



Adaptive Media

Envision3D User Training



Training Agenda

Lesson 1: Envision3D Overview

- How Envision3D Works
- Benefits to End Users
- Installing the DeskTop Plug-In
- DeskTop Basics: Navigation, Viewpoints, Paths and Objects

Lesson 2: The Envision3D Environment

- How Components Work Together
- Exploring Toolbar Features
- Working with Objects

Lesson 3: Annotation and Collaboration

- Creating Annotations
- Annotation States
- Accessing URLs Attached to Annotations
- A Focus on Collaboration



Training Agenda

Lesson 4: Adding Value

- Defining Navigation Paths
- Creating Dimensions

Lesson 5: Attributes

- The Importance of Attributes
- Working with Attribute Information
- Searching for Objects by Attribute

Lesson 6: Object Manager

- Isolating Objects
- Creating View Hierarchies



Course Objectives

You will be able to:

- Understand the role of Envision3D DeskTop
- Install the DeskTop plug-in
- Use basic navigation controls, viewpoints and paths
- Isolate objects within models
- Access, create, sort and validate viewpoints, annotations and paths
- Measure and display angles and distances on the surface of an object and save dimensions in an annotation
- Facilitate workgroup collaboration
- Work with attributes associated with objects





Adaptive Media

Envision3D Lesson 1: Overview



Lesson 1: Envision3D Overview

- How Envision3D Works
- Benefits to End Users
- The Envision3D DeskTop
- Navigating Your DeskTop
- Selecting Objects
- Viewpoints
- Paths



In a Nutshell

- Envision3D allows you to convert other formats into 3D models
- Formats that can be converted include:
 - VRML
 - DGN
 - Pro/E



What Envision3D Can Do

- Envision3D enables the distribution of highly complex 3D model designs across your enterprise
- It can be used in all departments and with external partners or customers
- As a user, you can access, annotate and interrogate models in real-time



How it Works

- Envision3D maximizes advanced technologies
 - Responds to your requests providing only the geometric information needed at that moment
 - Automatically provides a continuous level of detail
 - Uses occlusion culling to limit information to those items being viewed
- Scales to deliver models that are essentially unlimited in size and complexity
 - Over 100 MB
 - 3M+ Triangles
 - 50K+ Objects



Streaming via DeskTop

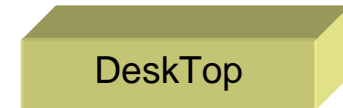
- Old technology: “download and view”
- Revolutionary technology
 - Dynamically deliver information from the server for those portions of the 3D model that are relevant to the requested view
 - Stream models from the MediaManager to the Envision3D DeskTop



Installing the Envision3D DeskTop

The DeskTop is the Client Interface

- Allows the user to:
 - View 3D models
 - Collaborate with others using views, paths and annotations
- Easily installed in moments
- Models are streamed from the Envision3D Server to the Envision3D Client (The DeskTop)



Windows 95/NT



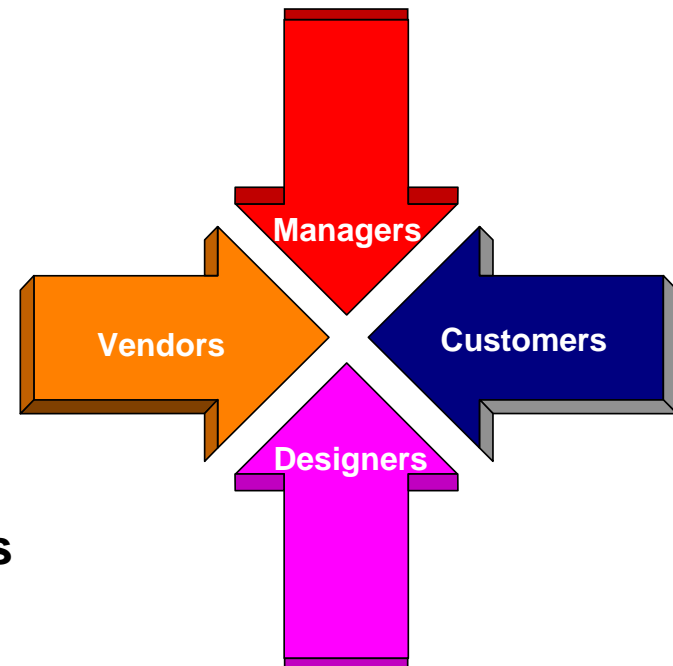
Envision3D Benefits

- Faster model load time
- Faster navigation times
- Shorter product design review cycles
- Early inputs from all reviewers
- Product engineering data can be used throughout the enterprise
- Sharing of design and project information across sites
- Saves travel time, meeting time, and the costs associated with meetings



The Collaborative Benefit

Envision3D enables the distribution of highly complex 3D model designs across the enterprise resulting in a more collaborative and efficient working environment, so critical to the design process



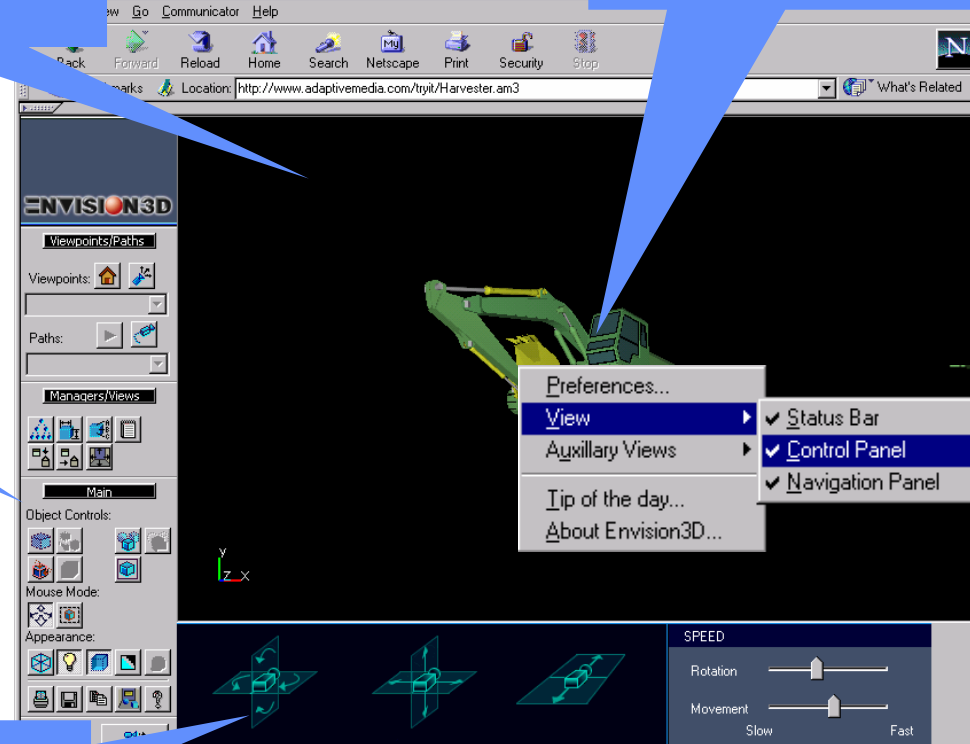
Main DeskTop Components

Viewing Area

Popup Menu
Right-click to open menu

Control Panel

Navigation Panel



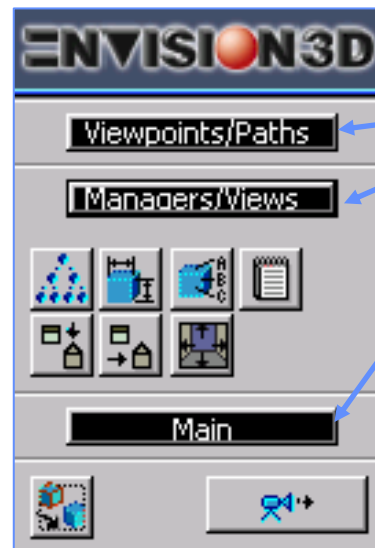
DeskTop Features

Dockable windows

- Control and navigation panels can be docked

Control panel

- Sections can be collapsed by clicking on the headers
- Short description of each icon displayed by holding mouse over



Click on header to collapse section



Basic Navigation

Navigation panel

- Click with mouse on icon to move in direction of arrows



Pitch

Pan

Forward/Back



Expert Navigation Mode



- Hold down left icon and move mouse directly in viewing area
- Arrow keys can also be used instead of the mouse
- Use Shift and Ctrl keys for changing pitch and panning



Navigation Methods

- The navigation panel
- Navigating with the mouse (expert mode)
- Navigating by keyboard
- A few other choices...
 - Navigate with auxiliary views
 - Top View
 - Front View
 - Navigate with pre-defined viewpoints
 - Navigate with pre-defined paths



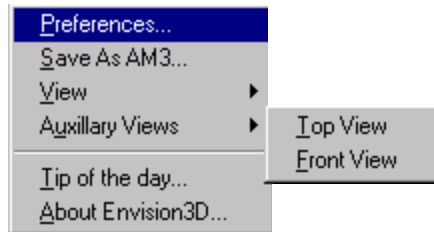
Auxiliary Views

- Access by clicking on the “Top View” or “Front View” icon or using the right-mouse pop-up



front view

The text "front view" is positioned below the toolbar, with an upward-pointing arrow indicating the location of the front view icon in the toolbar.



Position Indicator

The text "Position Indicator" is in a blue box with a blue arrow pointing to a red triangle on the 3D model in the Top View window.

zoom out (smaller)

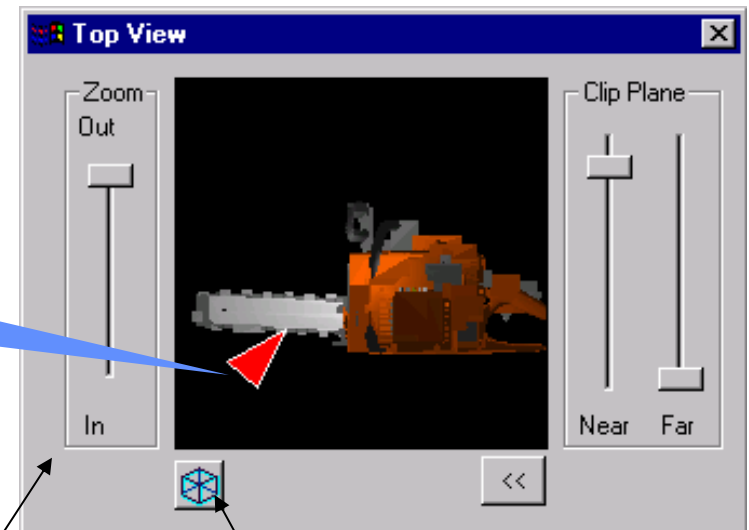
The text "zoom out (smaller)" is positioned to the left of the Top View window, with an arrow pointing to the "Zoom Out" slider.

zoom in (larger)

The text "zoom in (larger)" is positioned to the left of the Top View window, with an arrow pointing to the "Zoom In" slider.

wireframe view

The text "wireframe view" is positioned below the Top View window, with an arrow pointing to the wireframe view icon (a cube with a blue outline).



