Introduction to Ansys SpaceClaim

Workshop 1.1 FEA: Basics

Release 2022 R1

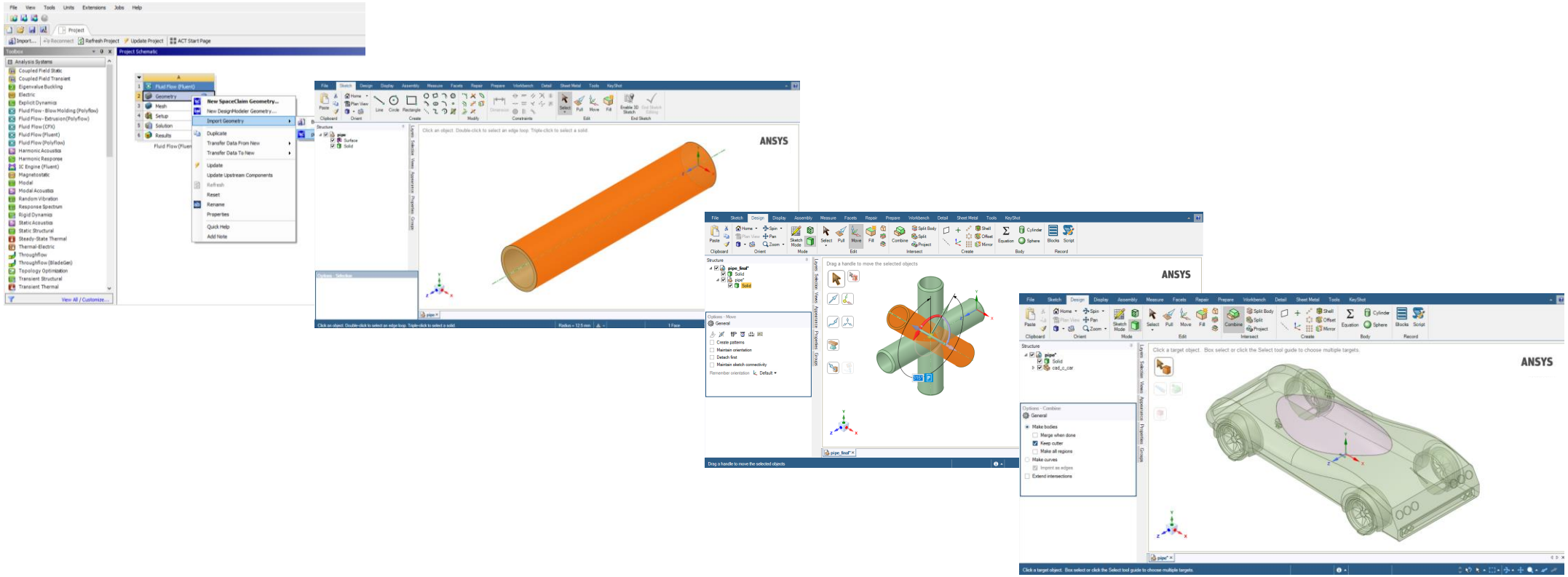
Please note:
- These training materials were developed and tested in Ansys Release 2022 R1. Although they are expected to behave similarly in later releases, this has not been tested and is not guaranteed.
- The screen images included with these training materials may vary from the visual appearance of a local software session.
- Although some workshop files may open successfully in previous releases, backward compatibility is somewhat unlikely and is not guaranteed.

Overview

- In this workshop we will learn about:
  - Launching Ansys SpaceClaim
  - Exploring the Ribbon Toolbar
  - Using the Structure Tree
  - File Operations

