Introduction

About Autodesk® Stitcher™ Unlimited 2009

Autodesk Stitcher Unlimited 2009 is the way to build high-quality panoramas for the Web, film, print, and 3D.

With advanced features, Autodesk Stitcher Unlimited 2009 gives photographers and artists the power to deliver the most impressive panoramas in the formats they need. Autodesk Stitcher creates wide-angle, high-resolution 360° × 180° panoramic images in seconds from horizontally and vertically overlapping photos. You can create new image sets from the panorama using a virtual camera with zoom, pan, and roll motion. Results can be rendered as a cube, plane, cylinder, sphere projection, and as a QuickTime® movie (Cylindrical QTVR and Cubic QTVR), and in VRML format for creating high-impact Web pages, definition mattes, environment maps, and 3D models.

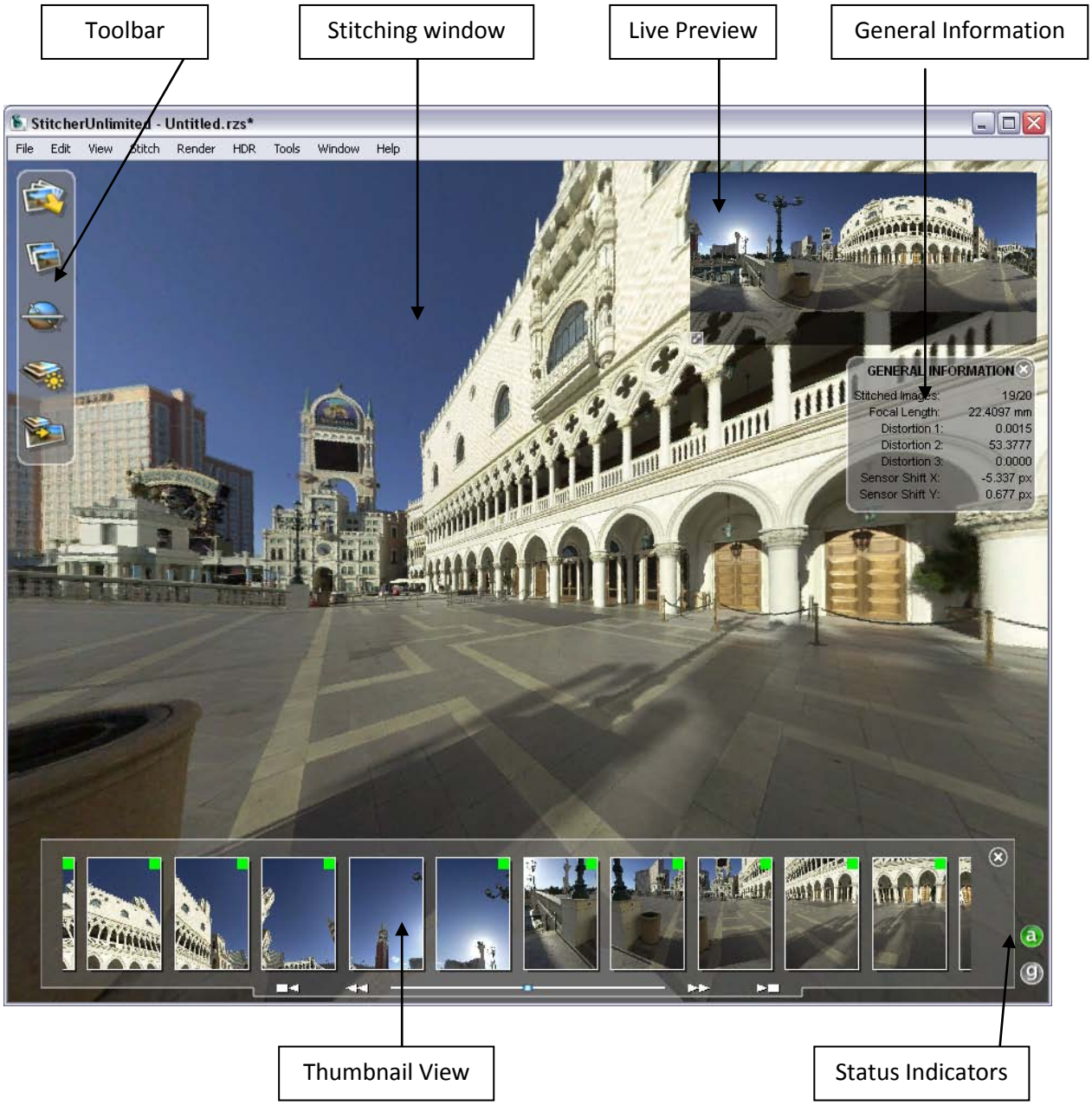
Goal of this tutorial

This 5-step tutorial will guide you through the creation of a full spherical panorama image in 360° and a QTVR interactive file. This complete project will take you step by step through the main workflow and features of Autodesk Stitcher Unlimited 2009.

This tutorial was prepared and illustrated using Autodesk Stitcher Unlimited 2009.

1. Loading Images

The Autodesk Stitcher Unlimited 2009 interface



Loading your shots

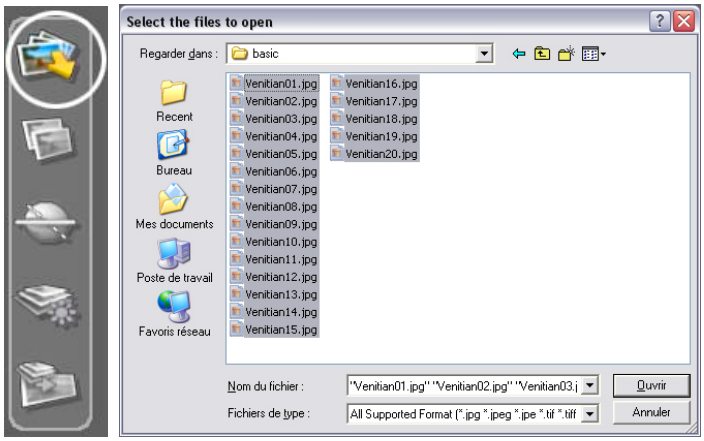
The first step in the creation of a Stitcher project is to load the image files that you will use to create the panorama.

To load the pictures:

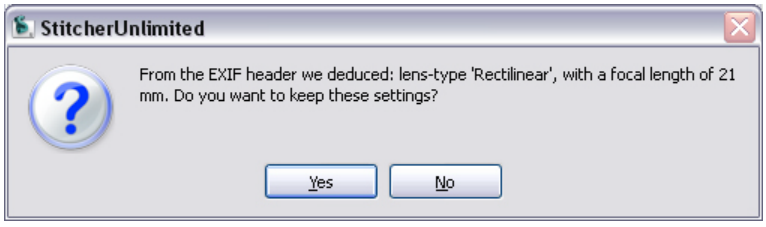
1. Select **File > Load Images** from the main menu or click the **Load Images** icon in the toolbar.

