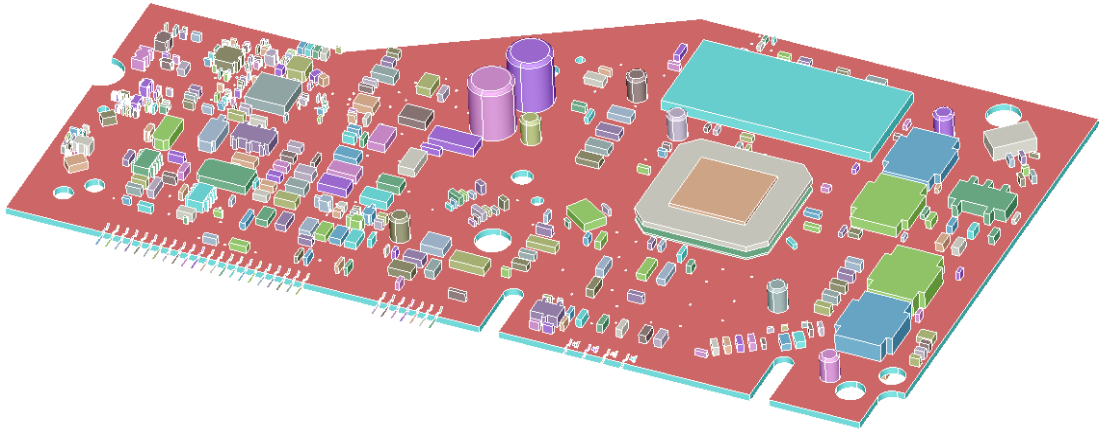
Join

Assembly > Connect

- Performance improved on joining the planar faces for electronic components (mother boards etc) where the base planar face is overlapping with multiple bodies.



Model name	No. of bodies	No. of pairs to join	Show (in sec)			Join (in min)		
			SimLab 2019.2	SimLab 2019.3 Beta	% Improvement	SimLab 2019.2	SimLab 2019.3 Beta	% Improvement
Model_1.gda	185	445	66	4	93.94	82	29	64.63
Model_2.gda	1141	2148	108	4	96.3	199	40	79.9
Model_3.gda	488	2232	98	4	95.92	189	63	66.67

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FEATURES

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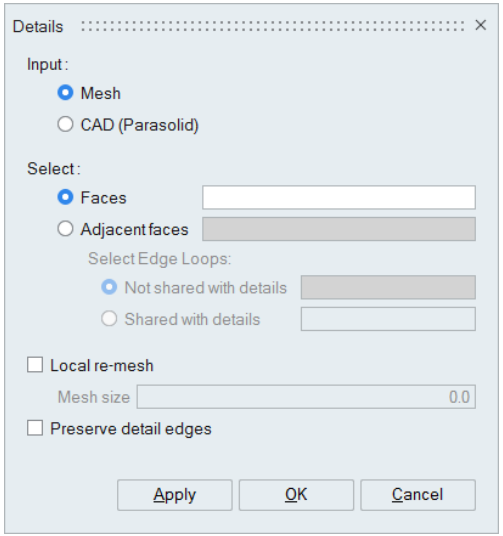
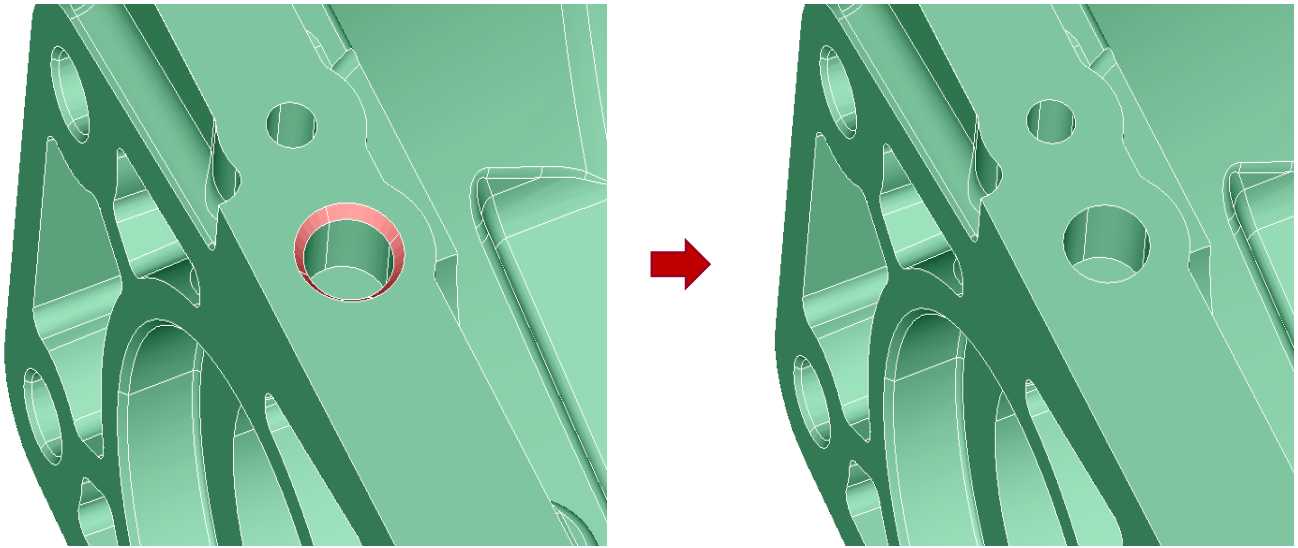
Details

Features > Defeature

- Renamed “Logo and Details” to “Details” and redesigned the UI.
- Support added to simplify or remove chamfers, holes and slots in Parasolid models.





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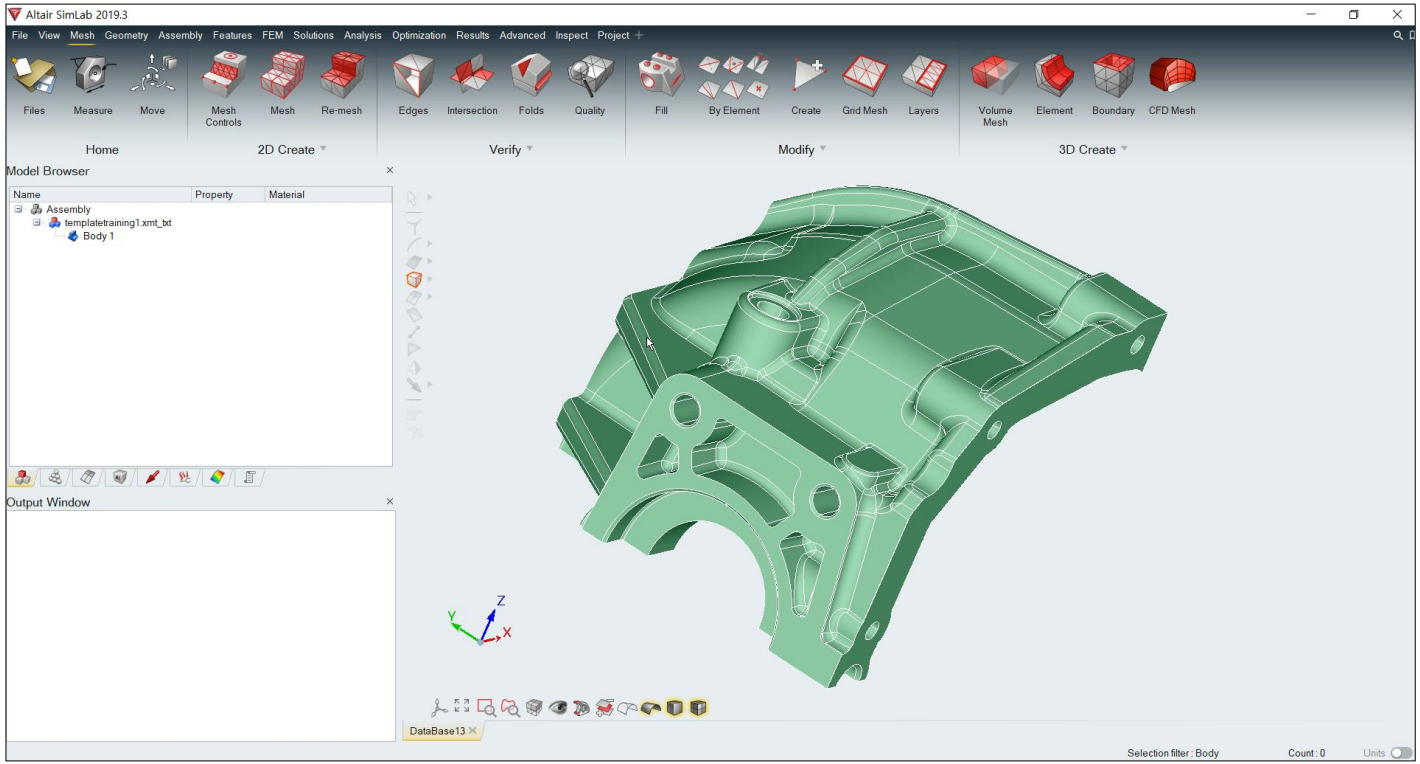
Details - Movie



