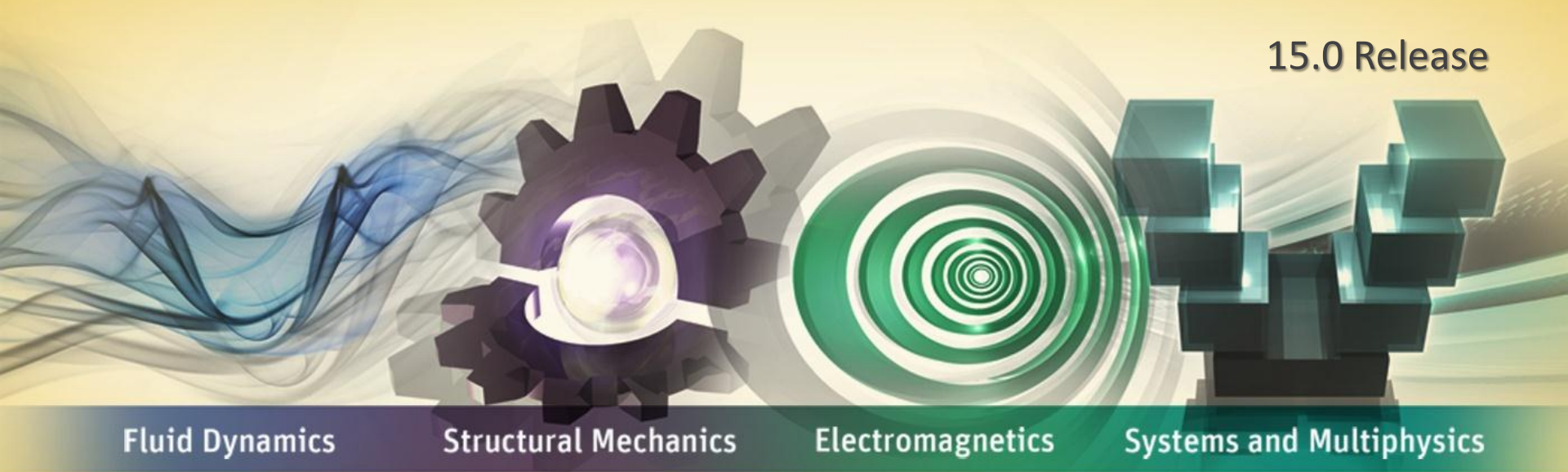


Appendix 1

Additional General Capabilities

15.0 Release

A horizontal graphic representing the 15.0 Release capabilities of ANSYS. It features four distinct visual elements: blue fluid flow lines on the left, a purple gear with a glowing center, a green concentric circle pattern, and a 3D isometric structure of blue and black blocks on the right. Below these elements is a dark blue bar with white text labels for each category.

Fluid Dynamics

Structural Mechanics

Electromagnetics

Systems and Multiphysics

Introduction to ANSYS ICEM CFD

Ansys ICEM CFD Product Purchasing

ICEM CFD

- Full capabilities (all meshers, CFD and FEA)
- Enables Ansys meshing in Workbench

ICEM CFD Tetra/Prism

- Includes hexa core, but not other hexa methods
- Enables Ansys meshing in Workbench

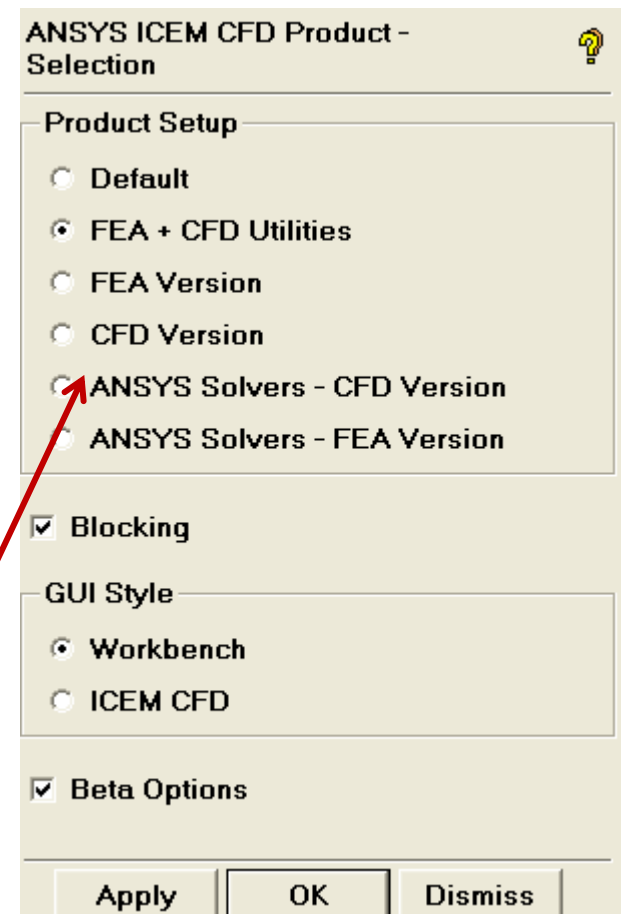
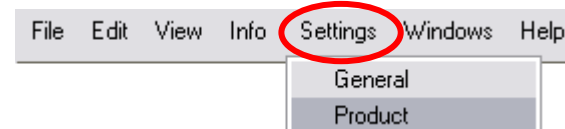
ICEM CFD hexa