   The **Load Images** browser opens.

2. Select all the files you will use for your panorama.
3. Click **Open**.

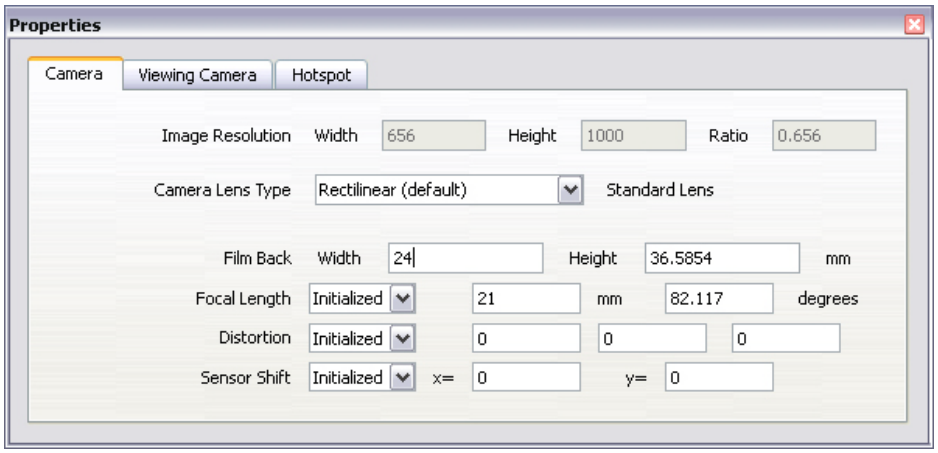


When the images are loaded, Stitcher tries to read the EXIF data and proposes the appropriate camera lens type. The following dialog lets you choose between keeping the settings and adjusting them manually.

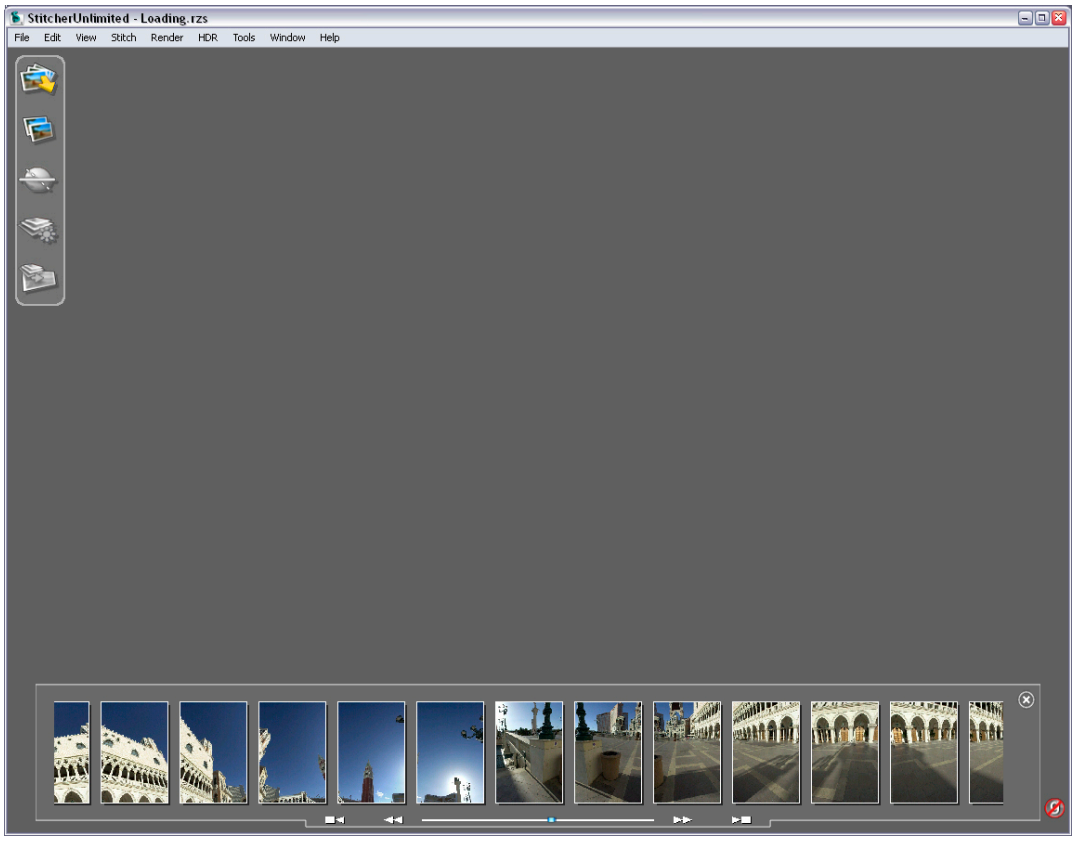


The current example use images with EXIF data so Stitcher correctly detects all the parameters. Click **Yes** to keep the settings Stitcher has read.

NOTE If for any reason you need to change the parameters you can right-click anywhere inside the Stitcher interface and open the **Properties** dialog.



Your images will be loaded into the **Thumbnail View**, as demonstrated in the screen shot below.



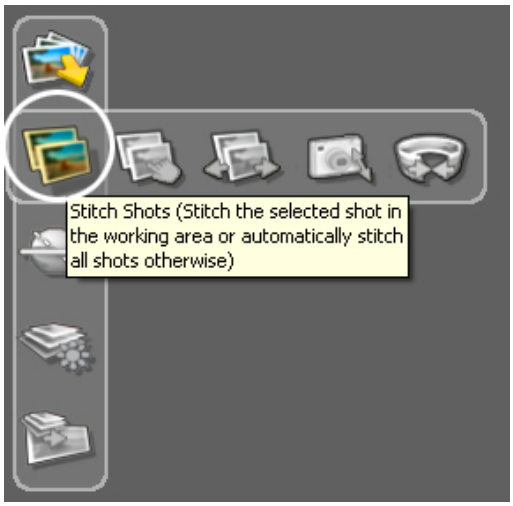
*Open the **loaded.rzs** file to see the image files already loaded for this project.*

2. Stitching

Auto-Stitching

Autodesk Stitcher Unlimited 2009 has a fully automated stitching engine. Run the **Stitch Shots** function by either:

- clicking the icon in the toolbar, or
- press **ENTER** (make sure no images are selected), or
- **Stitch > Stitch Shots**



The **Stitching Window** is a 3D environment in which you can navigate around using the navigation controls (see “Navigating in Stitcher” in the Stitcher User Guide for more information on navigation).

