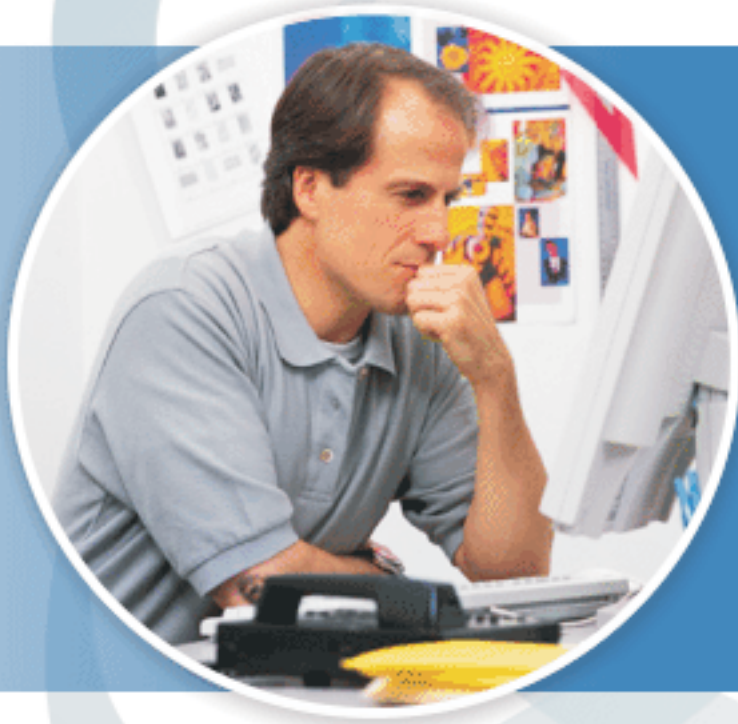




Advanced Learning Guide

A Supplement to the eZ Learning Guide



eZconference

Advanced Tools for
Architects, Engineers &
3D Model Artists

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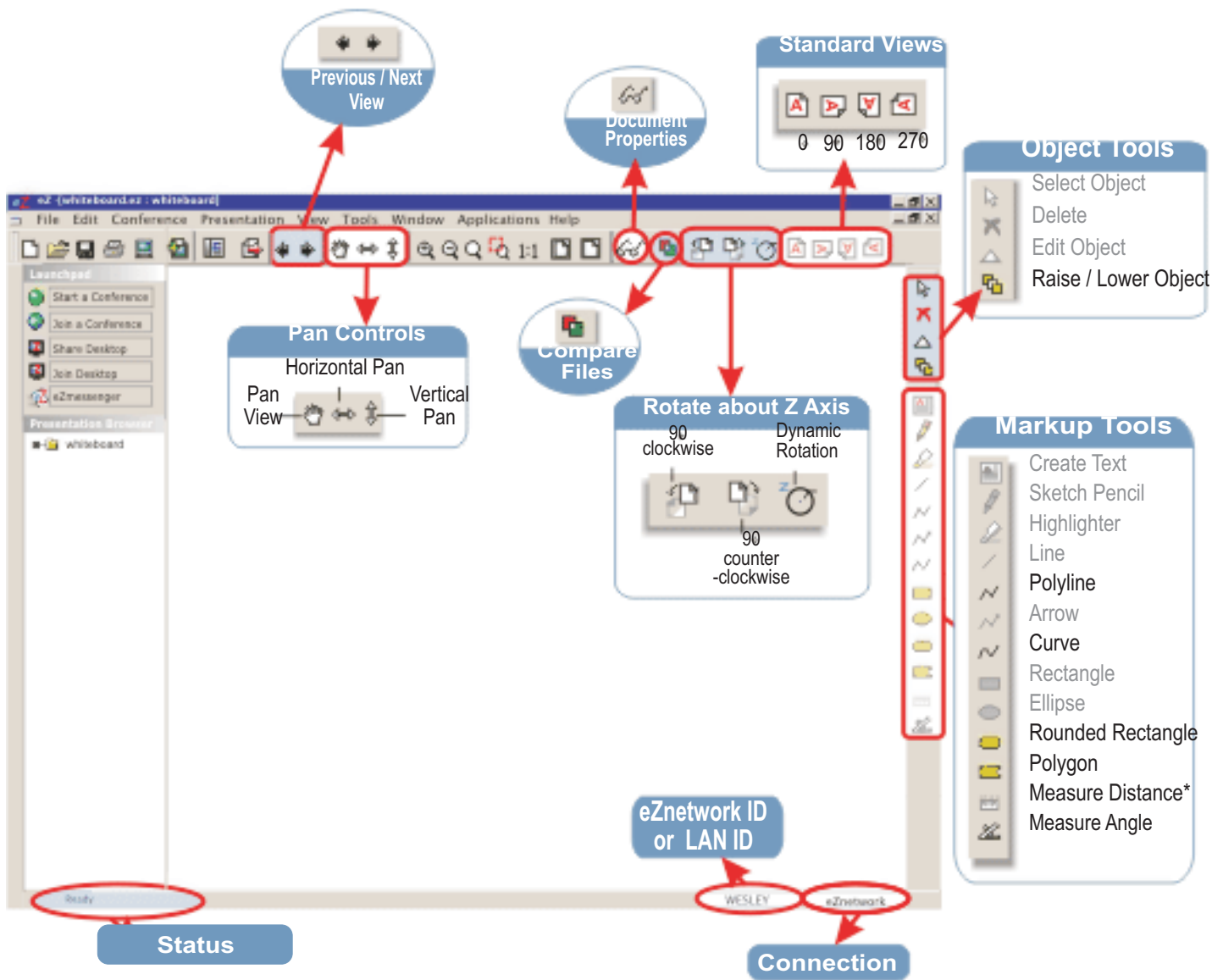
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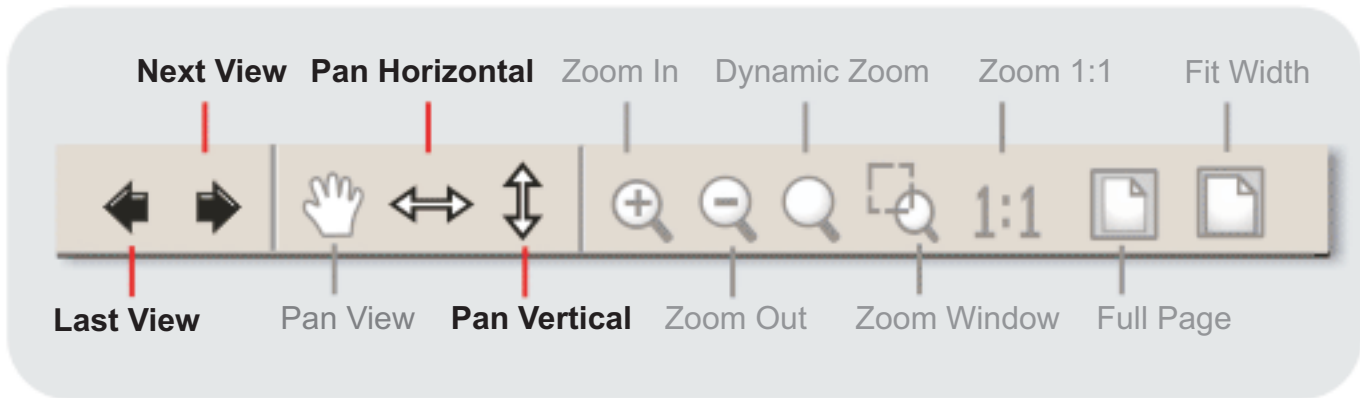
eZconference Advanced Tools

eZconference Tools Introduction



*The Measure Distance tool is only available when viewing 3D models.

Advanced Viewing Tools



eZconference gives you an extensive array of viewing tools which make it easy to move about the document and zoom in or out to any level. It's a better way to view your documents, giving you maximum flexibility and ease.



Last View / Next View

eZconference automatically remembers the last 72 view orientations for each graphic window. To scroll through these views, use the Last View and Next View buttons.



Pan Horizontal

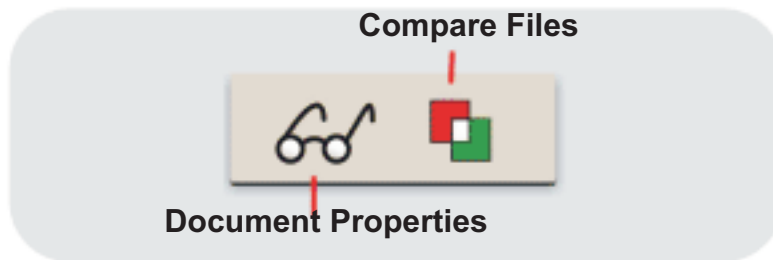
The Pan Horizontal tool allows you to move the image within the display window horizontally only. Click the Pan Horizontal button, then click and hold the mouse button in the display window. As you move the mouse horizontally, the image will move. Release the mouse button when the image has been moved to the new location.



Pan Vertical

The Pan Vertical tool allows you to move the image within the display window vertically only. Click the Pan Vertical button, then click and hold the mouse button in the display window. As you move the mouse vertically, the image will move. Release the mouse button when the image has been moved to the new location.

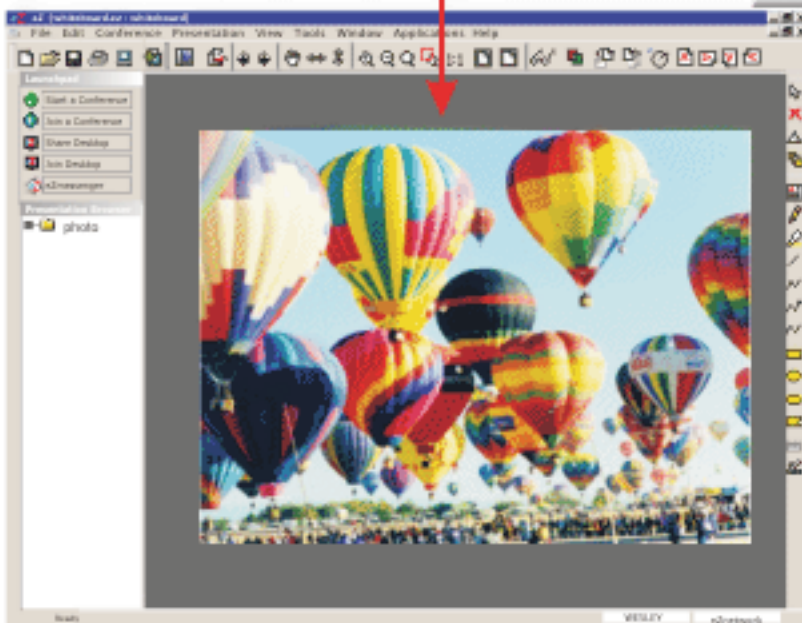
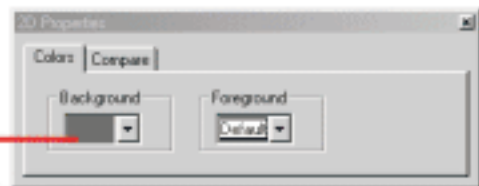
Property Tools



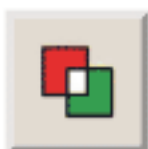
Document Properties



Select the Document Properties button to set the drawing colors and Compare colors.

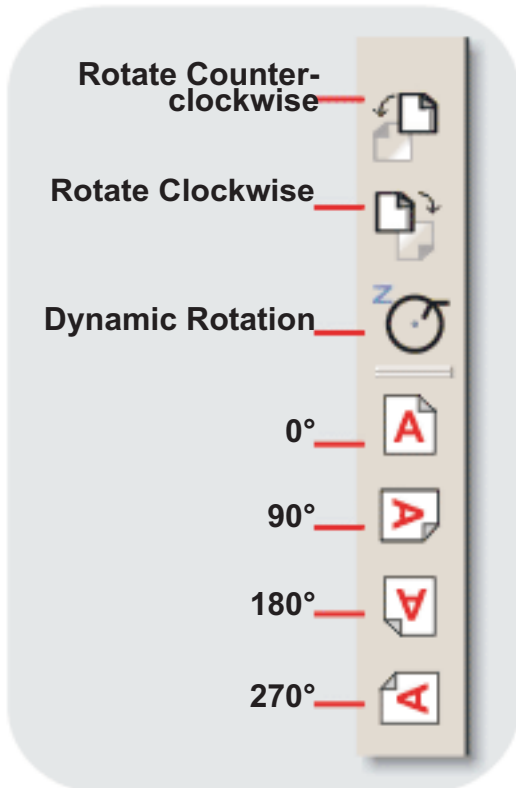


Compare Files



The Compare Files function allows you to easily examine similar files.

