














Photo Studio

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P1



P2



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Preface

Welcome to **Version 5 Photo Studio!**

This new generation product enables you to easily and interactively create photorealistic images and simple animations of a product.

Thanks to its ease of use and to the interactive preview of rendering specifications as they are applied, **Photo Studio** is the perfect tool for any "non specialist" user who wish to deliver a high quality photorealistic image at any time and without the help of rendering specialists.

Photo Studio contributes to enhance project collaboration by enabling any user to produce and share quality representations of their ideas. By giving a realistic simulation of the model appearance, it can also be used to validate the quality of the design at any time during the product development process.



[Using This Guide](#)
[More Information](#)

Using This Guide

This guide is intended for any users wishing to generate photorealistic images of products.

All users should be familiar with basic Infrastructure concepts such as document windows, standard and view toolbars as well as the 3D compass.

This guide is organized as follows:

- [Getting Started](#) tutorial provides information for starting a Photo Studio session
- [Basic Tasks](#) section guides you step-by-step through basic procedures such as managing cameras, light, pictures, and so on.
- [Advanced Tasks](#) section explains how to manage a scene
- [Workbench Description](#) describes the Photo Studio menu bar and toolbars
- [Customizing](#) contains information allowing you to customize your personal environment.
- [Glossary](#) provides keyterm definitions
- [Index](#) provides a list of terms specific to product image and animation management.

Where to Find More Information

Prior to reading this book, we recommend that you read the *Infrastructure User's Guide*.

You may also find useful to read the *CATIA - Real Time Rendering User's Guide* that allows you to define material specifications that will be shared across your entire product development process as well as map materials onto products to produce photorealistic images.



Certain [conventions](#) are used in the documentation to help you recognize and understand important concepts and specifications.

Conventions

Certain conventions are used in CATIA, ENOVIA & DELMIA documentation to help you recognize and understand important concepts and specifications. The following text conventions may be used:

- The titles of CATIA documents *appear in this manner* throughout the text.
- File -> New identifies the commands to be used.

The use of the mouse differs according to the type of action you need to perform.

Use this

mouse button, whenever you read



Select (menus, commands, geometry in graphics area, ...)

Click (icons, dialog box buttons, tabs, selection of a location in the document window, ...)

Double-click

Shift-click

Ctrl-click

Check (check boxes)

Drag

Drag and drop (icons onto objects, objects onto objects)



Drag

Move



Right-click (to select contextual menu)

Graphic conventions are denoted as follows:



indicates the estimated time to accomplish a task.



indicates a target of a task.



indicates the prerequisites.



indicates the scenario of a task.



indicates tips



indicates a warning.



indicates information.



indicates the end of a task.



indicates functionalities that are new or enhanced with this Release.
Enhancements can also be identified by a blue-colored background in the left-hand margin.

What's New?

Basic Tasks

Shooting

Enhanced: [shooting](#) quality definition

Render

Enhanced: [Stop](#) icon

Stickers

Enhanced: ergonomic improvements to the sticker [interface](#)

New: you can now customize the [sticker default image](#)

Materials

Enhanced: [material properties](#)

Advanced Tasks

Scene Tuning

New: [tuning light sources](#) for rendering

New: [tuning materials](#) for rendering

New: you can browse the [Scene catalog](#)

Workbench Description

New: Apply Material toolbar now includes the [Catalog Browser](#)

Getting Started

The following tutorial aims at guiding you when you open the Photo Studio workbench for the first time.

It provides 3 step-by-step tasks for:

[Entering the Rendering Workbench](#)

[Loading Products](#)

[Creating a Quick Render](#)





All together, these tasks should take 10 minutes to complete.


The result will look like this:

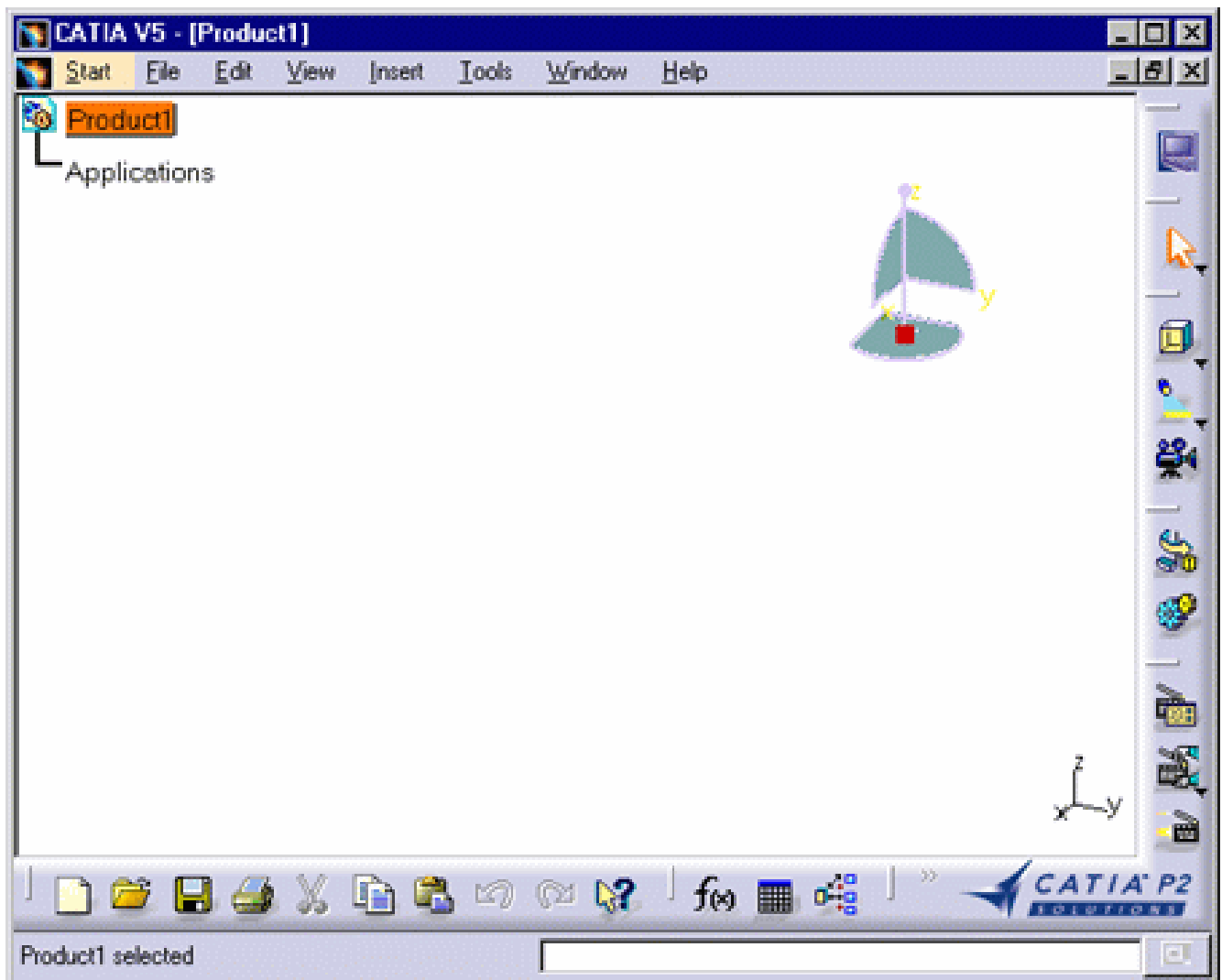


Entering the Rendering Workbench

 This first task will show you how to open the Rendering workbench.

 The only pre-requisite for this task is to have a current Version 5 session running.

-  1. From the Start menu, select the Infrastructure -> Rendering commands.
- The Rendering workbench is displayed:



Now, let's perform the next task to learn how to load documents in your Photo Studio workbench.



Loading Products



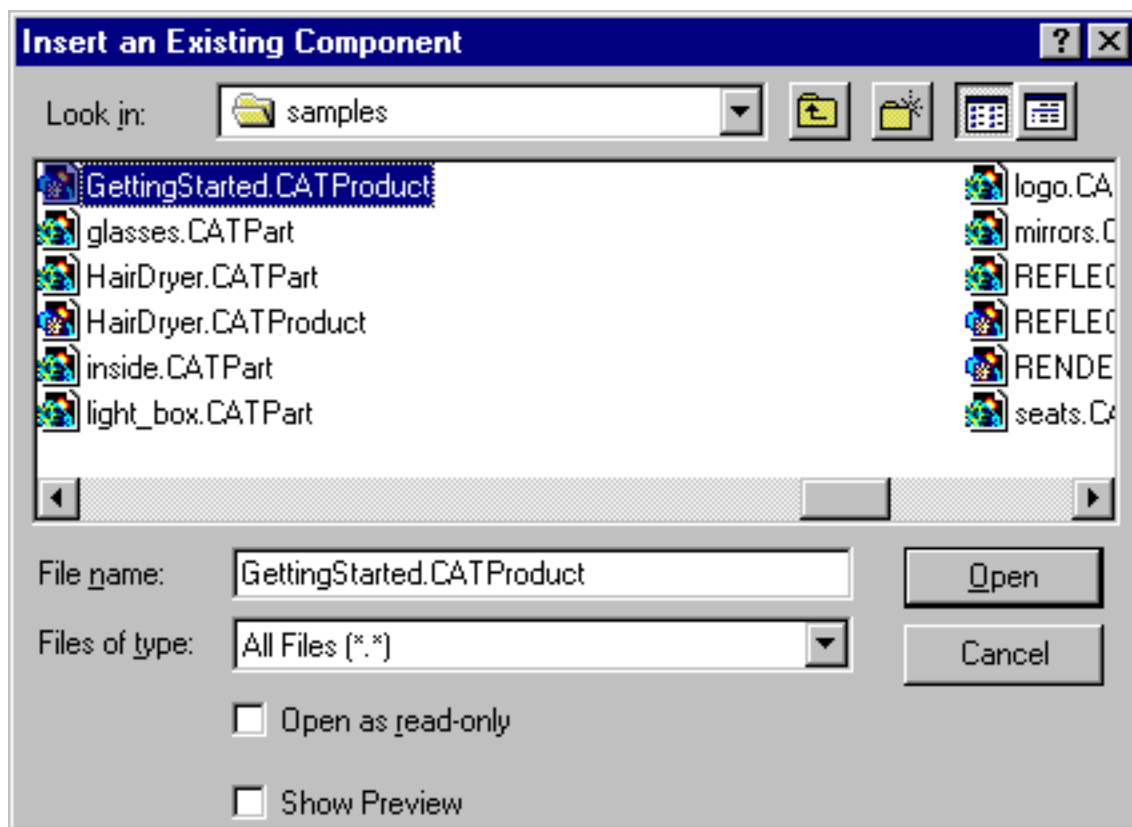
This task will show you how to load products in your Rendering workbench.



Make sure that the Shading and Materials options are checked by selecting the View->Render Style->Customize View command.



1. From the Insert menu, select the Existing Component... command. The Insert an Existing Component dialog box is displayed.



You can also right-click the product in the specification tree then select the *Components -> Existing Component...* contextual menu.

2. Select "Products" in the "Files of type" field as shown in the above image.
3. Select the GettingStarted.CATProduct.
4. Click Open.



The product is loaded in the Rendering workbench.



Creating a Quick Render



This task will show you how to very simply create a nice image of your product.



If you did not follow the steps 1 to 4 in the previous task, open the [GettingStarted.CATProduct](#).

Make sure that the Shading and Materials options are checked by selecting the View->Render Style->Customize View command.

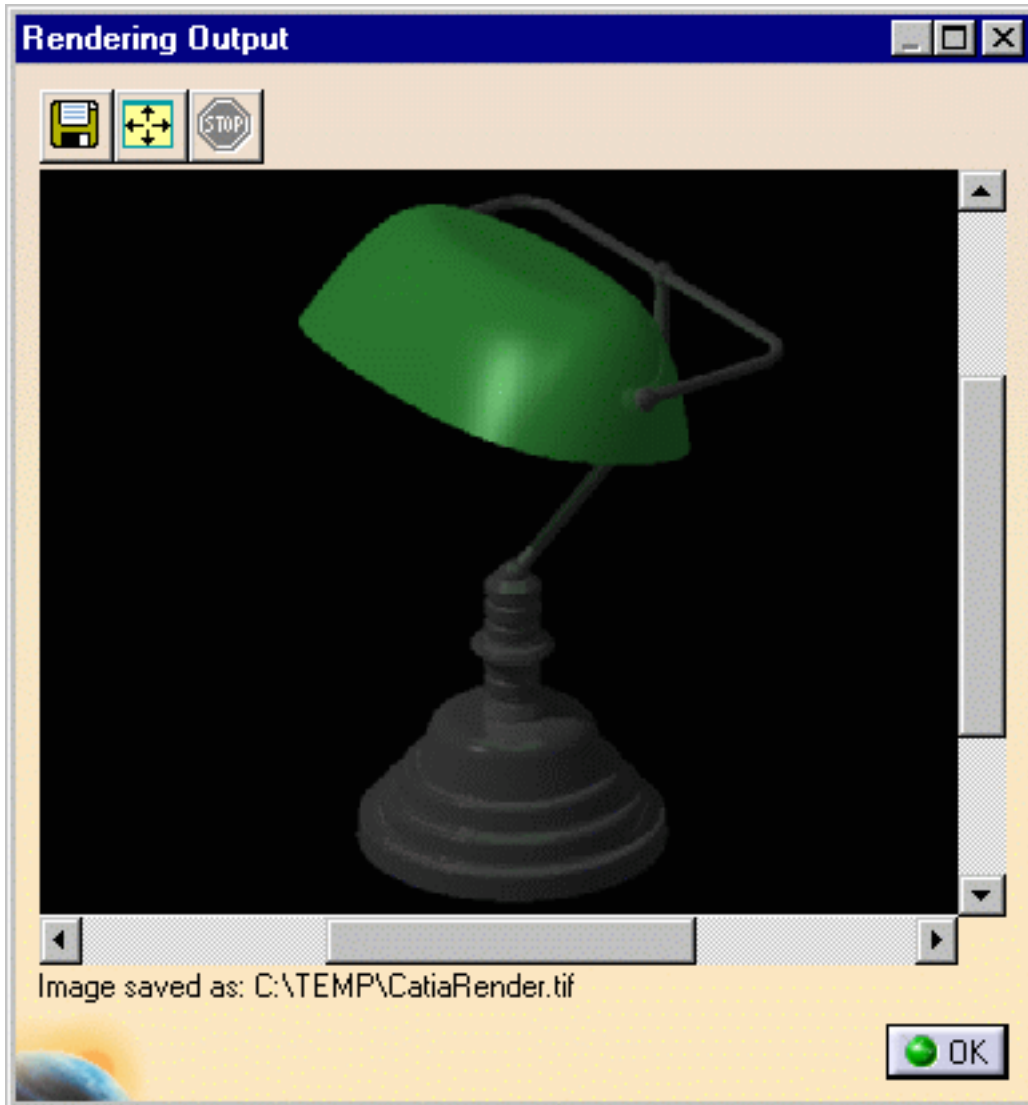
The product looks like this:





1. Click the Quick Render icon .

The Rendering Output window opens to display the rendered image. The image resolution is the one of the window containing your product.



A message indicates the name and the location of the image.

2. Click OK to close the window.



Basic Tasks

The Basic Tasks section shows how to use Photo Studio and is intended for the end-user.

[Camera Management](#)

[Light Management](#)

[Picture Management](#)

[Stickers](#)

[Animations](#)

[Environment Management](#)

[Shooting](#)

[Materials](#)

Camera Management

[Creating a Camera from a Viewpoint](#)

Creating a Camera from a Viewpoint



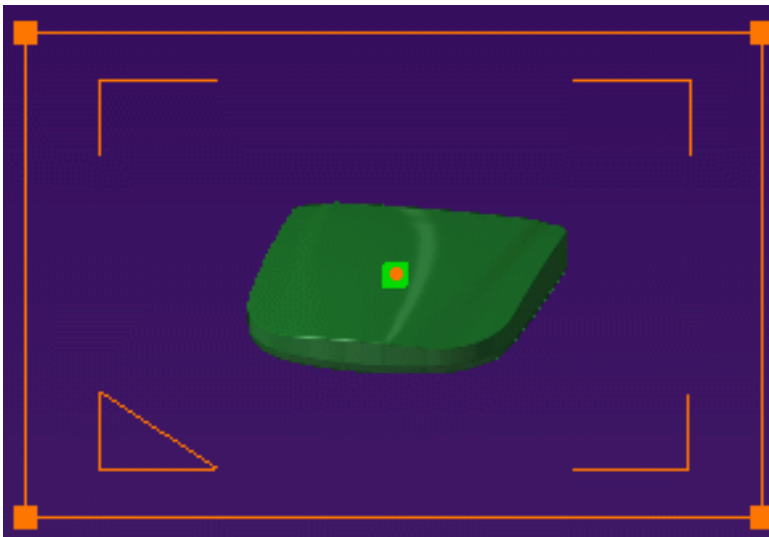
The camera enables you to specify a viewpoint from which a photorealistic image will be computed. This task will show you how to create a camera and manage its specifications.



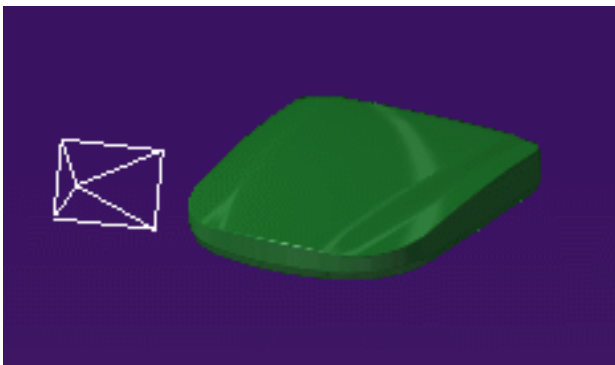
Open the [DISCMAN.CATProduct](#) document.



1. Click the Create Camera icon . The camera is created at the current viewpoint.



2. Click the Camera item in the Specification Tree and rotate the model to see the camera symbol:



This standard visualization is not affected by any change of scale ("zoom").

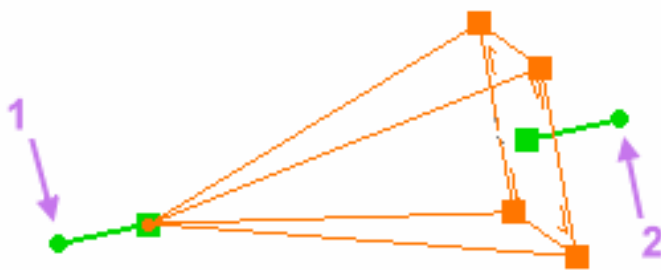


You can create several cameras at different locations to have different viewpoints.

The camera which is taken into account to render a given image is said to be **active**. Any other camera is **inactive**.

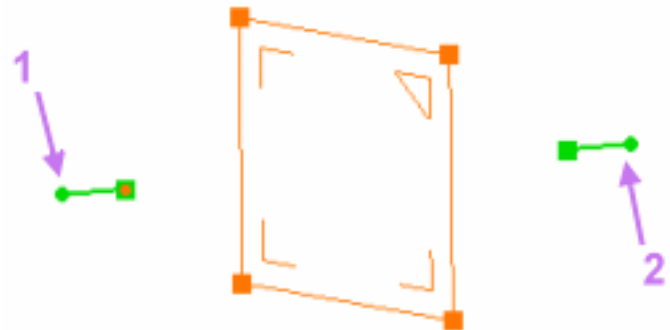
3. Use the two spheres and the two squares displayed in green on the 3D representation to interactively manipulate and position the camera.

This visualization is affected by changes of view scale (zoom) and is activated when selecting a camera in the scene or in the specification tree. Otherwise, all elements are set to the standard visualization.



Conical camera

*Pyramid height = focal length
and
Pyramid base = film dimensions*



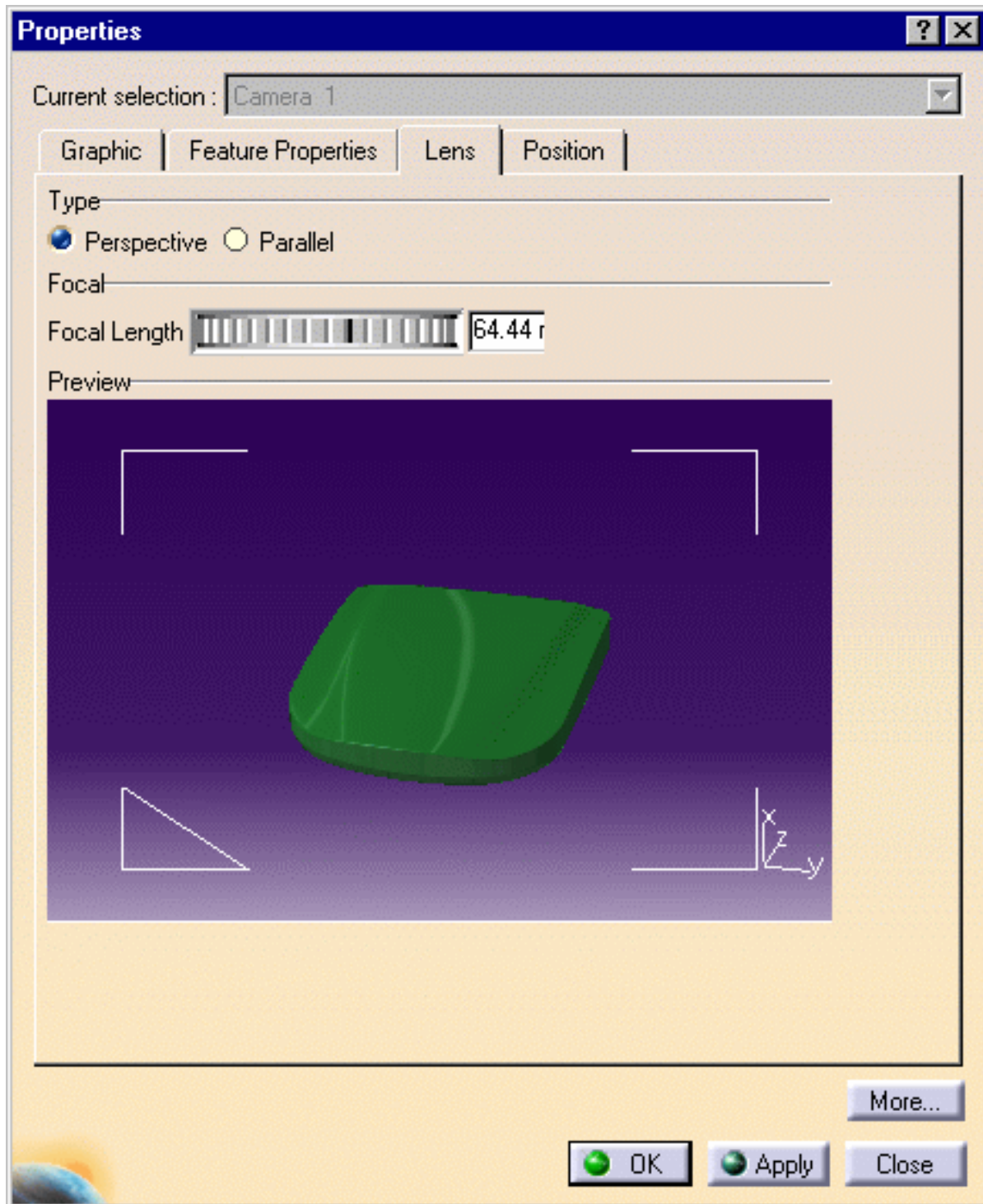
Cylindrical camera

Plane = film dimensions

- the source point (1) rotates the camera around its target point
- the target point (2) rotates the camera around its source point
- the source green square translates and rotates the camera around its target point
- the target green square translates and rotates the camera around its source point

Cameras are needed to render and view a scene. "An image is worth a thousand words": the better the camera is positioned, the more accurate the saying is.

4. Select the camera in the Specification Tree then right-click and select the Edit->Properties commands. The Properties panel is displayed. You can also specifies the camera view directly inside the preview window by zooming, rotating or panning the view.



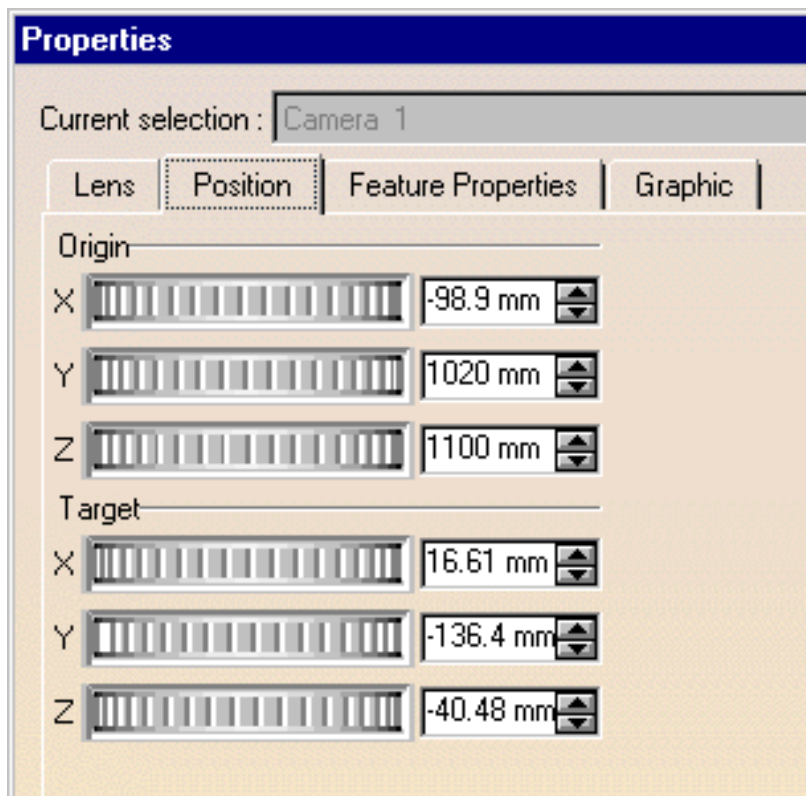
5. In the Lens tab, select the lens Type: Perspective or Parallel, i.e. to obtain a conical or a cylindrical projection. The Preview area shows the result of your selection accordingly.

A *conical camera* is equivalent to a standard camera, with a non-zero focal length.

Parallel lines in the camera line of view appear to intersect at the same point. Perspective cameras are used in most cases since they are close to the human vision.

In the case of a *cylindrical camera*, parallel lines never appear as intersecting. These cameras are mainly used to define architectural viewpoints.

6. Specify the Focal Length, which determines the field of view, in millimeters. In a cylindrical projection, the focal length is replaced by a zoom factor which determines the scale of view (i.e. "Scale" appears instead of "Focal Length" in the dialog box).
7. Click the Position tab to define the target and origin position.



You can define the Origin and the Target position in millimeters along the X, Y and Z axes.

The Feature Properties tab provides general information on the currently selected camera, e.g. its name, its creation date, etc.

8. Click OK when finished.
9. In case you want to position yourself behind the camera and observe the captured image, select the Window -> Camera Window command: a new window displaying the camera viewpoint is opened. When you manipulate the handler in this window, the camera is simultaneously positioned in the main window.
10. You can choose three arrangements for the opened windows, i.e. horizontal, vertical and cascading by selecting the following commands from the menu bar:
 - Window -> Tile Horizontally
 - Window -> Tile Vertically
 - Window -> Cascade



You can double-click the Camera item in the specification tree to position the camera from the current point of view.



Light Management

[Defining a Light Source](#)

Defining a Light Source



This task shows you how to create a light and define its parameters. Lights let you illuminate the objects to be rendered as you wish for example, by highlighting a specific element in your scene, thus focusing the viewer's attention.



Open the [Lamp.CATProduct](#) document.