Selecting Objects

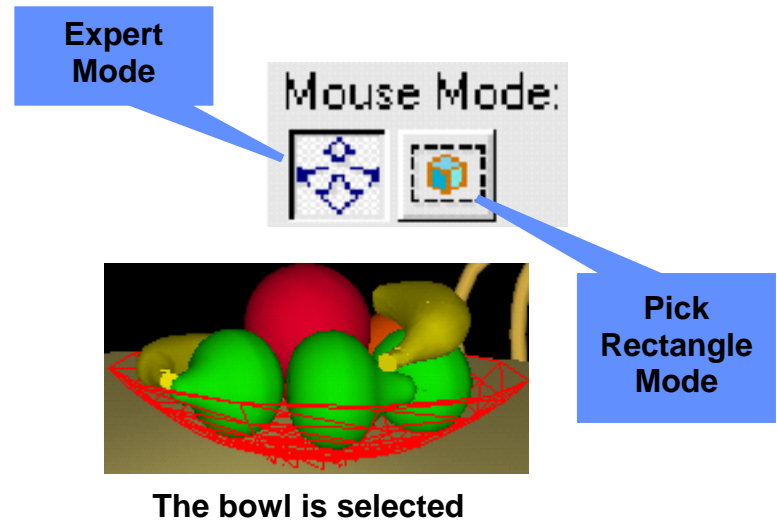
Two Modes

Expert Mode (Default)

- Click on any object in the viewing area to select it
- Click on it again to deselect it
- Hold down Ctrl and click on multiple objects to select

Pick Rectangle Mode

- Use the box drawing tool to surround the many objects you wish to select



Viewpoints



Viewpoints are saved views

- Easily created and can be shared:
 - Start with the control panel
 - Use the viewpoints icon to display the viewpoints list



The Home Icon

- When projects are initially converted, basic navigational viewpoints are usually created for users
- By default, the “Home” icon is the center of the 3D space
 - Administrators can modify this in the 3DI configuration file
 - You can use the home icon to return -- at any time --to your original view



Paths

- Paths are like viewpoints with motion
 - Create fly-through tours
 - Excellent for both internal and external reviews
- You can play and pause a path
- Other features:
 - Path manager for path description
 - Change a path's "play" speed
 - Start from someplace other than the beginning



Lesson 1 Review

- How Envision3D Works
- Navigating the DeskTop
- Selecting Objects
- Using a Viewpoint
- Navigation Paths



Lesson 1 Lab

- Your instructor will provide the URL to begin your work with basic navigation
 - Install your DeskTop Client
 - Open a Practice Model
 - Become Familiar with DeskTop Basics
 - Practice with Navigation
 - Select Objects
 - Use Viewpoints
 - Practice with a Path





Adaptive Media

Envision3D Lesson 2: The DeskTop



Lesson 2: Envision3D DeskTop

- The Envision3D Product Suite
- How Components Work Together
- Exploring Envision3D DeskTop Toolbar Options
- Working with Objects



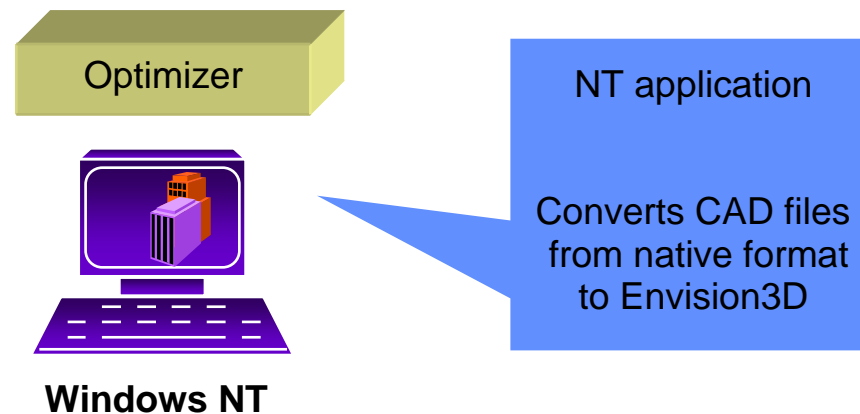
The Envision3D Product Suite

- Envision3D Optimizer
- Envision3D MediaManager
- Envision3D DatabaseManager
- Envision3D DeskTop



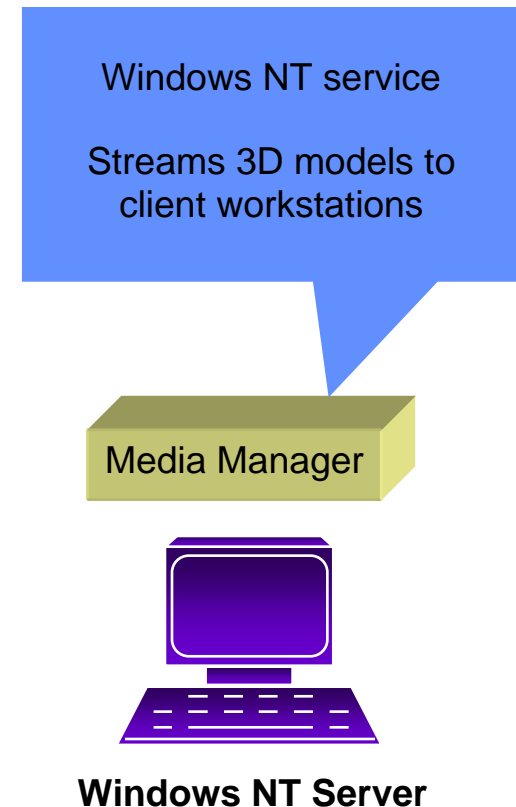
Envision3D Optimizer

- Allows the user to convert 3D model files in other formats into Envision3D model files
- Sends attribute data to the DatabaseManager server, which then creates an attribute/annotation database associated with the converted 3D model
- Based on the user's options, the 3D model files are converted into the Envision3D format—ready for streaming



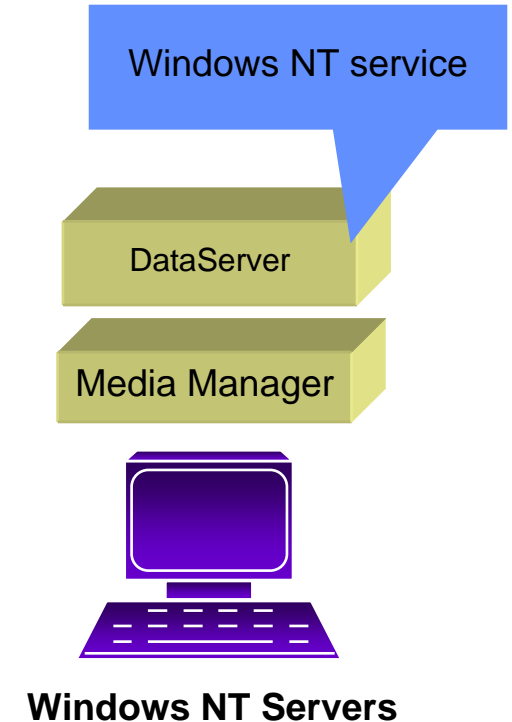
Envision3D MediaManager

- Streams Envision3D model files to client systems so users can navigate them using Envision3D DeskTop
- Runs as a windows NT service on the Envision media server
- Passes presentation file information to the MediaManager server



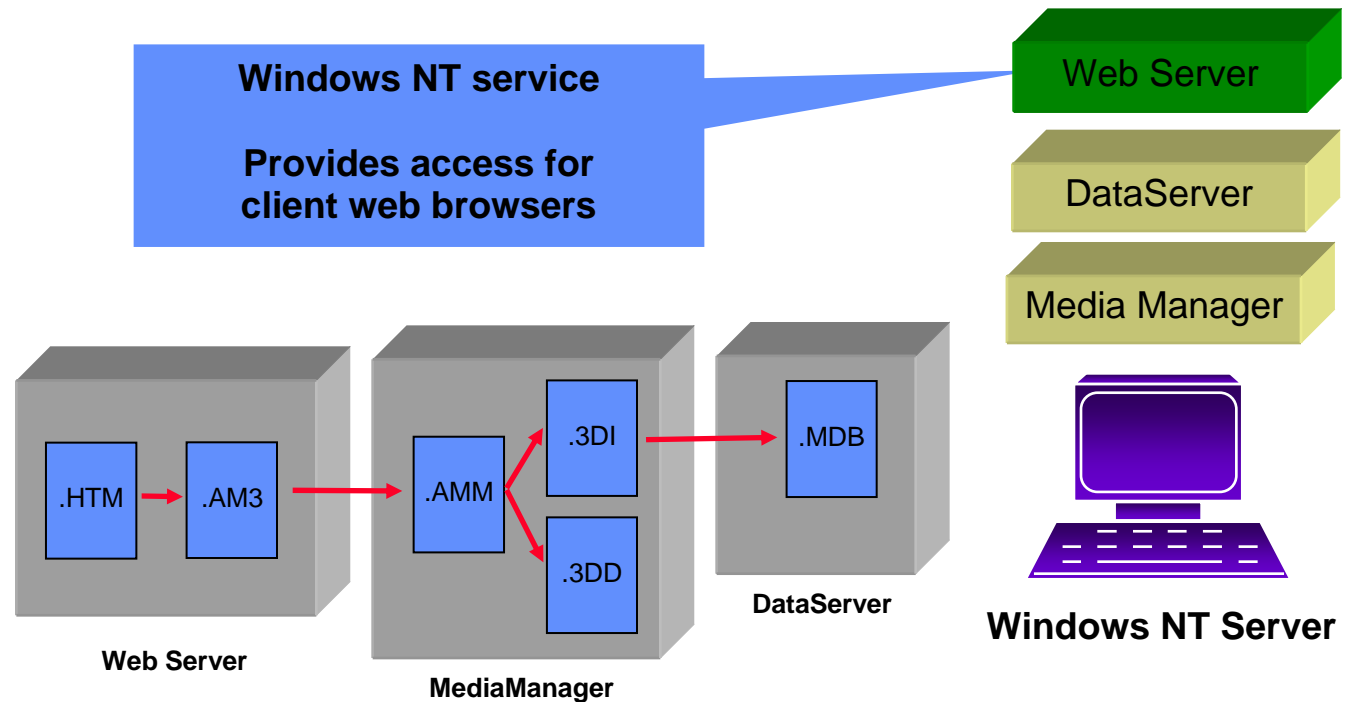
Envision3D DataServer

- The DataServer runs as an interface between a Microsoft Access database and client systems
- DataServer communicates with Optimizer when converting models
- It populates attribute and annotation information in the Envision3D Access database