- No tetra/prism
- Includes Body-fitted Cartesian (BFC) and Hex-dominant

ICEM CFD Add-on

- Lower cost, added to Ansys solver bundles
- Full capabilities
- Only writes to Ansys solvers (Ansys, CFX, Fluent)

CAD interfaces sold separately



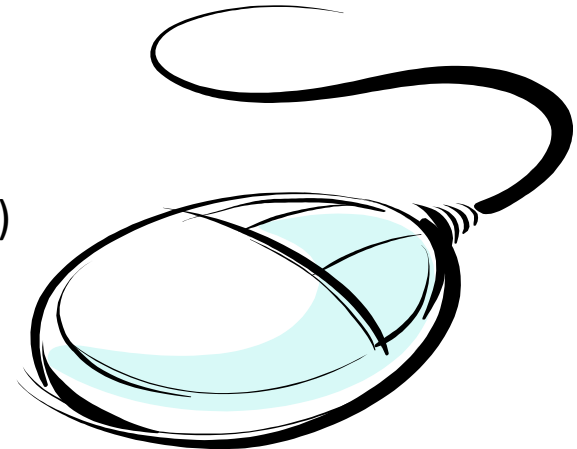
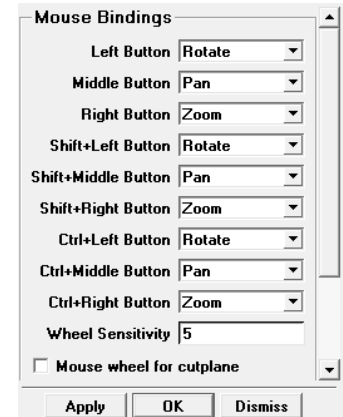
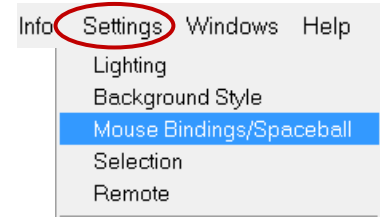
Settings->Product filters what options are seen in the application, but the licensing determines which ones can be used

'Dynamic' viewing mode (click and drag)

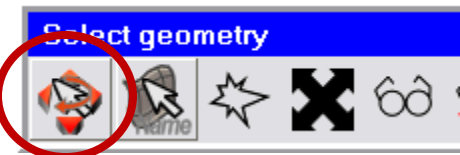
- left: rotate (about a point)
- middle: translate
- right: zoom (up-down)
screen Z-axis rotation (sideways)
- Wheel: zoom

Selection mode (click)

- left: select (click and drag for box select)
- middle: apply operation
- right: unselect last selection

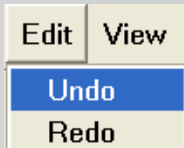


- **F9** toggles the mouse control to Dynamic mode while in Select mode
 - **Toggle Dynamics** button also does this
- **Spaceball** allows for dynamic motion even while in selection mode

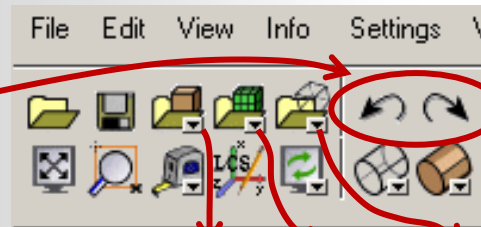


Commonly Used Utilities

Edit > Undo/Redo

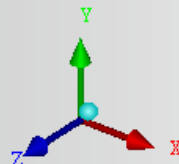


Also here



View

- **Fit**
 - Fit visible entities into screen
- **Box Zoom**
- **Standard views**
 - Top, Bottom, Left, etc.
 - Can also select X, Y, Z axis of display triad in lower right hand corner of main view screen to orient to standard views, e.g. selecting "X" will orient "right"
 - Isometric – select blue dot within triad