Rotation Tools



Rotate Counterclockwise

Rotate the image 90° counterclockwise at the current zoom level



Rotate Clockwise

Rotate the image 90° clockwise at the current zoom level



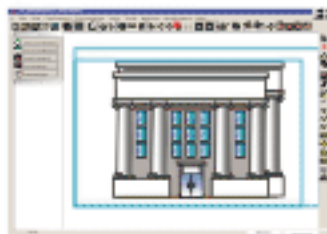
Dynamic Rotation

To dynamically rotate the image, select this tool, then click and hold the mouse button down, moving the cursor across the display window.

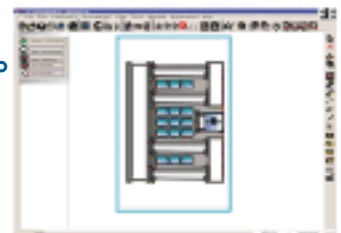
The image may be quickly oriented by selecting one of the following buttons from the orientation toolbar. The image will be shown as large as possible in the display window at the selected orientation.



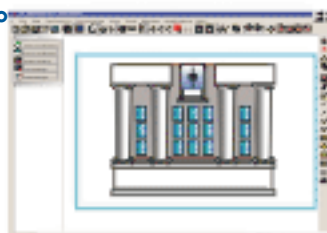
0°



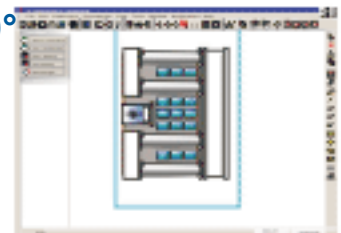
90°




180°



270°



Object Tools

Raise/ Lower Markup  The object tools allow you to move, delete and edit markup objects.

Raise / Lower Markup

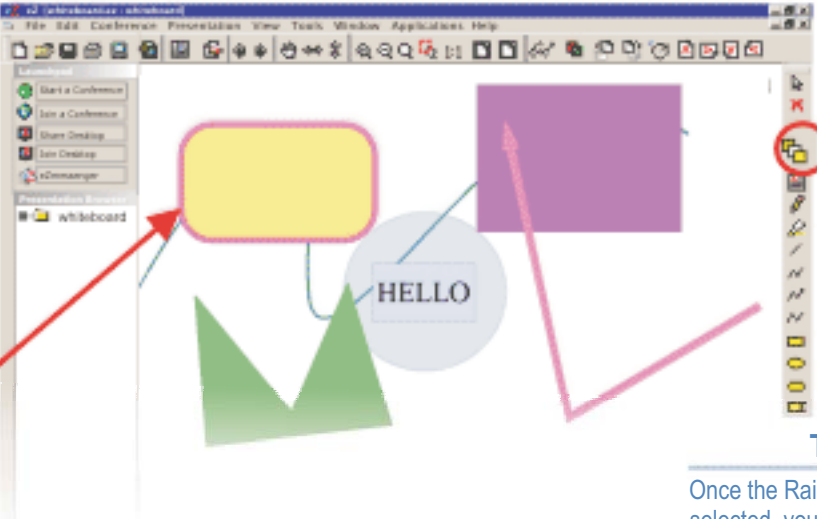


To bring a markup object which is behind other objects to the front, or to send an object in front to the back, select the "Raise / Lower" tool, then click on the object to be raised or lowered. Press the up-arrow key on your keyboard to bring the object to the front, or press the down-arrow key on your keyboard to send the object to the back.

BEFORE

Select the Raise / Lower button, then click on a markup. Use the UP arrow to move the markup forward and the DOWN arrow to move the markup backward.

When an object is selected the edge will turn magenta until the object is released.



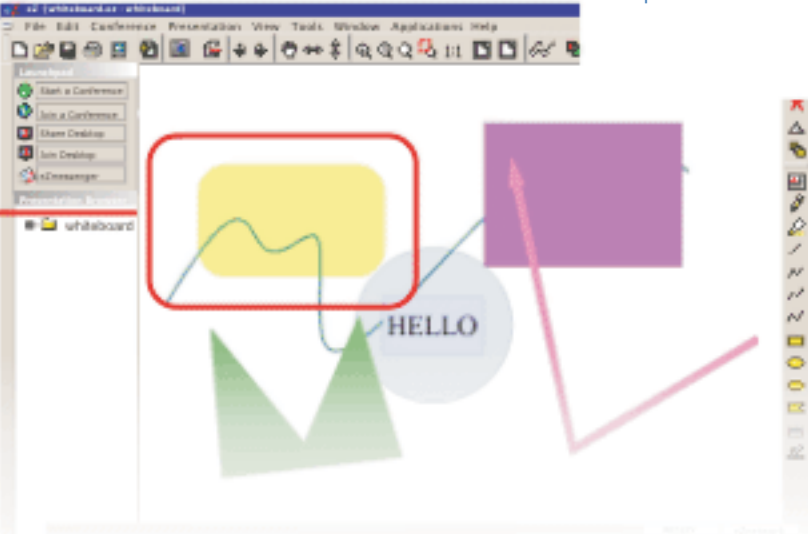
Raise / Lower Button

TIP

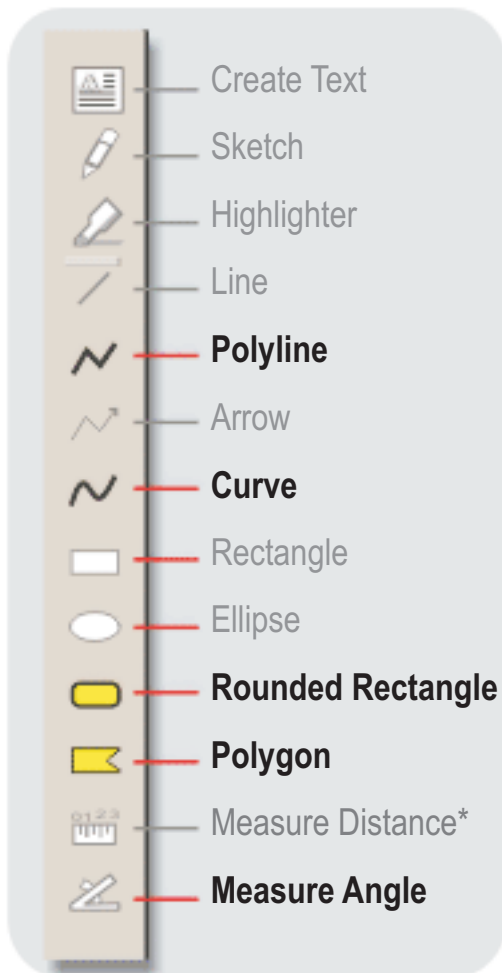
Once the Raise / Lower button selected, you can raise / lower multiple items by selecting an item and using the UP / DOWN arrows on your keyboard. To turn the Raise / Lower tool OFF simply press the button again.

AFTER

Simply by selecting the Raise / Lower button, clicking on the Rounded Rectangle and pressing the down arrow, the Rounded Rectangle was sent backward and now the Curve which was behind it is now visible.



Markup Tools

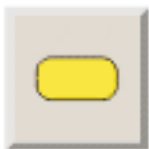


eZconference has an extensive set of easy-to-use markup tools which allow you to add notes, lines, shapes even sketch freehand on a document, without affecting the original, as if you were drawing on a plastic overlay.

Each drawing tool allows you to choose from up to 16 million colors. You can even set the thickness of your lines, and the outline color of shapes and text boxes. The performance on all tools is real-time.

eZconference's markup tools can be used to make notes and annotate documents for your own review, or interactively in a conference with others. You can store markup sheets for later reference, to edit the original document, or simply as a record of the meeting notes.

* The measure distance tool is only available when viewing 3D Models.



Rounded Rectangle

A Rounded Rectangle is a rectangle with rounded corners. Rounded rectangles may be solid or transparent, filled with any color, and the edge may be any color and width. Rounded rectangles are drawn just like rectangles and ellipses.

To draw a rounded rectangle, click and hold the left mouse button in the display window. Drag the mouse until the shape is the desired size. Release the mouse button to create the shape. Drag the mouse again to create another rounded rectangle. Right-click or select another tool to exit the function.

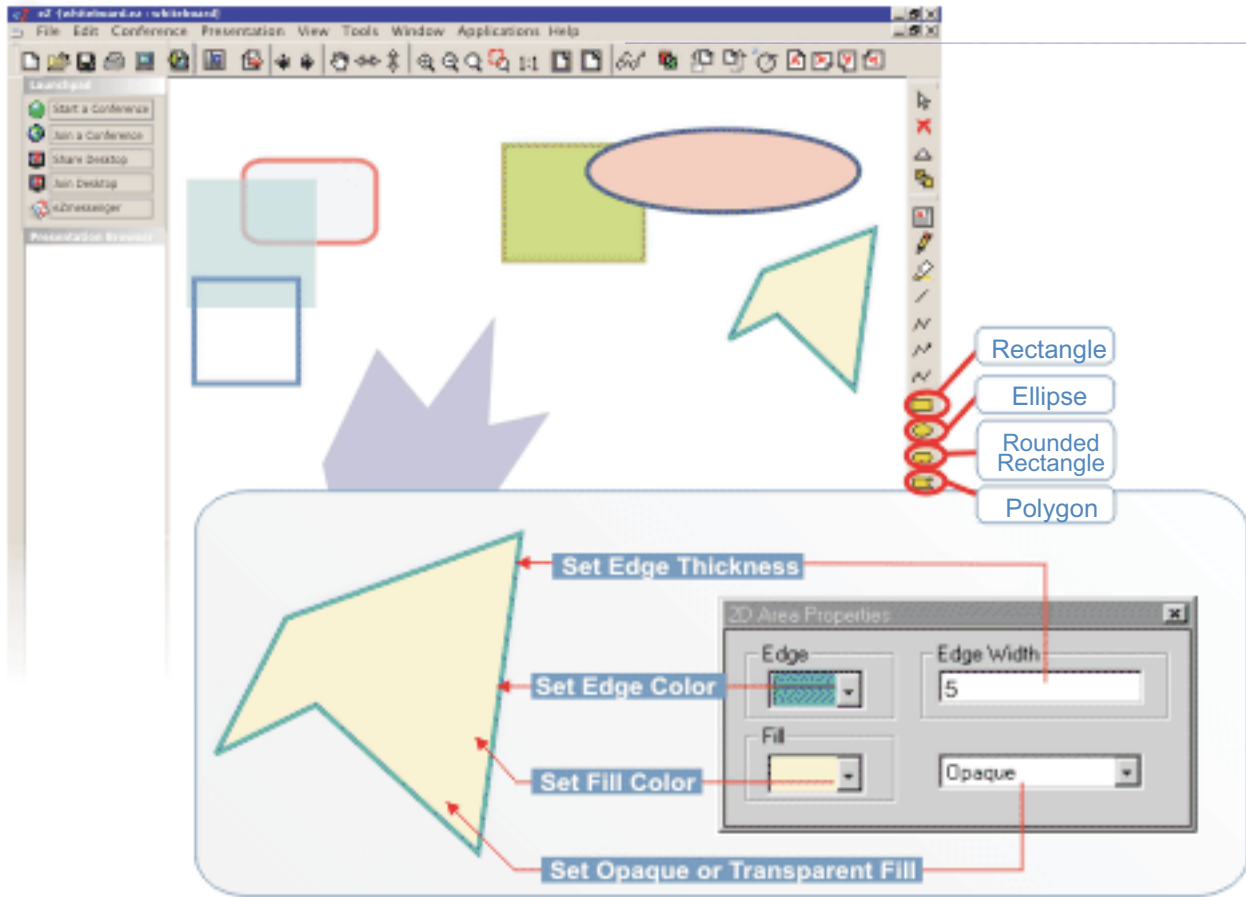


Polygon

The Polygon tool allows you to draw a freeform multi-sided shape. Fill color, edge color and width, and transparency may be set in the Area Properties dialog box.

