



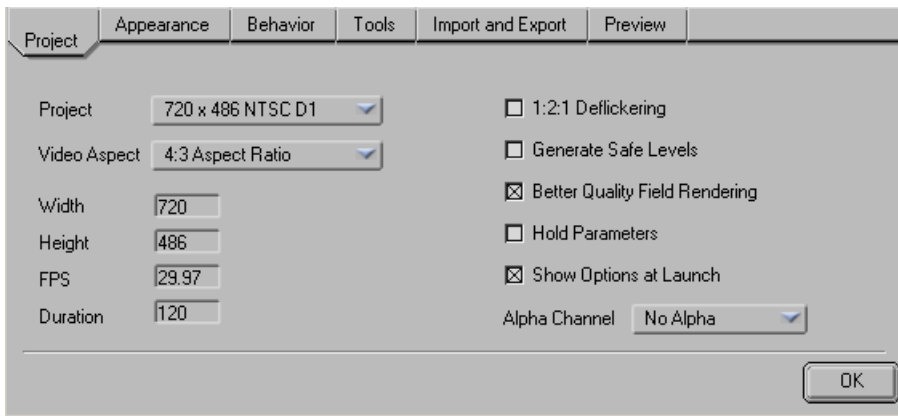
Animating a 3D Model Using Keyframes

In this tutorial, you will use keyframes to animate a single track in 3D space. This tutorial also covers basic interpolation settings and file management.

This tutorial uses media from PlanIT3d. To complete the tutorial you can use your own 3D model or download the model used in the tutorial from www.PlanIT3d.com.

Importing a 3D Model

1. Launch Boris Blue. The Project tab of the Preferences window appears.



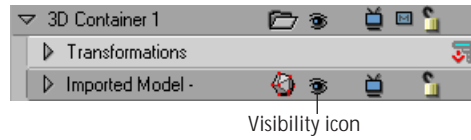
2. The **Project menu** should be set to the default, **720 x 486 NTSC D1**. If it is not set to the default project size, choose it from the menu. If you work in PAL, choose **720 x 576 PAL D1 DV** from the menu.
3. Increase the **Duration** of your effect to **180** (frames).
4. (Optional) Deselect **Show Options at Launch** to prevent the Preferences window from appearing the next time that you launch Blue.
5. Click **OK**. The Blue interface appears.
6. In the Timeline window, click the **Add Model button**.



- 7. A dialog box lets you navigate to the file's location. Highlight the 3D model file and click **Open**. The image appears in the Composite window and tracks appear in the timeline.




- 8. Click the **Visibility icon** on the Imported Model track to hide that track. The taxi disappears from the Composite window.
- 9. Click the **Visibility icon** again to restore the taxi's visibility.

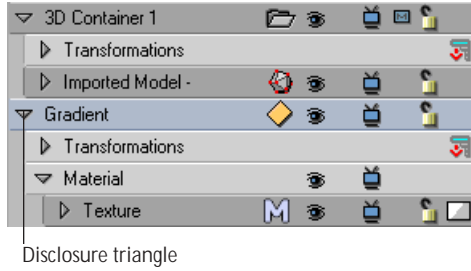


Adding a Gradient Background

In this part of the tutorial we add a gradient background to make the effect more interesting.

- 1. In the Timeline window, click the **Add Gradient Media button**.  A Gradient track appears in the Timeline and gradient media appears in the Composite window.

- 2. **Drag** the Gradient track below the Imported Media track. This ensures that the gradient appears behind the imported model. Your tracks should look like the example at right.



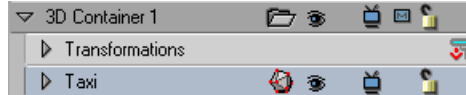
- 3. (Optional) Select the Material track nested in the Gradient track and adjust the gradient in the Controls window.
- 4. Click the **disclosure triangle** next to the Gradient track to hide the tracks nested within it.