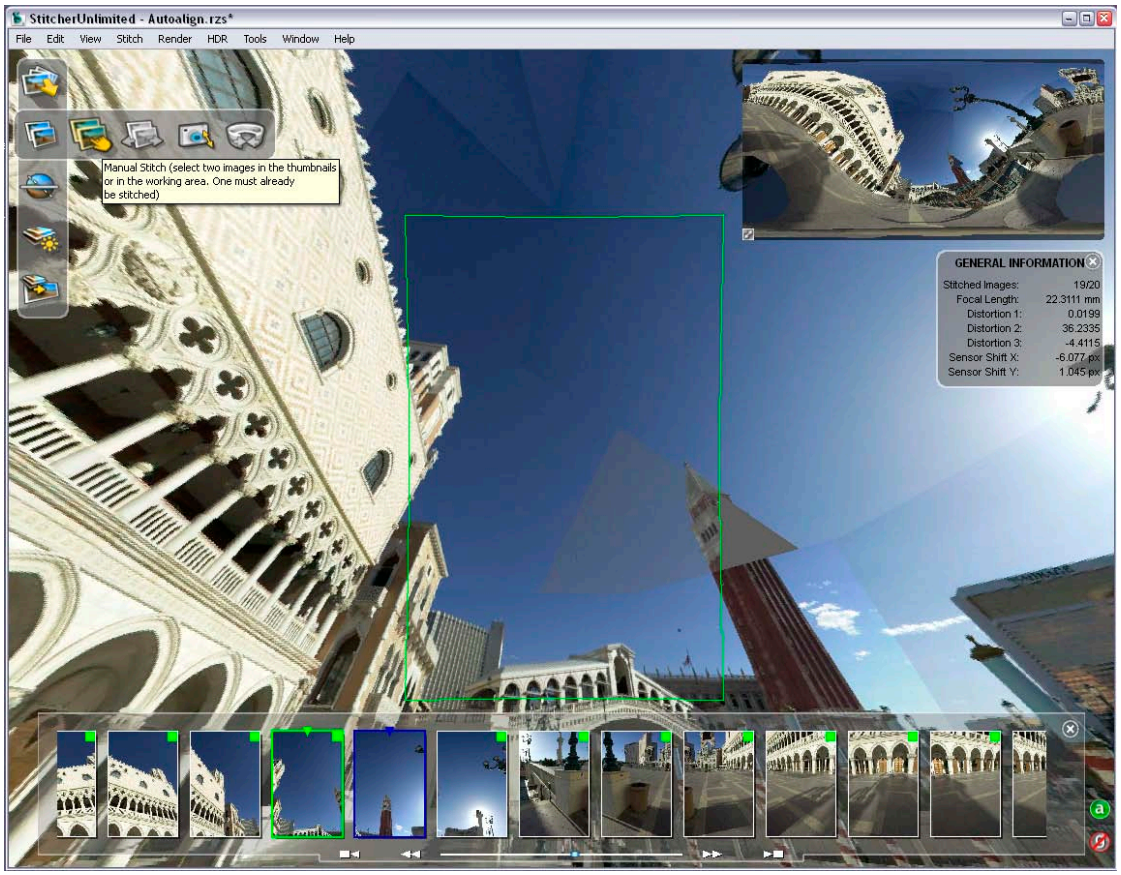
NOTE The display can appears smoother in the Stitching window if your graphic card allows real time linear blending; the GPU options can be set from the preferences. The icon is a status indicator to specify that the GPU blending is activated.

Manual-Stitching

In this example almost all the pictures are automatically stitched, but one is missing. For situations like this, you can use the **Manual Stitch** tool to complete the panorama.

To manually stitch the missing image, you need to find a stitched image which overlaps it. You will use the overlapping features in the shots to match the images one to each other.

1. Select the unstitched image
2. Add to the selection by holding down the **Shift** key and clicking an already stitched image which has features that overlap the unstitched image (in our example use the venitian08.jpg)



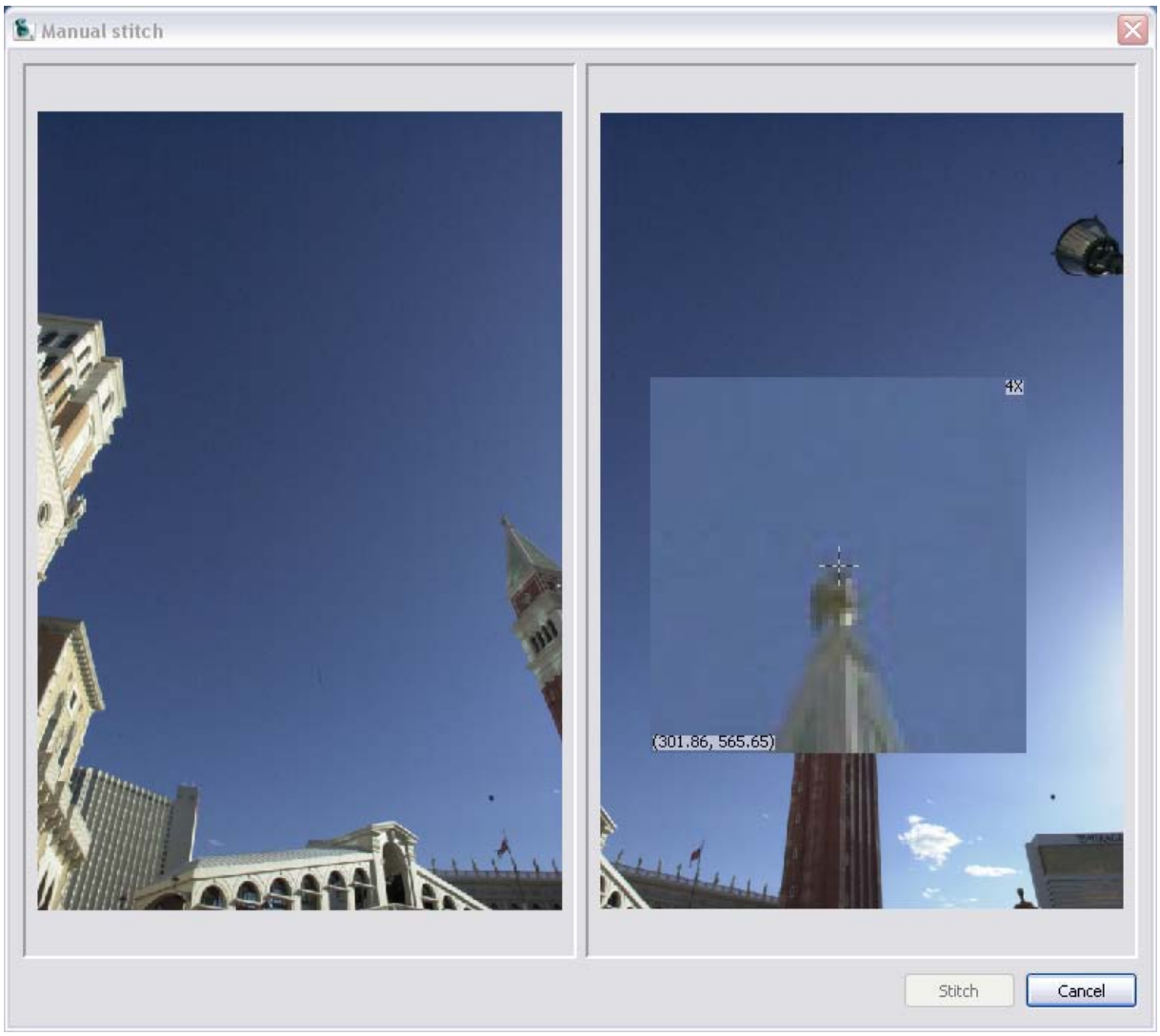
3. Do one of the following:

   - Click **Manual Stitch** in the Toolbar, or
   - Select **Stitch > Manual Stitch,** or
   - Right-click and choose **Manual Stitch** from the contextual menu

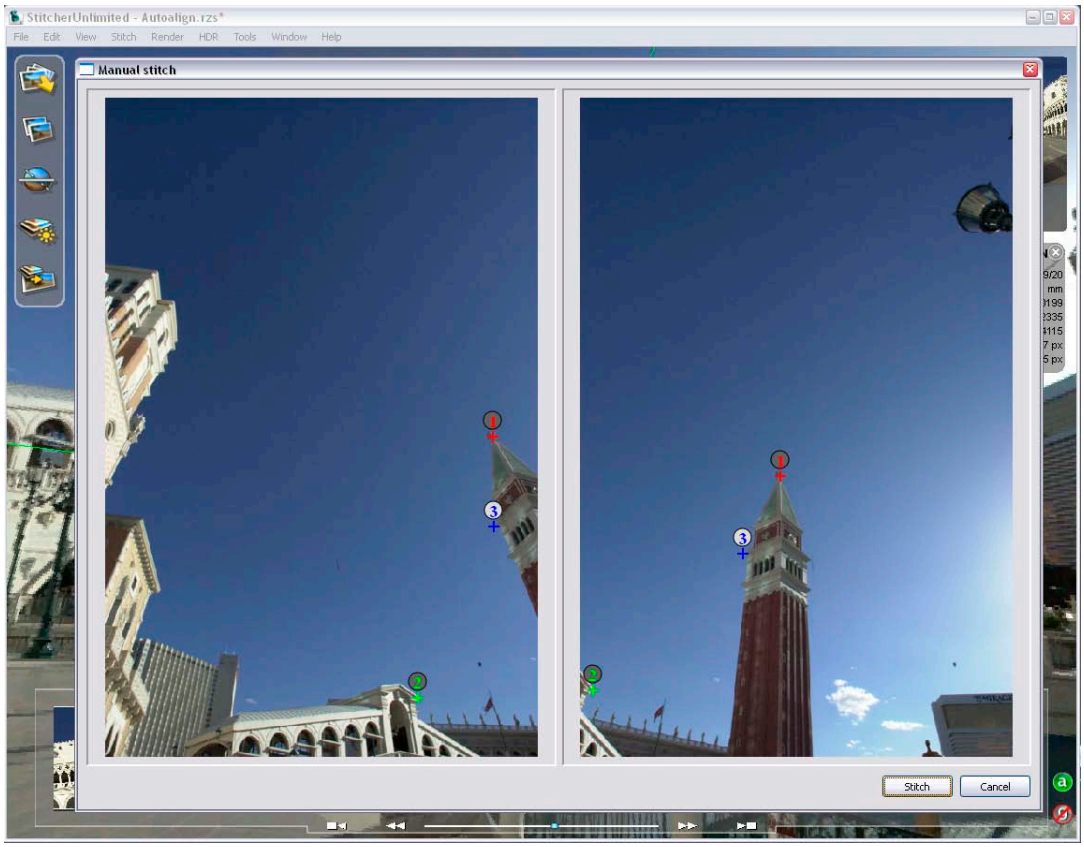
When stitching images manually, you need to find at least two common points in both images. The points should not be on the same line, but be distributed in the image for greater precision.

The manual stitch workflow is:

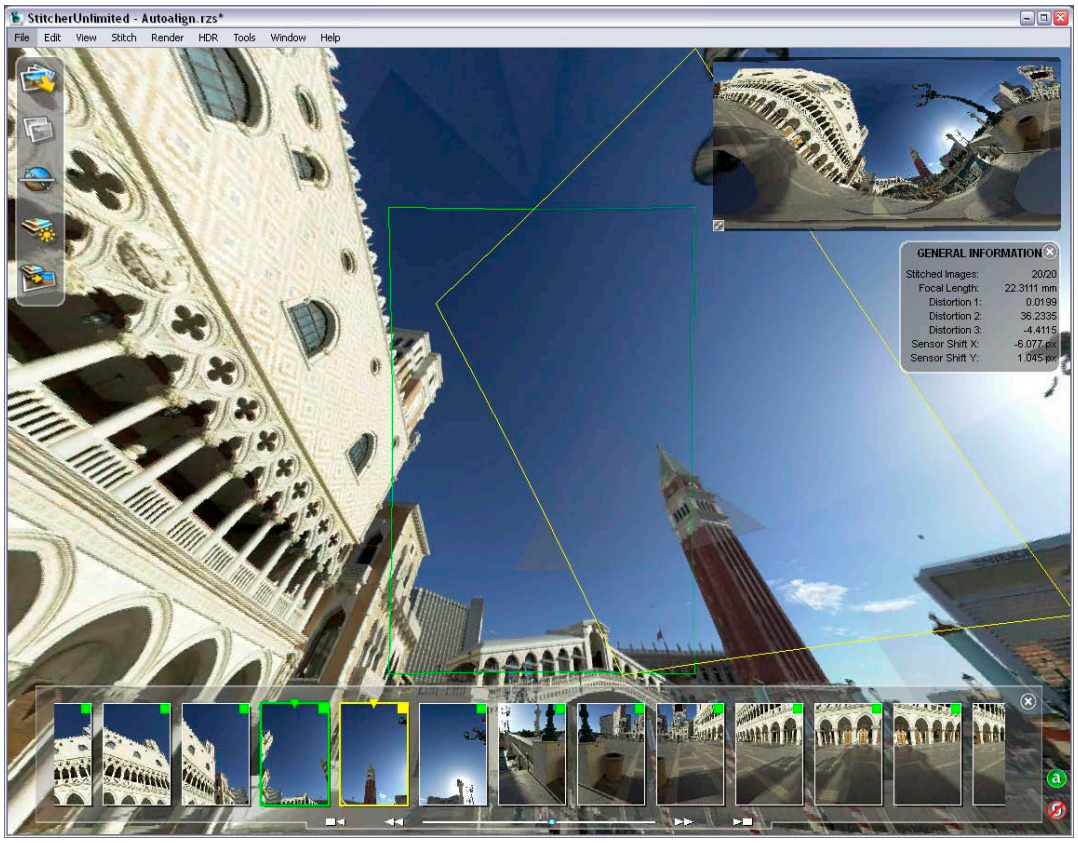
1. Click and place a marker on a particular detail in the first image