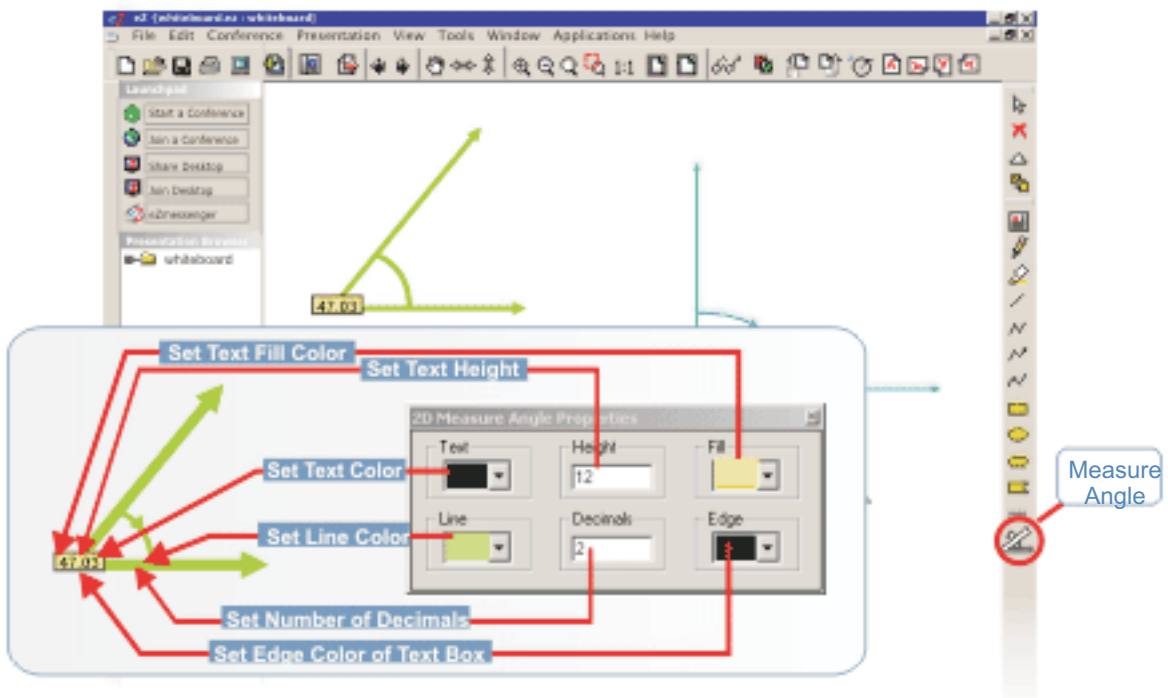
To draw polygons, select the polygon tool, then click the mouse button in the display area, click again to set the consecutive points of the polygon. Right-click or select another tool to exit the polygon function.

Alternatively, double-click to complete the shape while remaining ready to draw another polygon.



Measure Angle

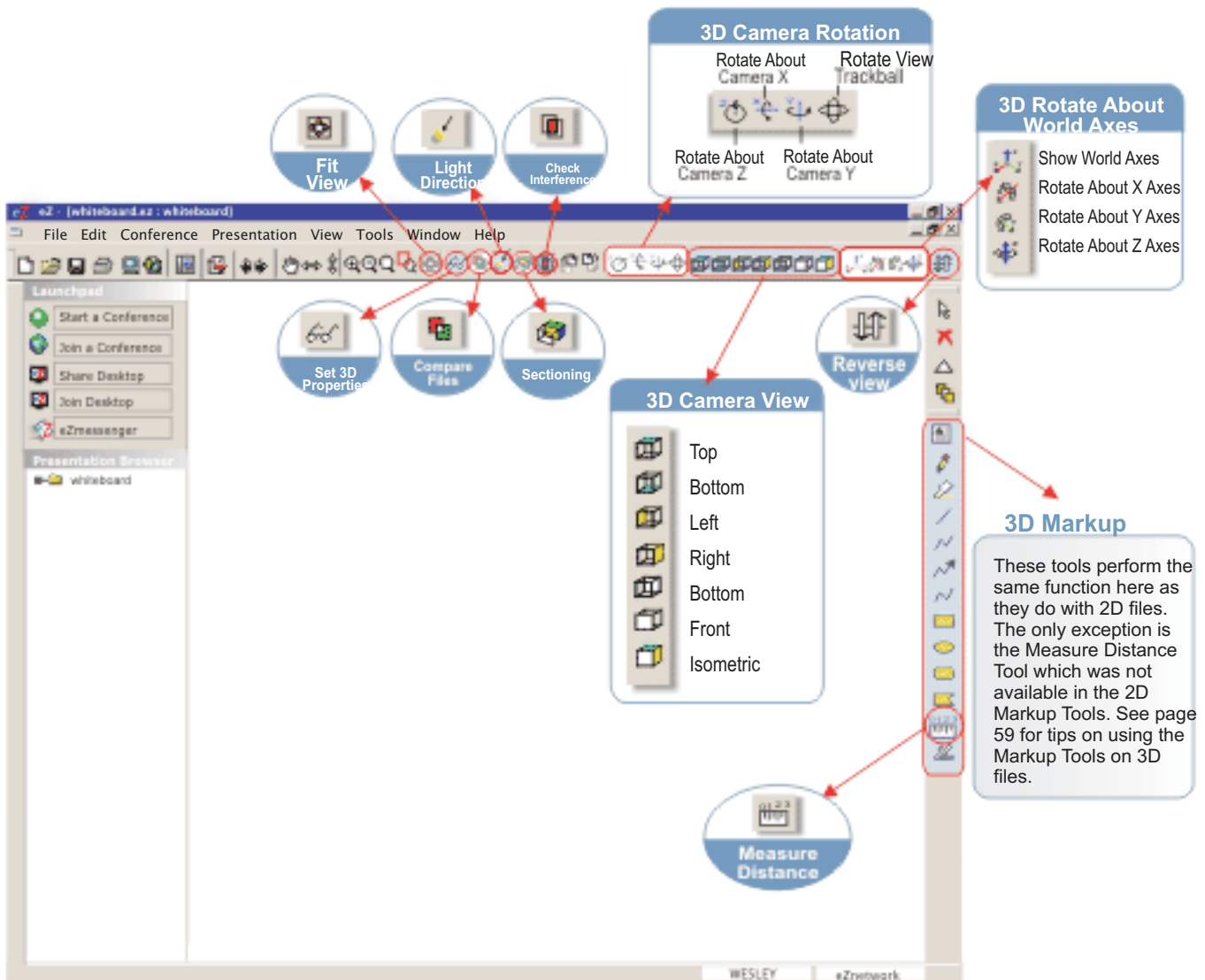
To begin measuring, select the Angle tool and click on the first point in the display window. You may press and hold the CTRL key to limit the tool to 45 degree increments. Click the second point to set the center point. Click again to complete an angle measurement.



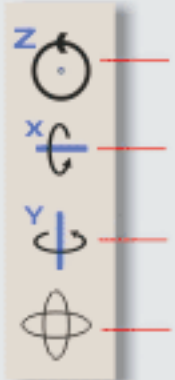
3D Interface

eZconference has intuitive, easy-to-use tools for exploring 3D models. Tool groups below are only shown when viewing a 3D model. On the pages that follow, these tools will be explained in more detail. The tools for file operations, conferencing, viewing, 2D orientation and markup featured earlier in this section can also be used with 3D files.

You can quickly access all basic eZconference 3D functions from simple-to-use toolbar shortcuts.



3D Camera Rotation



- Rotate About Camera Z Axis
- Rotate About Camera X Axis
- Rotate About Camera Y Axis
- Rotate View Trackball


eZconference allows you to rotate a 3D model about the “Camera” axes.

Camera Axes are fixed from the viewer’s perspective. You may think of your computer screen as the viewfinder of a camera, with the Z axis always pointing out of the image towards you. When you rotate about the Camera axes, you are moving your viewpoint around the model. The camera is moving not the model.

Rotate About Camera Z Axis



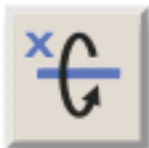
Press this button to dynamically view the 3D model. Holding the left side, drag the mouse, this will rotate the model about the Z axis. To stop the rotation simply release the mouse. Click the right side of the mouse to end the tool.

When you click the button your cursor will change to the following: 

Holding down the left side drag the mouse. The speed of the rotation will depend on how fast you move the mouse. Click the right side of the mouse to end the tool.



Rotate About Camera X Axis



Press this button to rotate the camera around the X axis of the model. Remember the 3D model is not moving only your view of the model is moving.

Holding down the left side drag the mouse. The speed of the rotation will depend on how fast you move the mouse.

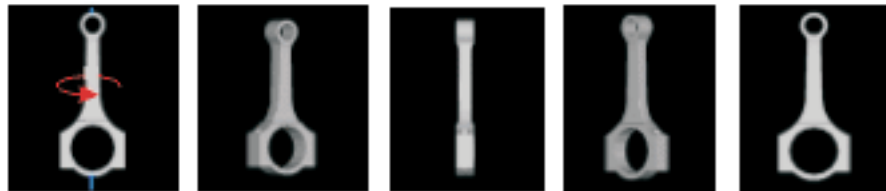


Rotate About Camera Y Axis



Press this button to rotate the camera about the Y axis. Holding the right side, drag the mouse to rotate the 3D model.

Holding down the left side drag the mouse. The speed of the rotation will depend on how fast you move the mouse.



Rotate View Trackball

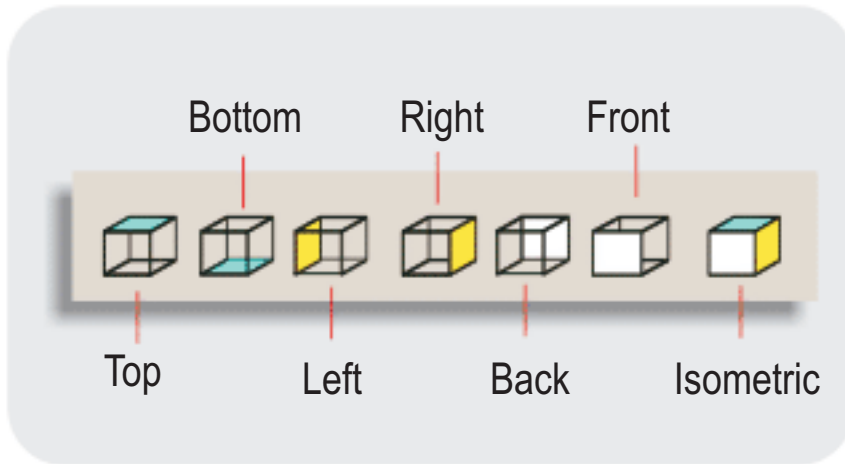
Press this button to orbit the camera freely around the 3D model. Holding the right side, drag the mouse to rotate the 3D model.

Holding down the left side drag the mouse. The speed of the rotation will depend on how fast you move the mouse.



3D Camera View Toolbar

By clicking on any of the 3D Camera View Icons the 3D model automatically switches to that camera view.



