

# Teamcenter Visualization Concept Desktop

*Hands-on tutorial*

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### Acknowledgements

The dune buggy model on the cover and used throughout this guide was a collaborative project between Brigham Young University and Virginia Tech as part of the PACE program. PACE – Partners for the Advancement of Collaborative Engineering Education – links GM, EDS, Sun Microsystems and UGS to support strategically selected academic institutions worldwide, to develop the automotive lifecycle management (PLM) team of the future.

### Project goal

The goal of the project was to create a dune buggy model using collaborative Teamcenter® tools provided by UGS. The UGS tool set included NX 2, Teamcenter Community, Teamcenter Engineering, and Teamcenter Visualization.

### Project contributors

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For more information regarding the PACE program visit <http://www.UGS.com/partners/goplM/PACE>

## Teamcenter Visualization Concept Desktop hands-on tutorial

Teamcenter Visualization Concept is an add-on to the Professional or Mockup service levels of Teamcenter Visualization (not supported for iSeries, Rich Client, or Portal Viewers). It is made up of the Desktop and Showroom modules. This Quick-Start Guide only addresses the Desktop module. The Concept Showroom module takes reality to the next level with support for advanced virtual reality environments for complete immersive interaction with your products in true 1:1 scale.

Concept Desktop enables you to leverage your existing JT data to create realistic looking scenes directly on your desktop for communication of designs in a “lifelike”, real-time fashion.

Concept Desktop is ideal for anyone who needs to communicate their designs to others. In addition to enabling you to create high-quality images for marketing, the real-time nature of the software allows it to serve well in design review situations where realism helps those not intimate with the data understand it more clearly.

When combined with Teamcenter Visualization Publish, you can add clarity to technical documents that are typically developed for less technical consumers. Across the board, Concept Desktop is a valuable addition to your enterprise visualization strategy.

This guide is intended to be a self-paced, hands-on tutorial to show the basic functionality of the Teamcenter Visualization Concept Desktop product. It is designed to be completed in a single session in about one hour.



## Prerequisites

You should have a basic understanding of the Teamcenter Visualization product. You should be comfortable with the basic toolbars and understand how to interact with the user interface and with JT models.

In order to accommodate the widest possible range of skill sets, these instructions are designed to give enough detail for a part time user and therefore may have more detail than necessary for more advanced users.

- You should have Teamcenter Visualization 2005 already installed and licensed on your computer or on your company's network.
- Concept Desktop requires at least a Professional service level but the Quick-Start Guide includes a trial license of Professional in case you are only licensed for the Base or Standard service level.
- It is assumed that you already meet the minimum system requirements listed below for Teamcenter Visualization. For more information, see the `Install_guide.htm` file (`loadpoint\Teamcenter 2005\Visualization\Help\C\ Install_guide.htm`).

### General system requirements

Performance is directly related to system processor speed, RAM, and your video card. Although Teamcenter Visualization will run if your system meets the minimum requirements described in this section, you should use the "Minimum Recommended System" configuration (below) when using Concept.

### Minimum recommended system

For 3D models and 2D images, your system should have a 1 GHz processor or equivalent, 512 MB RAM, a video card with 32 MB of VRAM, hardware Z-buffering and OpenGL support, and 1 GB of virtual memory.

#### NOTE

- *These are only recommendations. For information on officially supported workstations, video cards and drivers, please visit the UGS support site:*

[http://support.ugs.com/online\\_library/certification/](http://support.ugs.com/online_library/certification/)

## Trial licensing

In order to obtain a license to run **Concept Desktop** for this tutorial, you must register at: [www.UGS.com/go/concept](http://www.UGS.com/go/concept)

You will receive an email with a temporary license for the Concept Desktop add-on module. You must have either the Teamcenter Visualization Professional or Mockup service levels licensed on your machine to run Concept Desktop. Therefore, you will also receive a license for the Teamcenter Visualization Professional service level.

*Note: The Professional service level includes additional functionality that is not covered in this hands-on tutorial. Please refer to the Teamcenter Visualization Help files (available from the Help menu of the product) for information and assistance on using these additional features.*

You or your systems administrator will need to:

**Step 1.** Make a copy of your existing license file so you can restore your original installation when you are finished evaluating this demo.

**Step 2.** Edit the license file for your Teamcenter Visualization 2005 install. This should be the **license.dat** file in the **loadpoint\License** directory (eg. `C:\Program Files\UGS\Teamcenter 2005\Visualization\License`).

**Step 3.** Copy the license file lines from your email into the bottom of your license file.

*Note: These license lines will expire individually and will not affect the function of the rest of your installation.*

**Step 4.** Save the license file. Start Teamcenter Visualization. It should now allow you to use the Concept Desktop functionality.

*Note: If you are using FlexLM, you will need to run the `lmreread` command.*

# Installation

Note: depending on your permissions, you may require a systems administrator to conduct the installation section.

If you or your systems administrator did not originally install the **Concept** product and **Concept Example Files**, you will need to run the installation utility.

## Windows instructions:

I. Open the install window in one of these ways:

### To open from the Start menu

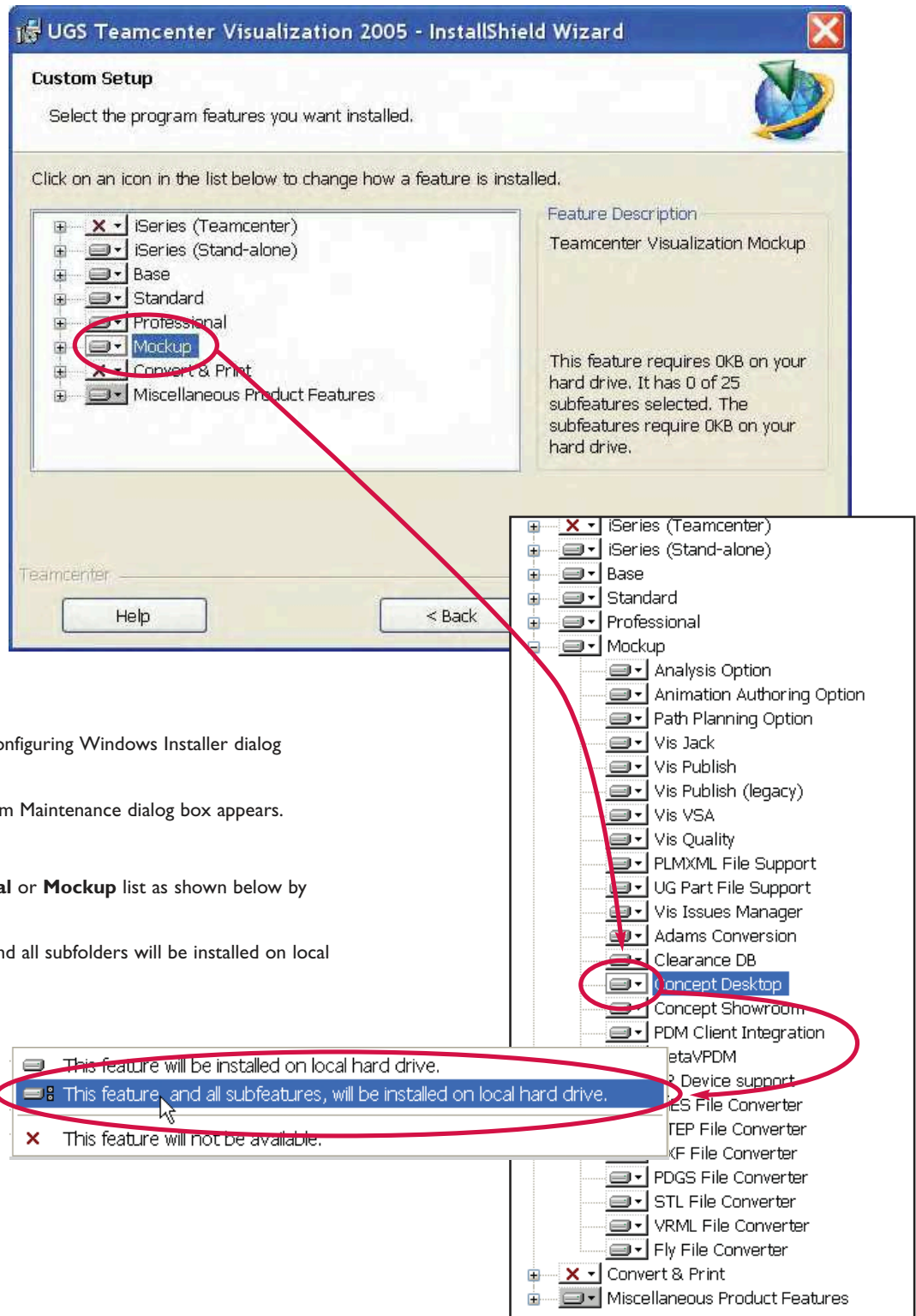
- Step 1) From the **Start** menu, point to **Settings** and choose **Control Panel**.  
The Control Panel window appears.
- Step 2) Choose **Add/Remove Programs**.  
The Add/Remove Programs dialog box appears.
- Step 3) Select **UGS Teamcenter Visualization 2005** from the list.
- Step 4) Click **Change**.

or

### To open from the Setup file

- Run the program "setup.exe" file if it is installed on the file system.
- A Teamcenter Visualization 2005 CD has been included with this tutorial. Run the setup.exe file from the CD (or it will "autorun" if enabled).

