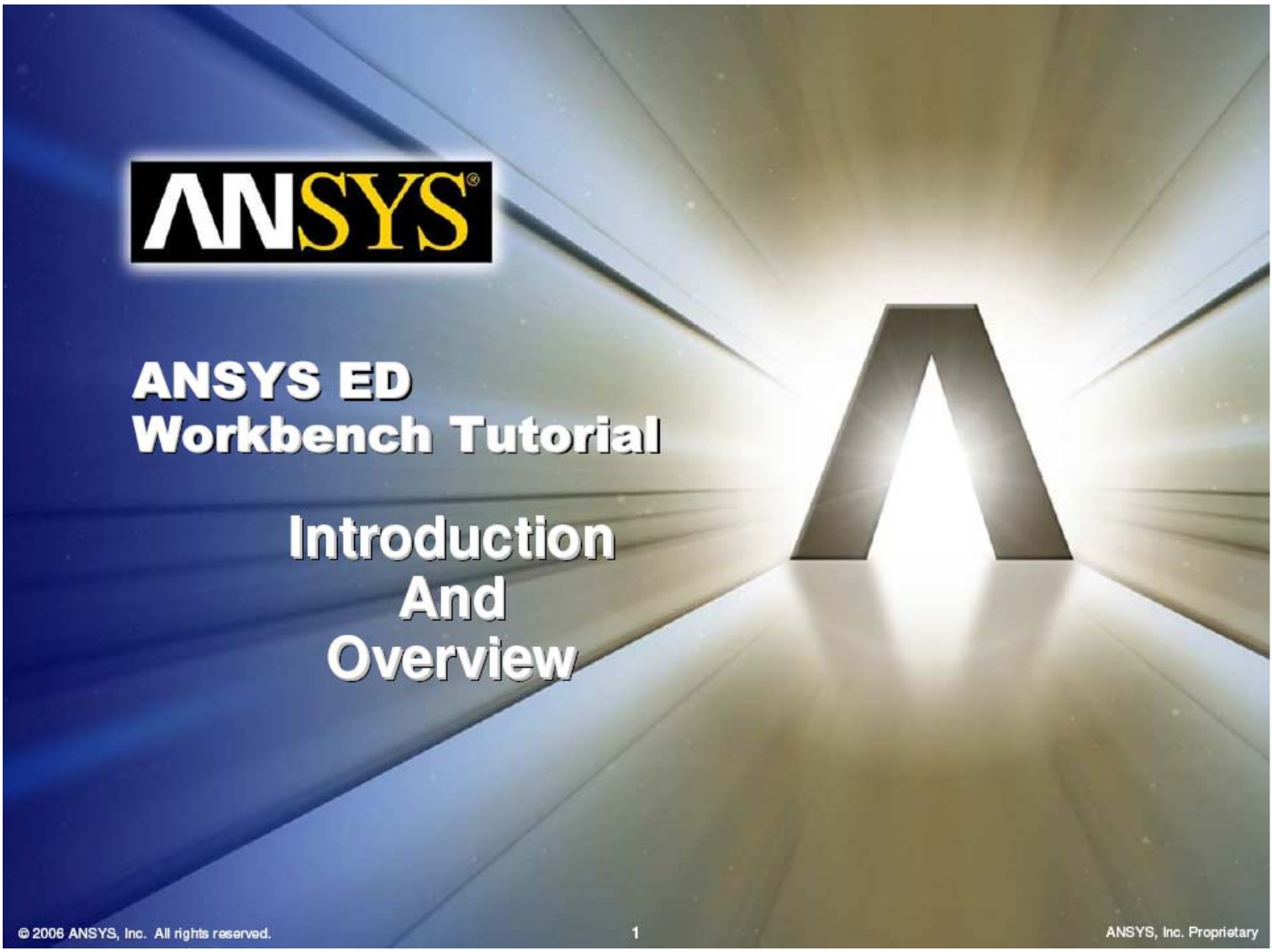


Introduction

ANSYS

- The ANSYS Workbench represents more than a general purpose engineering tool.
  - It provides a highly integrated engineering simulation platform.
  - Supports multi-physics engineering solutions.
  - Provides bi-directional parametric associativity with most available CAD systems.
- This tutorial is designed to introduce you to the capabilities, functionalities and features of the ANSYS Workbench.

ANSYS Workbench [ANSYS ED]

- ANSYS ED represents an application that:
  - Provides access to a range of ANSYS Engineering Simulation solutions.
  - Is designed to handle a limited set of relatively simple engineering solutions
    - Simulation capabilities are limited by the size of engineering and finite element models
    - Finite element models are limited to 1000 elements on single parts or assemblies.
    - Other limitations can be found at www.ansys.com/products/ed.asp

Purpose

- This tutorial is incremental in nature (it is recommended and in some cases required that exercises be taken in their defined order)
- It is designed to introduce you to:
  - The nature and design of the ANSYS Workbench User Interface
  - The concepts of ANSYS Workbench Projects and related engineering simulation capabilities
  - The integrated nature of ANSYS Workbench technology
  - The power of the ANSYS Workbench in using applied parametric modeling and simulation techniques to provide quality engineering solutions

Using this Tutorial

The following guidelines are provided when taking the tutorial

Green boxes are guides describing various Workbench features but requiring no action on your part

Blue boxes represent actions to be taken. When numbered they guide you through the sequence of the actions

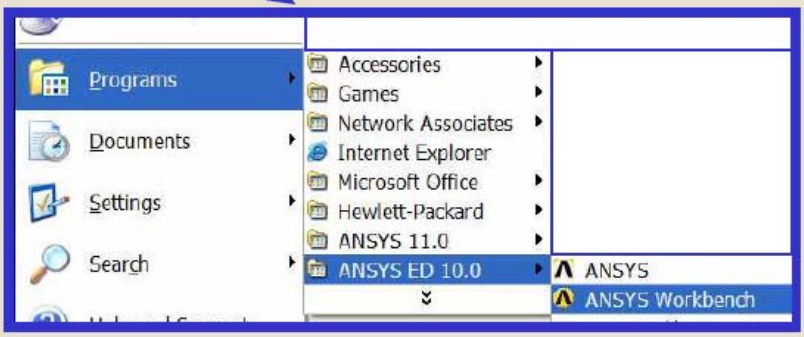
Orange boxes present warnings or notes of interest or importance

Before You Proceed

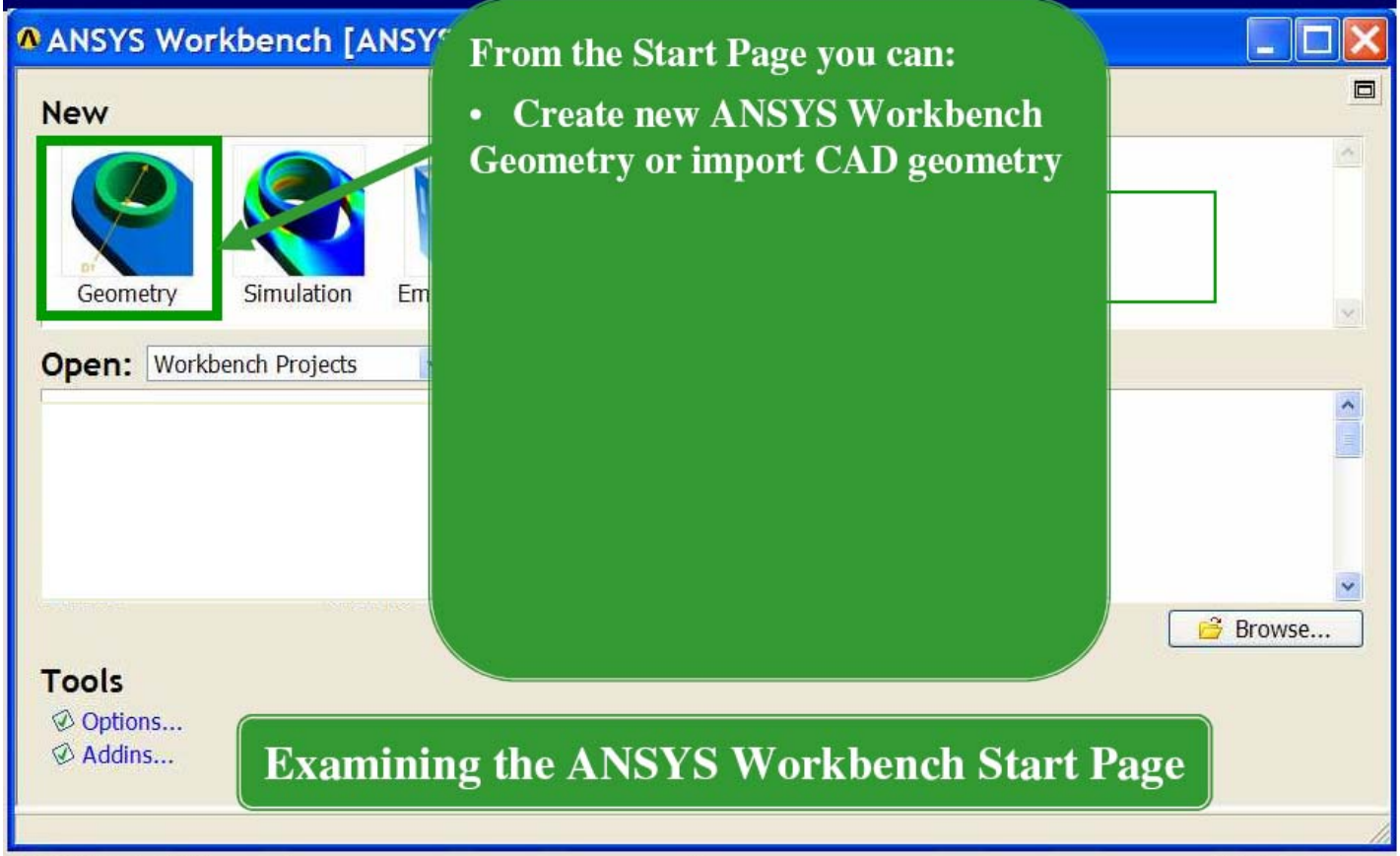
- This “Introduction and Overview” is designed to familiarize you with the ANSYS Workbench
- The layouts and information contained in the Introduction are intended only to help you become familiar with the ANSYS Workbench
- Details on the use of the ANSYS Workbench itself are contained in the exercises you will perform later
- As you surf the ANSYS Workbench in this introduction the background screen shots have been taken from other projects to present pertinent data.
- Your screens in the ANSYS Workbench will not contain the content presented in this overview

Getting Started

Launch the ANSYS Workbench



Getting Started

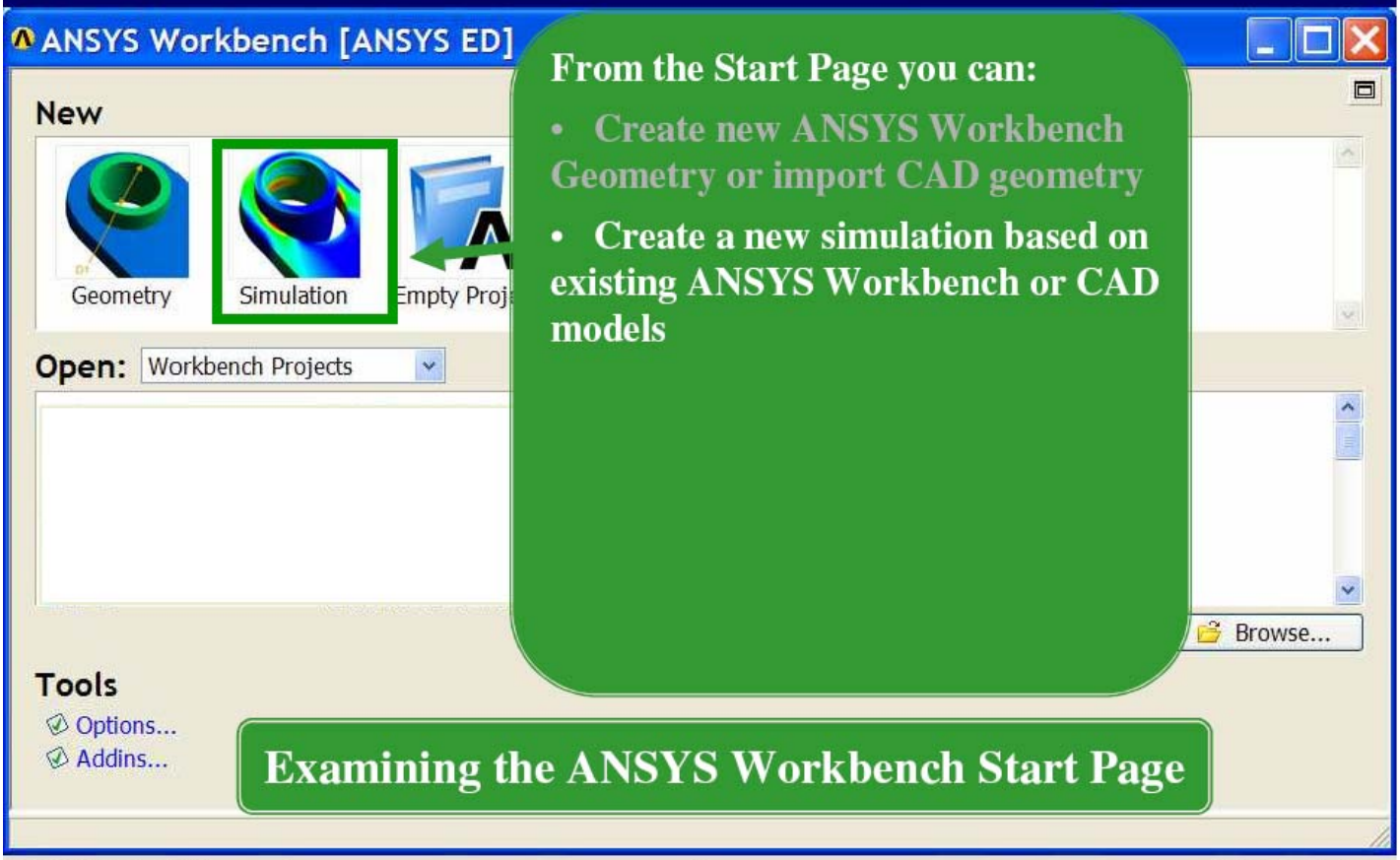


From the Start Page you can:

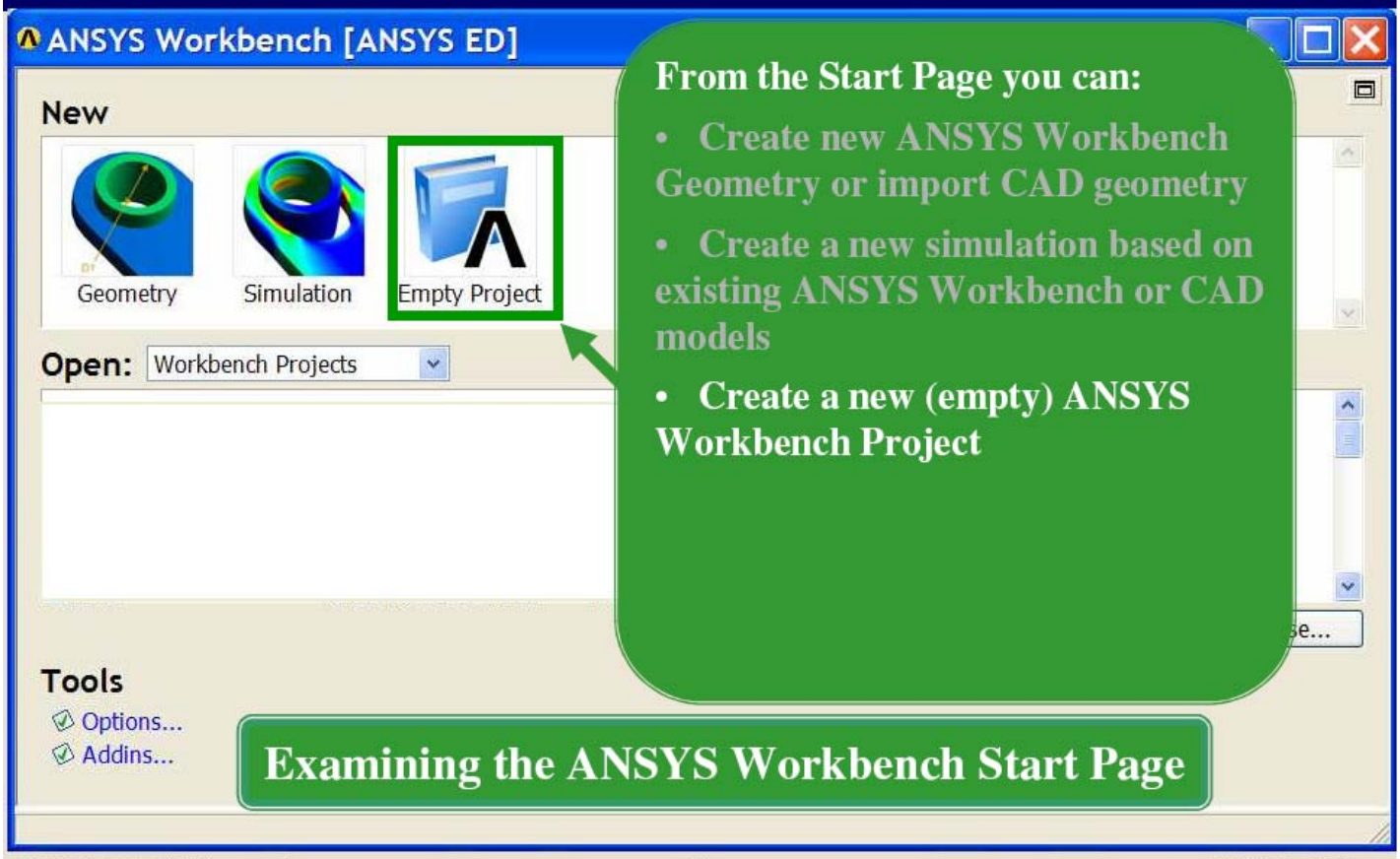
- Create new ANSYS Workbench Geometry or import CAD geometry