Naming Tracks

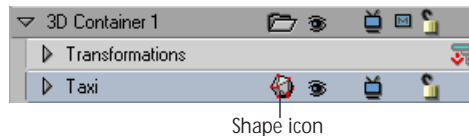
By default, tracks are named by their media type. For example, if you change a track's media to Still Image File, the track is automatically assigned the file name. However, once you explicitly name a track, the track retains that name, even if you change the track's media type.

1. Select the Imported Model track and choose **Track > Rename Track**.
2. Type "Taxi" and press **Enter**. The track is renamed "Taxi." You can also rename the track using the following shortcut. Select the track and press **Enter**. Type "Taxi" and press **Enter**.



Animating the 3D Model Shape

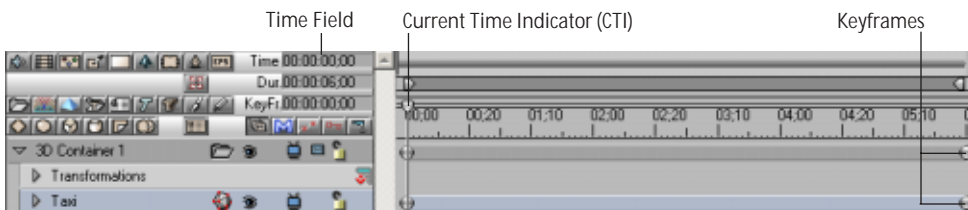
You can assign each track in the timeline one of nine 3D shapes by pressing the **Shape icon** for that track. Note that each shape has a different icon.



Selecting a track displays the parameters for that type of track in the Controls window. Parameters can be animated using **keyframes**. A keyframe sets specific parameter values for a track at a certain point in the timeline. When you place multiple keyframes on the timeline, the program interpolates, or computes intermediate values, between keyframe values.

Blue includes two types of keyframes, **master keyframes** and **parameter keyframes**. Master keyframes appear on the Shape and Container tracks. Parameter keyframes appear on the Transformations tracks nested inside the Shape and Container tracks. You can associate multiple parameter keyframes with each master keyframe. When you create a parameter keyframe, the corresponding master keyframe is automatically created. In this section, you will set keyframes in the timeline to animate several parameters.

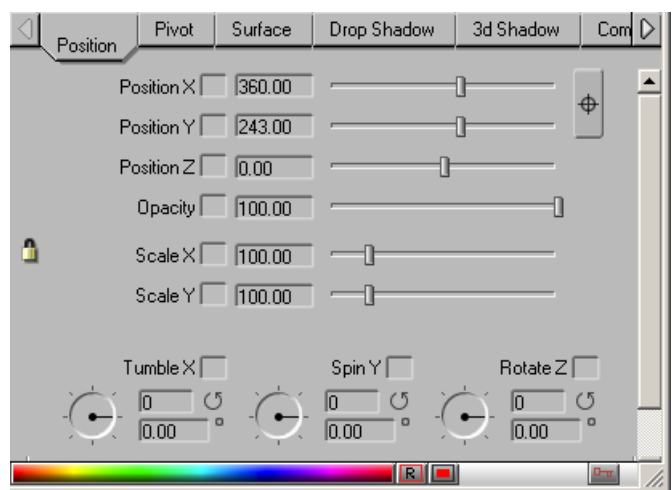
1. Click to select the Taxi track. The track already has keyframes placed at the start and end. Because both keyframes contain the default parameter values for the track, the effect is static (not animated).



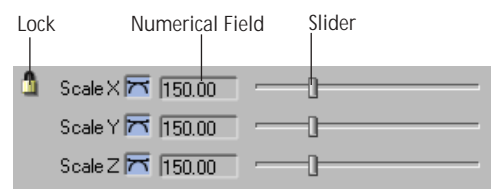
- 2. Move the **Current Time Indicator (CTI)** to frame 20 (Time 00:00:00:20). The CTI determines which frame of the effect displays in the Composite window. As you move the CTI around the timeline, the Composite window updates to display the frame at the new CTI location. Because the taxi is a still image, all the frames are the same.

You can either drag the CTI to the new location or type the timecode of the new location in the **Time field** in the Timeline window and press **Enter**. Make sure that the first keyframe is not selected after you drag the CTI. Selected keyframes are red. To deselect a keyframe, click in the track on the right side of the timeline.