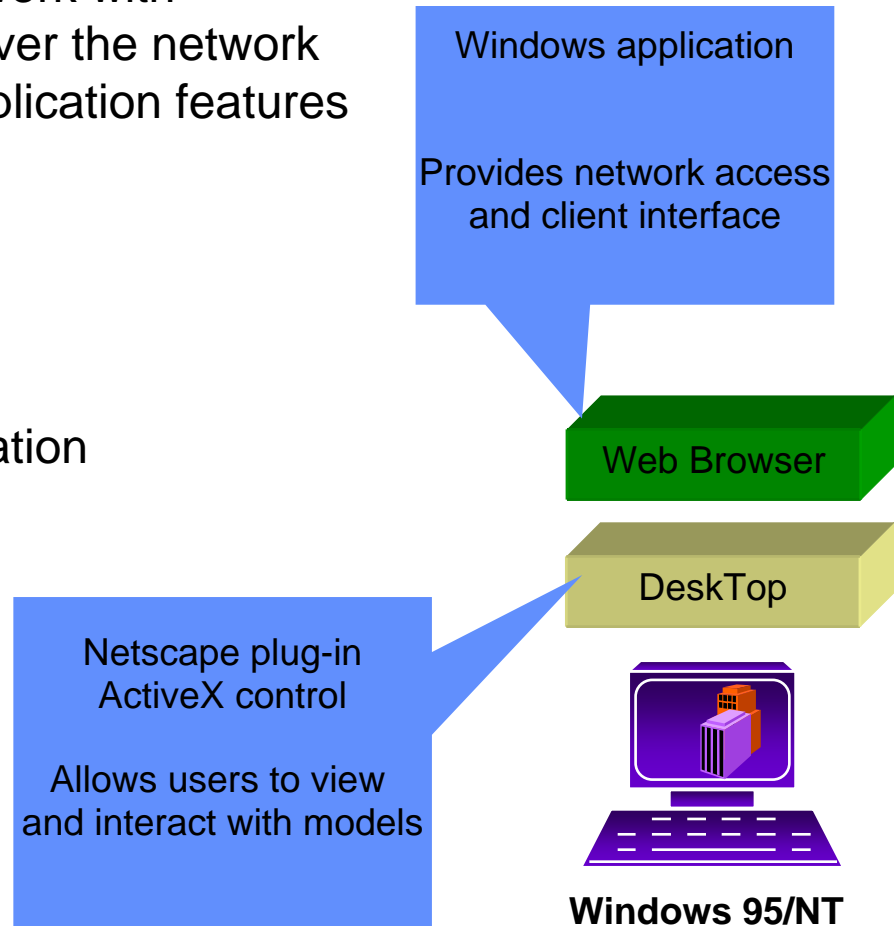
Web Server

- Your Web Server includes Envision3D presentation files and HTML pages that are linked to Envision3D content

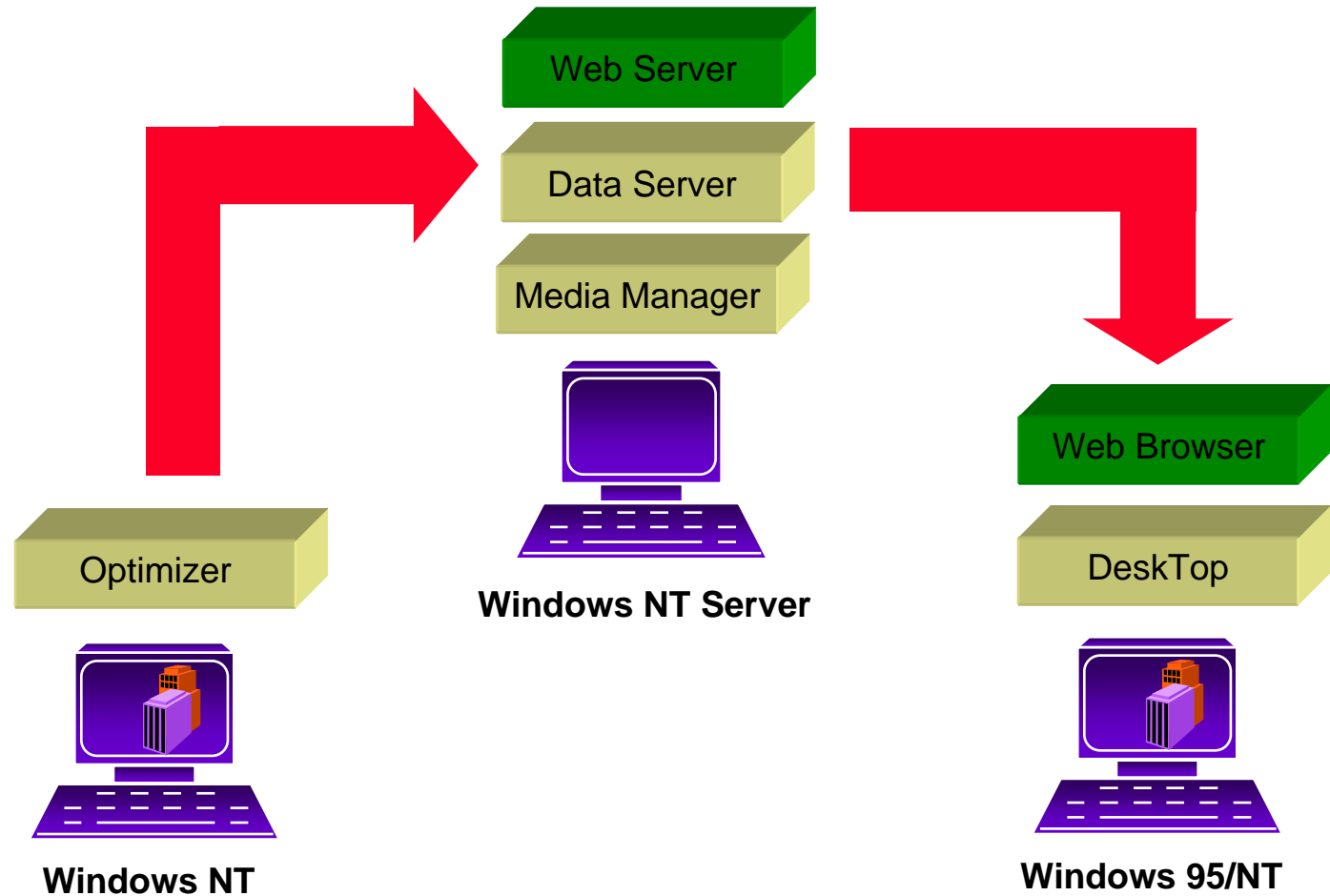


Envision3D DeskTop

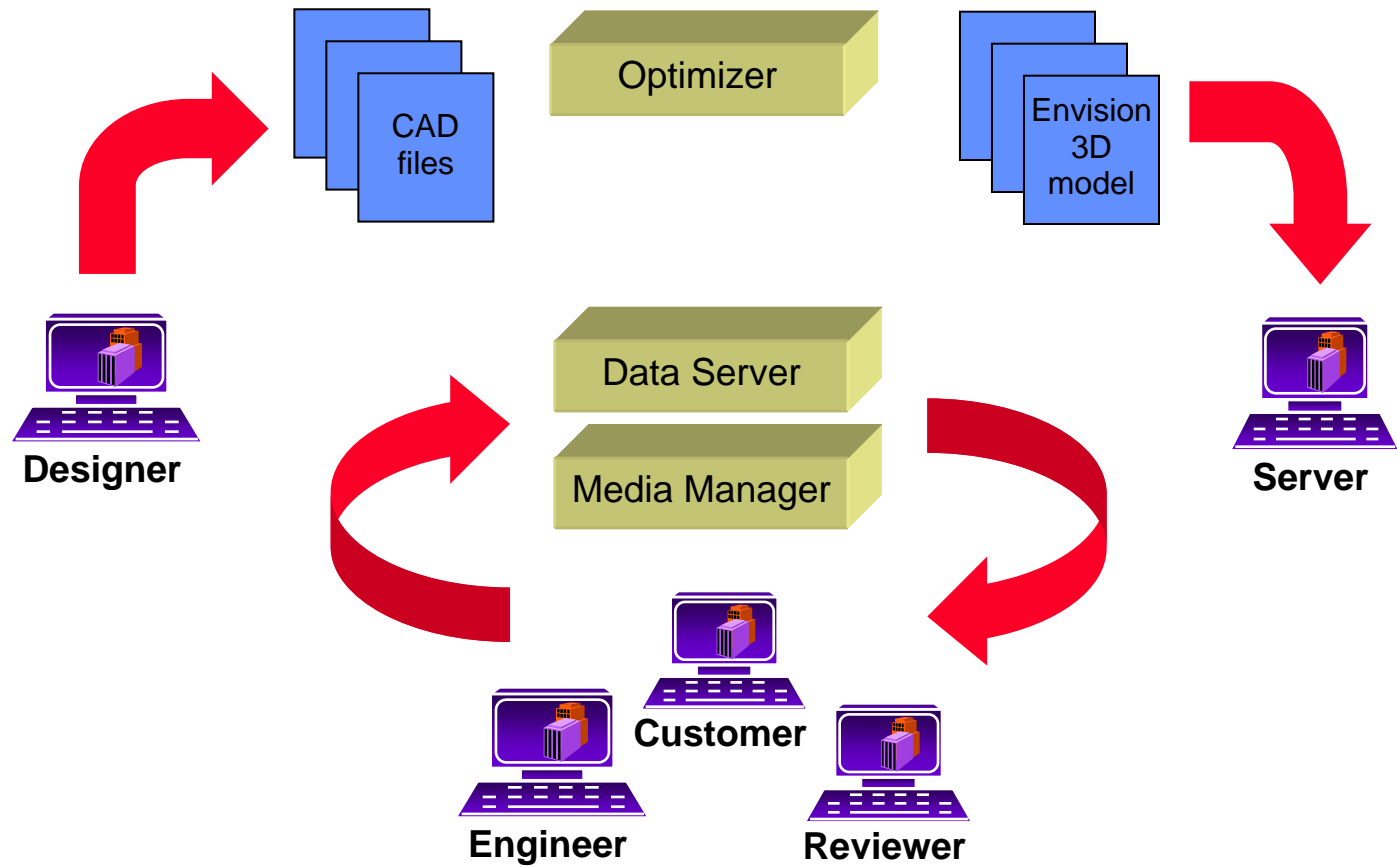
- Allows the user to work with streamed models over the network using advanced application features
 - r Navigation
 - r Annotations
 - r Dimensions
 - r Attributes
 - r Object Manipulation



