

 RELEASE NOTES

Altair Inspire™ 2021

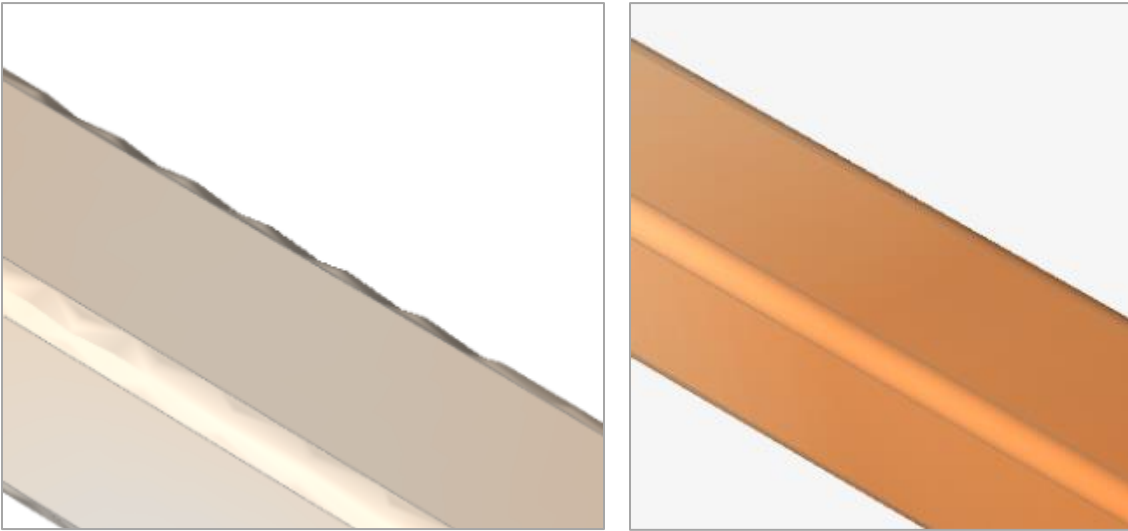
New Features and Enhancements

Altair Inspire 2021 includes the following new features and enhancements.

Structures

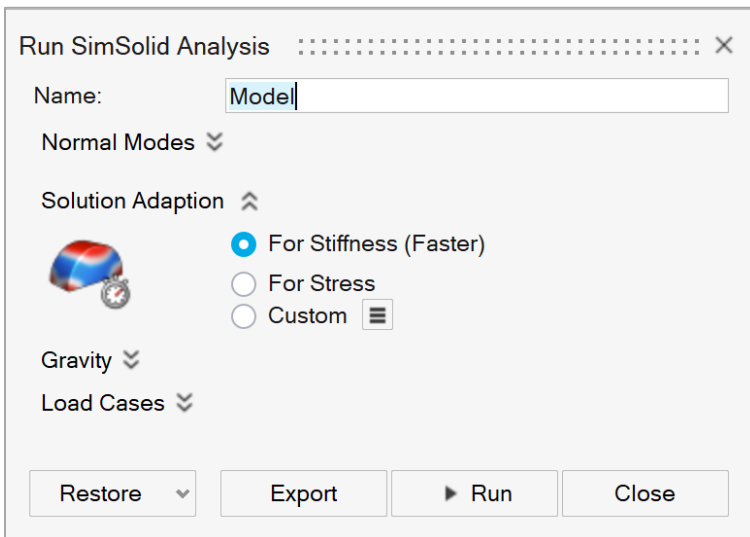
Refine Results Option for SimSolid Analysis

In cases where SimSolid results are poorly tessellated, you can now right-click on the part and select Refine Results to refine the tessellation.



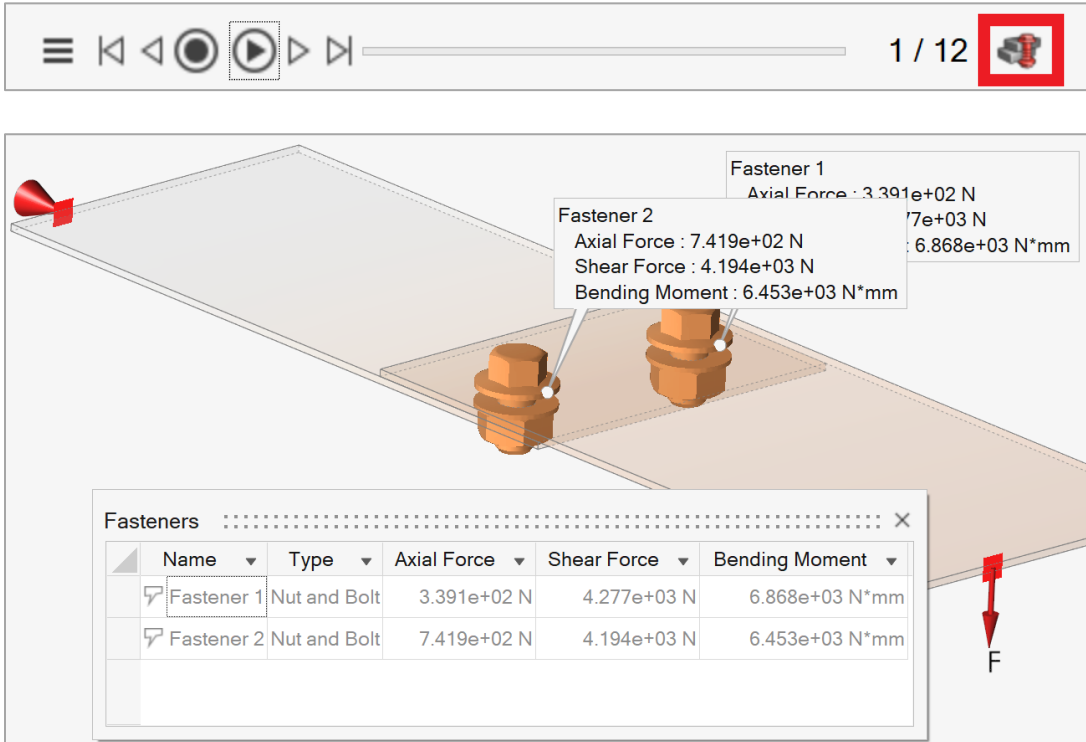
Export .ssp Files for SimSolid

You can now export .ssp models for SimSolid runs by clicking the Export button in the Run SimSolid Analysis dialog.



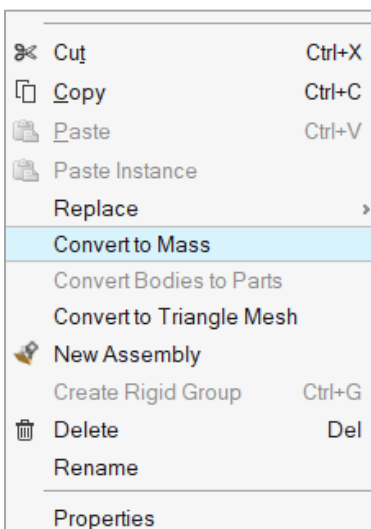
Reaction Forces for Fasteners

Use the new Fasteners Table icon on the Animation toolbar to extract reaction forces at fasteners.