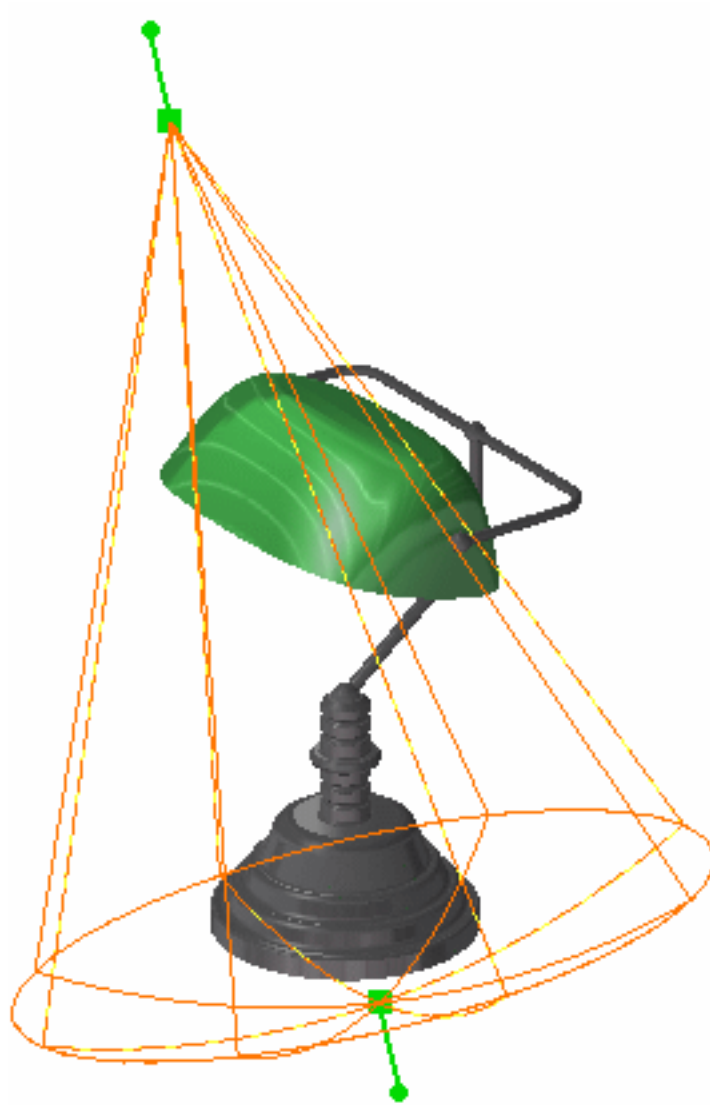
You can choose between three different types of light sources: spot, point and directional.



1. Click the Create Spot Light icon  to create a source with a conical shape.

This light source is located at a given place, emitting the light isotropically inside a cone of influence determined by the privileged direction of illumination (forming the axis of revolution) and the angle that the edge of the cone forms with this axis.

Spot light sources are mainly used to simulate spot light (the most frequently used lights) and are useful for tuning the lighting of each object individually.



You can also

click the Create Point Light
icon:



or

click the Create Directional Light icon





this creates a source situated at a given point, emitting light isotropically, i.e. in all directions. This light source type is mainly used to simulate light bulb, for instance.



this creates a light source coming from a given direction, generating constant intensity parallel lighting. This light source type is mainly used to simulate a global lighting as the sun does.

Note: you can click anywhere in the geometry area to see the light symbol:



Spot light
Punctual light



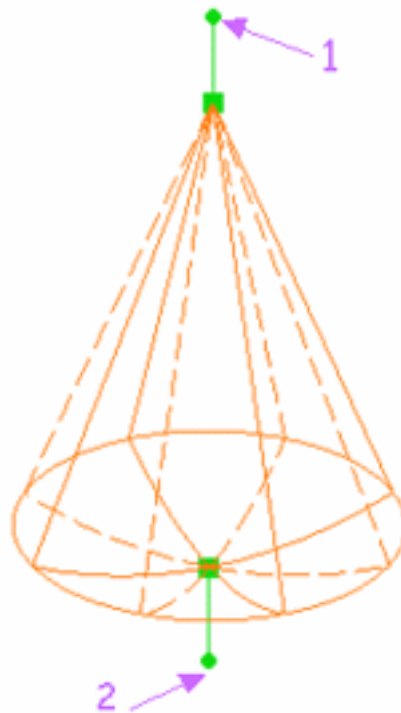
Directional light

Direction vector represents the privileged direction of illumination of the source for spot and directional light sources. It is visualized by an arrow whose origin is the anchoring point of the source.

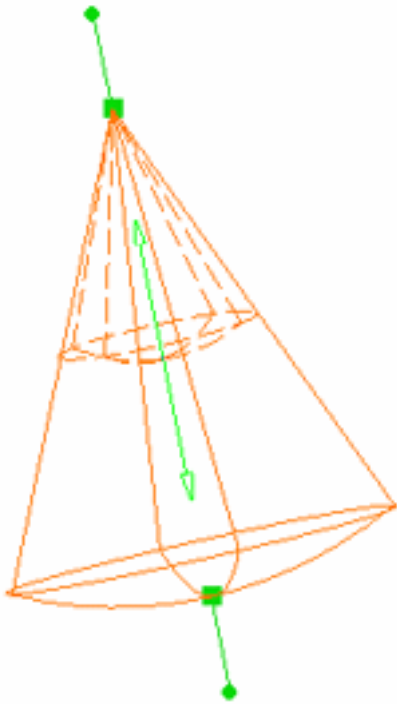
Anchoring point is the position of the light source and is represented by a small star. When the source is characterized by a direction, the anchoring point coincides with the origin of the arrow.

In the case of a spot or punctual light source, the anchoring point physically localizes the source. In the case of a directional light source, it can be used (with the target point) to define the illumination direction.

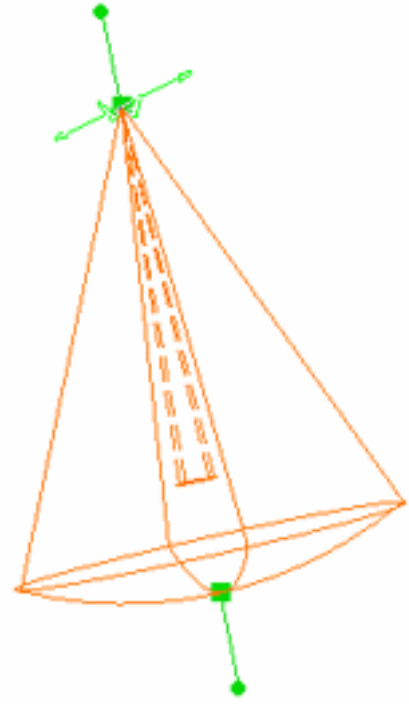
2. As for cameras, you can interactively manipulate a light as you do with cameras.



- the **source point** (1) rotates the spot around its target point
- the **target point** (2) rotates the spot around its source point
- the **upper green square** translates and rotates the spot around its target point
- the **lower green square** translates and rotates the spot around its source point
- the **dotted lines** define the lighting attenuation for the spot and punctual lights. By default, there is no attenuation: the illumination starts at the source point and ends at the target point. The dotted lines indicate where lighting attenuation starts, ending with a null intensity at the plain lines. The two pictures below explain how to modify this attenuation:

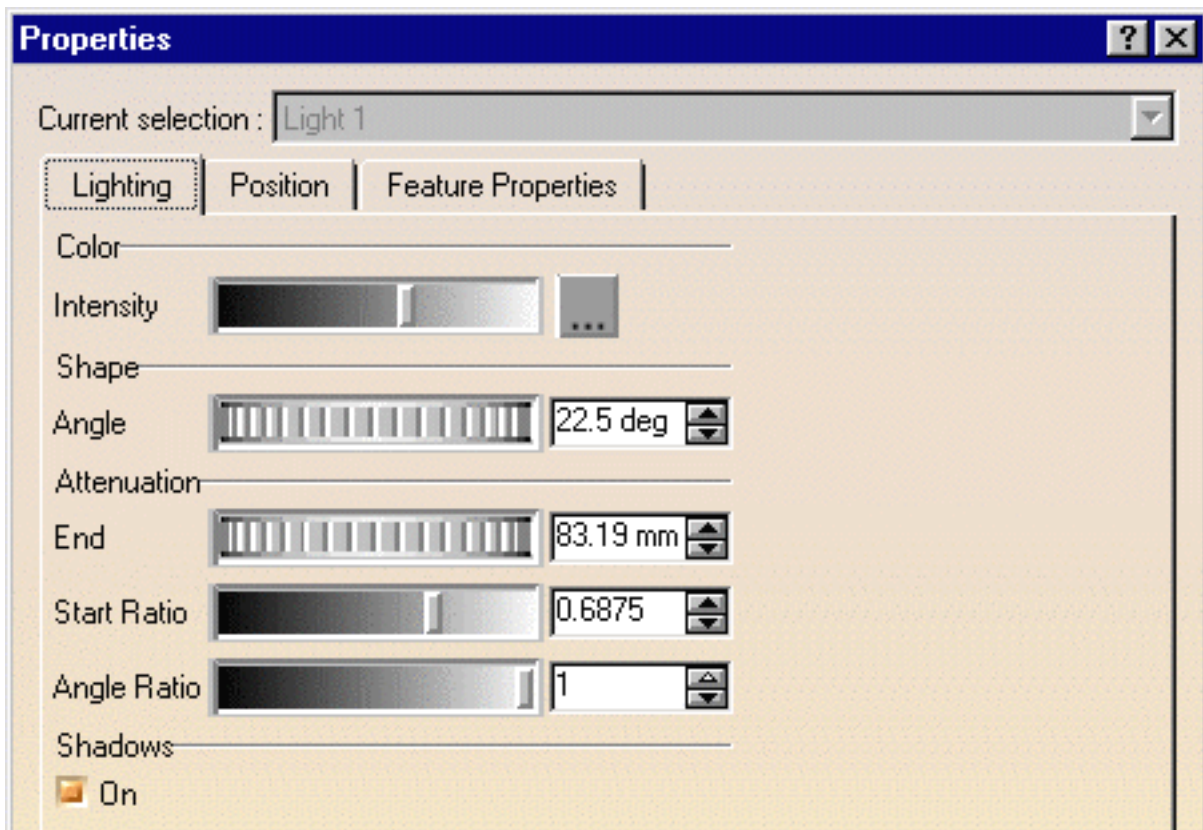


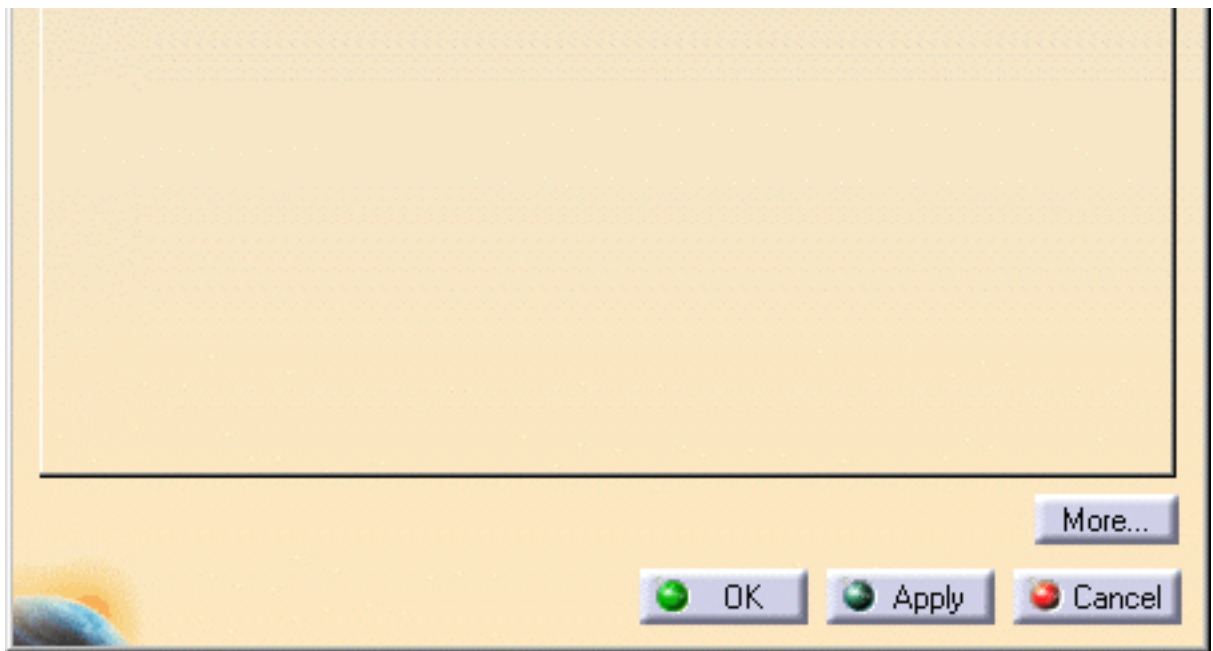
Position your pointer over the dotted line, then click and drag the vertical segment to modify the attenuation starting point.




Position your pointer over the dotted line then click and drag the curved segment to modify the attenuation angle ratio.

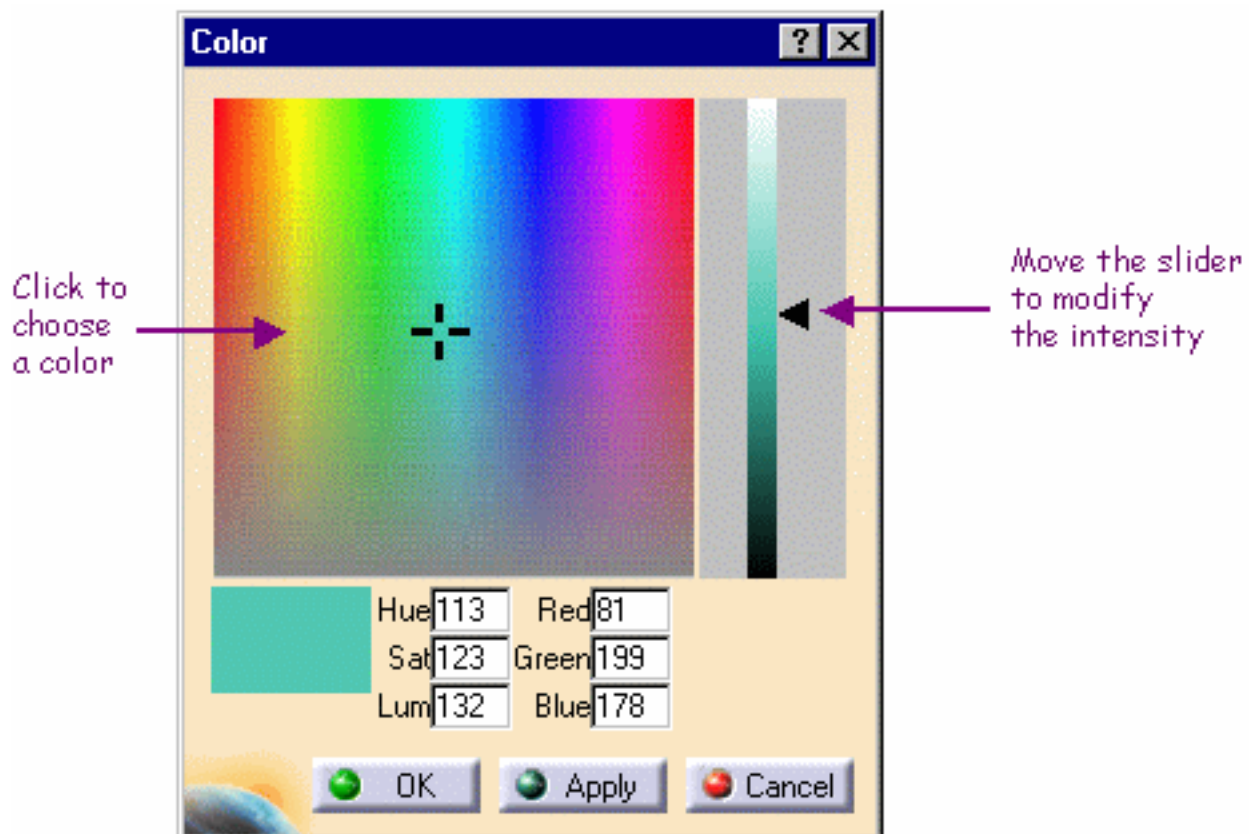
3. Select the light then the Edit->Properties command to access the Lighting tab in order to edit the lighting parameters:





Selecting the light in the specification tree then the Properties or the Light object-> Definition... command from the contextual menu also opens the Properties panel.

4. Use the slider to modify the color intensity then click the  button if you want to choose another color (the default color is white):



You can enter a value comprised between 0 and 255 for any of these fields.

As you can see it in the above picture, two color system models are used:

- **HLS** (Hue, Saturation, Luminance) **model** is an intuitive, easy to use tool for describing or modifying a color.
Hue is the "color" of the color. It is the name by which the color is designated and is used to define the desired color.
Saturation is the intensity of the color. The higher the number, the more intense the color.
It is used to tune the purity of the color.
Luminance is the brightness of the color, i.e. the degree to which the pure color is diluted by white or black. The larger the number, the lighter the color. It is used to adjust intensity.
- **RGB** (Red, Green, Blue) **model** is a more physical model. It is based on the tri-stimulus theory of the human perception system. This model is usually used to define, with a high precision, the three primary components of the color.

5. Click OK to confirm and close the Color dialog box.



You can check the *Shadows* option if you want that light to produce shadows in the rendered image.

6. The Shape area enables you to define the half-angle of the cone, that is the angle between the axis of revolution and the cone edge (for spot light sources only). The angle is a value between 0 and 180 degrees. This means that a value of 180 degrees would generate a light source equivalent to a punctual light source.

7. The Attenuation area lets you define

- **Attenuation End:** defines in millimeters the maximum distance for light attenuation (i.e. the distance to the center from which the light source does not illuminate)
- **Attenuation Start Ratio:** defines as a ratio the minimum distance for light attenuation. For example:
0 corresponds to an attenuation starting from the center
0.5 corresponds to an attenuation starting from the middle
1 corresponds to an attenuation starting from the end, i.e. a null attenuation
- **Attenuation Angle Ratio:** defines as a fraction of the light angle the angle to the light axis from which the light starts to attenuate. For example:
0 corresponds to an attenuation starting from the axis
0.5 corresponds to an attenuation starting from the half-angle
1 corresponds to an attenuation starting from the end, i.e. a null attenuation.

8. Check the Shadows option if you want to enable shadow casting. When it is Off, shadows are not calculated for this light source.

Note: this option is used for rendering only.

9. Click the Position tab to define the light source anchoring point and the point to which the source is directed, respectively in the Origin and Target areas.
You can define this position in millimeters along the X, Y and Z axes.

Current selection : Light 1

Lighting | **Position** | Feature Properties

Origin

X

Y

Z

Target


X

Y

Z

The Feature Properties tab provides general information on the currently selected light source, e.g. its name, its creation date, etc.

10. Click OK to apply the defined parameters to your light source.



Light sources which are taken into account for rendering are said to be **active**. Otherwise, they are **inactive**.
To activate or deactivate a light source, simply select it in the specification tree then check or uncheck the *Light On* option from the contextual menu.




Picture Management

[Managing Picture Sequences](#)



[Saving Pictures](#)


Managing Picture Sequences

 This task explains how to manage pictures when rendering a product.

 Open the [PHONE.CATProduct](#) document.


Select the Apply Customized View icon  from the View->Render Style menu in order to check that the Shading and Materials options are on.


 1. Click the Render Shooting icon  to open the Render dialog box.

2. Click the Render Single Frame icon . The Rendering Output window opens and the processing starts:

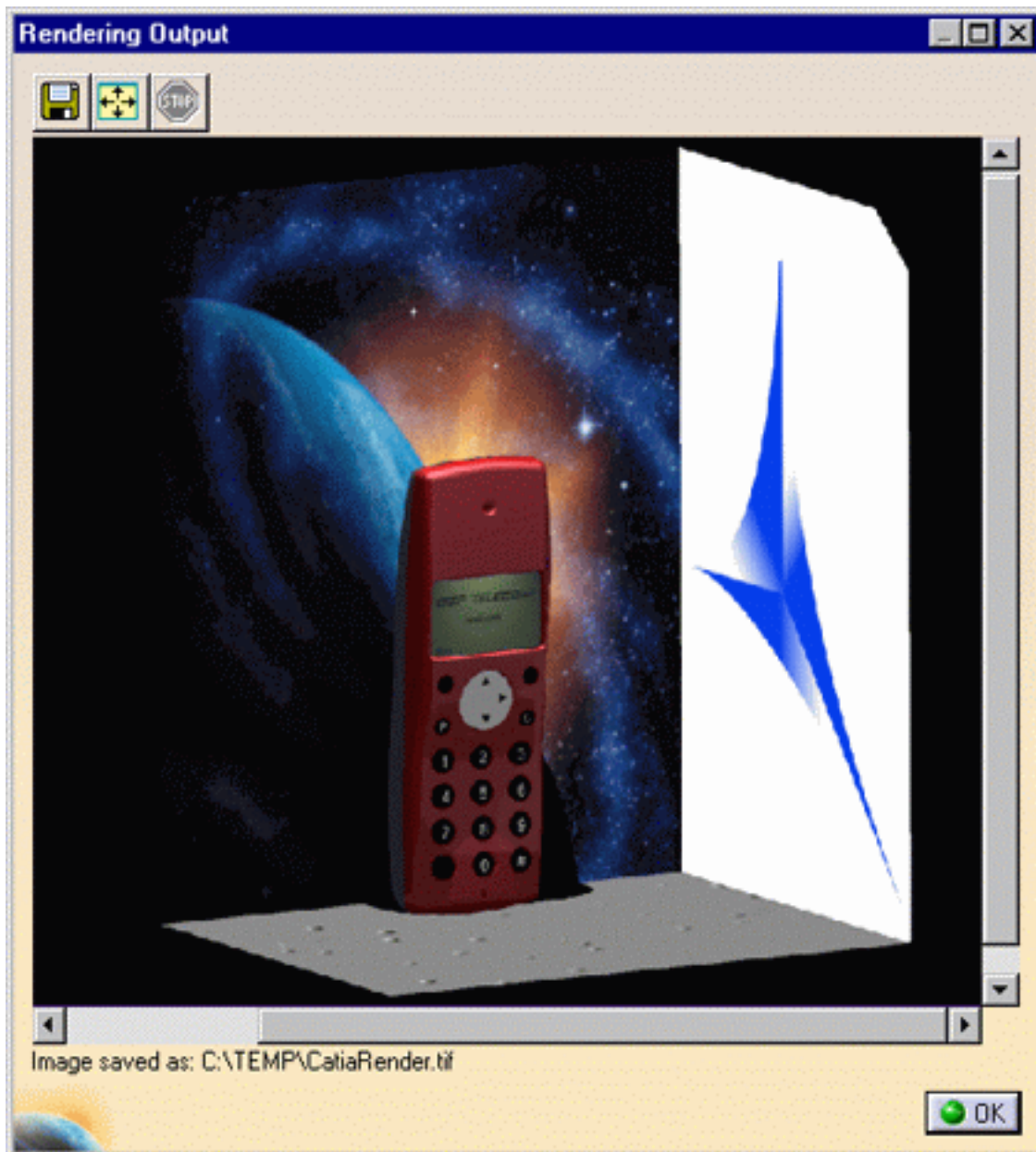





You can also click the Quick Render icon  to render an image.

3. Click the Fit All In icon  to zoom the current view out so that the whole document fits into the available space in the viewer area.

You can also zoom in or out the current view with your mouse as shown below:





If the rendering computation takes too much time,
you can interrupt it by clicking the Stop icon




Note: you can not interrupt the computation as long as the pre-processing phase is not finished.

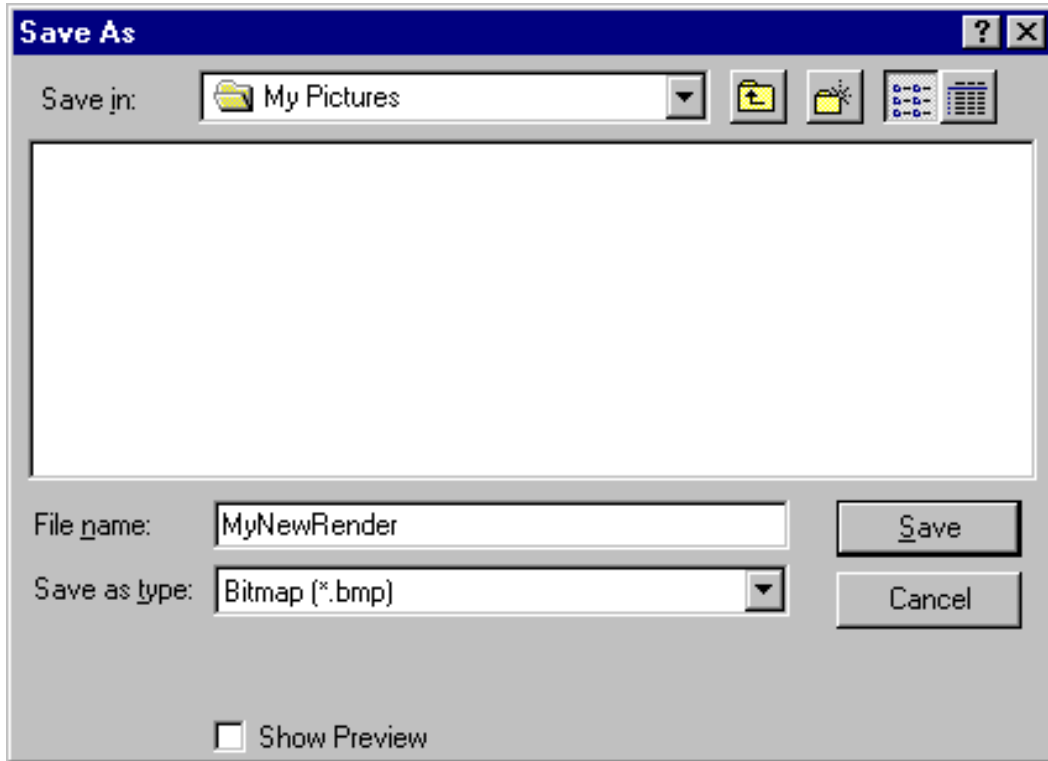
By default, the image is saved as CatiaRender.tif in a temporary. If you wish to modify the name and the default location, please refer to the next task that learns you how to [save pictures](#).



Saving Pictures

 This task explains how to save your image once rendered.

 1. Click the Save icon  to open the Save As dialog box.



2. Navigate to the desired location then enter the image name as well as the format in the appropriate fields.
3. Click Save.


The image is saved.