Envision3D Components



Envision3D Workflow



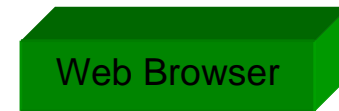
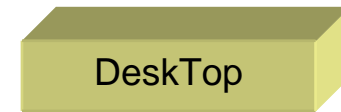
DeskTop Specifications

Software Components

- Web browser - Netscape or Internet Explorer
- Netscape plug-in
- ActiveX control

System Requirements

- Windows 95/NT 4.0
- Pentium 133MHz
- 32MB RAM
- Optional: OpenGL accelerated graphics board



Windows 95/NT



Opening and Closing Models

Opening a model

- Open your web browser and enter the URL
- Open .AM3 or .3DI file inside the browser
 - .am3 - reference file to select model (resides on web server)
 - .3di - the actual model (resides on MediaManager)

Closing a model

- Close your web browser or type in a new URL to close the model
- Keep only 1 model open at a time for best performance



Exploring Toolbar Features



Navigate with Saved Views & Paths

- Home
- Viewpoint Manager
- Path Manager

Explore Managers and Views

- Object Manager
- Dimensioning Manager
- Attribute Manager
- Annotation Manager
- Top View
- Front View
- Full Screen

General Tools

- Print - Save - Copy
- Preferences
- Help

Control Objects

- Hide/Show Objects
- Show All Hidden Objects
- Isolate Objects
- Unisolate
- Examine Objects
- Reset Examine Center
- Fit

Choose Mouse Modes

- Expert Mode
- Pick Rectangle Mode

Change Appearance

- Wireframe
- High Quality Lighting
- Back Face Culling
- Anti-Aliasing
- Maximum Level of Detail
- Clear
- Straighten Up



Keyboard Shortcuts

Navigate right, left, up, and down Arrows	Right, Left, Up, and Down
Increase the navigation speed	+ on the Numeric keypad
Decrease the navigation speed	- on the Numeric keypad
Fit an object	F
Hide a selected object or objects	H
Show the last object or objects you have hidden	S
Show all hidden objects	A
Isolate a selected object or objects	I
Unisolate all objects	U
Examine the selected object or objects. Or if you are already in Examine mode, return to regular navigational mode	E
Clear all selections	C
Exit Full Screen Mode	ESC



The Home Viewpoint

- Generally established by the administrator after the model is transcoded
 - Defined in an Envision3D .am3 file
 - `"threed.initial.viewpoint"="starting point"`
 - Can be set to:
 - Coordinates (heading, pitch, roll)
 - A Viewpoint Name
 - A Path Name



Viewpoint Manager

Manage Viewpoints

- Create viewpoints
- Select existing viewpoint
- Change the label or description
- Delete a viewpoint
- When you close a viewpoint, the Manager saves changes for the current session - click Save to preserve viewpoints for others



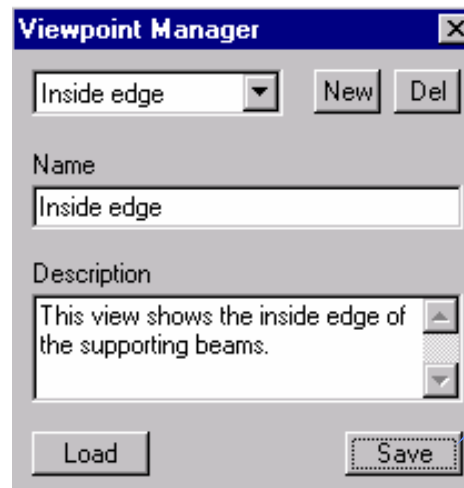
Saving & Sharing Viewpoints

Saving personal viewpoints

- Viewpoints can be saved in a .view file
- Viewpoint files can be sent to other users via LAN or e-mail

Saving for default use

- Viewpoints can be saved directly in the model (.3di file)
- These viewpoints will be accessible to all users
- Usually done only by administrator or person optimizing model

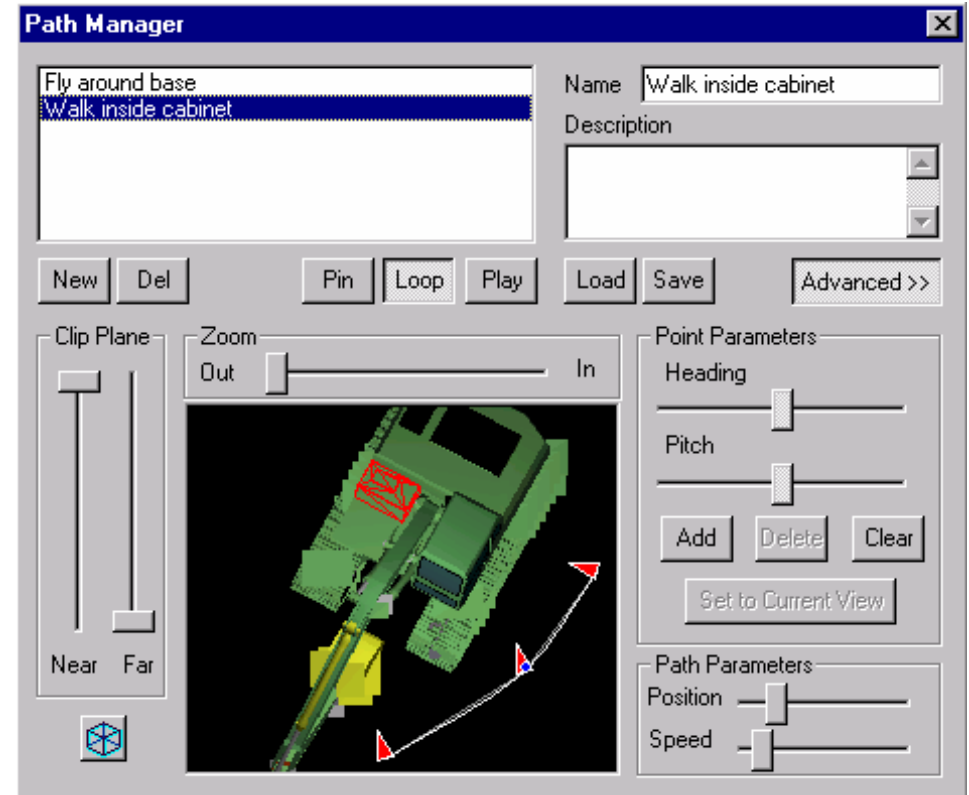


Click on Save
to store viewpoints
permanently



Path Manager

1. Navigate to desired starting point
2. Click on the path manager icon
3. Click on the new button
4. Enter a name and description
5. Click on the advanced icon to expand the window



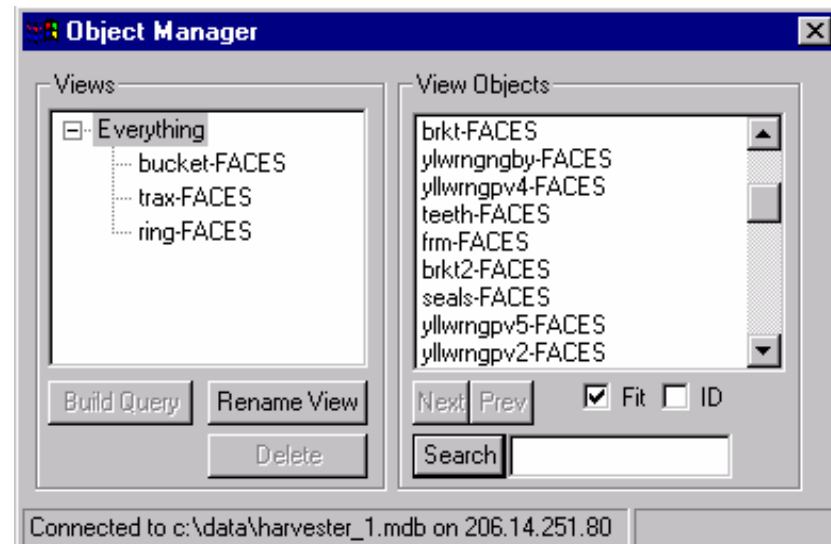
Object Manager

Working with Objects

- The Object Manager icon is located in the control panel
- Provides a quick method of navigation to specific object
- Click on item in list and the object will automatically be positioned in the center of your viewing area



**Object
Manager**



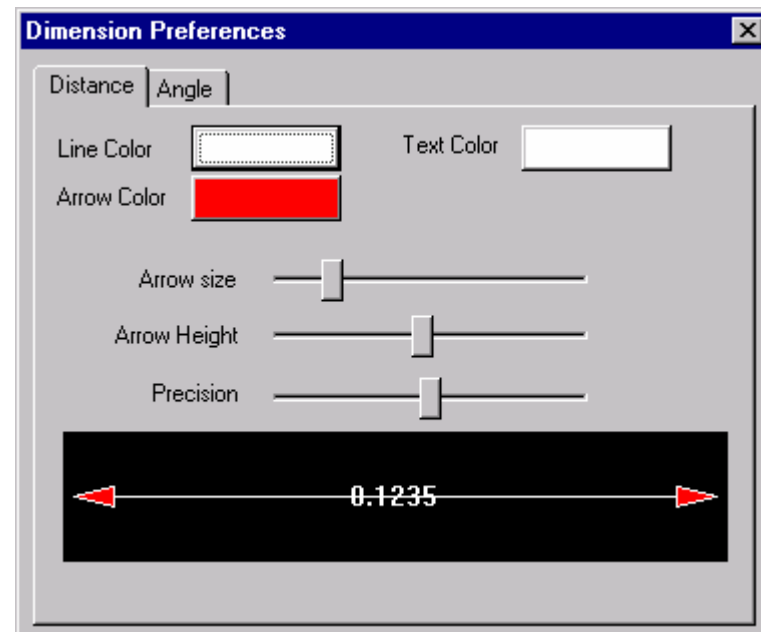
Dimensioning Manager

Allows you to capture dimensions on the model:

- Distance
- Angle
- Preferences



**Dimensioning
Manager**



Attribute Manager

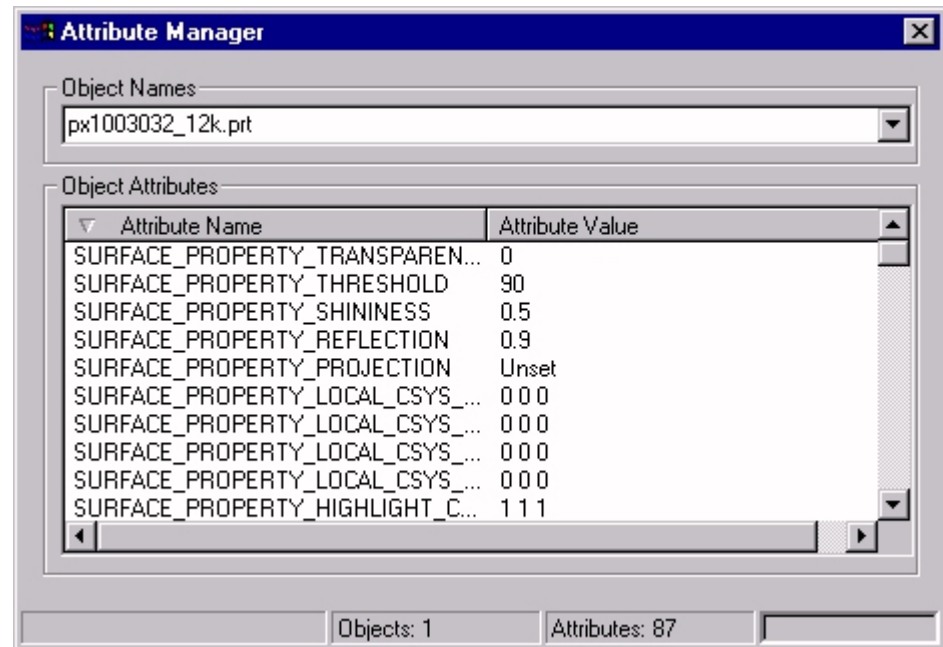
Shows list of all attributes associated with the selected object:

Step 1: Select the object in the view area

Step 2: Click on the attribute manager icon in the control panel



Attribute
Manager

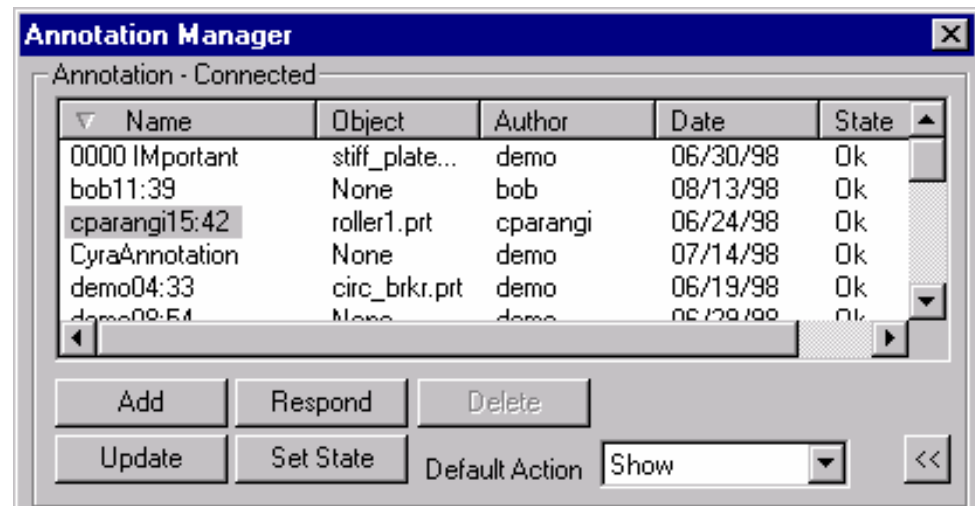


Annotation Manager

- Shows list of all annotations for the current model
- Click on the Annotation Manager icon in the control panel



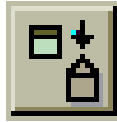
Annotation Manager



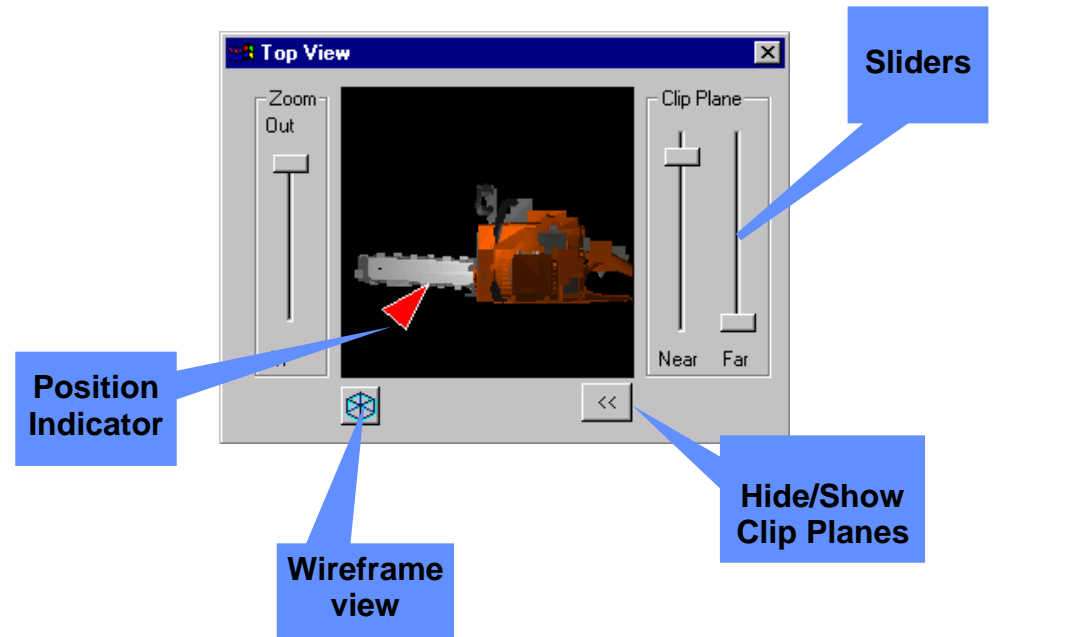
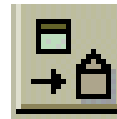
Top View and Front View

Auxiliary Views

- Top View



- Front View



Ctrl Shift to draw a rectangle zoom window

*Change point-of-view **location** by clicking on a new spot*

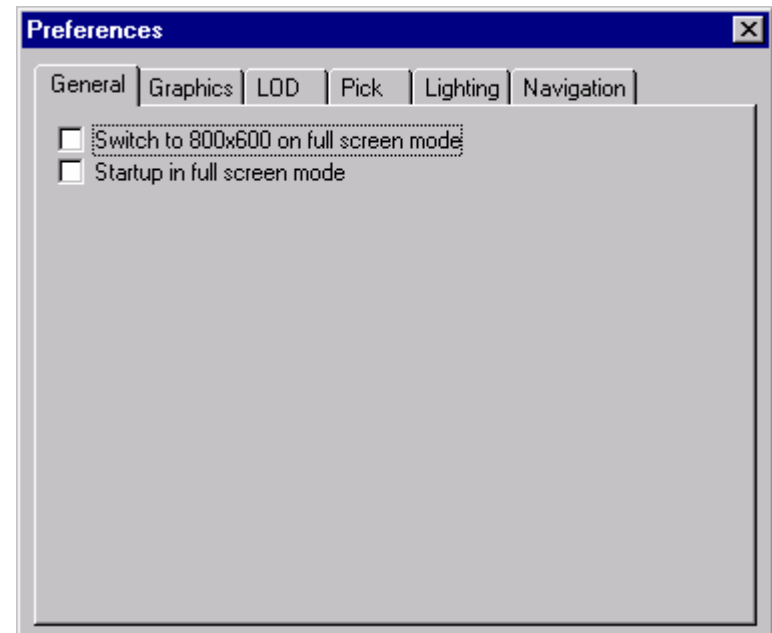
*Change point-of-view **direction** by dragging the point of the red arrow as you hold down the Ctrl key*

Move the portion of the model by right-clicking on the display and dragging.



Full Screen

- You can instantly move to full screen with this icon
- Depending on the Preferences you have set, full-screen can be interpreted as 800x600 or full screen at your current resolution
- You can also set a Preference to startup in full screen mode

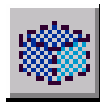


Keyboard Shortcut: Esc - exits full screen mode

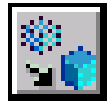


Hide/Show/Show All Objects

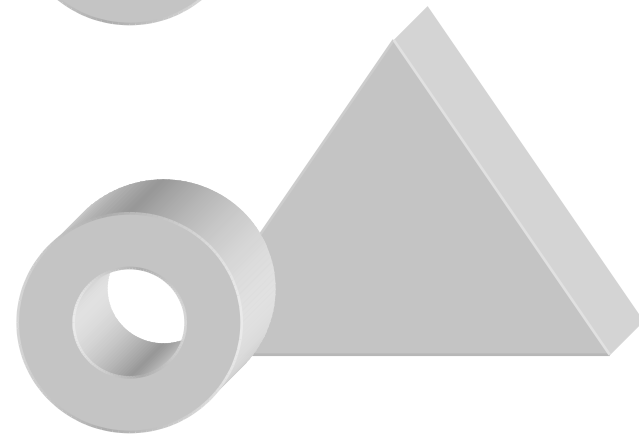
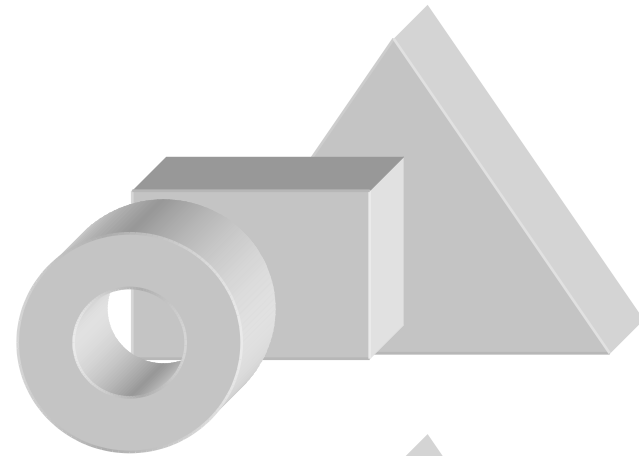
- You can hide or show objects in a model so they are not blocking your view of other objects



**Hide/Show
Toggle**



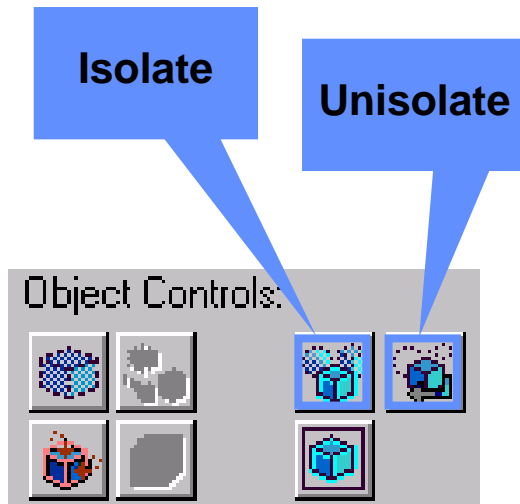
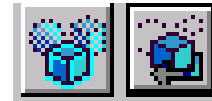
**Show All
Hidden Objects**