Examining the ANSYS Workbench Start Page

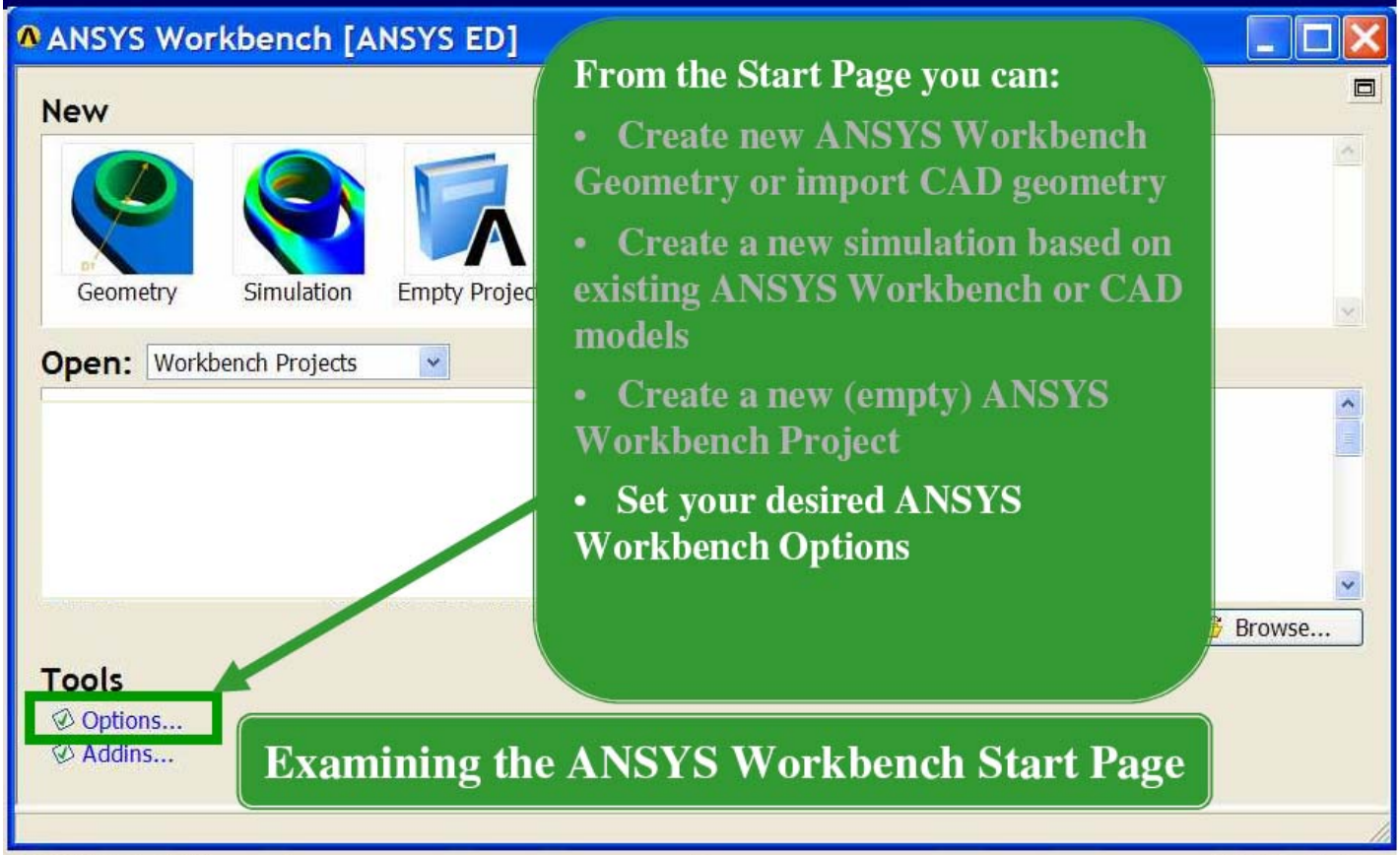
Getting Started



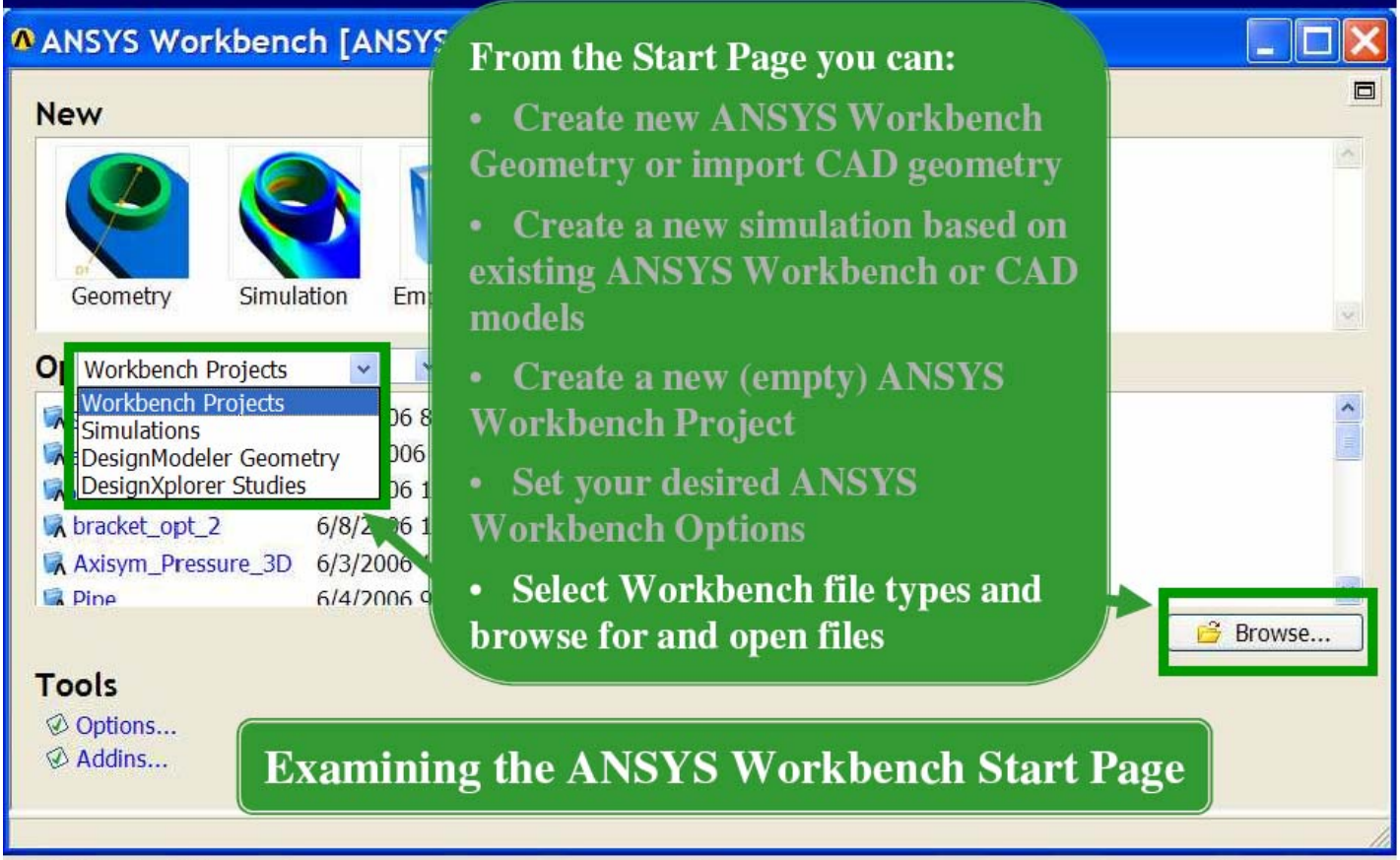
Getting Started



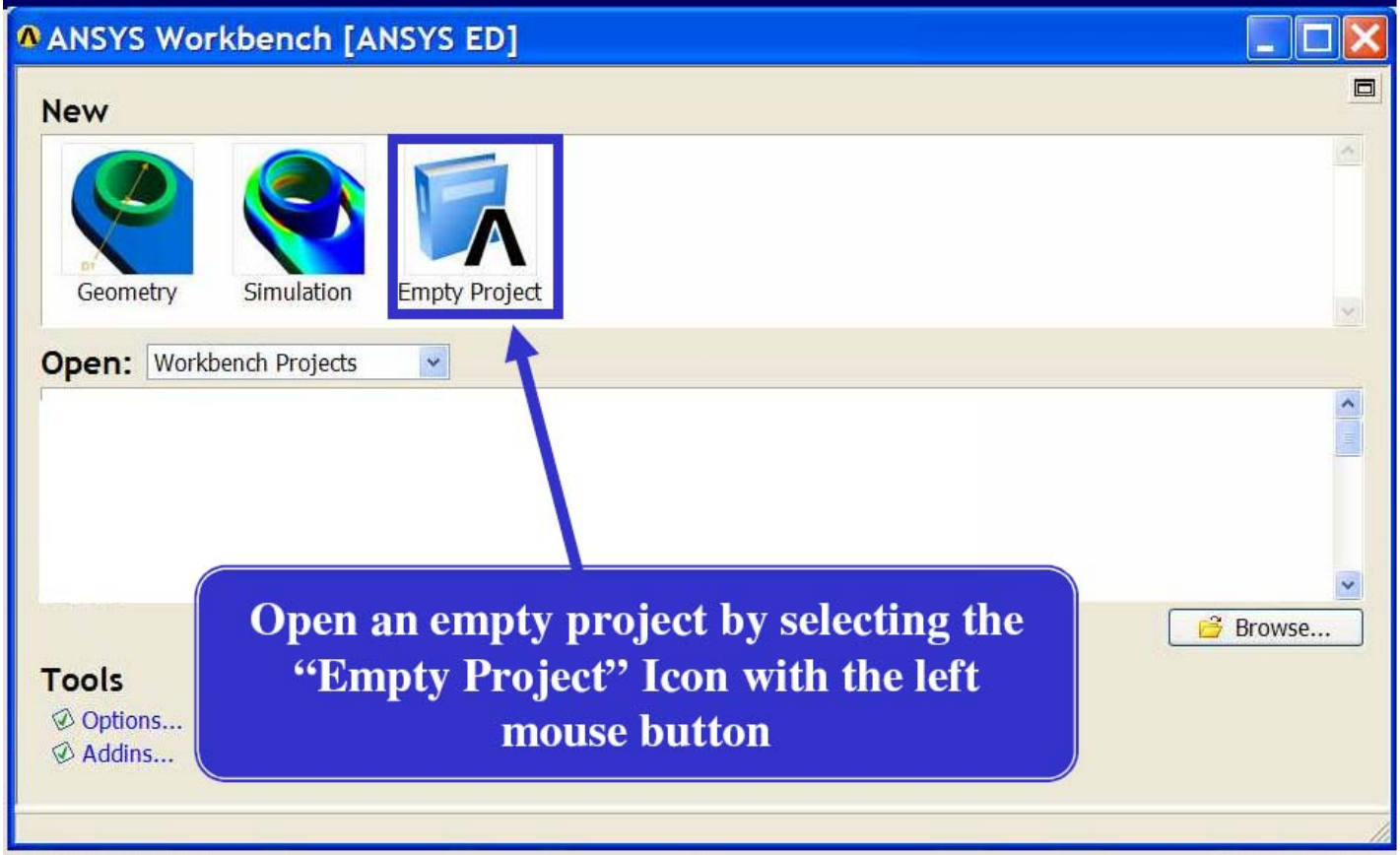
Getting Started



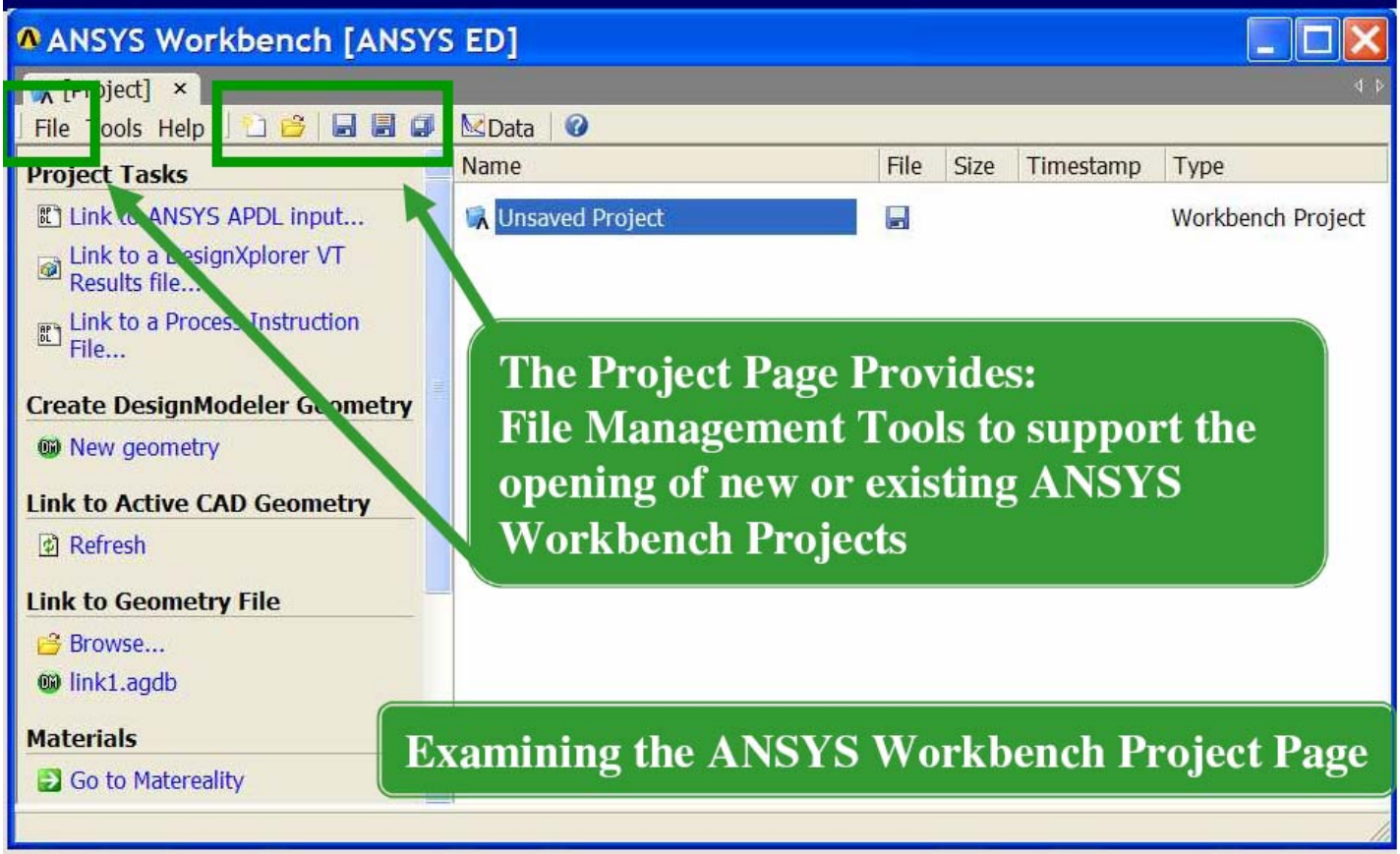
Getting Started



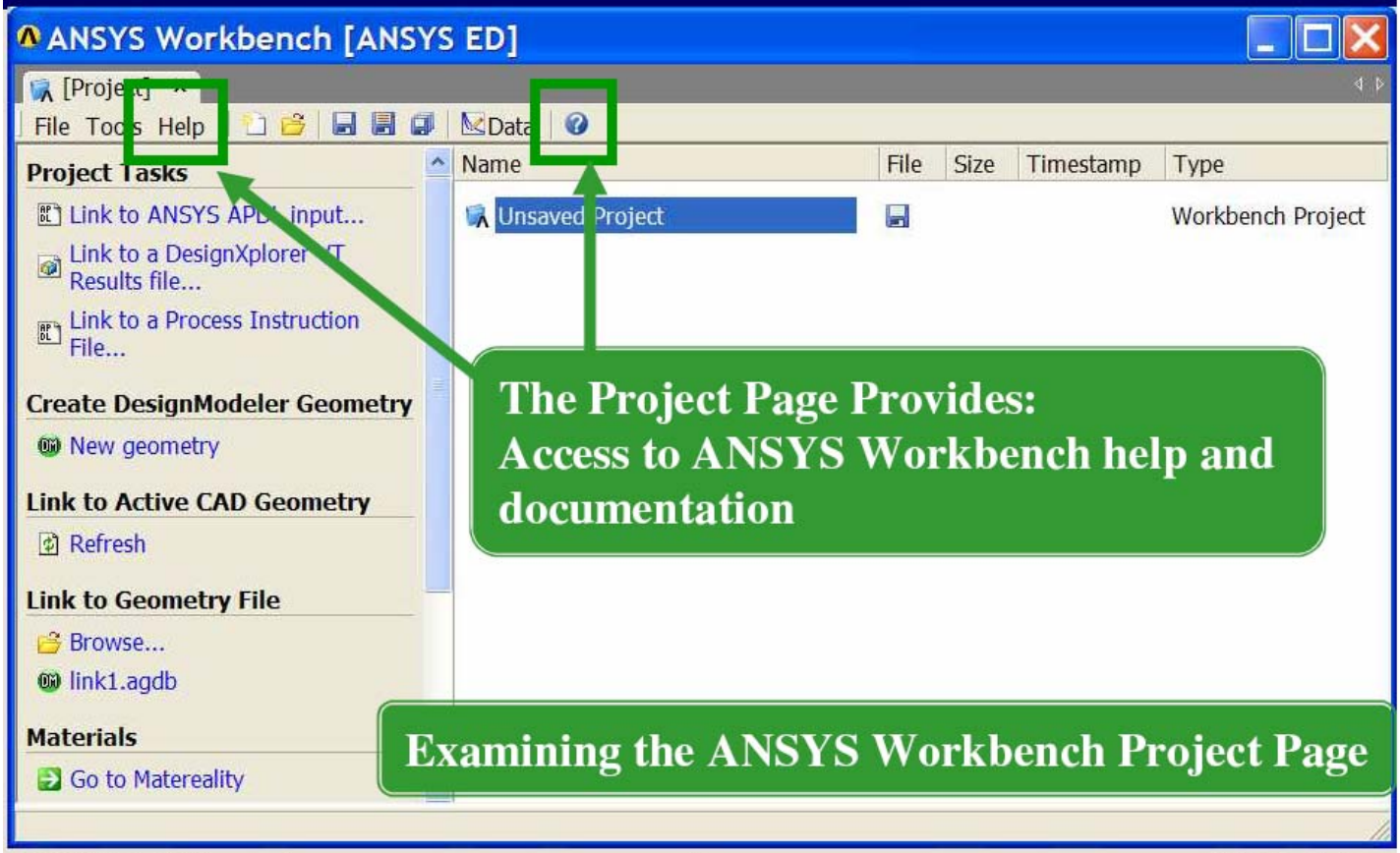
Open an Empty Project



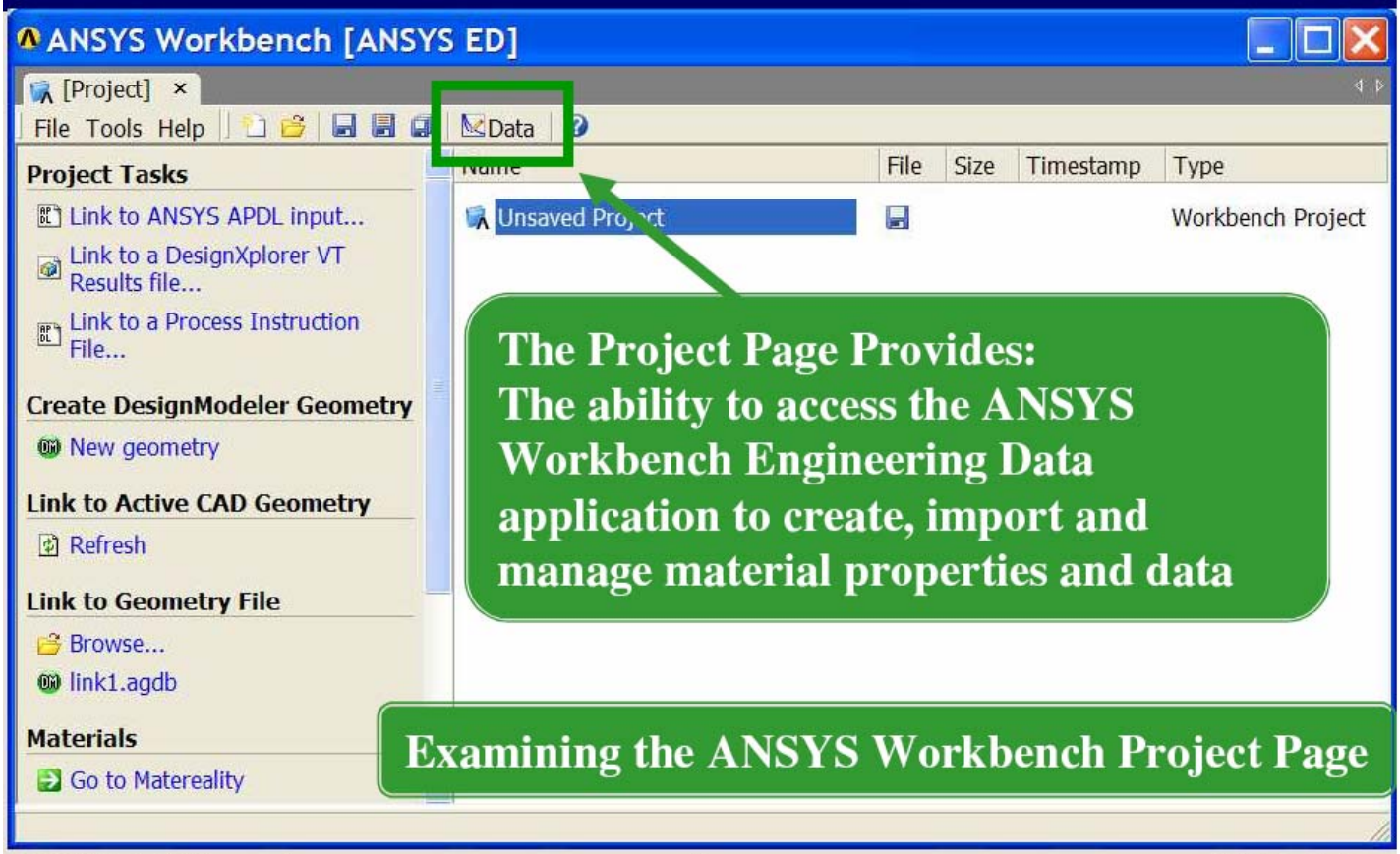
The Project Page