Convert Part to Mass Option

You can now convert a part or parts to a point mass to simplify the simulation and make it run faster. Right-click on the parts and select Convert to Mass in the context menu. The mass will still need to be attached to the rest of the structure.



Additional Changes and Enhancements for Structures

The following changes and enhancements have also been added for version 2021:

Thermal Properties for Materials

Thermal properties have been added to materials.

Parts and Materials						
Parts	Material Library	My Materials				
Material	E	Nu	Density	Yield Stress	α	λ
Steel (AISI 304)	1.950000E+11Pa	0.290	8.000E+3 kg/m3	215.000E+06 Pa	17.300E-06 /K	16.200E+00 W/(m*K)
Steel (AISI 316)	1.950000E+11Pa	0.290	8.000E+3 kg/m3	205.000E+06 Pa	16.000E-06 /K	16.300E+00 W/(m*K)
Steel (AISI 1015)	2.000000E+11Pa	0.290	7.870E+3 kg/m3	285.000E+06 Pa	11.900E-06 /K	51.900E+00 W/(m*K)
Steel (AISI 1040)	2.000000E+11Pa	0.290	7.850E+3 kg/m3	350.000E+06 Pa	11.300E-06 /K	50.700E+00 W/(m*K)
Steel (AISI 1080)	2.000000E+11Pa	0.290	7.870E+3 kg/m3	380.000E+06 Pa	14.700E-06 /K	48.100E+00 W/(m*K)
Steel (AISI 4130)	2.000000E+11Pa	0.290	7.870E+3 kg/m3	360.000E+06 Pa	13.700E-06 /K	42.700E+00 W/(m*K)
Steel (AISI 4142)	2.000000E+11Pa	0.290	7.870E+3 kg/m3	585.000E+06 Pa	12.200E-06 /K	42.600E+00 W/(m*K)

Enhancements to Connectors

An option to automatically calculate the center of the surface has been added to the Property Editor for connectors. In addition, connectors are now visualized without the “spider” lines, unless explicitly added using the Connectors tool.

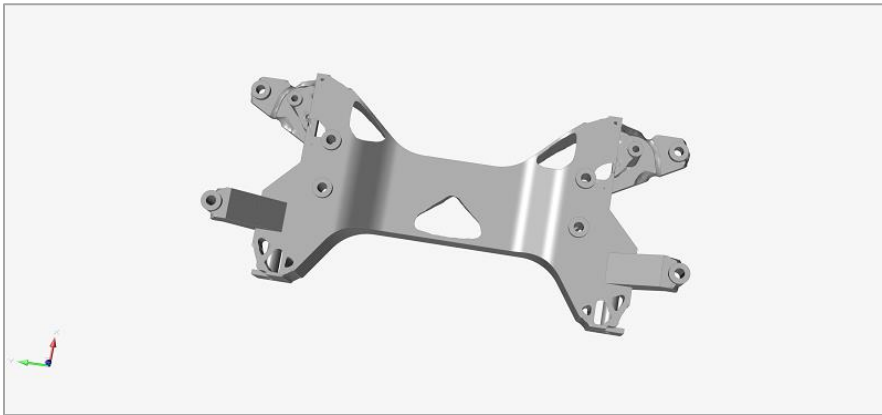
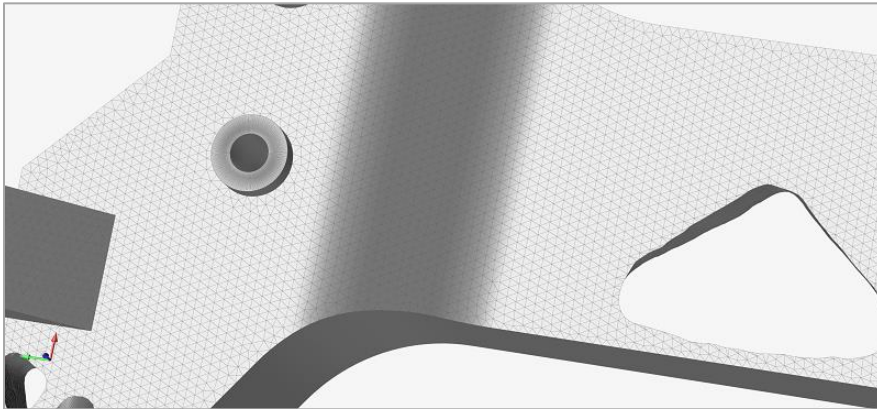
Name	Value
General	
Name	Connector 1
Connectio...	Flexible
Position	
Auto Center	<input checked="" type="checkbox"/>
X	-0.0235 mm
Y	0.192 mm
Z	0.135 mm
Appearance	
Visible	<input checked="" type="checkbox"/>
Color	■ red

Contact Force Results

Inspire now extracts contact force results for normal, tangential, and traction forces when running OptiStruct analysis.

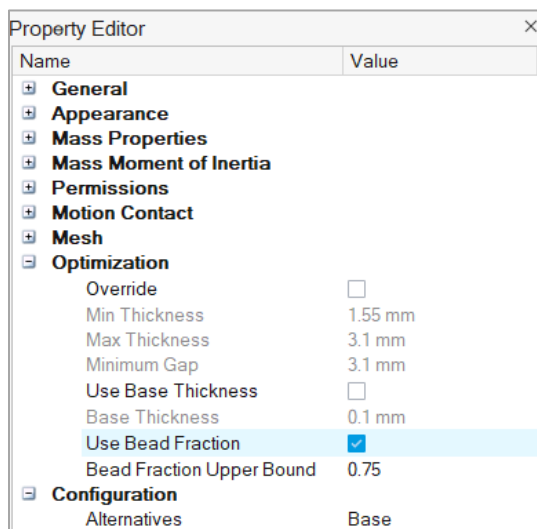
Fading Mesh Lines

Mesh lines now fade when you zoom out in the modeling window. This creates a cleaner appearance for large models.

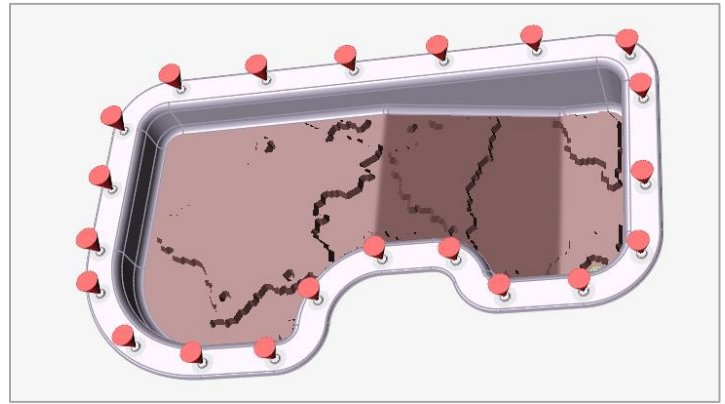
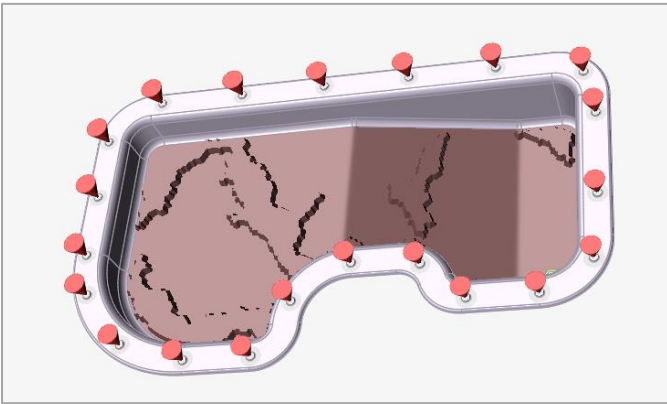


Maximum Bead Fraction

For topography optimization, there is now an option to Use Bead Fraction and to define a Bead Fraction Upper Bound in the Property Editor.