Keyboard Shortcuts: H (hide) S (show) A (show all)



Isolate & Unisolate Objects



- Using the Isolate icon removes all objects from view except the selected objects
 1. Select the object you wish to isolate
 2. Click on the isolate icon or keyboard shortcut
- Unisolate icon returns to normal view



Keyboard Shortcuts: I (isolate) U (unisolate)



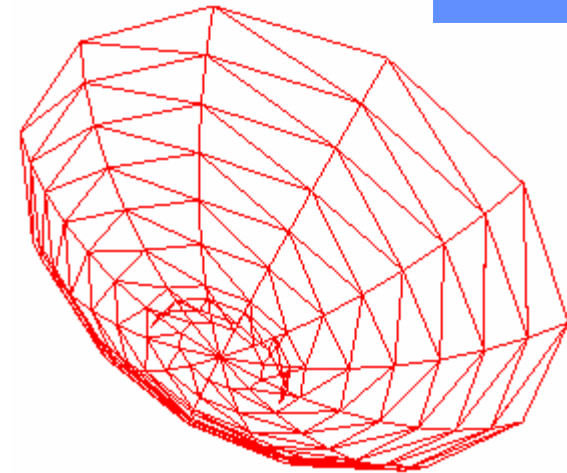
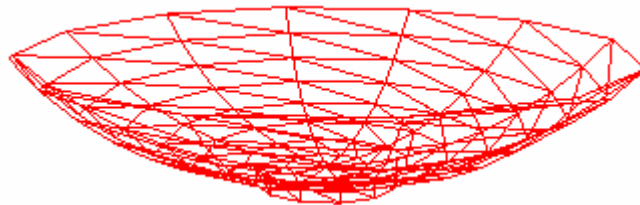
Examining Objects

- Similar to isolate, but changes navigation controls to relate only to the object
- Allows you to rotate the object and move without interference from any other parts of the model
- 'Reset Examine Center' allows you to change your focus

Examine



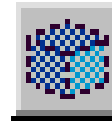
Reset
Examine
Center



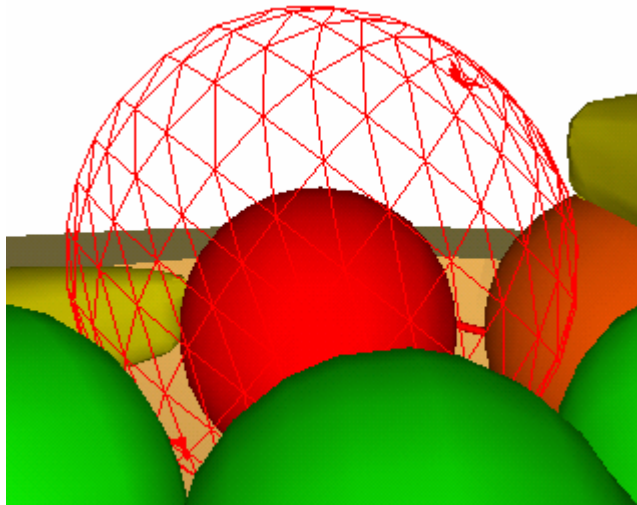
Keyboard Shortcut: E (examine - on/off toggle)



Using the Fit Button



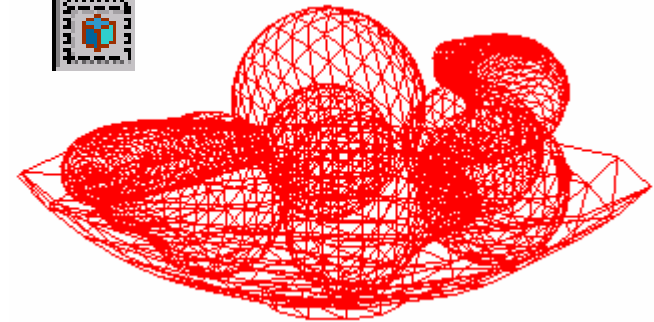
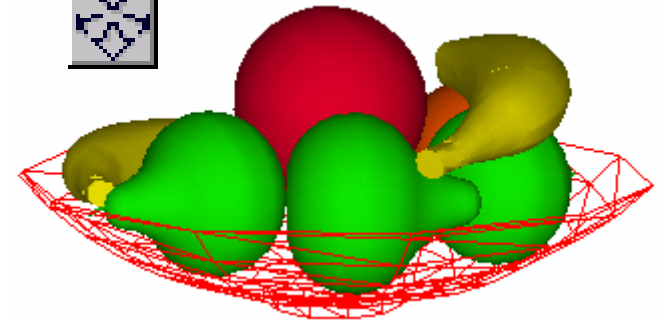
- To reposition your view automatically, click the Fit button
 - Fit works with multiple objects
 - Brings your object to the center of the view



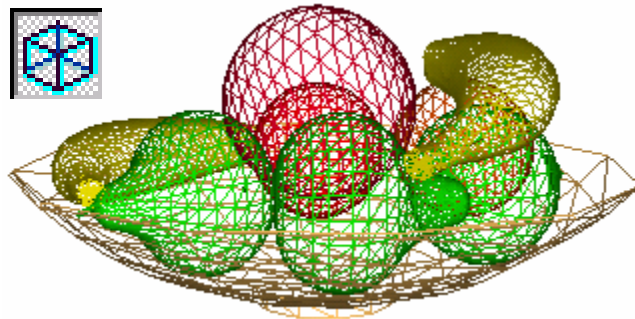
Keyboard Shortcut: F (fit)

Mouse Modes

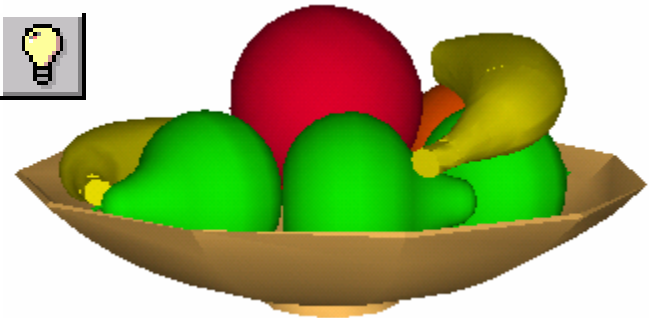
- Expert Mode (Default) allows you to use mouse and keyboard combinations to move through the model
- The cursor responds and changes when you navigate in expert mode
- Pick Rectangle Mode allows you to select a group of objects by dragging a selection rectangle around them
- To de-select all “picked” objects, press the Clear Selection button



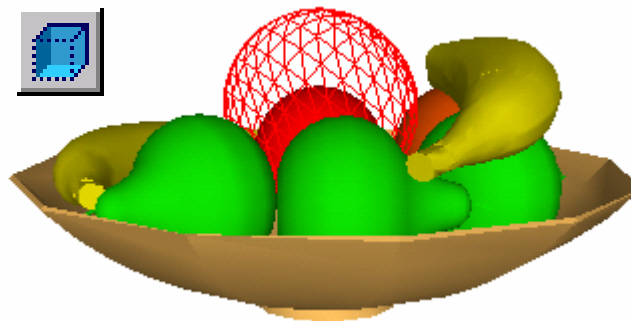
Changing Appearances



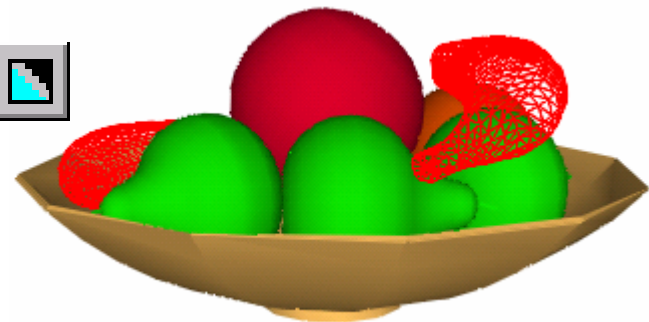
Wireframe



High Quality Lighting




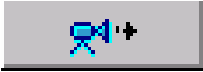

Back Face Culling



Antialiasing



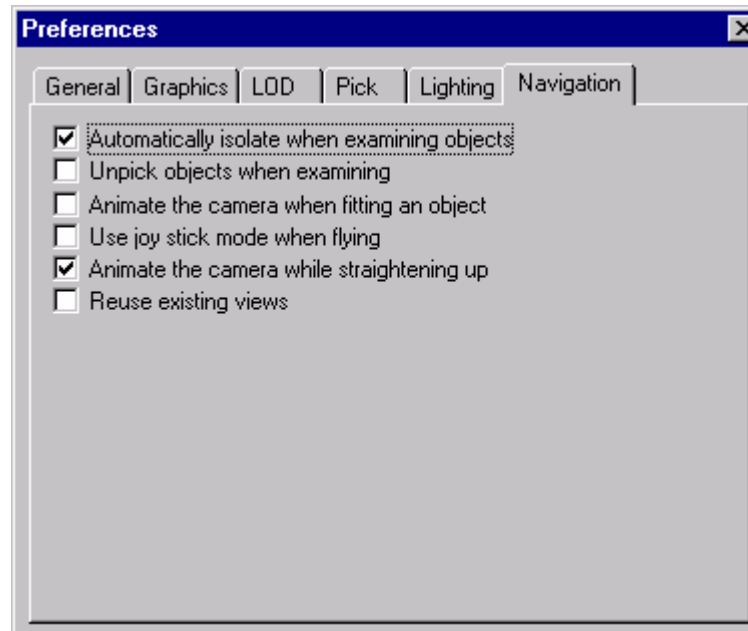
Tidying Up

- Maximum Level of Detail 
 - Available when isolating objects or looking at a view hierarchy. It builds the detail of objects to the maximum level. Note that this can seriously degrade performance, but you may want to use it to get the most detailed view possible.
- Straighten Up 
 - Resets your pitch to zero if you have moved up or down and want to “level out”
- Clear Selections 
 - Clear away any selections you’ve made