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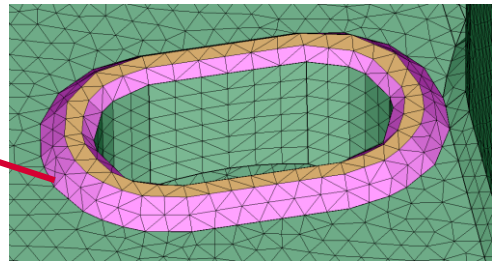
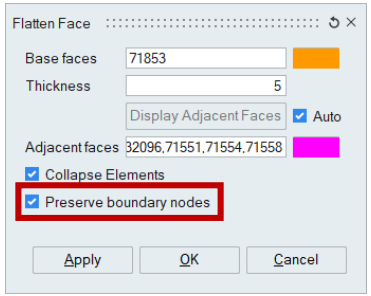
Flatten Face

Features > Defeature

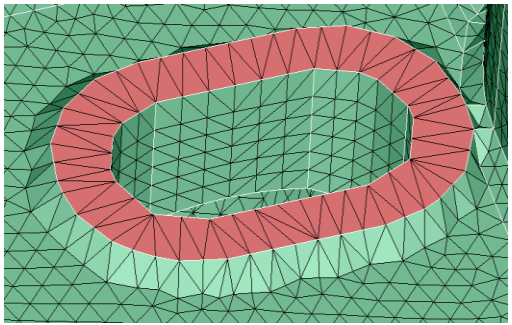
- “**Preserve boundary nodes**” toggle added to preserve the boundary nodes on the selected adjacent faces.

Boundary nodes on adjacent face

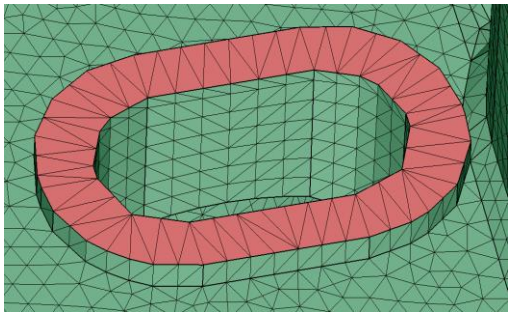




Input faces



Preserve boundary nodes OFF



Preserve boundary nodes ON

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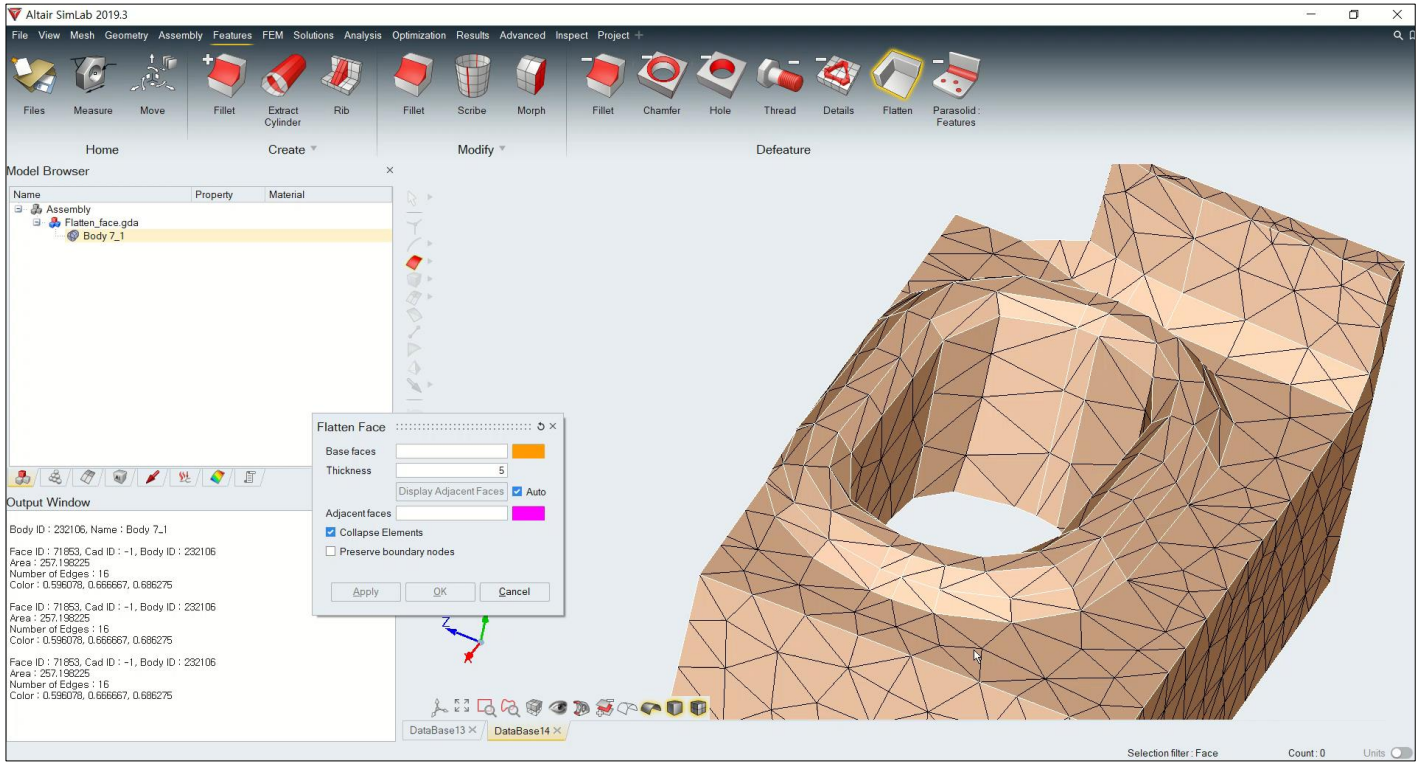
Flatten Face - Moive



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FEM

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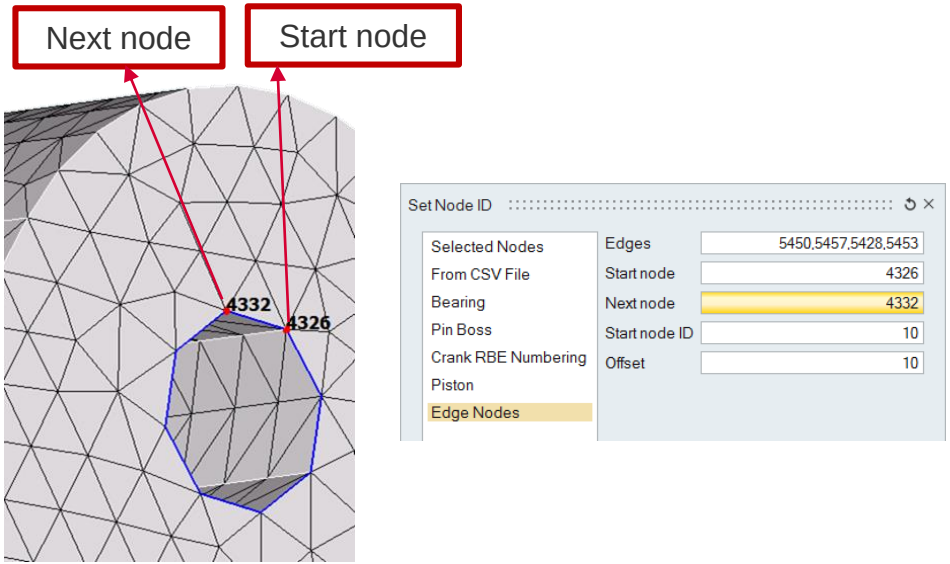
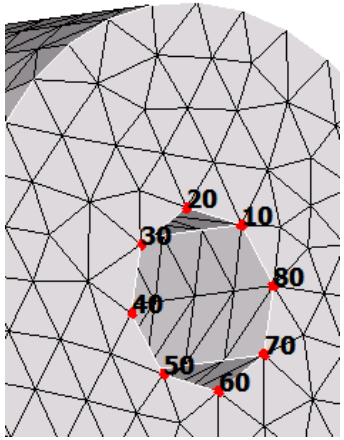
Set Node ID

FEM > Node

- Support added to renumber edge nodes. This is supported for both open and closed edge loop.



