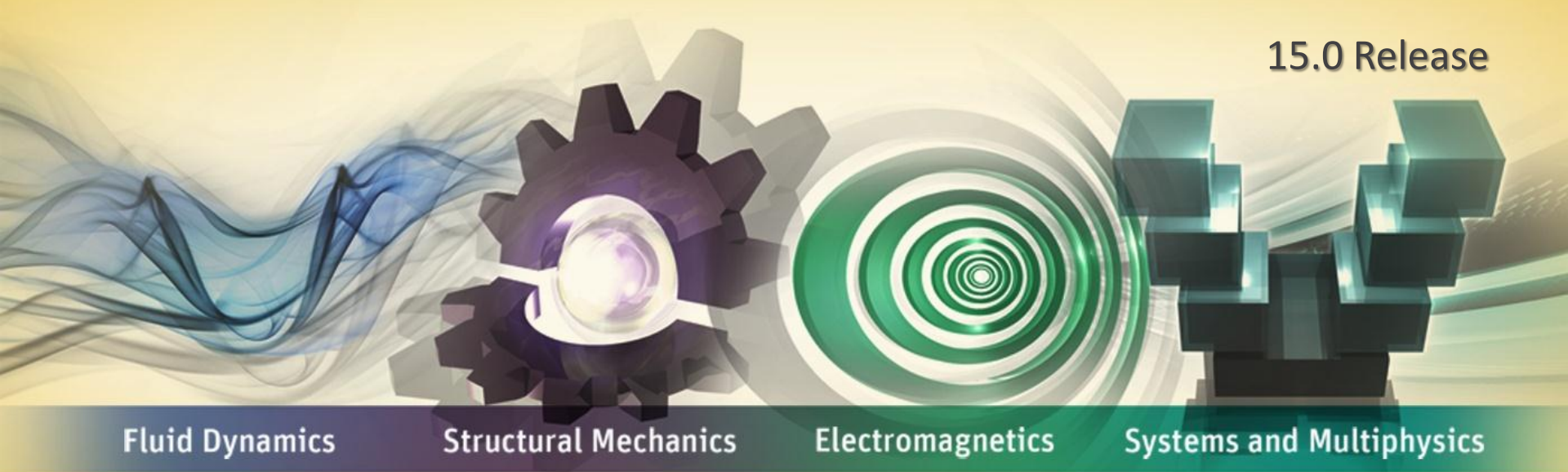


Appendix 3

Additional Shell Meshing Features

15.0 Release

A horizontal banner with a yellow-to-orange gradient background. It features four distinct 3D visualizations: fluid flow streamlines on the left, a dark gear with a glowing center, a green concentric circle pattern, and a stack of blue cubes on the right. Below these images is a dark teal bar containing four white text labels.

Fluid Dynamics

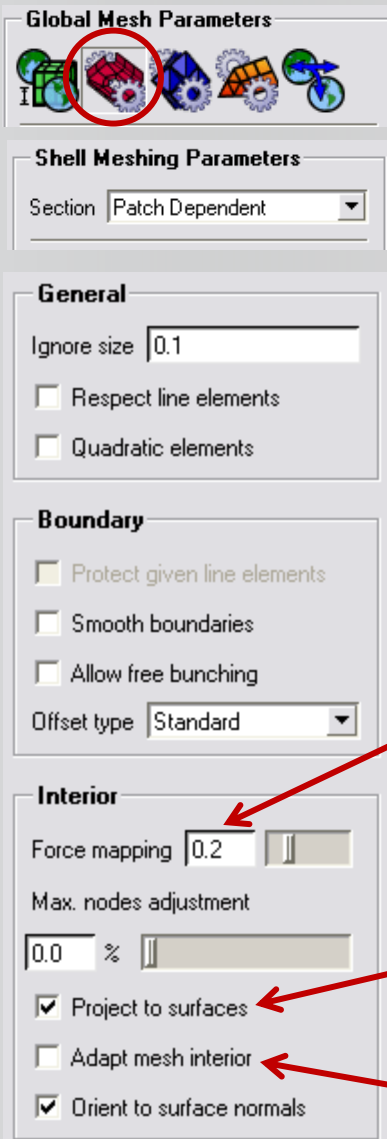
Structural Mechanics

Electromagnetics

Systems and Multiphysics

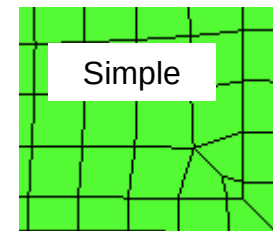
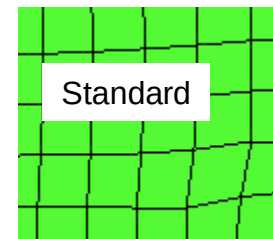
Introduction to ANSYS ICEM CFD