Measure

- Distance
- Angle
- Location



Open/Save Project



Open/Save/Close for
Geometry, Mesh, Blocking

– Local Coordinate System

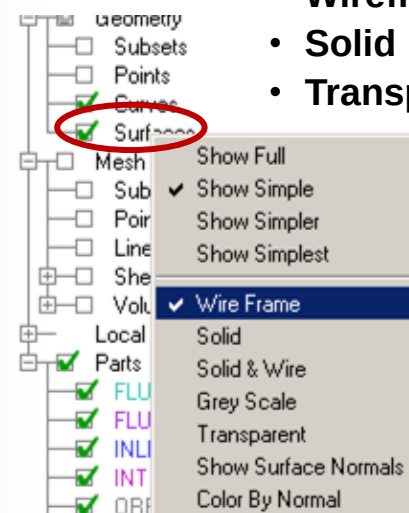


• Used by:

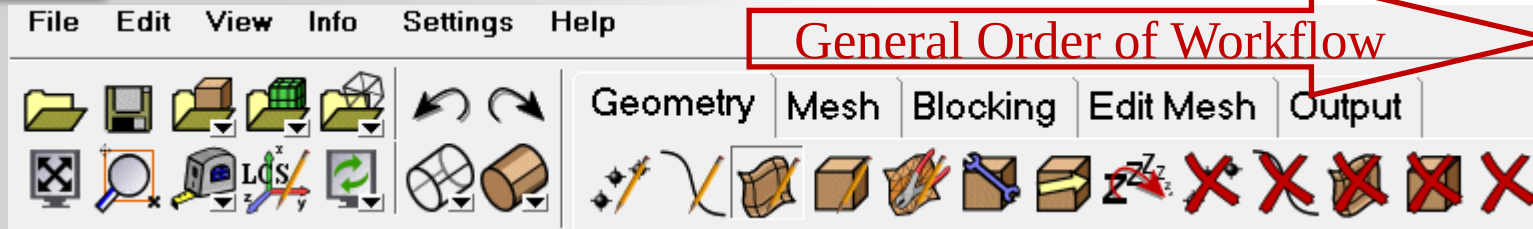
- Any XYZ point location entry in menus
- Select location
- Measuring
- Node/point movement/creation
- Alignment
- Loads
- Transformation

– Surface display

- Wireframe
- Solid
- Transparent



Common Function Tabs



Geometry



Create/Modify geometry

Mesh



Set mesh sizes, types and methods
Set global mesh options
Create Shell, Volume, Prism meshes

Blocking



Generate structured hexa mesh by creating a blocking

Edit Mesh



Check errors/problems, Smooth, Refine/Coarsen, Merge, repair mesh, Transform, etc.

Output



Set Boundary Conditions and Parameters
Write mesh for 100+ solvers.

Structural Function Tabs

Only available when **Common Structural Solver** is set to Abaqus, Ansys, Autodyn, LS-Dyna, or Nastran