Below you can see the difference when the bead fraction upper bound is set to 0.25 vs 0.75:



Refresh Query Results for PDM

When opening files from a Product Data Management (PDM) system, you can now select **Check for updated parts** on the Open from PDM System window to automatically refresh the query results. Out-of-date parts are shown in red in the list of files.

Open from PDM System

Repository:

Query type:

Query by:

☒ Latest revision only ☒ Check for updated parts

☐ Set revision rule

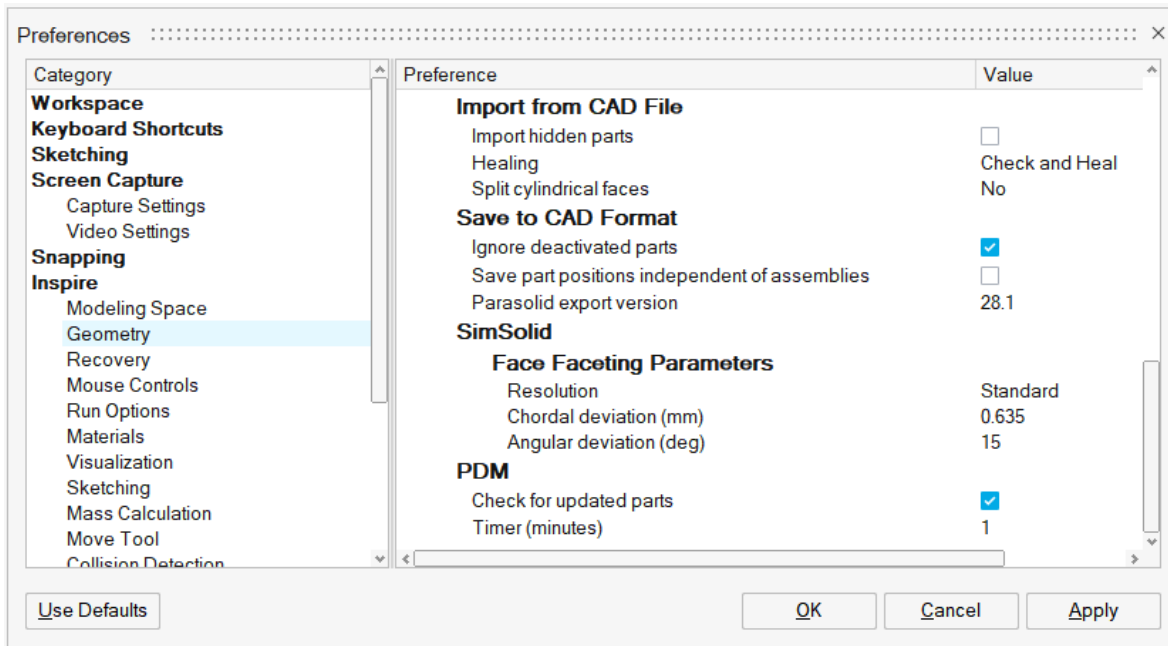
Files:

Name

Properties:

Name	Value
------	-------

This option can also be set in the Preferences, under **Inspire > Geometry > PDM**. Use the **Timer** setting to determine how often to automatically refresh the query results.



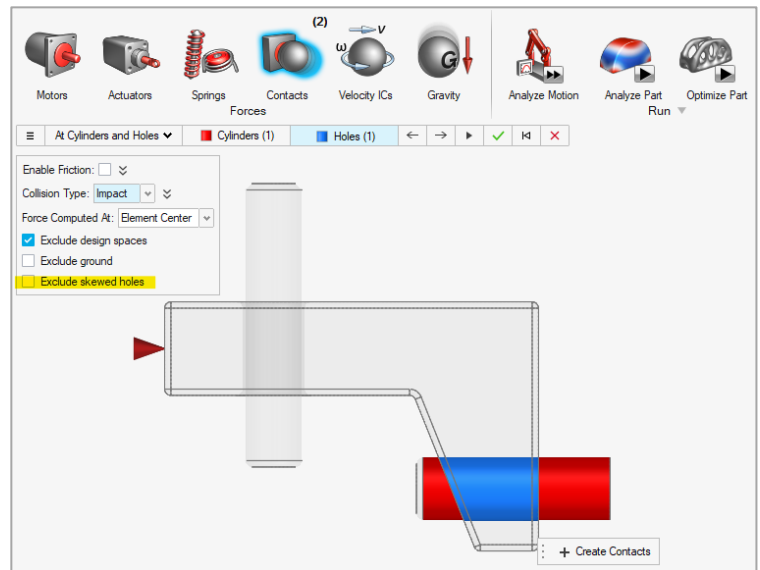
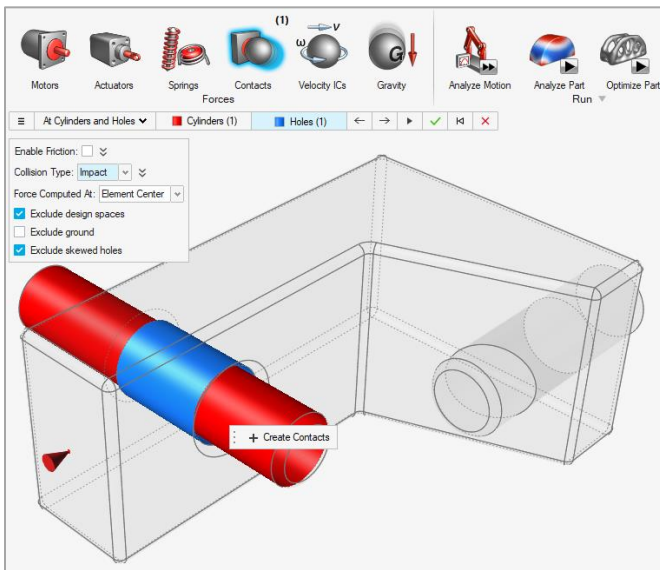
Surface to Surface Contacts for OptiStruct Analysis

OptiStruct analysis now supports surface-to-surface and node-to-surface type contacts.