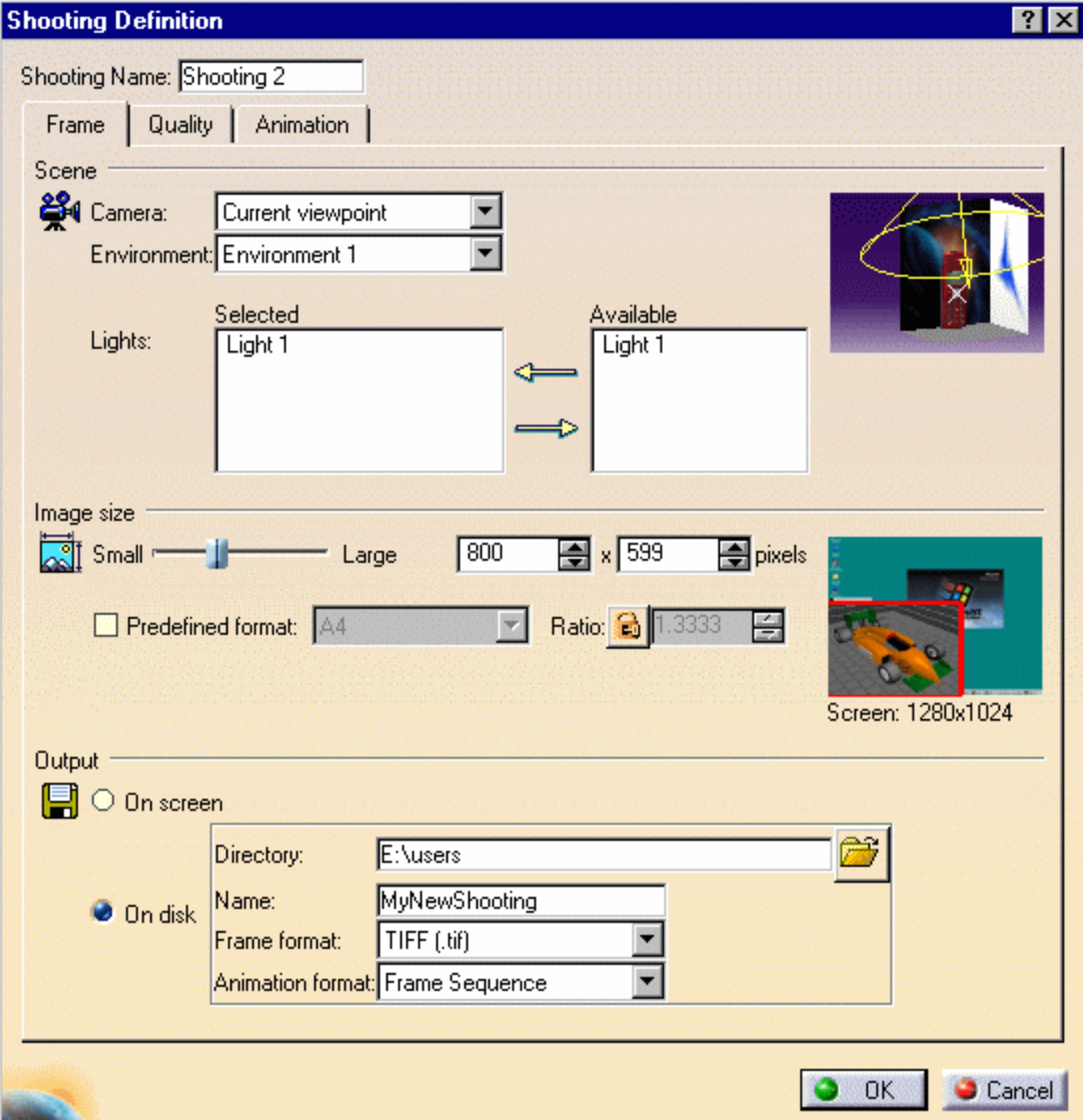
For more information on saving documents for the first time or under another name, refer to the [Infrastructure Version 5](#) documentation.



Modify the default name and location of images rendered with a shooting



1. Click the Create Shooting icon  to open the Shooting definition dialog box.
2. Under the Frame tab, select the "On disk" option and specify the new path and the new name of the image.



Shooting Definition

Shooting Name: Shooting 2

Frame | Quality | Animation

Scene

Camera: Current viewpoint

Environment: Environment 1

Lights: Selected: Light 1, Available: Light 1

Image size: Small | Large: 800 x 599 pixels

Predefined format: A4, Ratio: 1.3333

Output: On screen, On disk

Directory: E:\users

Name: MyNewShooting

Frame format: TIFF (.tif)

Animation format: Frame Sequence


OK Cancel

The supported formats are: .rgb, .bmp, .jpg and .tif. If you do not specify any extension for the file, the default format will be .tif.

Note: the image names of a turntable animation sequence are based on the path and name defined above. Image names are then prefixed with frame numbers: for instance, for an animation containing 3 frames, choosing *MyTurntable.tif* for the image name will produce *MyTurntable_0001.tif*, *MyTurntable_0002.tif* and *MyTurntable_0003.tif*.

3. Click OK.


The default location is modified.

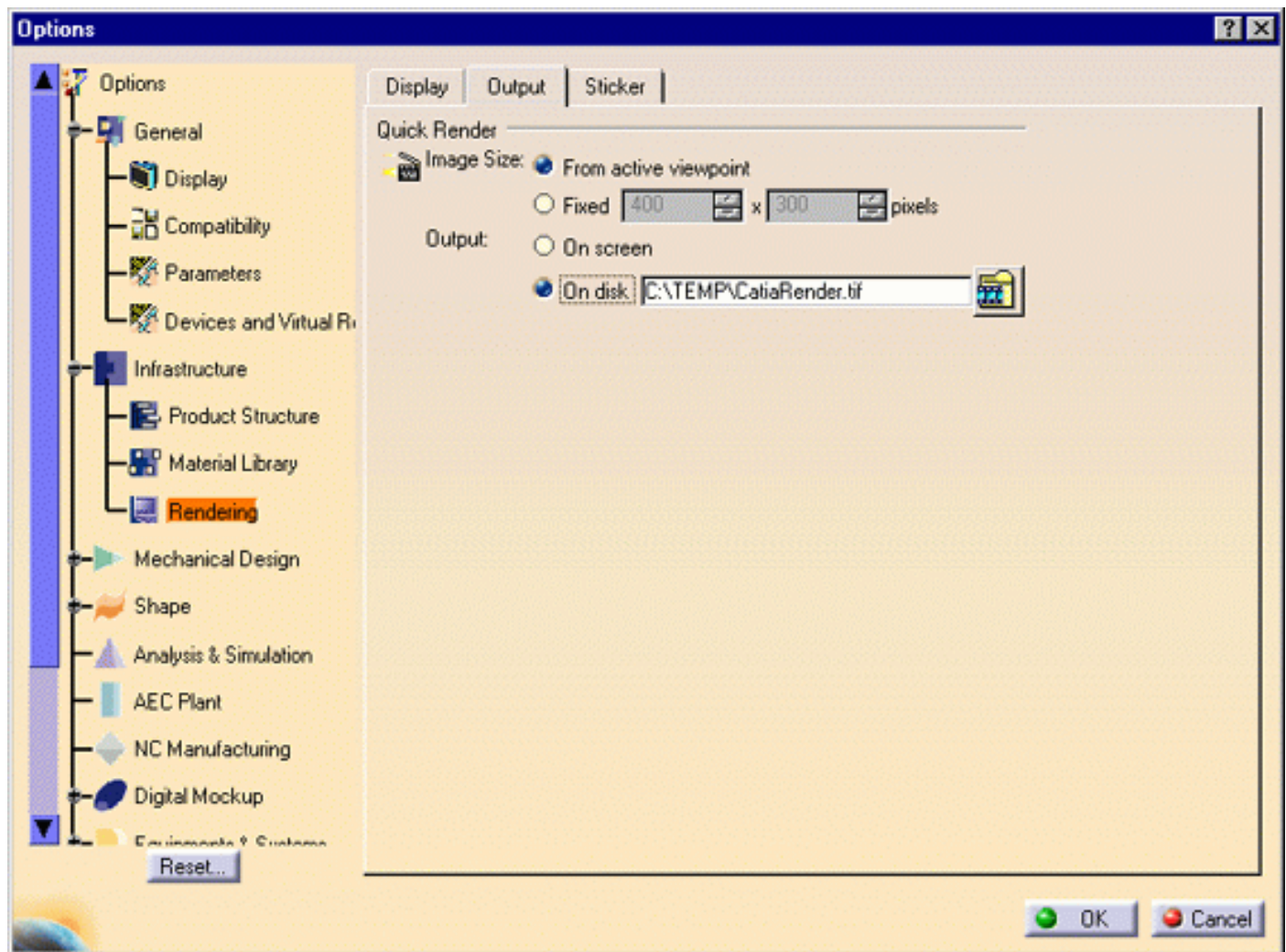


Images rendered in *.tif* format can easily be used for compositing thanks to alpha channel support. The image pixels that do not cover any geometrical object have a transparent alpha channel, thus allowing to nicely embed the rendered image in any other image used as background.




Modify the default path when using a quick render picture

- 
1. Select the Tools->Options... command.
 2. Choose the Infrastructure category.
 3. Click the Rendering subcategory the select the Output tab:



4. In the Output area, select the "On disk" option then specify the new path and the new name of the image.

You can also click the  icon to display the Open dialog box and navigate to the desired location.

5. Click OK.

The default location is modified.



Stickers

[Applying Stickers](#)

[Modifying Stickers](#)

Applying Stickers



This task explains how to apply a sticker onto a face.



Open the [DISCMAN.CATProduct](#).

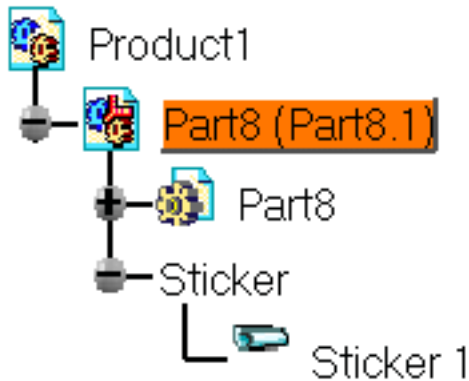
Select the Tools->Options command then check the Highlight faces and edges option in the Visualization tab. This option enables to highlight the stucked face.

Select also the Apply Customized View icon  from the View->Render Style menu in order to check that the Shading and Materials options are on.

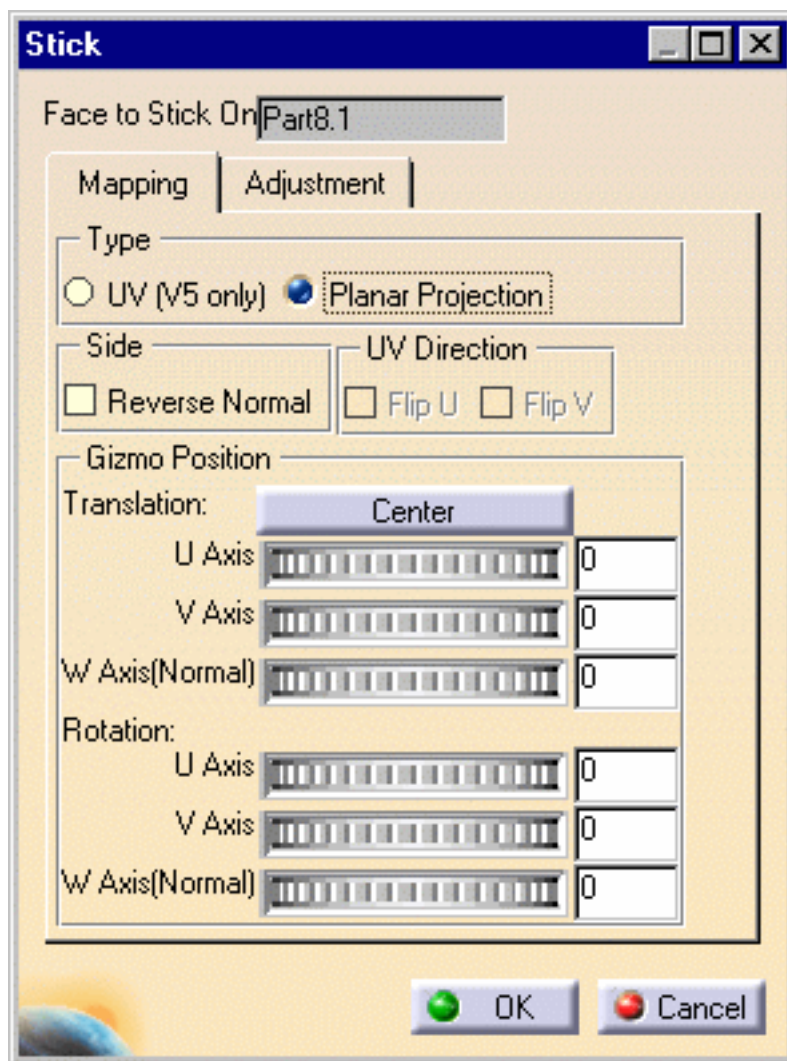


1. Click the Apply Sticker icon .

An empty sticker is displayed in the specification tree:



2. Double-click the root product to apply the sticker (you apply stickers on contextually edited products).
3. Select the empty sticker in the specification tree then choose the Stick command from the contextual menu to display the Stick dialog box:

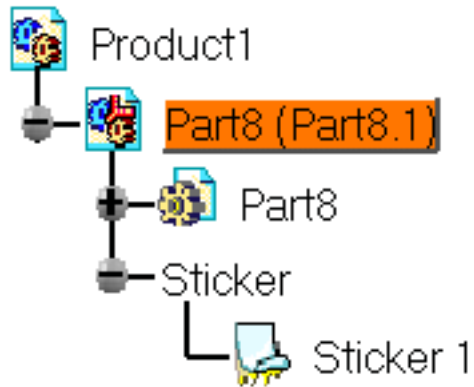


4. Select the 3D geometry location where you want to apply the sticker:

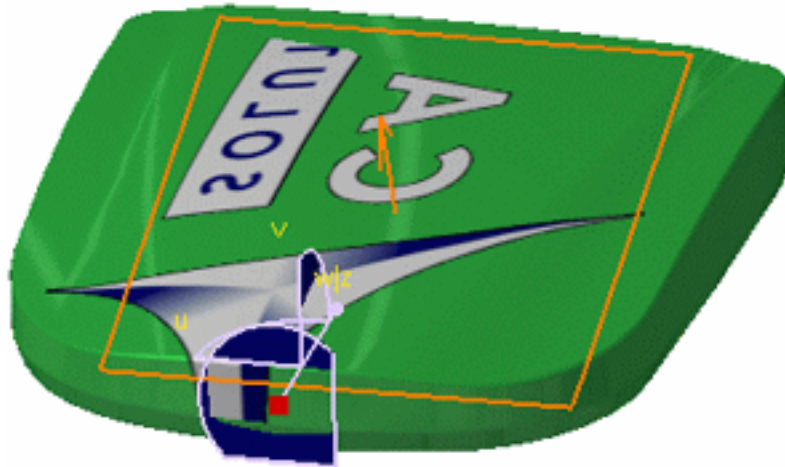
- for a V5 model, you can select either a single face in the 3D window or an entire product in the specification tree
- for a V4 model, you can select a face or the entire product as well.

Note: when the Visualization Mode is active, you can only select an entire product. Activate the Edit Mode to be able to select a single face.

The sticker icon changes in the specification tree...

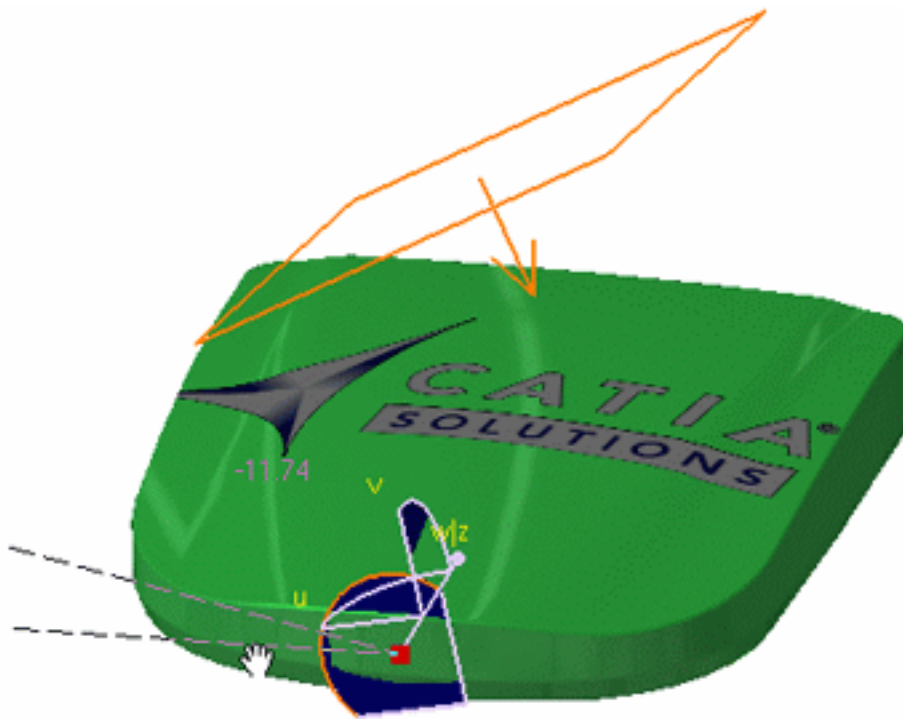



...and a default sticker is applied onto the element you selected:



The compass is automatically attached to the gizmo and lets you modify the sticker orientation if you are working in Planar Projection mode only.

Once the dialog box is closed, you can still use the compass by selecting the sticker in the specification tree then dragging and dropping the compass onto the sticker:



 The application of a sticker onto the entire product will result in a longer response time when manipulating geometry.

5. In the Mapping tab, select the projection Type: UV or Planar.


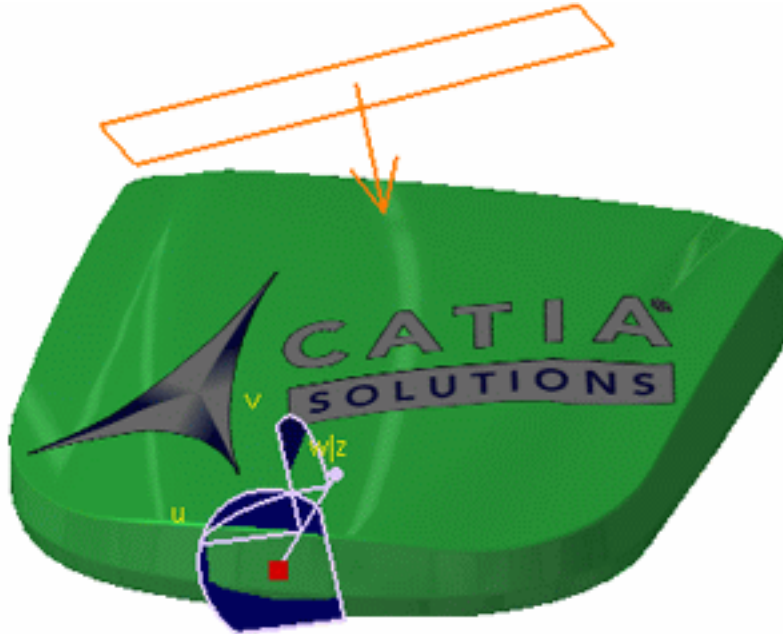
- along the UV axis: the sticker image will be projected on the selected geometry according to the isoparametrics, i.e. the curves
- planar: the image will be projected according to a plane.

Note: sticking on an entire product forbids the use of UV projection thus the Planar Projection will be the only available option.

In the case of .cgr models, you will have to select the entire object and thus only the Planar Projection option will be available.

If you chose the Planar Projection, the next step is to define the mapping preview in the Gizmo Position area.

The arrow of the mapping preview indicates the projection direction and limit: it defines an infinite half space where the image will be shown. The mapping preview behaves a bit like a headlight illuminating half of the space with the image:



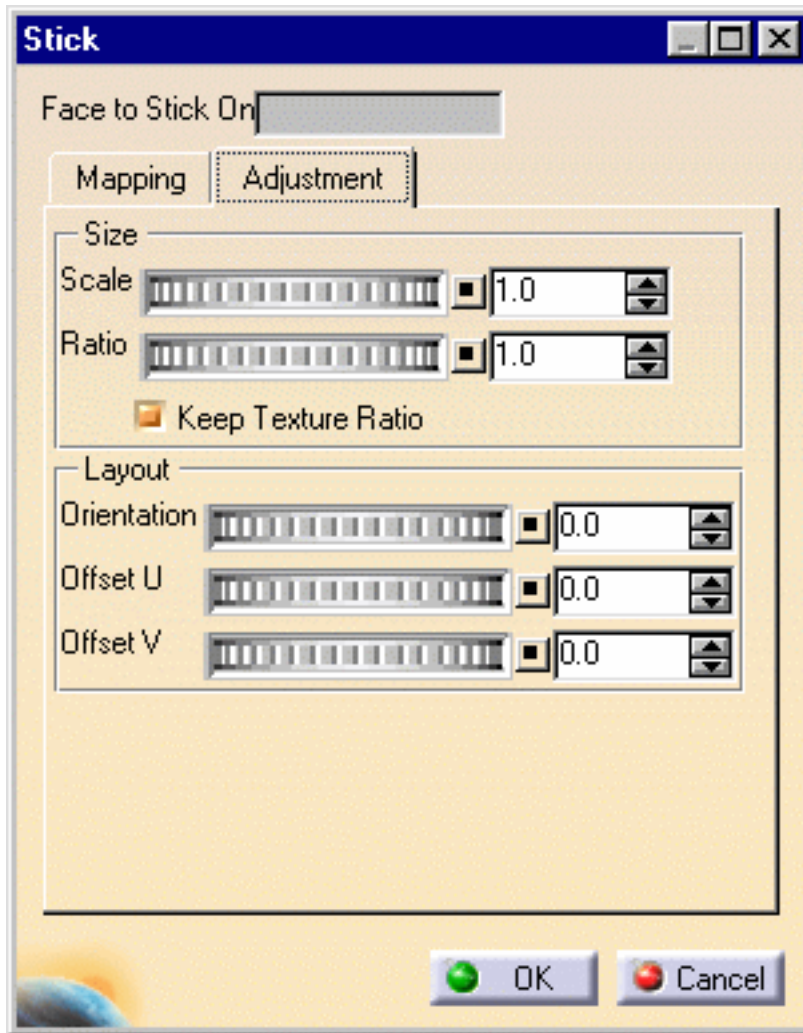
Click the Center button to position the gizmo at the center of the selected geometry bounding box.

6. In the Translation area, set the gizmo position along the U, V and W axes.
7. In the Rotation area, set the gizmo rotation on the U, V and W axes. The W axis represents the normal to the surface.

You can use the Reverse Normal option to invert the normal.

The Flip U and Flip V options lets you invert respectively the U and V direction.

8. Click the Adjustment tab:



9. In the Size area, define the Scale and the Ratio of the sticker.

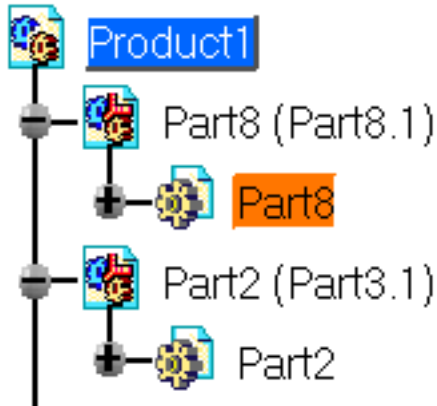
The Keep Texture Ratio checkbox enables you to keep the image proportional to its original resolution.

10. In the Layout area, define the sticker Orientation.

You can also define an Offset along the U and V axes.

11. Click OK to validate your parameters.

In case of a product containing several part instances, once you applied a sticker onto one of these part instances you cannot apply it onto same level or upper level part instances.



In the above example, once a sticker has been applied onto Part8, you cannot apply it onto either Part8.1 nor Part 3.1 or Part2.

You can create as many stickers as you wish on the same geometry and make them overlap each other, the last sticker created being placed on the top.

You are now ready to modify the [sticker properties](#).



Modifying Stickers



This task explains how to modify the sticker properties such as the lighting or the projected image, for instance.



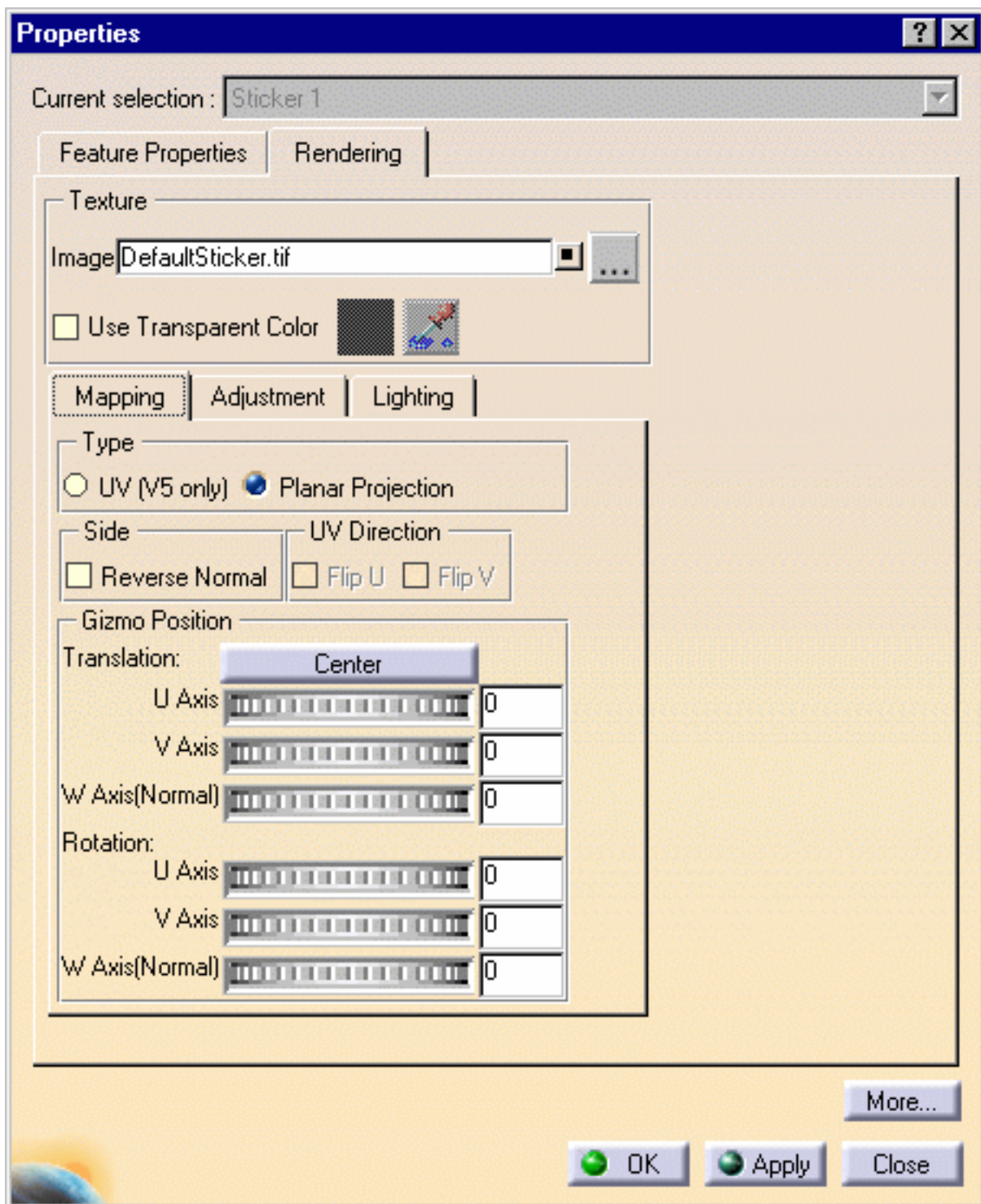
Open the [DISCMAN.CATProduct](#) and apply a sticker as explained in [Applying Stickers](#).



1. Select the sticker in the specification tree then choose Properties from the contextual menu.

The Feature Properties tab provides general information on the currently selected sticker, e.g. its name, its creation date, etc.

The Rendering tab enables you to modify the Mapping, Adjustment and Lighting parameters:



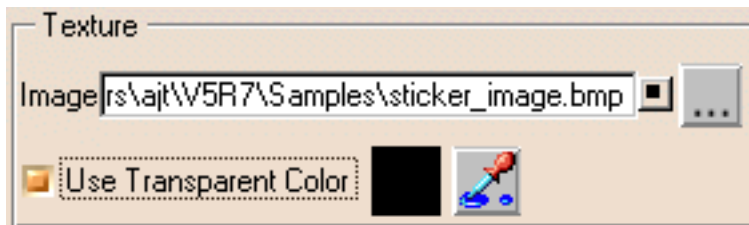
The Mapping and Adjustment parameters displayed in this dialog box are identical to those contained in the Stick dialog box, except that you can not manipulate the viewpoint.