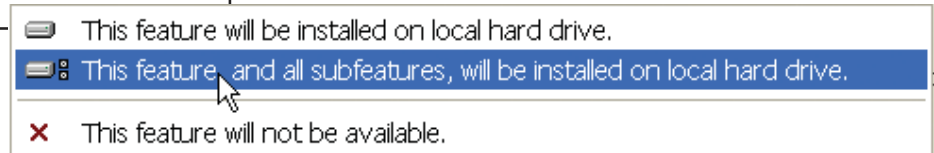
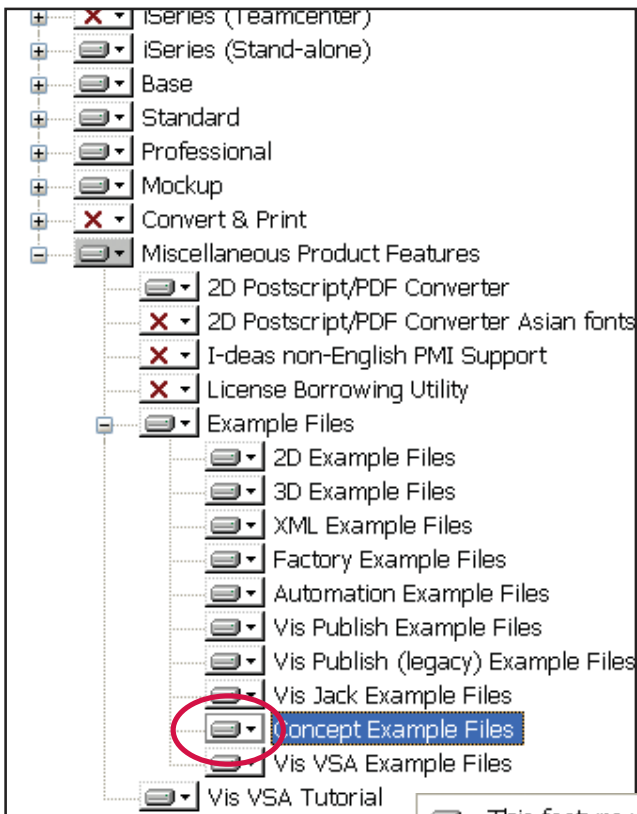
# Installation (continued)



The InstallShield Wizard-Configuring Windows Installer dialog box appears.

2. Click **Next**. The Program Maintenance dialog box appears.
3. Choose **Modify**.
4. Expand the **Professional** or **Mockup** list as shown below by clicking on the "+" sign.
5. Click on "This feature and all subfolders will be installed on local hard drive."

## Installation (continued)



6. Similarly, expand the **Miscellaneous Product Features** section at the bottom of the list and select the **Concept Example** files. Click on "This feature and all subfolders will be installed on local hare drive."
7. Click **Next**.
8. Accept **English** as the language and click **Next**.
9. Check the radio button next to "**Do not modify the existing license**" and click **Next**.
10. Click **Install** to begin modifying the installation.
11. Click **Finish**.

# UNIX Installation

## UNIX installation instructions

To install Teamcenter Visualization products:

1. Verify that the system requirements are met.
2. Log in as root.
3. Insert your CD into the CD drive.

*Note: UNIX CDs were not provided in the Hands-on Tutorial*

4. Mount the CD and type one of the following:

- /CDROM/install
- /cdrom/install

5. Click **Install Software**.

The Teamcenter Visualization Setup window appears.

6. Click **Next**. The Choose Location window appears.
7. Choose the default location, type in a location, or click **Browse** to specify a location to install the software, and then click **Next**.

The Select Platforms window appears.

8. Select the platforms on which to install the software, and then click **Next**.

The Language Selection window appears.

9. Select the languages that you want to install, and then click **Next**.

The Select Components window appears.

10. Select the products and components that you want to install (see above), and then click **Next**.

The License Type window appears.

11. In **License Type**, choose one of the following:

Choose this option	Then do this
Do not modify the existing license file(s).	No further action is necessary.
Obtain a license from a license server machine.	Enter the Server Name and Server Port.

12. Click **Next**.

The Ready to Install window appears.

13. Review the current settings. Click **Back** to make any changes. When you are ready to continue, click **Next**.

The installation process begins and the window displays the progress and lists the files being installed.

14. In the **Installation Complete** window, click **View Log** to look at the log file created during the installation process and review the files that have been installed.

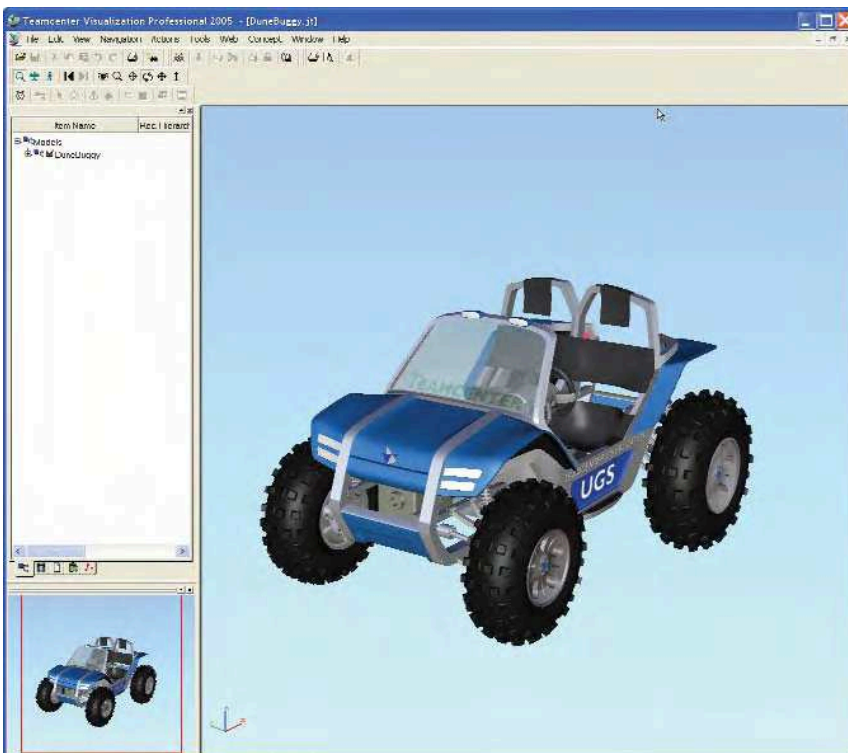
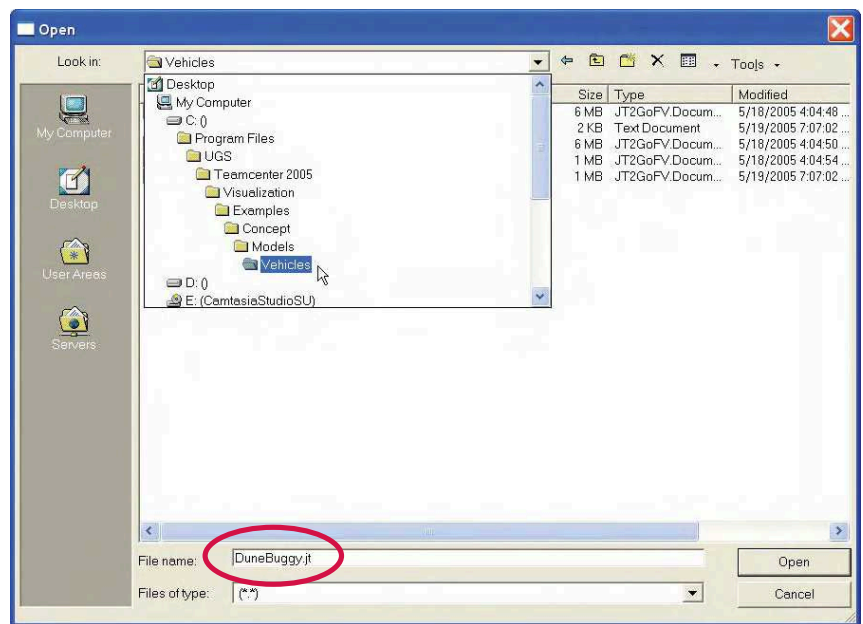


# Let's get started

## Activity – load a model

First things first. You'll need to load a model.

**Step 1.** Start Teamcenter Visualization and load the DuneBuggy.jt model located in the path shown below (loadpoint/ Teamcenter2005/Visualization/Examples/ Concept/Models/Vehicles/DuneBuggy.jt).



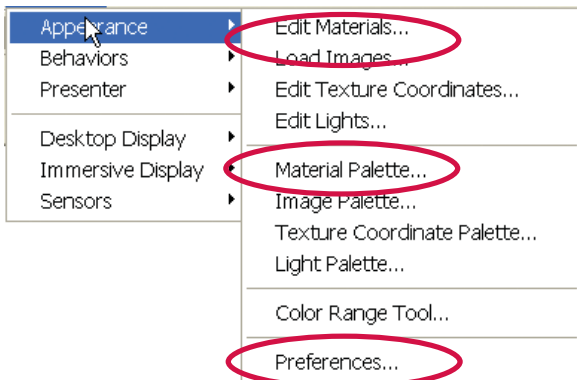
**Step 2.** Turn on the entire model by clicking the box next to DuneBuggy in the assembly tree. Orient the model to a <sup>3</sup>/<sub>4</sub> view as shown below by rotating it in the viewing window.