Input



Node ID after renumber

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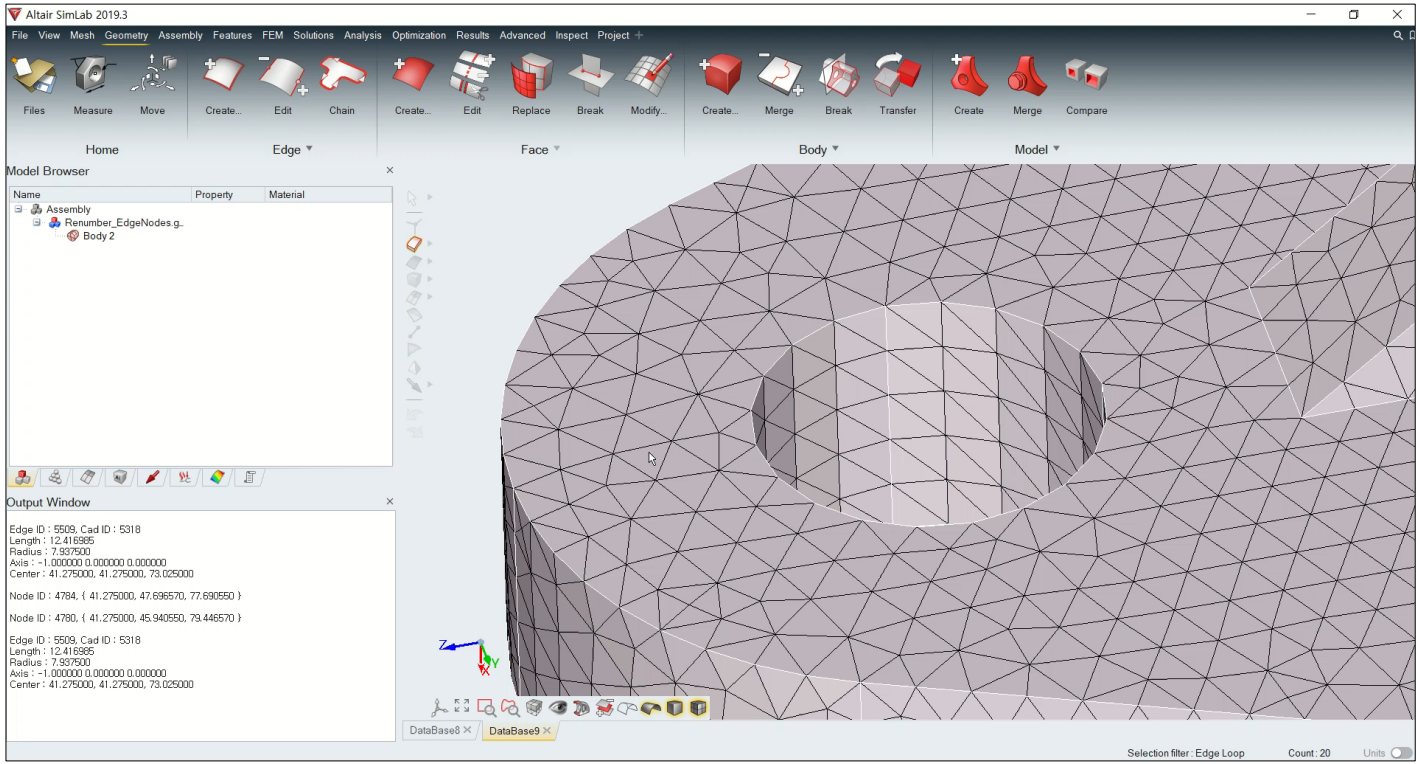
Set Node ID



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RADIOSS INTERFACE

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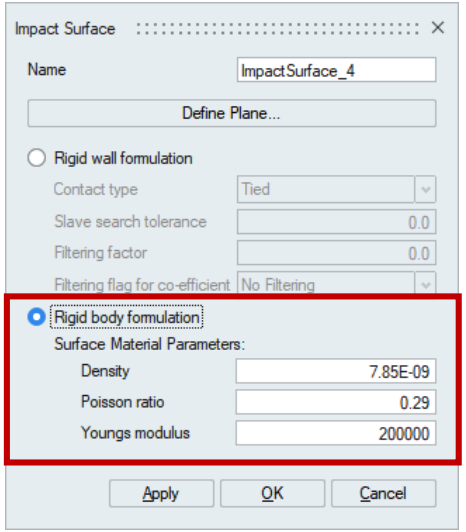
Impact Surface (Rigid wall)

Radioss Interface: Analysis > Loads and Constraints

- Added support to define **Rigid Body**.



Note: Tool name is changed from “**Rigid Wall**” to “**Impact Surface**”

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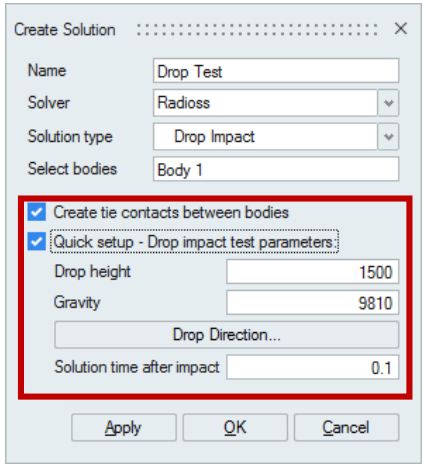
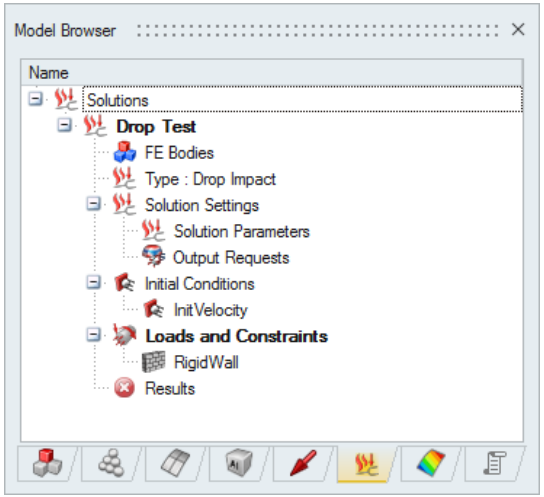
Solver Interface - Radioss

Solutions > Drop Test

- Support added to create Quick drop test setup for Radioss solutions .



Solution Dialog



Drop Test Quick Solution Setup

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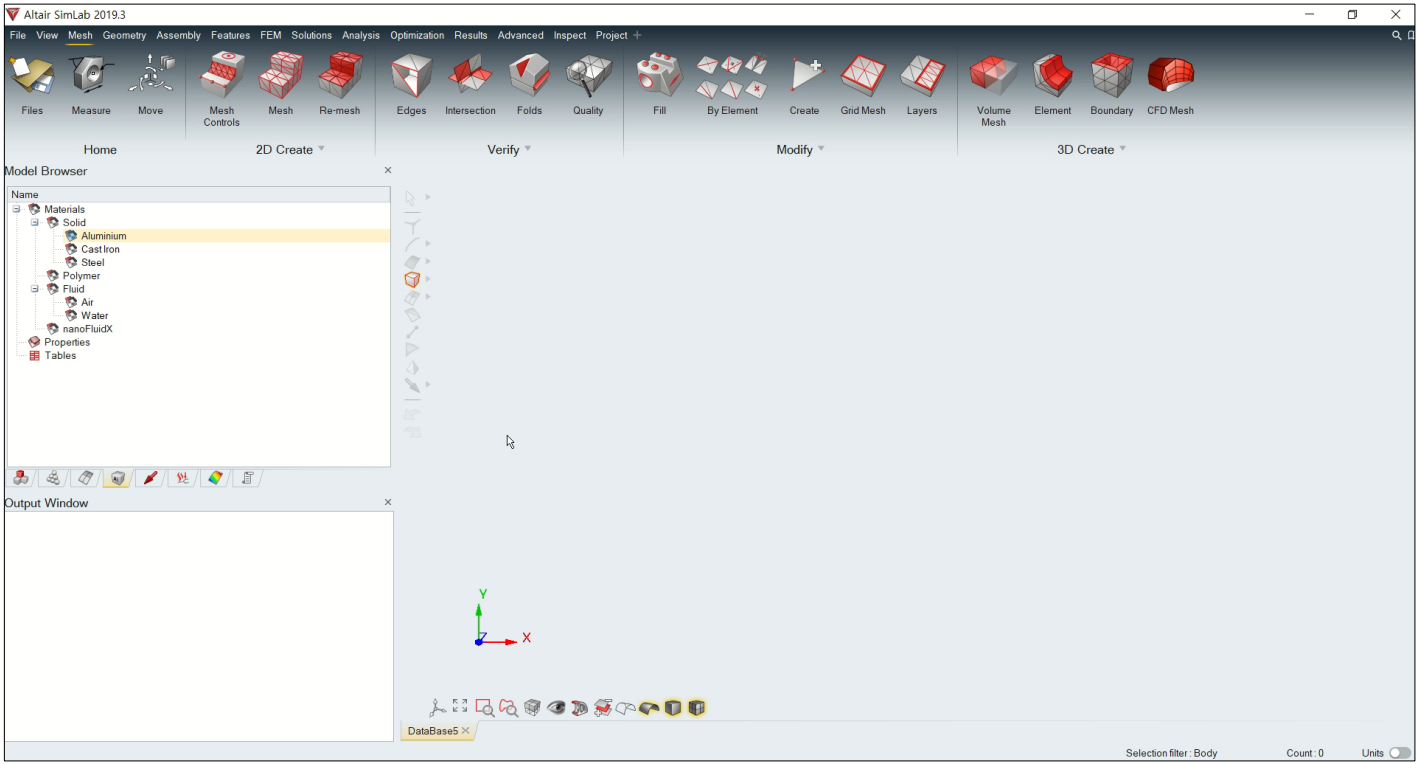
Simple Drop Test (Radioss) - Movie