2. If you want to apply an image to the sticker, click the ... button to open the File Selection dialog box.

The supported image formats are .bmp, .rgb, .jpg and .tif (this format supports transparency so that you can see the underlying stickers and geometry in the transparent areas of your image).

3. Navigate to the image you wish to apply then click Open.

The name, the path and the graphical representation of the chosen image are displayed in the Texture area:



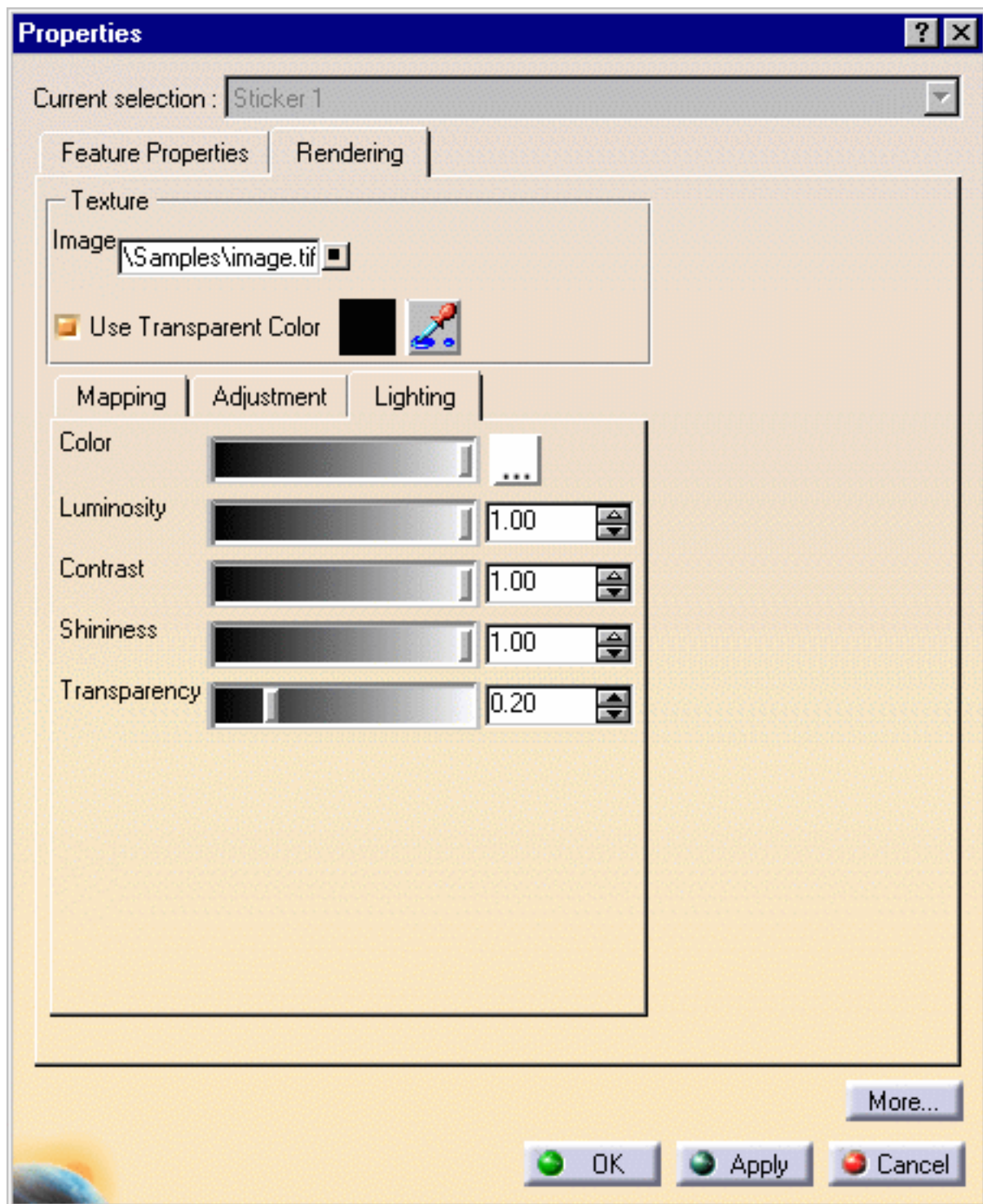
Whatever image format you choose, you can check the "Use Transparent Color" option then click the  icon to open the Pick Transparent Color dialog box:



This dialog box lets you select the color on which the transparency will be applied after clicking OK:

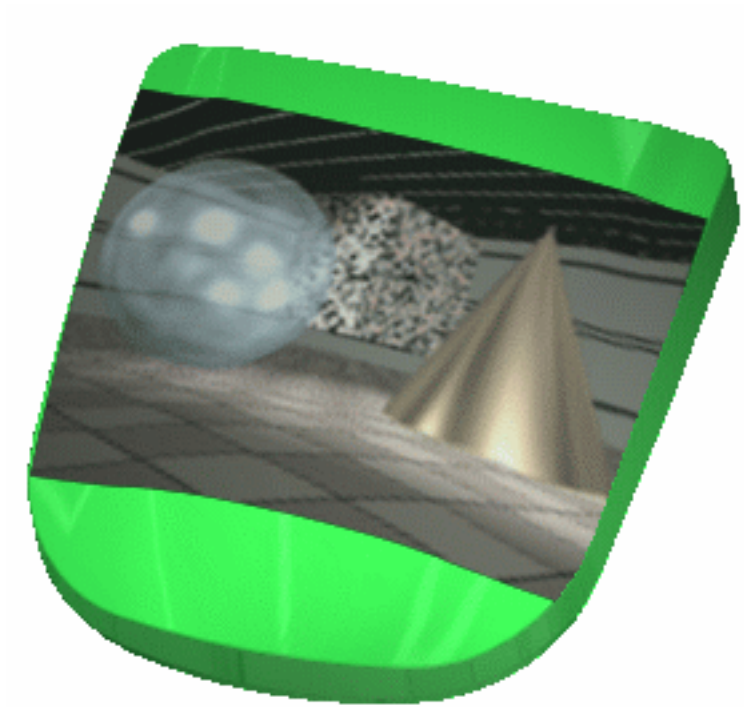
Note: the default transparent color is Black.

- Click the Lighting tab to modify the following parameters: color, luminosity, contrast, shininess and transparency.



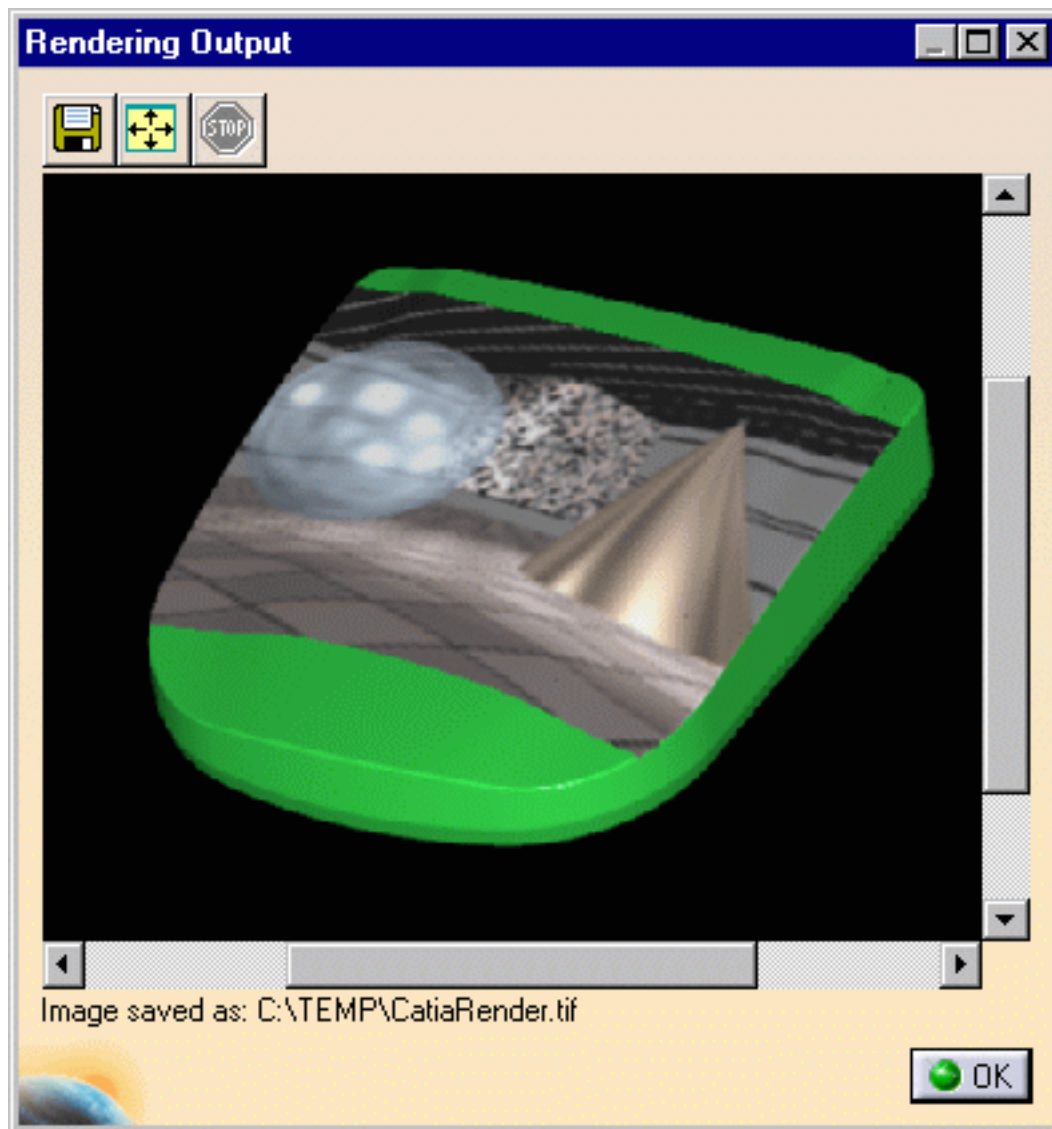
For more information on these parameters, refer to the [Using Materials for Rendering](#) task in this guide.

5. Click Apply to validate your definition:



The new sticker properties are applied onto the object.

6. Click the Quick Render icon  to display a rendered image of the sticker.



7. Click OK to close the Rendering Output window.



Animations

[Creating a Turntable](#)

[Defining Animation Parameters](#)

[Previewing and Rendering a Turntable](#)

Creating a Turntable



This task explains how to create a turntable which is the preliminary step before rendering an animation.

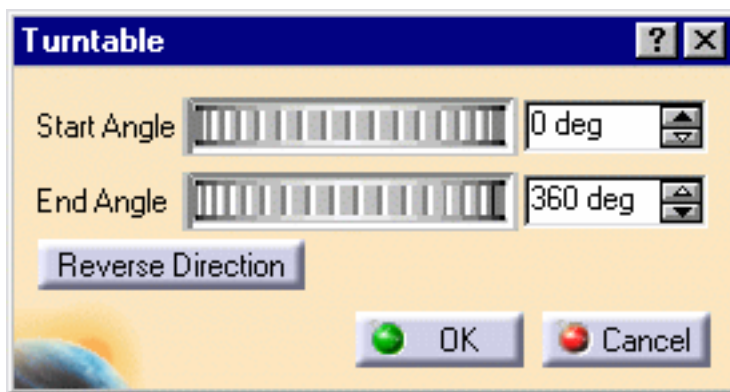
A turntable lets you generate a movie of your model, permitting a better analysis of the design quality. It is a set of successive images. The movie generated consists in a rotation of the active camera around an axis.



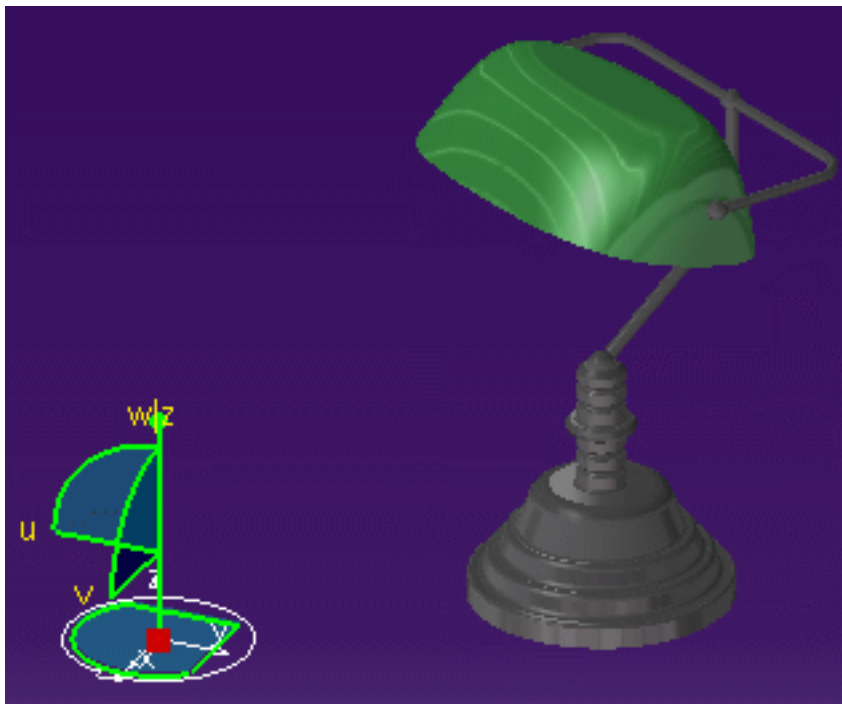
Open the [LAMP.CATProduct](#) document then hide the environment display by clicking the Environment 1 in the specification tree then selecting the Hide/Show contextual menu.



1. Click the Create Turntable icon  to open the Turntable dialog box.

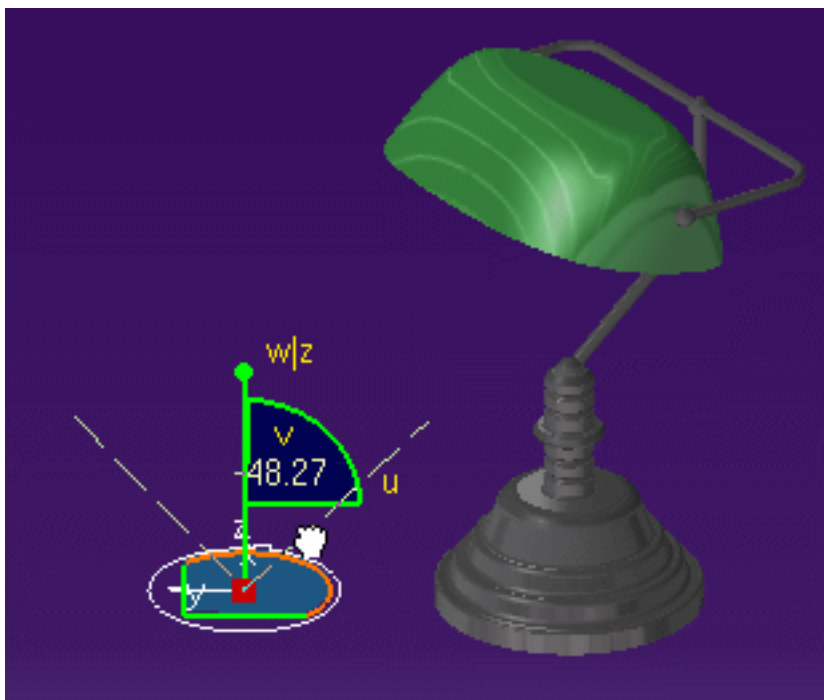


The turntable symbol is displayed on the product:



You can now define the model rotation axis. The entire product geometry will be able to rotate around that axis.

2. Position the turntable along the x, y, and z axes by dragging it to the desired location using the compass:



3. Rotate the turntable along the u, v and w axes:



4. In the Turntable dialog box, indicate the rotation Start and End angles in degrees.

By definition, the turntable is a simple rotation animation. The rotation can be limited to less than 360 degrees (for instance a half-turn, that is 180 degrees).

The end angle is identified by an arrow.



Note: you can change the rotation direction by clicking the Reverse Direction button.

5. Click OK.

The turntable is created and you are now ready to define the [animation parameters](#).



Select the turntable axis in the specification tree then Axis object -> Definition... from the contextual menu to edit the turntable rotation axis.




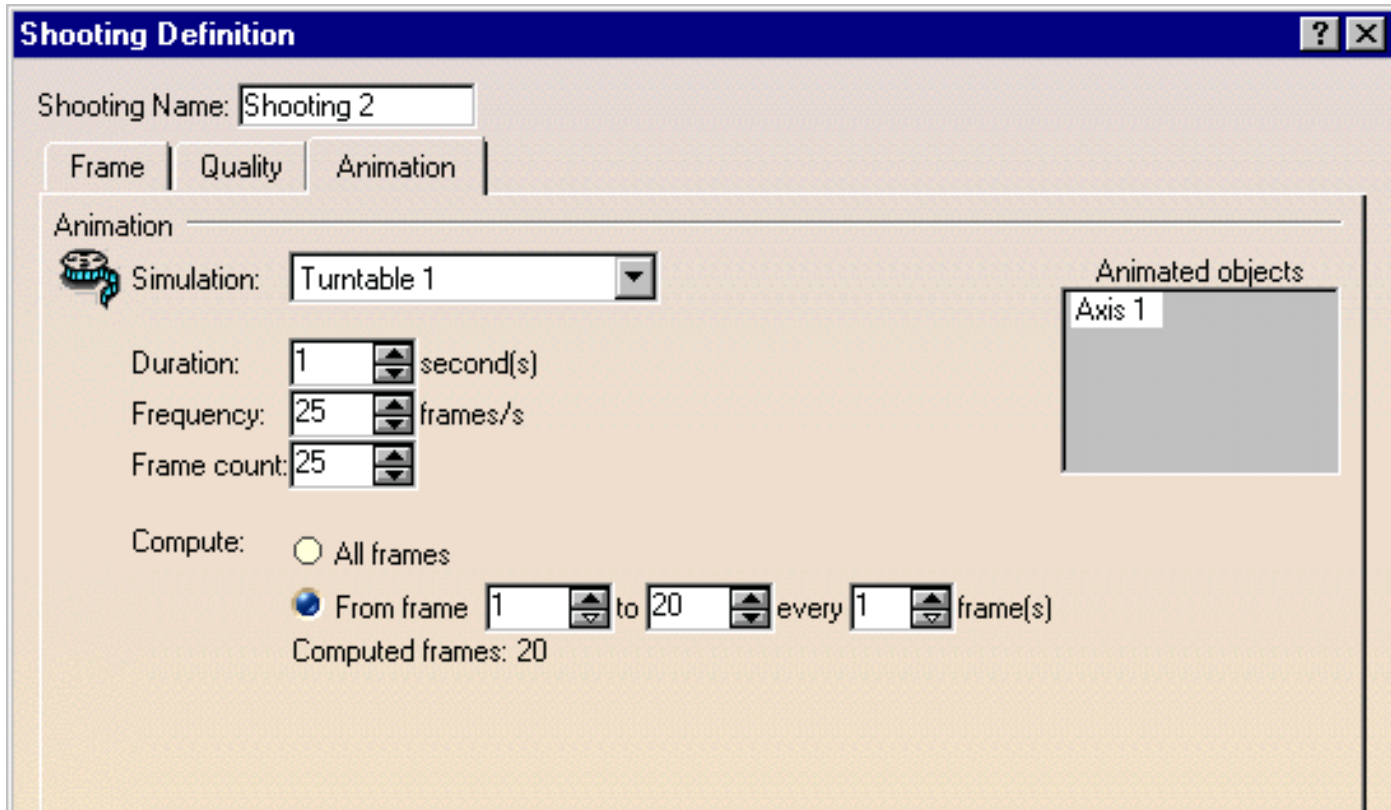
Defining Animation Parameters



This task shows you how to define animation parameters.



1. Click the Create Shooting icon  to open the Shooting Definition dialog box.
2. Click the Animation tab.



The screenshot shows the 'Shooting Definition' dialog box with the 'Animation' tab selected. The 'Shooting Name' field is set to 'Shooting 2'. The 'Animation' section includes a 'Simulation' dropdown menu set to 'Turntable 1'. Below this are three spinners for 'Duration' (set to 1), 'Frequency' (set to 25), and 'Frame count' (set to 25). The 'Compute' section has two radio buttons: 'All frames' (selected) and 'From frame' (set to 1) to '20' every '1' frame(s). The 'Computed frames' field shows '20'. On the right, the 'Animated objects' list contains 'Axis 1'.

3. Select the simulation to be rendered from the pulldown list.
4. Key in the complete animation Duration in seconds.

This gives you the feedback of the effective animation lapse time. It depends on the number of frames per seconds specified in the scene.
The default value (twenty-five frames per seconds) displayed in the Duration field is the standard number of images used on a tape recorder.
5. Indicate the Frequency of computation according to the total number of frames in the animation.
6. In the Frame count field, choose the number of frames that are going to be replayed in the animation.

7. In the Compute field, indicate whether you wish to compute All frames or only a specified number of frames. In that case, you have to enter the start and end frames as well as the step between the computed frames.
8. Click OK.

The shooting is defined and you can now [preview and render](#) your animation.



Previewing and Rendering a Turntable

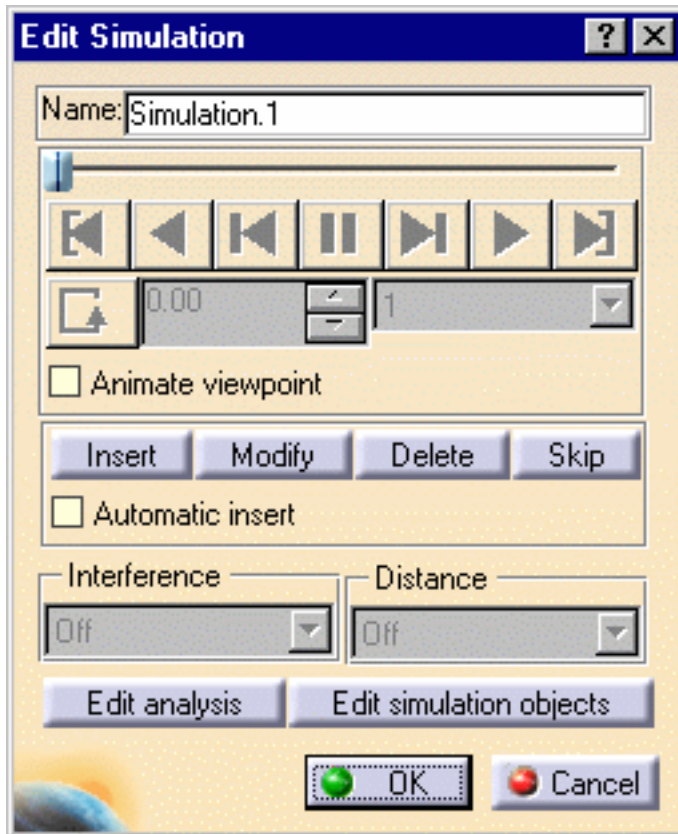


This task shows you how to animate a product in a simulation once you have defined the [turntable](#) and the [animation parameters](#).



1. Select the turntable axis.

2. Click the Simulation  icon. The Edit Simulation dialog box appears:




3. Move the turntable as you wish using the compass.

4. Click the Insert button to record the desired shots in your animation.

As soon as you insert your first keyframe, the dialog box buttons are grayed out and let you modify, delete or skip the current shot by clicking the appropriate button.



For more information on animating in a simulation, refer to [Animating Scene Elements in a Simulation](#) in this guide.

5. Keep on inserting keyframes then preview the animation by clicking the Play forward  button.

When you run the simulation, the animated object rotates around the turntable axis. Just click the picture below to run the animation:

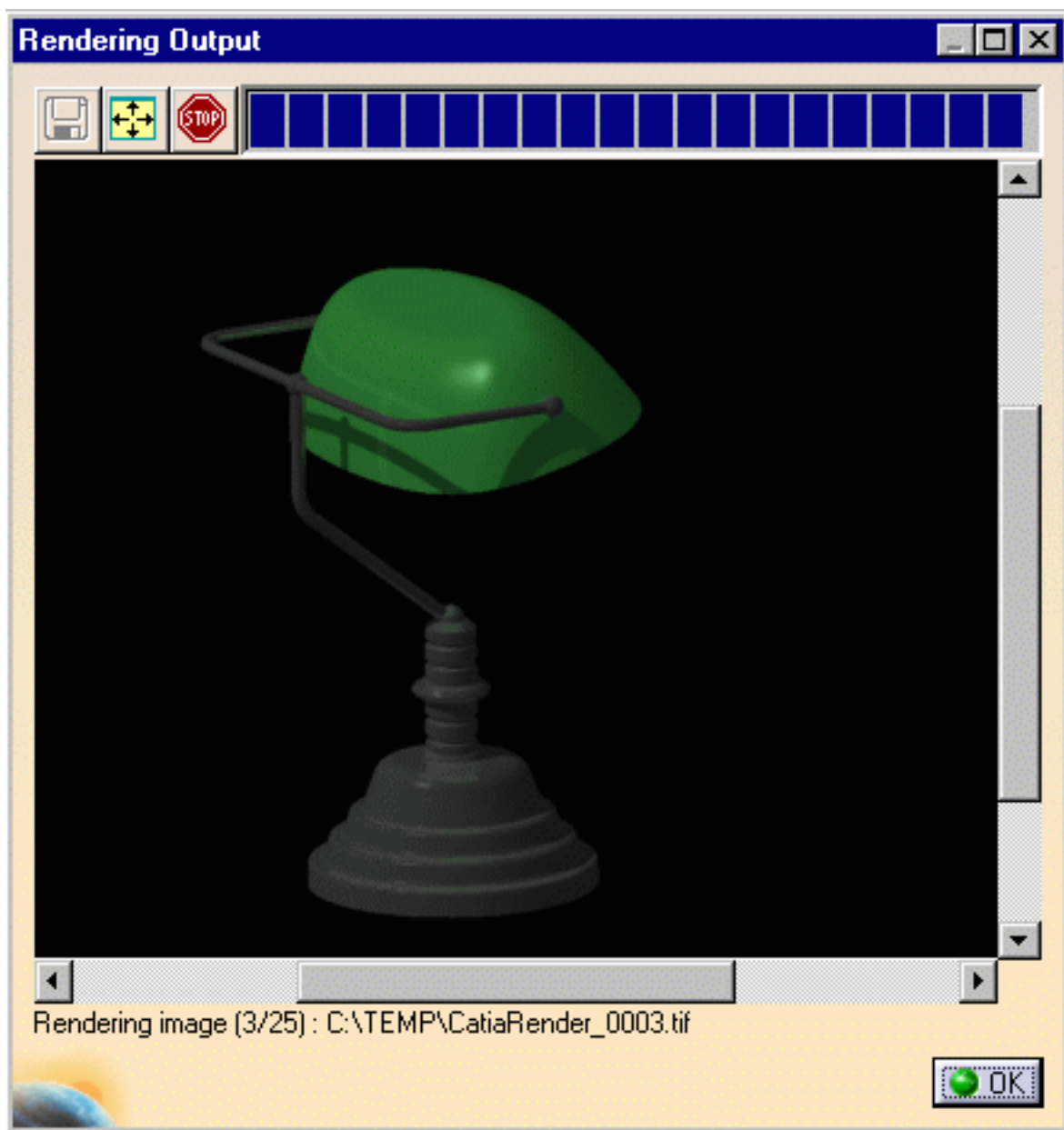


6. Click the Render Shooting icon  to render your animation. The Render dialog box opens.



7. Click the Render Animation icon .

The animation is rendered and saved under a default location:



You can also render an animation by selecting the desired shooting in the specification tree then clicking the Render Animation contextual menu.