2. Click to add the same marker inside the second image, then repeat step 1 and 2 to create 3 points inside each image as shown in the screen shots.



3. After you have placed the three matching points, click **Stitch** and your image will be positioned correctly inside the panorama.



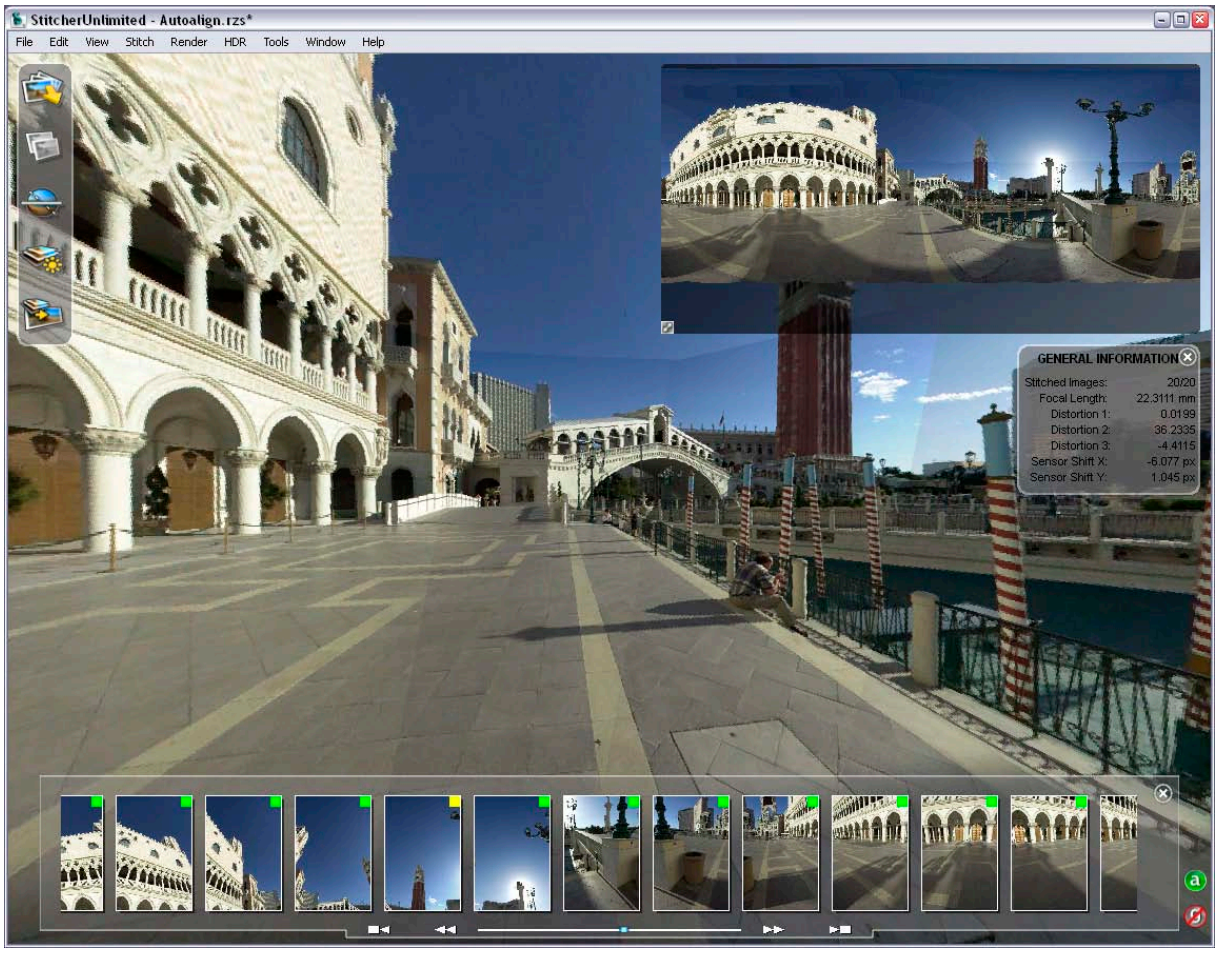
NOTE Manually stitched images have a yellow highlight to distinguish them from auto-stitched images.

Load the Stitcher project file, ***stitched.rzs,*** *to see this step completed.*

3. Alignment

Before rendering the panorama, you can change the viewpoint to determine what you see in the final panorama. Stitcher automatically aligns the panorama.

You can align the panorama by clicking the **Auto-Align** icon or by selecting **Tool > Automatically Align Panorama**, or pressing **"A"**.



NOTE the  status indicator is displayed when the panorama is aligned.

4. Equalization

When you click the **Equalization** icon, the Equalization tool launches in all of the images. This step is significant and makes it possible to correct certain differences in exposures, especially in the levels of blue in the sky.