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RESULTS

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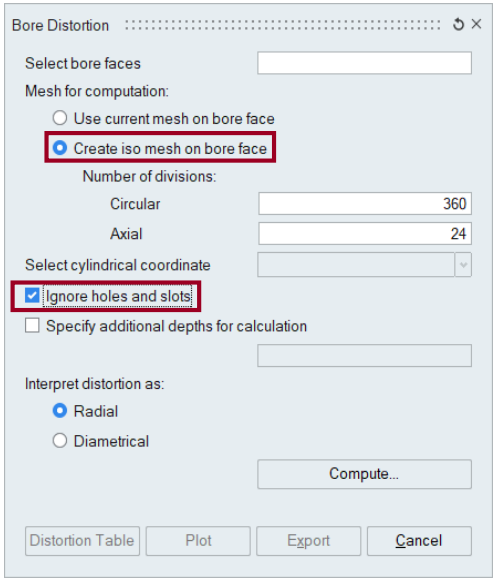
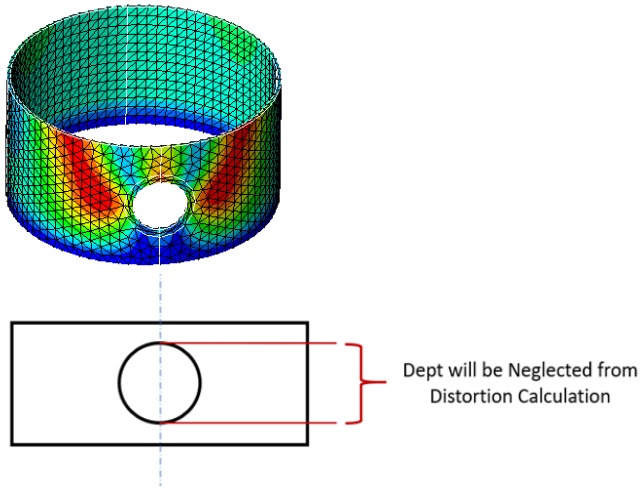
Bore Distortion

Results > Distortion

- Added a toggle in “Ignore holes and slots” in Bore Distortion dialog. By tuning ON this toggle, the bore depth with holes\slots will be ignored in distortion calculation.





Note: This toggle will enable only for Create iso mesh on bore face option.

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ELECTRONICS

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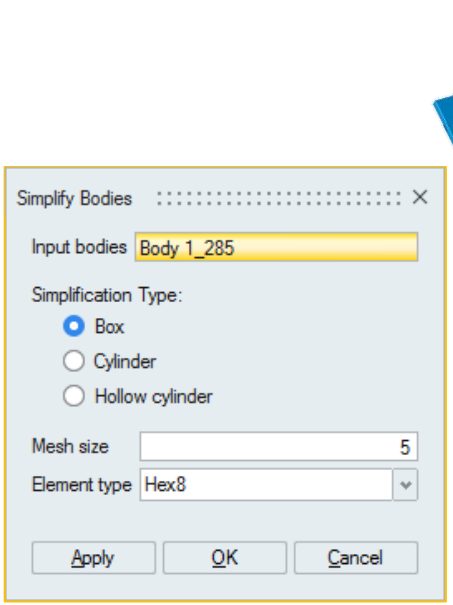
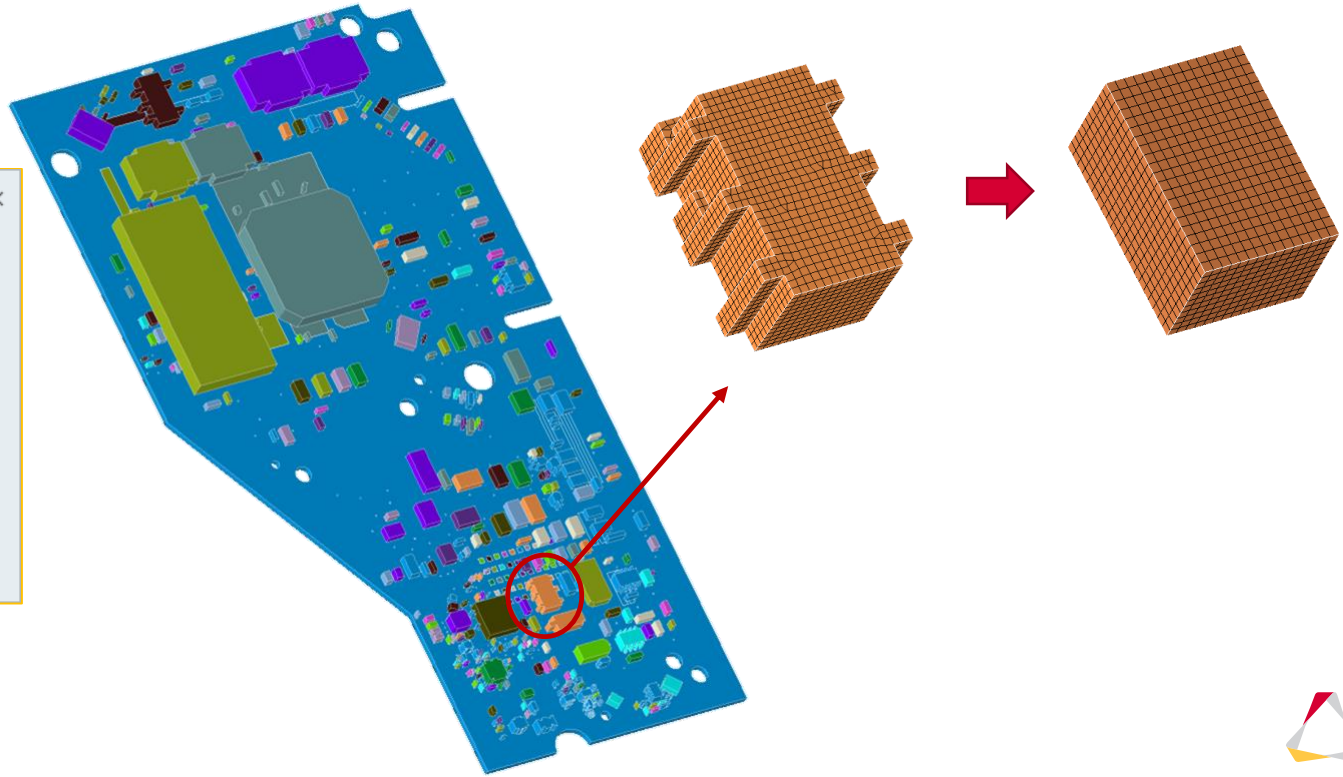
Simplify Bodies

Advanced > Electronics > Mesh

- Tool added to simplify geometry to Box, Cylinder and Hollow cylinder.





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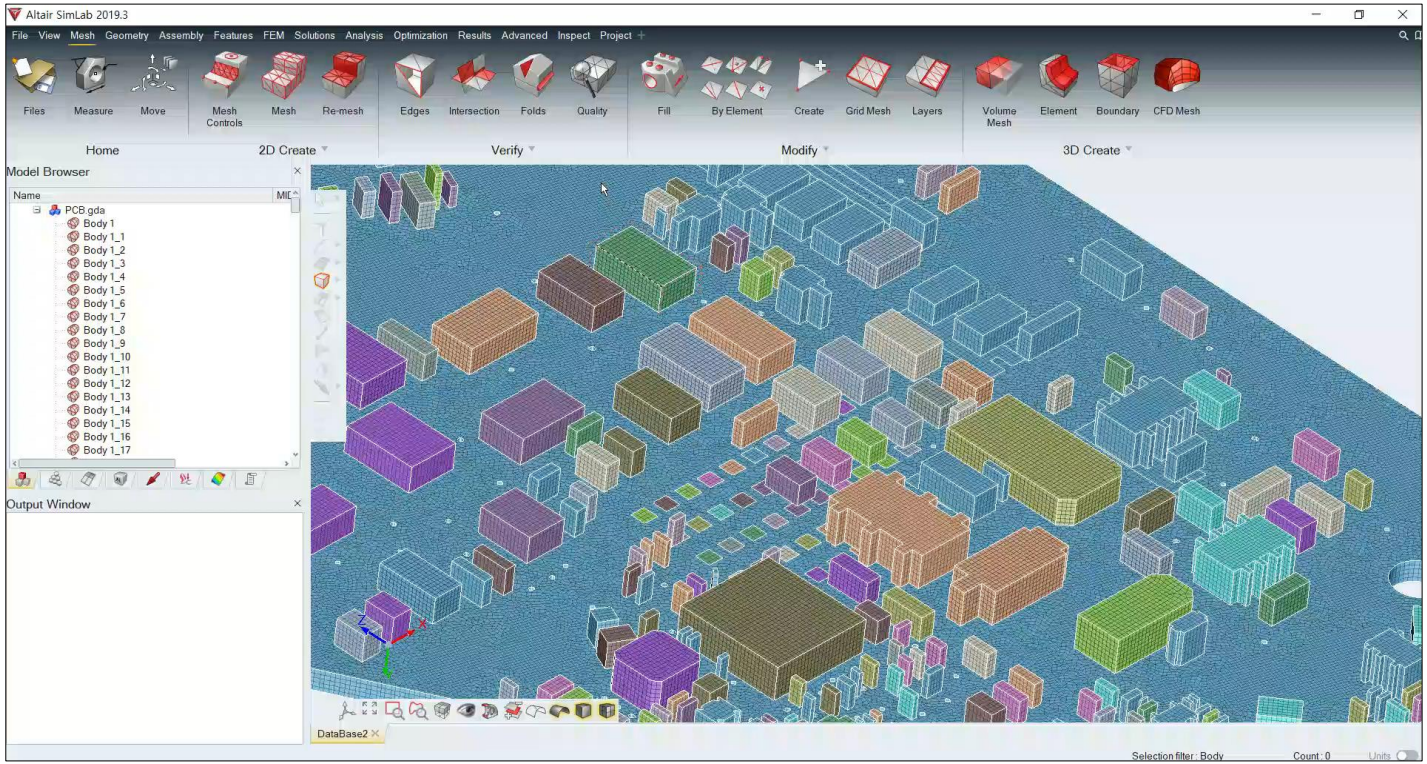
Simplify Bodies