Do not forget to select the corresponding turntable in the Shooting Definition dialog box as shown below, otherwise the Render Animation icon will be grayed:



Environment Management

[Creating an Environment](#)

[Managing Walls](#)

[Defining the Wallpaper](#)

[Previewing an Environment](#)

Creating an Environment




This task will show you how to create an environment. Three environment types are available: box, sphere and cylinder.

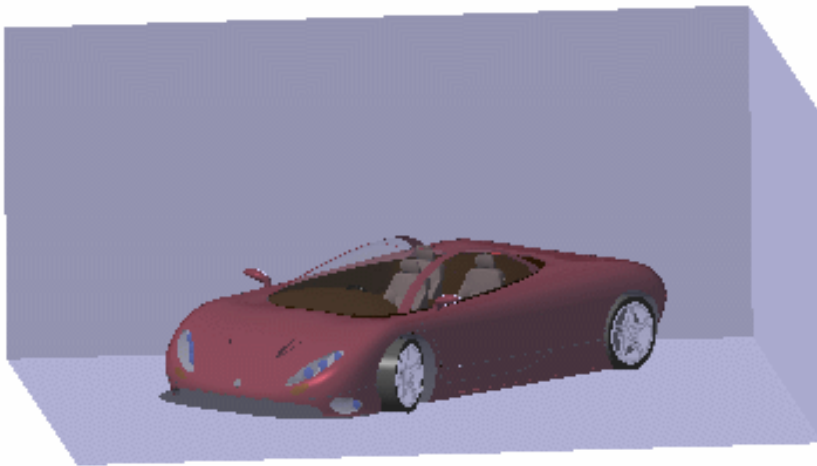
An environment is a simplified simulation of a landscape surrounding your model and directly reflected by your model. It is an efficient way to get a very quick feedback of the illumination behavior of your model and check its integration in its final environment. For example, placing neon lights as a 3D-texture on the ceiling will be used for car body design, while referring to a picture of a Norwegian forest for the walls will produce an impressive marketing image of a newly designed chainsaw.




Open the [RED-CAR.CATProduct](#) document.




1. Click the Create Box Environment  icon if you want to create an environment with a rectangular shape (to represent a room for example).
2. Zoom out then click anywhere in the geometry area to deselect the environment.



You can also

click the Create Sphere Environment  icon if you want an environment being a non-dimensional sphere with two hemisphere: north and south (to simulate a sky for example).



click the Create Cylinder Environment  icon if you want an environment having a cylindrical shape:



Showroom environments (square or cylindrical shape) correspond to a square or cylinder room without windows, with a texture or an image on the walls, floor and ceiling.

This type of environment is a very efficient tool for design study of very close reflection, for instance, reflection of rows of neon lights on a car body.

Their size can be set and they can be positioned at a desired location.

They are always visible and will appear as other geometrical elements of the model at their defined location.

Sky-ground environments (spherical shape) will be used to simulate the reflections of a "real world" onto the geometry. Texture simulating grounds or skies will provide good results.

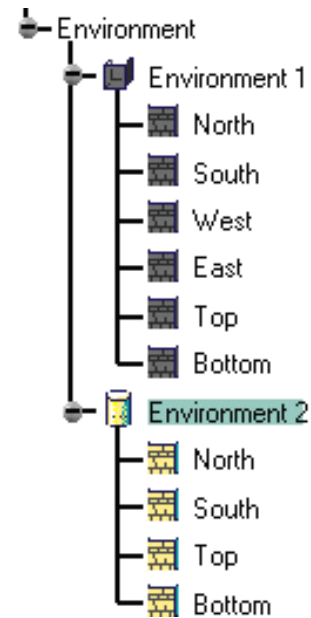
They are sizeless: they totally surround the model, whatever its size, whatever their location. They can be positioned, not for rendering reasons, but to define the turntable axis.

As soon as you create an environment, it becomes the **active** one. Any previously created environment is deactivated in the specification tree, only one active environment being taken into account at rendering time.

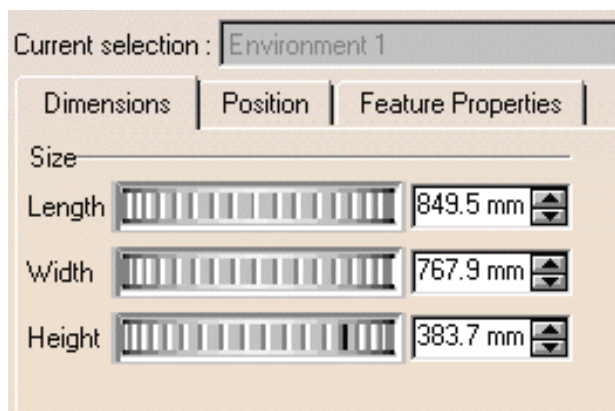


In our example, Environment 2 has been created and Environment 1 is deactivated.

To activate an environment, just select it in the specification tree then select the Environment Active command from the contextual menu.

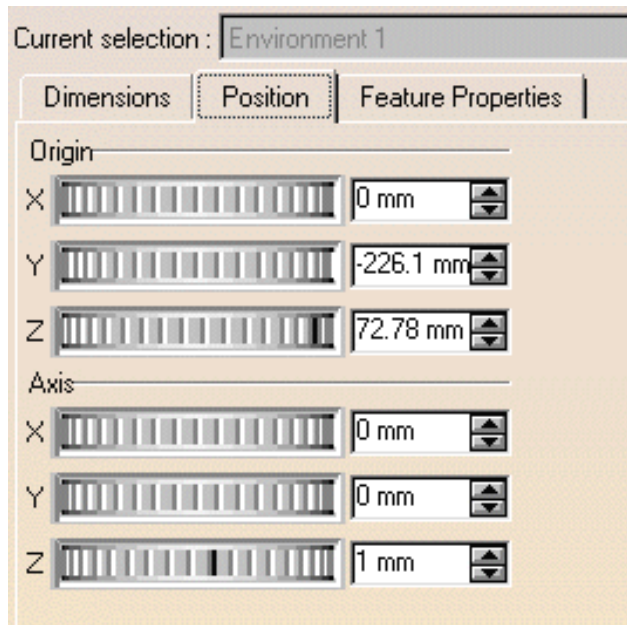


3. Position your pointer over the edges then use the green segments displayed to
 - click and drag a segment to resize the walls according to the edges
 - shift-click and drag a segment to resize the walls according to the center.
4. Select the environment in the specification tree then right-click and choose the Edit -> Properties commands. The Properties panel is displayed.
5. The Dimensions tab enables you to define the Length, Width and Height of the walls in millimeters.




6. Click the Position tab to interactively define:

- the environment translation from the Origin along the X, Y or Z axis.
- the environment translation along the X, Y, or Z Axis.



The Feature Properties tab provides general information on the currently selected environment, e.g. its name, its creation date, etc.

 You can also interactively position your environment by dragging the compass and dropping it onto the environment.



Managing Walls



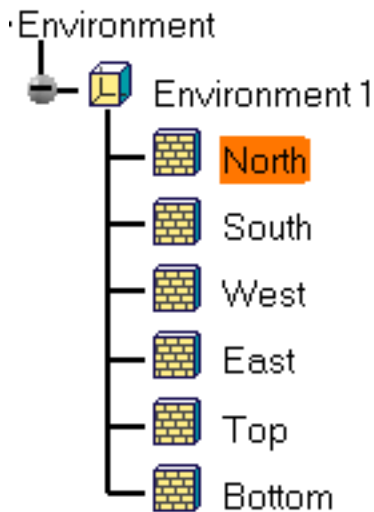
This task will introduce wall list management.



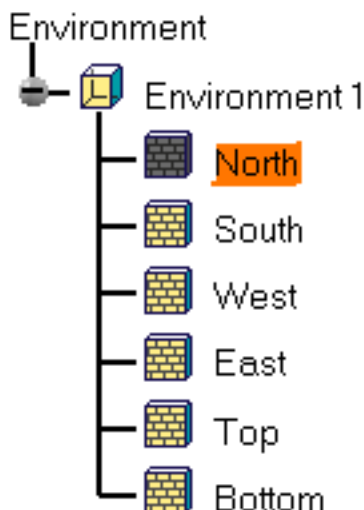
Open the [RED-CAR.CATProduct](#) document and create an environment as explained in [Creating an Environment](#).



1. In the specification tree, select an environment wall (or select it directly in the 3D window).




2. Right-click to display the contextual menu then uncheck the Wall Active option. The selected wall is grayed in the specification tree and is not taken into account at rendering time, as shown in the example below:



Only the edges of the deactivated wall are displayed in the environment representation except if you have specified to display inactive environments (select the Tools->Options->Product commands then the Rendering tab).



 The geometry shadows are projected onto environment flat walls.



Defining the Wallpaper



This task will show you how to associate images to your environment walls.



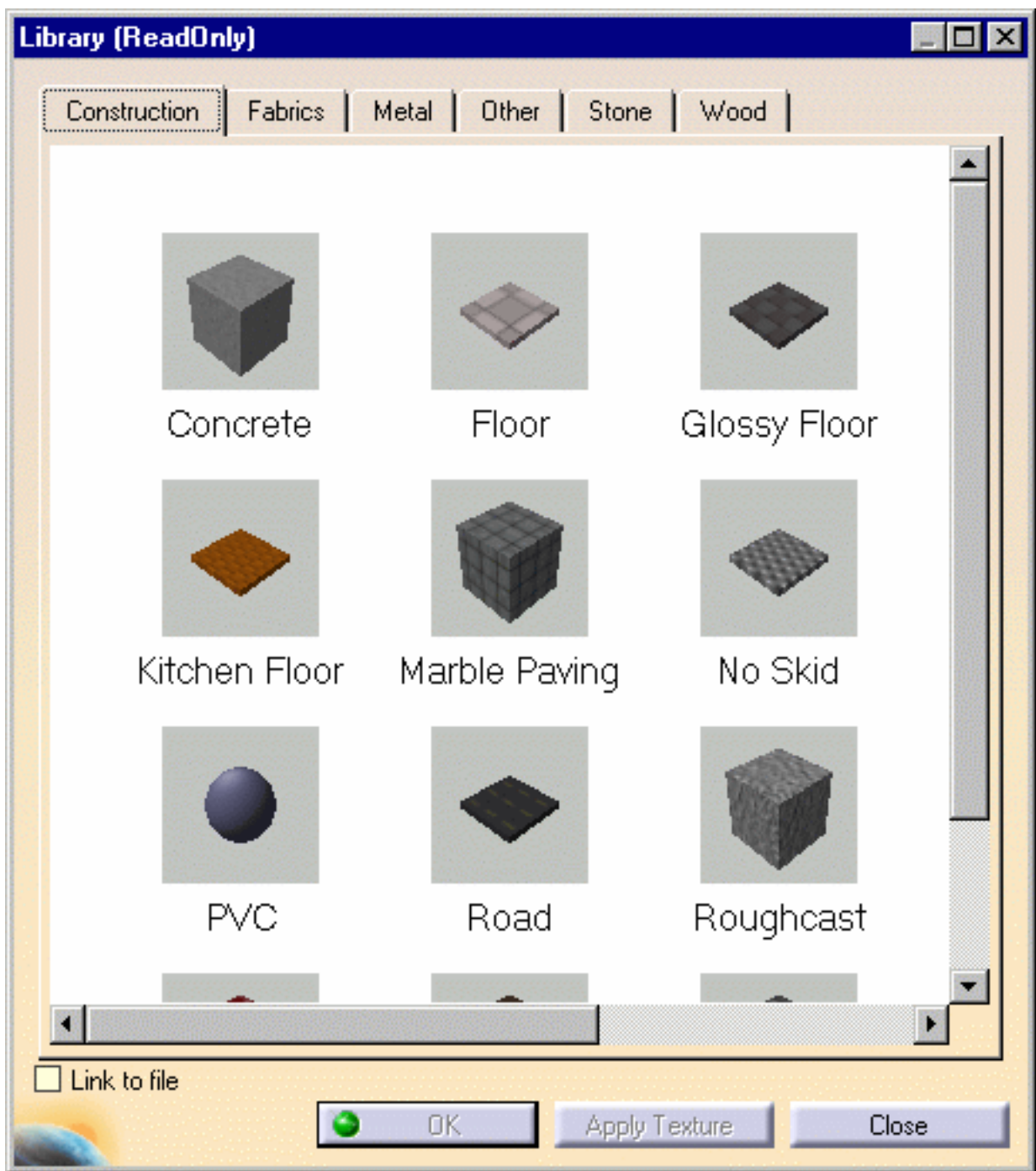
Open the [RED-CAR.CATProduct](#) document and create an environment as explained in [Creating an Environment](#).



1. Select any wall of the environment on which the wallpaper should be defined.

Note: As far as showroom environments are concerned, you can apply a different texture to each wall of the environment.

2. Click the Apply Material icon  to display the Library window.



The material must have a texture, otherwise an error panel will be displayed.

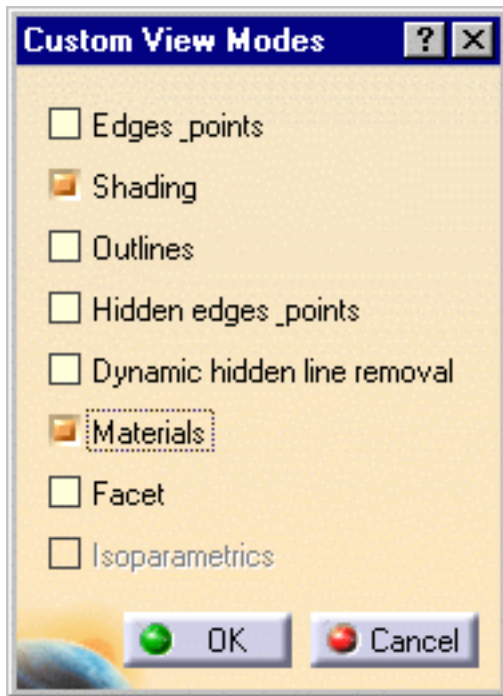
3. Click the Construction tab, for example.
4. Select Marble Paving.

5. Click Apply Material to map the image texture of the material onto the selected wall.
6. Repeat these steps for the other walls if you want to.



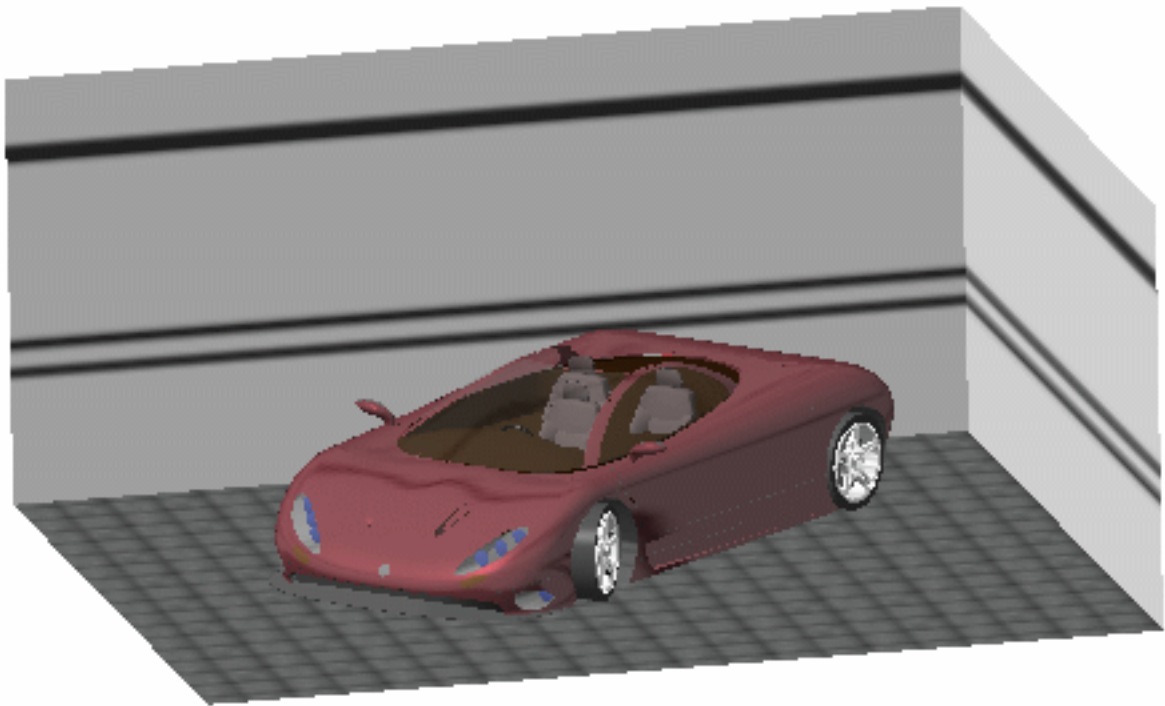
Instead of clicking Apply, you can also use the contextual menu then copy the material before pasting it or drag and drop the material directly onto the wall.

7. Select the Apply Customized View icon  in the View -> Render Style menu. The Custom View Mode dialog box is displayed.



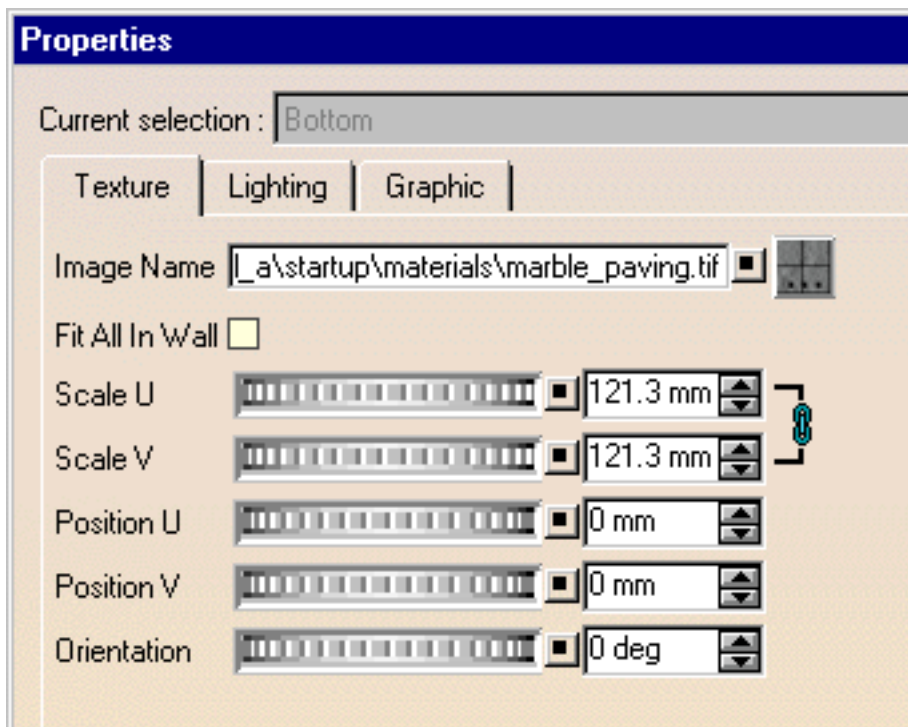
8. Make sure that the Shading and Materials options are checked.
9. Click OK.

The material texture is mapped onto the selected wall.



In the above example, we have applied the following materials: Marble Paving and Strip Wall.

10. To modify the mapped texture properties, right-click the corresponding environment wall in the specification tree then select the Properties or the object->Definition... command from the contextual menu.
The Properties dialog box is displayed:

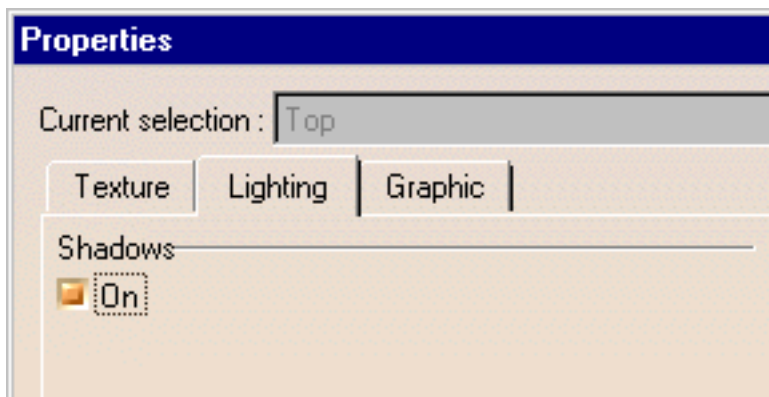


The Texture tab lets you modify the Image Name as well as the material Scale, Position and Orientation.



For more information, please refer to the Modifying Materials section in the *CATIA - Real Time Rendering User's Guide*.

11. Click the Lighting tab and check the "Shadows" option if you want to enable shadow casting on the wall.




When the option is off, the wall is visible even if not illuminated.


Note: this option is used for rendering only.


12. Click OK or Apply then OK to validate and close the Properties dialog box.

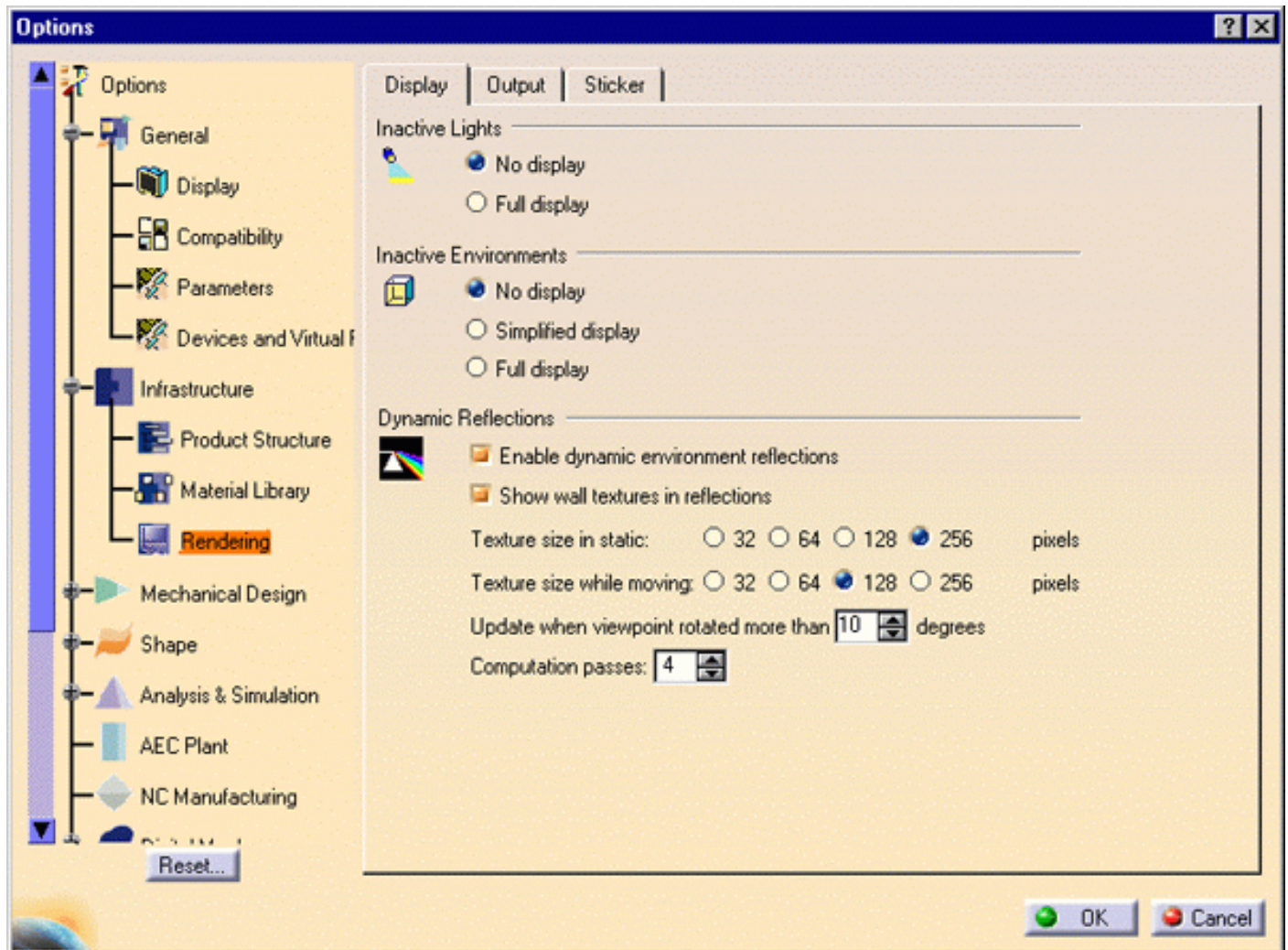


Previewing an Environment

 This task will show you how to preview the environment reflections.


 Open the [RED-CAR.CATProduct](#) document then create an environment with wallpapers as explained in [Defining the Wallpaper](#).

-  1. Select the Tools->Options... command.
2. Choose the Infrastructure category.
3. Click the Rendering subcategory. The Display tab opens:



4. In the Dynamic Reflections area, check the "Enable dynamic environment reflections" option.

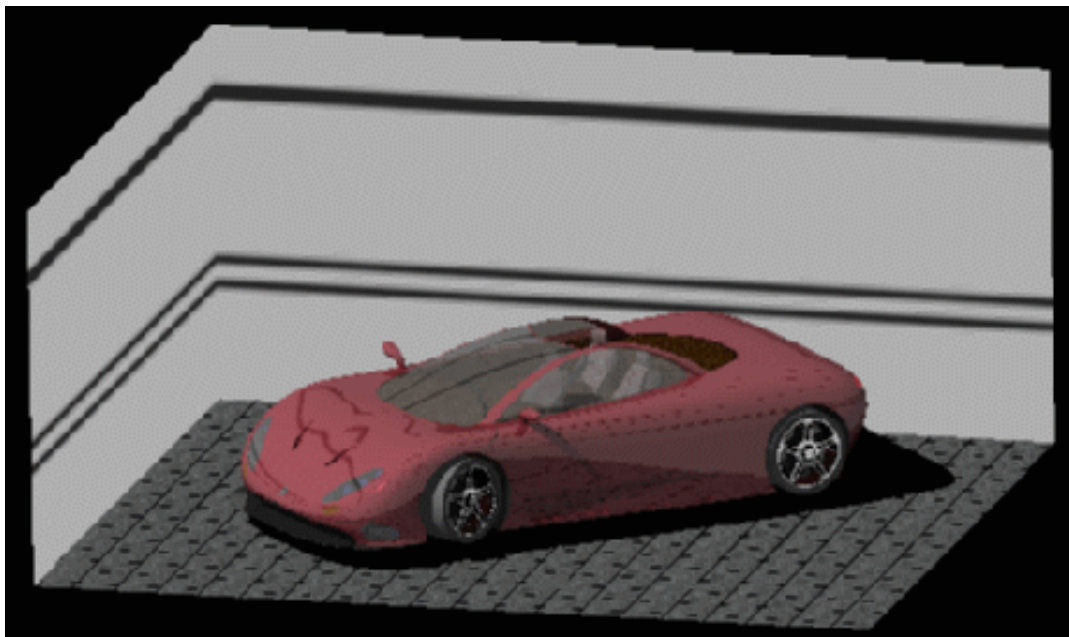
This option enables you to activate/deactivate the update of environment reflections on reflecting objects (i.e. those having a non null reflectivity) when the viewpoint is changed.

 In order to see environment reflections, an object must be reflecting and thus having a non-zero reflectivity coefficient.

5. Indicate the texture size in pixels used when the product geometry is moved (e.g during a zoom, a translation, etc.) and when it is still using the "Texture size while moving" and "Texture size in static" options, respectively.
6. Specify the texture update threshold in degrees in the "Update when viewpoint rotated more than..." field.
7. Indicate the number of texture Computation passes.

For more information on setting dynamic reflection display, refer to [Rendering](#) in the *CATIA - Infrastructure User's Guide*.

Here is an example of environment reflections on the RED-CAR product:




If part of an environment has no texture or image, this part has no effect during computation of the environment color.