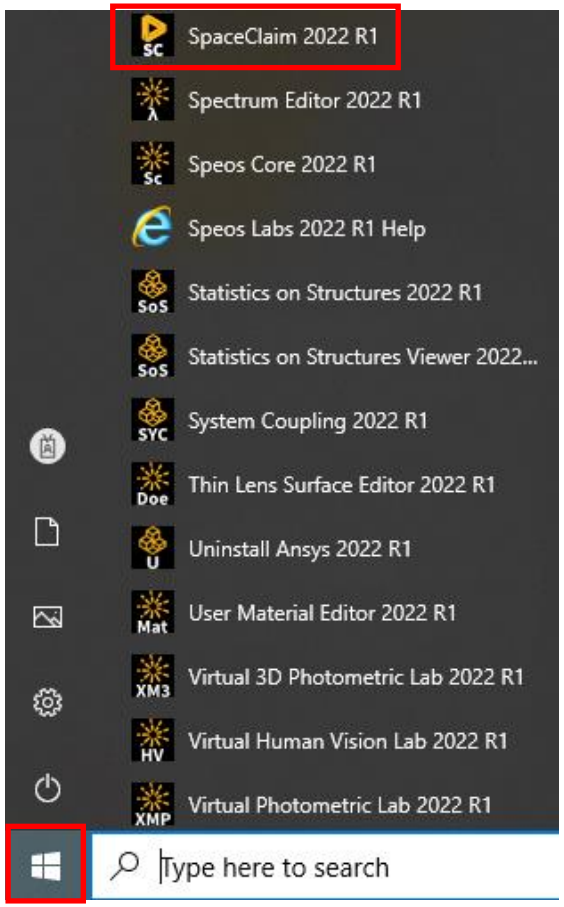
Objectives

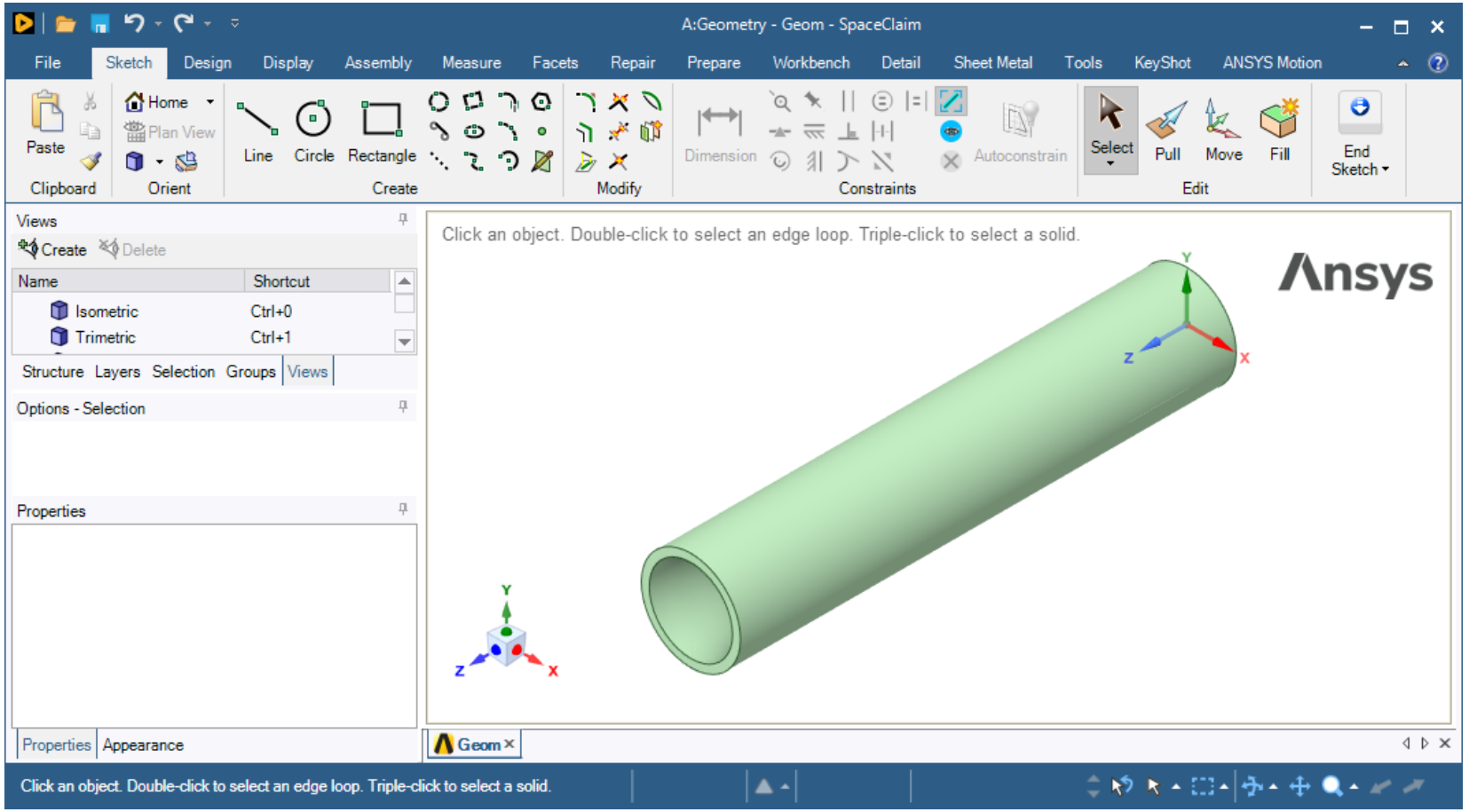
- To start SpaceClaim in standalone mode and from Workbench
- To become acquainted with geometry creation basics
- To become acquainted with the structure tree
- To import geometry within current component and as a new component



Starting up SCDM and Navigating (1)