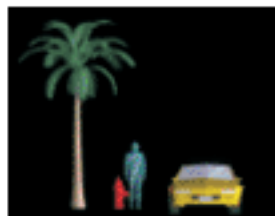
Top



Bottom



Left



Right



Back



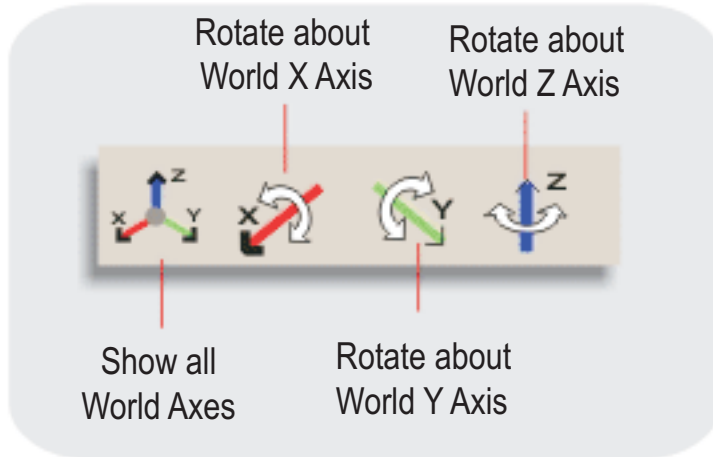
Front



Isometric



3D Rotate Toolbar



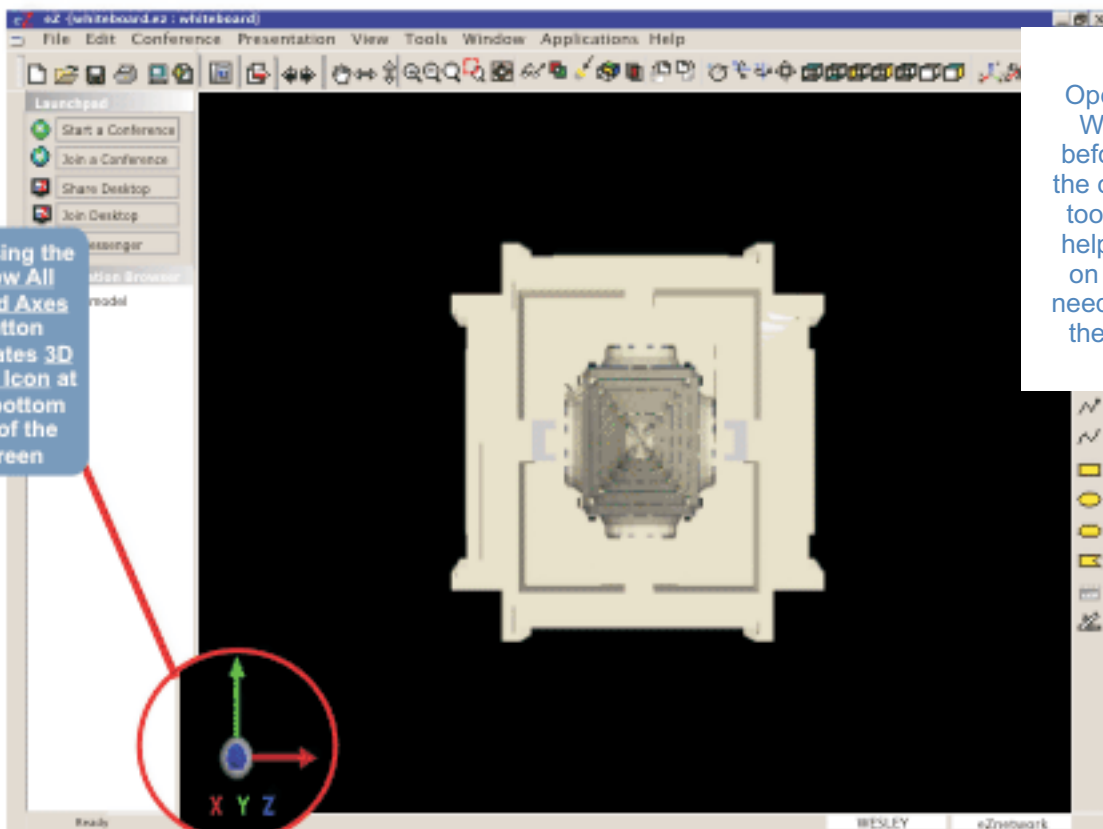
eZ allows you to rotate a 3D model about the "World" axes.

World Axes are the X, Y and Z axes associated with the model. You may think of the World Z axis as an imaginary centerline running from the bottom through the top of a 3D model. World Axes move with the model.



Show All World Axes

Press the show all world axes button and a 3D icon of all the axes will appear at the bottom left hand corner of the screen. This icon shows the current position of the World axes. This tool can remain on while you are using the other rotation tools. It will keep track of the position of all the axes as you move the 3D model. To turn this tool off simply press the button again and the 3D icon will disappear.



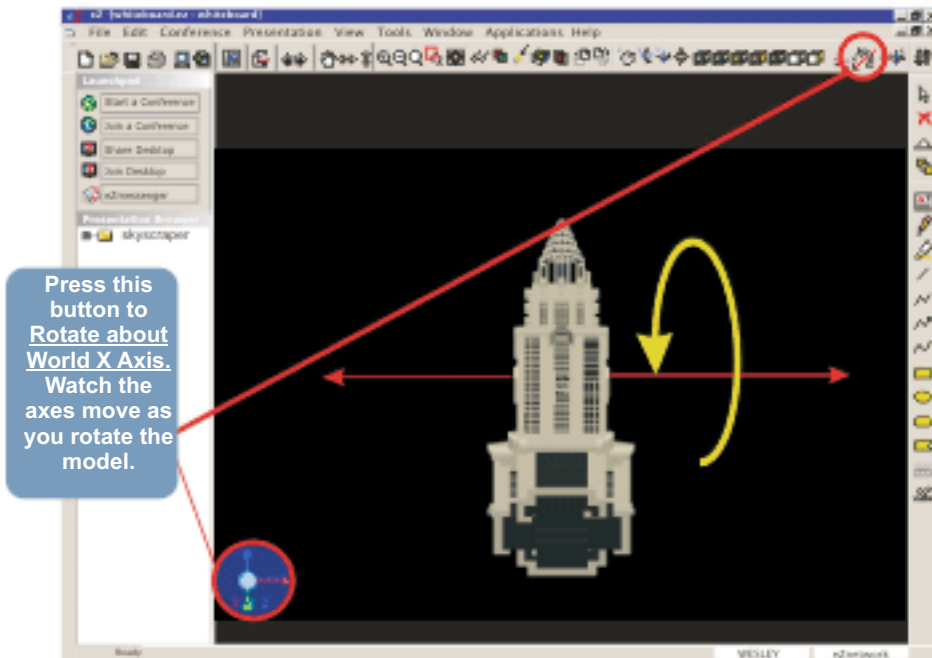
TIP

Open the Show All World Axes Tool before using any of the other 3D rotation tools. This tool will help you determine on which axis you need to rotate to get the desired effect.

Rotate About World X Axis



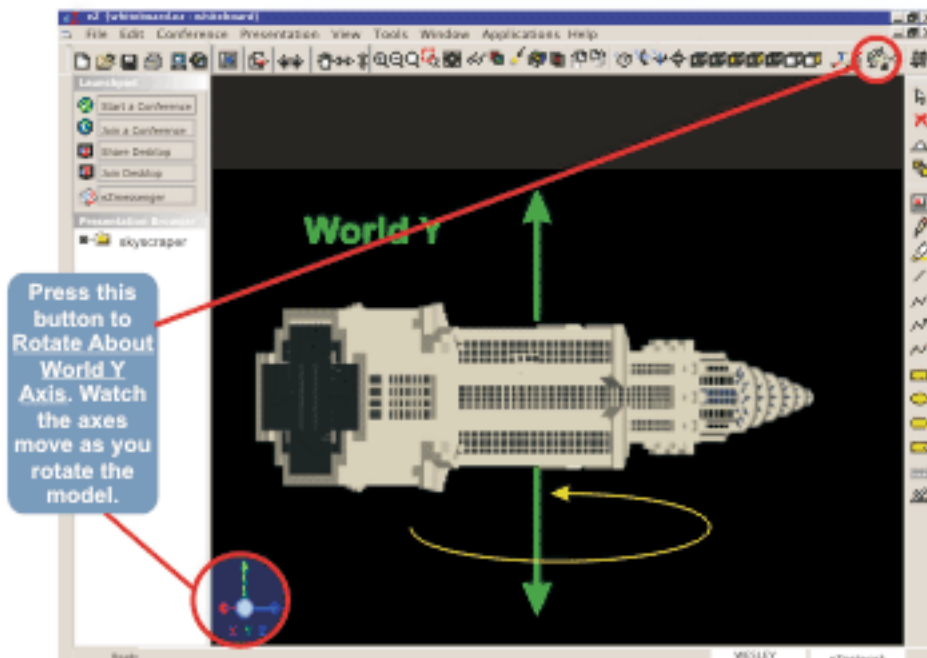
Press the rotate about the world X axis tool to rotate the 3D model. The red axis is the X axis. Simply hold down the left side of the mouse and drag to rotate. Watch the axes at the bottom left of the screen, they will correspond with the rotation of the 3D model. Remember the camera view remains the same —only the 3D model is rotating.



Rotate About World Y Axis



Press the rotate about the world Y axis tool to rotate the 3D model. The green axis is the Y axis. Simply hold down the left side of the mouse and drag to rotate. Watch the axes at the bottom left of the screen, they will correspond with the rotation of the 3D model. Remember the camera view remains the same only the - 3D model is rotating.

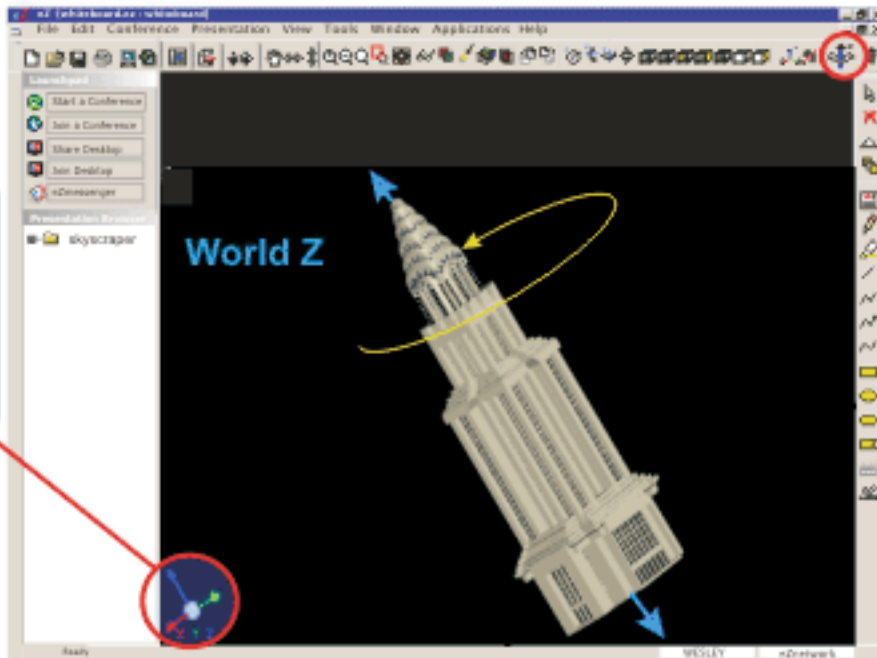


Rotate About World Z Axis



Press the rotate about the world Z axis tool to rotate the 3D model. The blue axis is the Z axis. Simply hold down the left side of the mouse and drag to rotate. Watch the axes at the bottom left of the screen, they will correspond with the rotation of the 3D model. Remember the camera view remains the same- only the 3D model is rotating.

Press this button to Rotate About World Z Axis. Watch the axes move as you rotate the model.

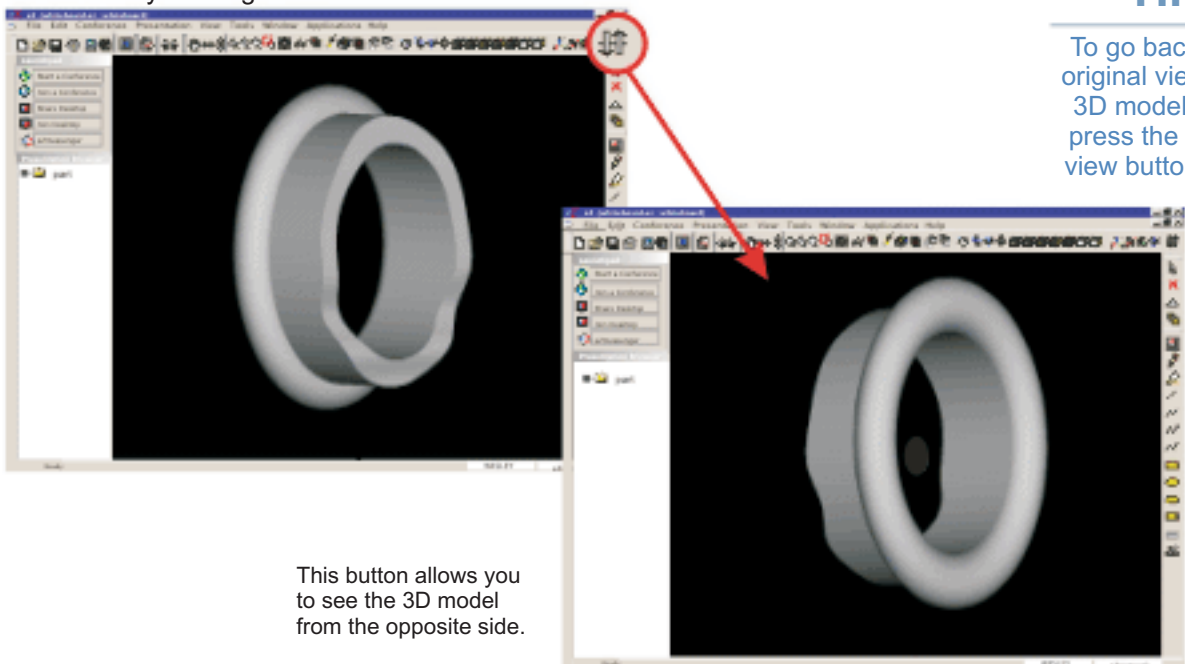


Reverse View

Press the Reverse View button see the exact opposite view of the 3D model that you are currently viewing.