Shooting



[Setting Image Quality Parameters](#)

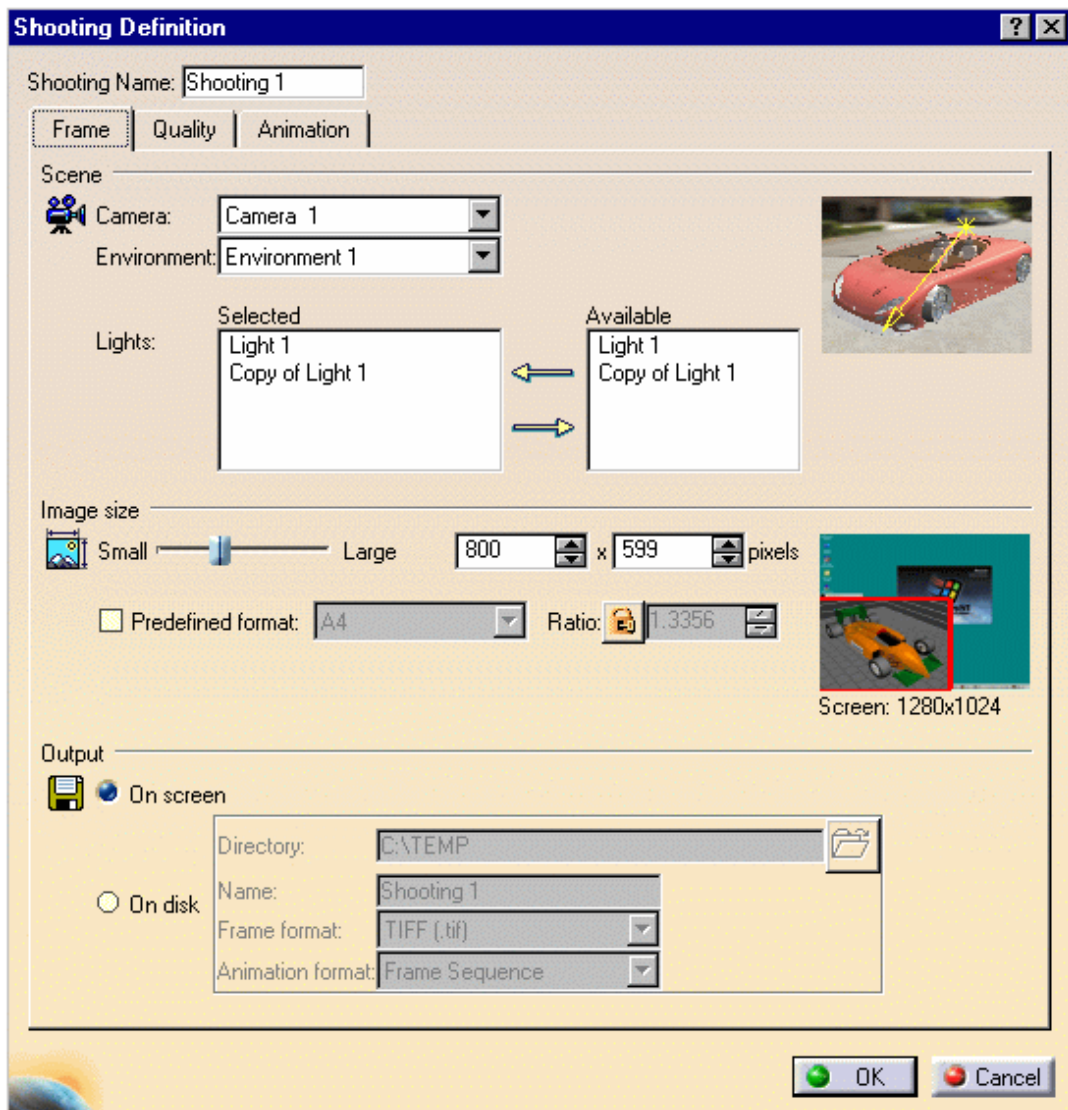
Setting Image Quality Parameters

 This task shows how to define the rendering style and quality parameters.

 Open the [TuningLightsEnd.CATProduct](#) document.

Make sure that the Shading and Materials options are checked by selecting the View->Render Style->Customize View command.

 1. Click the Create Shooting icon  to open the Shooting Definition dialog box.



Under the Frame tab, the Scene area lets you specify the elements to be rendered as well as the way of rendering them. By default, the active environment and any other active source are rendered.

2. In the the appropriate fields of the Scene area, select the Camera, Environment and Available Lights you want to render. A preview of the selected environment and the camera view is displayed.

If no light is Selected, a default directional light orthogonal to the image plane will be used (therefore producing very few shadows).

3. In the Image size area, define the size of the rendered image using the slider or manually. The number of pixels and the ratio are linked together. Whenever you change the pixel number, the ratio value is adjusted according to this number and reciprocally.

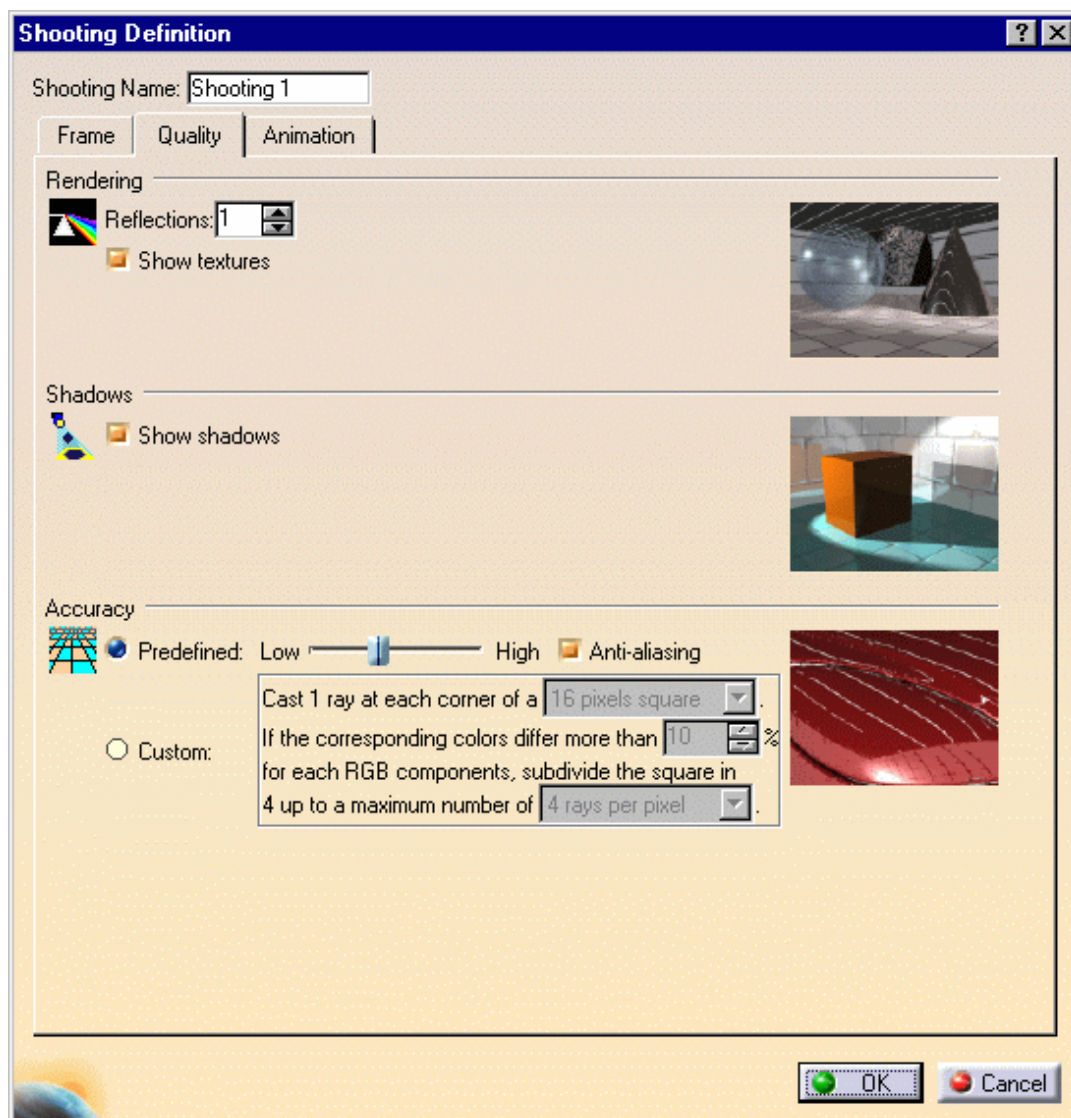


You can also use the Predefined format option to retrieve standard ratios. The corresponding Ratio is displayed.

4. In the Output area, check the "On disk" option if you want to modify the name of the computed image. By default, it is saved in a temporary folder under the name "CatiaRender.tif".

The "On disk" option also lets you change the default location. For more information, refer to the [Saving Pictures](#) task in this guide.

5. The Quality tab lets you specify rendering, shadow and accuracy parameters, all of them impacting the rendering computation duration.



6. Indicate the maximum reflections number.
For instance, if you choose 2 and have two parallel mirrors in your scene, you will see the reflections of the reflections in each mirror ; choosing 1 instead, you will not see the secondary reflections.



No texture rendering means that only the material lighting characteristics will be taken into account for the rendering and the environment wall texture are not rendered as well. This option can be used to speed up rendering at early stage for example.

If you check the "Show shadows" option, only the shadows produced by the active lights will be rendered, otherwise no shadows are computed. This can be useful to speed up rendering.

Now, let's define the accuracy parameters that control the oversampling of the final image:

7. Select the accuracy type.

Predefined: sets a fixed sag value for calculating tessellation on all objects.

- a low value means that a very fine mesh is used to render surfaces, but the drawback is that pre-processing and rendering will take more time
- a high value means that a very coarse mesh is used, but the advantage is that pre-processing and rendering will take less time.

Custom: the Custom parameters are defined through three values: a minimum number of samples, a maximum number of samples and a threshold.

- *minimum sample:* specifies the minimum number of samples, i.e. rays, taken at each corner of a pixel square. In our example, we have chosen a minimum of 1 ray at each corner of a square of 4×4 pixels
- *threshold:* specifies the percentage over which an oversampling is done if the contrast in any RGB component between the currently calculated pixels and the neighboring pixels weighted by their sum is greater than this threshold.
The lower this value, the more oversampling and the longer the rendering time
- *maximum sample:* specifies the maximum number of samples, i.e. rays, per pixel. In our example, we have chosen a maximum of 1 ray per pixel.

The preview area to the right shows you the effect of each setting.



Note that anti-aliasing sets a better oversampling. Anti-aliasing modifies the appearance of lines in order to make the jagged edges look smoother. To do so, the square pixels composing the lines are put in shades of gray or in-between color.

8. Click the Animation tab to define the animation parameters.



For more information on the animation, refer to the [Defining Animation Parameters](#) task in this guide.

9. Click OK.

The next step is to render the shooting you have defined.

10. Click the Render Shooting icon  to open the Render dialog box. A summary of the selected scene characteristics is displayed.

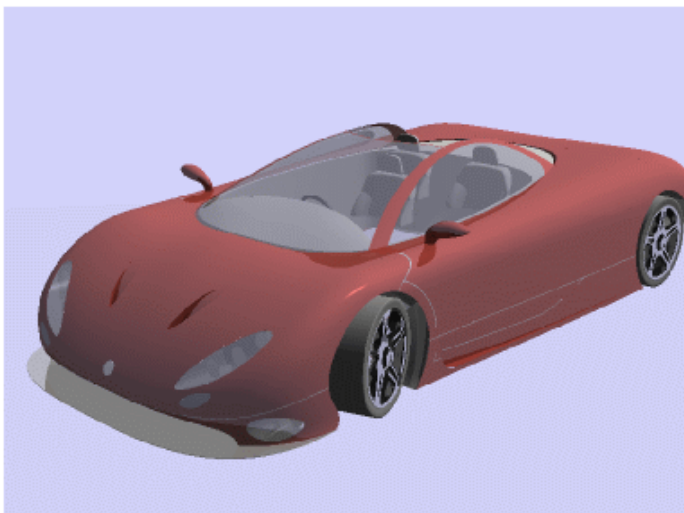


11. Select a shooting then click the Render Single Frame icon  or the Render Animation icon , depending on the type of render you wish to create.

The Rendering Output window opens and displays the rendering result.

Note: you can also render an animation or a single frame by selecting the desired shooting in the specification tree then clicking the Render Animation or the Render Single Frame contextual menu.

The following images illustrate different types of rendering:



Textures off, two active lights, shadows off and an average accuracy.





Textures on, two active lights, shadows on, anti-aliasing off and the lowest accuracy.




Textures on, two active lights, shadows on and the lowest accuracy.



Textures on, two active lights, shadows on and an average accuracy.

The  icon identifies the most recently rendered shooting in the specification tree, the other shootings being identified with the  icon.



Click the Redo Render  icon if you wish to redo the last render you have made, whether it was a single frame or an animation.



Materials

[Using Materials for Rendering](#)

Using Materials for Rendering



This task aims at showing you how to define the material attributes for a rendering.



Open the [PHONE.CATProduct](#) document.

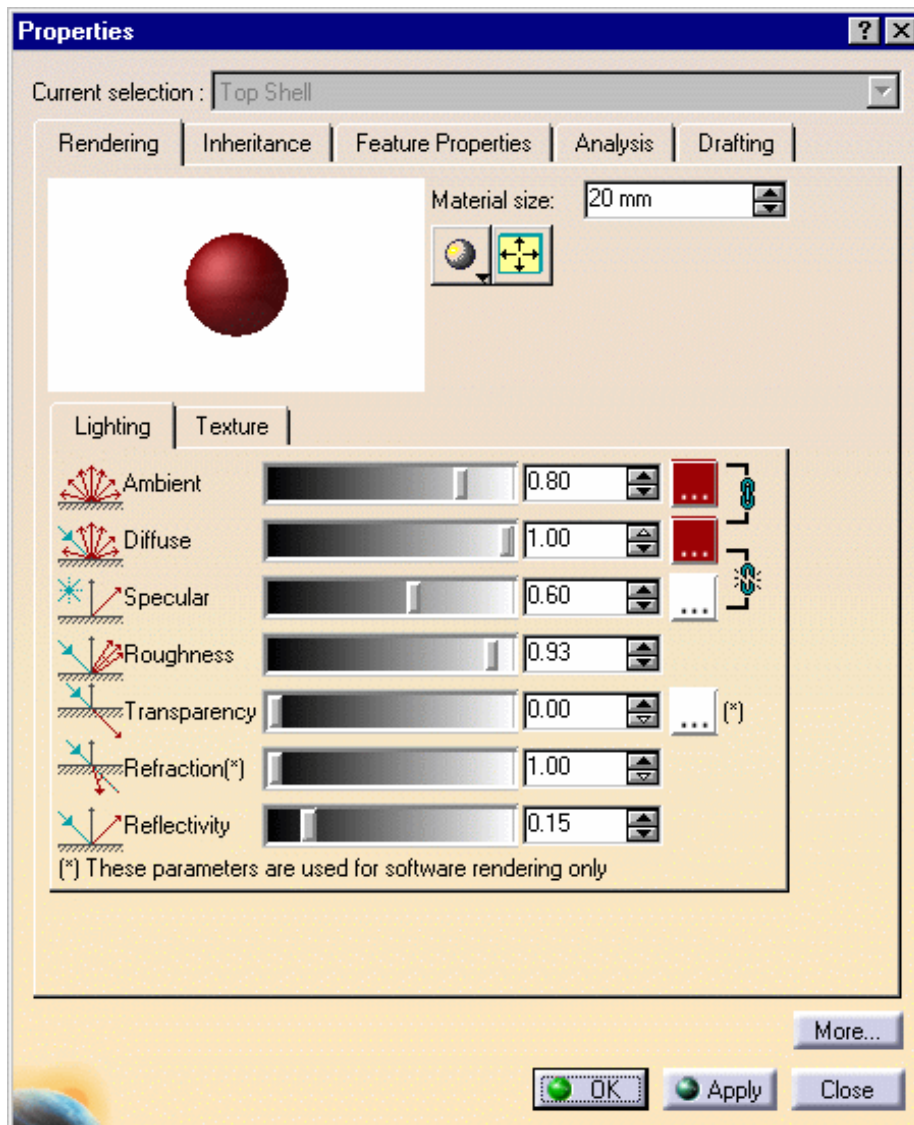


You can apply a material to each instance within a CATProduct. This functionality is especially relevant for rendering purposes since it lets you apply a different texture to each instance. Therefore, there will be as many materials as instances. The material preview will however display the last material applied to the instance.



1. In the specification tree, select the plus sign besides the item referred to as "Top Shell".
2. Right-click the Top Shell material then select the Properties command.

The Properties dialog box is displayed:



5. Click the Rendering tab to define the Lighting parameters:

Ambient: the intensity of light diffused in any direction by the object, even if not lit by any light source. The intensity is defined by a coefficient (with a value between 0 and 1). This parameter affects the whole object, including the shadowed area.

Diffuse: the intensity of light diffused by the object when lit by light sources. The intensity is defined by a coefficient (with a value between 0 and 1).

Typically, a shiny metal surface would have a diffuse reflectance value close to 0, while a piece of cardboard would have a value probably above 0.9.

Specular: intensity and color of light reflected in one particular direction (highlights).

Set the value to a minimum to generate very sharp highlights on very shiny surfaces. Set the shininess to a higher value to generate large specular spots creating a duller effect.

Typically, a polished object would have a high value for the specular reflectance coefficient, while a more mat surface would have a lower one.

Roughness: dullness of an object (size of the reflecting zone).

Set the value to a minimum to generate very sharp highlights on very shiny surfaces. Set the shininess to a higher value to generate large specular spots creating a duller effect.

Transparency: the degree of transparency of an object.

The higher the value, the more transparent the object (in the example the value is 0.75), the lower the value, the more opaque the object.

Refraction: degree of light refraction passing through an object. The refraction is defined by a coefficient (value between 1 and 2).

Set to 1, the transparent object will show no light distortion. As an example, water has a 1.2 coefficient. This parameter is relevant for rendering purpose only.

Reflectivity: degree of reflectivity of an object. Set to a high value, the object reflects its environment.

Note that Photo Studio does not handle refraction (i.e light deviation at transparent boundaries) but only transparency (i.e light is not bent by transparent boundaries).

A preview is displayed in the Properties window but it slightly differs from the rendered image. Here are a few examples of rendered images with their corresponding lighting properties:

Lighting Preview



Quick Render





6. Click OK.

The material attributes are defined.



Advanced Tasks

[Scene Definition](#)

[Scene Tuning](#)

[Catalog Browsing](#)

Scene Definition

[Creating a Scene](#)

[Animating Scene Elements in a Simulation](#)

Creating a Scene



This task gives you a methodology to define the parameters involved in the scene creation, i.e. light, camera, textures.





Open the [RED-CAR.CATProduct](#) document.



Select also the Apply Customized View icon from the View->Render Style menu in order to check that the Shading and Materials options are on.



1. Create an empty environment (either box, cylindrical or spherical).
2. Choose the point of view you want to use then click the Create Camera icon .
3. Click the Create Spot Light icon  to define a conical light source then orientate the light as you wish with the help of the light preview on the environment walls.
4. Select the Light View command from the specification tree to make sure you have the desired illumination. This command lets you see the light point of view. Only the lit elements contained in the light preview shape will be lit at rendering time.




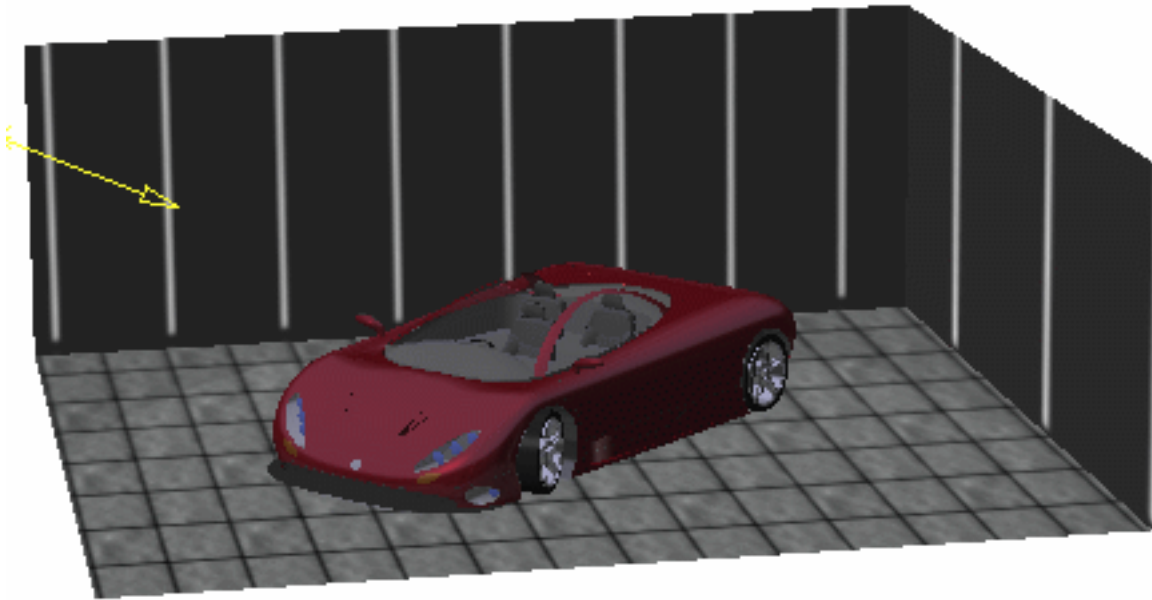
Set the lighting attenuation in order that it does not end before the environment, otherwise the environment will be almost entirely shadowed.



5. Click the Quick Render icon to make a quick render from the light view. Perform as many modifications as necessary and check that what you get is really what you want to lit.
6. Click the Camera item in the specification tree then select the Camera View command from the contextual menu.


You can then perform changes and make quick renders to adjust the frameset to your needs.


7. Apply a texture on your environment and your part(s) by clicking the Apply Material icon  and check the result by creating a quick render.



Once you are satisfied, you can create a shooting to have a finer result. To do so:

8. Click the Create Shooting icon  to define the shooting parameters.

 We advise you not to modify the default shooting parameters except those concerning accuracy. When the accuracy parameters is set beneath the mid value, you should obtain a result nearly as identical as the quick render.

9. Select a material in the specification tree then choose the Properties command from the contextual menu to adjust the material parameters.
10. Click the Render Shooting icon  to check the result then go back to the material Properties to correct the parameter definition if necessary.

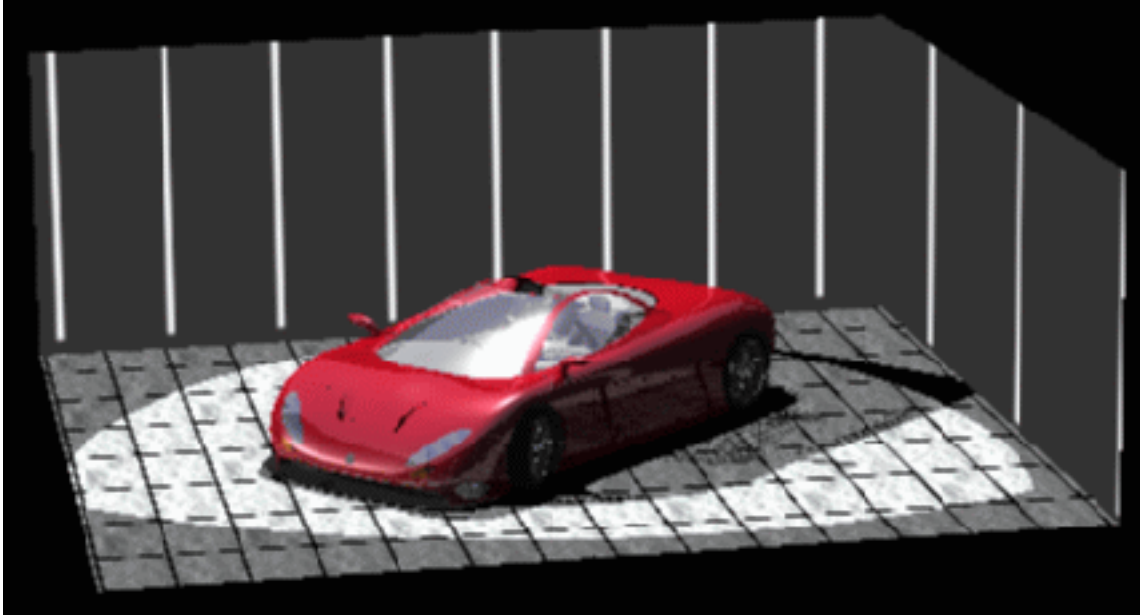
Here are a few tips for lighting parameters:

- **contrast:** start by setting the Contrast to the minimum intensity: when you define the material lighting, the sum of all parameters (except Shininess) should be roughly equal to 1 to render the material with realism, but nothing forbids you to choose higher or lower sum values to achieve special effects: they may simply be harder to control.
- **luminosity:** use very carefully the Luminosity parameter ("good" values are around 10%) to avoid final color saturation
- **reflectivity/shininess:** set the Reflectivity and the Shininess at the same time
- **transparency:** if the material is transparent, define a Transparency value.

We recommend you to define this parameter at the end.

11. When the result is satisfactory, adjust the shooting parameters to refine the result such as the reflection number, the anti-aliasing, etc. in the Shooting Definition dialog box.
12. Click OK when you have finished.

The scene is defined and ready to be rendered.



Animating Scene Elements in a Simulation




This task shows you how to animate the various elements composing the scene, i.e. cameras, lights, environments and materials.

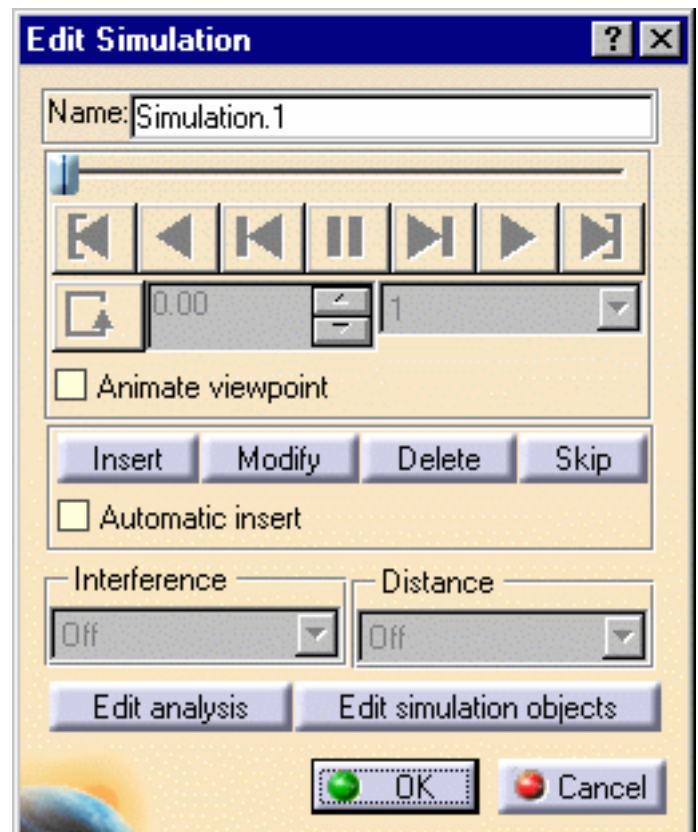
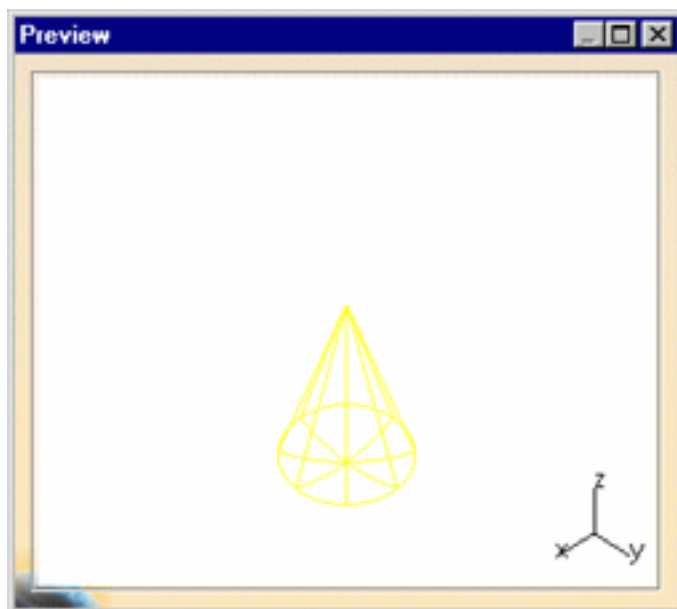
The method is identical whether you animate a camera, a light, an environment or a material, thus we will use only one of these objects to illustrate this task.