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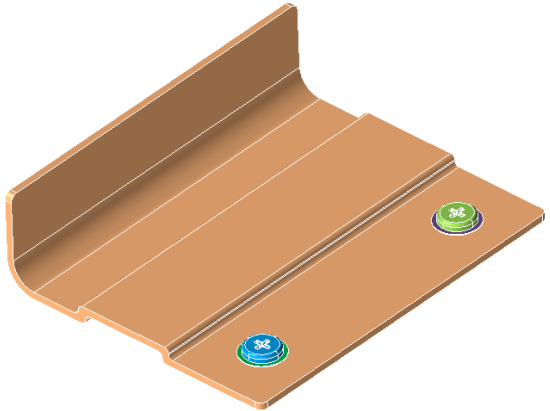
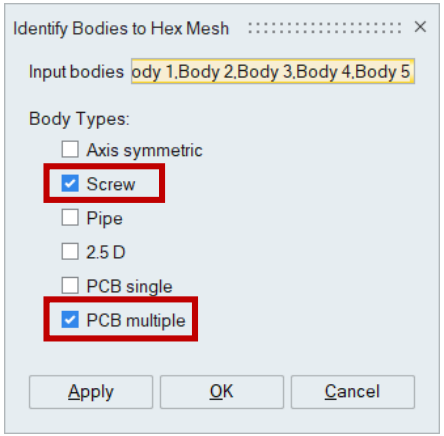
Identify Bodies To Hex Mesh

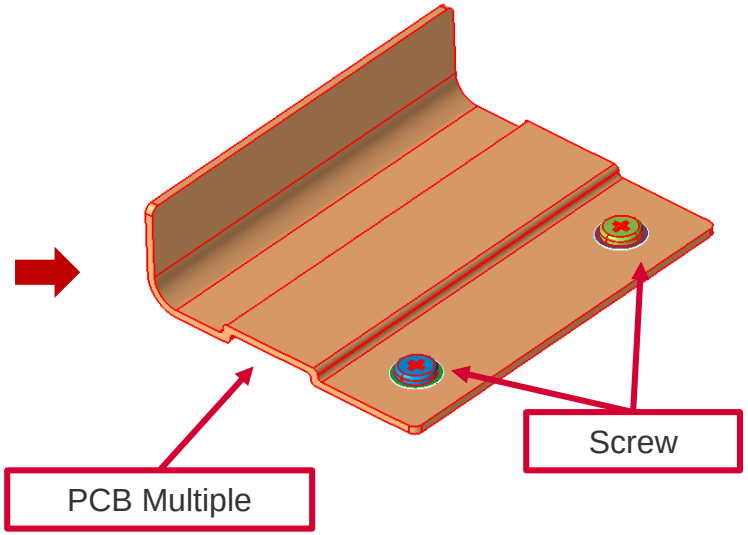
Advanced > Electronics > Mesh

Sample model

- Enhanced the tool to identify and select screws & PCB multiple bodies.







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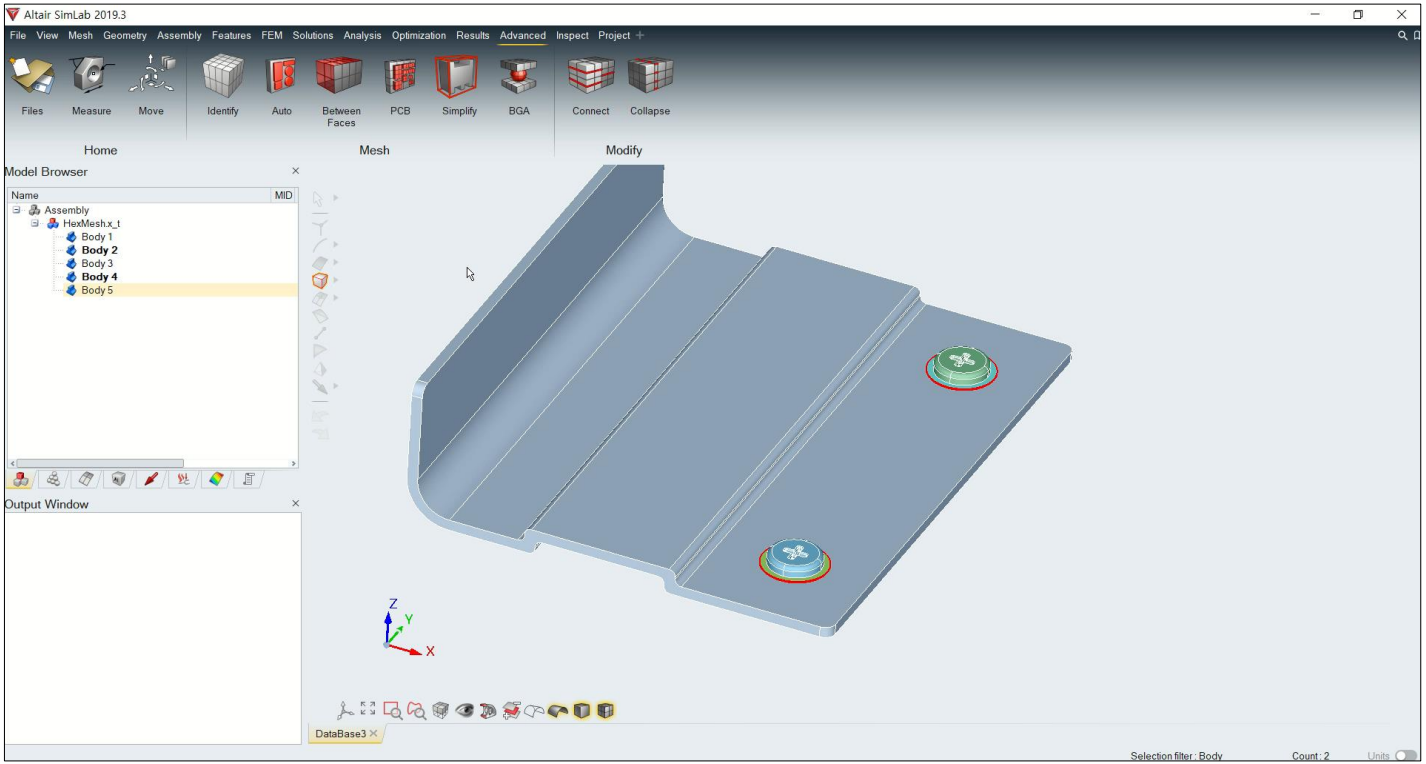
Identify Bodies To Hex Mesh