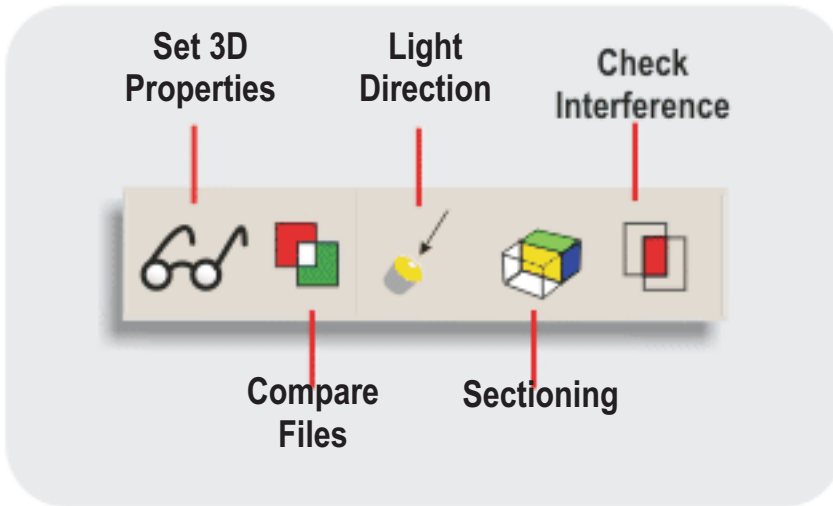
TIP

To go back to the original view of the 3D model simply press the reverse view button again.



This button allows you to see the 3D model from the opposite side.

3D Property Toolbar

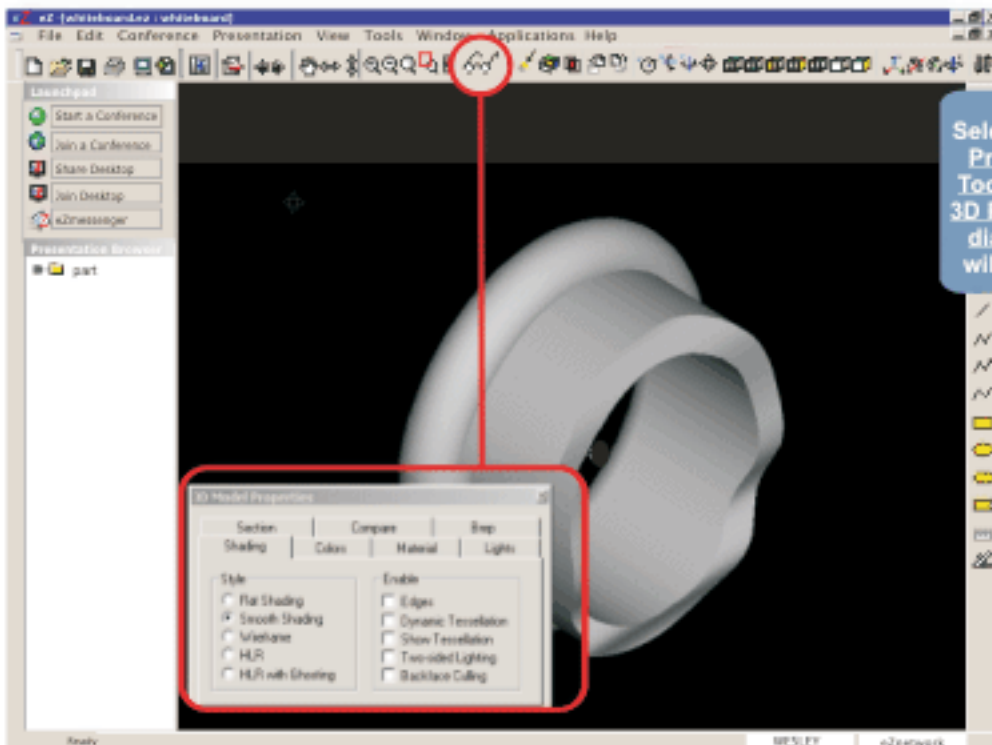


3D Properties toolbar will only apply to 3D models and will only be available while in 3D mode. The only exception is the Compare Files, which is available in 2D & 3D mode.

Set 3D Properties

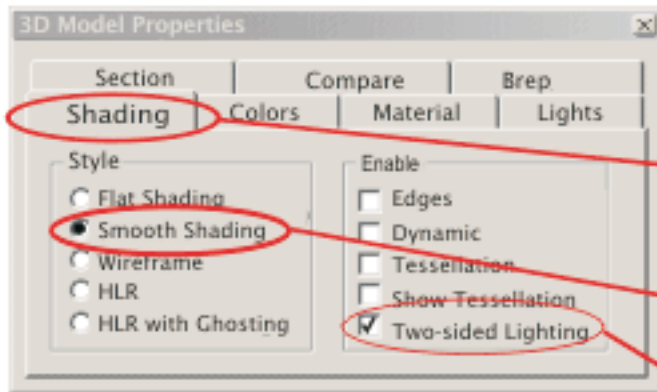


Press the 3D Properties button from the toolbar to access the 3D Properties dialog. This dialog box is only available while in 3D mode.



3D Properties Dialog

The 3D Properties Dialog gives you great flexibility in setting the various properties for 3D models.



Select a tab by clicking on it. Once you click on a tab the Properties Dialog box will change to reveal additional property settings for each tab.

For example, the first Tab Option is **Shading**. Select the Shading tab to reveal the various shading style options.

To select a Shading Style such as **Smooth Shading** simply click on the circle to the left and it will turn black. To enable an Option such as **Two-sided Lighting** click on the box to the left and a black check will appear.

Shading Options

See the Properties Dialog Box above to see an enlarged view of the Options available under the Shading Tab. There are examples of each option below.

Flat Shading
All the surfaces of the 3D model appear flat.

Smooth Shading
All the surfaces of the 3D model are shaded.

Wireframe
Show only the wireframe of the 3D model.

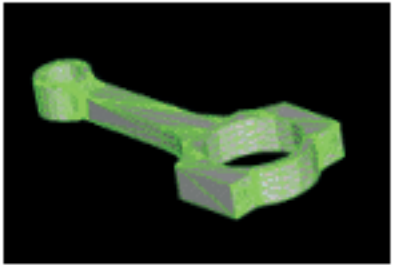
HLR
(Hidden Line Removal) Shows only the visible edges.

HLR with Ghosting
Visible edges are opaque, hidden edges are ghosted.


Shading Options

See the Properties Dialog Box on the top of the previous page to see an enlarged view of the Options available under the Shading Tab. More than one of the options can be checked at a time. There are examples of each below.

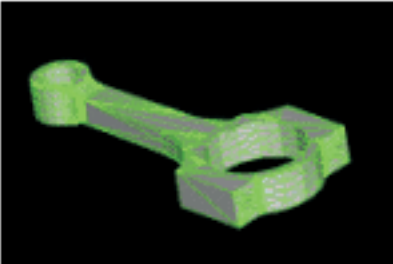
Edges
Outlines of the surfaces are shown.



Dynamic Tessellation
Individual triangles and polygons are dynamically updated.



Show Tessellation
Individual triangles and polygons are outlined.



Two-Sided Lighting
Surfaces facing away are shown in the "backface" set under the "Material" tab.

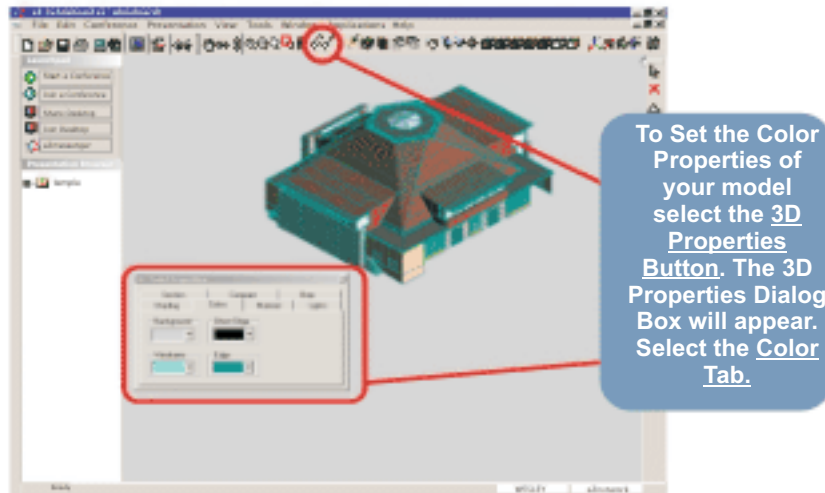


Backface Culling
Surfaces facing away are invisible.



Color Options

Select the “Colors” tab to set the background color of the graphics window and colors used to display wireframe geometry, triangle or polygon edges and hidden lines when rendering in HLR mode (Ghost Edge).

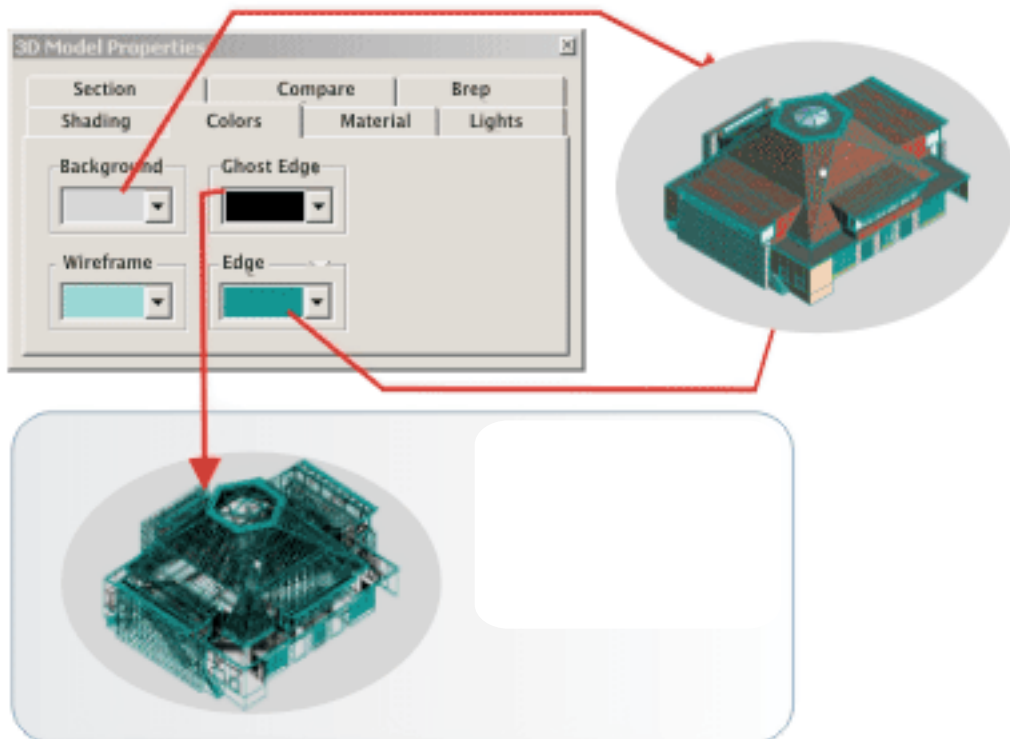


To Set the Color Properties of your model select the 3D Properties Button. The 3D Properties Dialog Box will appear. Select the Color Tab.

Note: The Ghost Edge and the Wireframe 3D Color options are not available on all models.

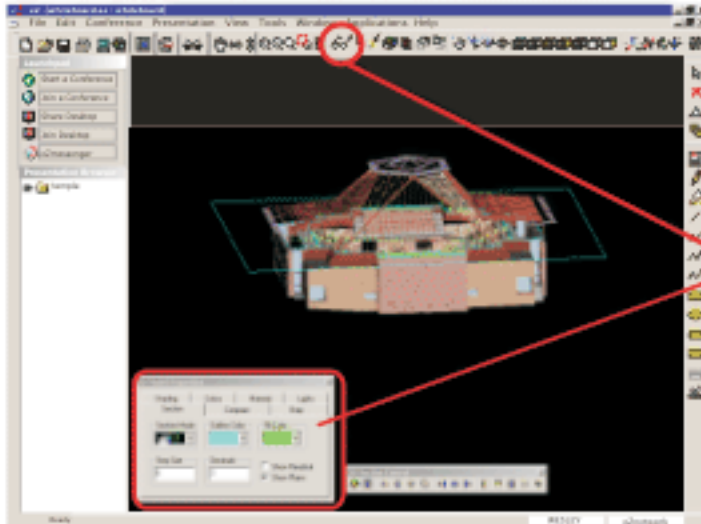
Enlarged View of Set Area Properties Dialog

Set the Background, Ghost Edge, Wireframe and Edge Colors. To see the most recently used colors by simply clicking on the down arrow next to the currently selected color. You can click on the color you wish to used or scroll down to “More” to create a custom color.