Open the [REFLECT.CATProduct](#) document.

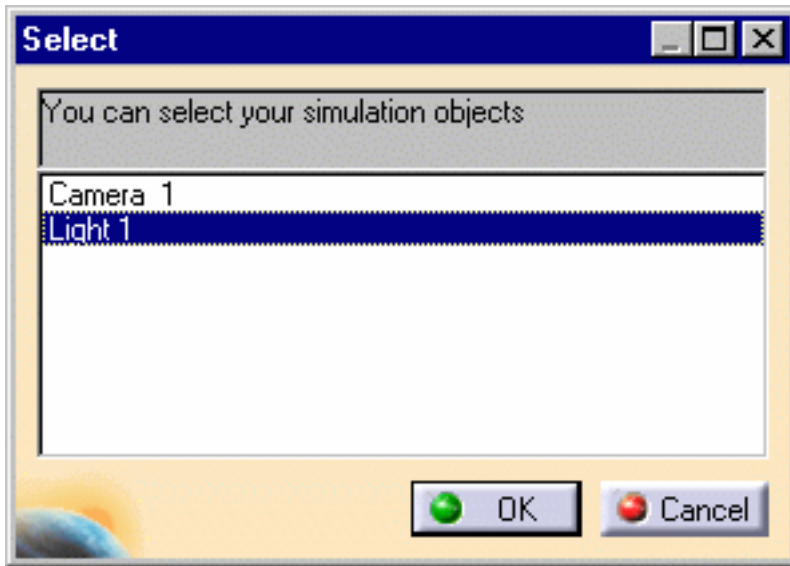


1. Select the object you wish to animate, the light in our example.
2. Click the Simulation  icon. The Preview and Edit Simulation panels appear:



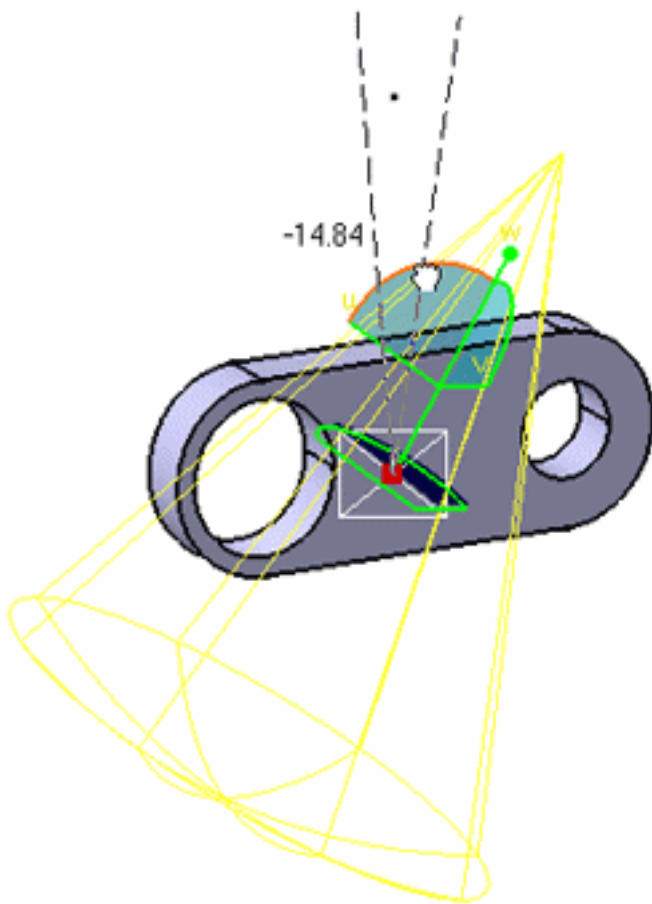


If you click the icon without having selected any element, the Select dialog box opens and let you choose the element to be animated:



The Edit Simulation dialog box appears when you click OK.

Note: running the Simulation command positions the compass over the element to be animated, which lets you manipulate it very easily as shown below:



4. Modify the lighting properties such as the attenuation starting point or the angle ratio.
5. Click the Insert button to record the desired keyframe and insert it into your simulation scenario.

As you insert your first keyframe, the dialog box buttons are grayed out to let you Modify, Delete or Skip the recorded shots.



The initial position is automatically recorded. If you need to reposition your object, just delete its first position or modify it.

6. Select the interpolation which defines the number of steps between the shots you have recorded.



Assigning a high number of interpolations amounts to replaying the scenario at a very low speed.

Note: the interpolation is used for preview only and does not affect the rendered animation.

7. Use the other VCR buttons to play backward, step forward, modify the speed, etc.



8. Click the Play Forward button  to preview the animation.

You can also use one of the loop modes to:



run the simulation once



run the simulation in a continuous way

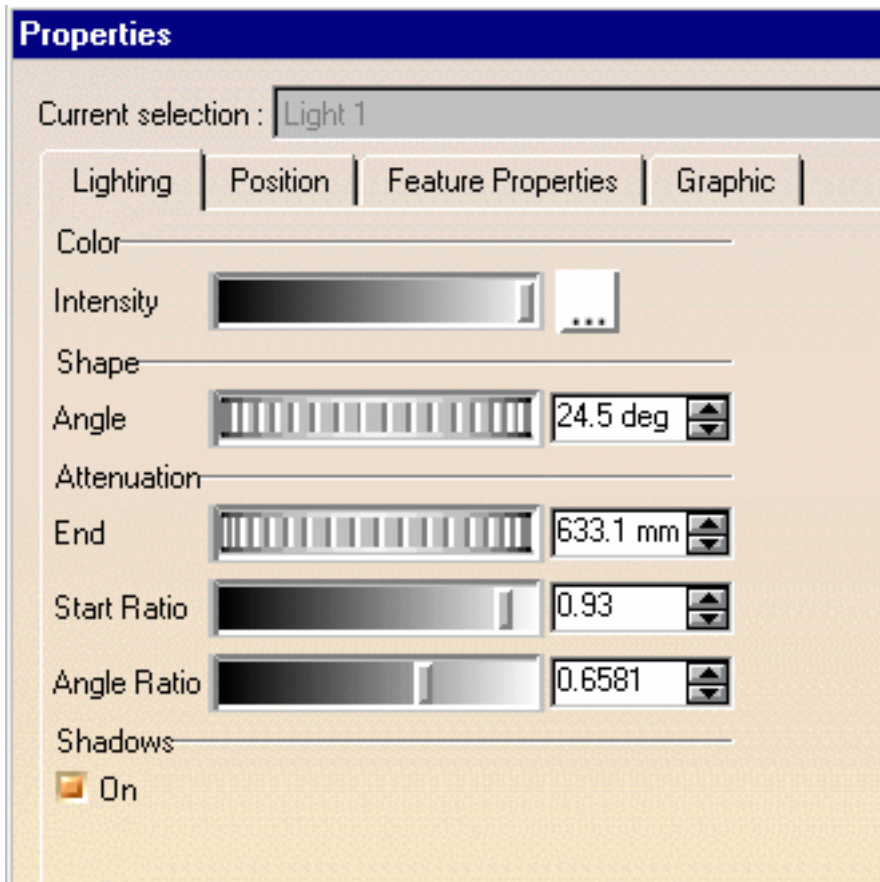


run then reverse the simulation in a continuous way.

9. Click the Edit simulation objects button to modify the object parameters. The Edit Simulation Objects dialog box opens:



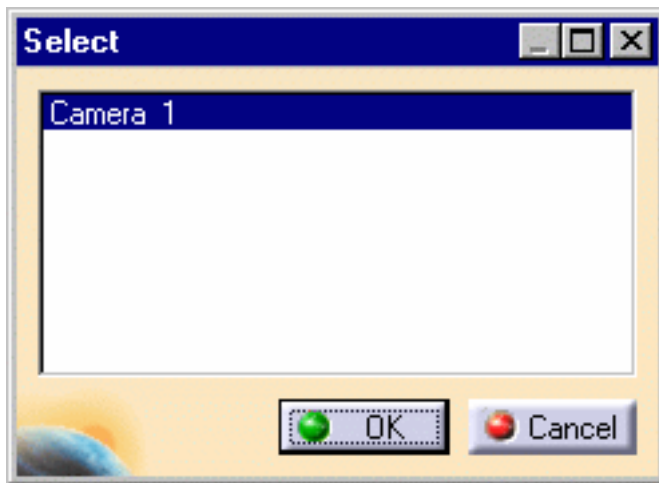
10. Select the simulation object to edit from the proposed list then click the Edit... button to open the Properties dialog box:



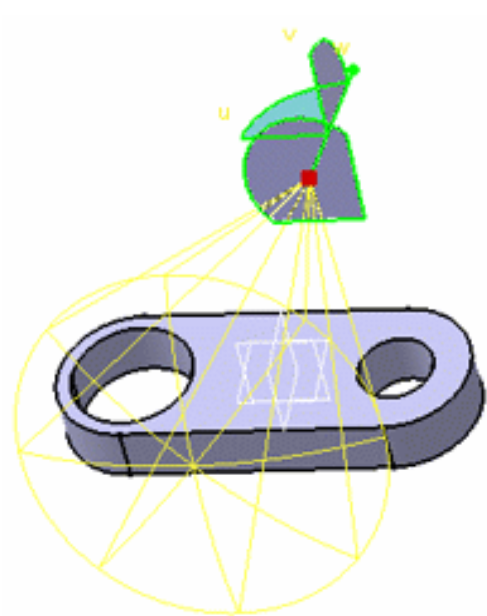
11. Modify the object parameters as desired then click the OK button twice to close the Properties and Edit Simulation Objects dialog boxes.

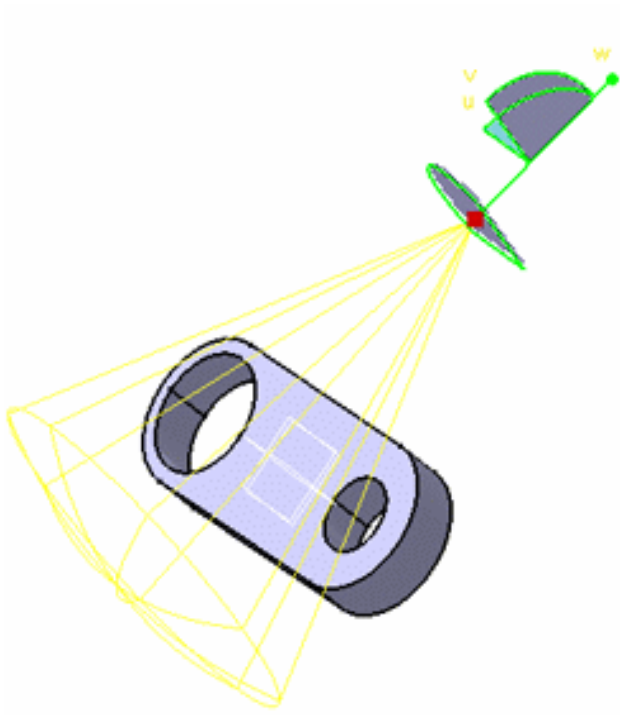


If you wish to animate more elements in your simulation, click the Add... button. This opens the Select dialog box and enables you to select additional objects:

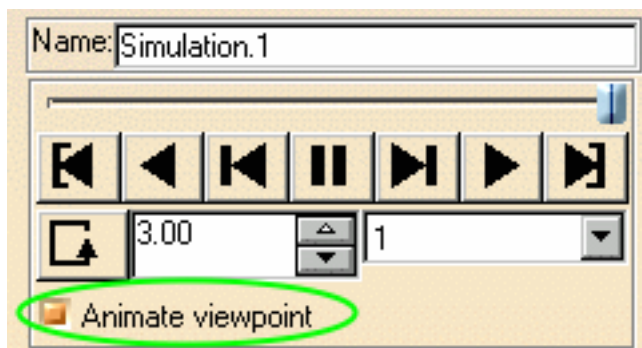


12. Modify the object position and parameters as often as necessary, clicking the Insert button to record each of the desired shot. You can also change the viewpoint:

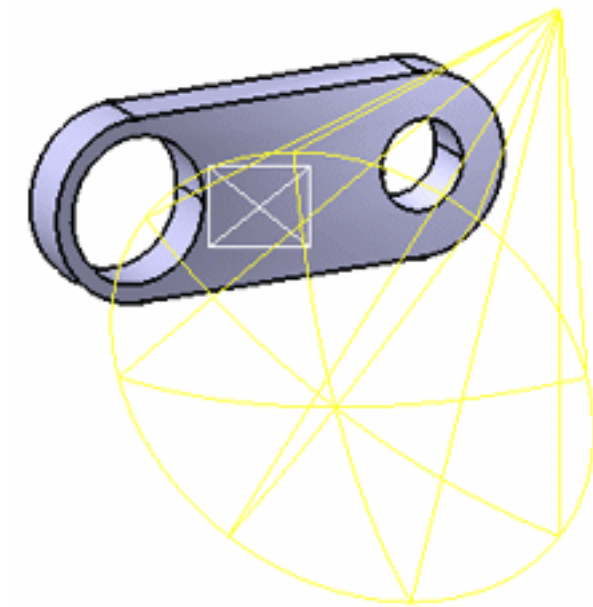




13. Replay your simulation with the "Animate viewpoint" option checked:



The simulation is replayed and shows the viewpoint changes you recorded:



Note: this option can be activated whenever you want, either before recording the simulation or after.



You can activate the "Automatic insert" at any time. This option records the shots automatically as you move the object as often as necessary.

14. Click OK to save your simulation.





Scene Tuning

[Tuning Light Sources for Rendering](#)

[Tuning Materials for Rendering](#)



Tuning Light Sources for Rendering



This task gives you some tips to help you tuning the light source parameters when rendering a scene.



Open the [TuningLightsStart.CATProduct](#) document.

Select the View->Render Style->Customize View menu in order to check that the Shading and Materials options are on. Select also the perspective view (still from the View->Render Style menu).



1. Create a Quick Render .



Step 1 - No light source

In our example, we aim at creating a light source that matches the lighting of the environment pictures, i.e. the sun light.



2. Create a Directional Light  then a Quick Render to check the result.



Step 2 - One directional light source

As you can see it above, the result is better but still not realistic enough.

Note: if there is not shadow cast on the pavement, edit the Bottom wall properties then check the Shadows "On" option under the Lighting tab.

3. Modify the light orientation using the green manipulators so that the red car shadow matches the shadows of the cars parked behind. For our example, a correct position would be:
 - origin in top rear left
 - target in bottom front right

Changing the viewpoint may be helpful to position the light (for example you can use the Top or Left view).

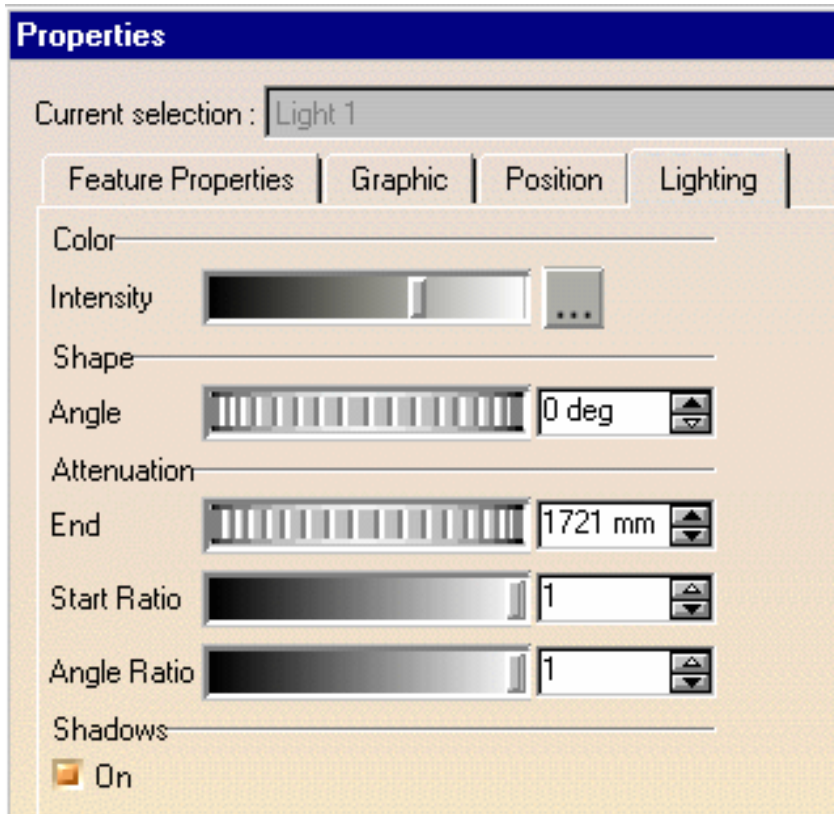
4. Double-click the camera to go back to the original viewpoint then create a Quick Render.

When using spot or point lights, pay attention to the lighting end in order to make sure that the light cone includes the object and thus, correctly illuminates it. Otherwise, the object will be too dark.

For more information on light sources, refer to [Defining a Light Source](#) in this guide.



5. For a more realistic lighting, you may need to create soften shadows.
To do so, simply duplicate the original light (Copy->Paste), slightly modify the orientation of the new lights then decrease the intensity (only one light cast shadows) as shown in step 6:
6. Access the Lighting parameters in the Properties dialog box to soften the light and give it a faint yellow color.



Intensity parameters: Red= 173, Green= 173, Blue= 167

Do not forget to check the Shadows option "On".

7. Edit the Lighting parameters of the duplicated light (*intensity parameters: R=G=B= 80*) then check the Shadows option "off" before creating a quick render.

You can use the Stop icon to interrupt the process as soon as an unsatisfactory result is detected.

When using a spot or point light, changing the Attenuation may also make the lighting more realistic.

8. When satisfied, Create a Shooting then Render it to check the result:



Shooting rendered from current viewpoint



Shooting rendered from camera viewpoint



Bear in mind that the more light sources, the more difficult the tuning of the global illumination of the scene.

Having a look at the [TuningLightsEnd.CATproduct](#) document may be helpful to check that your lighting parameters are correctly defined.

For more information on shooting creation, refer to [Setting Image Quality Parameters](#) in this guide.





Tuning Materials for Rendering



This task gives you some tips to help you tuning the material parameters when rendering a scene.



Open the [TuningMaterialsStart.CATProduct](#) document.

Select the View->Render Style->Customize View menu in order to check that the Shading and Materials options are on. Select also the perspective view (still from the View->Render Style menu).

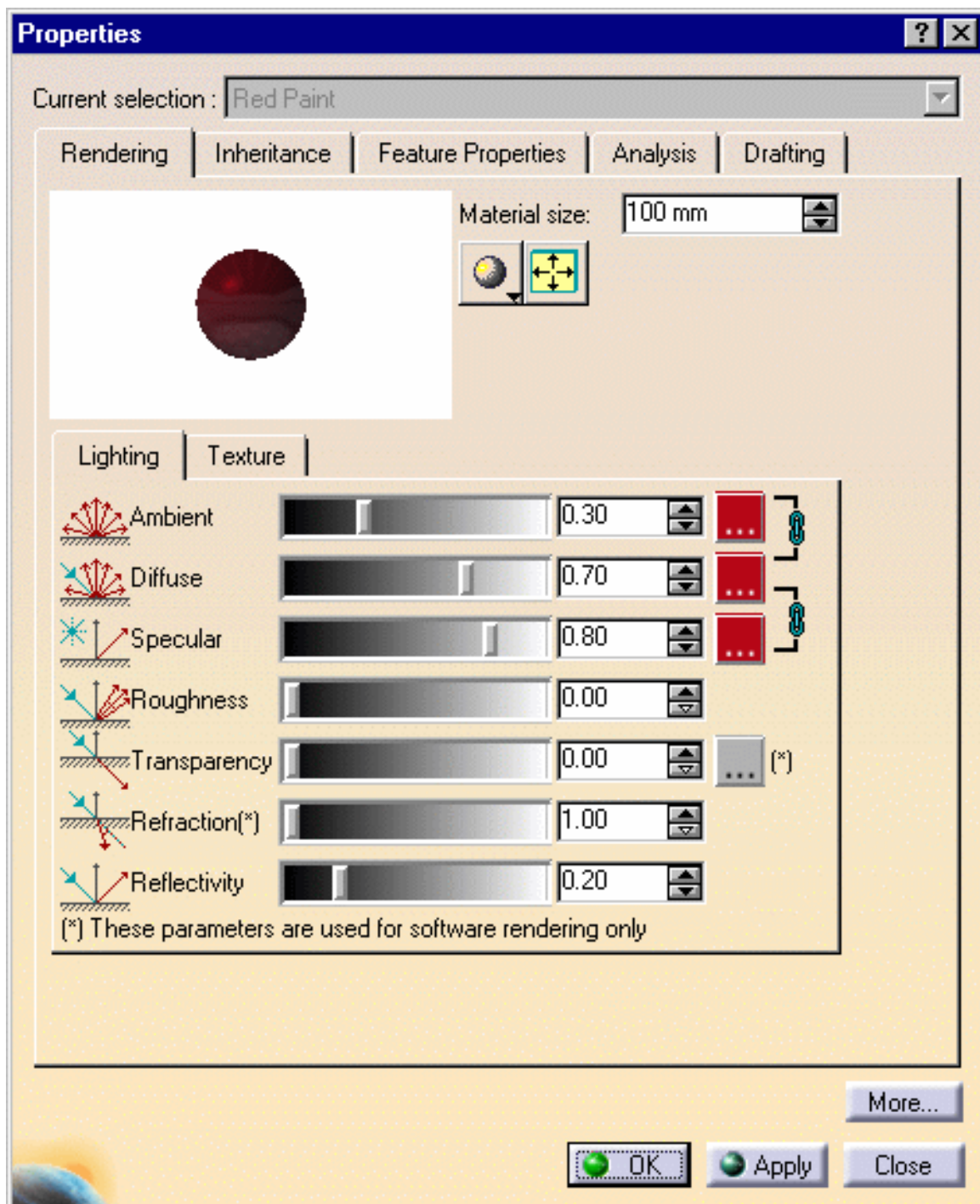


1. Create a quick render to detect the material parameters which need to be modified:



Specular and Reflectivity parameters set to 0

2. Access the Rendering parameters in the Properties dialog box.
We will start by modifying the Red Paint color and lighting so that the material looks like having the iridescent and reflective properties of the metal:



The paint color was assigned the following values:

Red=182

Green=6

Blue=24

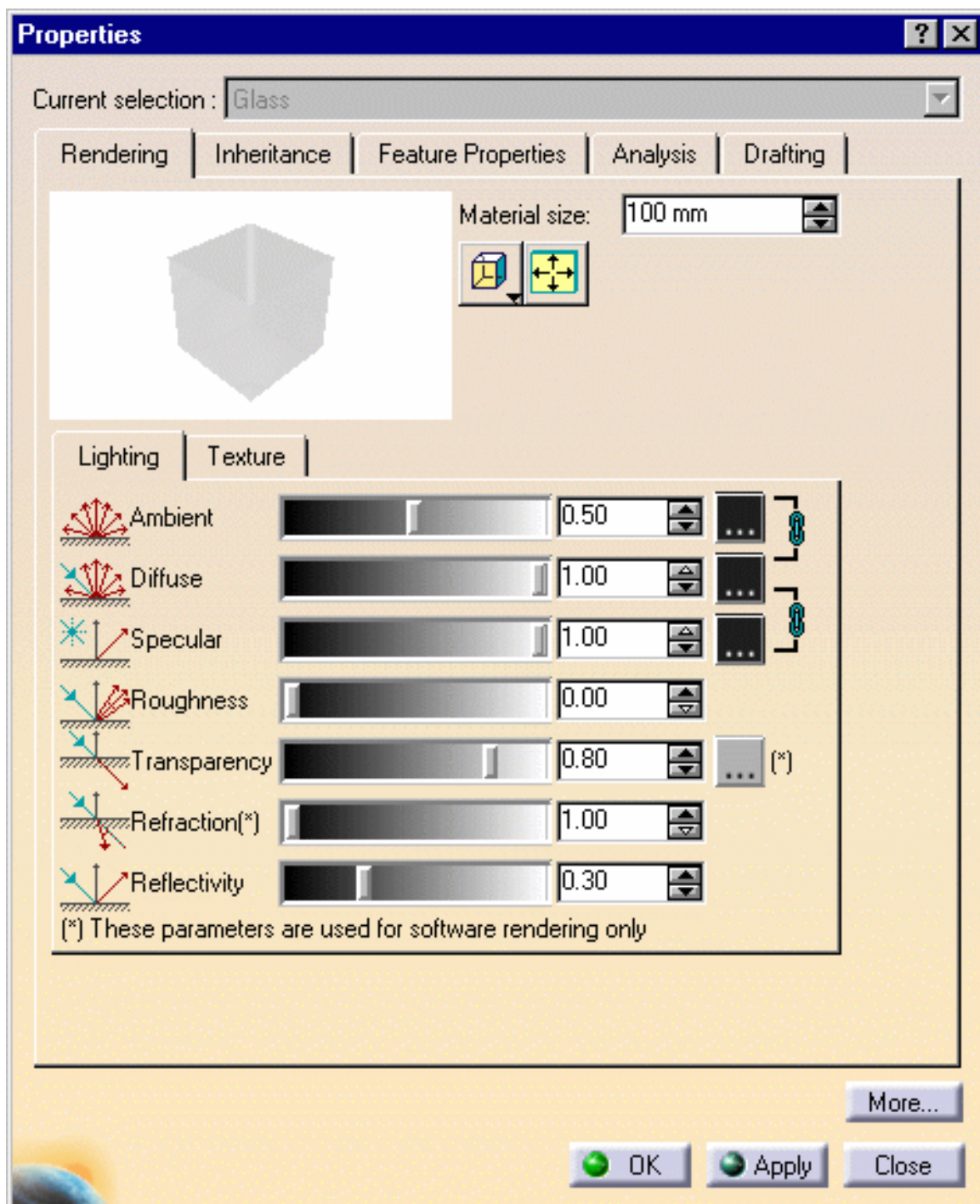
Play with the Diffuse coefficient to adjust more precisely the material lighting.

Do not forget that the Specular coefficient tunes intensity of light coming directly from the light source, whereas Reflectivity coefficient defines the amount of reflected light coming from other objects (indirect light).