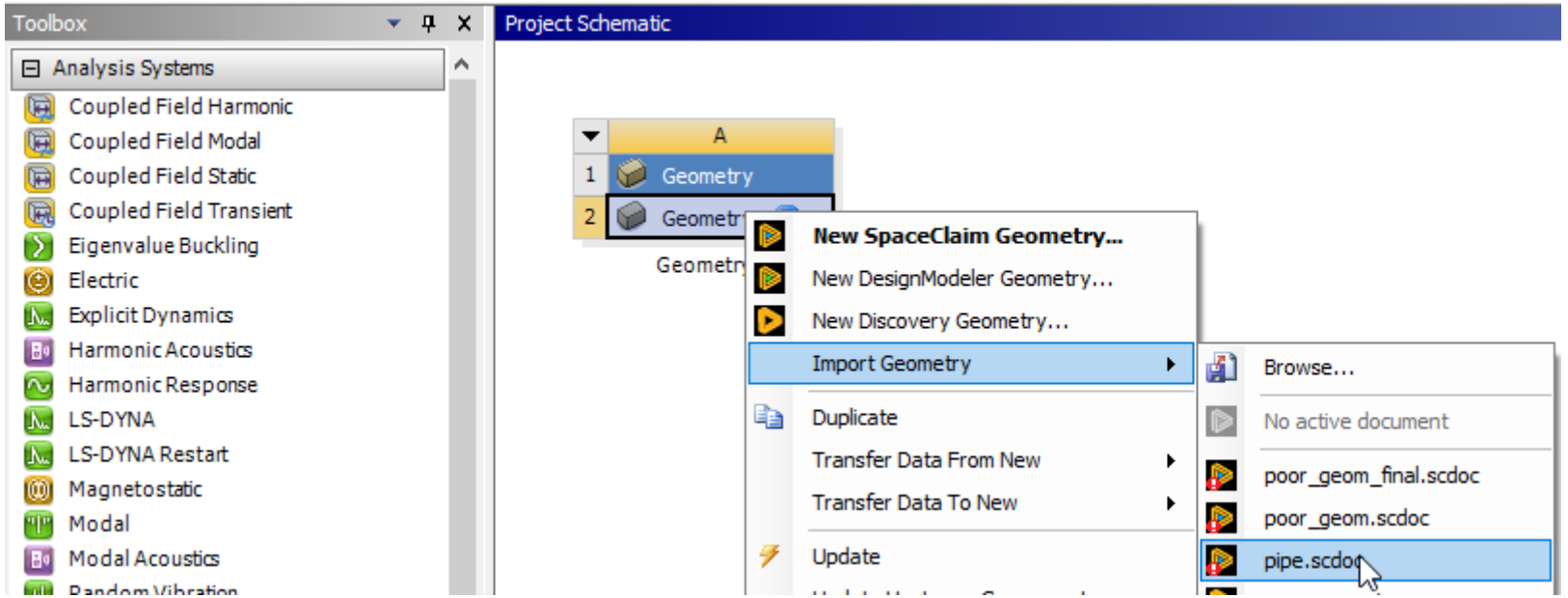
- Launch SCDM and open the file ‘pipe.scdoc’
  - Do this in standalone mode





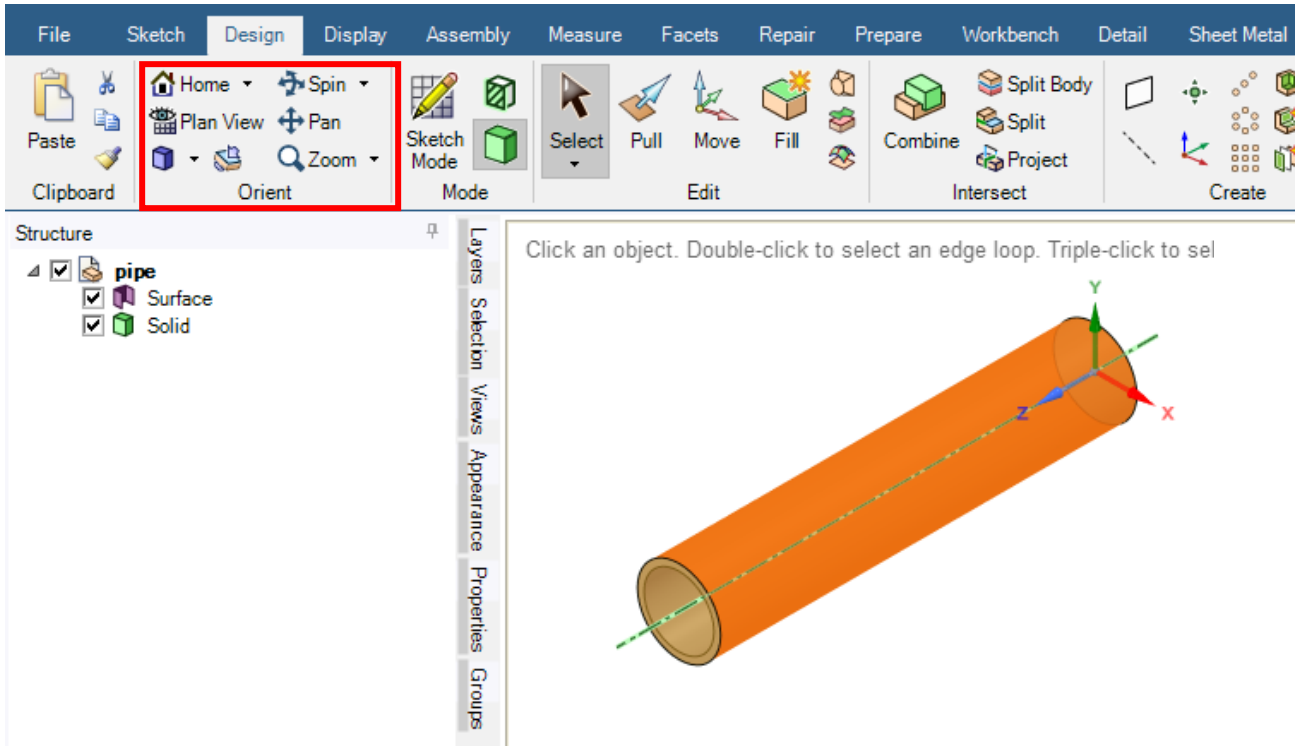
Starting up SCDM and Navigating (2)