Motion

Cylinder and Hole Feature Pair Detection

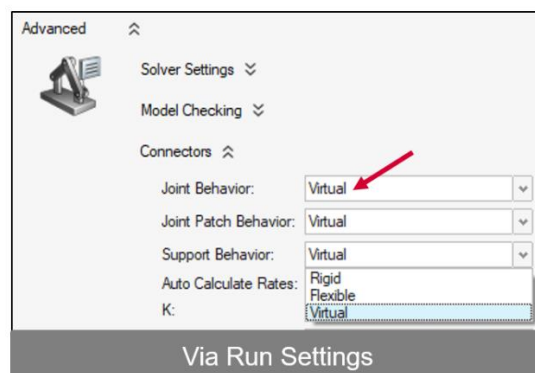
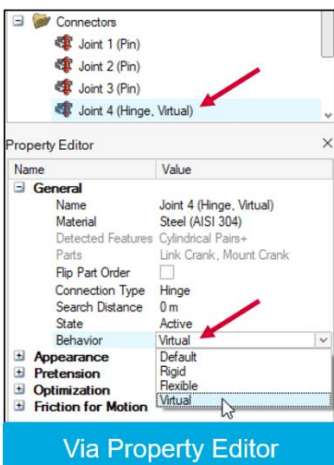
The At Cylinders and Holes option on the motion contacts guide bar will now automatically detect Cylinder and Hole candidate pairs. During creation, the guide bar arrows let you navigate through the detected pairs so you can 1) accept the selections in the contact sets, 2) Ctrl + left click on features to add/remove them from the contacts sets, or 3) navigate through individual features for the currently active contact set by holding down Ctrl while clicking the guide bar arrows.



Additionally, a checkbox for filtering out skewed holes has been added to the Find Options menu and we have improved the positioning of glyph icons to be located nearer to the contacting features.

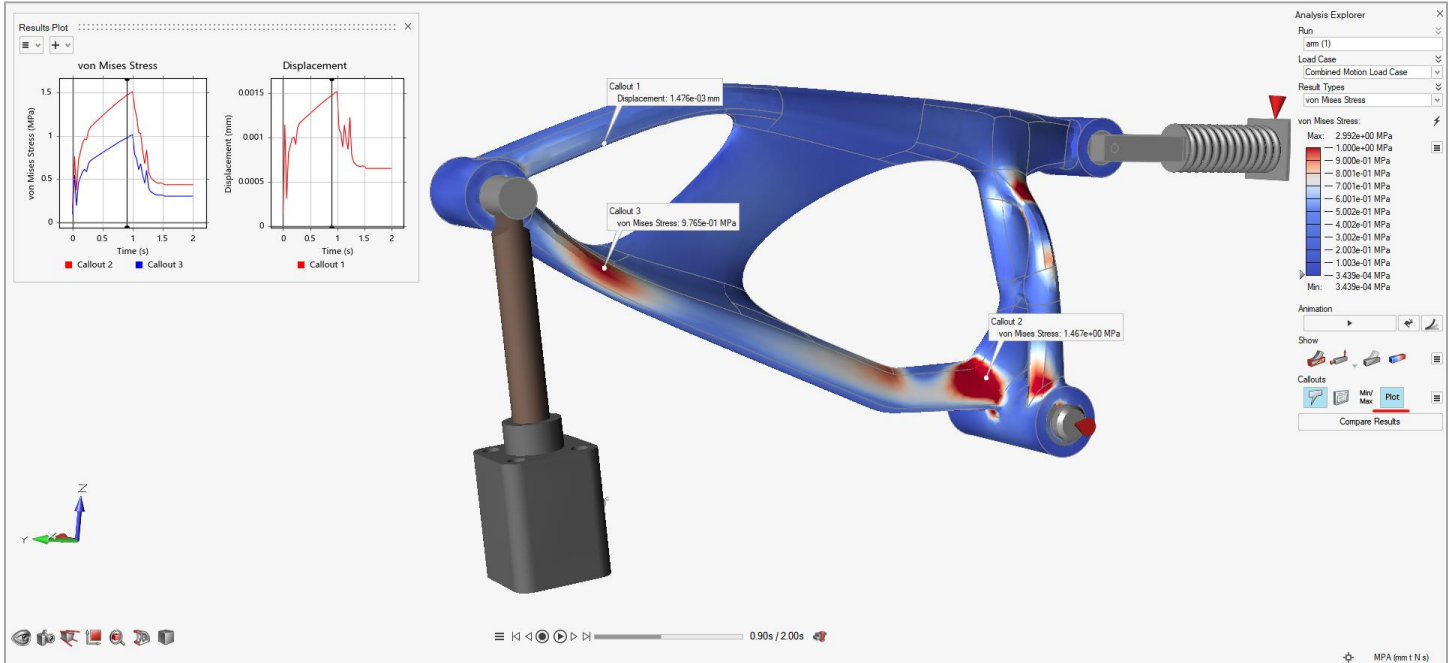
Virtual Option for Joints

A new Virtual option has been added to motion joints, which is useful for overcoming redundancies in rigid joints for motion analysis. This alternative to idealized joints allows for some compliance and can be used in applications like couplers and joints with friction enabled, where previously you were required to make the joint rigid. Now you can specify the Virtual option on an individual joint basis using the Property Editor, or on a global basis from the Motion Run Settings window.



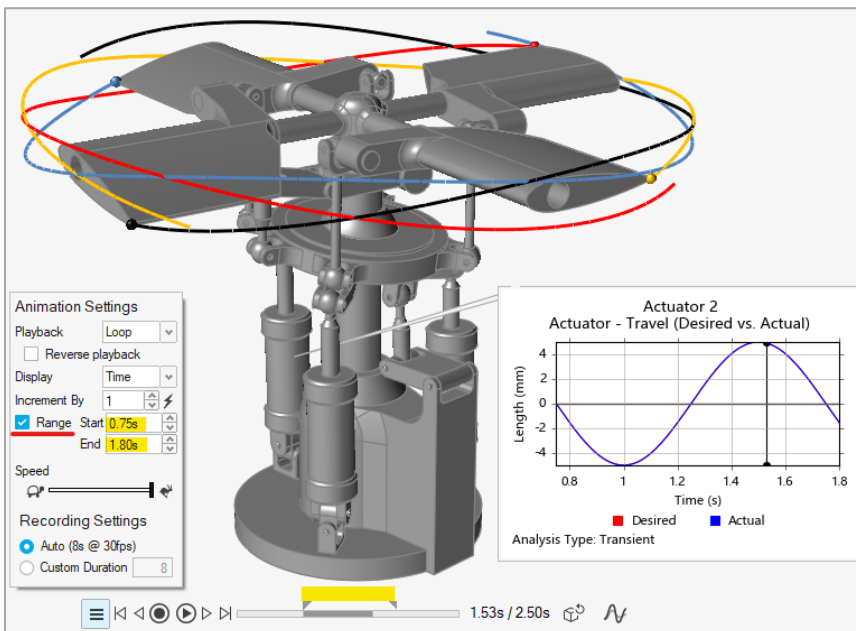
Time History Plots for Structures Callouts

The Analysis Explorer now has a Plot button that can be used to display time history plots for callouts defined for structural analysis. Changes made to the Result Types option are synchronized with the setting on the Analysis Explorer. Using the Callout option allows you to put multiple plots of mixed types on a single page.