- 3. If it is not already displayed, click the **Position tab** in the Controls window.

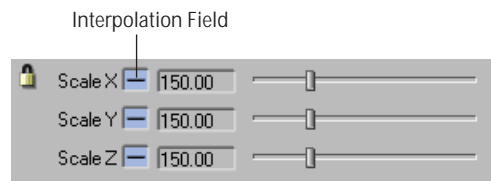


- 4. Change the **Scale X** value to **150** by dragging the slider to the right. (The three Scale values are locked by default, so the Scale Y and Scale Z settings also update.) You can also scrub the numerical field or click the numerical field, type **150**, and press **Enter**.

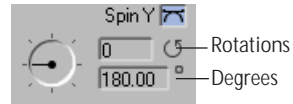


A new keyframe is automatically created at frame 20, and the taxi image is scaled to 150% of its original size. The keyframe uses the default interpolation, **Ease In/Out**.

- 5. Click to select the new keyframe at frame 20. Selected keyframes are red.
- 6. Press the **Interpolation field** in the Scale X controls. Choose **Hold** from the menu.



7. In the Controls window, set **Spin Y** to **0** rotations, **180°** by typing 180 and pressing **Enter**.
8. Press the **Interpolation** field in the Spin Y controls. Choose **Hold** from the menu.



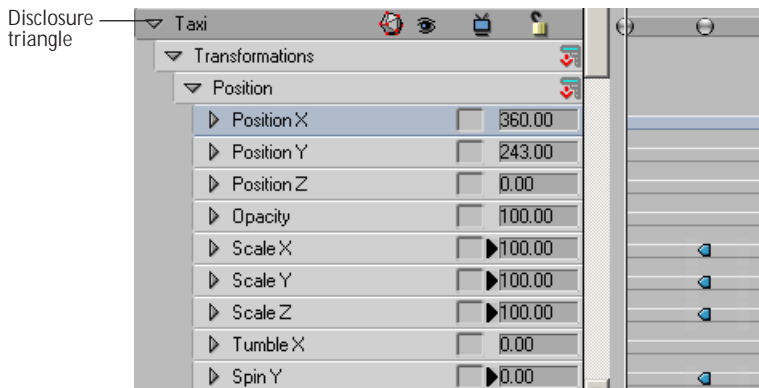
9. Return the CTI to the beginning of the effect, either by dragging the CTI to the beginning or by pressing the **Home** key.
10. Play the sequence by clicking the **Play button** in the Composite window or by pressing the **Space** bar.



The taxi starts full size and facing outward, spins around and increases to 150% size by frame 20, then holds at that size and orientation for the remainder of the effect. Playback loops until you press the Space bar or Play button again.

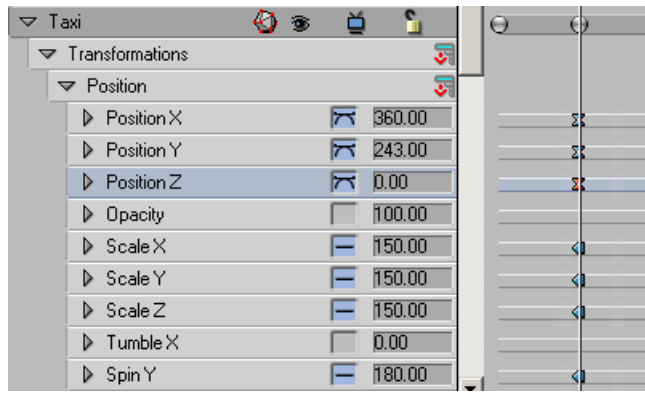
Now, you will add animation to move the taxi off-screen.

11. Select the Taxi track.
12. You should see red, green and blue OpenGL interactors in your Composite window. If you don't, press the **G** key or choose **Preview > OpenGL Interactor > Show Interactor**. The interactors should display arrows at their ends to indicate that you are in Translation mode. If they don't, press the **W** key or choose **Preview > OpenGL Interactor > Translation Interactor**.
13. Expand the Taxi track by clicking the disclosure triangle to the left of the track name, then expand the Transformations track. Expand the Position track to reveal tracks that correspond to each parameter in the Position tab in the Controls window. The keyframes you set earlier in the exercise appear in the Scale X, Scale Y, Scale Z and Spin Y tracks as shown in the following example.