# Appearance editor

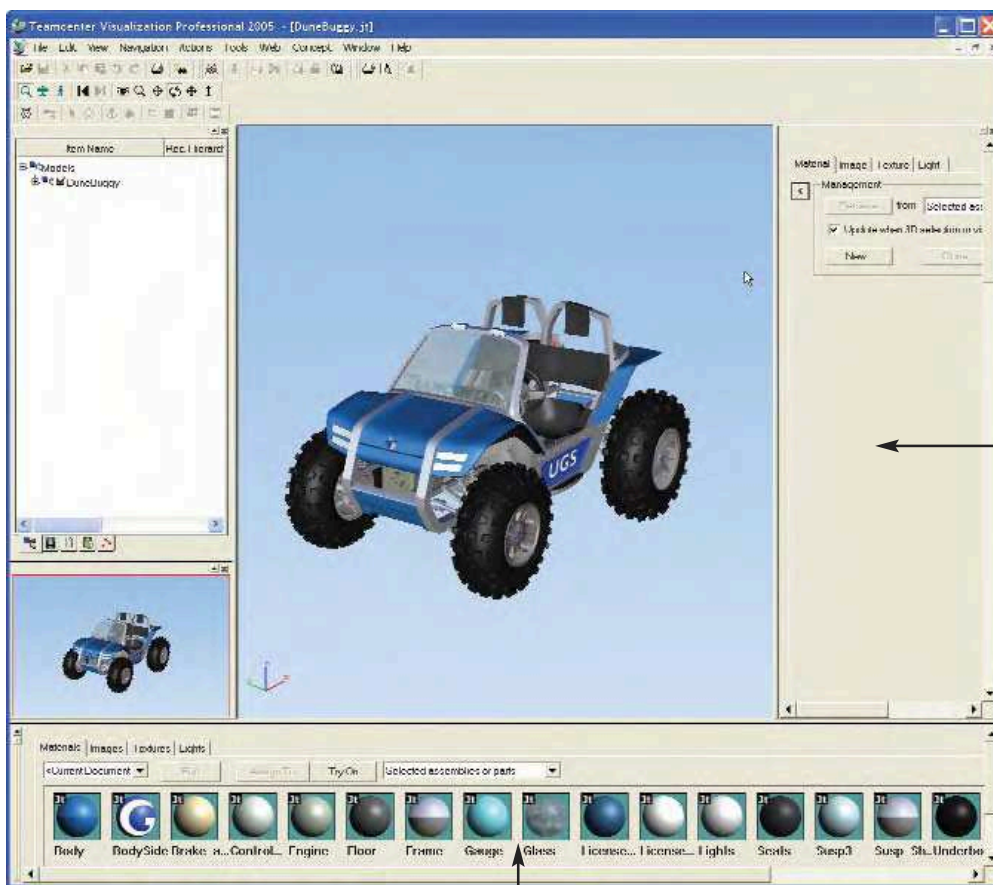
In Teamcenter Visualization, the appearance (color, shininess, and transparency) of selected parts is controlled from the Appearance Editor found on the **Concept** menu. The Concept Desktop module enables you to **create and edit** advanced materials, but it is not required to **view** advanced materials. In other words, if you add advanced materials to a model with Concept Desktop, users of the Base, Standard, Professional, or Mockup service levels of Teamcenter Visualization will be able to see the advanced materials, they just won't be able to modify them.

### Activity – setup your work area

**Step 1.** From the **Concept** menu on the main toolbar, click on **Edit Materials** (above) to open the Editors. Click on **Material Palette** to open the Palettes. Modify the Palette Preferences to show a single row using the **Concept, Appearance, Preferences** dialog and clicking on the **Single Row** button.



**Step 2.** You can place the editor and palette tools anywhere you'd like but for consistency with this guide, organize the display by positioning the Appearance Editor and Material Palette as shown below.



**Editors**  
Drag to right side  
of screen

**Palettes**  
Drag to bottom  
of screen

## Working with materials

Use materials to alter the appearance of your models. Basic materials consists of color and shading properties such as transparency and shininess. When you assign a material, you apply all of its appearance attributes at once to the surface of your model.

Concept Desktop provides tools to create advanced materials that add more realism to your model. When working with advanced appearance attributes, you can:

- Include texture maps, bump maps, and environment maps.
- Manage materials, images, texture coordinates, and lights.
- Use the assembly to control appearance attributes.
- Specify Appearance Editor Preferences.

In the following exercise, you will use the Appearance Editor and Appearance Palettes to modify the part's appearance.

*Note: Concept Desktop delivers many additional and more advanced tools for controlling part and scene appearance that may not be covered in this guide. Refer to the Help files for more information.*

### Activity – apply a material

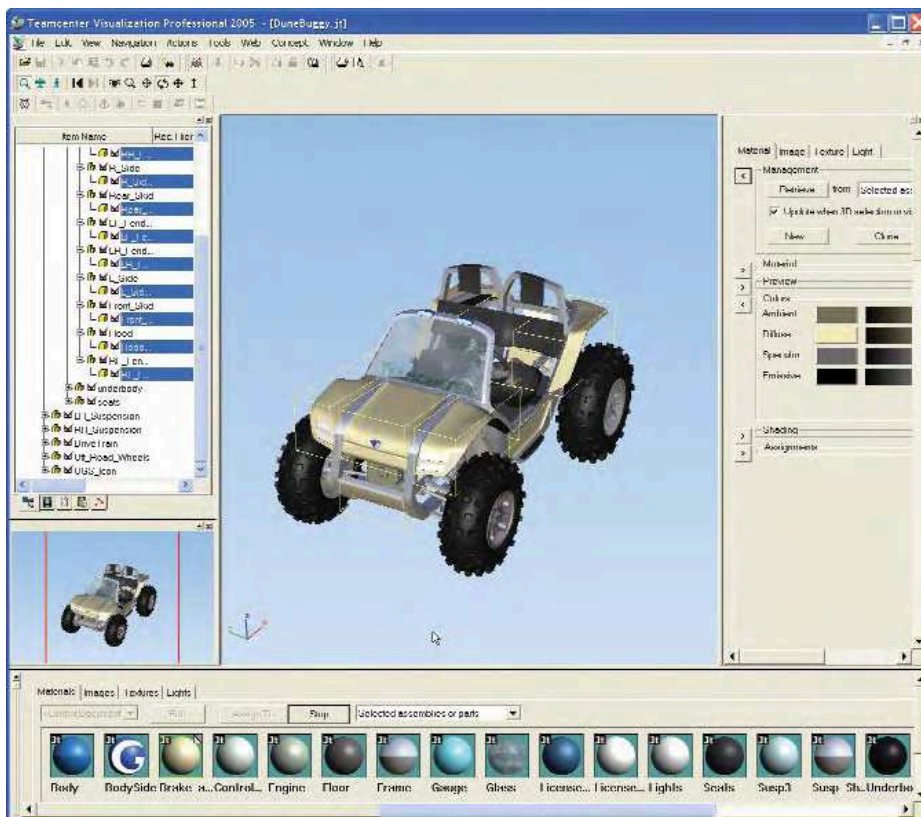
Notice the colored spheres in the Material Palette at the bottom of your screen. They correspond to the different materials currently assigned to parts in this model. In this exercise you will change the color of a part using the different materials located on the Material Palette.

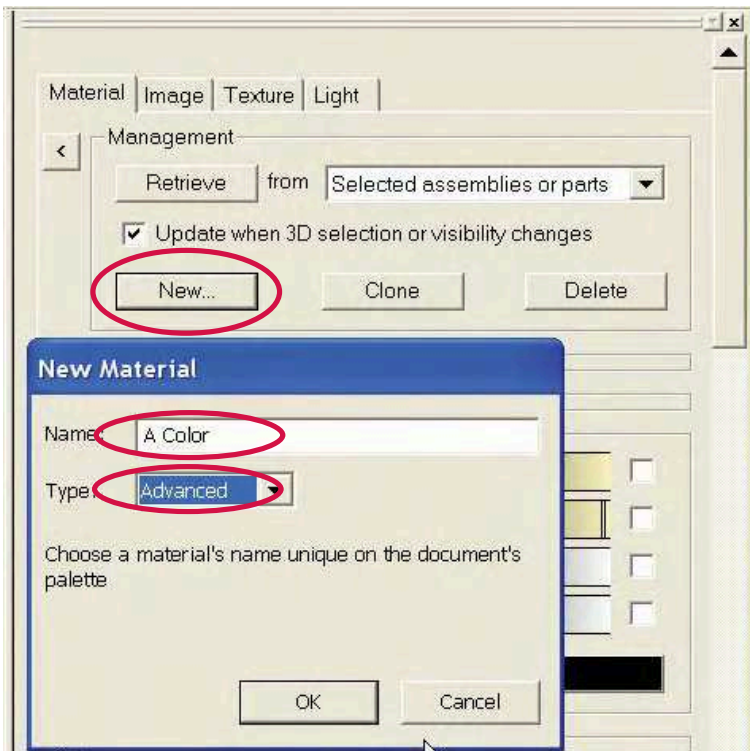
**Step 1.** From the viewing window, select all of the blue body components that give the dune buggy its color. You can select the visible parts from the viewing window. Hold the **<Ctrl>** key for multiple selections but release it when you want to rotate the model. Don't forget to select the Front and Rear Skid Plates.

**Step 2.** From the Material Palette, pick the **Try On** button, and then select different materials from the palette. The color of the car body changes to match the selected material. Try several other materials. (You can scroll to see additional materials using the buttons at the bottom of the Palette). Notice that all of the characteristics of an existing material are applied including reflections or textures. Pick the **Stop** button when you're done "trying on" materials to assign the material to the part.

**Step 3.** You can also directly assign a color that you have selected in the Material Palette by clicking the **Assign** button.