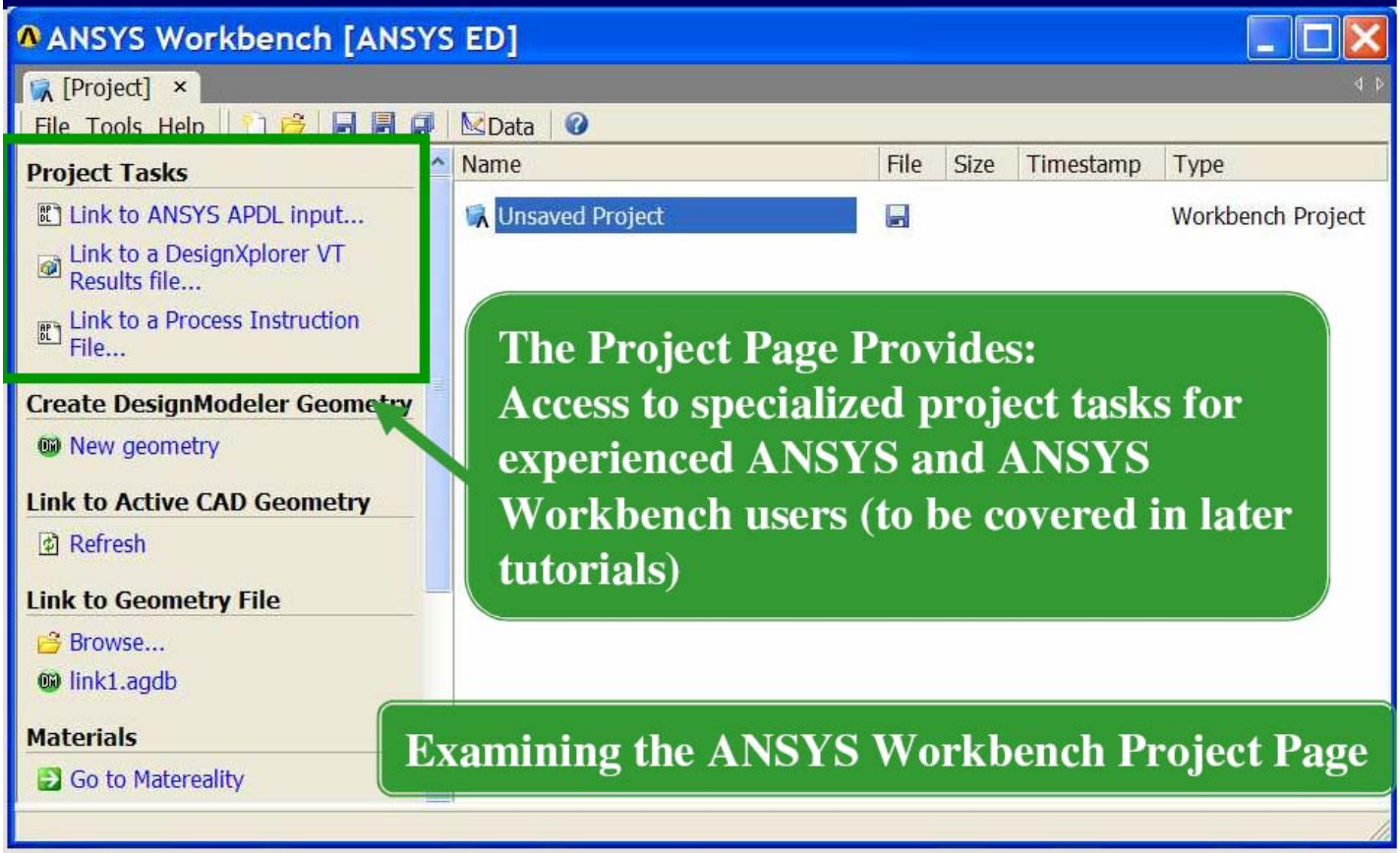
The Project Page



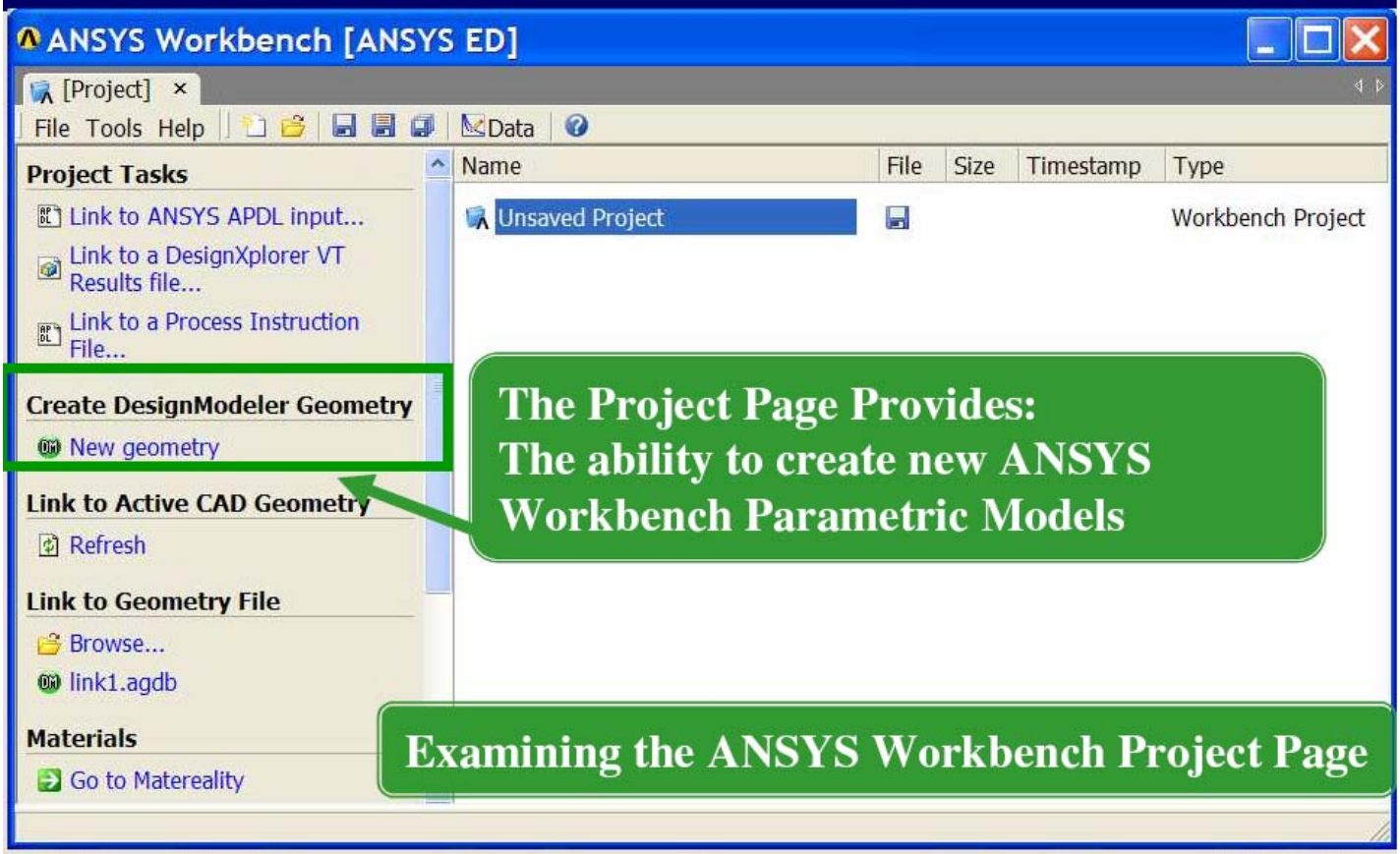
The Project Page



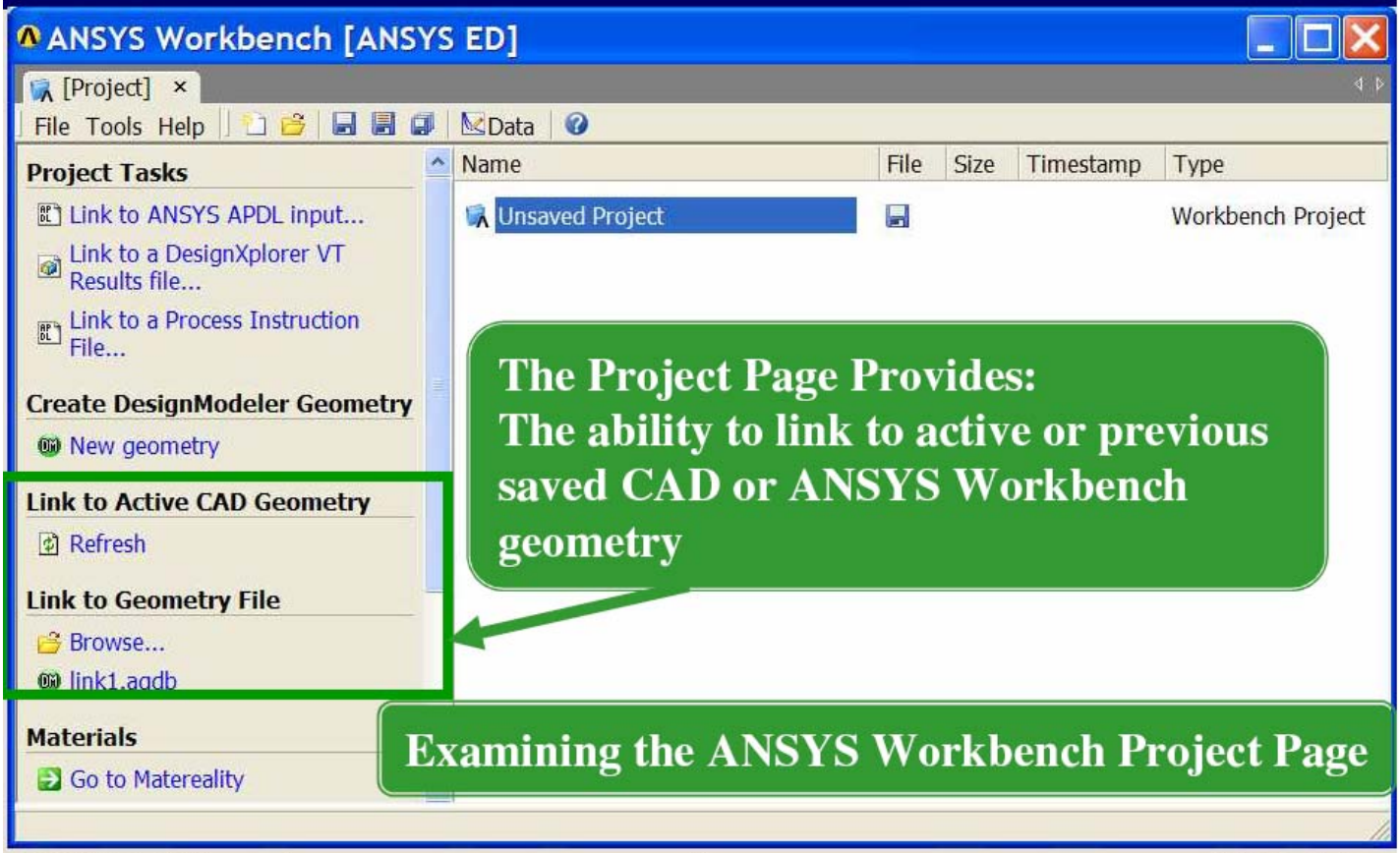
The Project Page



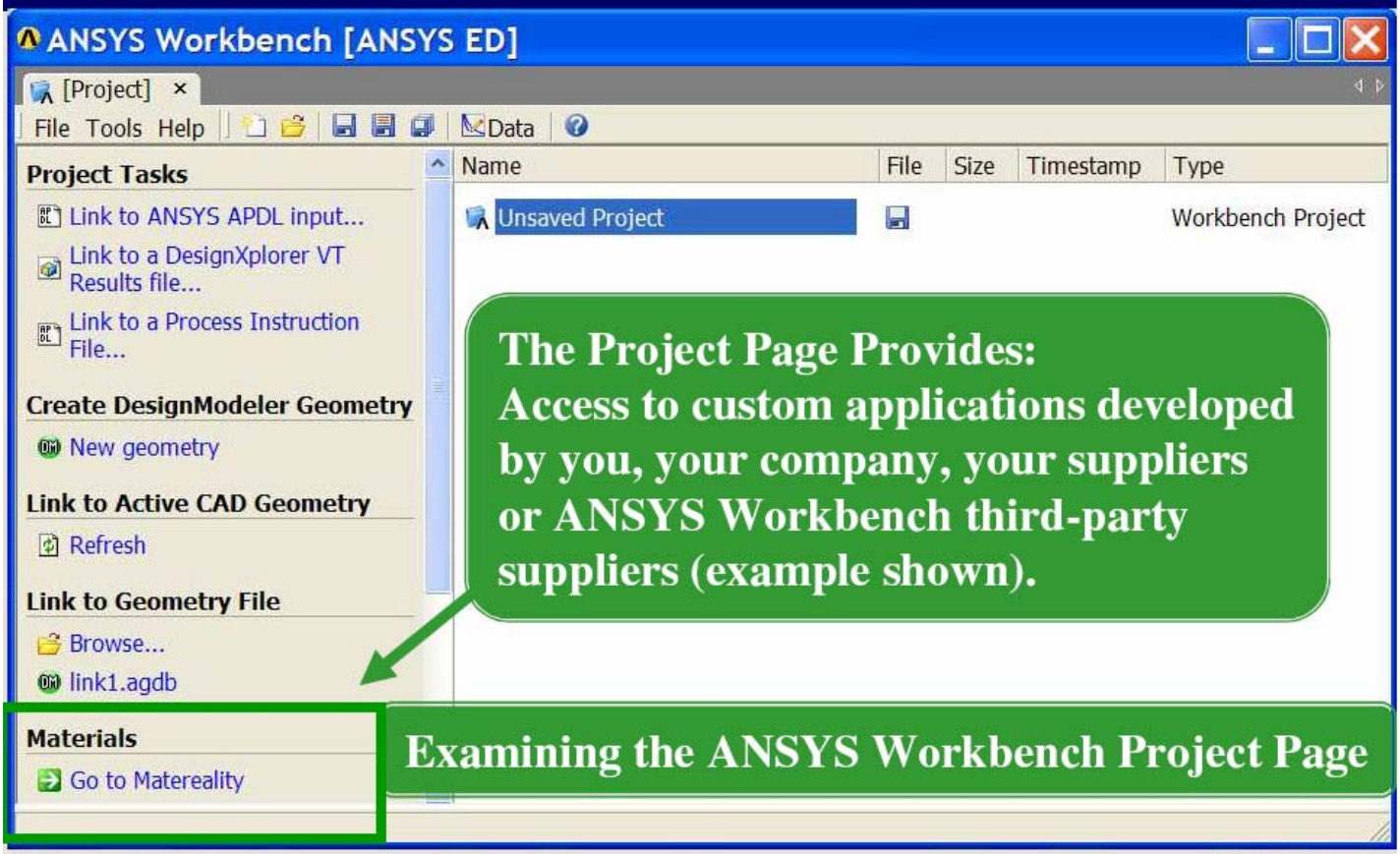
The Project Page



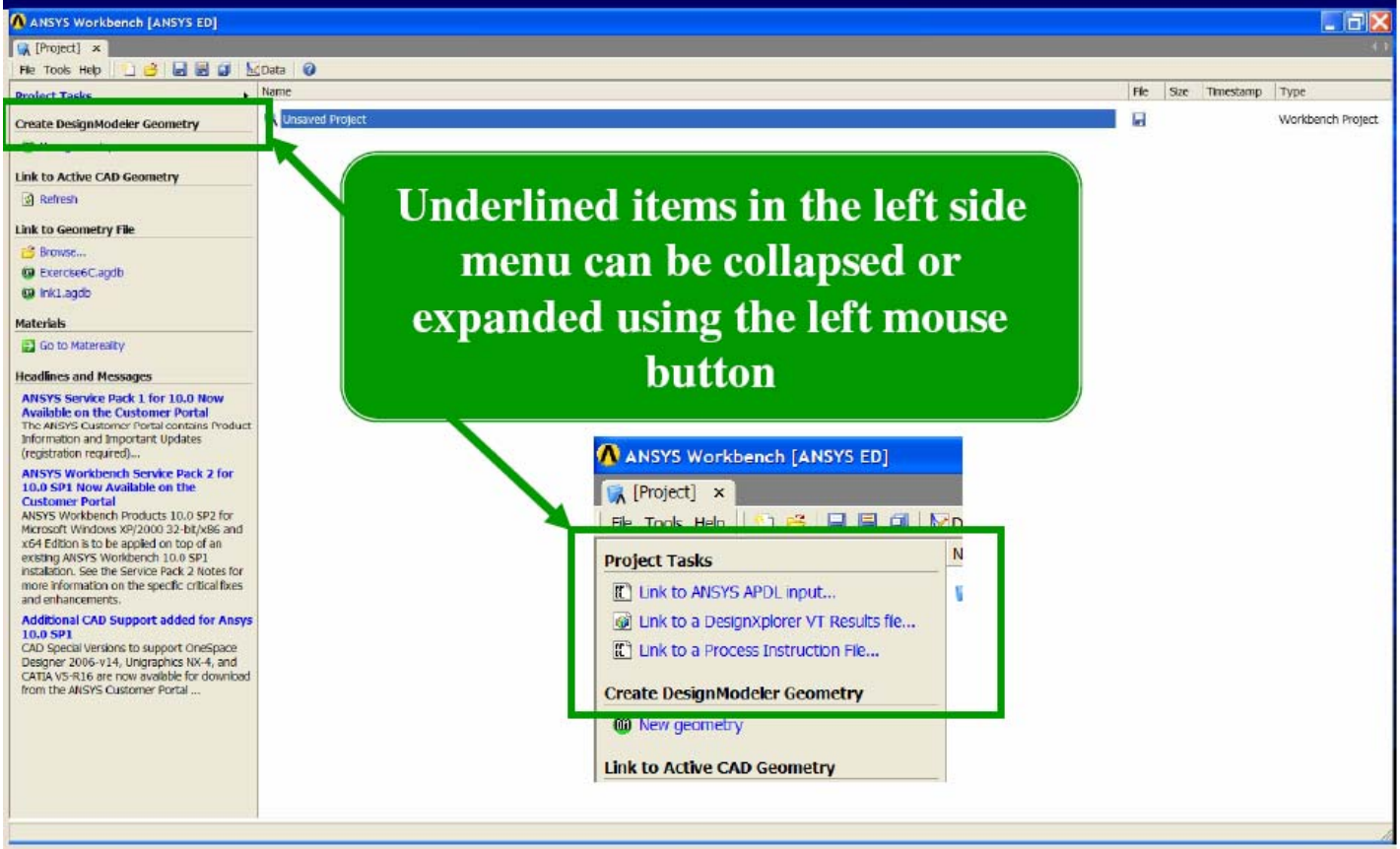
The Project Page



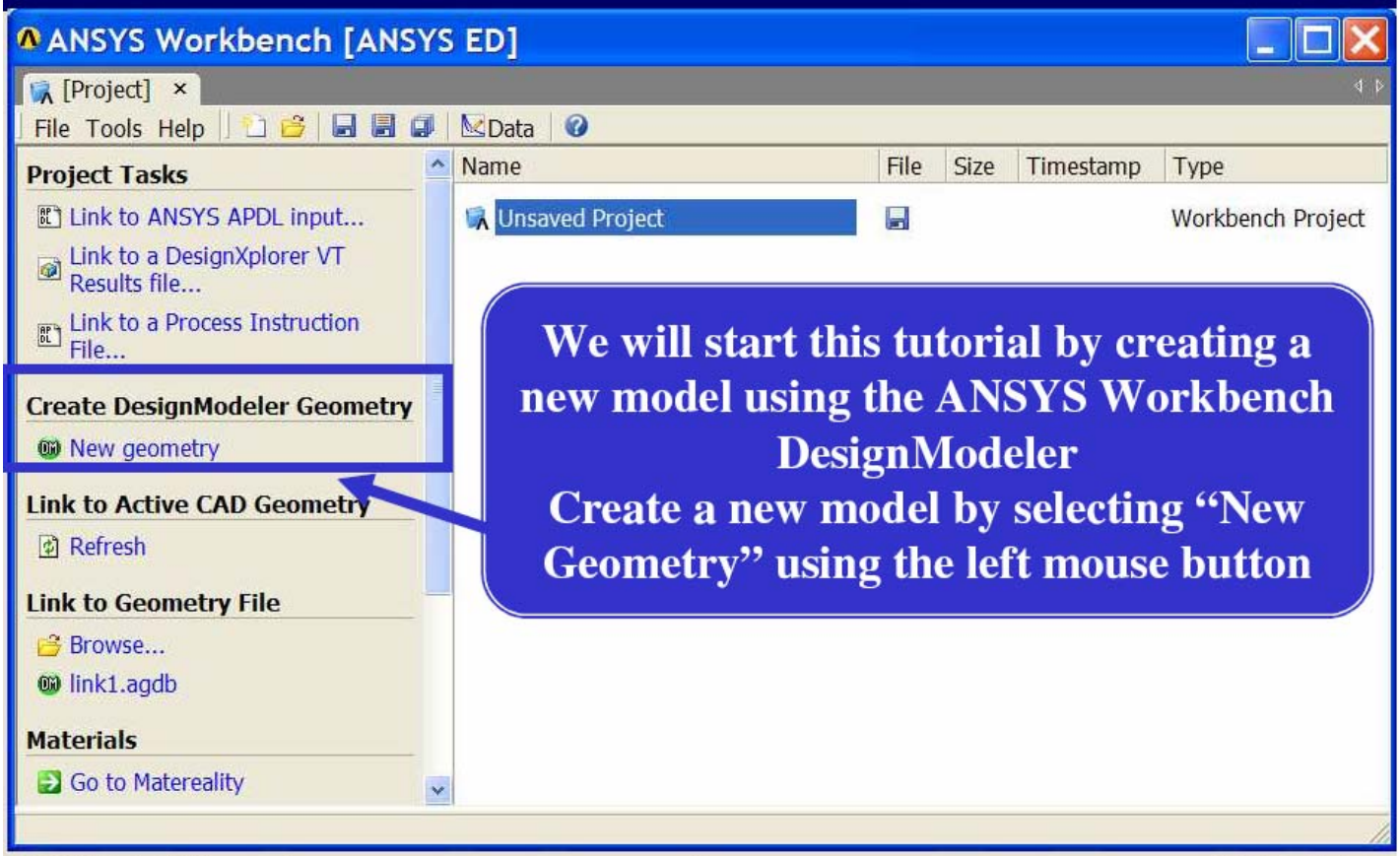
The Project Page



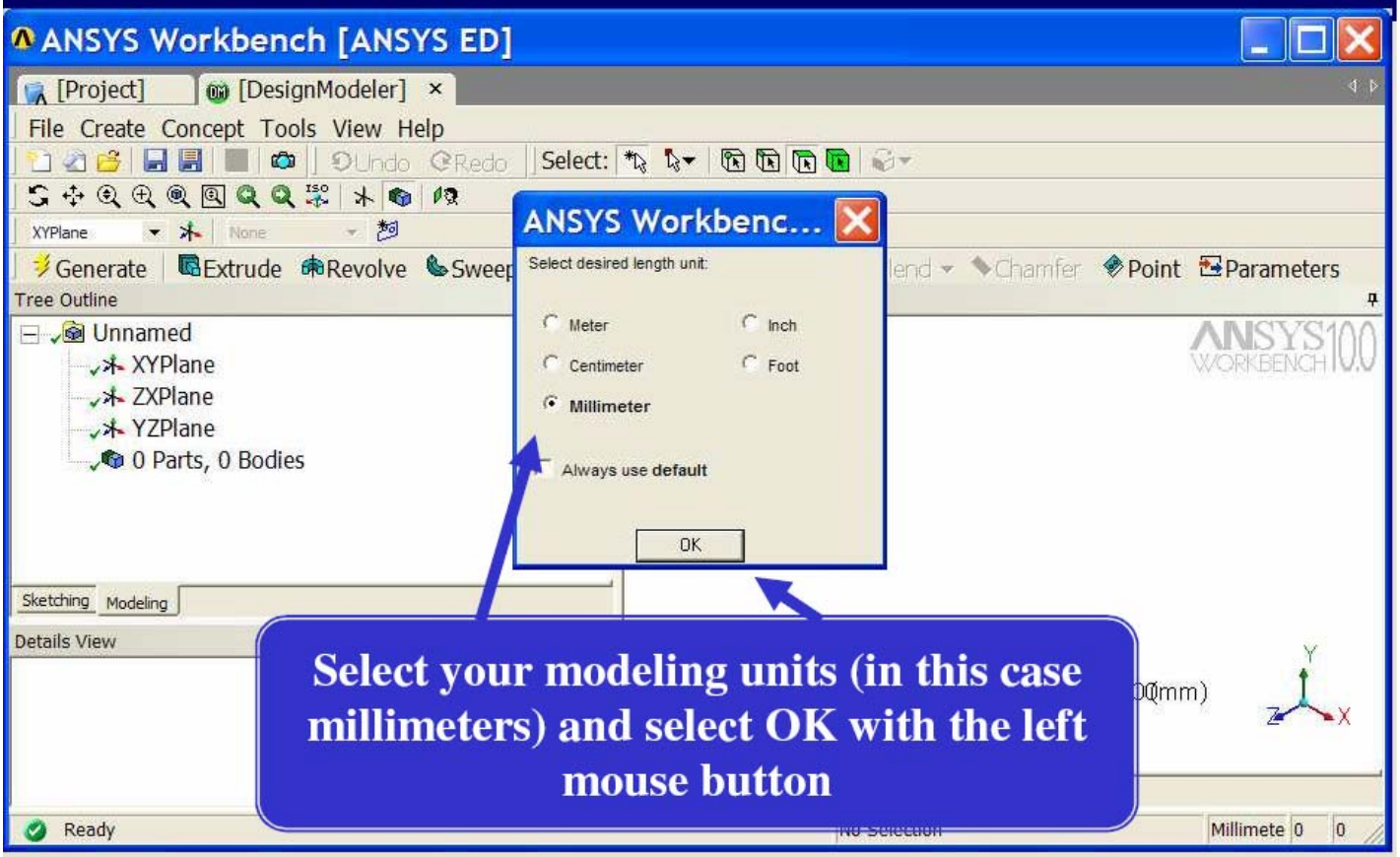