- Launch SCDM and open the file ‘pipe.scdoc’
  - Do this as part of a Workbench workflow



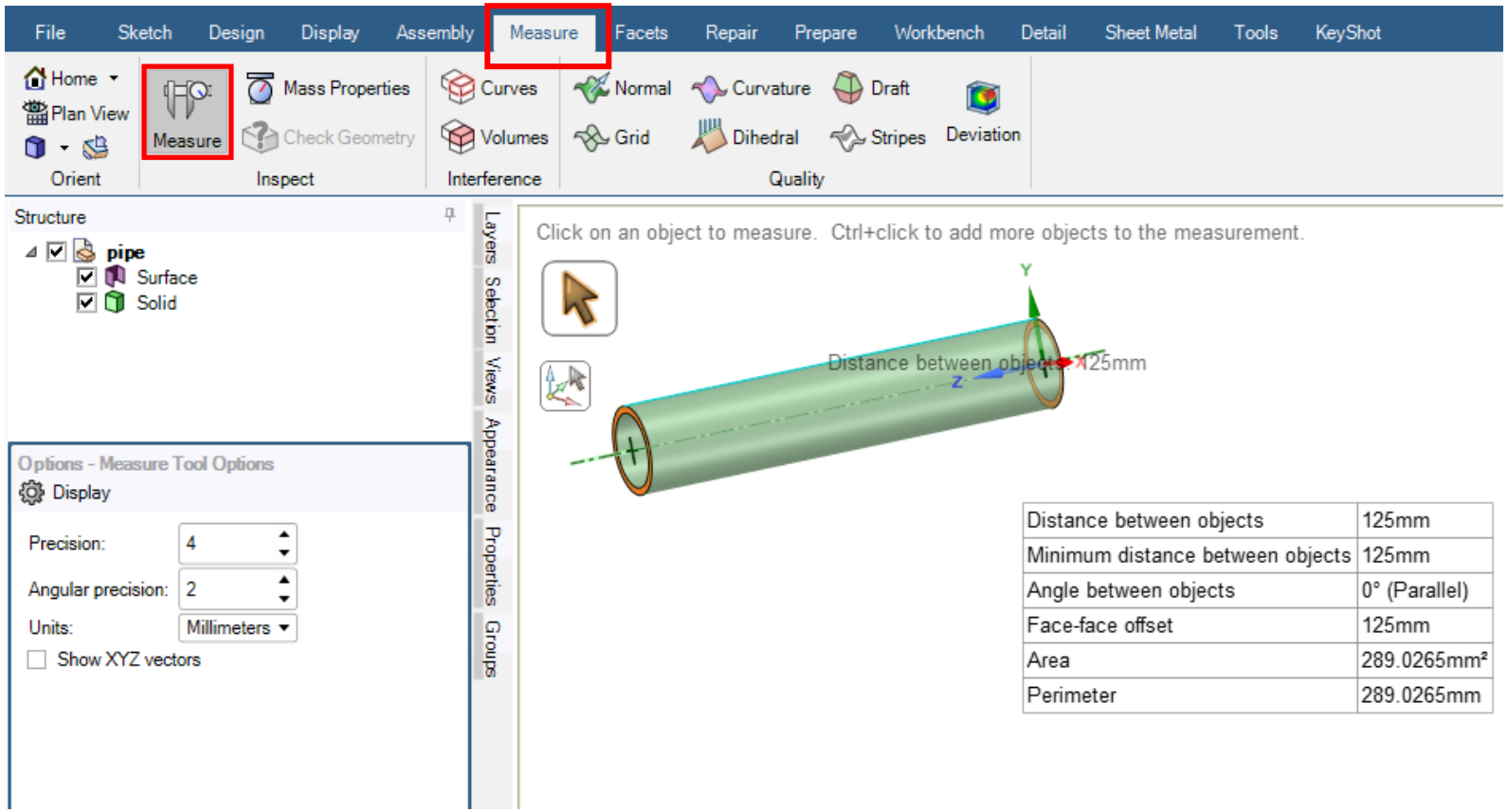
Exploring the Ribbon Toolbar (1)