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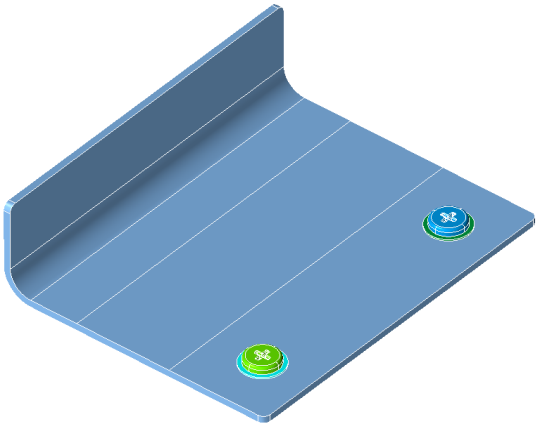
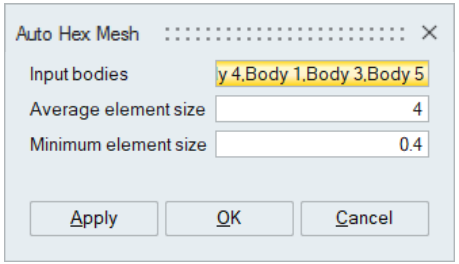
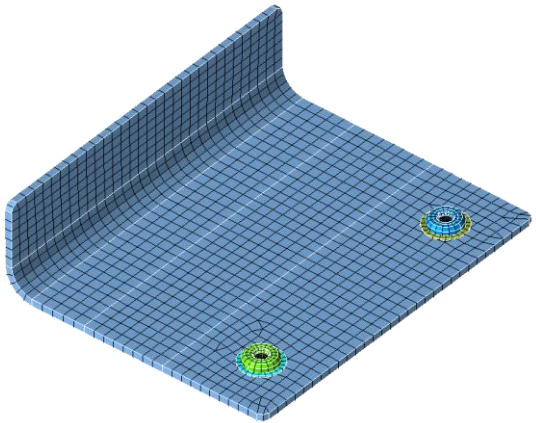
Auto Hex Mesh

Advanced > Electronics > Mesh

- New tool added to generate hex mesh the following body types.
  - Axis-symmetric bodies
  - 2.5 D bodies
  - Screw bodies
  - PCB single







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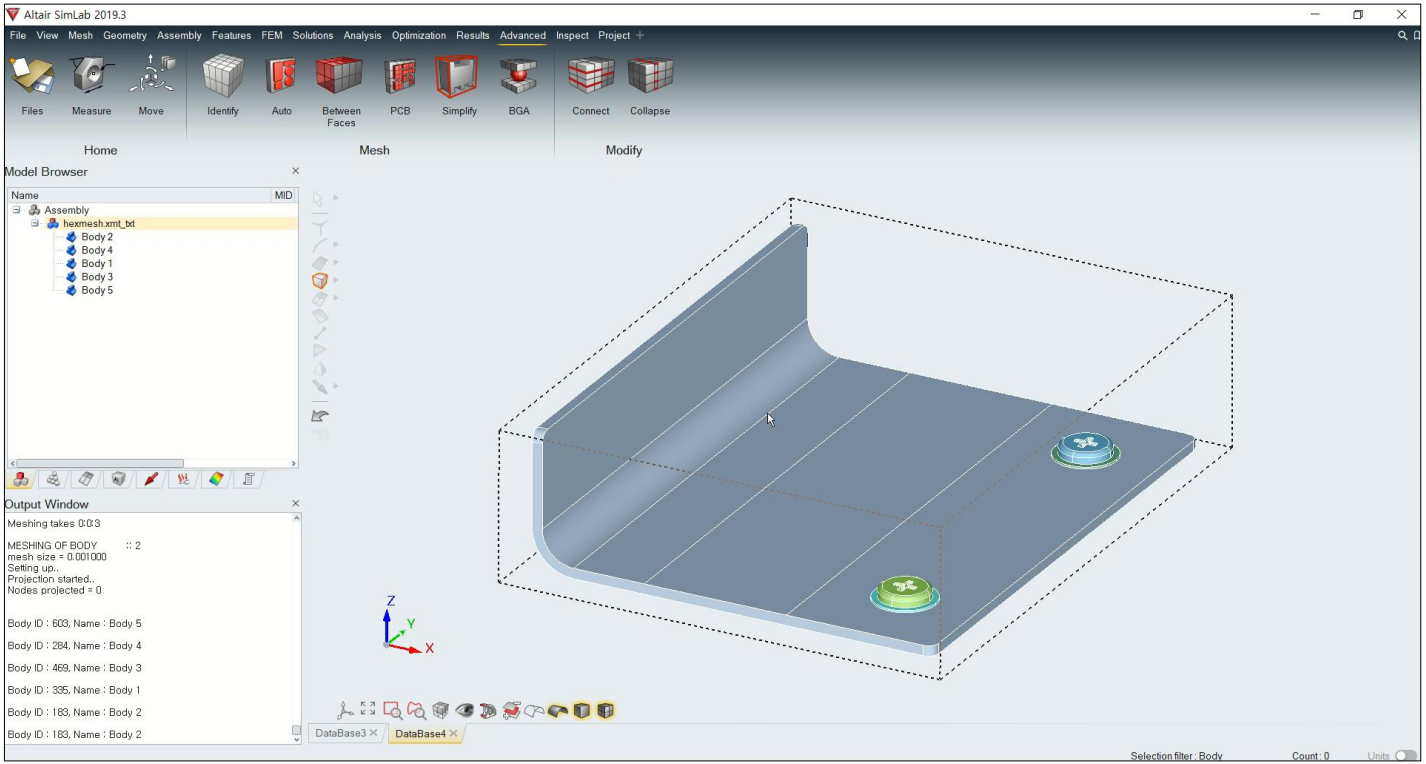
Auto Hex Mesh



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SOLVER INTERFACE

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Material

Analysis > Property

- Support added to directly assign materials to CAD bodies.

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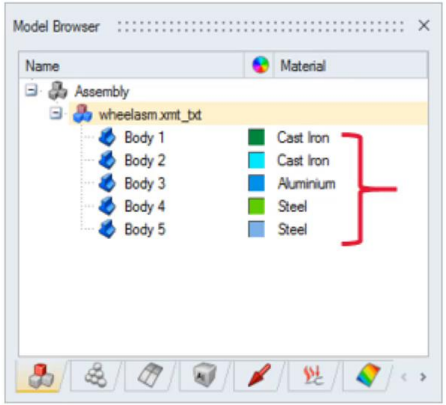

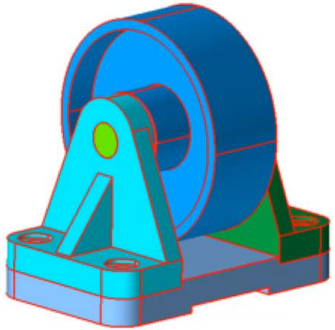

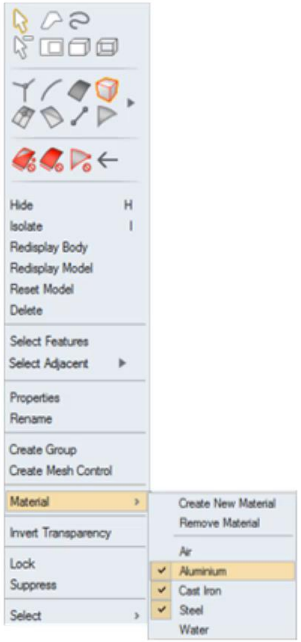

Model Browser

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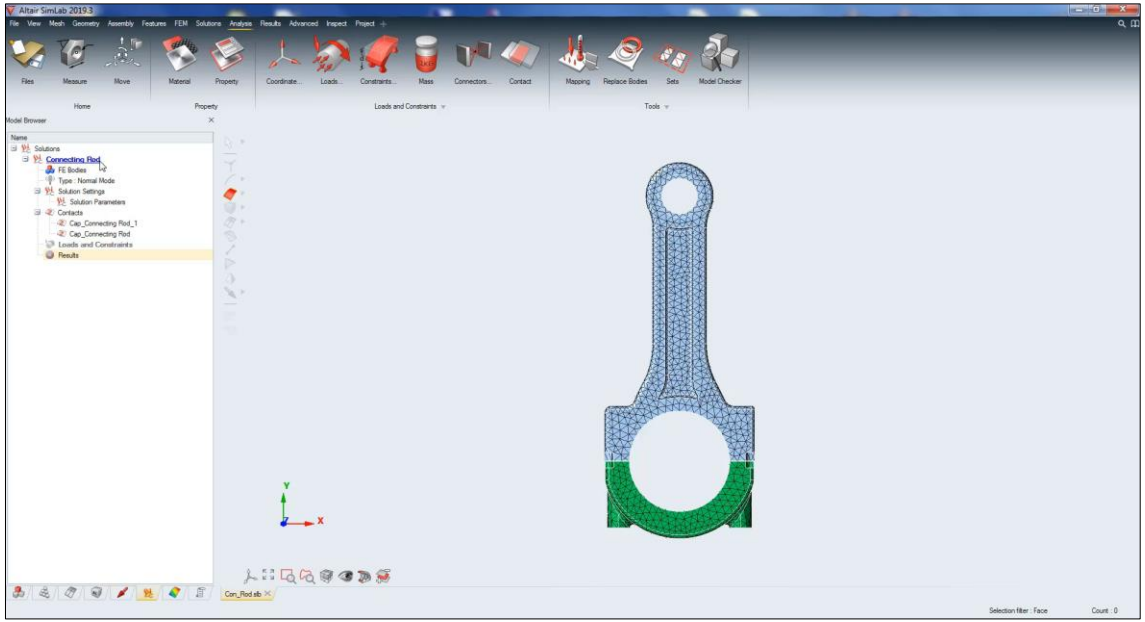
Solver Interface
Solutions