The Project Page



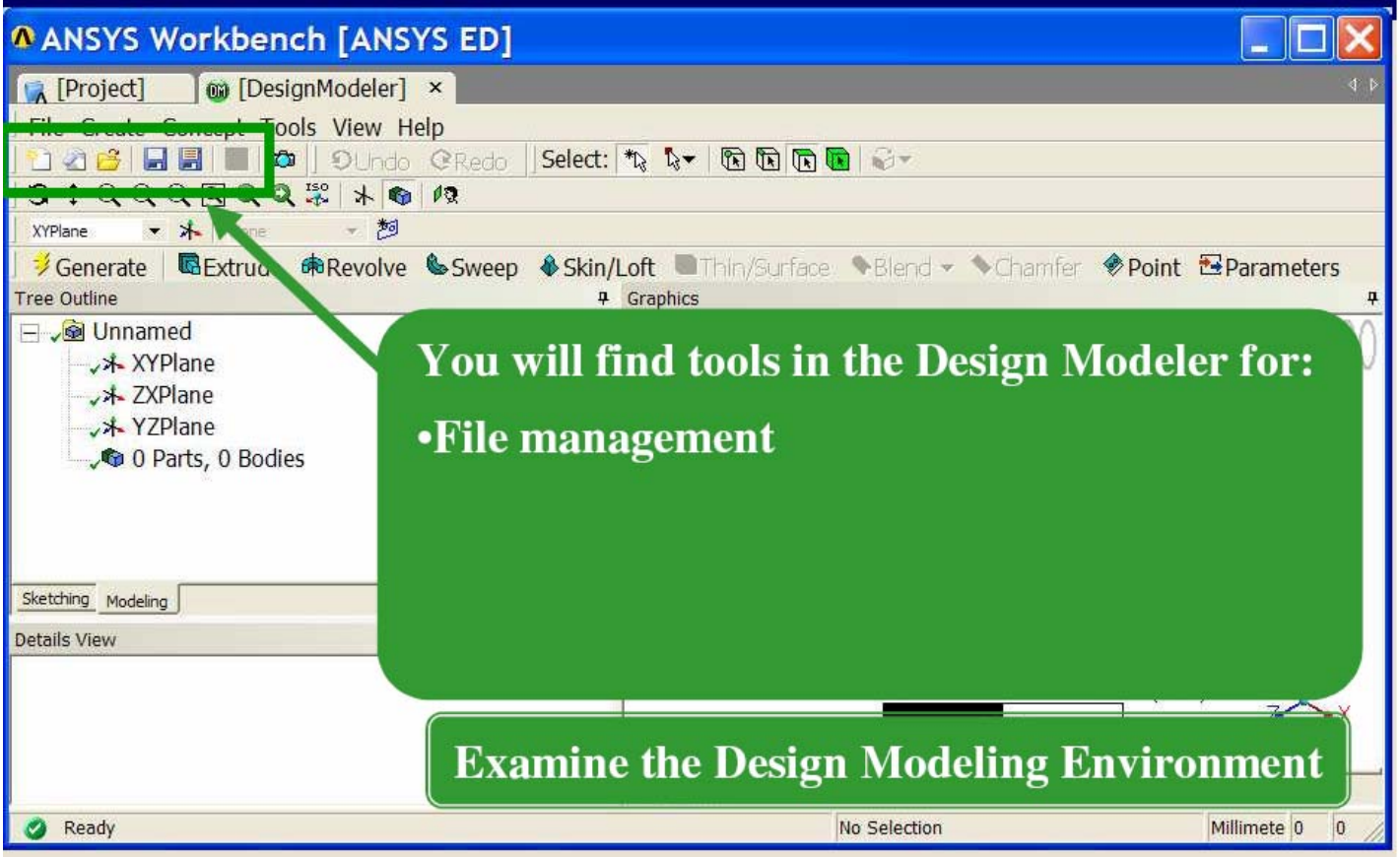
Creating initial geometry



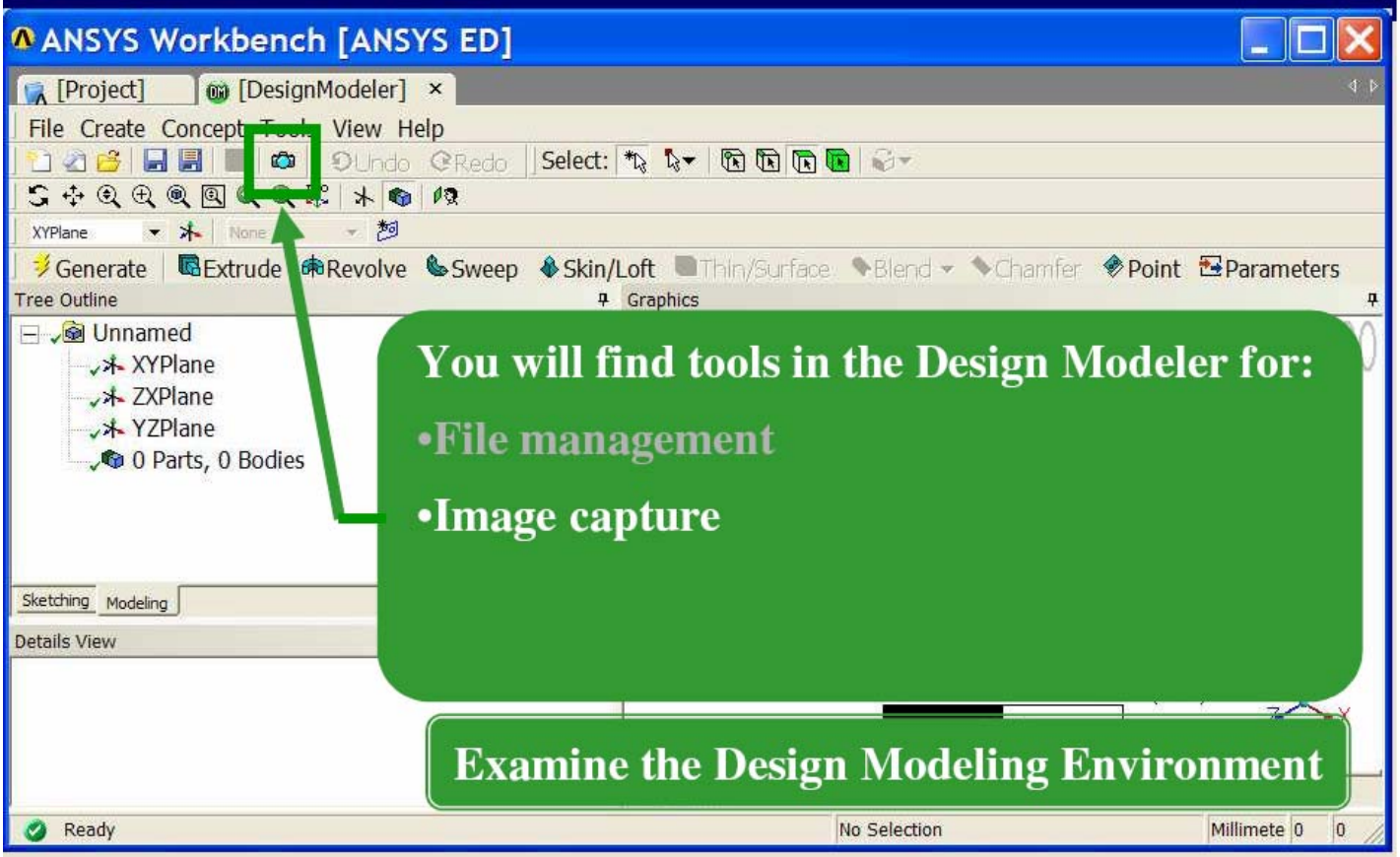
Building our initial model



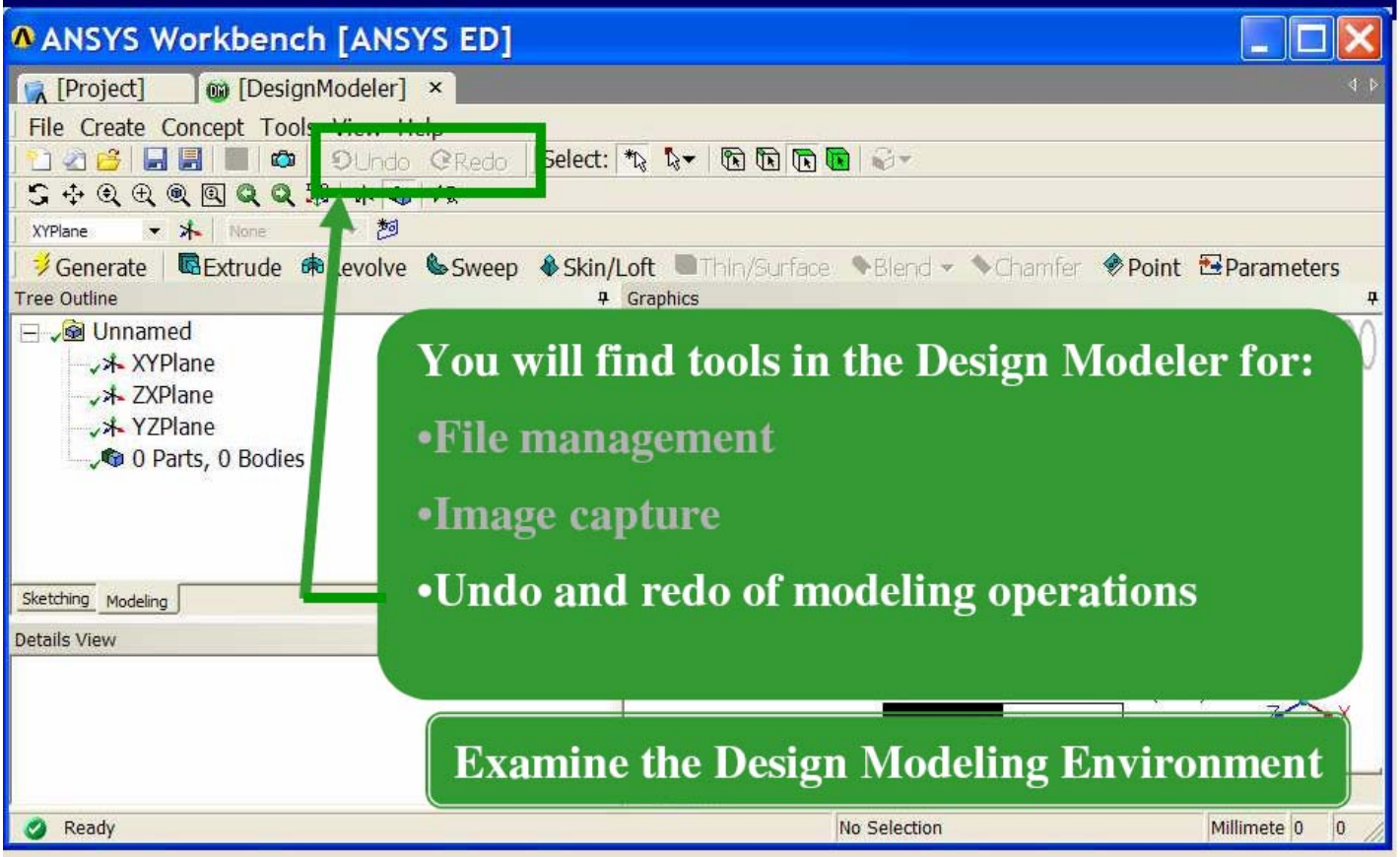
The DesignModeler



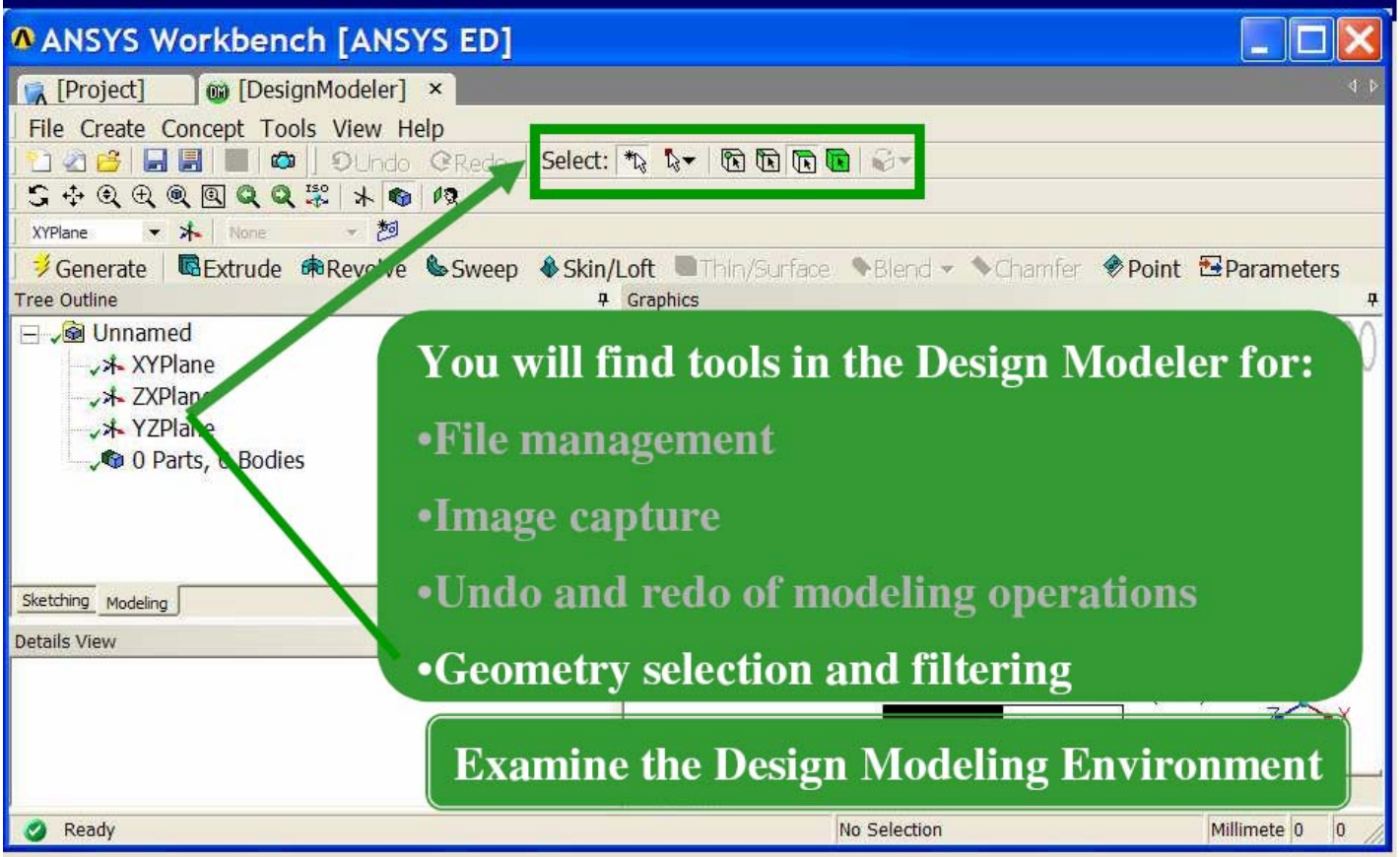
The DesignModeler



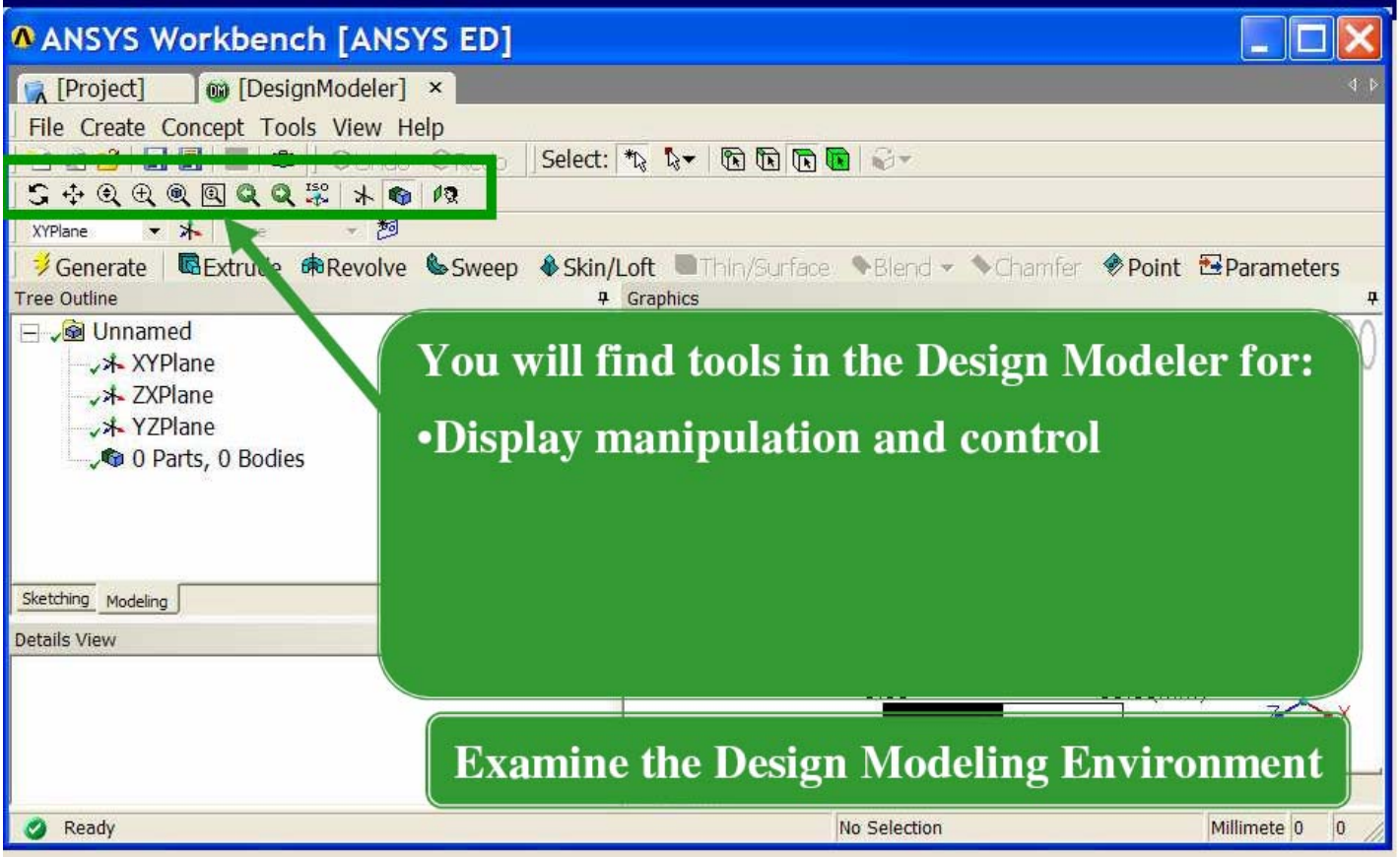
The DesignModeler



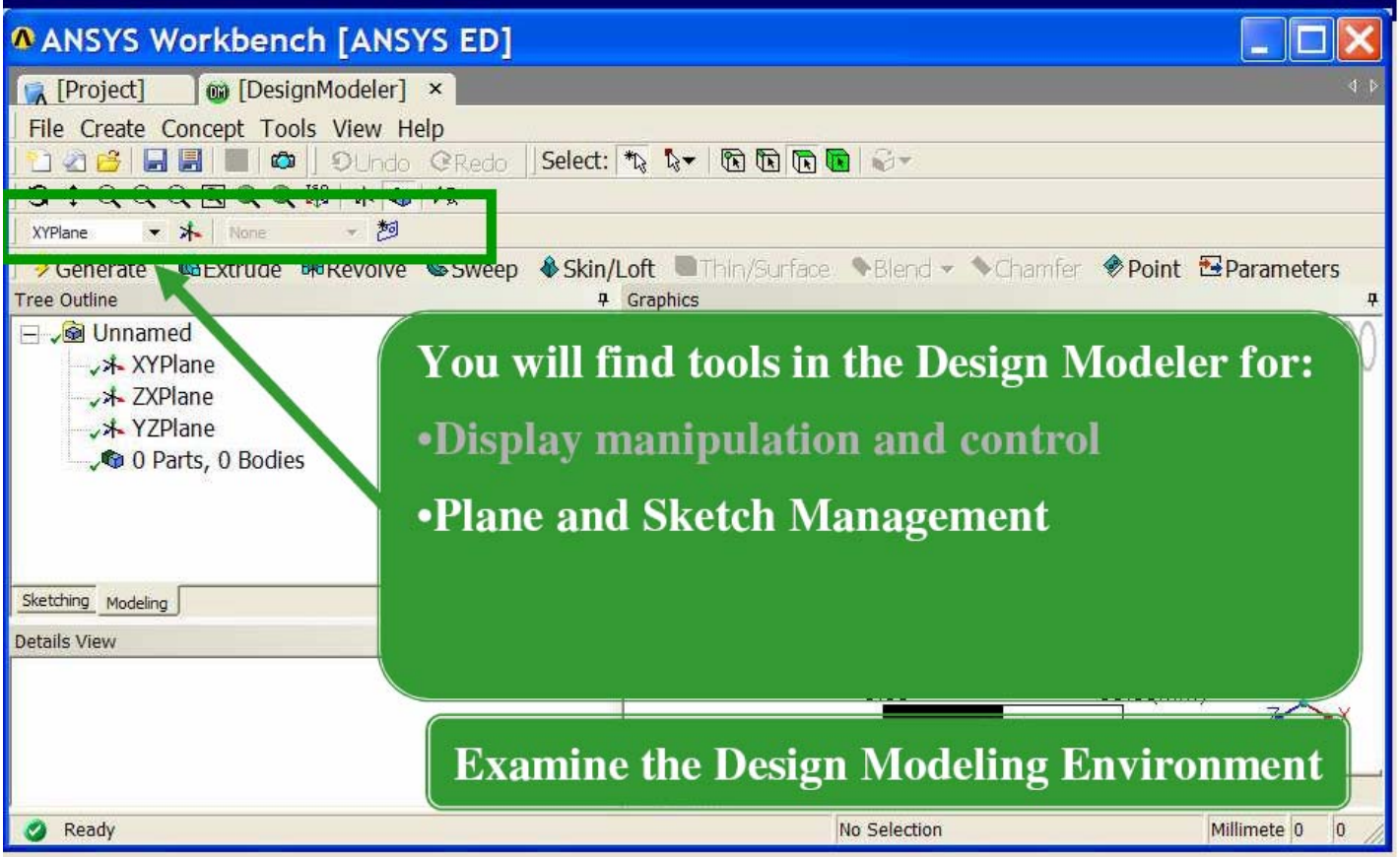
The DesignModeler