- Familiarize yourself with the Ribbon Toolbar – try the following:
  - Rotate, translate, and zoom in on the pipe
    - Look for the “Orient” section in the “Design” tab: “Spin”, “Pan”, and “Zoom” controls
    - Now try with just the middle mouse button and “Control” key
    - Return to “Isometric” view (from the purple cube drop-down list)
  - Experiment with some of the other “Orient” features like the purple cube list which contains default views



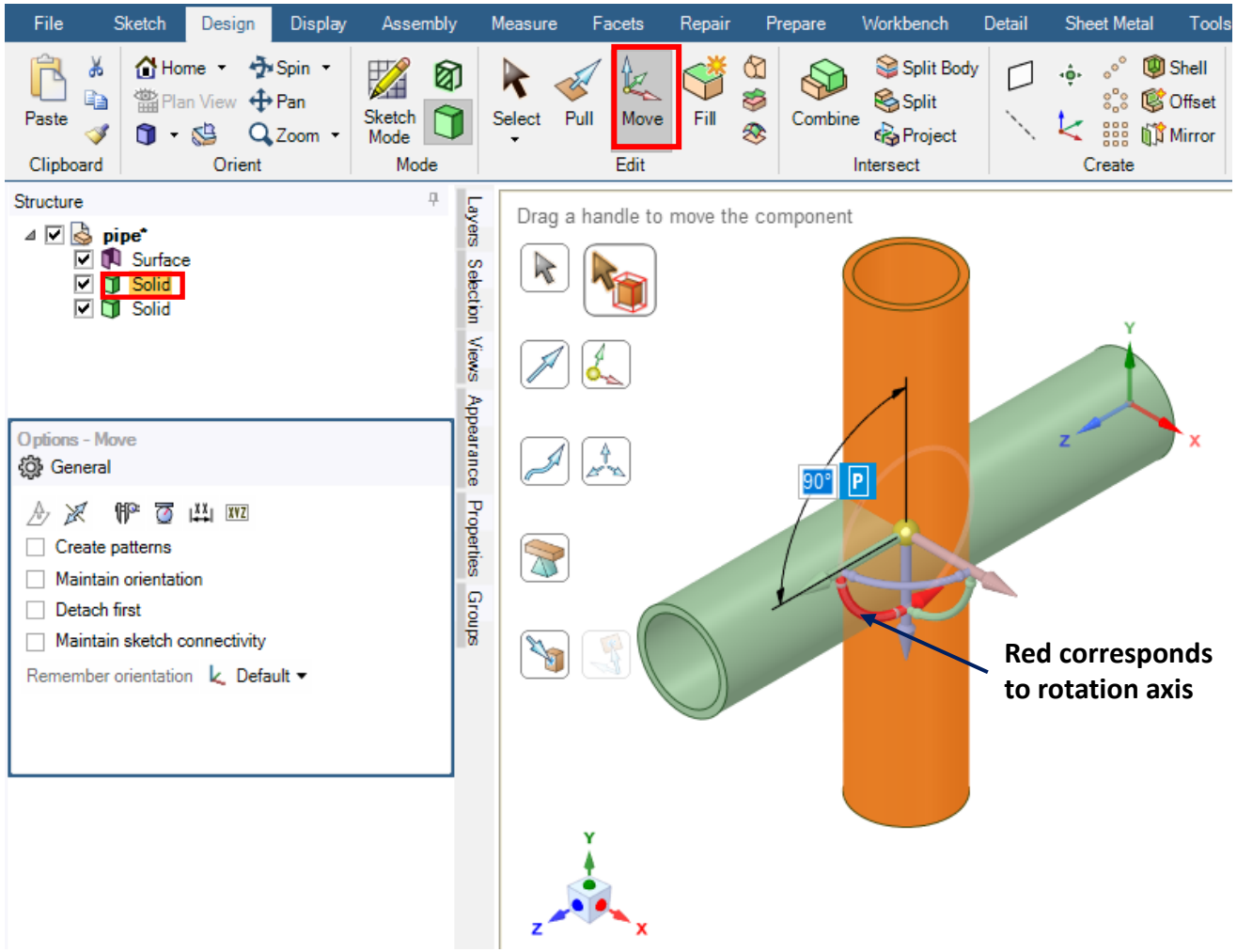
Exploring the Ribbon Toolbar (2)