14. Move the CTI to frame 20 (Time 00:00:00:20).

- 15. Select the Position X track, then choose **Track > New Keyframe** or type **Control-N**. A parameter keyframe appears in the Position X track at the CTI's current position (Time 00:00:00:20). Use the same steps to create a new keyframe at that point in the Position Y and Position Z tracks. Because the keyframes use Ease In/Out interpolation, they appear as an "X" in the timeline. Your timeline should now appear like the following illustration.

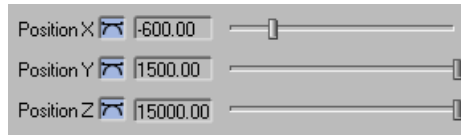


- 16. Move the CTI to the last frame in your effect (Time 00:00:06:00) and click the final keyframe for the Taxi track. The keyframe turns red to show that it is selected. You may need to scroll up.
- 17. Click the **green interactor** in the Composite window. The green interactor moves the image on the Y-axis. Make sure you click the interactor and not the taxi image. The shaft of the interactor turns yellow to indicate that it is selected.
- 18. Drag the interactor down until the taxi goes offscreen. In the Controls window, the value for Position Y updates. Stop dragging at a **Position Y** value of approximately **1500**.

Most likely you'll need to reduce the size of the preview scale to drag the interactor as far as needed. Choose a smaller scale from the **Scale menu** located  in the Composite window.

- 19. Click the **red interactor** and drag to the left until the taxi image is offscreen. Make sure you click the interactor and not the taxi image. The shaft of the interactor turns yellow to indicate that it is selected. In the Controls window, the value for Position X updates. Stop dragging at a **Position X** value of approximately **-600**.
- 20. Click the **blue interactor** and drag downward until the taxi image disappears. Make sure you click the interactor and not the taxi image. The shaft of the interactor turns yellow to indicate that it is selected. In the Controls window, the value for Position Z updates. Stop dragging at a **Position Z** value of approximately **15000**.

- If you prefer, you can adjust the parameters in the Controls window by setting **Position X** to **-600**, **Position Y** to **1500**, and **Position Z** to **15000** with the default **Ease In/Out** interpolation.



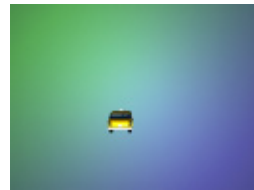
- Return the CTI to the beginning of the effect, and play the effect. The taxi now spins around and increases to 150% size by frame 20, and moves off screen by frame 180.



Time 00:00:00:00



Time 00:00:00:20



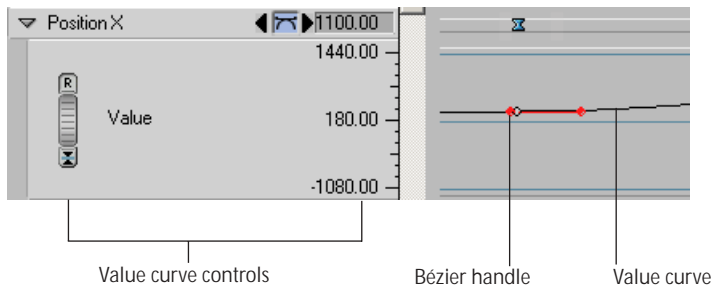
Time 00:00:02:00

- Complete the steps in the next section to finetune your animation.

Working with Bézier Curves

The **Ease In/Out** interpolation (the default interpolation type) allows you to work with bézier curves to finetune the motion of the effect. Keyframes that use the Ease In/Out interpolation are displayed as an "X" in the timeline. This section describes two ways of using the bézier controls to smooth transitions at keyframe points.

- In the timeline, select the keyframe at frame 20 (Time 00:00:00:20).
- Expand the Position X track to reveal the Value curve controls for that parameter.