**Step 4.** Save your session.



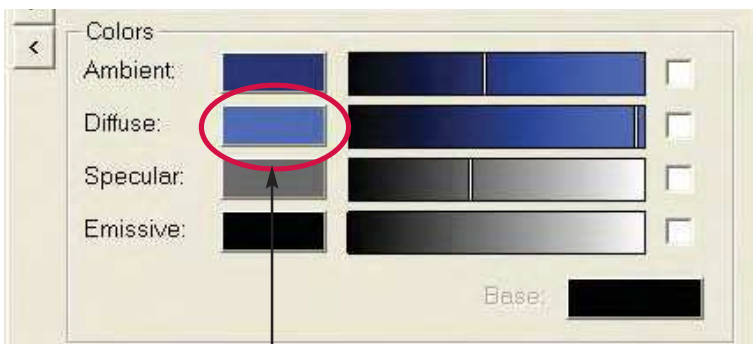


### Activity – create a new material

In this activity you will work with the Appearance Editor at the right of your screen. The Appearance Editor has four tabs. Think of them as drawers in a toolbox. The parameters under each tab are further divided into multiple areas. These areas can be expanded or collapsed depending upon what function you are performing.

**Step 1.** Expand the **Management** area on the **Material** tab.

**Step 2.** Pick the **New** button to create a new material. Enter the name “A Color” (so it will be first in the alphabetically organized list on the palette) and select the **Advanced** option.



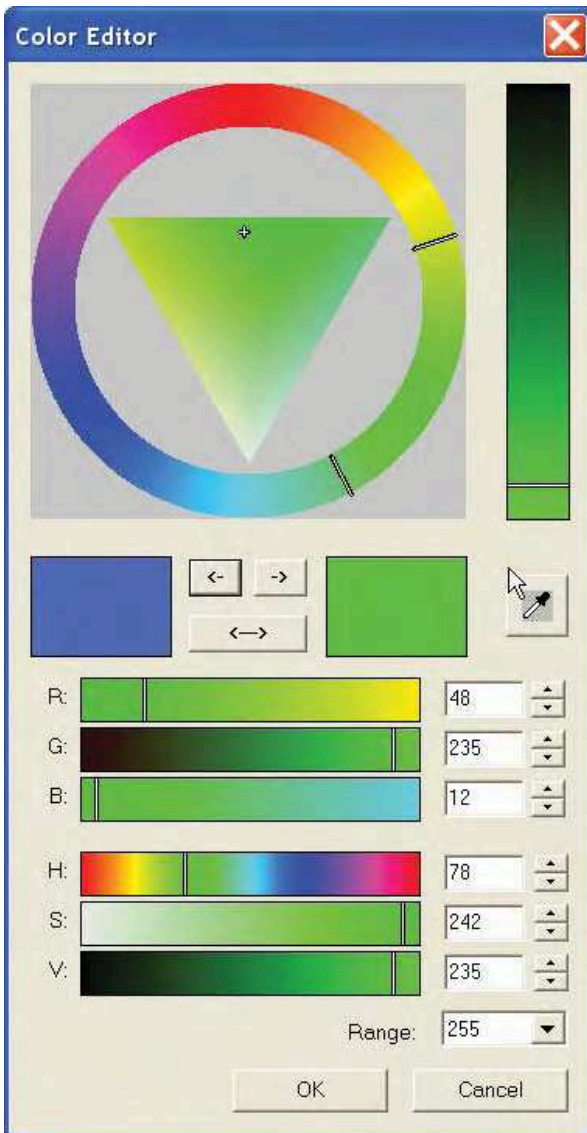
Click here  
to open color editor

**Step 3.** Change the color of the body panels to the new color material that you are creating by selecting the “A color” material on the palette, and then clicking **Assign** to.

**Step 4.** In the Appearance editor, the **Colors** area has been automatically expanded for you. Color is controlled by adjusting the Ambient, Diffuse, Specular, and Emissive values. You can adjust color by moving the sliders. As you move the sliders, notice the color changes on the dune buggy in the viewing window.

**Step 5.** Click on the color box to the right of the diffuse slider to open the color editor.

## Working with environment mapping



**Step 5.** You can also control the color dynamically with the Color Editor. Click the colored box next to Diffuse to change the hue and saturation of the material.

This displays the Color Editor window. The Color Editor provides a dynamic way to explore all aspects of the color very quickly. The upper area is for broad adjustments while the sliders below are for fine tuning. All of the controls on the Color Editor are interrelated. For the purposes of this exercise, adjust the color to match the image below using the tools as follows:

- The **color range** is controlled by the two markers on the color circle around the triangle.
- By dragging the cursor in the triangle at the top of the window, you can change the **hue** and **saturation**. Move the marker in the triangle and watch the six horizontal sliders to see how they are all related.

Move your cursor horizontally for the hue and vertically for the saturation.

Notice that the H and S sliders below adjust to reflect the changes in the color triangle.

- The slider to the right of the color circle adjusts the **value** (brightness).
- The two color rectangles below the color circle show the previous color and the current color.  
Use the left and right arrows to make the two colors match.  
Use the double arrow button to switch between the two colors.
- The eyedropper button on the right is a press and drag tool that allows you to pick any color shown on your computer screen. You can even move the eyedropper tool over desktop items outside your application window. Releasing the left mouse button selects the color.
- The three RGB sliders individually control the levels of red, green and blue and the boxes allow for specific values to be input.
- And of course the HSV sliders at the bottom control hue, saturation, and value respectively.

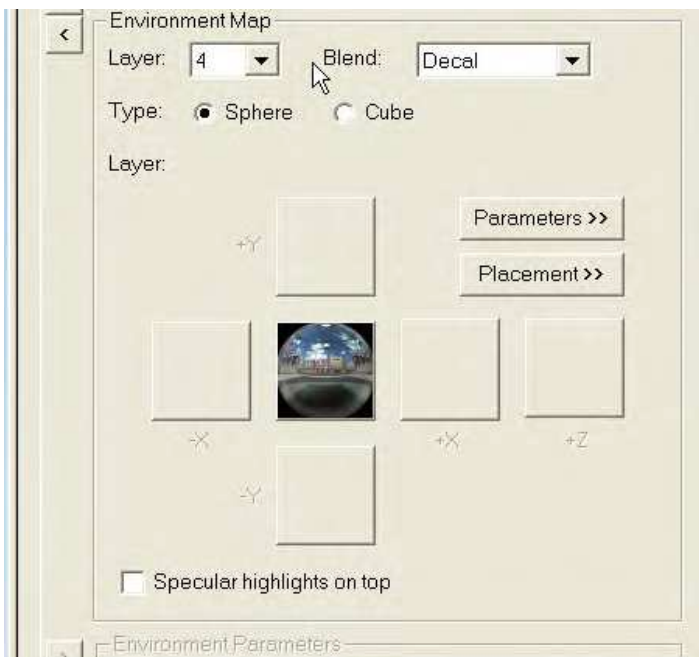
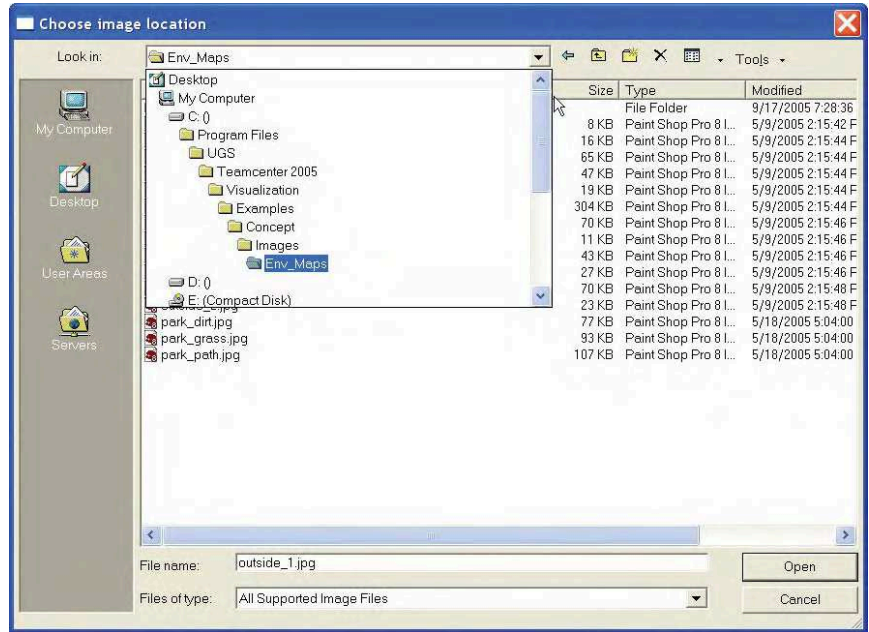
**Step 6.** Save your Session

Environment maps function as reflections, emulating the reflective properties of shiny surfaces such as chrome, glass, or glossy paint. You can select an image, add it to an advanced material, and apply the material to a part. The image appears to be reflected by the shiny surface of the part. Environment maps can emulate reflections, but they are not true reflections. If you place two parts next to each other, for example, you will not see the second part reflected in the shiny surface of the first part.