- Familiarize yourself with the Ribbon Toolbar – try the following:
  - Measure the length of the pipe
    - Use the "Measure" tool in the "Inspect" section of the "Measure" tab
    - Use "Control+Click" to select both annular faces at the end of the pipe



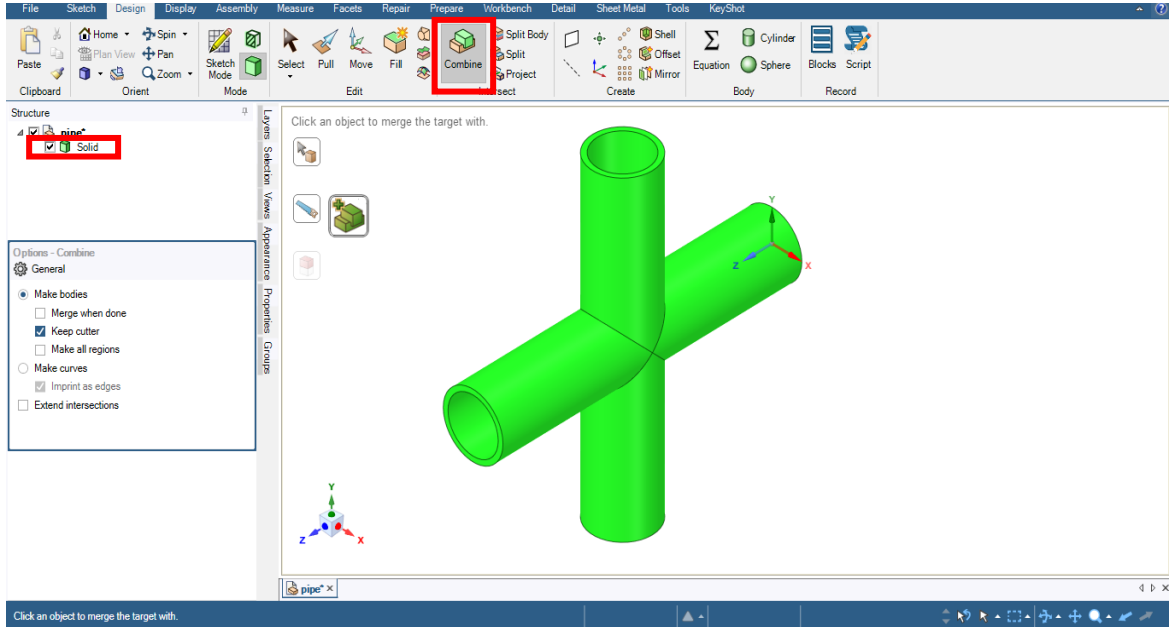
Structure Tree (1)

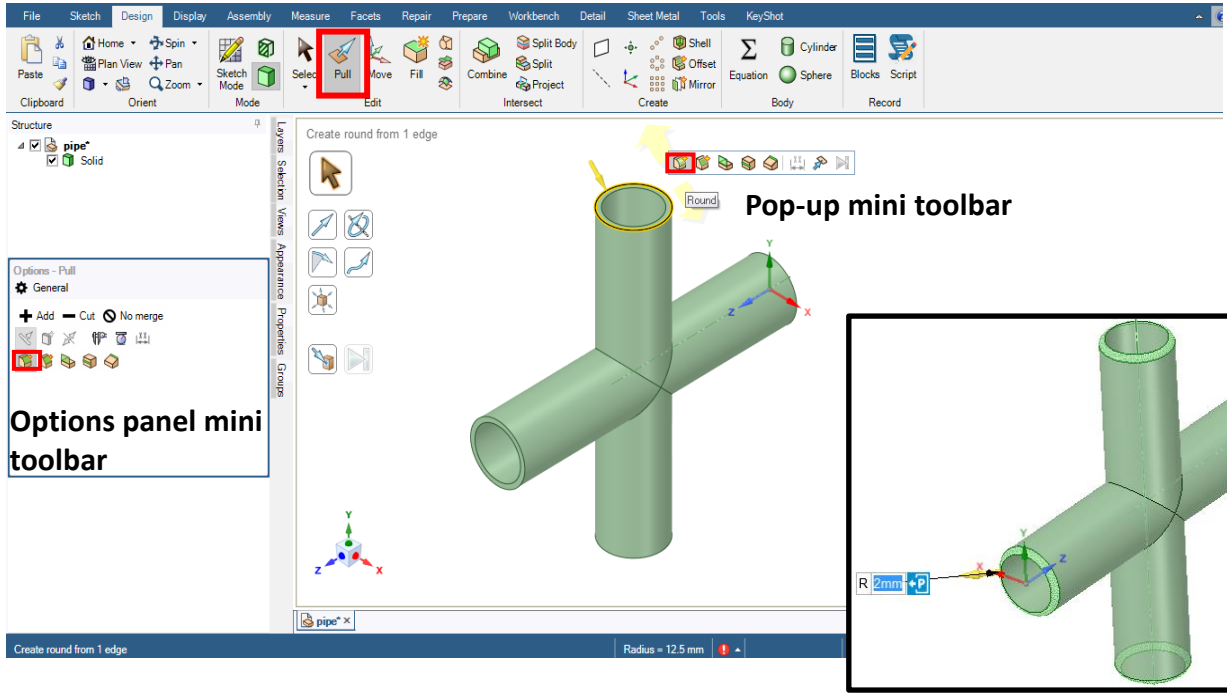
- SpaceClaim has an international Microsoft Office look and feel, and as such uses similar commands such as “Control-C” for Copy followed by “Control-V” for Paste
  - Rotate pipe by 90 degrees (triple-click the pipe in graphics window to select solid instead of surface, select “Move” from ribbon toolbar, click the red arrow to rotate about x-axis; type the angle and hit enter)
  - Note that:
    - We have 2 solid bodies and 1 surface body
    - The rotation is not recorded in the tree
    - The order of bodies in the tree does not matter (try dragging the surface between the two solids in the tree)
    - This is in contrast to a history-based tool like DesignModeler