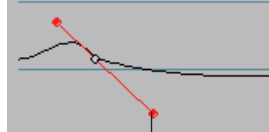


Red bézier curve handles appear at each keyframe point on the Value curve in the timeline.



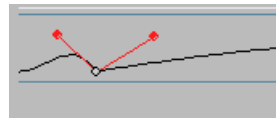
If you do not see bézier handles in the value curve, press the interpolation field in the Position X controls and choose **Ease In/Out** from the menu.

- 3. Drag either of the handles to move them up or down or lengthen them. The left handle controls the curve going into the keyframe, and the right handle controls the curve going out of the keyframe.



Bézier handle

- 4. To manipulate the direction of each bézier handle independently, press the **Alt** key as you drag the handle.
- 5. After adjusting the bézier handles, play your effect to see the affect of the adjustments.



An Introduction to Shaders

Shaders simulate different types of surfaces on each face of your 3D shape. Shaders calculate effects on a per-pixel basis, allowing you to create complex, realistic scenes in real time. Shaders provide unprecedented control for determining the lighting, shading, and color of each individual pixel, allowing you to create unique surface effects.

In this example, you apply an Image Processor Shader to the 3D Container track in your effect.

- 1. Select the 3D Container track in your timeline.
- 2. Choose **Shaders > Image Processors > Invert Solarize**.



The Shader is applied and the Composite window updates. An Invert Solarize Image Processor track appears in the timeline.

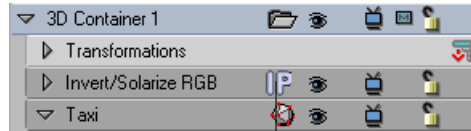
- 3. Play your effect. The Shader does not need to be rendered.
- 4. In the Controls window, choose **Invert/Solarize Saturation** from the **Type** menu.





Your effect updates with an altered Shader. Experiment with some of the other menu choices.

5. Boris Blue also makes it easy to change to a different Shader. Simply click the **Shader icon** to choose a different Shader from the menu. In the following example, a Scan Lines Shader has replaced the Invert Solarize Shader.



Shader icon

6. Again, experiment with different Shaders and make changes to them in the Controls window.



Saving Settings

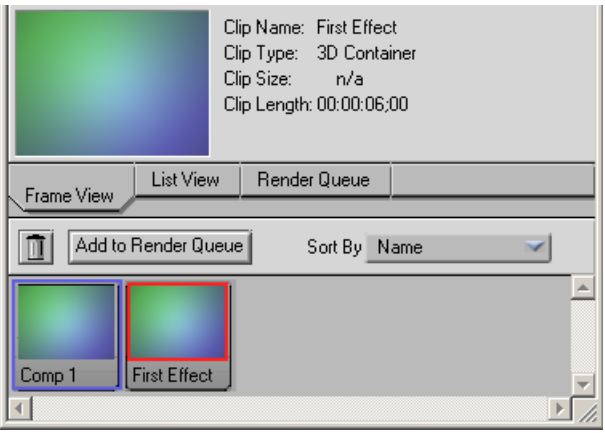
Use the Render Queue to render your effect. You can also save the settings file and open it later in a host application to render it. In this case, you will save the effect you created to the Project window and also in the Boris Library Browser so that you can reuse it later.

The Project window is useful if you want to experiment with multiple versions of an effect. You can save the composition to the Project window and then continue adjusting parameters. Later, if you decide that you like the earlier version, you can open that version in the timeline.

1. Choose **Composition > Save Composition Copy**.

A copy of your effect appears in the Project window.

- 2. Click the Composition copy and rename it “First Effect” by pressing **Enter**, typing the name and pressing **Enter** again. When you finish, your Project window should look like the following example.



- 3. Choose **File > Save Project Copy to Library**.
A dialog box lets you name and save a copy of the effect.
- 4. Click the **New Folder** button to create a new folder. Name the folder “My Effects” and press **Enter**.
- 5. Open the “My Effects” folder.
- 6. Click to select the **With Thumbnail Previews** checkbox.
- 7. Name your effect and click **Save**.