**Activity – add an image as an environment**

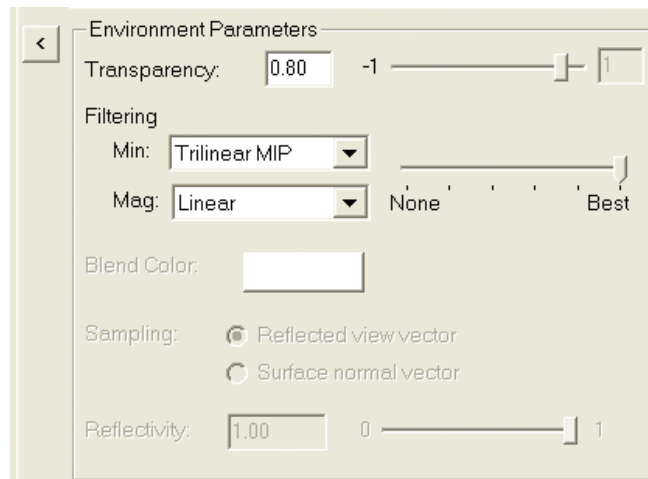
**Step 1.** On the Material tab, scroll down to the Environment Map area. Accept the default **Layer 4**, set Blend to **Decal**, and Type to **Sphere**.

**Step 2.** To load a new image, open the **Image** tab at the top of the Appearance Editor. Click on **New** and **Browse**. Browse to the Images folder and select the **outside 1.jpg** image and accept by clicking **Open**.



**Step 3.** Go back to the **Environment Map** area on the **Material** tab of the Appearance Editor and click the middle grey square. The image should appear on the square. The image should also appear reflected in the car body.

## Working with environment mapping



**Step 4.** By default, the environment map has a transparency value of 0. Select the **Parameters** button in the Environment Map area of the Material tab. It will open the **Environment Parameters** area providing access to the **Transparency** setting. Change the transparency to .8 to make the paint finish less reflective and to allow the paint color to show through.

**Step 5.** You can experiment with different Environment Maps by selecting them in the palette and clicking the middle square in the Appearance Editor.

**Step 6.** Save your session.



*Environment Map Transparency = 0 (fully reflective)*



*Environment Map Transparency = .8*

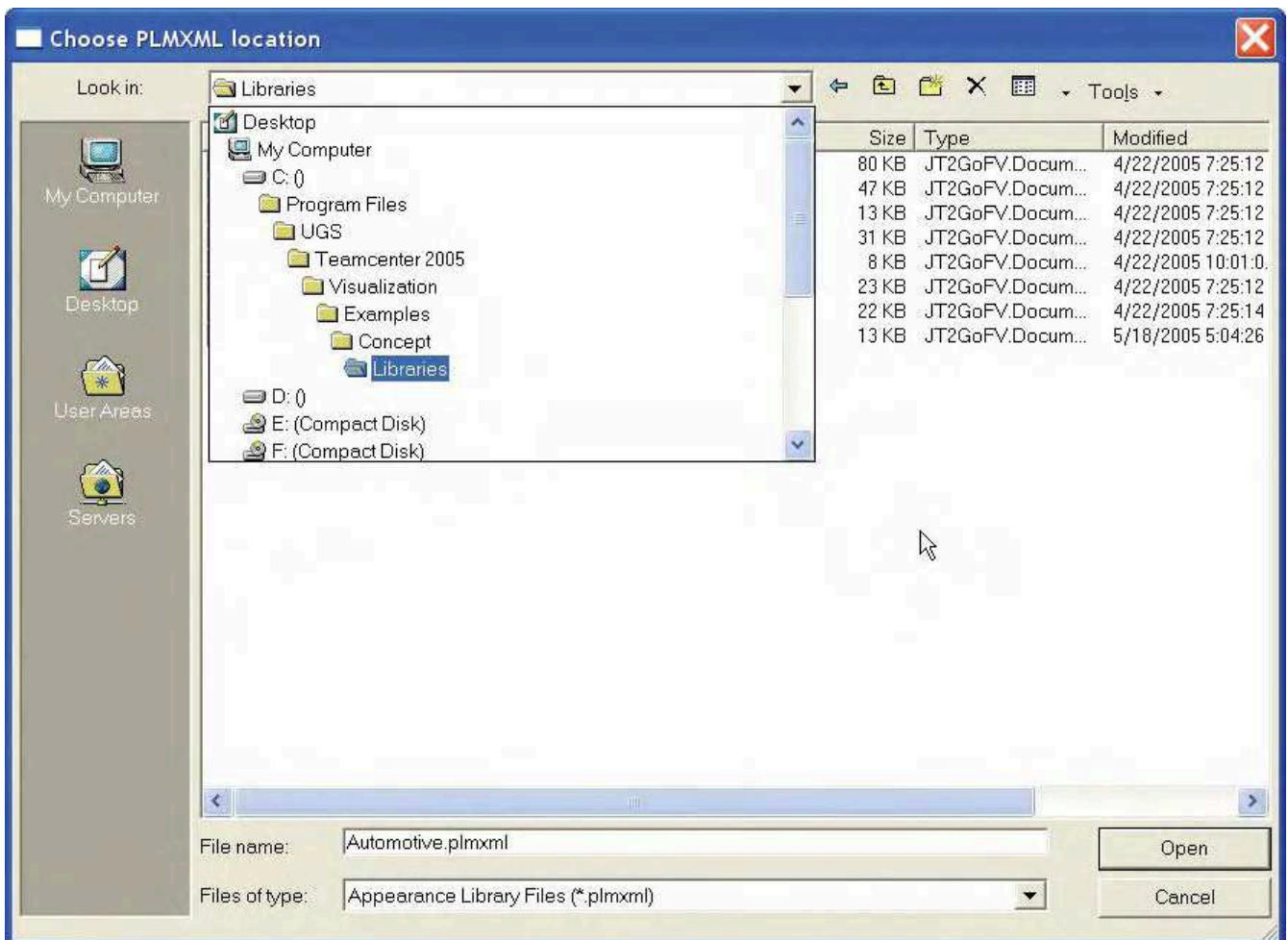


### Activity – Load in a Palette Library

You can Save, Load, or Merge collections of materials called a material palette. For this activity you will merge an existing palette into your session.

**Step 1.** Right click in a blank area of the Material Palette (between any two colors works well). Select **Merge Palette** and **Browse**. Browse to the Libraries directory as shown below and load the **Automotive.plmxml** file and select **OK**.

**Step 2.** You should now see a number of new materials in the palette. Assign the Chrome material to the four rims as described above.



## Working with lights

Concept Desktop has three types of lights. You can apply three different types of light sources to illuminate geometry in the 3D Viewing window. The three types are:

- **Directional** – Directional lights have no position, only direction. Use them to simulate infinite light sources like the sun.
- **Point** – Point lights are omni directional lights originating from a point source. Use them to simulate indoor light sources like a bare light bulb in a room.
- **Spot** – Spot lights have both position and direction. Use them to light a particular area within a scene.

You can use as many lights as you need.

### Activity – add a directional light to the model

In this activity you will add a directional light to your model.

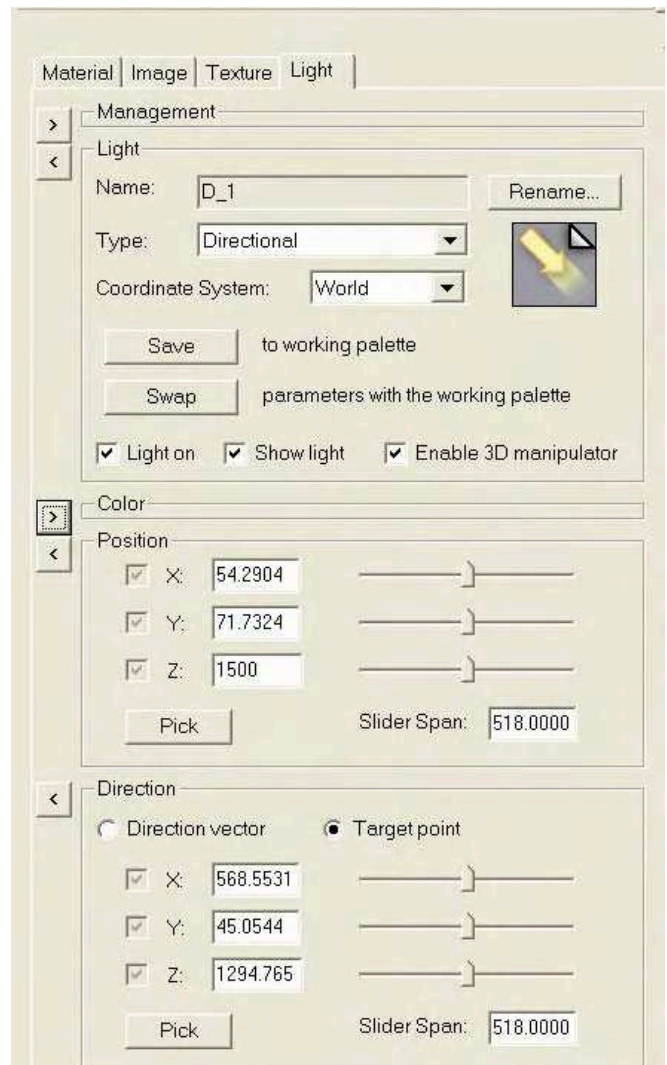
**Step 1.** Select the Lights tab in each of the Appearance Editor and Appearance Palettes. Note there is currently a default light. In the Appearance Palette, toggle the Default light off to see the effect of the new lights by right-clicking on the light tile and clicking on the Light On menu selection.

**Step 2.** From the Management area on the Appearance Editor, create a new Directional light named D\_1.

**Step 3.** Open the Light area and set the Coordinate System to World. Check the boxes for Light on, Show light, and Enable 3D manipulators.

**Step 4.** Scroll down to the Position area, choose **Pick**, and select a point on the car's hood. Change the Z value to 1500 to raise the light above the car.

**Step 5.** Scroll down to the Direction area, and choose **Target** point. Click **Pick**, and select a point in the middle of the windshield. The light is now shining down on the car.