Range for Motion Animation Playback

A new Range option is available in the Animation Settings dialog to specify the Start and End times (or frames) for motion animation. This allows you to limit the playback range to just a portion of the animation, making it easier to study behaviors in more detail. You can use the Ctrl key while clicking on the Start or End icons to jump to Range Start and Range End, respectively. You can fit plots for the selected range by using the Ctrl key while double-clicking. Also, the paths of tracers will be trimmed to honor the specified range.

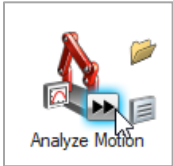


Additional Changes and Enhancements for Motion

The following changes and enhancements have also been added to Inspire Motion for version 2021:

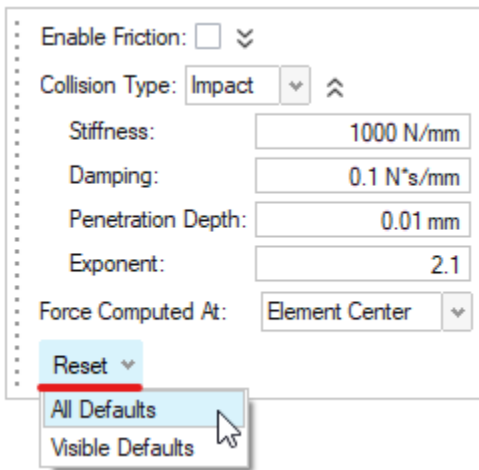
Change to Quick Run Behavior

Instead of launching a new run, the Motion Quick Run button will now begin playing back motion animation results when available, provided that the End Time has not been changed and nothing in the model has been changed. The animation playback can be stopped by pressing the Pause button on the Animation toolbar or by pressing the Esc key to exit the tool. Note that if you prefer to execute a new motion analysis, hold down the Ctrl key as you click the Motion Quick Run icon.



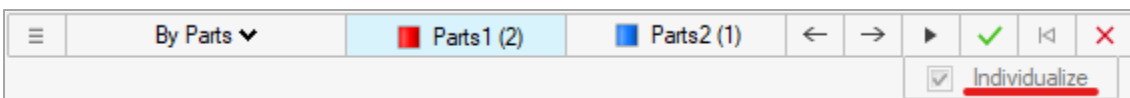
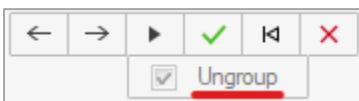
Reset Options on Motion Contacts Microdialog

The Motion Contacts microdialog now has a Reset option for restoring the default values of parameters. You can either restore all defaults or just those that are currently visible in the microdialog.



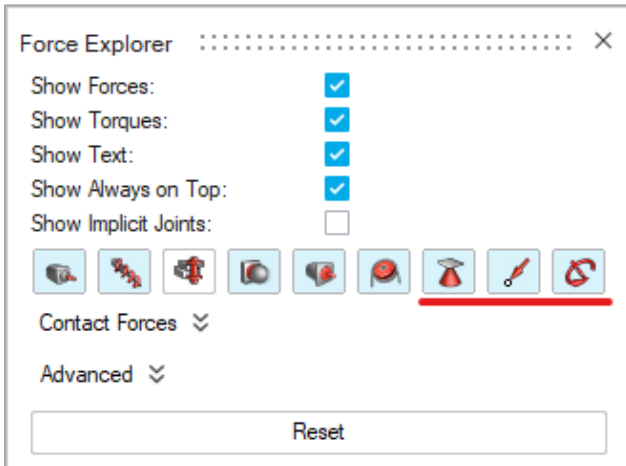
Improved Guide Bar Design

The guide bars for Rigid Groups and Motion Contacts now display a checkbox with text to clarify what the secondary action for the Play button is, such as Ungroup or Individualize.



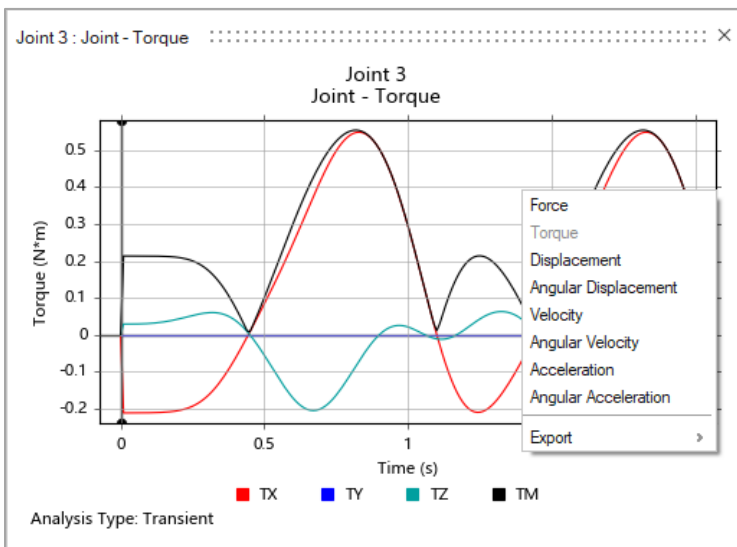
Filter Buttons for Structures Entities on Force Explorer

The Force Explorer now has dedicated filter buttons for supports, forces, and torques.



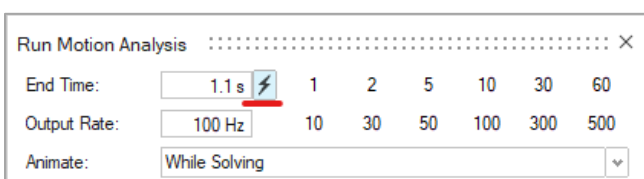
Plotting Context Menu Improvement

The right-click context menu for motion plots now shows the option currently being plotted as greyed out.