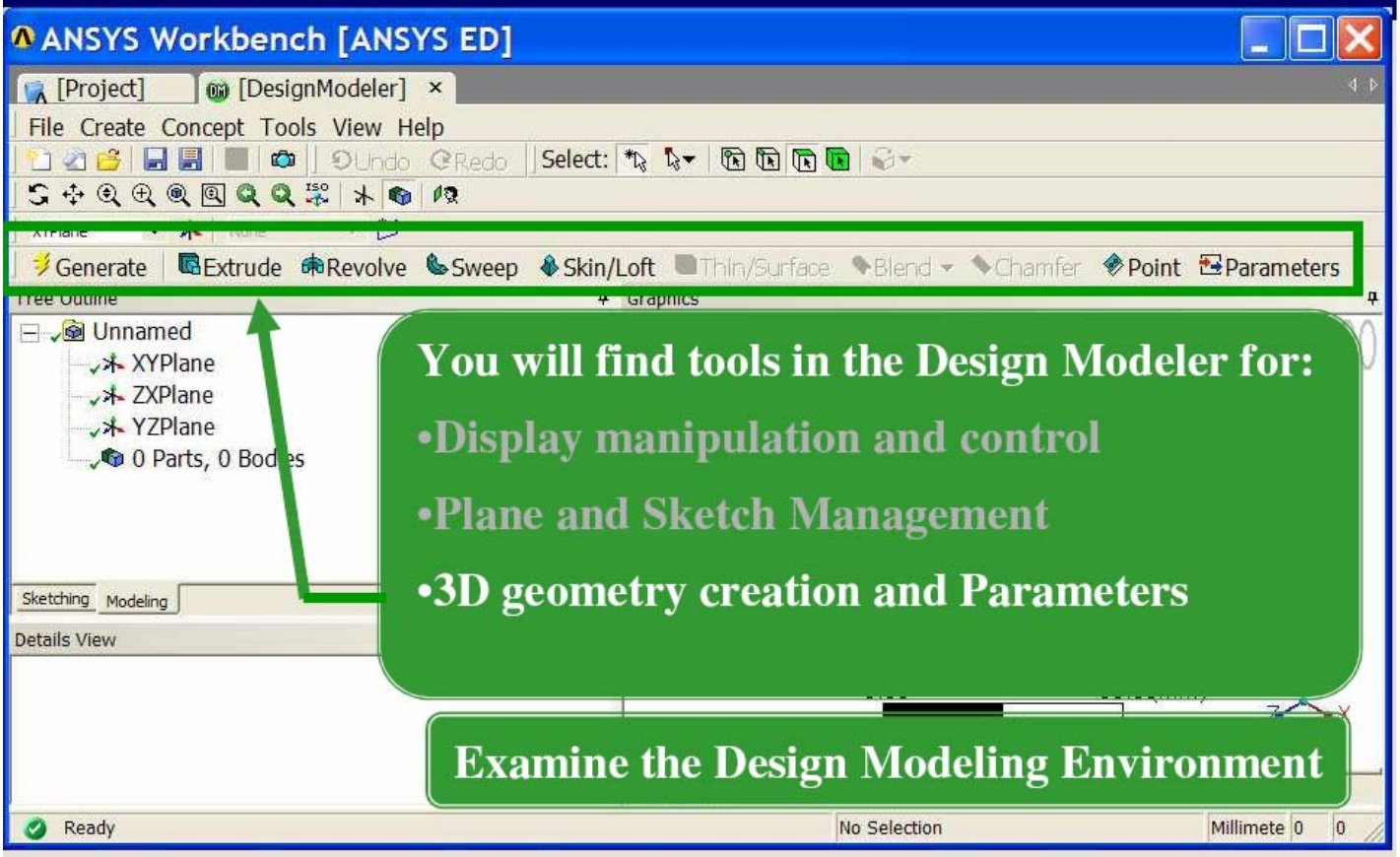
The DesignModeler



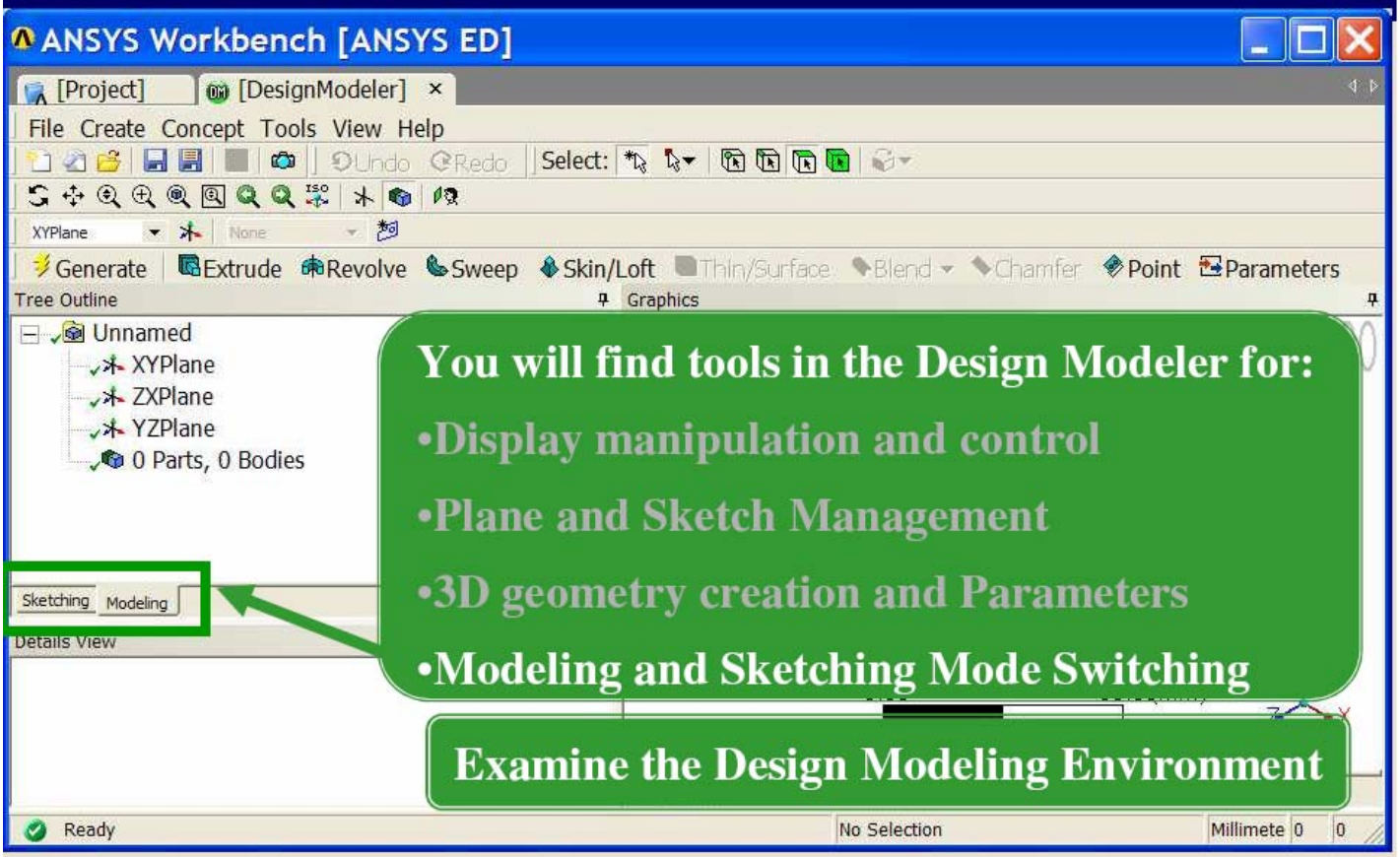
The DesignModeler



The DesignModeler



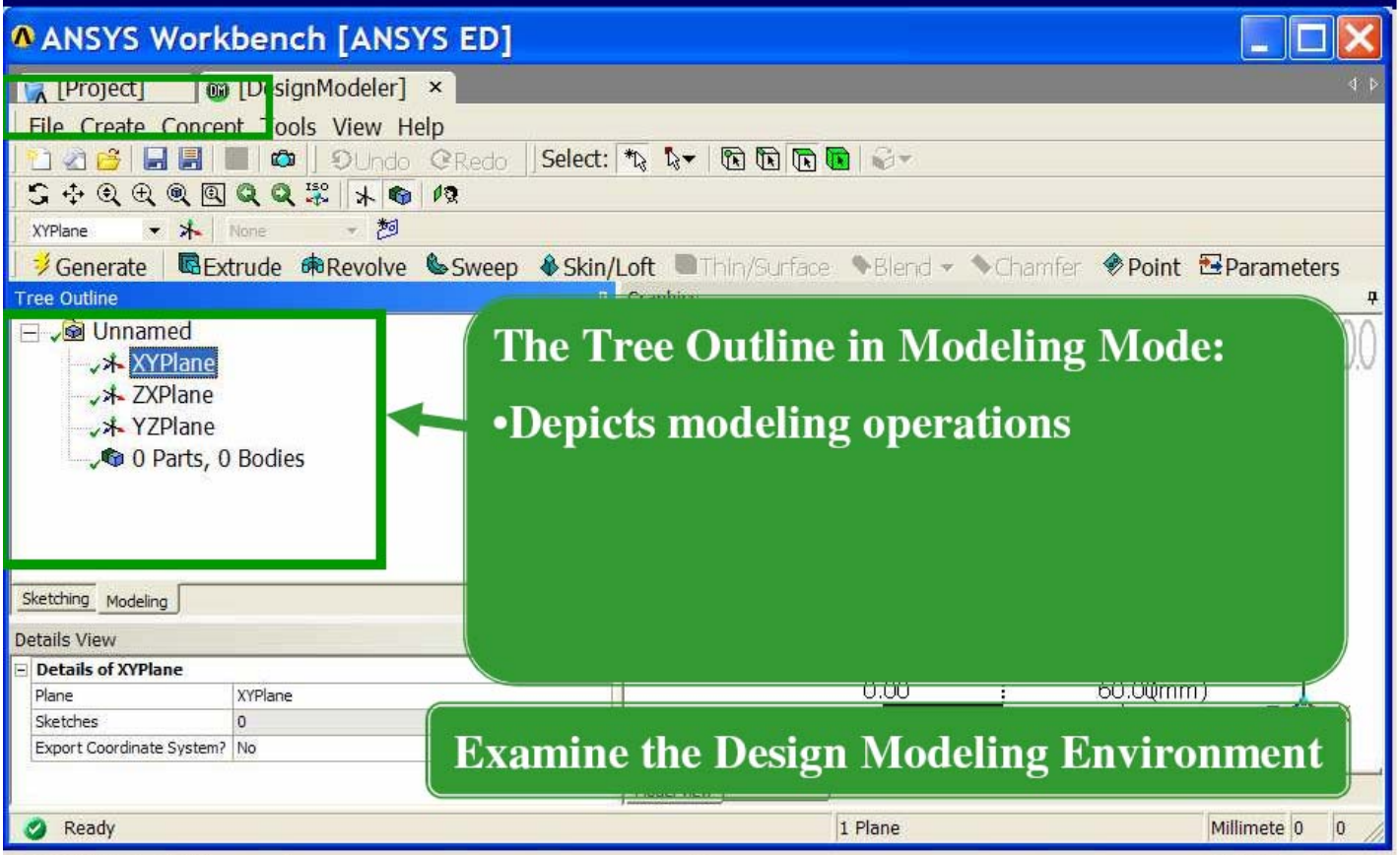
The DesignModeler



DesignModeler Modes

- Sketching Mode
  - Provides for the creation of sketches using standard or user defined model coordinate systems
  - Supports the creation of 3D parametric solids from 2D sketches
- Modeling Mode