Settings->Product must also be set to an FEA version

Properties



Create, read, write out material properties
Apply to geometry/elements

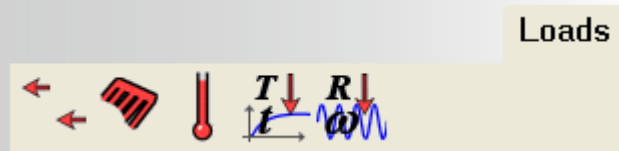
Constraints



Constraints

Set constraints, displacements, define contacts, initial velocity, rigid walls

Loads



Loads

Set force, pressure and temperature loads

Solve options

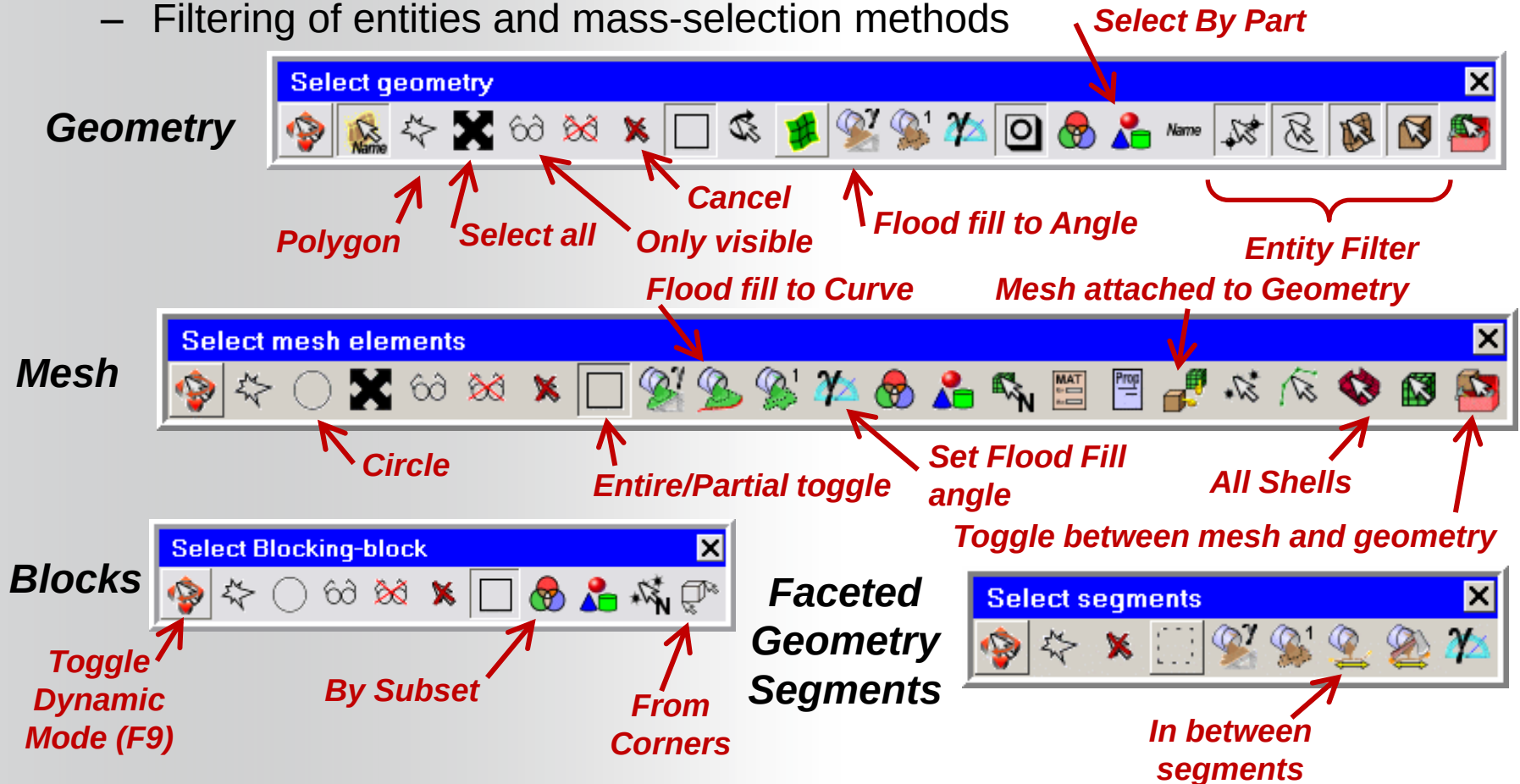


Solve Options

Set parameters, attributes, create subcases, write out input file, run solver

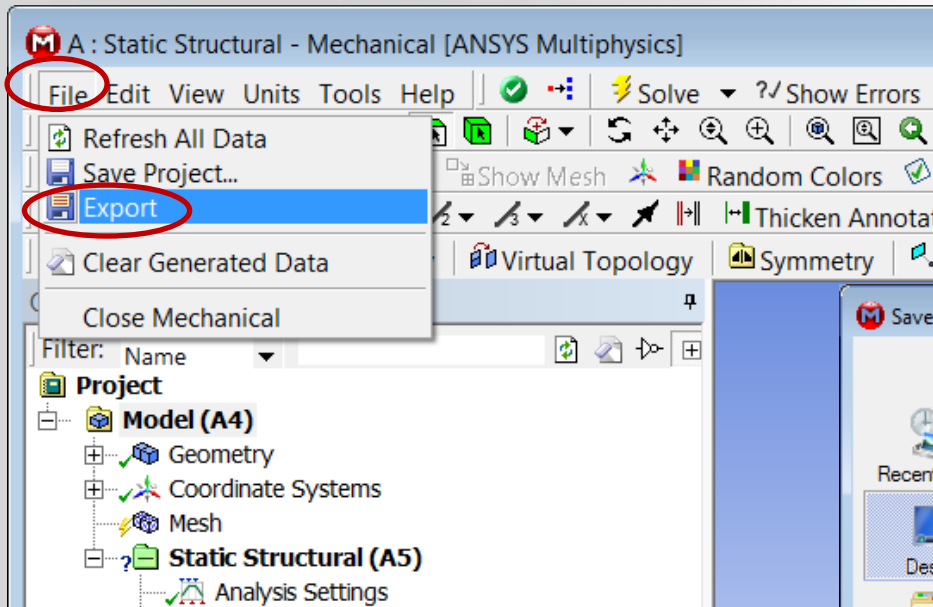
Selection Toolbar

- During select mode, popup selection toolbar appears
 - Some tools are common to all, others are contextual
 - Linked to select mode hotkeys
 - Filtering of entities and mass-selection methods



Exporting ICEM CFD Files from Workbench

Export files from Mechanical (Simulation) or Meshing Application to open in ICEM CFD



- **Files exported:**

- Project file (.prj)
- Geometry (.tin)
- Mesh (.uns)

- **Some ICEM CFD capabilities have been integrated into the Meshing Application**

- Tetra octree (patch independent)
- 3D blocking fill (Multizone)
- Autoblock (2D, uniform quad)
- Body fitted cartesian