Structure Tree (2)

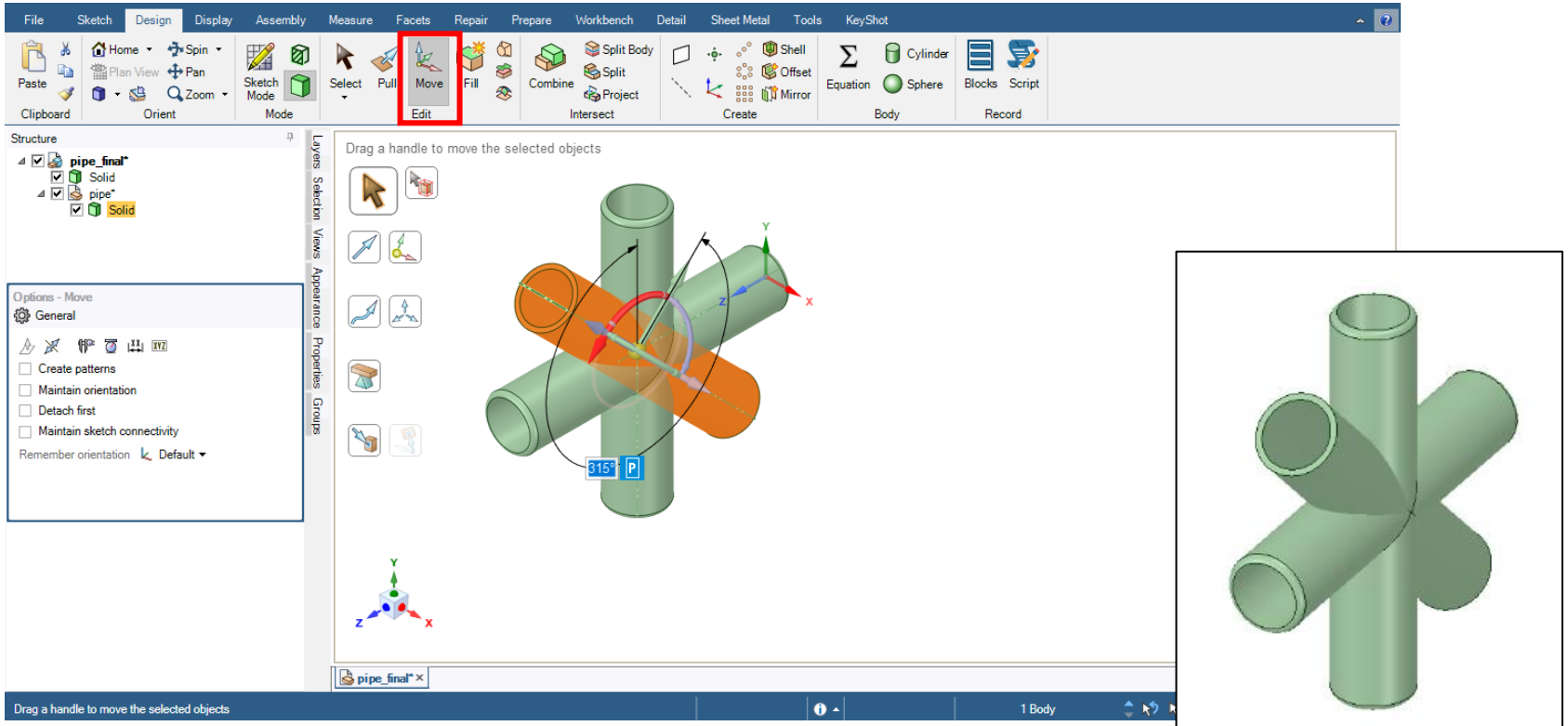
- Body operations are not included in the structure tree (the essence of a direct modeler)
  - Delete the surface (Right click in the tree then delete and combine the two pipes into one body ("Combine" tool in the "Design" tab). There is now 1 body in the tree
  - Put rounds on the outer diameter edge loops using the "pull" tool (from either the mini toolbar or the options panel you can select the four edges with CTRL + click. Set the round radius to 2 mm)
    - Note that again, this operation is not recorded in the tree