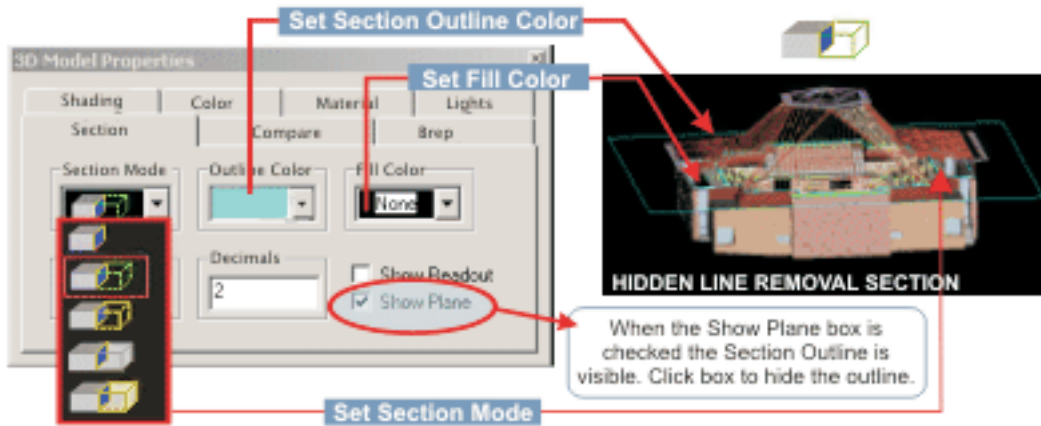
Section Options

The Section Tab allows you to set the properties for the Sectioning Tool. Cut-away sections of your 3D model may be totally removed from view, or viewed as a combination of outline and ghosted materials. The changes made can only be viewed if you have the Section Control toolbar open.

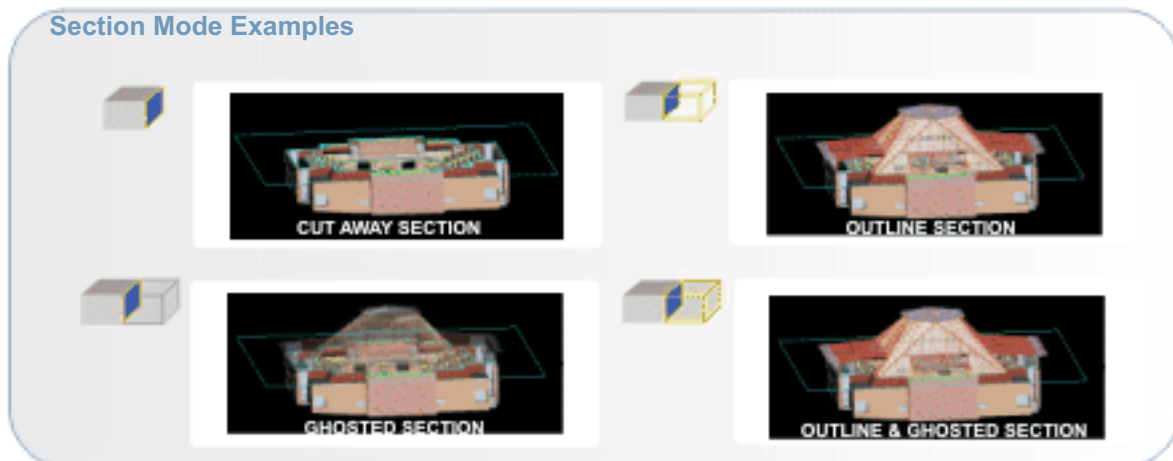


To Set the Section Properties of your model select the **3D Properties Button**. The 3D Properties Dialog Box will appear. Select the **Section Tab**.

Enlarged View of Set Area Properties Dialog

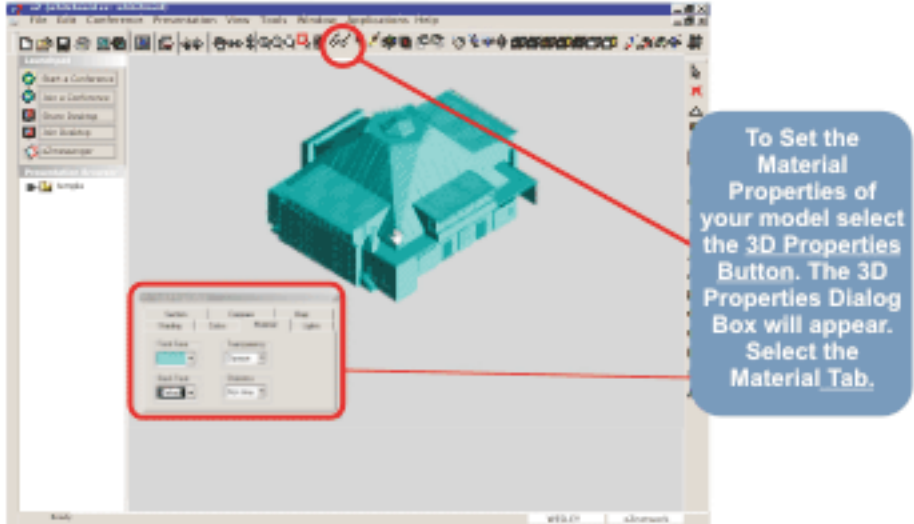


Section Mode Examples



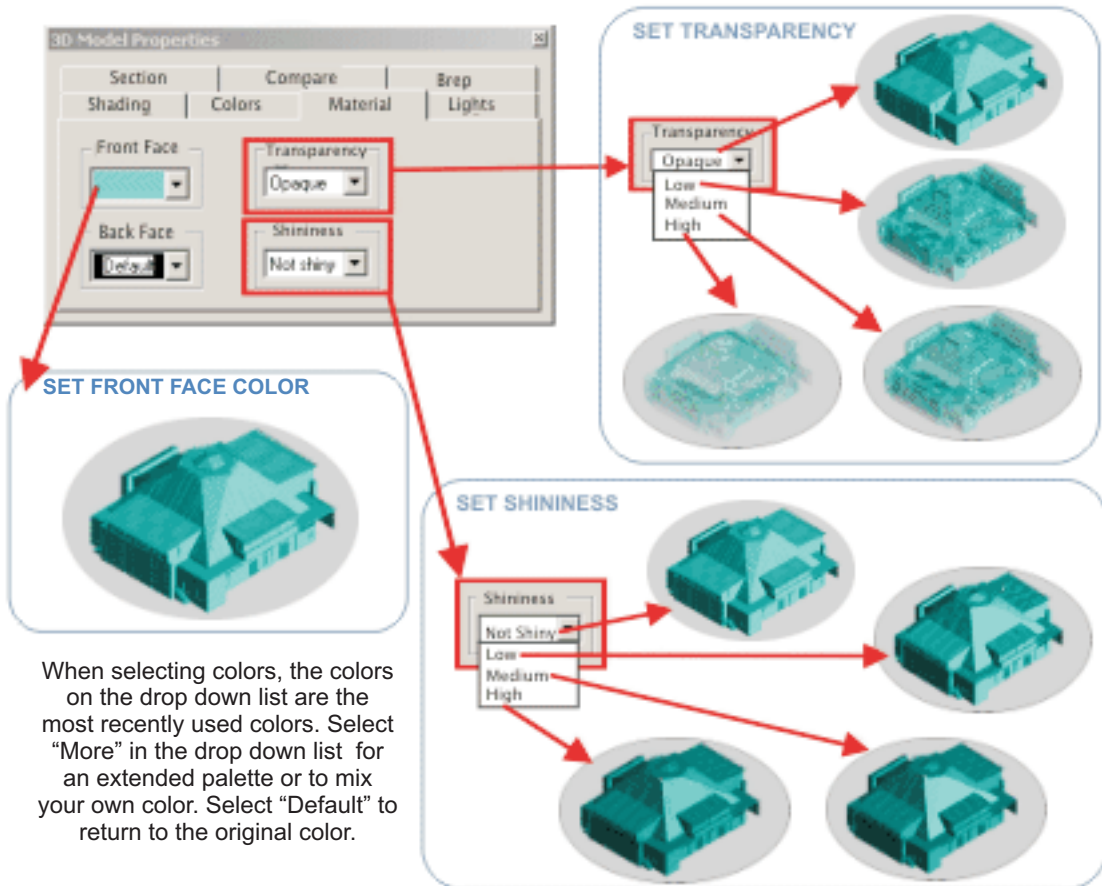
Material Options

Select the "Material" tab to adjust the colors of the front and back facing triangles or polygons and the degree of transparency and shininess of the surfaces.



Note: Back facing surfaces can be set to invisible by selecting "Backface Culling" under the "Shading" tab.

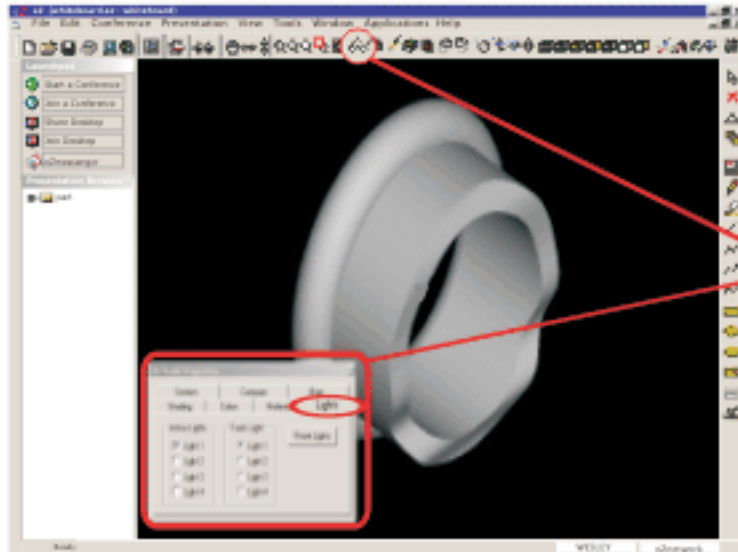
Enlarged View 3D Properties Material Dialog



Lights Options

Select the "Lights" tab to activate or deactivate any of the four available lights and set which active light will be tracked by the Light Direction tool. In a true color environment (more that 256 colors), the default color for Lights 2, 3 and 4 are Red, Green and Blue respectively. In a 256 color environment, all four available lights will be white. The following example is a 3D model in a true color environment.

The example below has only Light 1 Active and has it designated as a Track Light.



To Set the Light Properties of your model select the **3D Properties Button**. The 3D Properties Dialog Box will appear. Select the **Lights Tab**.

Enlarged View 3D Properties Lights Dialog

Track Light allows you to set which light will be tracked by the Light Direction Tool

Returns the light setting to the default mode.

3D Model Properties

Section	Compare	Brep
Shading	Color	Material
Lights		
Active Lights	Track Light	Reset Lights
<input checked="" type="checkbox"/> Light 1	<input checked="" type="radio"/> Light 1	<input type="button" value="Reset Lights"/>
<input type="checkbox"/> Light 2	<input type="radio"/> Light 2	
<input type="checkbox"/> Light 3	<input type="radio"/> Light 3	
<input type="checkbox"/> Light 4	<input type="radio"/> Light 4	

Active Lights

- Light 1
- Light 2
- Light 3
- Light 4

Active Lights

- Light 1
- Light 2
- Light 3
- Light 4

Active Lights

- Light 1
- Light 2
- Light 3
- Light 4

Active Lights

- Light 1
- Light 2
- Light 3
- Light 4

This example has only Light 1 selected. Light 1 in a true color environment is **White**.

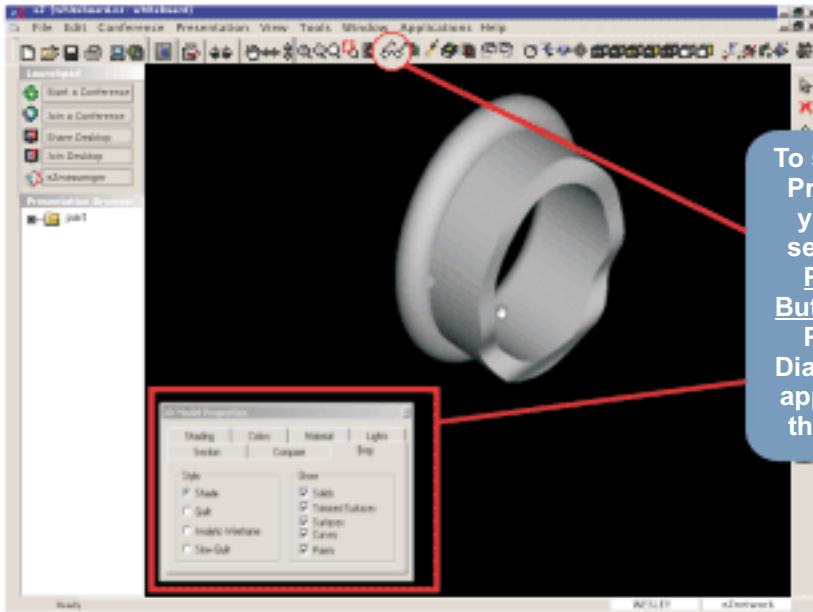
This example has both Light 1 & Light 2 selected. Light 2 is **Red** in a true color environment.