**Step 6.** Use the manipulators to move the light source.

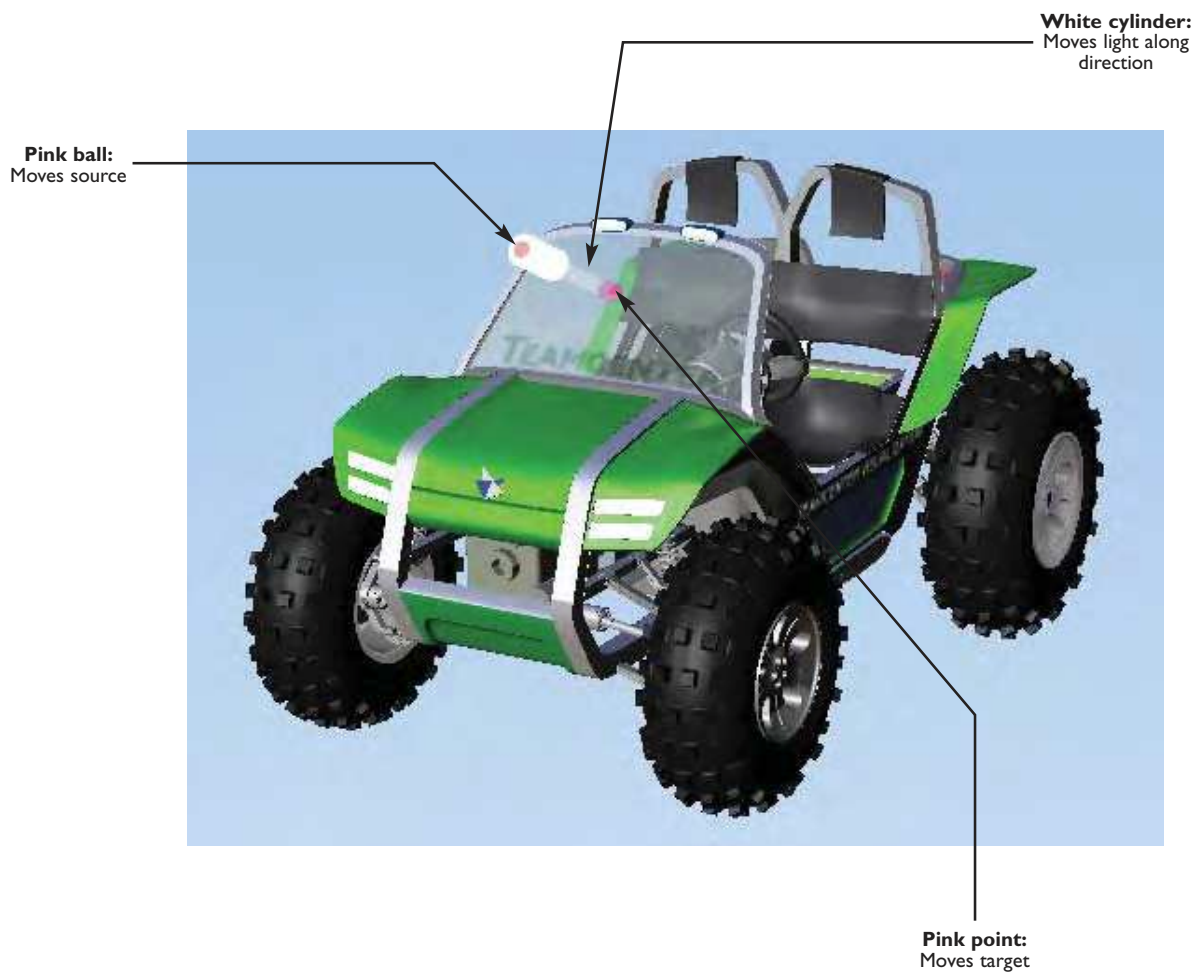
- Click on the shaft of light and drag to change the distance from the target.
- Drag the pink tip to change the target.
- Drag the round ball to move the source.

**Step 7.** Rotate the model. Since you set the Coordinate system to World, the light remains with the model as you rotate your camera (or view). If the Coordinate System had been set to View, the light would remain fixed and the model.

**Step 8.** Once you like the position of the light, toggle off Enable 3D manipulators and Show light.

**Step 9.** You can turn lights on and off by right-clicking on its icon in the Light Palette at the bottom of your screen.

**Step 10.** You can also adjust the directional light's color and intensity in the Color area of the Light Editor.



## Working with lights

### Activity – add a point light to the model

Point lights are omni directional. Use them to simulate indoor light sources.

**Step 1.** Create a Point Light just like you created the Directional Light. From the Management area, create a new Point light named Point\_1.

**Step 2.** In the Light area, set coordinate system to View. Check the boxes for Light on, Show light, and Enable 3D manipulators. Rotate the model to see the effect of using a View coordinate System. The light appears to remain fixed with respect to the view as the car rotates. Change the Coordinate System back to World for the remainder of the activity.

**Step 3.** Scroll down to the Position area, and select **Pick**. Select a point on the top of the dune buggy. Note that the Point light has no direction component; it radiates in all directions.

**Step 4.** You can manipulate the Point light directly in the viewing area dragging it around.

For the purposes of this activity, set the Position of the Point light at  $X=2000$ ,  $Y=-2000$  (minus 2000),  $Z=2000$ .

**Step 5.** When you're satisfied with the Point light, uncheck Light on and Show Light in the Light area of the Editor

**Step 6.** Save your session.



### Activity – add a spot light to the model

Spot lights have both position and direction. Use them to light a particular area within a scene.

In this activity you will create a spot light.

**Step 1.** From the Management area, create a new Spot light named S\_1 in the same manner as above.

**Step 2.** In the Lights area, set coordinate system to World. Check the boxes for Light on, Show light, and Enable 3D manipulators.

**Step 3.** Scroll down to the Position area, and manually set  $X = 1000$ ,  $Y = -2000$  (minus 2000), and  $Z = 0$ . This will position the light just outside the driver's door.

**Step 4.** Scroll down to the Direction area, and choose **Target** point. Instead of entering the coordinates for the target point, click **Pick**, and select one of the rims. Click **Pick** again and select one of the other rims. This gives you a good feel for the “cone” of light.

**Step 5.** Use the manipulators to move the light source.

- Click on the lamp shade and drag to rotate the light around the target.
- Click on the shaft of light and drag to change the distance from the target.

**Step 6.** From the editor, you can adjust other properties of the spot light.

- From the color area, you can adjust the color and intensity.
- From Spotlight Attributes, you can adjust the angle of the cone of light. This changes the effective size of the “spot” at a given distance.

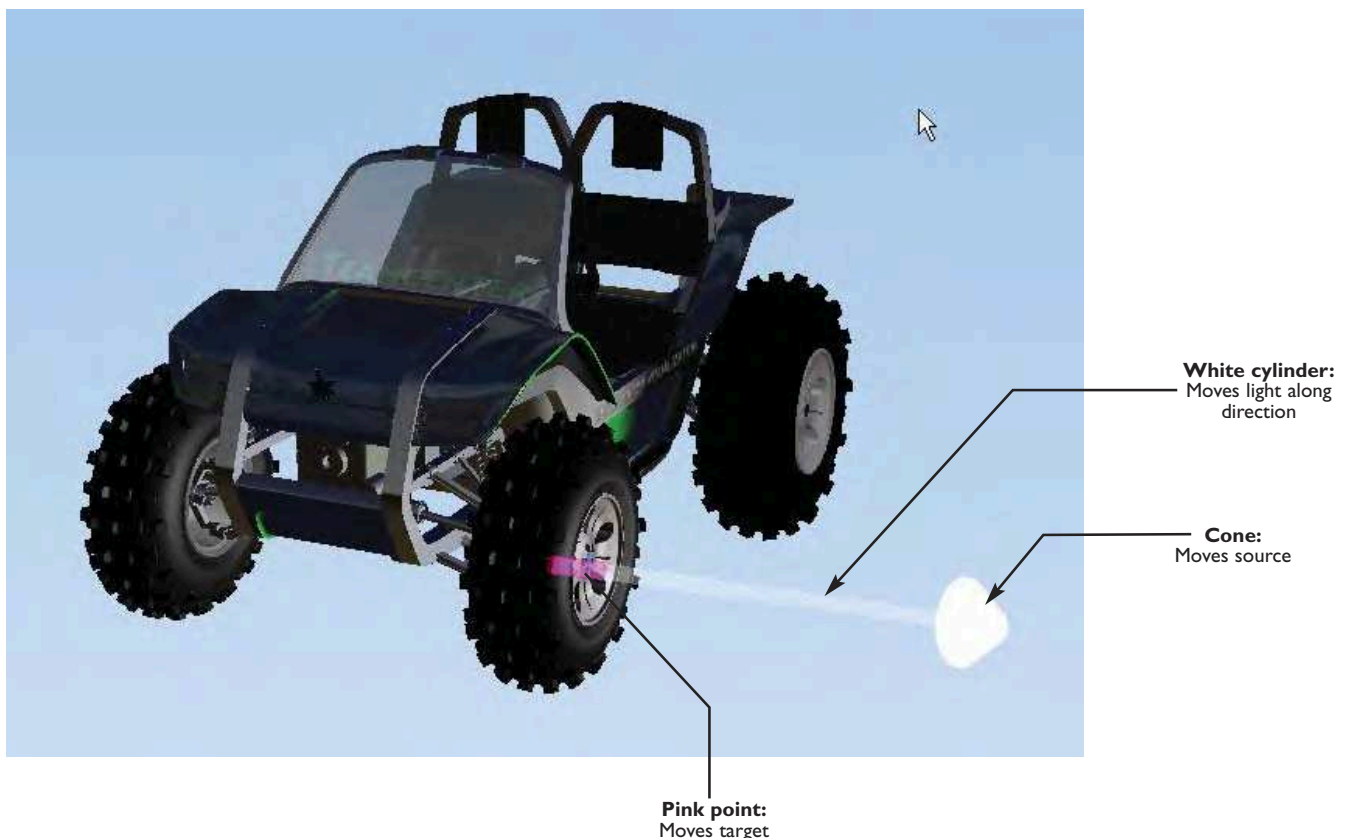
You can also change the Spot Exponent that effectively softens the “edge” of the circle created by the cone.