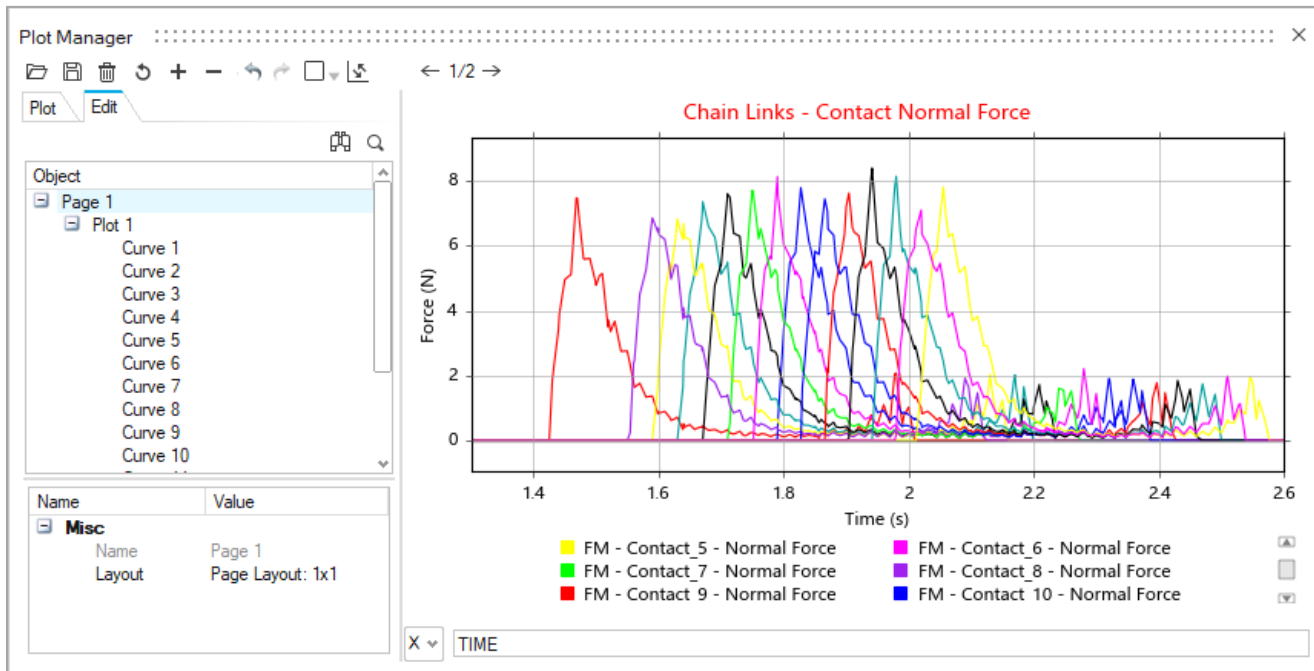
10% Extension for Calculate End Time Button

Holding down the Ctrl key when clicking the Calculate End Time button now adds 10% more time. This is handy for seeing model behavior after the profile has ended.



Scrollable Legend for Motion Plots

A vertical scrollbar now appears in the legend area when the number of rows in the legend is greater than three. This is useful when a lot of curves are being plotted simultaneously or when the legend label text is lengthy.



Start Time Column Added to Actuator and Motor Tables

The motion profile Start Time parameter is now accessible from the Motor and Actuator tables.

Motors

Name	Parts	Type	Use Controller	Locked	Function	Value	Reverse Direction	Start Time
Motor 1	torque, baseplate	Angle	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Step Dwell Step	22 deg	<input type="checkbox"/>	0.1 s
Motor 2	motor shaft, arm motor	Angle	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Step Dwell Step	45 deg	<input checked="" type="checkbox"/>	0.25 s
Motor 3	motor shaft 2, arm motor	Angle	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Step Dwell Step	45 deg	<input checked="" type="checkbox"/>	0.1 s

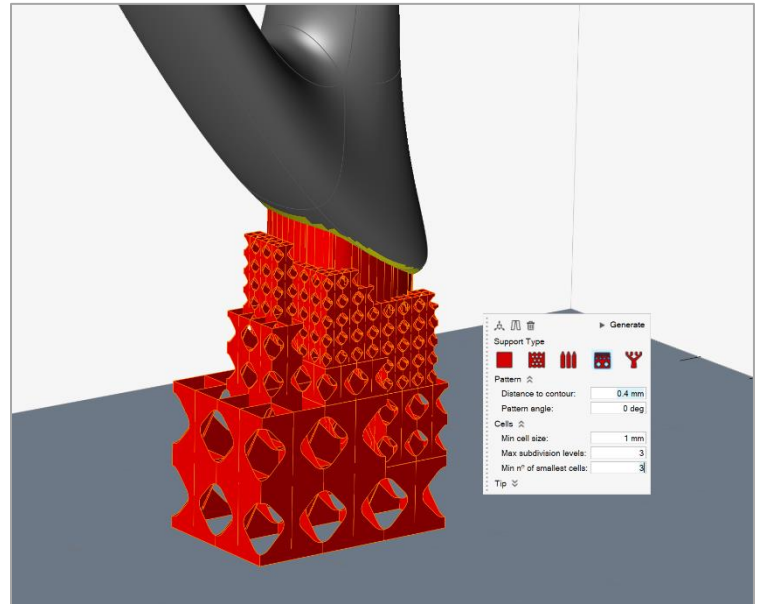
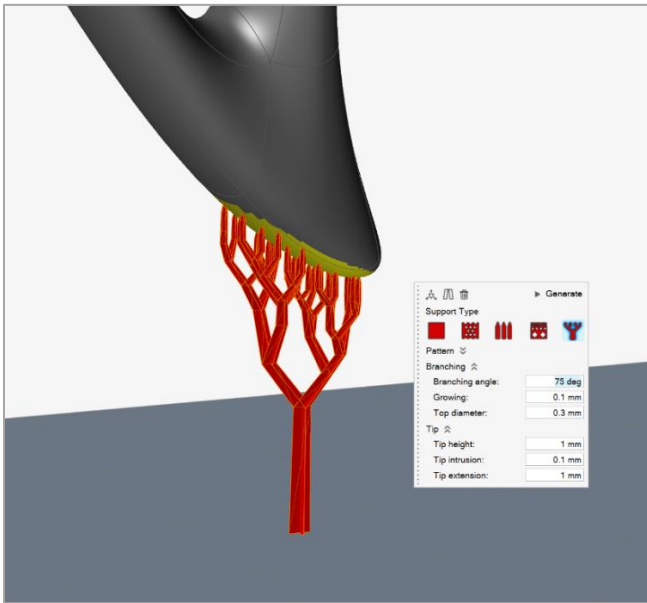
Actuators

Name	Parts	Type	Use Controller	Locked	Function	Value	Reverse Direction	Start Time
Actuator 1	CYLINDER 3, ROD 3	Displacement	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Oscillating	0.01 m	<input type="checkbox"/>	0 s
Actuator 2	CYLINDER 2, ROD 2	Displacement	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Oscillating	0.01 m	<input type="checkbox"/>	0.25 s
Actuator 3	CYLINDER 1, ROD 1	Displacement	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Oscillating	0.01 m	<input type="checkbox"/>	0.5 s