This example has Light 1, 2, 3 and 4 selected. Light 4 is **Blue** in a true color environment.

This example has Light 1, 2 and 3 selected. Light 3 is **Green** in a true color environment.

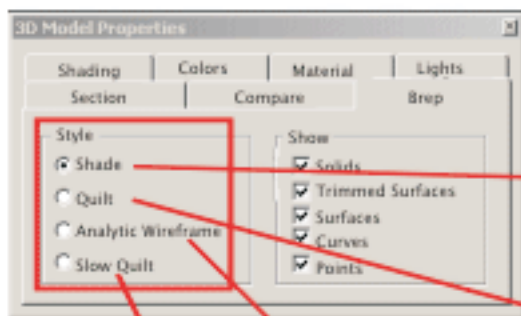
Brep Options

Brep (Boundary Representation) describes the object using points, edges and faces.




To set the Brep Properties of your model select the **3D Properties Button**. The 3D Properties Dialog Box will appear. Select the **Brep tab**.

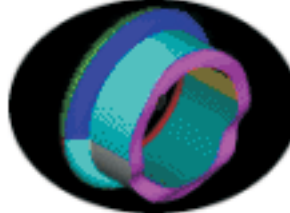
ENLARGED VIEW OF 3D PROPERTIES BREP DIALOG



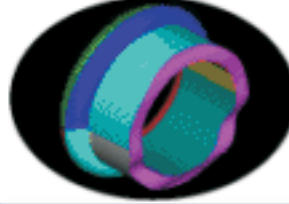
Shade
Shows the objects boundaries by shading the object.



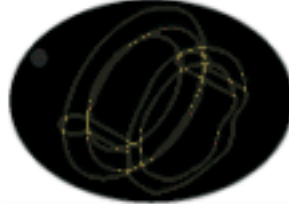
Quilt
Shows the objects boundaries by using sections of color.



Slow Quilt
Shows the objects boundaries by using sections of color that appear in sequence of hierarchy.



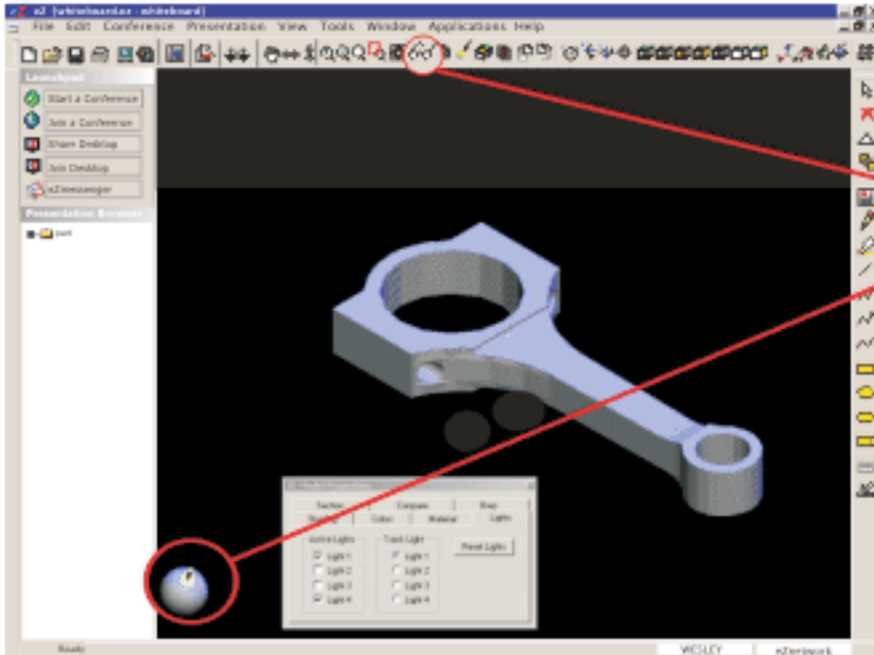
Analytic Wireframe
Shows the objects boundaries by using wireframe.





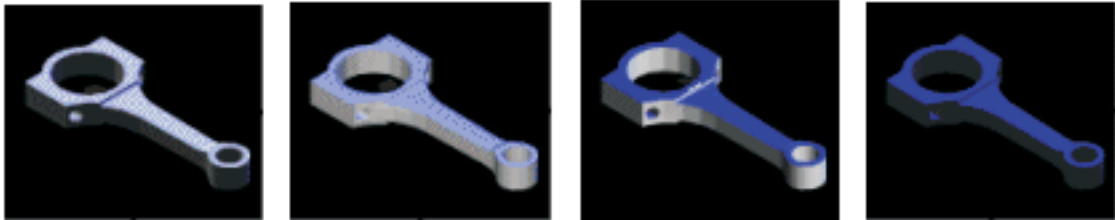
Light Direction

Select the Light Direction tool from the main toolbar. This tool opens a sphere in the lower left hand corner of the display window. Click and drag the left mouse button to adjust the light direction. You can change the angle of the light selected or the Light Number (Color) by clicking on the 3D properties button and choosing the Lights tab in the dialog box. To designate the "Track Light" simply check the box next to the Light Number.



Select the Light Direction tool to open the Sphere Icon at the bottom left corner of the screen. By holding down the left side of your mouse and dragging the direction that the light is coming from will adjust accordingly.

By simply clicking the left mouse button and dragging, the light source changes direction. This tool can create very dramatic effects using only light direction.



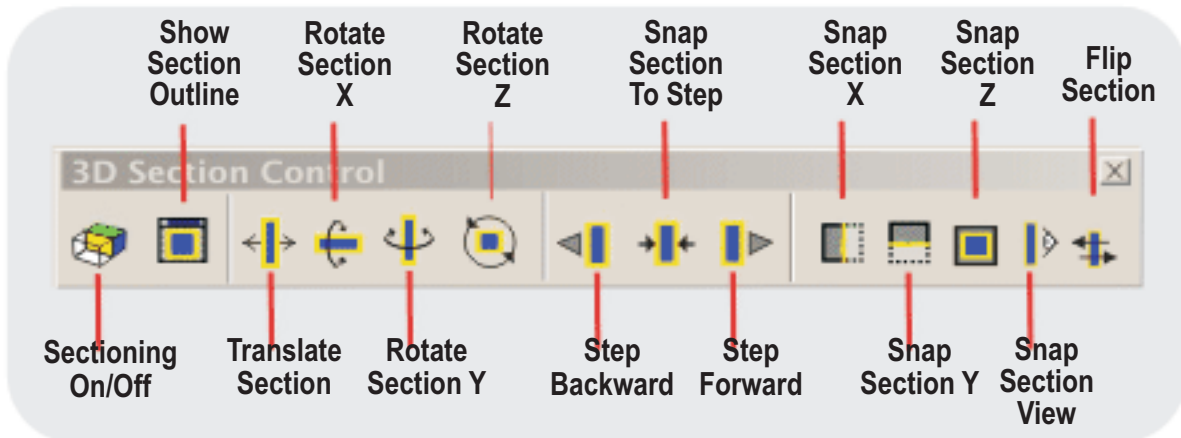
Arrow indicates the direction the light is coming from. Watch the sphere move as you revolve the light direction.

***Note:** Changing the 3D Light Properties in the 3D Properties dialog box can create many different effects. For more on the 3D Light Properties see page 50*



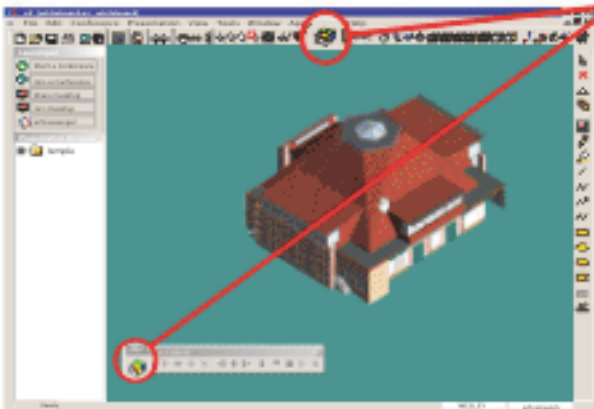
Sectioning Tool

Select the Sectioning tool from the main toolbar to activate the 3D Section Control toolbar. These sectioning tools allow you to slice through your 3D models, providing cut away views and instantaneous 2D data. The appearance of the sectioned models may be adjusted by selecting the 3D Properties Icon from the main menu and choosing the Section tab in the 3D Properties dialog box.



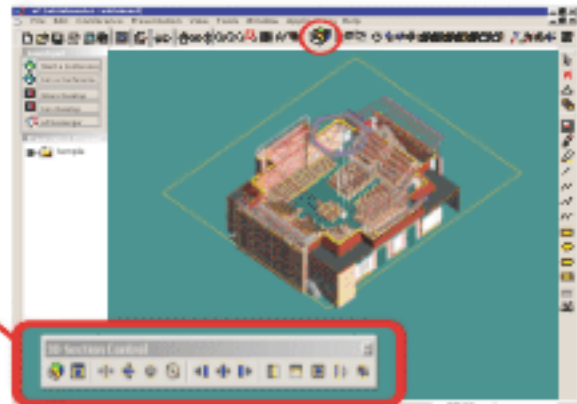
This example demonstrates how to turn the Sectioning tool **On** and **Off**. Open a 3D model and select the Sectioning tool from the main toolbar. The 3D Section Control Toolbar will appear on your screen. Select the Sectioning On/Off button to turn sectioning tools On.


SECTIONING OFF



To Section your 3D model select the Sectioning Tool from the main toolbar and then select the Sectioning On/Off button from the 3D Section Control Toolbar.

SECTIONING ON

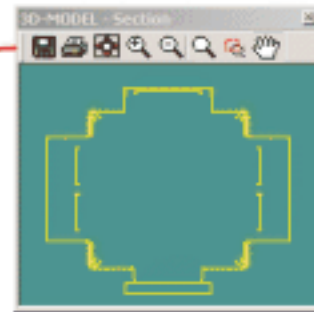
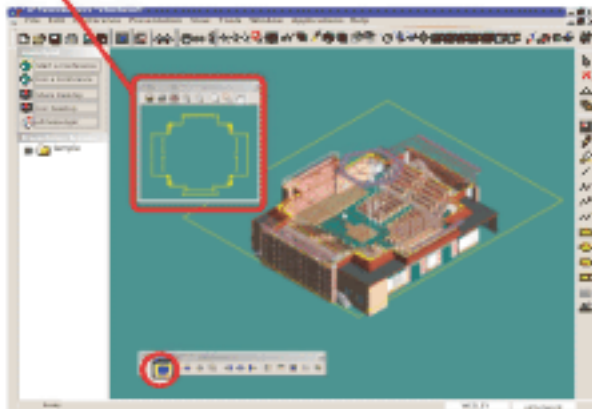


After turning Sectioning on, the entire 3D Section Control Toolbar becomes active. Remember, you can adjust the Sectioning Properties by choosing the 3D Properties tool from the main toolbar. Then select the Section Tab from the 3D Properties Dialog Box. The 3D model to the right is using the Hidden Line Removal  sectioning view.



Show Section Outline

Select this tool to show the section outline in a separate window.



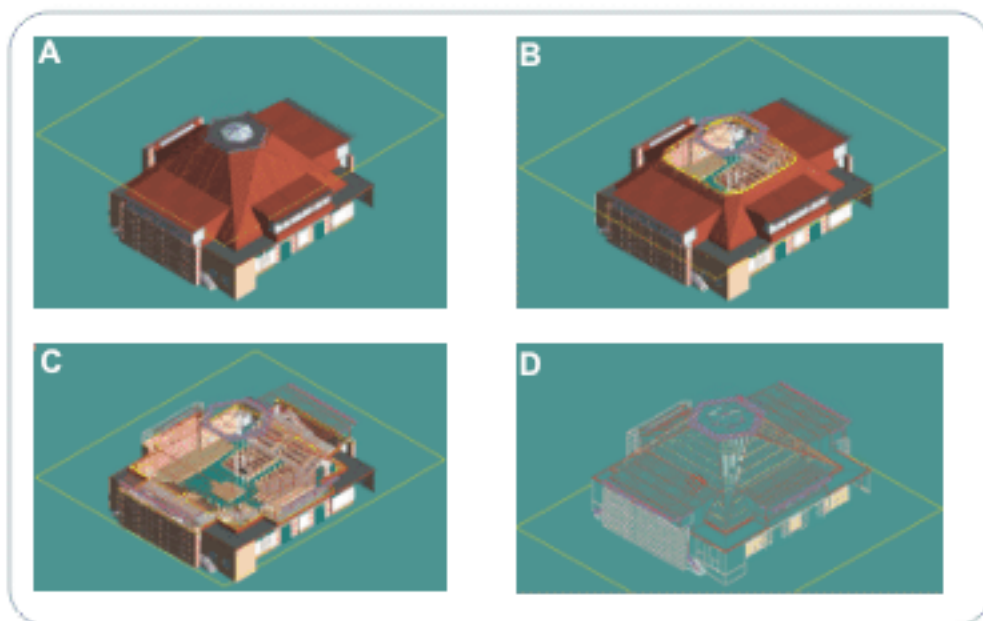
The Section outline window has its own Zoom and Pan controls which mimic those of the main toolbar. It also has Save and Print options which allow you use print/save this outline separately from the 3D file.