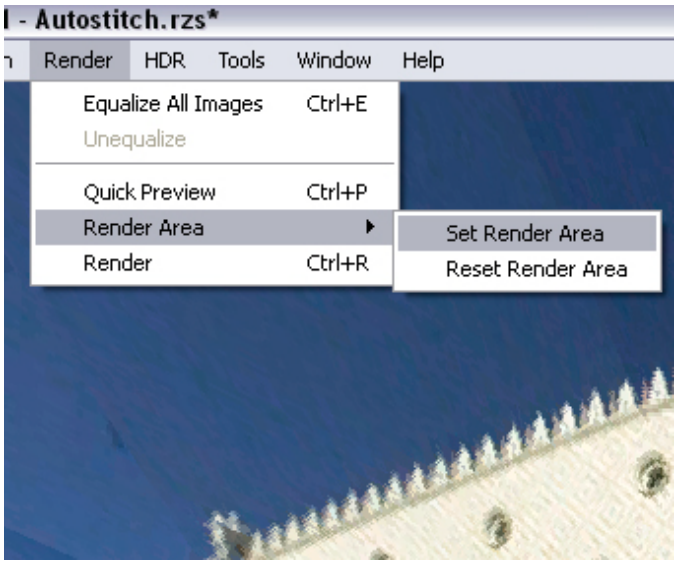
NOTE The **Equalization** process can be reverted at any time by selecting **Render > Unequalize**. The equalization factor can be defined in the rendering preferences.

5. Render

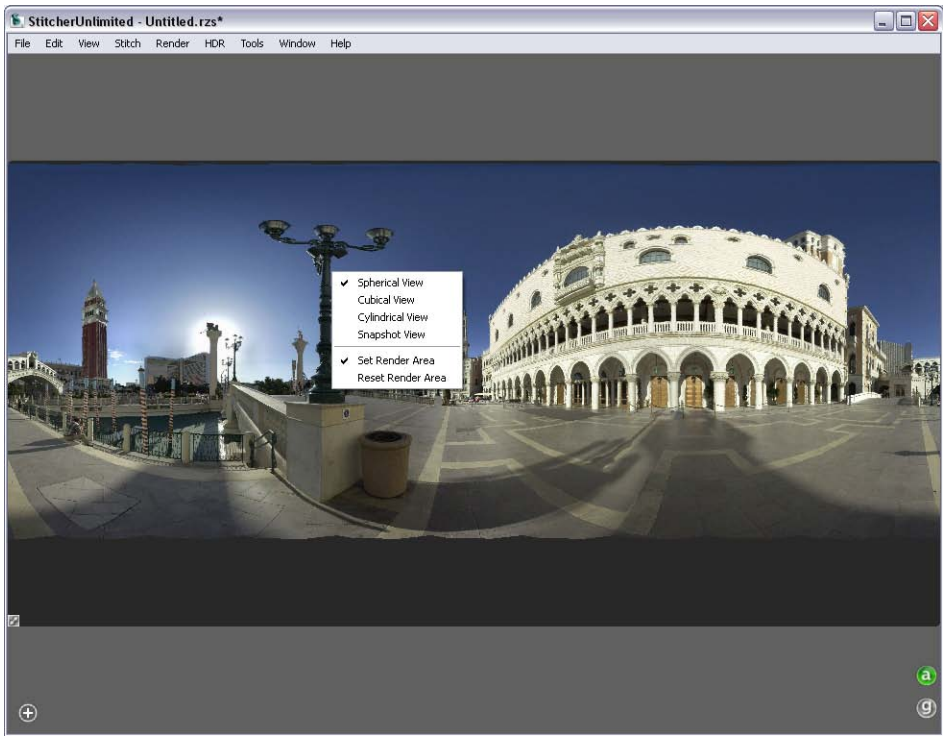
Render area and rendering options

If you need to render only a part of the panorama, do the following steps:

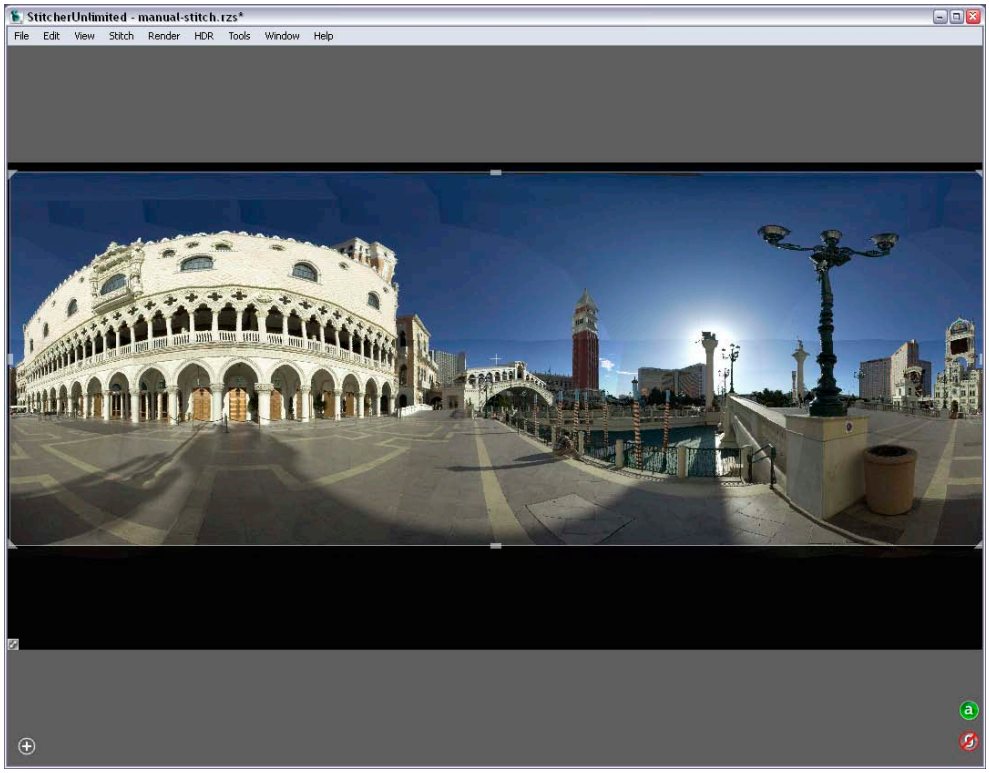
1. Select **Render > Render Area > Set Render Area** tool.
2. Right-click in the panorama, and choose Spherical View from the contextual menu



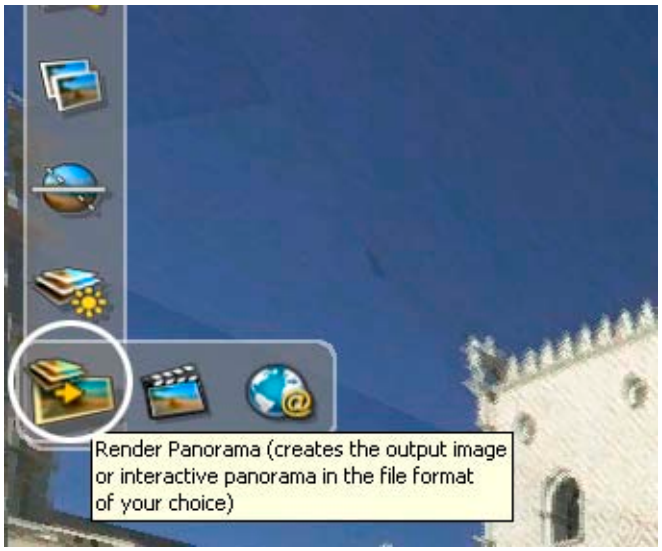
NOTE the contextual menu in the fully-stitched panorama lets you choose the projection you want to use for rendering.