**Step 7.** Rotate around the car model. Since you set the Coordinate system to World, the light remains with the model as you rotate your camera (or view).

**Step 8.** Once you like the position of the light, toggle off Show light.

**Step 9.** Turn off and on the various lights that you've just created from the Light Palette at the bottom of your screen. Notice the different affects that you get from each light and from combining them. Of course you can create as many different lights as you need to create a desired effect.

**Step 10.** Save your session



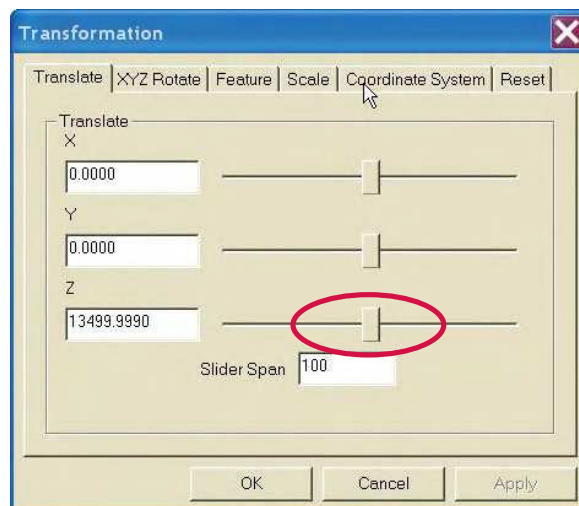
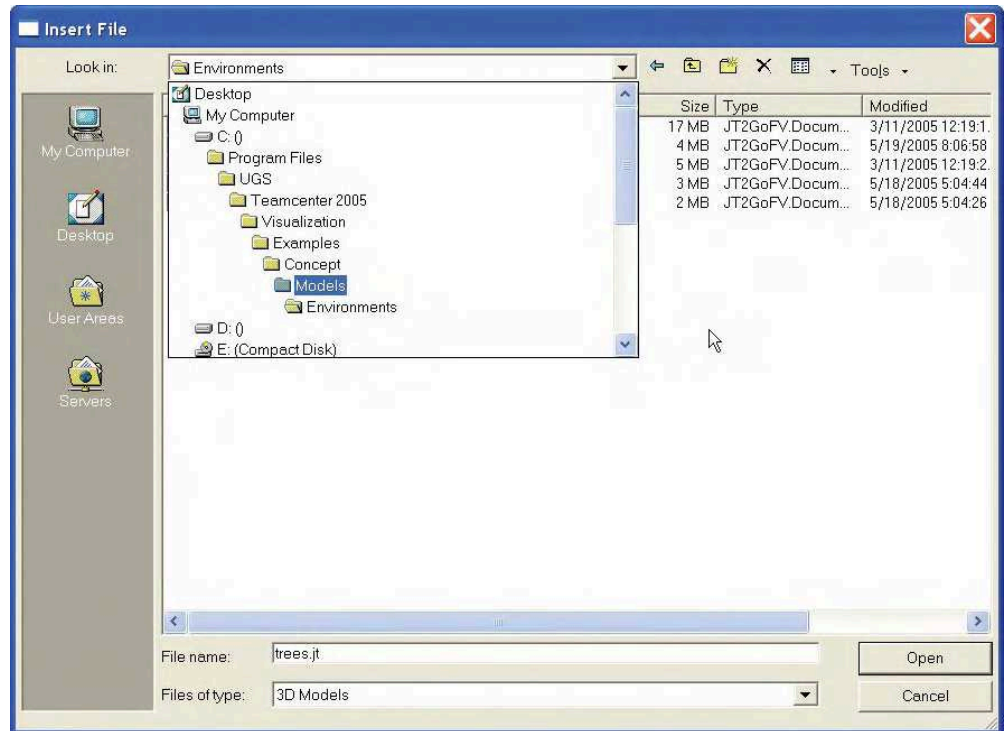
## Creating environments

Concept Desktop allows you to create realistic scenes by putting your products into environments like rooms, buildings, or even outdoors.

### Activity – adding a room

**Step 1.** From the **File** button on the main menu, insert the **trees.jt** model from the Environments directory as shown to the right.

**Step 2.** Turn on the trees.jt model by checking the box in the assembly tree view. You may wish to contract the DuneBuggy product structure by clicking on the “-” sign to the left of its name in the Assembly tree. The view should now look like your dune buggy is buried a couple of inches in the grass.



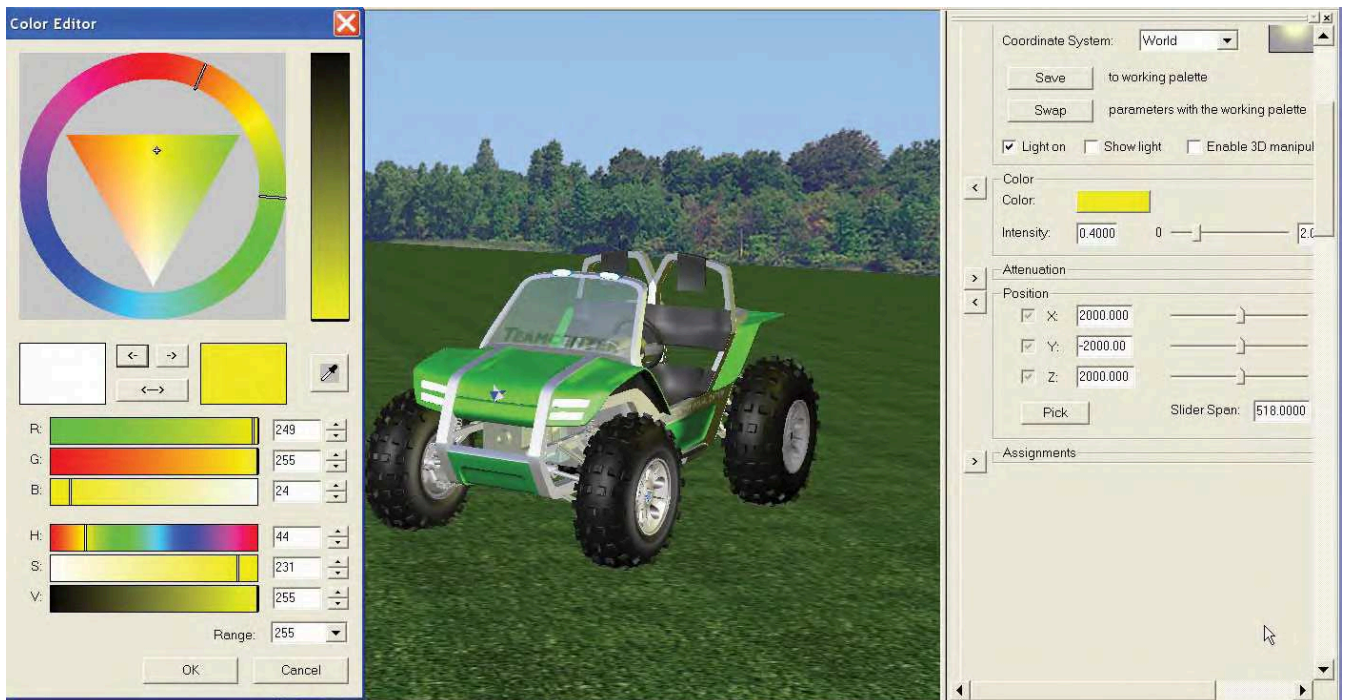
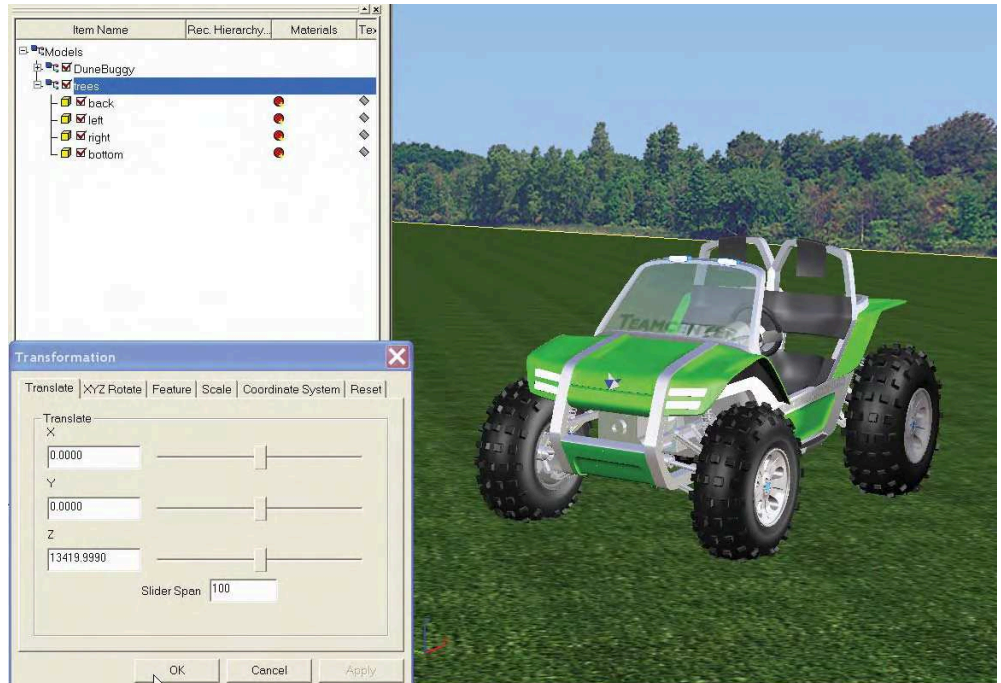
**Step 3.** To translate (move) the trees model relative to the dune buggy, select it in the Assembly Tree and open the Actions/Transformations/Transformations dialog. Click on the “negative” side of the Z Translate slider until the dune buggy appears to be sitting properly on the grass.