File Operations (1)

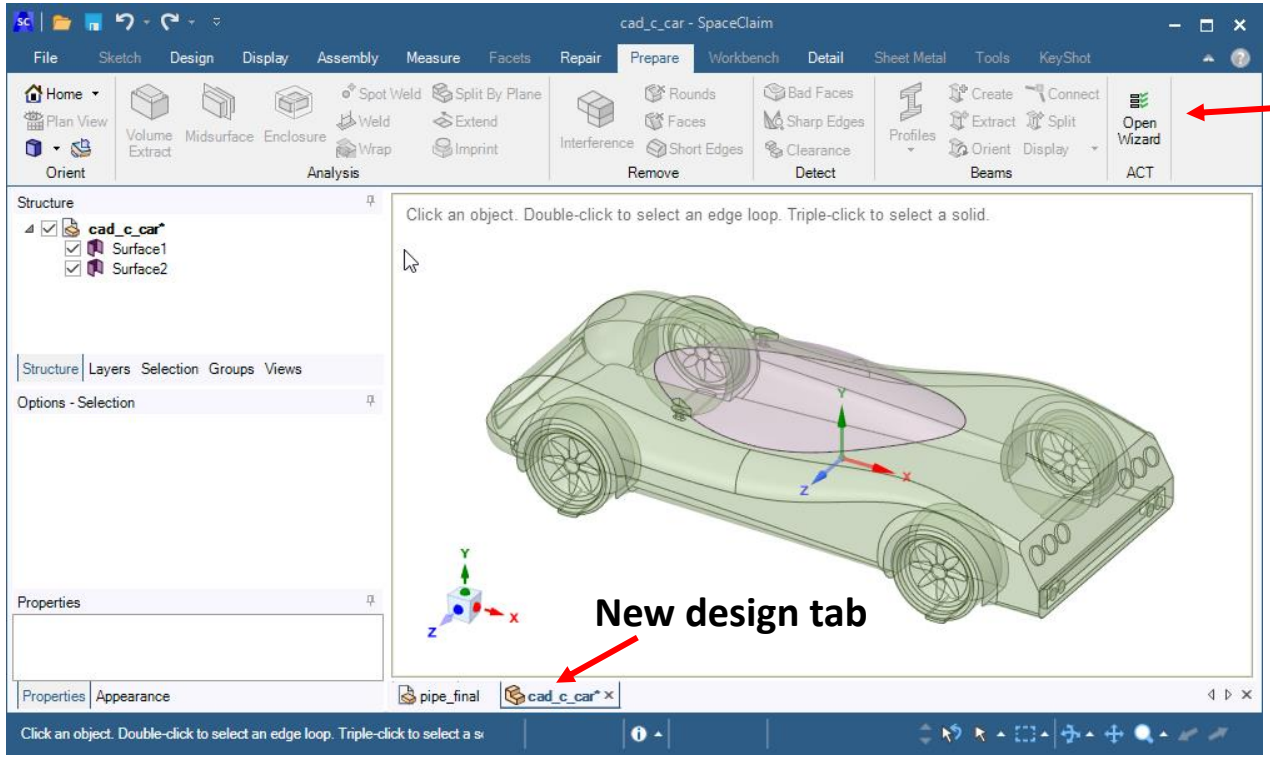
- Different SCDM projects can be dragged and dropped into one another
  - Save the current SCDM project as “pipe_final.scdoc”
  - Drag and drop the original “pipe.scdoc” into the graphics window
    - Delete the surface body from the tree and rotate the added solid -45 (or +315) degrees about the x-axis as shown



  - This provides ease of use when working with assemblies

File Operations (2)

- CAD files of many formats can be dragged and dropped into a current SC session, not just "*.scdoc" files!
  - Locate the Parasolid file "cad_c_car.x_b"
  - Drag and drop "cad_c_car.x_b" into the top toolbar instead of the graphics window



  - Note that this opens the car model into a new design tab rather than the existing one

End of presentation