Print3D

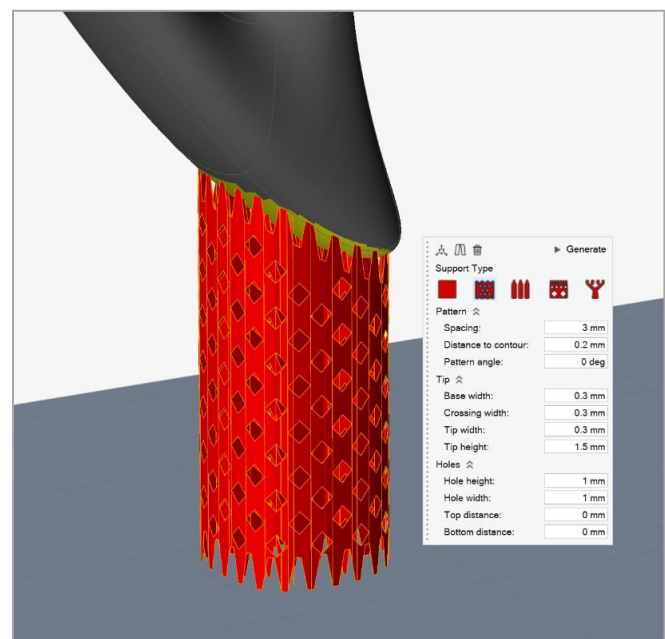
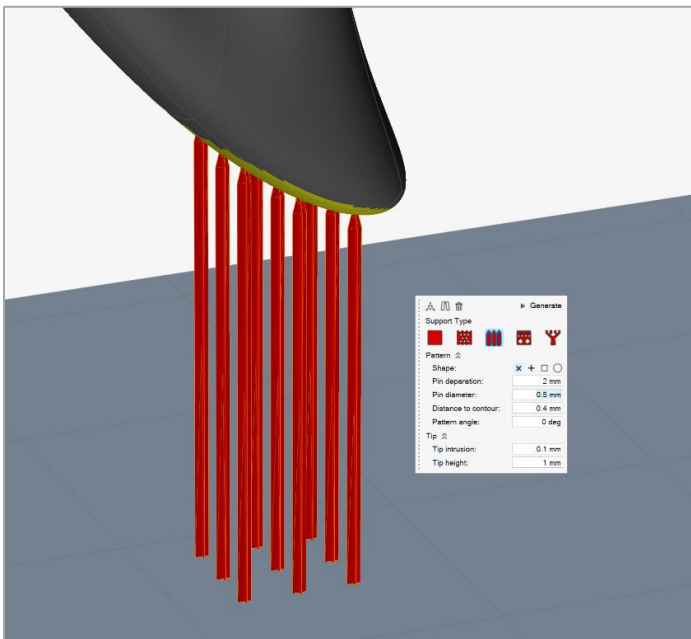
Improved Support Types and Parameters

The Print3D Supports tool has been improved, and now allows you to generate multiple support shapes in addition to optimizing time and materials. Available support types include block, rod, H-cell, tree, and feature a variety of options to control the support pattern, tip, and other parameters.



Tree Supports

H-cell Supports

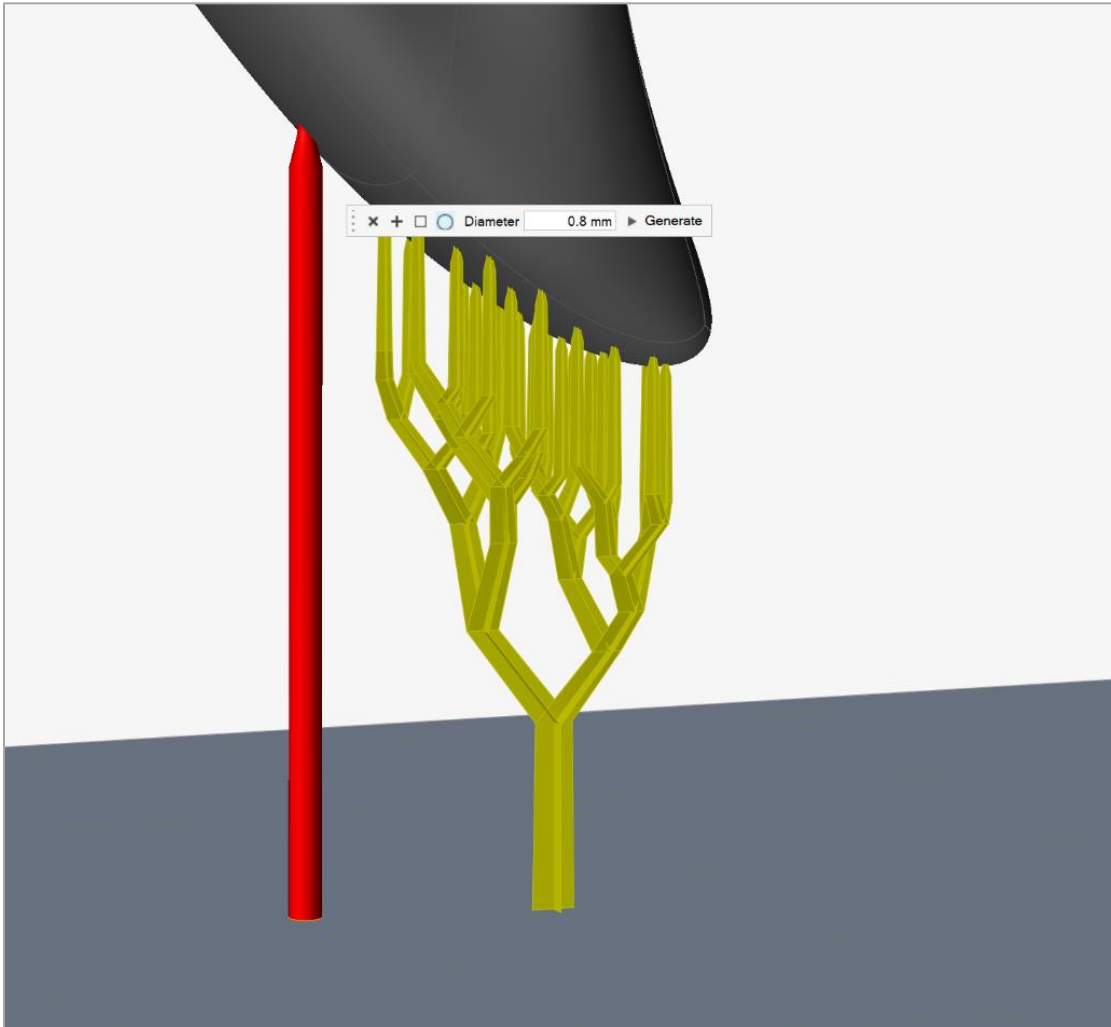


Rod (Pin) Supports

Block Supports

Manual Supports

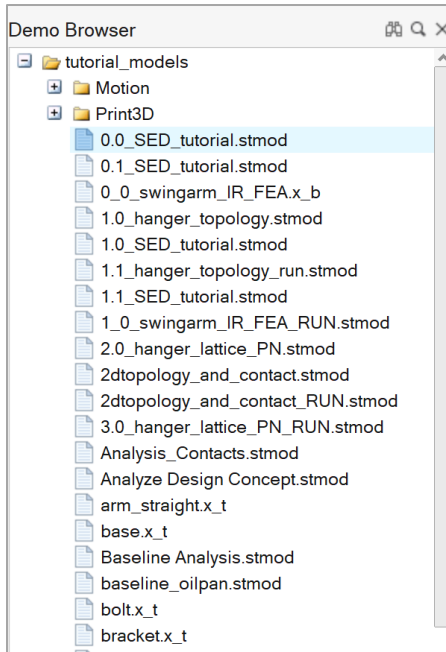
You can now generate manual supports in any region of the part based on your specific requirements.