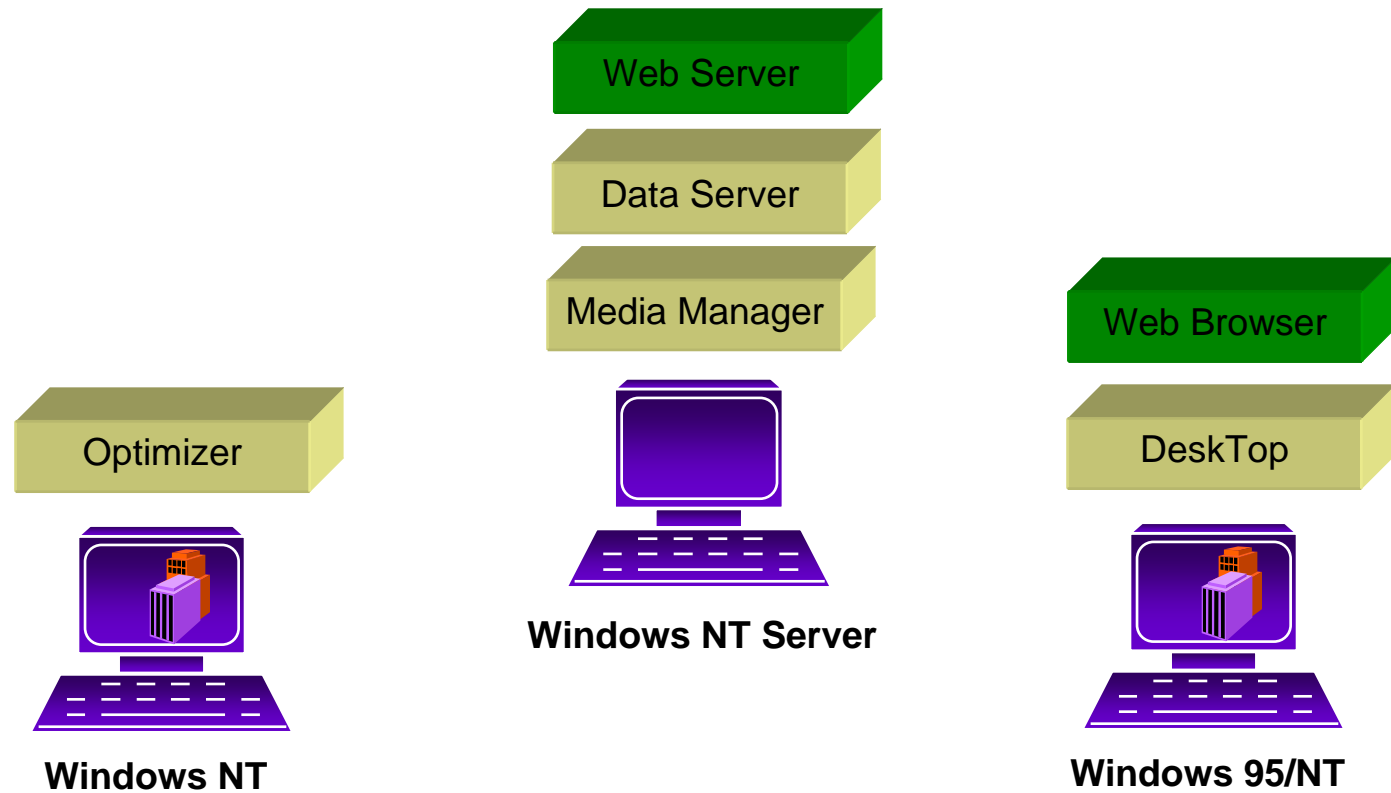


Preferences

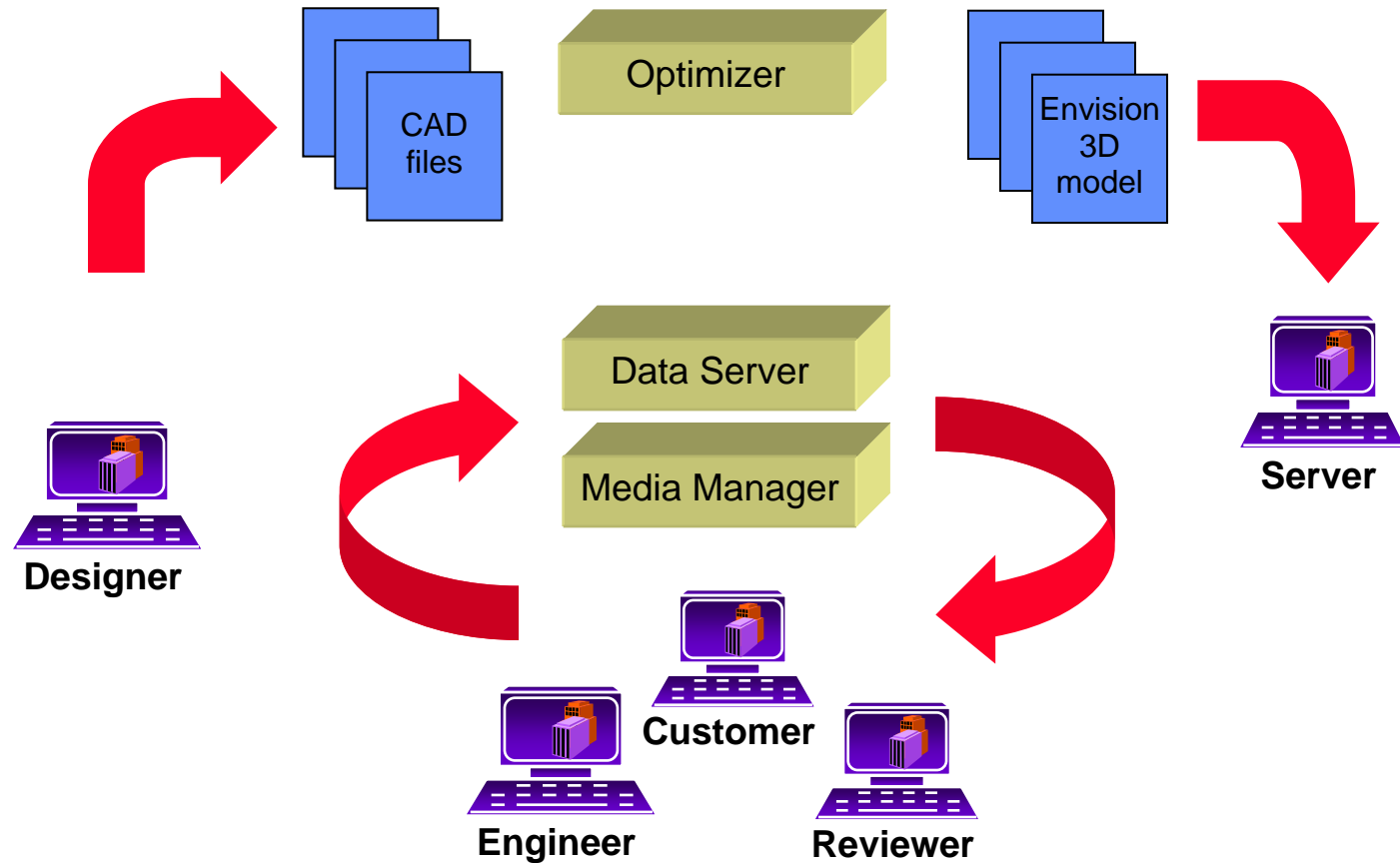
- The Preferences option allows you to set guidelines for working with Envision3D
- There are six tabs that handle various components of the program
- Your workbook details each of the tabs and their settings



Review: Product Components



Review: Envision3D Workflow



Review: Toolbar Options



- Value added viewpoints & paths at initial conversion
- Attributes determined by original model
- Envision3D Managers organizing functionality
- Object controls
- Selection options in mouse modes
- Changing appearance for improved detail or functionality
- Preferences for your personal style
- Standard desktop services (print, save, help)
- Clear and straighten up



Lab 2

- Explore Toolbar Options
- Gain experience with navigation options





Adaptive Media

Envision3D Lesson 3: Annotation & Collaboration



Lesson 3: Annotation & Collaboration

- Creating Annotations
- Annotation States
- A Focus on Collaboration



Annotations

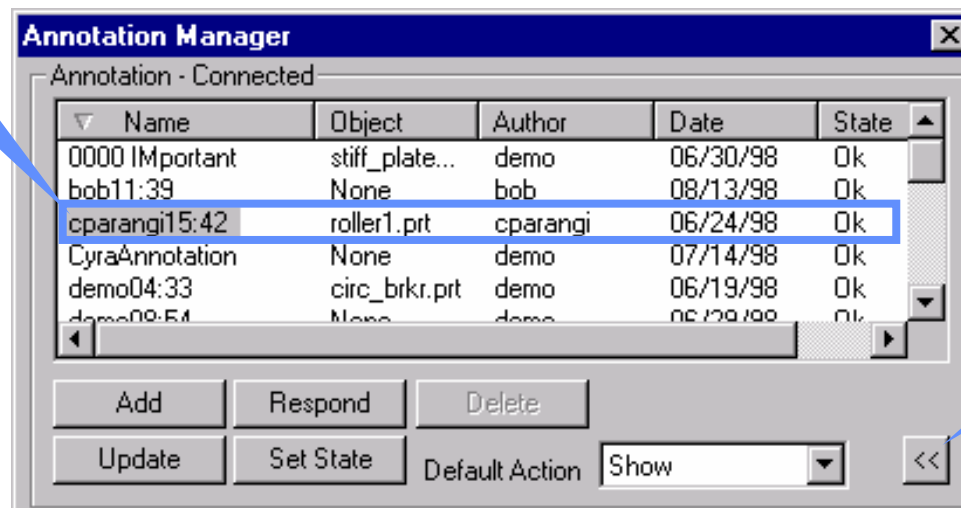
- *Annotations* are comments or markups that can be added to a viewpoint or to an object within a viewpoint
 - Can be TEXT
 - Can be MARK UPS
 - Straight lines
 - Rectangles
 - Freehand lines
- Can contain a URL link
- Are stored in the database file (.mdb) for each model



Annotation Manager

- Click on the name of the annotation
- Annotation information will be shown in the viewing area
- Each annotation shows the author, object, date, and state
- Click on the Expand button to show more information