Patch Dependent Mesher - Boundary option



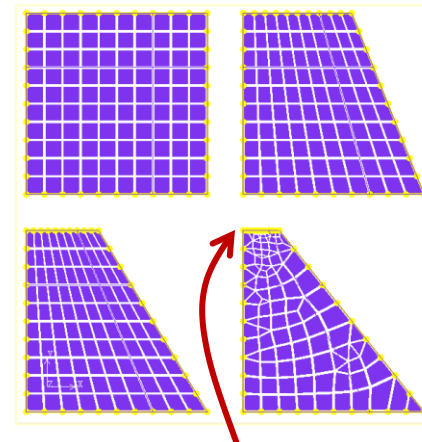
Boundary

- **Protect given line elements**
 - Keeps existing line elements which are smaller than the *Ignore size*
 - Grayed out unless **Respect line elements** is on
- **Smooth boundaries**
 - Smooths mesh boundaries after mesh generation. Ignores curve mesh settings
- **Offset type** →



Interior

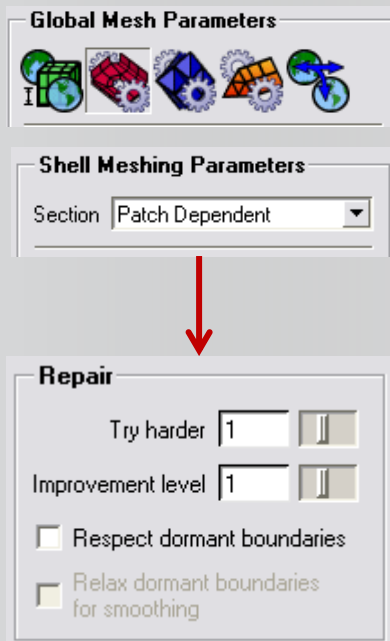
- **Force mapping**
 - Forces mapped mesh on regular (4 sided) surfaces to desired degree (0-1)
 - Adjusts the number of nodes on opposite sides (0.2 = change number nodes by 20%)
- **Project to surfaces**
 - Interior nodes project to surface rather than interpolate position
- **Adapt mesh interior**
 - Allows transition to larger element size in the interior of the surface (uses surface max size)



Would require too many nodes increased from original setting based on force mapping setting

Patch Dependent Mesher - Repair option

- **Repair**

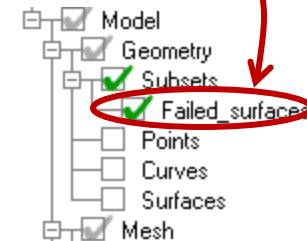


- **Try harder**

- For loops that fail with requested paving algorithm
- Levels (1-3) make further attempts to create grid
- **0** - No further attempts, failed surface(s) marked and put into a subset
- **1** - Simple triangulation of surface, converted to requested type
- **2** - Same as 1, but dormant curves activated
- **3** - Run octree, same as patch independent

- **Improvement Level**

- Levels (0-3) to improve mesh quality
- **0** - Laplace smoothing only
- **1** - STL tri mode, with conversion to quads (if requested)
- **2** - tri to quad conversion, splitting of bad quads
- **3** - allow nodes to move off boundary with smoothing



- Other options and fuller descriptions may be found in the **Help** menu.

Shrinkwrap

Cartesian (rectilinear) method

- Can ignore larger features, gaps, holes

Cube faces partially projected to geometry

Quickest method for creating surface mesh

Can't recognize sharp features

- Currently in development phase

Best for “wrapping” complicated geometry

- Quick and dirty surface meshing of complex geometries

For “solid” models

- Not recommended for thin sheet solids

Options

- **No. of smooth iterations**
 - To improve grid quality
- **Surface projection factor**
 - To fully project to original geometry (1.0), to not project at all (0.0), or partially ($0.0 < \text{factor} < 1.0$)