  - Provides tools for the creation and modification of 3D parts and models
  - Tracks and supports modification of modeling operations

The DesignModeler

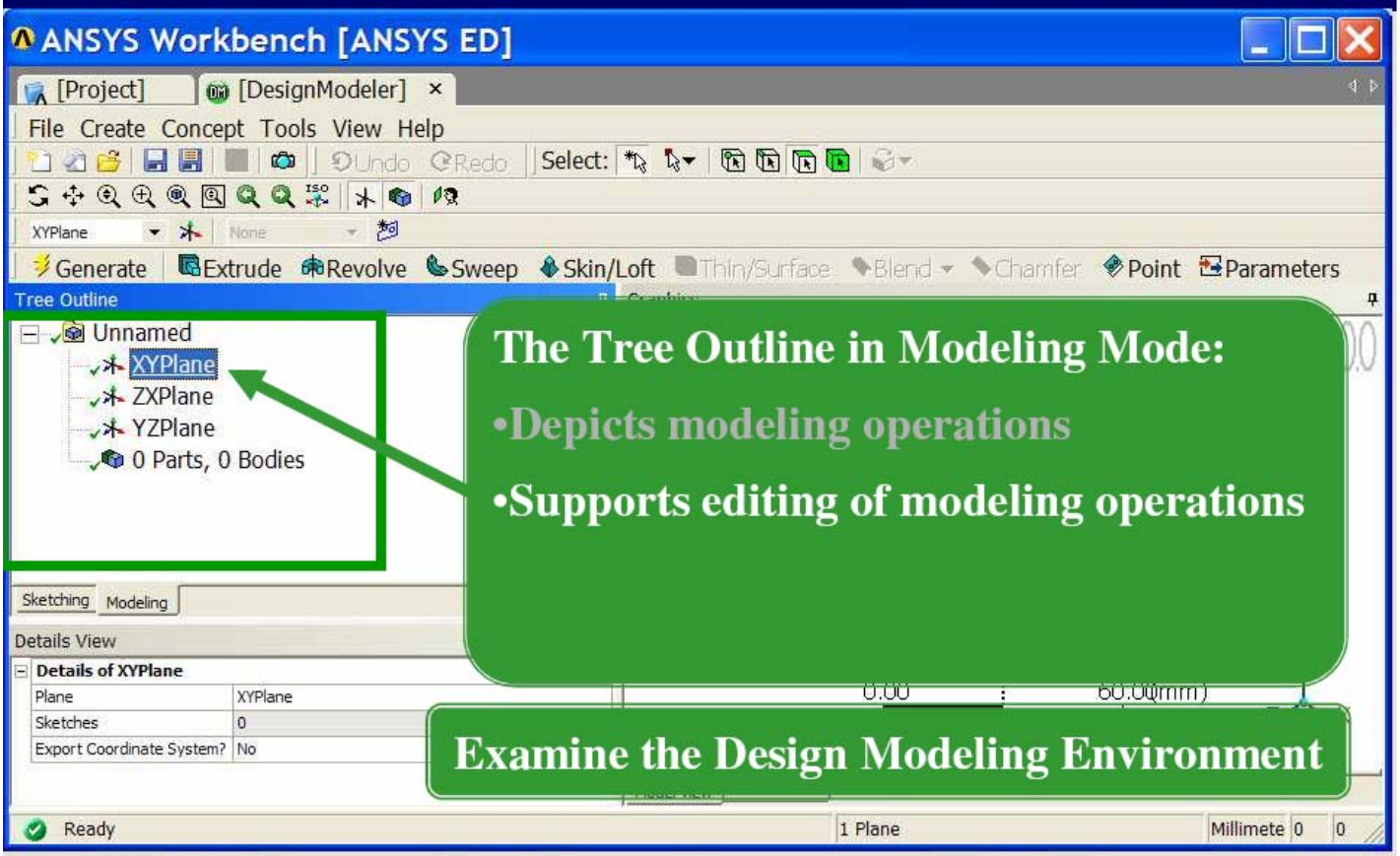


The Tree Outline in Modeling Mode:

- **Depicts modeling operations**

Examine the Design Modeling Environment

The DesignModeler

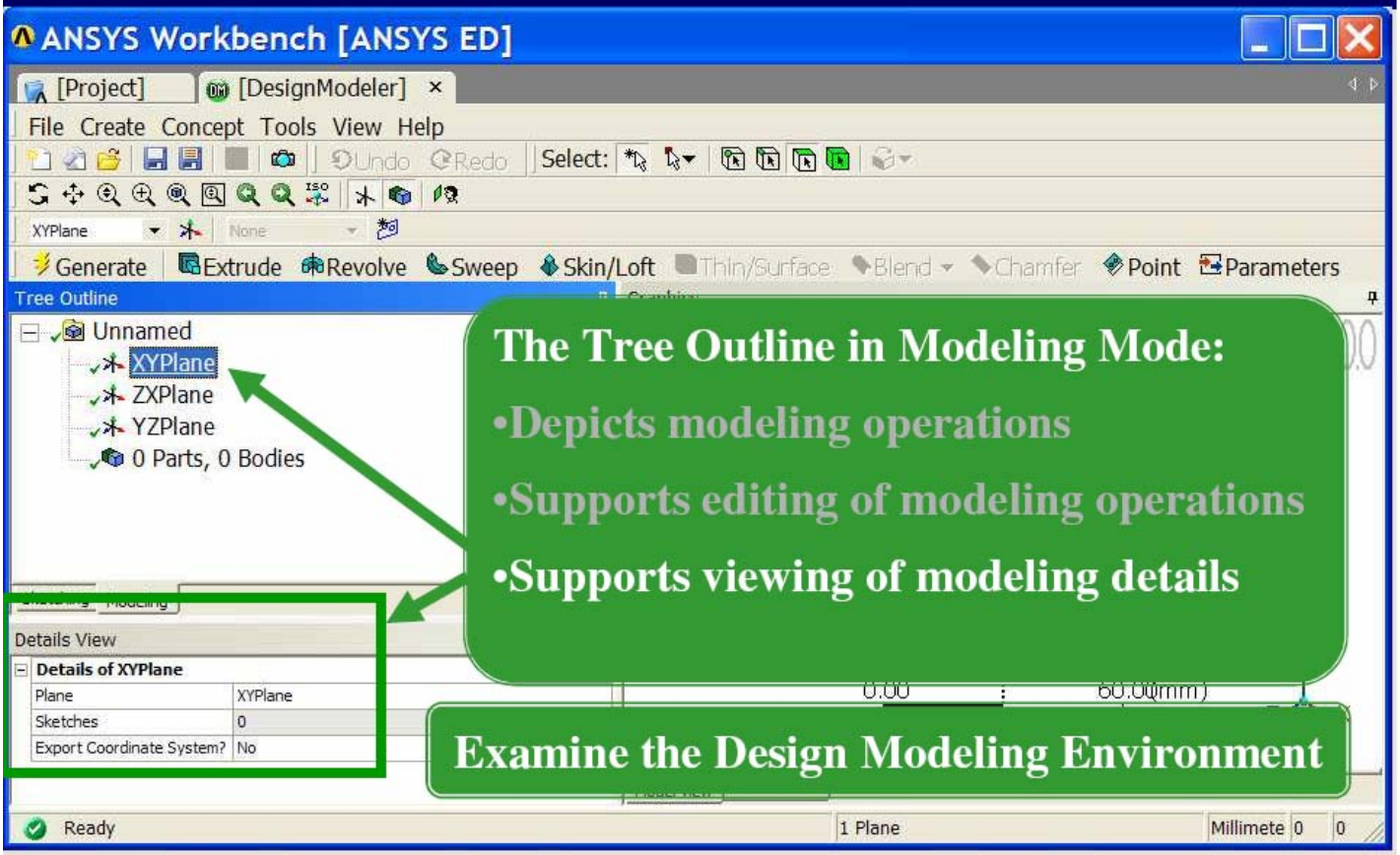


The Tree Outline in Modeling Mode:

- **Depicts modeling operations**
- **Supports editing of modeling operations**

Examine the Design Modeling Environment

The DesignModeler

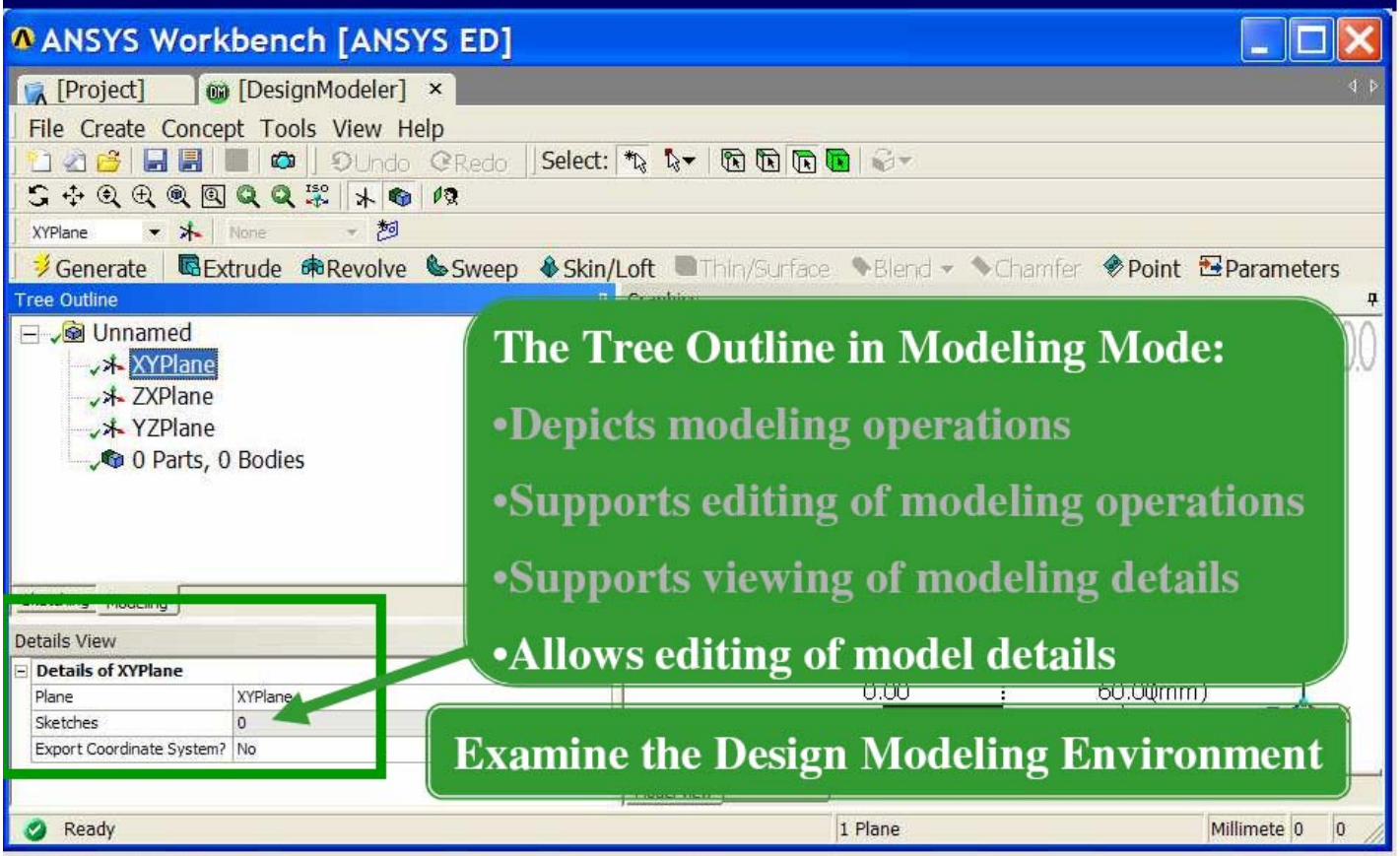


The Tree Outline in Modeling Mode:

- Depicts modeling operations
- Supports editing of modeling operations
- Supports viewing of modeling details

Examine the Design Modeling Environment

The DesignModeler

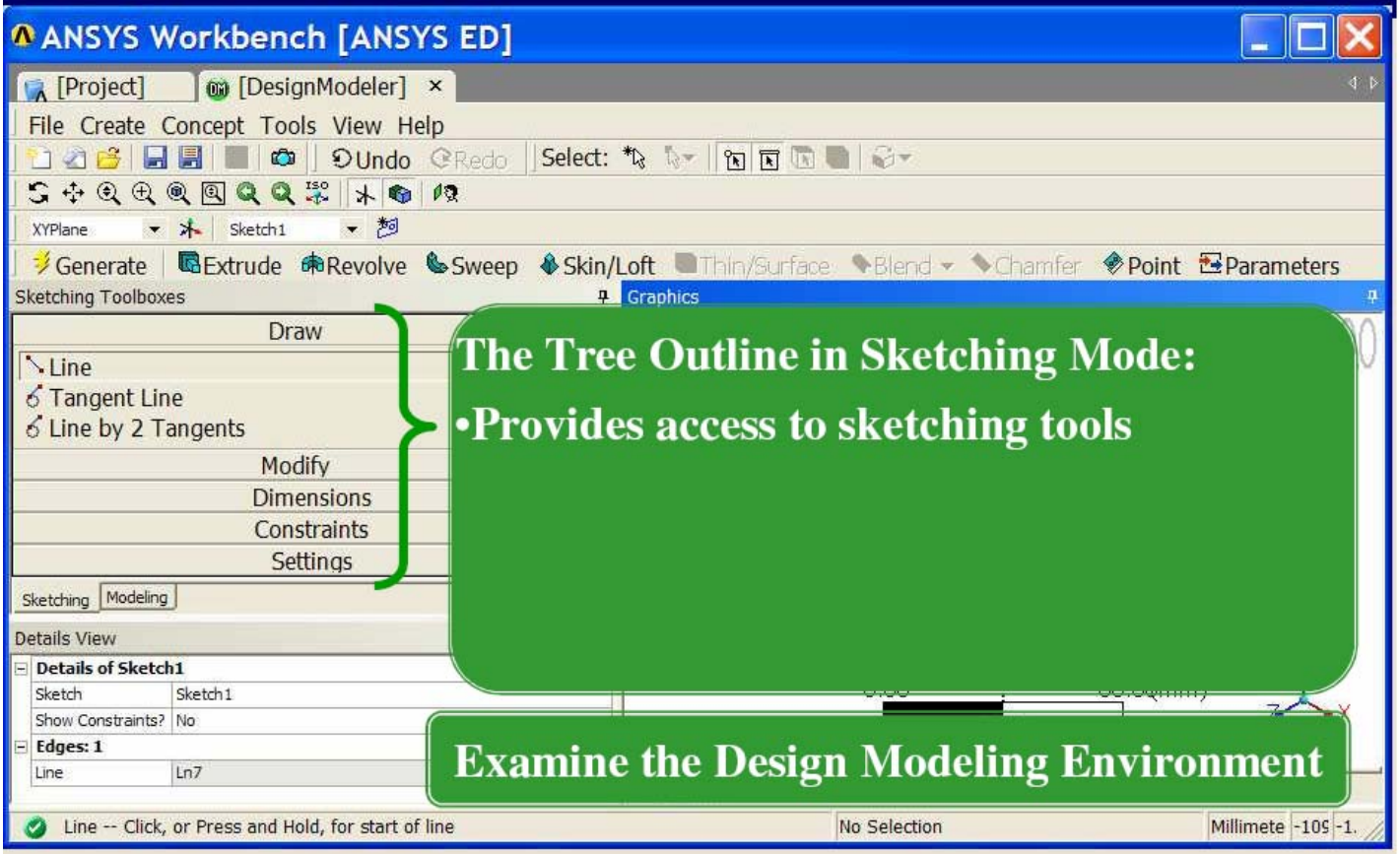


The Tree Outline in Modeling Mode:

- Depicts modeling operations
- Supports editing of modeling operations
- Supports viewing of modeling details
- Allows editing of model details

Examine the Design Modeling Environment

The DesignModeler

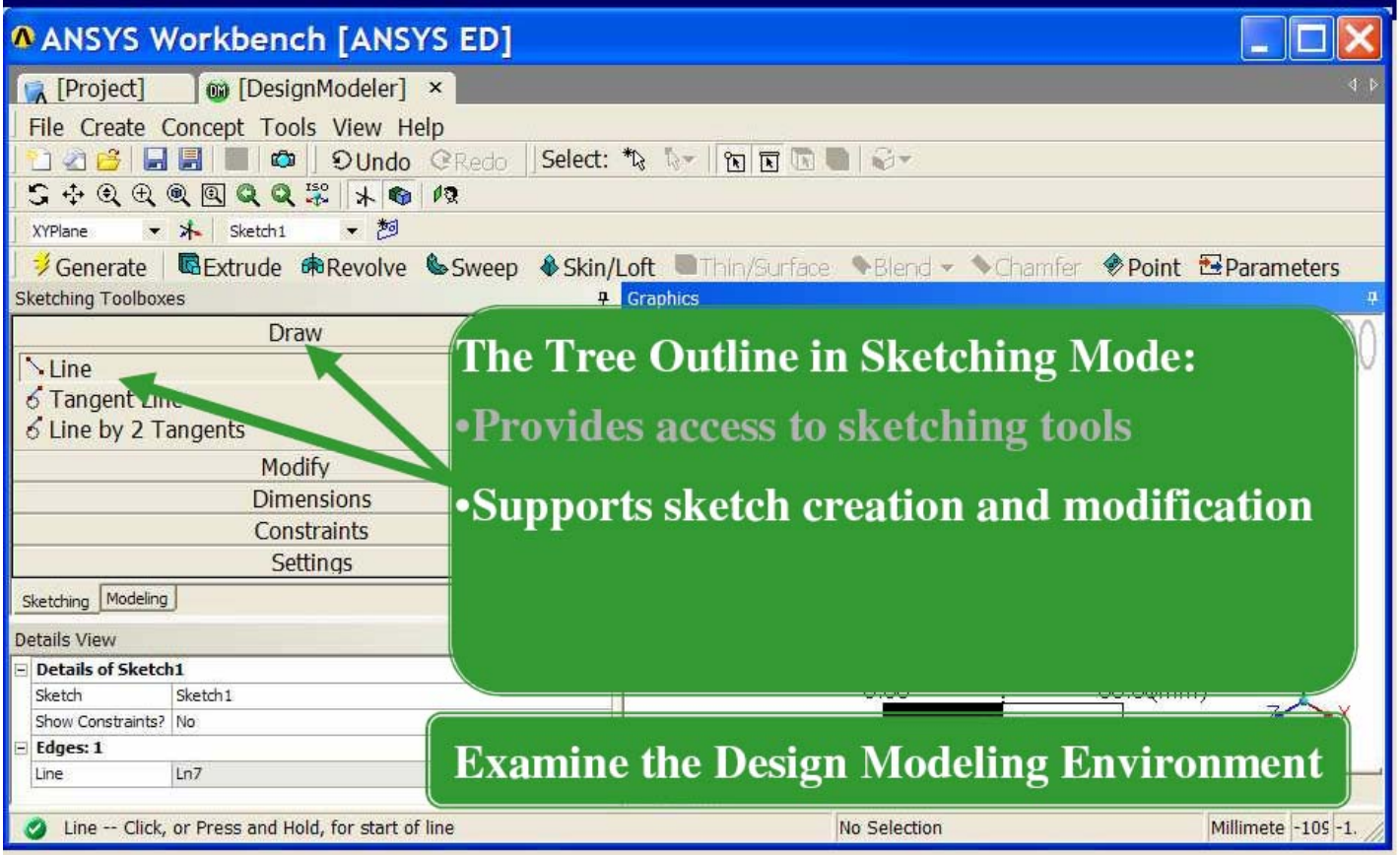


The Tree Outline in Sketching Mode:

- **Provides access to sketching tools**

Examine the Design Modeling Environment

The DesignModeler

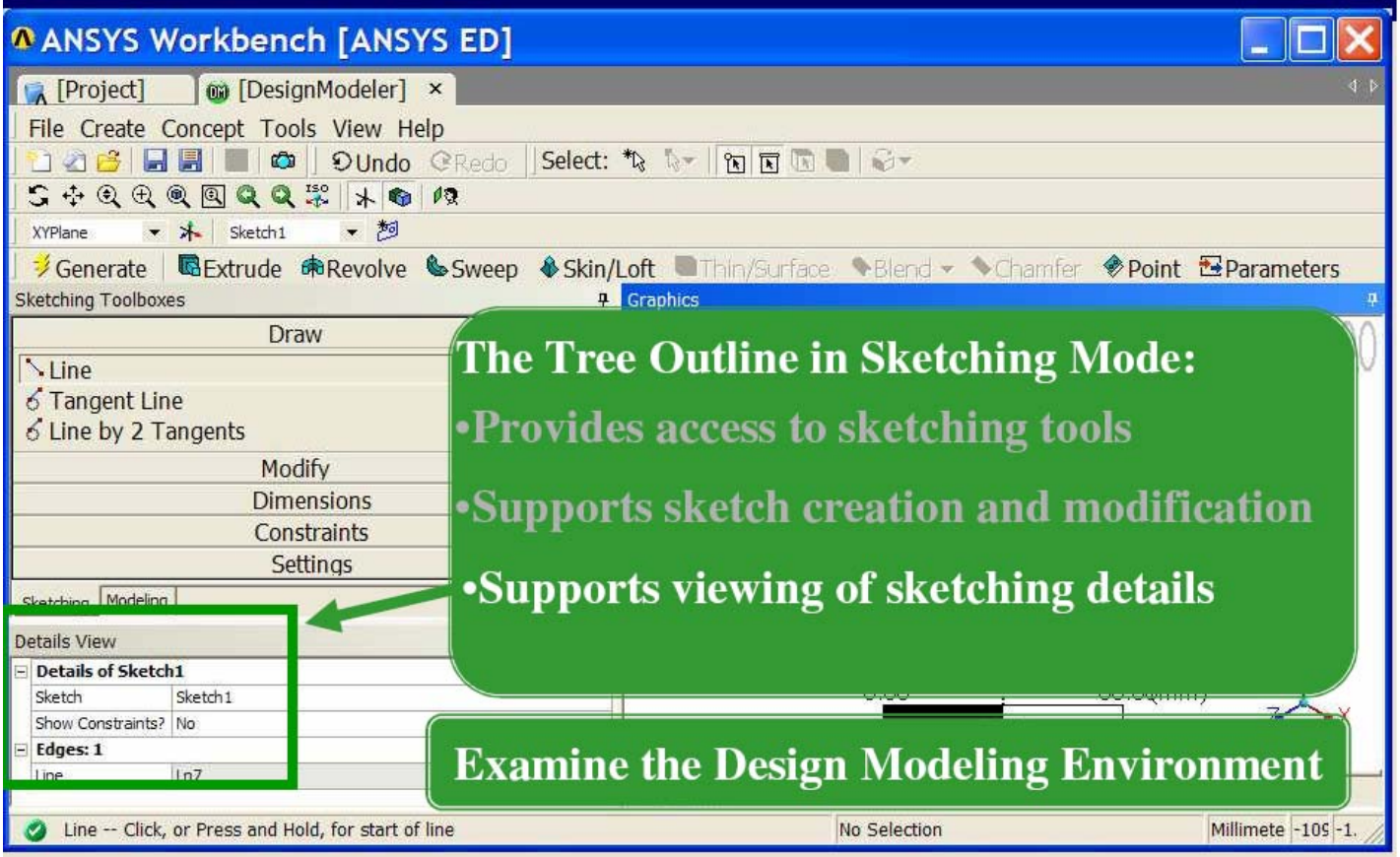


The Tree Outline in Sketching Mode:

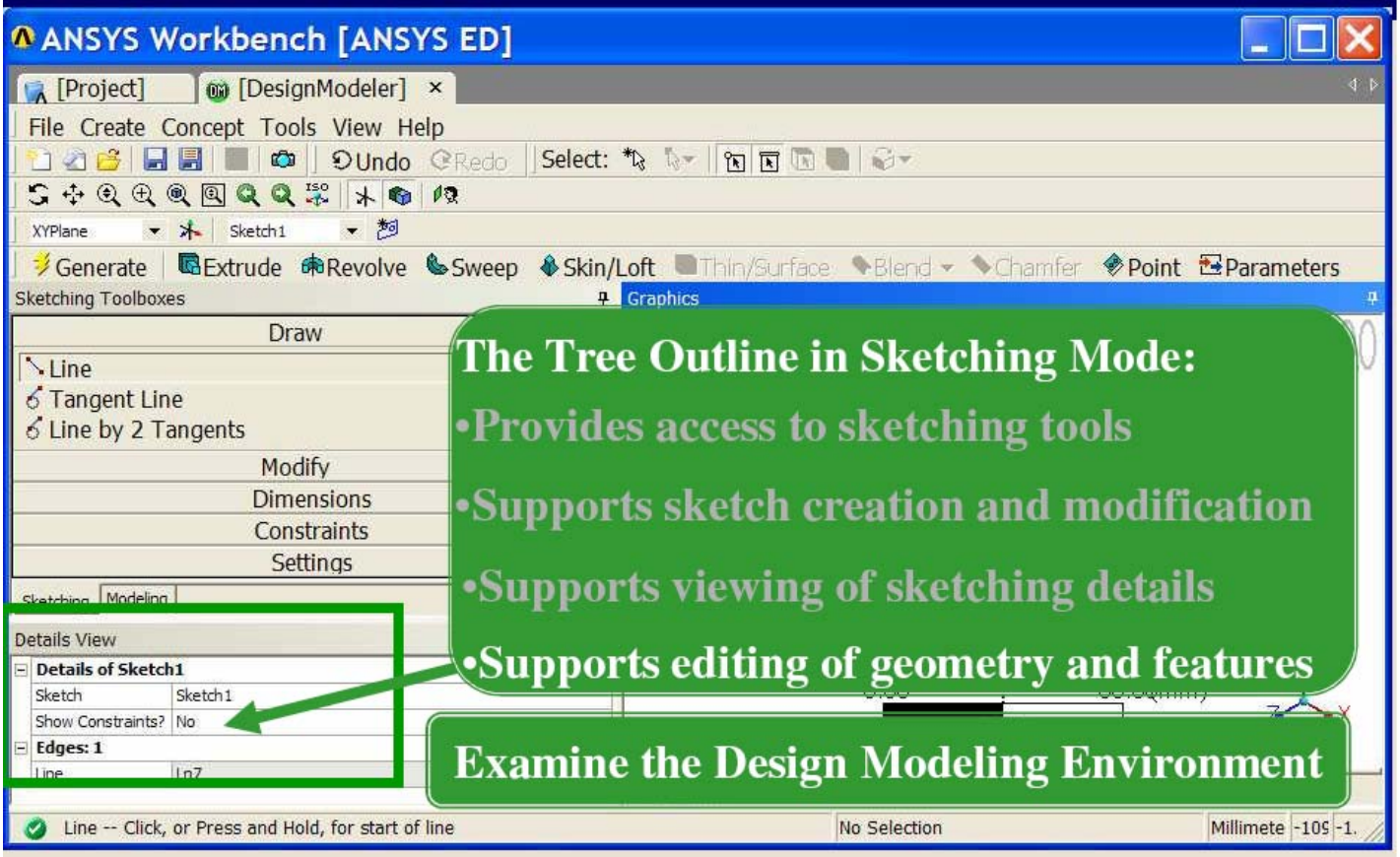
- **Provides access to sketching tools**
- **Supports sketch creation and modification**

Examine the Design Modeling Environment

The DesignModeler

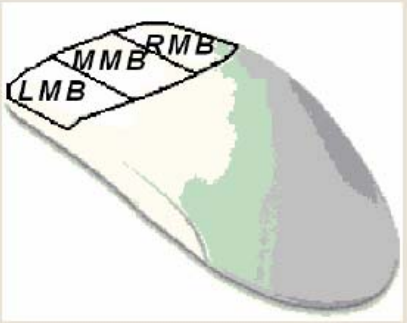


The DesignModeler



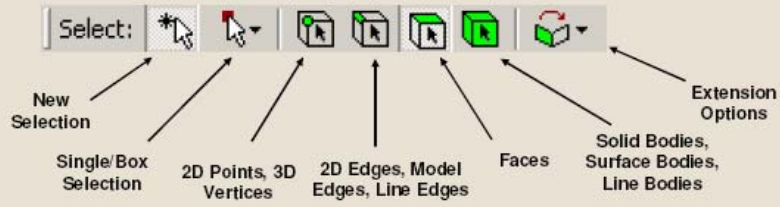
GUI - Graphical User Interface
Basic Mouse Functionality

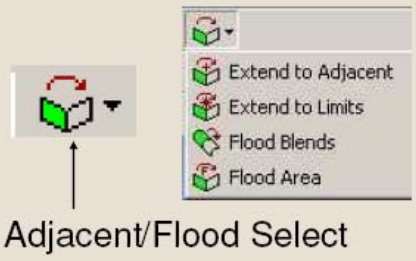
- Basic mouse control (3 button mouse assumed):
  - LMB (left mouse button)
    - Geometry selection
    - <CTRL> + LMB adds/removes selected entities
    - Hold LMB and sweep cursor = continuous selection
  - MMB (middle mouse button)
    - Free Rotation (shortcut)
  - RMB (right mouse button)
    - Open pop-up (context) menus



Selecting
Selection Filters

- Model features are identified by graphically picking them (selecting) using the left mouse button
- Feature selection is done by activating one of the selection filters from the menu bar or from pop-up menus using the right mouse button





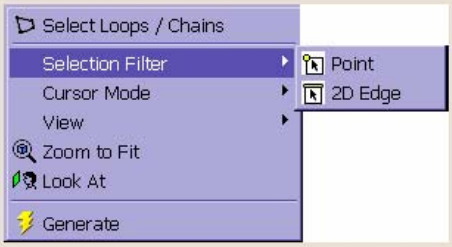
Adjacent/Flood Select

- In select mode the cursor changes to reflect current selection filter (it will match the icon).
- Adjacent and Flood Selections extend selections to adjacent areas. Additional information can be found in the ANSYS Workbench Help (documentation).

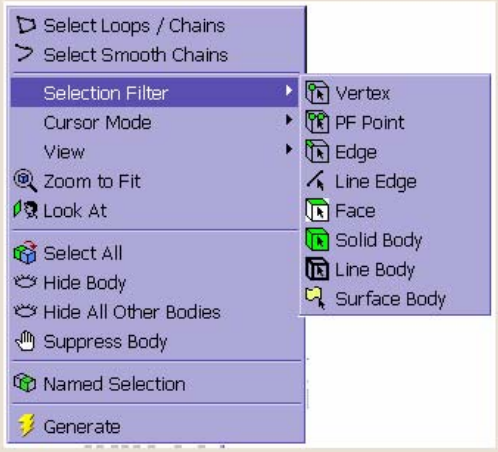
Selecting
Selection Filters

- Selection filters can also be set using pop-up menus (right mouse button in the Model View):

In Sketching Mode:



In Modeling Mode:



Selecting
Mouse Selection

+ **Ctrl**

- Add to or remove from current selection set
  - Depends on current selection filter (lines, surfaces, etc.)

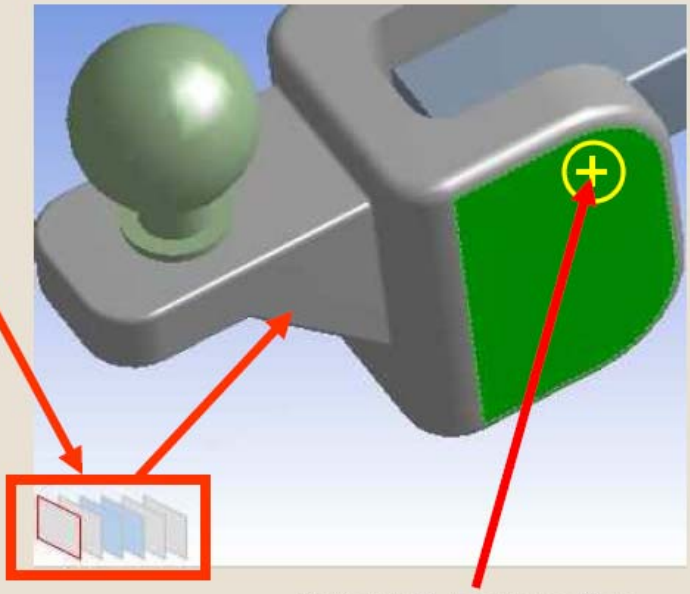
Press & Hold

- "Paint Select" - hold left mouse button then move ("paint") mouse over entities to be selected
  - Depends on current selection filter (lines, surfaces, etc.)

Note: To un-select all, click once in a blank area of the window in which your selections were made

Selecting
Selection Panes

- "Selection Panes" allow selecting hidden geometry (lines, surfaces, etc.) after an initial selection
  - In assemblies only panes are color coded to match part colors
  - Multi-select techniques apply to selection panes as well

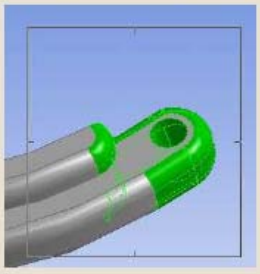


Note, each plane represents an entity (surface, edge, etc) that an imaginary line would pass through starting from the initial mouse click location and proceeding into the screen away from the viewer in the normal viewing direction.

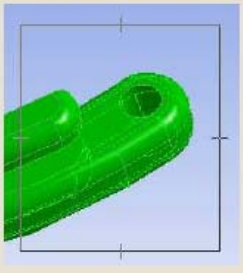
Selecting
Box Selection

- The Selection Toolbar includes a "Select Mode" button allowing users to select items via Single Select or Box Select
  - Selection based on currently active filter
  - Type of selection based on dragging direction:
    - Drag from left to right: items completely enclosed in the box are selected
    - Drag from right to left: items completely and partially enclosed in the box are selected
  - Note the difference in the hash marks along the edges of the box to help you determine which box selection type will be performed.

Left to Right

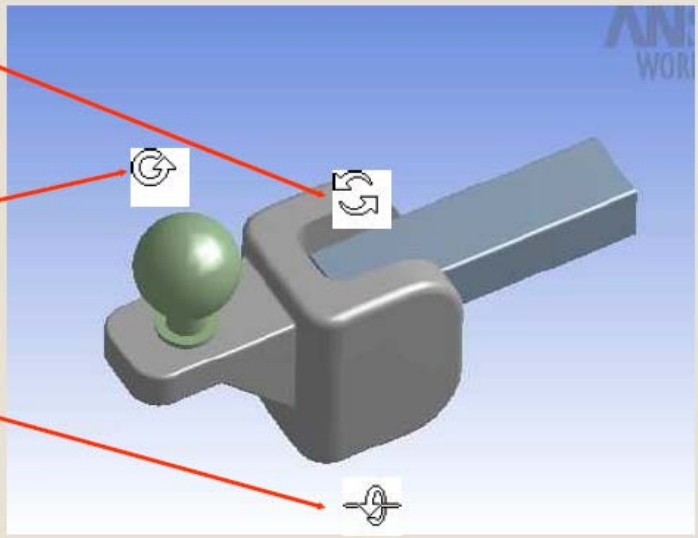


Right to Left



Graphics Controls

- Rotate Behavior (LMB):
  - Cursor near center of graphics screen = free rotations.
  - Cursor outside center = rotation about Z axis of the view which points out of the screen.
  - Cursor near top or side edge of graphics screen = rotations about X (horizontal) or Y (vertical) axes of the screen.



Note: the cursor will change style depending on window location/action

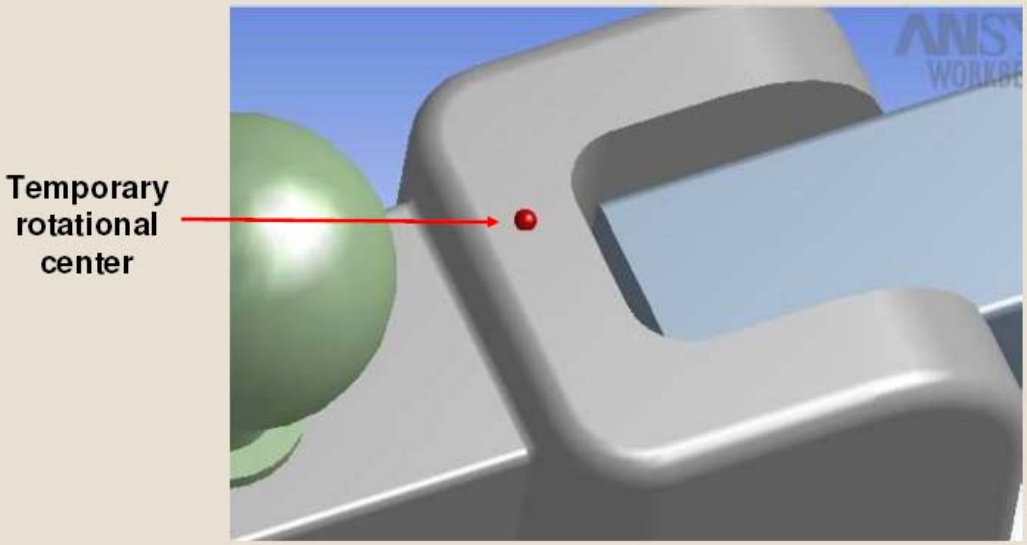
...Graphics Controls

- – Panning
- – Zoom in/out
- – Box Zoom
- – Fit model to graphics screen
- – Look At: select model feature (surface, line, etc.) then "Look At". Model automatically orients normal to feature, centered at pick point.

- Additional Mouse Controls
  - While in select mode:
    - Center mouse button = free rotations.
    - Right mouse button = box zoom.
    - Shift + Center mouse button = zoom.

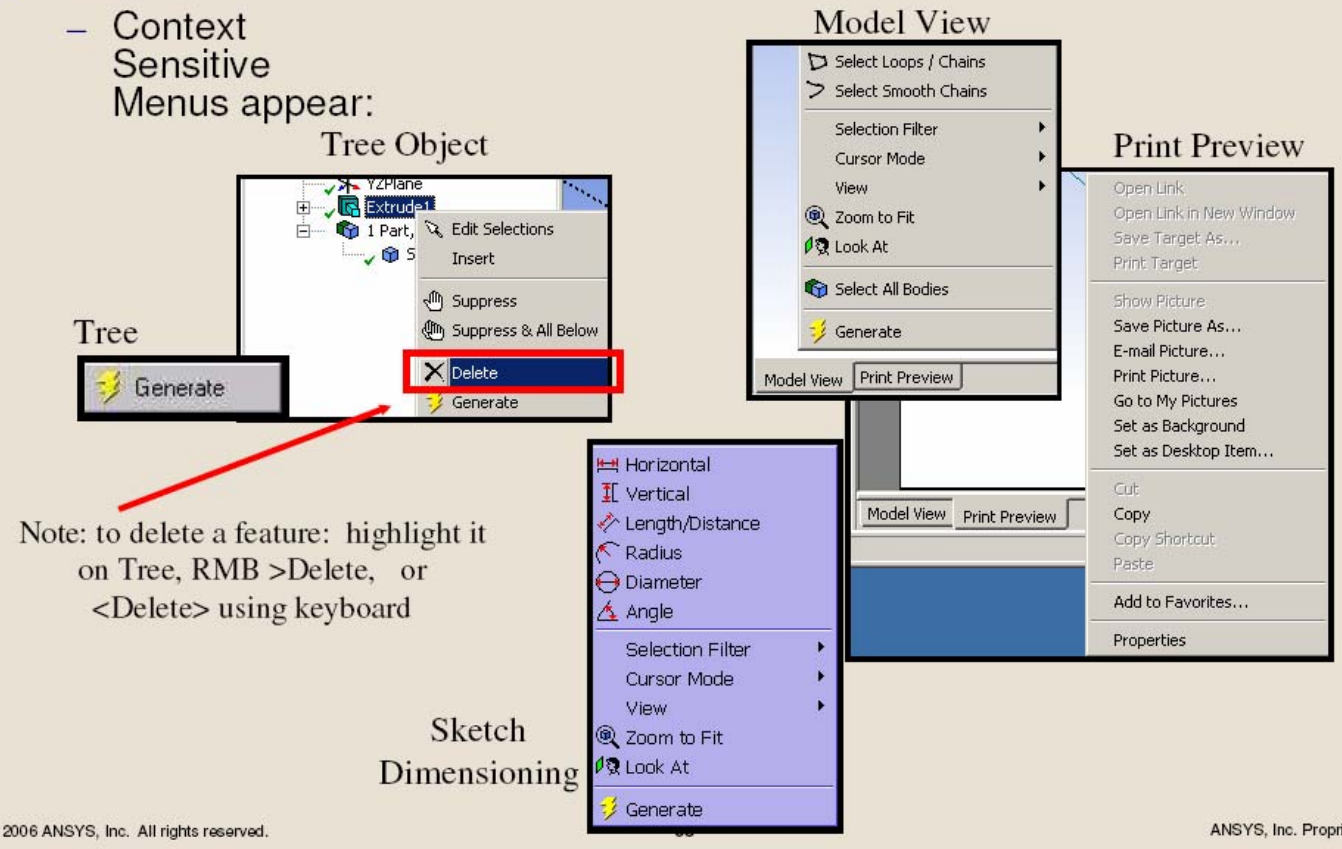
...Graphics Controls

- While in Rotate, Pan, or Zoom mode:
  - Left click on model temporarily resets center of view and rotation at cursor location (identified by red dot).
  - Left click in open area (off the model) re-centers model and rotation center to centroid.



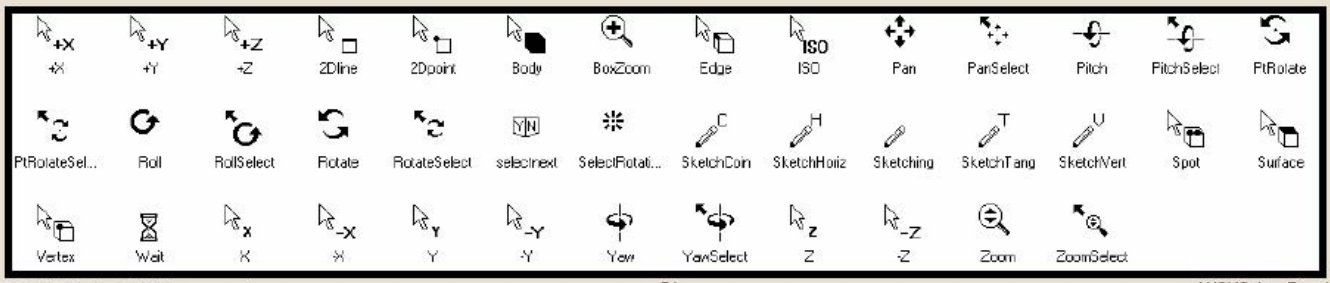
GUI - Graphical User Interface
Context Menus

- RMB
  - Context Sensitive Menus appear:



Cursor Modes

- Mouse Cursor is context sensitive
  - Indicating current mouse actions
    - Viewing, Rotation…
    - Selecting
    - Sketch AutoConstraints
    - System Status “busy, wait”



Congratulations

- At this point you have completed the ANSYS Workbench Introduction
  - You should have a basic understanding of
    - The Start Page
    - The Project Page
  - You should have a developed a basic understanding of the graphical user interface including:
    - Screen layouts
    - Graphical User Interfaces
    - Mouse interactions (menus and selections)