3. Click OK to validate before creating a quick render:



4. Access the Glass lighting parameters in the Properties dialog box . As for Red Paint, the glass should be reflective and shiny:



The glass color was assigned the following values:

Red=30

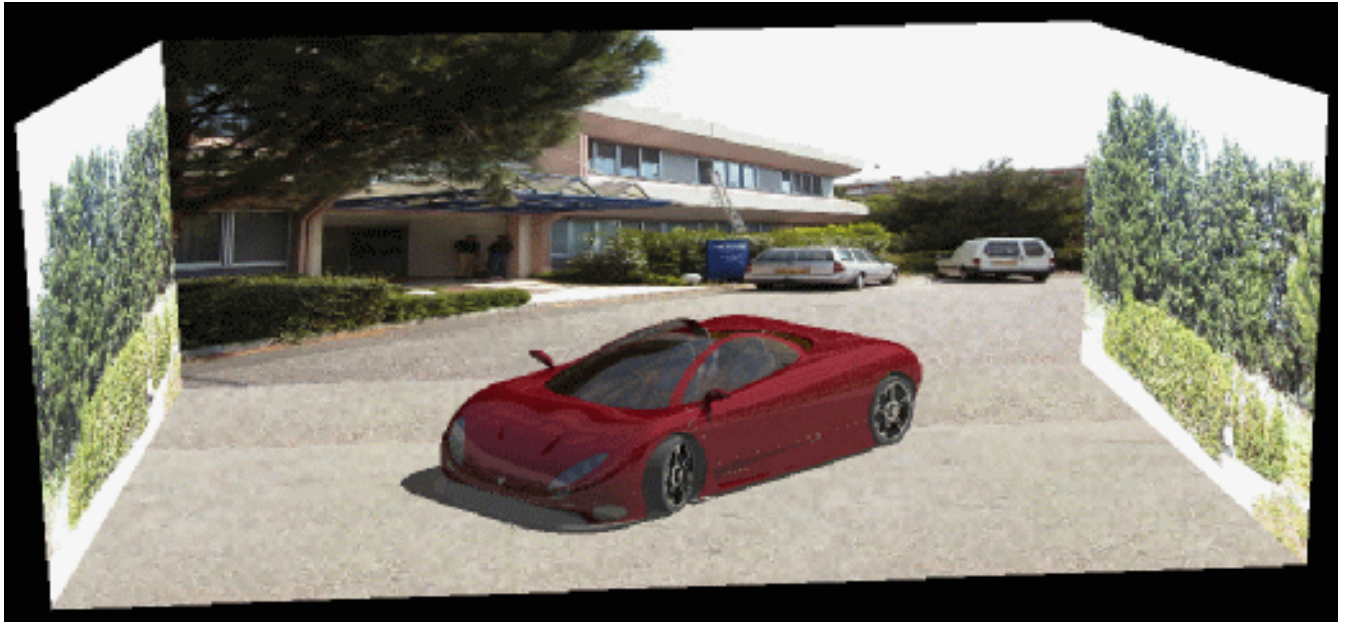
Green=30

Blue=30

5. Click OK to validate then create a quick render.

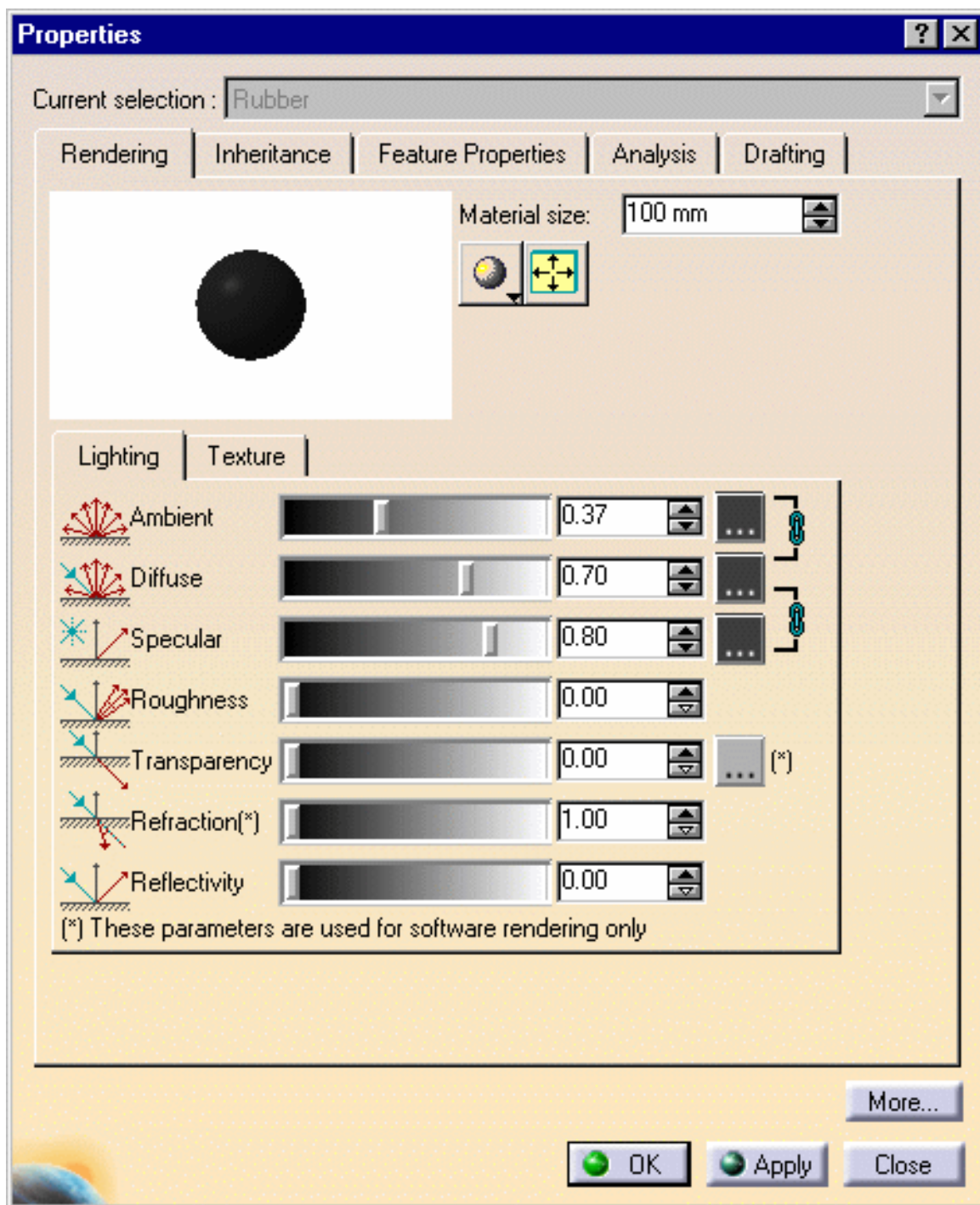
Note: if you want the red car lighting to be similar to the one of the other cars (in background), thus being as close as possible to reality, just set the Luminosity value to 0.75.

The quick render result will be:



We suggest that you create a quick render after each parameter modification to check the impact on the material.

6. Now let's deal with the tyre color and access the Rubber material properties. The following values have been applied:



The rubber color was assigned the following values:

Red=61

Green=61

Blue=61

7. When satisfied, validate your parameters then click the Render Shooting icon to check the final result:



Shooting rendered from current viewpoint



Shooting rendered from camera viewpoint

For more information on shooting, refer to [Setting Image Quality Parameters](#) in this guide.





Catalog Browsing

[Browsing the Scene Catalog](#)



Browsing the Scene Catalog



In this task you will learn how to browse the Scene catalog and instantiate its components.

Should you need further information about catalogs (creation, preview, query, and so on), please refer to [Using Catalogs](#) in the Infrastructure documentation.

This default catalog is located under:


downloaddirectory/OS/startup/components/Rendering/Scene.catalog

where OS is the operating system, for example intel_a (Windows NT).



Open the [RED-CAR.CATProduct](#) document.



1. Open the Catalog browser dialog box by clicking the Catalog Browser  icon. The Scene catalog opens:



2. Double-click a family from the list to display its components.
3. Click the selected component to see its preview as shown below:



4. Click the Table>> button to show/hide the catalog descriptions and keywords. By default, the table is hidden.



As far as Shootings are concerned, many informations are provided in the Table such as Name, Width and Height of the computed image, Texture, Shadows, etc.

Note: no component is provided by default. You have to create the components to be taken into account for the shooting or drag and drop existing elements to include them in the catalog.

5. Instantiate the desired element by double-clicking it.
Then you just have to adapt the instantiated element to your product. In the example below, the environment dimensions have been slightly modified so that the scene looks more realistic:



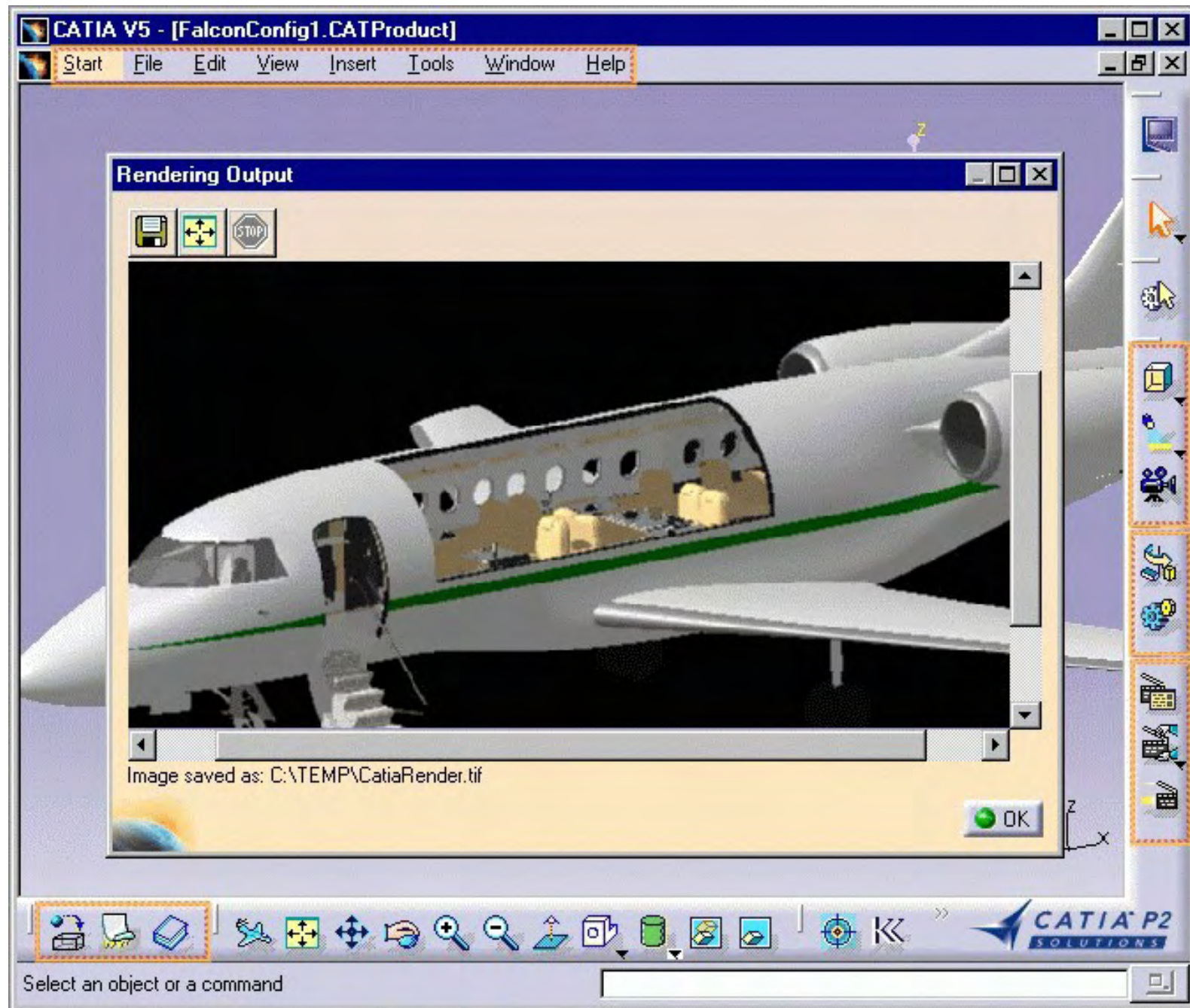
You can also Copy->Paste or drag and drop the element directly onto the product in the specification tree.



Workbench Description

The Photo Studio Version 5 application window looks like this:

Click the hotspots to see the related documentation.



[Menu Bar](#)

[Scene Editor Toolbar](#)

[Animation Toolbar](#)

[Render Toolbar](#)

[Apply Material Toolbar](#)














Menu Bar

This section presents the menu bar tools and commands dedicated to the Photo Studio workbench.
Many other operations are documented in the *Version 5 Infrastructure User's Guide*.

<u>S</u> tart	<u>F</u> ile	<u>E</u> dit	<u>V</u> iew	<u>I</u> nser <u>t</u>	<u>T</u> ools	<u>W</u> indows	<u>H</u> elp
---------------	--------------	--------------	--------------	------------------------	---------------	-----------------	--------------

Start

The Start menu is a navigation tool intended to help you toggle between different workshops. The contents of the Start menu vary according to the configurations and/or products installed.

<u>S</u> tart	For...	See...
 I nfr <u>a</u> structure ▶	Infrastructure->Rendering	Entering the Photo Studio workbench
 <u>M</u> echanical Design ▶		
 <u>S</u> hape ▶		
 <u>A</u> nalysis & Simulation ▶		
 <u>A</u> EC <u>P</u> lant ▶		
 <u>N</u> C Manufacturing ▶		
 <u>D</u> igital Mockup ▶		
 <u>E</u> quipments & Systems ▶		
 <u>D</u> igital Process for Manufacturing ▶		
 <u>V</u> irtual NC ▶		
 <u>D</u> EL <u>M</u> IA Infrastructure ▶		
 <u>D</u> evel <u>o</u> pm <u>e</u> nt ▶		
 <u>U</u> ser Galaxy		
<u>E</u> xit		

For more information about the Start menu, refer to the [Infrastructure](#) documentation.

File

The File menu lets you perform file creation, opening, saving and printing operations. Refer to the [Infrastructure](#) documentation.

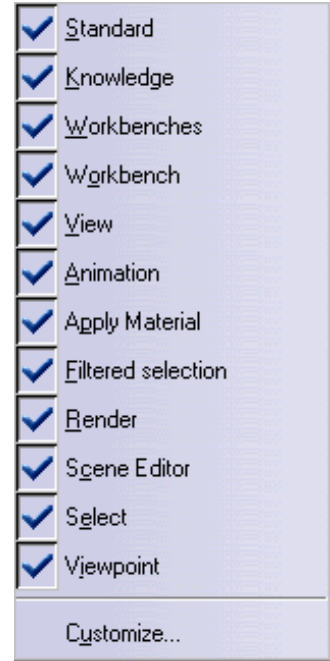
Edit

The Edit menu lets you manipulate selected objects. Please refer to the [Infrastructure](#) documentation.


View

The View menu lets you view document contents. Please refer to the [Infrastructure](#) documentation.


View - >Toolbars

	For...	See...
		
	Animation	Animation Toolbar
	Apply Material	Apply Material Toolbar
	Render	Render Toolbar
	Scene Editor	Scene Editor

Scene Editor Toolbar

	For...	See...
	Create Box Environment	Creating an Environment
	Create Spot Light	Defining the Light Parameters
	Create Camera	Creating a Camera from a Viewpoint

Animation Toolbar

	For...	See...
	Create Turntable	Creating a Turntable
	Simulation	Previewing and Rendering a Turntable and Animating Scene Elements in a Simulation

Apply Material Toolbar



For...

Apply Material

Apply Sticker

Catalog Browser


See...

[Defining the Wallpaper](#) + Refer to the Real Time Rendering documentation

[Stickers](#)

[Browsing the Scene Catalog](#)

Render Toolbar



For...

Create Shooting

Render Shooting

Quick Render

See...

[Defining Animation Parameters](#), [Setting Image Quality Parameters](#)


[Previewing and Rendering a Turntable](#), [Setting Image Quality Parameters](#)


[Creating a Quick Render](#)

Insert


Insert


Object

 New Component

 New Product

New CDM Component

 New Part

 Existing Component...

For...

Existing Component...

See...

[Loading Products](#)

Tools

The Tools menu lets you perform image capture and album management, set user preferences and manage macros. lease refer to the [Infrastructure](#) documentation.

Window

The Window menu lets you arrange document windows in relation one to the other. Please refer to the [Infrastructure](#) documentation.

Help

The Help menu lets you get help on the currently active command and the product in general. Please refer to the [Infrastructure](#) documentation.

Scene Editor Toolbar

This toolbar contains the following tools for creating and managing scene elements:



See [Creating an Environment](#)



See [Creating an Environment](#)



See [Creating an Environment](#)



See [Defining the Light Parameters](#)



See [Defining the Light Parameters](#)



See [Defining the Light Parameters](#)



See [Creating a Camera from a Viewpoint](#)

Animation Toolbar

This toolbar contains the following tools for creating turntables and animating scene elements:



See [Creating a Turntable](#)



See [Previewing and Rendering a Turntable](#) and [Animating Scene Elements in a Simulation](#)

Render Toolbar

This toolbar contains the following tools for creating shootings and launching renderings. Note that this toolbar is only available in the CATIA Photo Studio product line.



See [Defining Animation Parameters](#), [Setting Image Quality Parameters](#)



See [Previewing and Rendering a Turntable](#), [Setting Image Quality Parameters](#)



See [Setting Image Quality Parameters](#)



See [Creating a Quick Render](#)

Apply Material Toolbar

This toolbar contains the following tool for applying materials and stickers as well as browsing material catalogs. Note that these functionalities are only available in the ENOVIA Portal DMU line of products.



See [Applying Materials](#) in the *CATIA - Real Time Rendering Version 5 Guide*.



See [Applying Stickers](#)



See [Browsing the Scene Catalog](#)

Customizing

This section describes the different types of setting customization you can perform. All tasks described here deal with permanent setting customization.

These tasks are:



[Rendering Display](#)

[Rendering Output](#)

[Stickers](#)

Rendering



This task explains how to customize Rendering display and output settings as well as sticker mapping and adjustment.

Rendering Display



1. Select the Tools->Options... command then in the Infrastructure category, click the Rendering sub-category.

The Display tab appears:

The screenshot shows the 'Display' tab of the 'Options' dialog box. It has three sub-tabs: 'Display', 'Output', and 'Sticker'. The 'Display' tab is active. It contains three sections: 'Inactive Lights', 'Inactive Environments', and 'Dynamic Reflections'. Each section has a small icon and a set of radio buttons or checkboxes for different display options. 'Inactive Lights' has 'No display' (selected) and 'Full display'. 'Inactive Environments' has 'No display' (selected), 'Simplified display', and 'Full display'. 'Dynamic Reflections' has 'Enable' (checked), 'Consider wall textures' (checked), and two rows of radio buttons for 'Size in static' and 'Size while moving', both with '128' selected. There are also spinners for 'Update threshold' (set to 10) and 'Computation passes' (set to 1).

Display | Output | Sticker

Inactive Lights

☒ No display
☐ Full display

Inactive Environments

☒ No display
☐ Simplified display
☐ Full display

Dynamic Reflections

☒ Enable
☒ Consider wall textures

Size in static: ☐ 32 ☐ 64 ☐ 128 ☒ 256 pixels

Size while moving: ☐ 32 ☐ 64 ☒ 128 ☐ 256 pixels

Update threshold: 10 degrees

Computation passes: 1

Setting Light Display

This area lets you control the display of inactive lights:

- check the "No display for inactive lights" option to turn off inactive light display
- check the "Full display for inactive lights" option to turn on inactive light display.

Setting Environment Display

This area lets you to set the type of environment display:

- check the "No display for inactive environments" option to turn off inactive environment display
- check the "Simplified display for inactive environments" option to display inactive environments in a simplified way
- check the "Full display for inactive environments" option to turn on inactive environment display.

Setting Reflection Display

This area lets you define reflection parameters:

- check the "Enable" option to update environment reflections on reflecting objects
- check the "Consider wall textures" option to display wall textures on reflecting objects
- you can use the "Size in static" and the "Size while moving" options to indicate the texture size used when the product geometry is still and when it is moved
- the "Update threshold" field lets you specify the texture update threshold in degrees
- the "Computation passes" field lets you indicate the number of texture passes

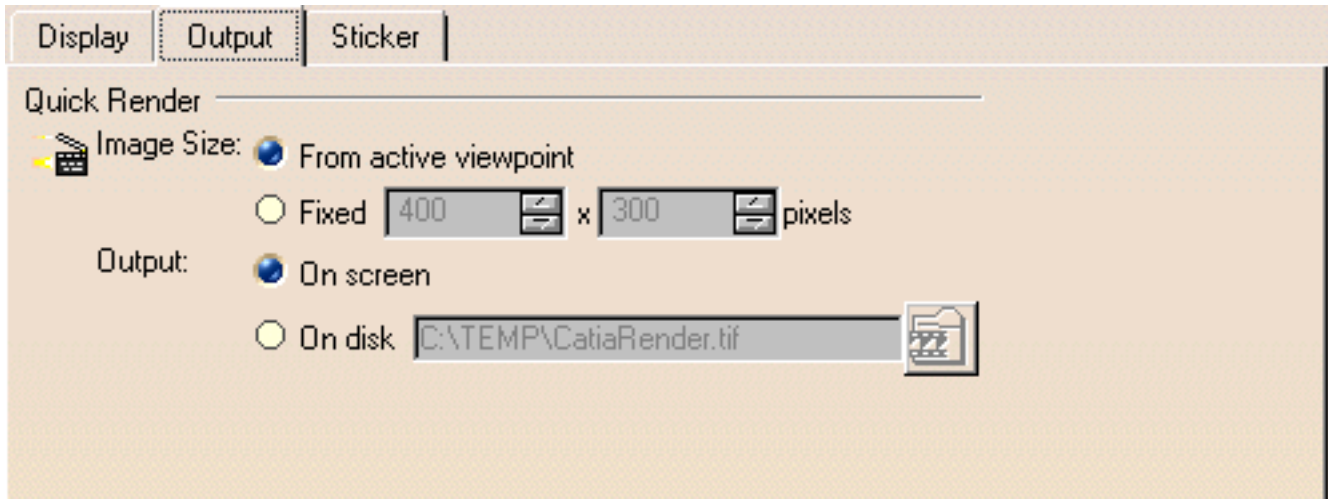


Rendering Output



1. Select the Tools->Options... command then in the Infrastructure category, click the Rendering subcategory.

2. Click the Output tab:



3. In the Image Size area, specify whether the image size is defined "From active viewpoint" or "Fixed". If you selected the "Fixed" option, you must then enter the image width and height in pixels.

4. In the Output area, indicate the output type, i.e. On screen or On disk. If you selected the " On disk" option, you must then specify the new path and the new name of the image.

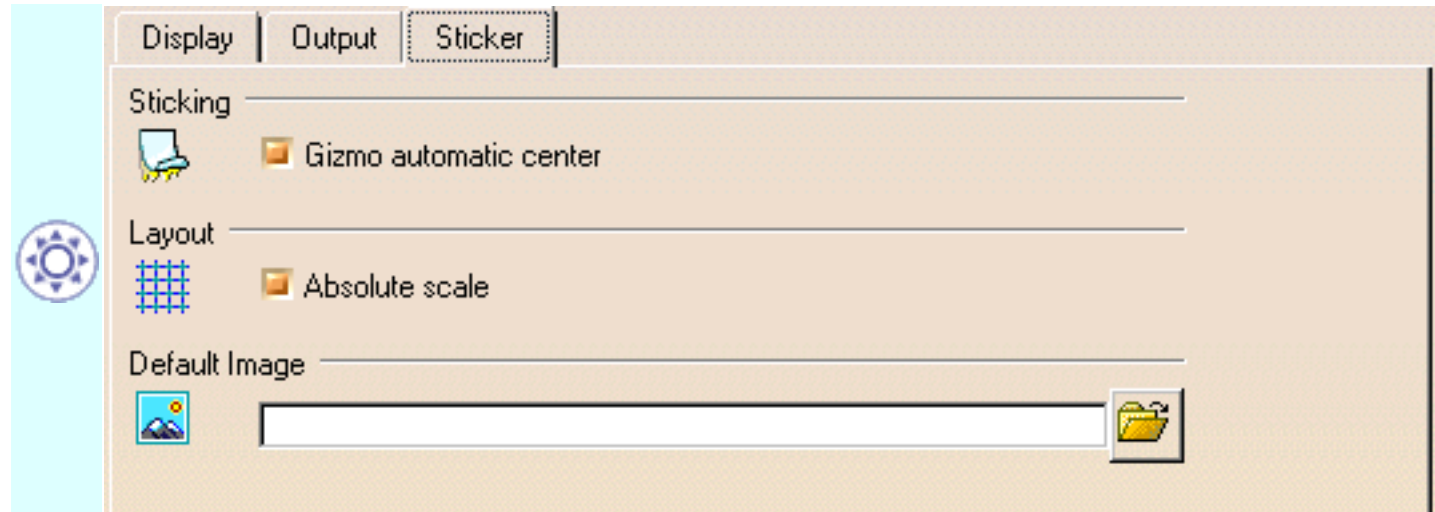


Stickers



1. Select the Tools->Options... command then in the Infrastructure category, click the Rendering subcategory.

2. Click the Sticker tab. Two options are on:



3. In the Sticking area, deactivate the Gizmo automatic center option if you do not want to the gizmo to be automatically centered when applied in Planar Projection mode.

This may be useful to adjust different parts of a same sticker on adjacent faces.


4. In the Layout area, deactivate the Absolute scale option if you do not want to use absolute scale values when adjusting the sticker.

These values are those displayed under the Adjustment tab of the Stick dialog box. The default relative scale is 1.00 which corresponds to the optimum sticker covering on the whole surface.

Note: this option is relevant in Planar Projection mode only. However, absolute values are proposed in UV mode but they are approximative.



5. The Default Image area lets you replace the default sticker image with your own image.

Simply enter the path to the user-defined image or use the  icon to open the File Selection dialog box which lets you browse your folders to the desired location.



Glossary

A

accuracy	A parameter enabling to define the degree of precision of the rendering quality
animation	A rendering of successive positions of a product recorded in a simulation
anti-aliasing	A graphic design technique that involves adding colored pixels to smooth the jagged edges of a graphic
attenuation	The action of lessening illumination

C

camera	A rectangular-shaped element with a lens used to specify the chosen viewpoint to take the image
contrast	The intensity of light diffused by the object when lit by light sources

D

directional light	A light coming from a given direction (like the sun, for instance)
--------------------------	--

E

environment	A geometrical element, either rectangular, cylindrical or spherical, used to simulate interior as well as exterior scenes
--------------------	---

L

luminosity	The intensity of light emitted by any light source
-------------------	--

P

part	A 3D entity obtained by combining different features
point light	A punctual illumination (like a bulb, for instance)
product	A 3D entity containing several components

property

The attribute or characteristic of an object that defines its state, appearance or value

R

raytracing

A photo-realistic image resulting from the calculation of the path of light reaching the product from various angles. Each pixel is created by calculating the behavior of a number of rays from these different points over the area covered by that pixel

reflection

A light wave returned from a surface

reflectivity

The ability to reflect light

rendering

A photo-realistic drawing of three-dimensional objects

S

scene

A reusable configuration enabling to put models on stage using cameras, light sources, environments, turntables

shininess

The dullness of an object

shooting

A set of parameters used to define a rendering

specification tree

An area of the document window reserved for viewing the design specifications of a part, presented in the form of a tree structure

spot light

A conical light

sticker

An image that can be mapped onto a face of a product

T

texture

An image that can be mapped onto a geometry

transparency

The degree of transparency of an object. The object transparency defines its property of transmitting light so that elements lying beyond are seen

turntable

A revolvable platform enabling to generate a sequence of images representing the model rotation around a user-defined axis

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A

accuracy 

adjustment

 sticker 

ambient

 lighting (material) 

Animate viewpoint option 

animation




 parameters 

 replay 



 scene 


Animation toolbar  

anti-aliasing 

Apply Customized View command   


Apply Material command  

Apply Material toolbar  

Apply Sticker command 

applying

 sticker 

attenuation (lighting) 



B

box

 environment 

browse

catalog 



C

camera


conical 


cylindrical 

focal length 

lens 

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Camera View command 

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