3. Now draw a rectangular area in order to define and adjust the borders of the final image.



4. To quit the Render Area tool, press the **Space** key or **Render > Render Area > Set Render Area.**
5. Click **Render Panorama** to set the render parameters.



6. The last step before launching the rendering process is to define the parameters for the image.

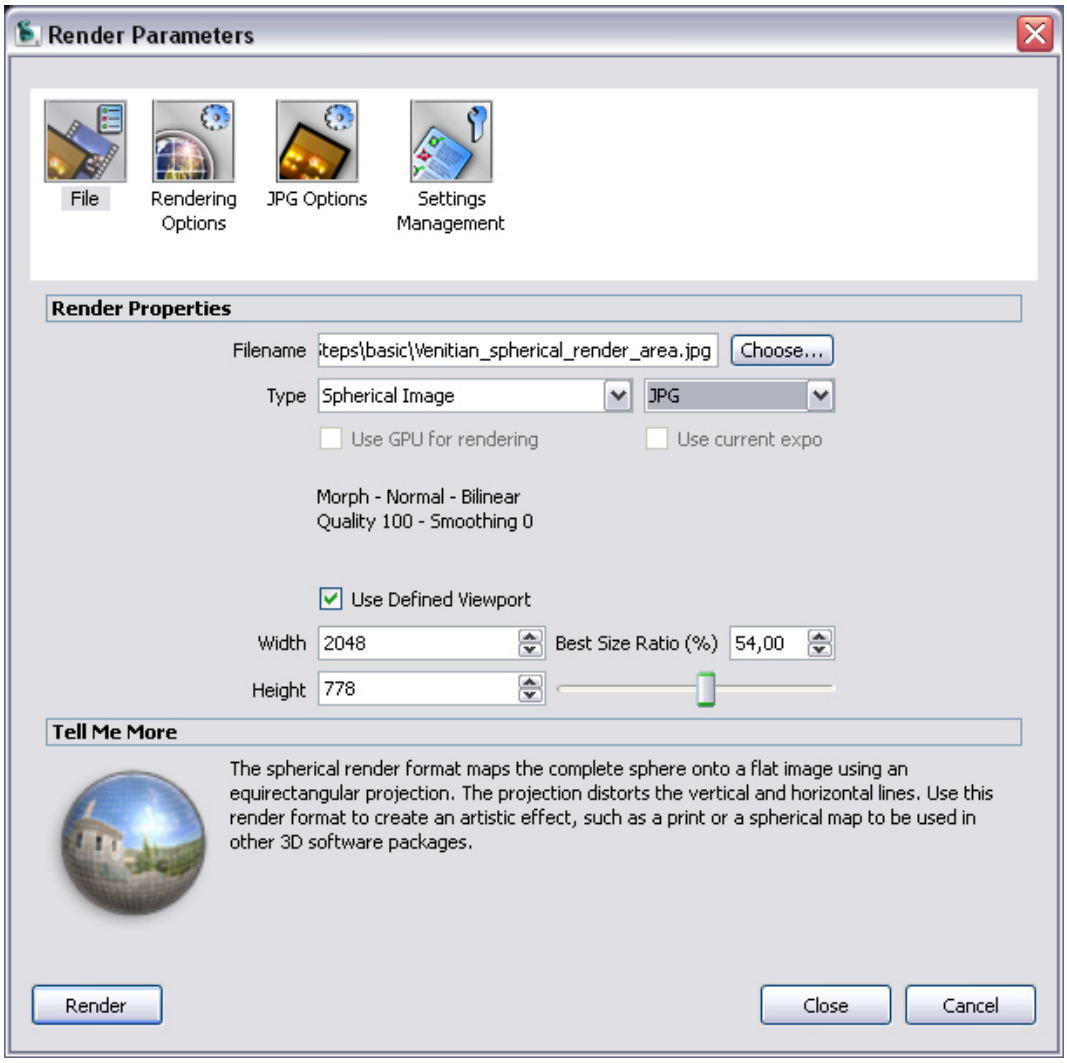
   Stitcher gives you the option of the following rendering types:

   - Cubical or cylindrical QuickTime® VR (QuickTime Player installation is required)
   - Images with a spherical, a cylindrical, or a cubical projection
   - Snapshot image
   - 3D formats such as VRML or Pure Player® projection

   When rendering a panorama as an image, you can choose between the following file formats:

   - Jpg
   - TIF
   - PSD Photoshop®
   - …

   Each file format has specific options which can be adjusted in the related tab.



Before rendering, you must define**:**

- The **path** and **filename** where you want to save the image file
- The **size** in pixels (for this tutorial you will set the width to 2048, the height value will update automatically).

NOTE The size of the panorama will have an impact on the rendering time. The optimal size is calculated as a function of the original image size that you have loaded in Stitcher, in order to maximize quality.

- The image **format.**

Now verify that the Type is set to Spherical and that the Use Defined Viewport option is checked. The **Use Defined Viewport** option is active when a render area is set.

7. Click **Render**.

Spherical panorama 360° with render area.

Load the Stitcher project file, ***render_area.rzs,*** *to see this step completed.*

You can also see the result with the file ***Venitian_area.jpg.***

Load a Spherical panorama and convert to QTVR®

This part of the tutorial guides you through loading a full 360° panorama in Stitcher, using the authoring control tool to set the viewing parameters of your movie and then converting the panorama to a QTVR® file.