General

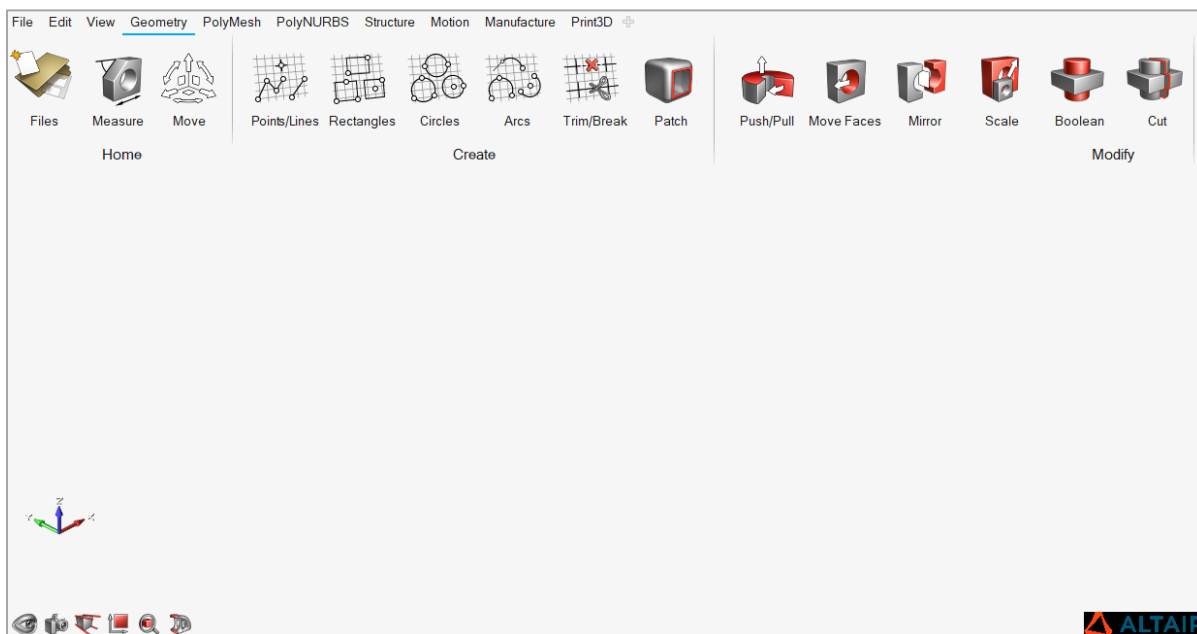
Demo Browser

A demo browser has been added to allow quick access to tutorial model files. The Demo Browser can be opened using the View menu or by pressing F7. Double-click a model from the list to open it, or drag-and-drop it into the modeling window.



Watermark Image

You can now add a .png or .jpeg image as a watermark in the graphics window. Simply rename the image “watermark” and add it to the Documents/Altair/2021/Inspire folder on your computer.



Resolved and Known Issues

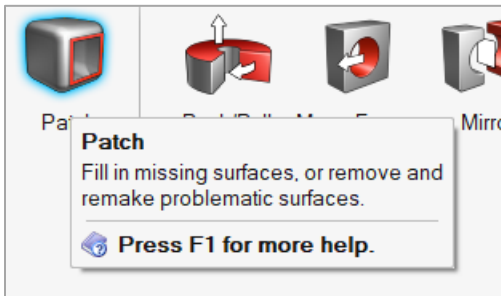
Resolved and known issues are listed in the online help. To view the latest information, go to **File > Help > What's New**.

Learn More About Inspire

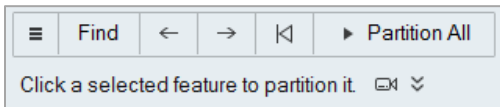
You can learn more about new and existing features in Inspire using the following resources:

In-Application User Assistance

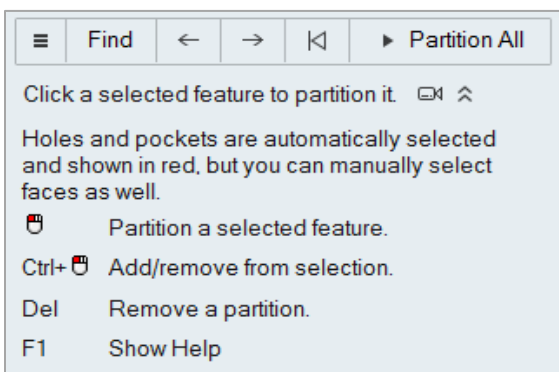
Inspire provides two types of user assistance. **Enhanced tooltips** appear when you hover over icons and other features. They describe what the tool does.



Workflow help appears when you select a tool that opens a guide bar or microdialog. The text prompts you what to do next.

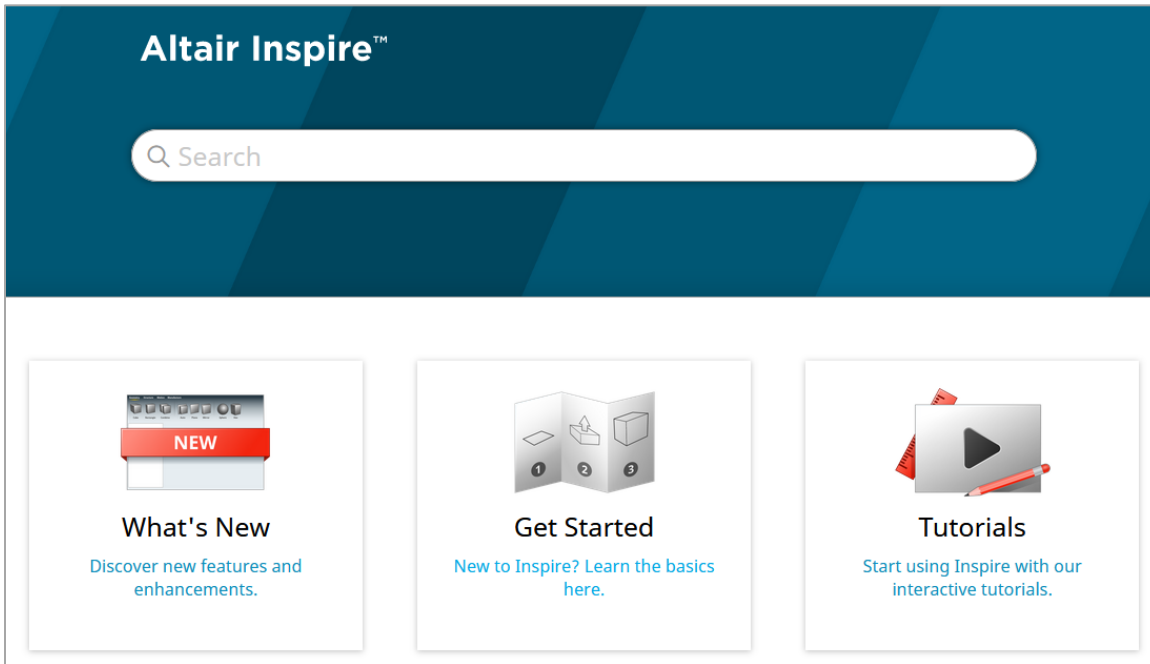


Click  to view additional tips and shortcuts. Some tools also include a video .



Online and Offline Help

Press **F1** or select **File > Help > Help** to view the online help.



You can download an offline version by selecting **File > Help > Download Offline Help**. An internet connection is required to download.