- Support added to solve solutions in the background without freezing SimLab while solving. This is supported for following solution.
  - OptiStruct
  - AcuSolve



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WELD

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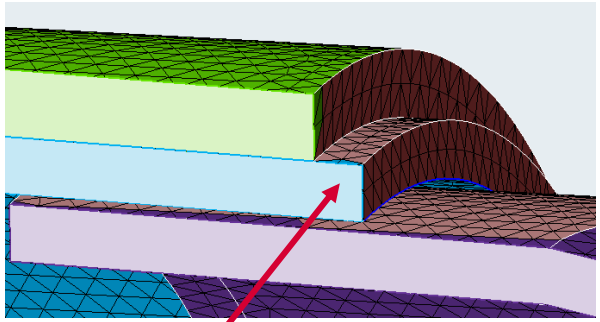
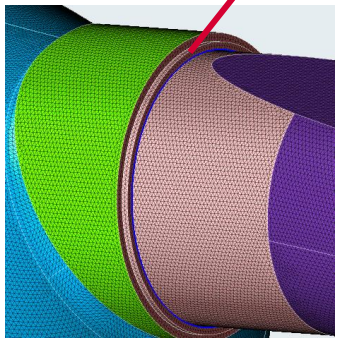
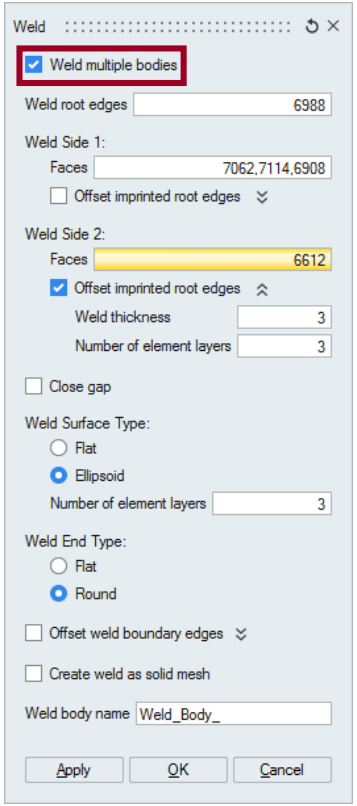
Weld

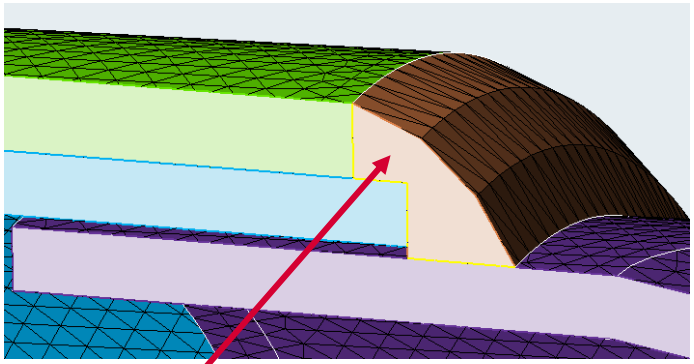
Advanced > Weld

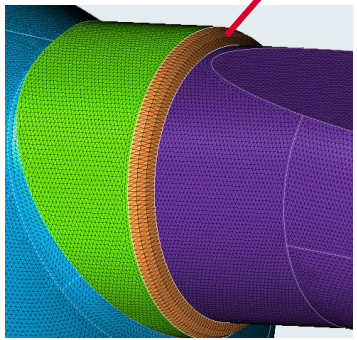
- Support added to weld multiple bodies simultaneously.











Created weld connects all the bodies

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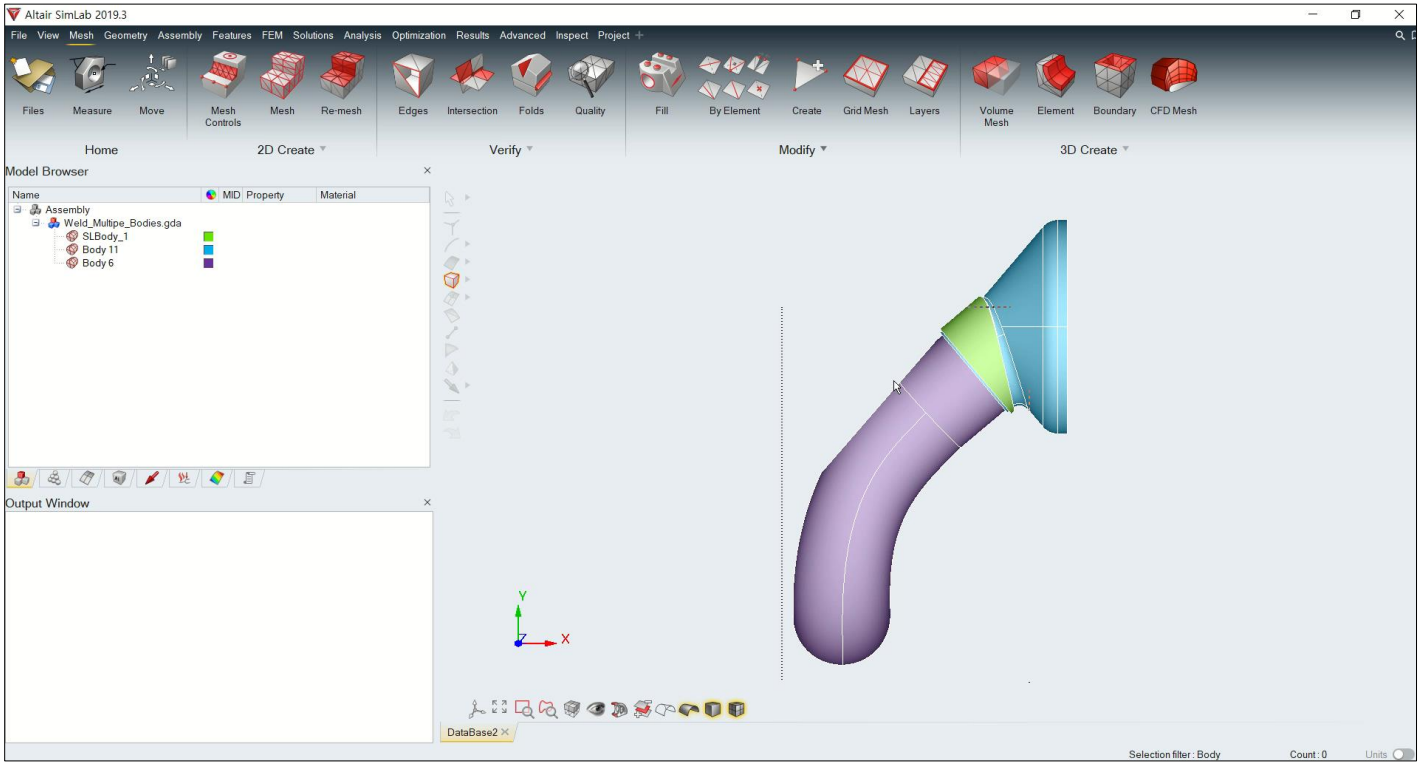
Weld – Moive