*Note that for realism, the knobs on the tires should still be buried a bit.*

**Step 4.** Now rotate the model a bit to get a view of the dune buggy sitting in a grassy field with trees in the background.

You may want to “turn down” the Point light a bit. Double-Click on it in the light pallet, scroll to the Color area. Click on the “negative” (left) side of the slider to reduce the intensity.

You may even want to open the Color Editor (click on the color box) to change the color to a yellowish orange to simulate the sun. Click on the double arrow button on the Color Editor to see the impact of the change.



## Working with behaviors

You can use Behaviors to add interactivity to 3D documents and presentations. Each Behavior consists of an action, such as the rotation of a part or change in camera position. This action is triggered by an event in your model, such as a selection, or by pressing a key on your keyboard.

At its most basic level, each Behavior consists of:

1. The target object that is affected when the Behavior is triggered
2. The trigger that initiates an action. A trigger can be when you select something, press a key on your keyboard, the start or end of another behavior, or activating a snapshot
3. The action that occurs when the Behavior is triggered. Actions include spin, translate, visibility changes, switching materials, sounds, motion files, camera moves, and more.

You can create Behaviors that employ three types of target objects. These include:

- Geometry target objects (for example, rotating or moving a part or assembly)
- Camera target objects (repositioning the camera to a different view of your 3D model)
- General target objects (stopping a running Behavior, jumping to a specific snapshot, launching an external system program, or playing a sound or motion file). To create a Behavior, you need to create an action for a target object (geometry)

### Activity – spin behavior

In this activity you will create a basic behavior to spin the dune buggy when you press a key.

**Step 1.** From the Concept/Behaviors menu, choose **New Behavior**. This will display the New Behavior dialog.

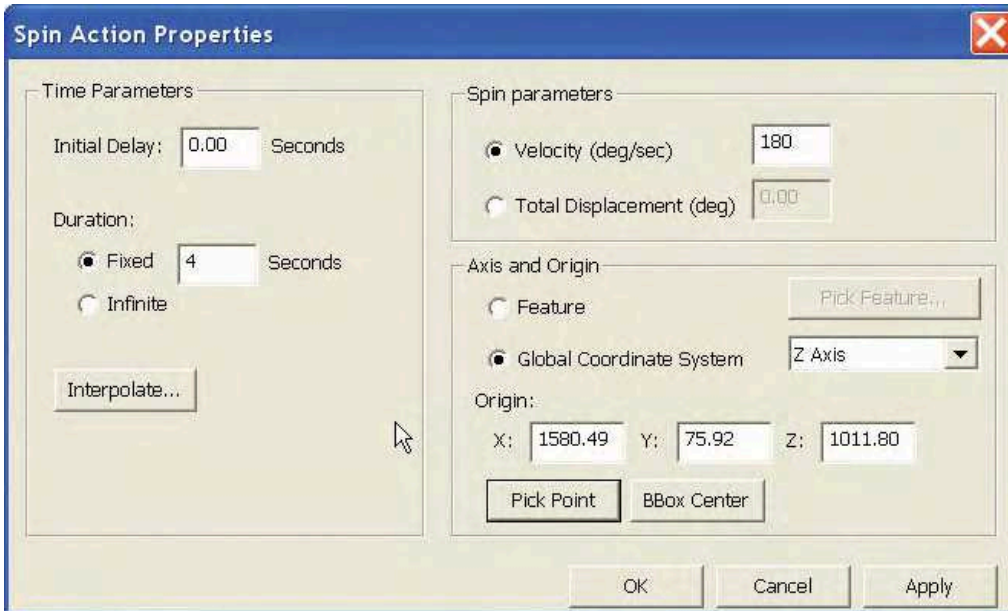
**Step 2.** Name the behavior Spin\_Z.

**Step 3.** Set the Action type to **Spin**, and click **Properties**.

**Step 4.** Set the following parameters as shown below:

- a. Initial Delay – 0.0 Seconds
- b. Duration – 4 Seconds
- c. Velocity – 180 degrees per second (you may wish to adjust this depending on the speed of your computer)
- d. Global Coordinate System – Z Axis
- e. Origin – click the **Pick Point** button and select somewhere in the center of the dune buggy's interior.



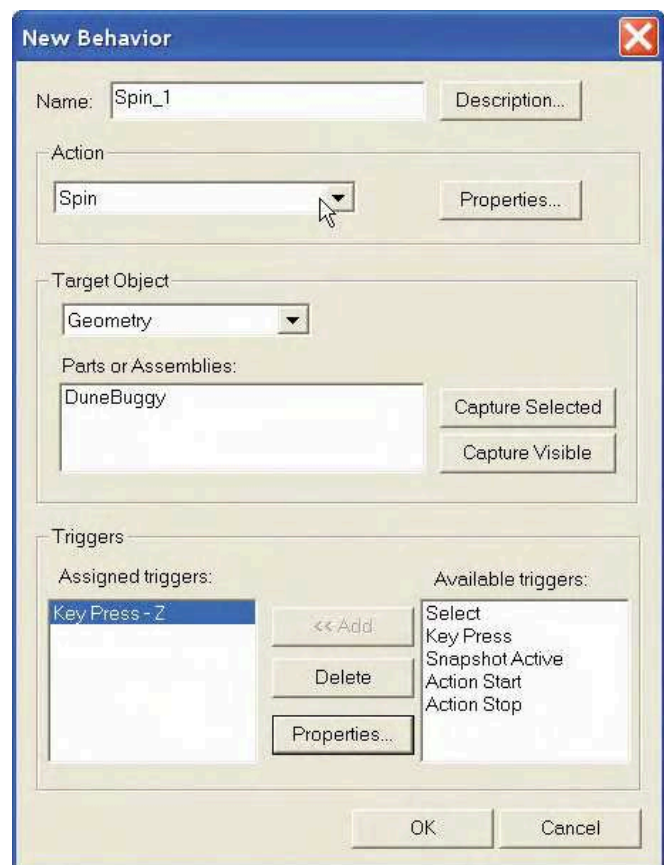


**Step 5.** Click **OK**.

**Step 6.** Back in the New Behaviors dialog, you'll want to spin the dune buggy with respect to the environment, so select the dune buggy model in the assembly tree then click **Capture Selected** in the dialog. Under Available Triggers, choose **Key Press**, and pick **Add**. Click **Properties**, choose **Z**, and **OK**.

**Step 7.** Pick **OK** to close the dialog.

**Step 8.** You'll want to Deselect the dune buggy model. Right-click in the window and click **Deselect All**.



## Working with behaviors

**Step 9.** From the Concept/Behaviors menu, choose **Activate**. Concept is now waiting for a trigger. Press the **Z** key. The car should rotate around the Z axis.

**Step 10.** To modify any of the parameters of the behavior open the **Behaviors/Behavior List** dialog from Concept menu, click on the behavior, and click **Edit**.

**Step 11.** Try switching the lights from World Coordinate System

to **View** to see the impact of the dune buggy rotating relative to the lights.

**Step 12.** From the Concept/Desktop Display menu, choose **Full Screen Mode**. Test your spin behavior in full screen mode.

Press **Esc** to exit full screen mode.



## Conclusion

Concept Desktop is a natural extension to your Teamcenter Visualization environment. It leverages the power of JT and creates a real-time, interactive environment that's ideal for adding realism to your design reviews. Because Concept Desktop builds on the valuable functionality of Teamcenter Visualization, it's a perfect solution for making digital mockups easier for everyone to understand. It can combine with other add-on solutions for Teamcenter Visualization such as adding realism to technical publications using Publish or even adding realism to tolerance simulations from VSA. You can even incorporate CAE results into your models in the Concept environment.

Of course Concept Showroom builds on the Concept Desktop solution by enabling support for high-end, virtual reality (VR) hardware environments like CAVEs or PowerWalls. Concept Showroom includes all the functionality of Concept Desktop plus additional tools for arranging and staging your models prior to projecting in the physical VR environment.

As you can see, Concept Desktop is very easy to use but has many valuable features and capabilities for you to explore and apply to your day-to-day work. You may continue to evaluate Concept Desktop until the expiration date of the trial license.

For more information on purchasing Concept Desktop call **1 800 498 5351** to speak to a telesales representative.

## About UGS

UGS is a leading global provider of product lifecycle management (PLM) software and services with nearly 4 million licensed seats and 46,000 customers worldwide. Headquartered in Plano, Texas, UGS' vision is to enable a world where organizations and their partners collaborate through global innovation networks to deliver world-class products and services while leveraging UGS' open enterprise solutions, fulfilling the mission of enabling them to transform their process of innovation. For more information on UGS products and services, visit [www.ugs.com](http://www.ugs.com).

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