Translate Section

Select this tool to move the section plane parallel to its normal position. Simply click the left side of the mouse and drag and the section plane will move.

In Figure A below, you can see the section plane (yellow hovering rectangle) above the 3D building. Select the Translate Section tool and drag your mouse while holding the left side. This will slowly change the section plane position. In Figure B the section has moved down the 3D building, revealing the Hidden Line Removal view on the top half of the building. You can continue to drag the mouse until the section plane is below the 3D building, revealing the entire image in Hidden Line Removal view. *(Change view in the 3D Properties Dialog box)*





Rotate Section X

Select this tool to rotate the section plane about world X axis. Simply click the left side of the mouse and drag. As you can see in the examples below, the rotating of the section plane progressively reveals the Hidden Line Removal View just by click and dragging the mouse.



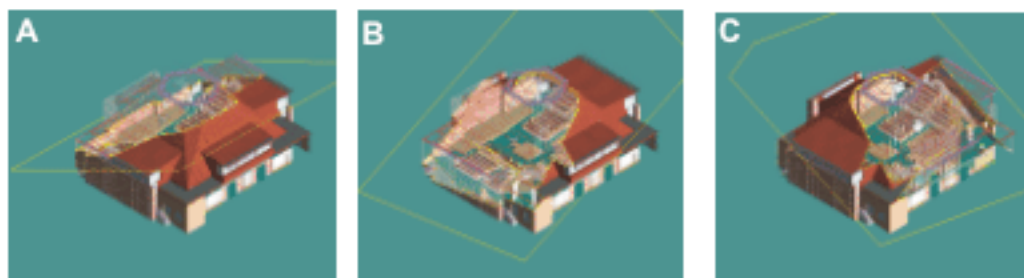
Rotate Section Y

Select this tool to rotate the section plane about world Y axis. Simply click the left side of the mouse and drag. As you can see in the examples below, the rotating of the section plane progressively reveals the Hidden Line Removal View just by click and dragging the mouse.



Rotate Section Z

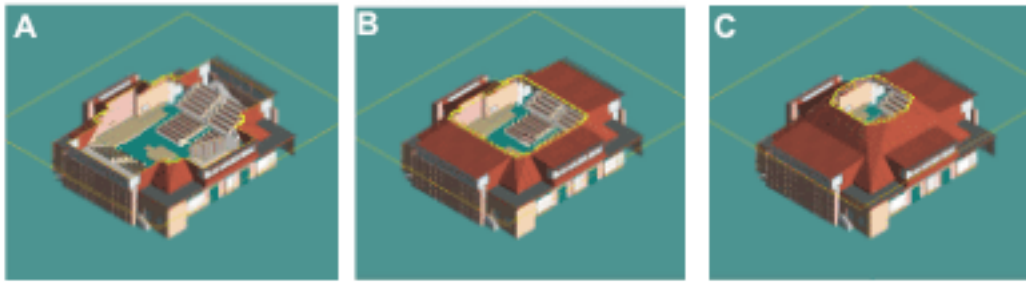
Select this tool to rotate the section plane about world Z axis. Simply click the left side of the mouse and drag. As you can see in the examples below, the rotating of the section plane progressively reveals the Hidden Line Removal View just by click and dragging the mouse.





Step Backward

Select this tool to step the section plane backward along its normal. For every click on the Step Backward tool, the section plane moves a step backward. The size of the step can be modified in the 3D Properties Dialog box under the Section tab.



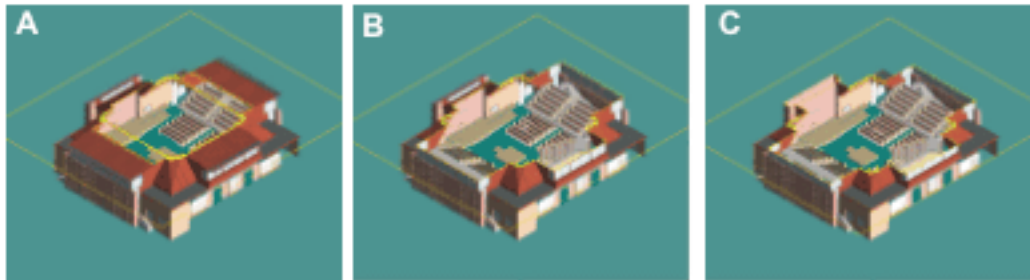
Snap Section to Step

Select this tool to step the section plane along normal to the nearest multiple of current step size. The step size can be modified in the 3D Properties Dialog box under the Section tab.



Step Forward

Select this tool to step the section plane forward along its normal. For every click on the Step Forward button, the section plane moves a step forward. The step size can be modified in the 3D Properties Dialog box under the Section tab.



Snap Section X

Select this tool to snap the section plane to coordinate plane orthogonal to world X axis. If you are not sure where the X axis is, select the Show Axis tool from the 3D Orientation Toolbar.





Snap Section Y

Select this tool to snap the section plane to coordinate plane orthogonal to world Y axis. If you are not sure where the Y axis is, select the Show Axis tool from the 3D Orientation Toolbar.



Snap Section Z

Select this tool to snap the section plane to coordinate plane orthogonal to world Z axis. If you are not sure where the Z axis is, select the Show Axis tool from the 3D Orientation Toolbar.



Snap Section View

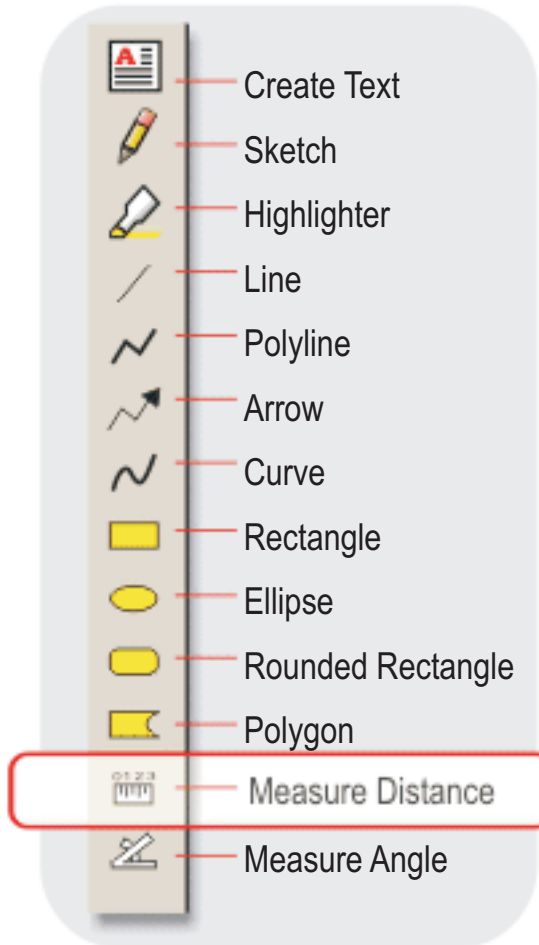
Select this tool to snap the section plane to the plane that is parallel to the camera of the current view. Think of yourself as the camera; the section plane will snap parallel to you.



Flip Section

Select this tool to flip the direction of the section plane.





eZ has an extensive set of easy-to-use markup tools which allow you to add notes, lines, shapes even sketch freehand on a document, just as you would on paper.

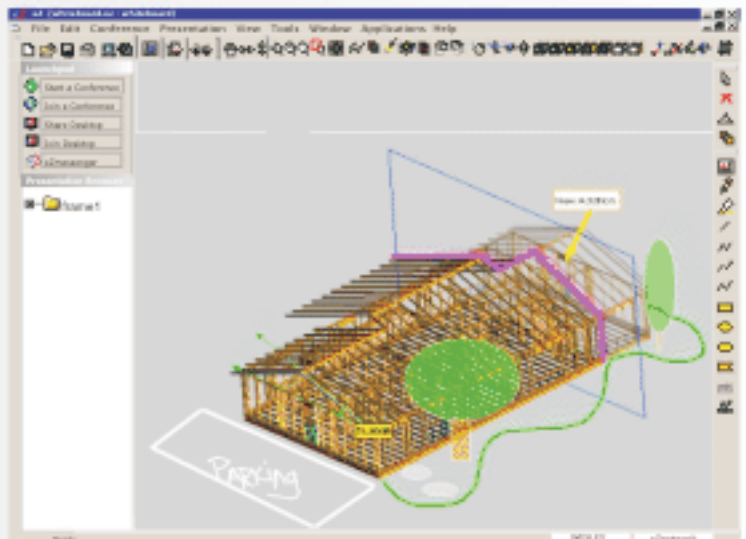
Each drawing tool allows you to choose from up to 16 million colors. You can even set the thickness of your lines, and the outline color of shapes and text boxes.

eZ's markup tools can be used to make notes and annotate documents for your own review, or interactively in a conference with others.

The Measure Distance Tool is the only Markup Tool not available with 2D images.

The Markup Tools are available on both 2D images and 3D Models. When creating markup on top of the 3D file, the following points in mind.

- Markup objects are rendered onto the current viewing plane using the same scale and dimensions as those of the associated 3D file.
- Markup objects are rendered onto the current viewing plane after all 3D geometry has been rendered.
- Markup objects are shown only when the current view coincides with the viewing direction in effect when they were created.

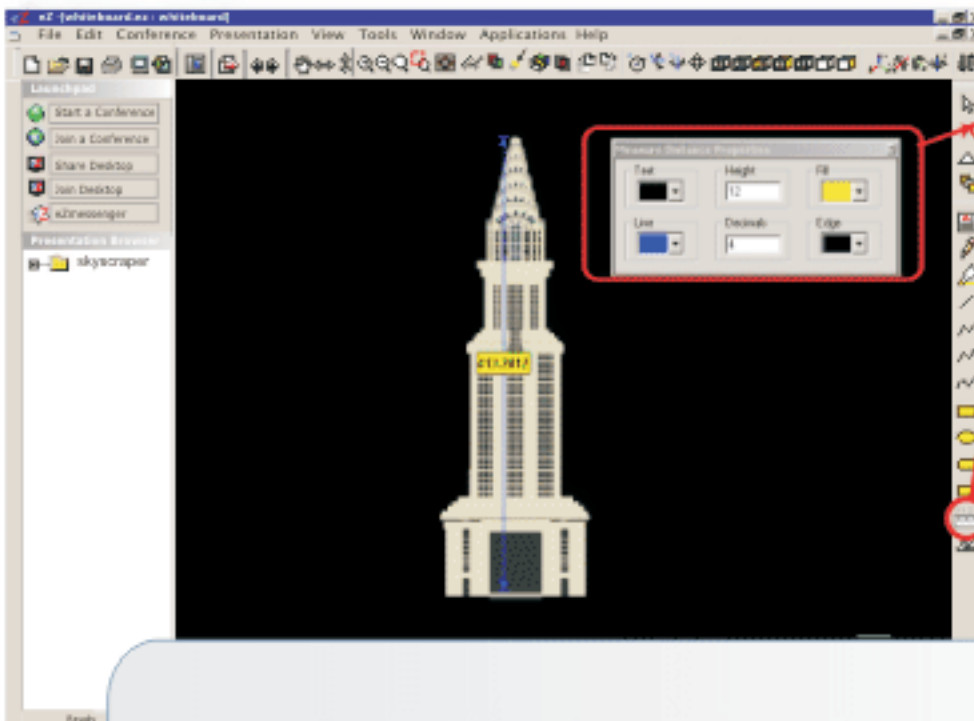


Measure Distance



Use this tool to measure the distance from one point on the model to another. This tool is only available when viewing a 3D Model when it is viewed “Square” to the screen. (Top, Bottom, Left & Right) To begin measuring select the measure distance tool and click on the object where you want the measurement to begin. Drag and click to set the end point.

To use the Measure Distance tool, simply select the Measure Distance button, set your Properties and using your mouse: “Click”-- “Drag”-- “Click”.



Select the Measure Distance button and the Measure Distance Properties Dialog Box will appear.