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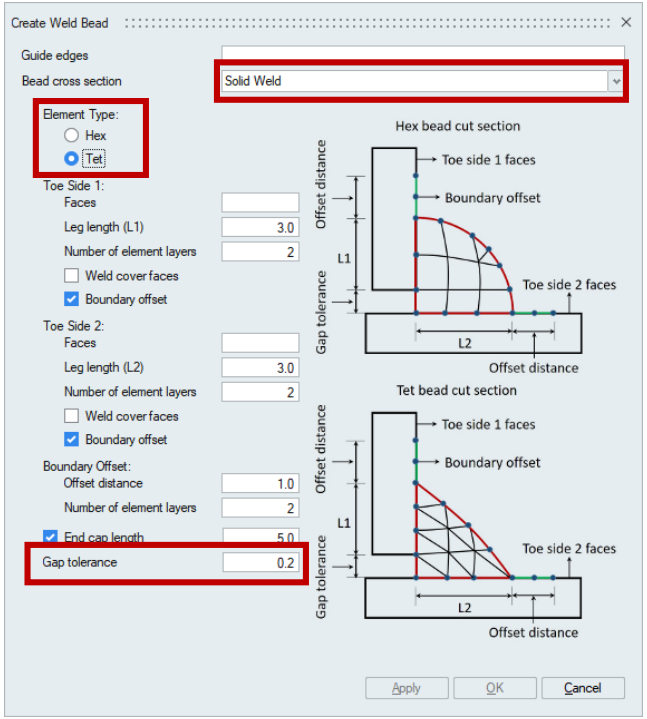
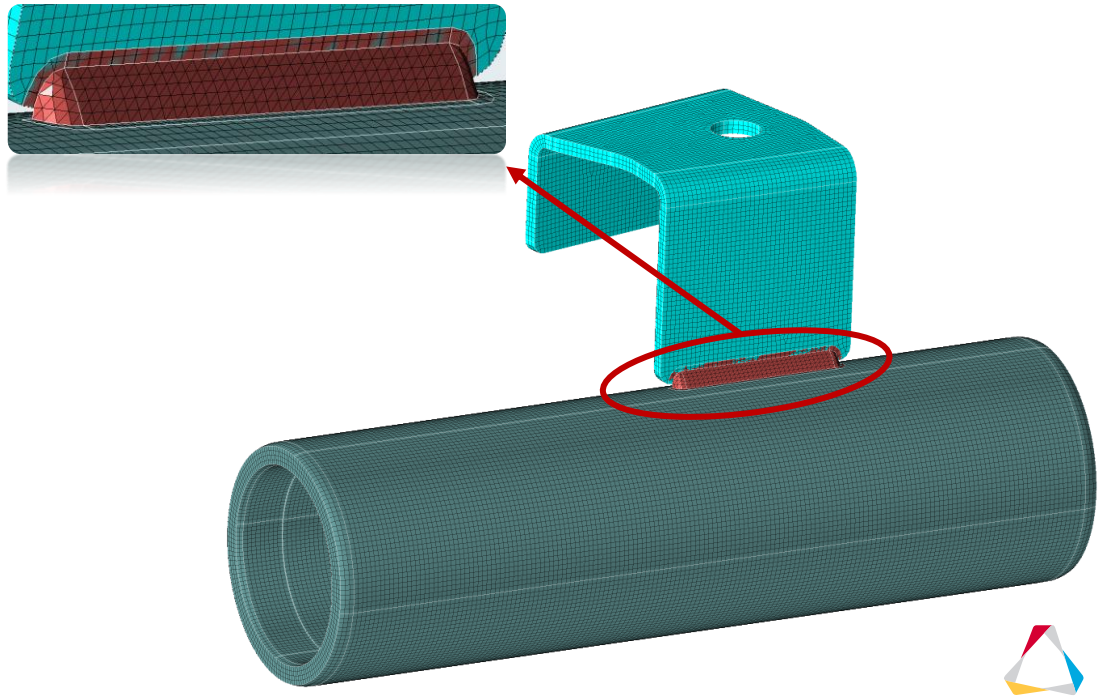
Create Weld Bead

Advanced > Weld > With Heat Zone

- Support added to create “**Tet** ” solid weld bead, thus renamed the bead cross section type from “**Hex Weld**” to “**Solid Weld**”. Also added option to specify allowable “**Gap tolerance”.**





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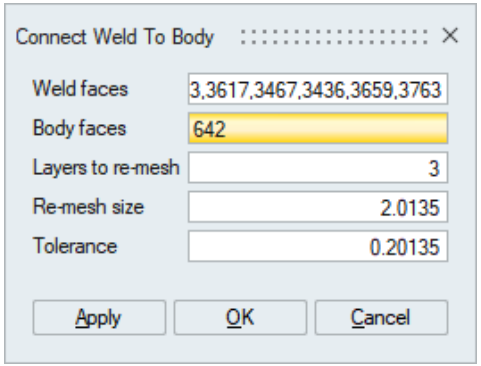
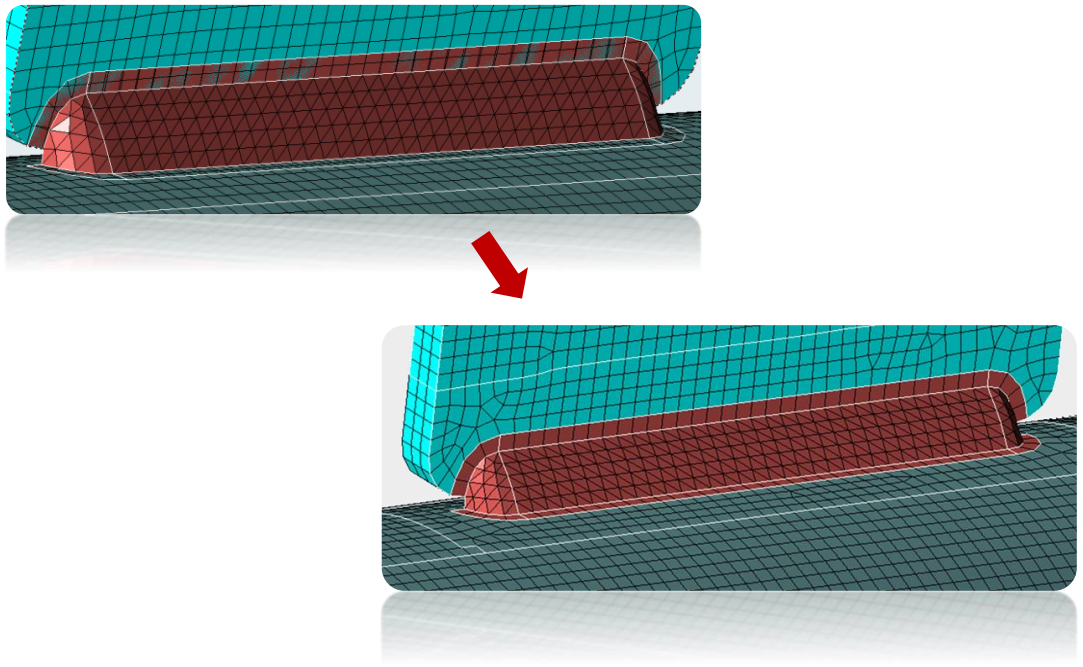
Connect Weld To Body

Advanced > Weld > With Heat Zone

- Added a new tool to connect Tet / Hex weld body with Tet / Hex (2.5D) part body.





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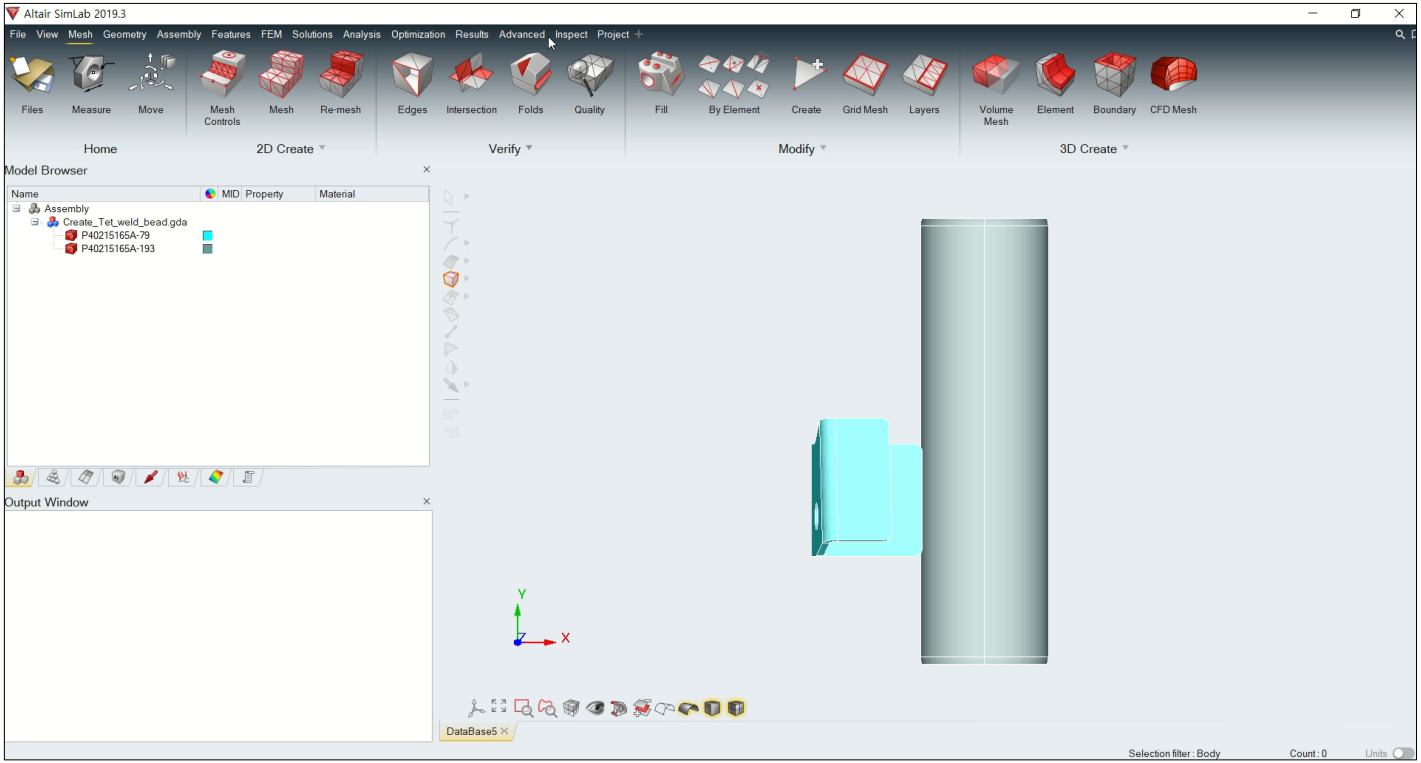
Create Weld Bead – Moive



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감사합니다