Click to view

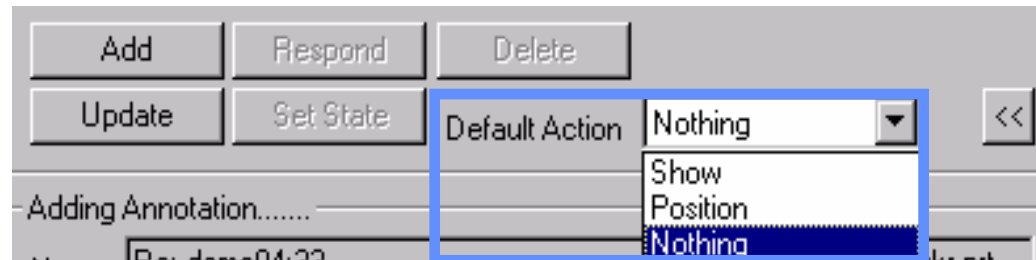


Expand



Viewing Tips

- Change default action to “nothing” for faster viewing

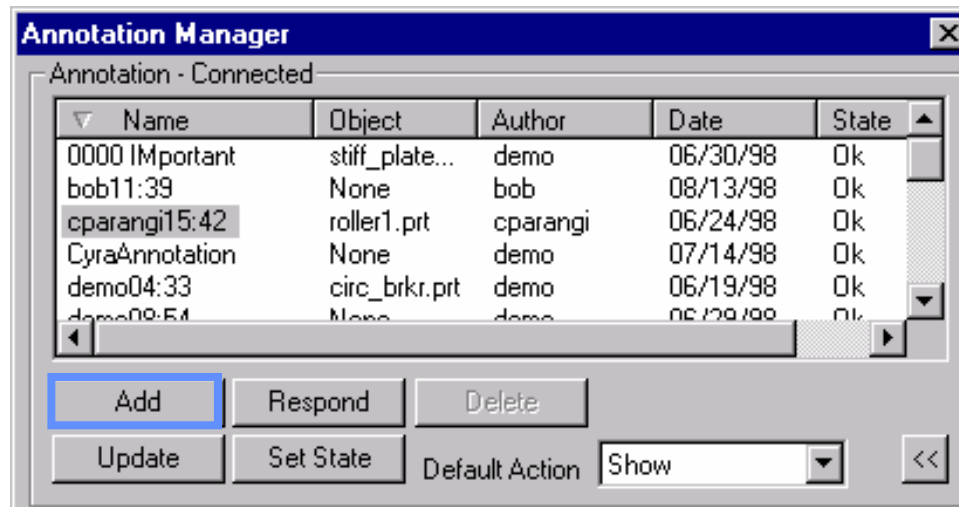


- Use “Show Picture” button to switch between annotation display and navigation mode



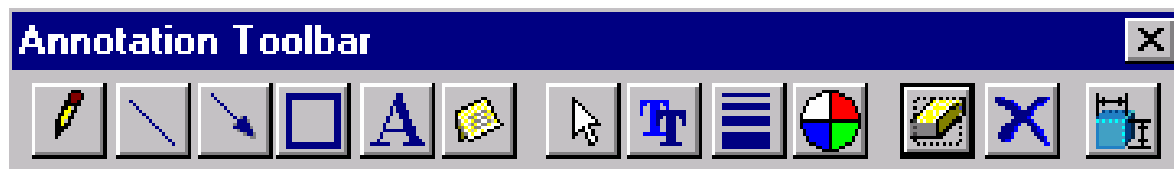
Working with Annotations

- Use the Annotation Manager icon to open the Annotation Manager.
- Click the Add button on the Annotation Manager to start the process.



Steps to Create an Annotation

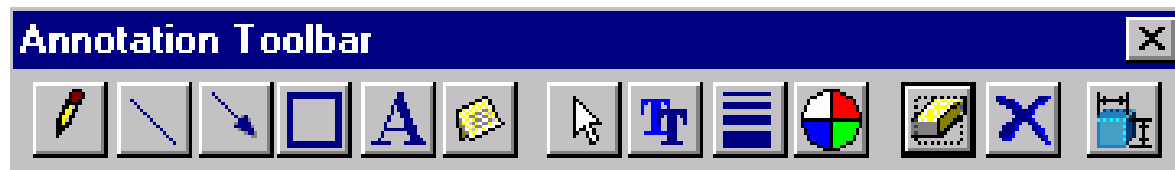
- Select an object or view
- Click on the Add button in the Annotation Manager Annotation Toolbar will appear and other windows will close



- Click on any tool to draw and add text in the viewing area
- Enter description
- Click Done when finished



Annotation Toolbar Options



Create

- Mark up text
 - Draw freehand lines
 - Draw straight lines
 - Draw arrow heads
 - Draw rectangles
- Add text directly to the annotation
- Add a note to the annotation

Edit

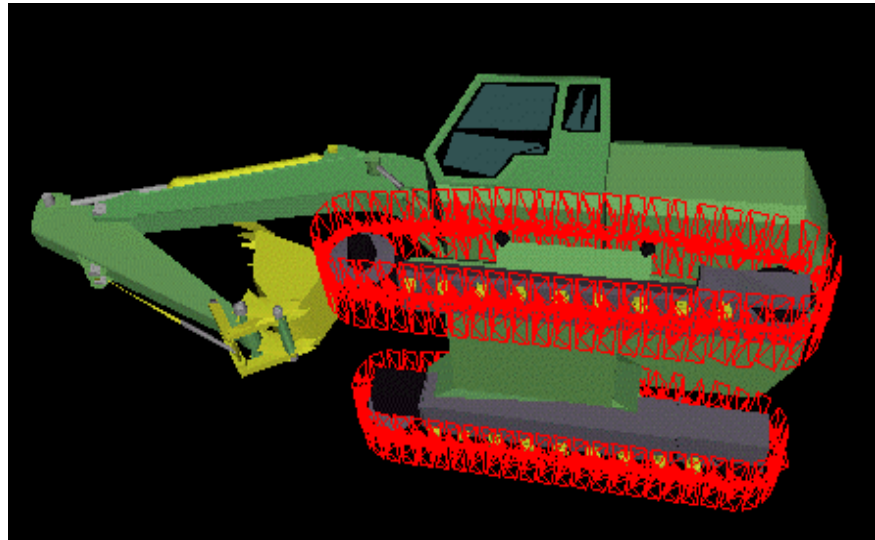
- Pick annotations
- Change fonts
- Change line width
- Change the color of text and lines
- Delete edits to annotation
- Delete the selected edit
- Call the Dimension Manager



Annotating an Object

You can associate an annotation with an object

Select the object *before* pressing the Add button



Attaching a URL

You can link an annotation to a web site, when using the expanded Annotation Manager

The screenshot shows the 'Annotation Manager' dialog box. At the top, there is a table with the following data:

Name	Object	Author	Date	State
Re: Administrator21:...	knnukflo...	Administrator	01/17/99	Ok
Administrator21:34	knnukflo...	Administrator	01/17/99	Ok
Kathy 21:32	knnukflo...	Administrator	01/17/99	Ok

Below the table are buttons for 'Add', 'Respond', 'Delete', 'Update', and 'Set State'. A 'Default Action' dropdown is set to 'Show'. Below this is the 'Adding Annotation.....' section with the following fields:

- Name: Kathy 21:32
- Object: knnukfloor-FA
- Author: Administrator
- On:
- URL: <http://www.adaptivemedia.com>
- Go to URL:
- Attach:
- Description: This dining room needs a better background.

At the bottom are buttons for 'Hide/Move', 'View Point', 'Print', 'Cancel', and 'Done'.

Jump to URL--
the key used
by end user

Enter URL

documents or web sites



Editing Annotations

- Types of Edits
 - Delete an annotation you've created
 - Respond to someone else's annotation
 - Validate an annotation
- What to Edit (appearance and content)
 - Text boxes
 - Text lines



Sorting in Annotation Manager

- Click on the heading by which you want to sort
- When sort is complete, an arrow pointing down appears next to the heading name

The screenshot shows the 'Annotation Manager' window with a table of annotations. The table has five columns: Name, Object, Author, Date, and State. The 'Name' column has a downward-pointing arrow next to its header, indicating it is the current sort criterion. Five blue callout boxes point to the column headers with the following text:

- Sort by name in ascending or descending order
- Sort by object in ascending or descending order
- Sort by author in ascending or descending order
- Sort by date and time
- Sort by annotation state

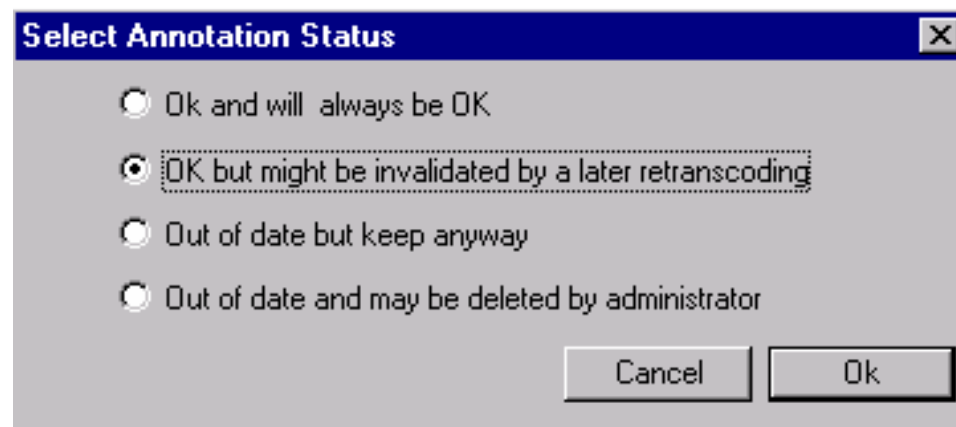
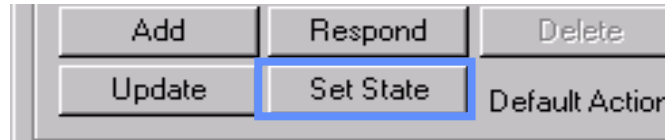
Name	Object	Author	Date	State
0000 Important	stiff_plate...	demo	06/30/98	Ok
bob11:39	None	bob	08/13/98	Ok
cparangi15:42	roller1.prt	cparangi	06/24/98	Ok
CyraAnnotation	None	demo	07/14/98	Ok
demo04:33	circ_brkr.prt	demo	06/19/98	Ok
demo09:54	None	demo	06/19/98	Ok

Below the table are buttons for 'Add', 'Respond', 'Delete', 'Update', and 'Set State'. There is also a 'Default Action' dropdown menu set to 'Show' and a '<<' button.



Annotation States

- If objects are deleted from the model, the associated annotations become invalid since the object no longer exists
- The “set state” button allows you to either keep or delete these



Validating an Annotation

- In Background:
 - When a 3D model with annotations is reconverted,
 - “OK” annotations are set to a “Not OK” state to indicate that their validity must be checked against the new version of the model
 - All annotations with a “Not OK” state will be deleted if reconverted again
- Validation Action:
 - You can use the Set State button on the Annotation Manager to change the state of any annotation
 - That currently has a “Not OK” value
 - That you have created



The Value of Annotations

Consider the value of annotations to these groups:

- Design staff
- Marketing staff
- Manufacturing staff
- Procurement staff
- Managers



Lesson 3 Review

- Creating Annotations
- Validating Annotations
- Sorting Annotations
- The Value of Annotations



Lab 3

- Creating Annotations
- Validating Annotations
- Collaborating