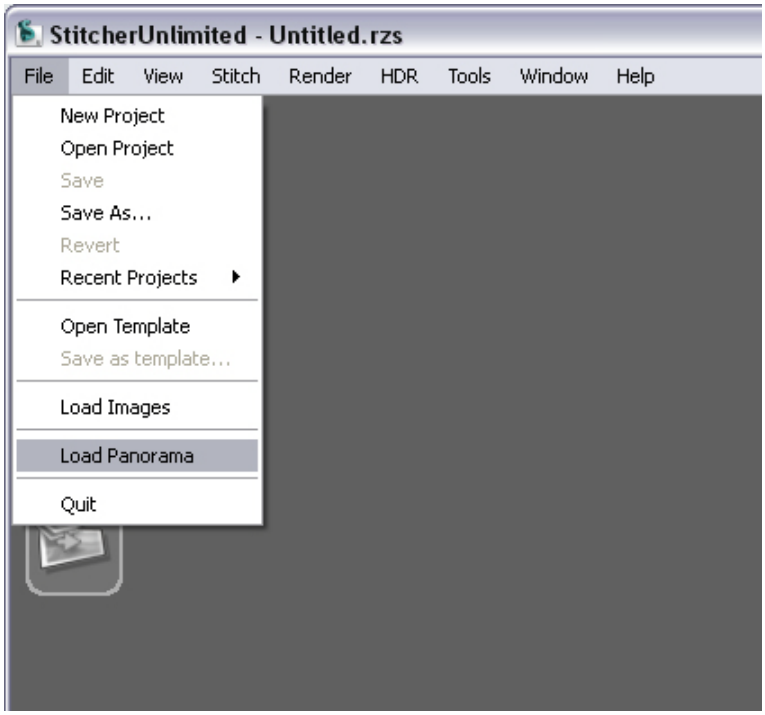
1. Select **File > Load Panorama**

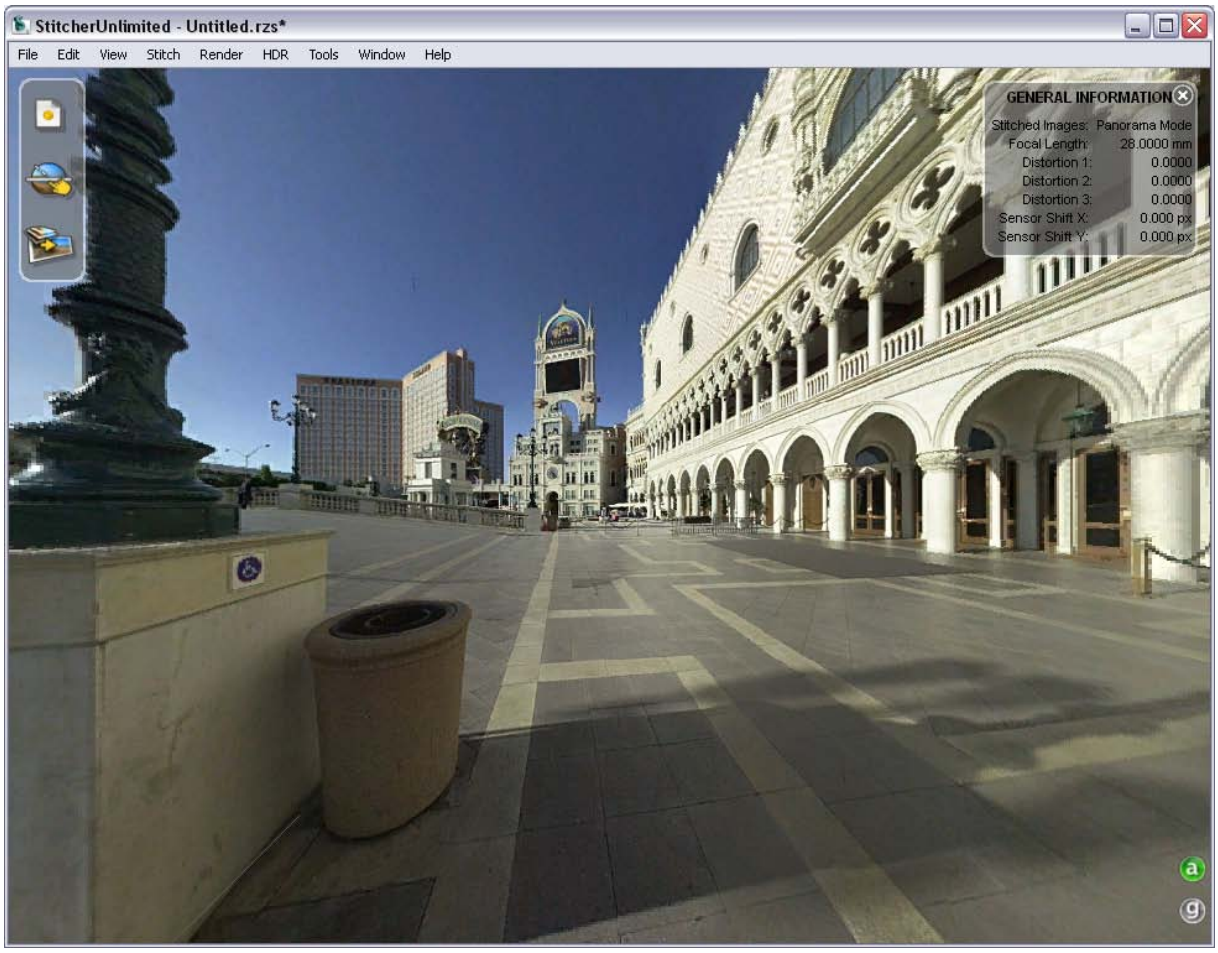
   The browser dialog opens.

2. Select the image file you want to load and click **Open.**

   In our example load Venitian_Spherical.jpg.

   NOTE If you are working with a cubical panorama, select one of the 6 face files.




StitcherUnlimited - Untitled.rzs*
File Edit View Stitch Render HDR Tools Window Help
GENERAL INFORMATION
Stitched Images: Panorama Mode
Focal Length: 28.0000 mm
Distortion 1: 0.0000
Distortion 2: 0.0000
Distortion 3: 0.0000
Sensor Shift X: 0.000 px
Sensor Shift Y: 0.000 px


StitcherUnlimited - Untitled.rzs*
File Edit View Stitch Render HDR Tools Window Help
Set Horizon
Add nadir
Remove nadir
Automatically Align Panorama
Flip Panorama
Go Back To Defined Horizon
Stencil Tool
Stencil from PSD
Authoring Controls
Hotspot Tool
Load hotspots
Save hotspots
Edit image
Reload image
Movie options
High distortion

3. Use **Tools > Authoring Controls** to activate the interactive controller.

   The **General Information** expands to display the **Authoring Controls** options.

4. Use the navigation control inside the stitching window to author (in real time) the view you want your QTVR file to have. Adjust the **zoom out** and lock it by clicking **Max FOV**. Do the same with the **min FOV**. You can real-time preview the **zoom control constraint** and adjust them at any time.

   NOTE The **zoom out constraint** is a good way to define the maximum zoom view and thereby stop viewers from setting a huge field of view (sometimes an inelegant display for your movie). The **zoom in constraint** prevents viewers from magnifying the view past the point where you feel the image quality of your movie is compromised (too pixilated, and also an inelegant display for your movie).

   Use the **Tilt constraint** and the **Pan constraint** the same way.

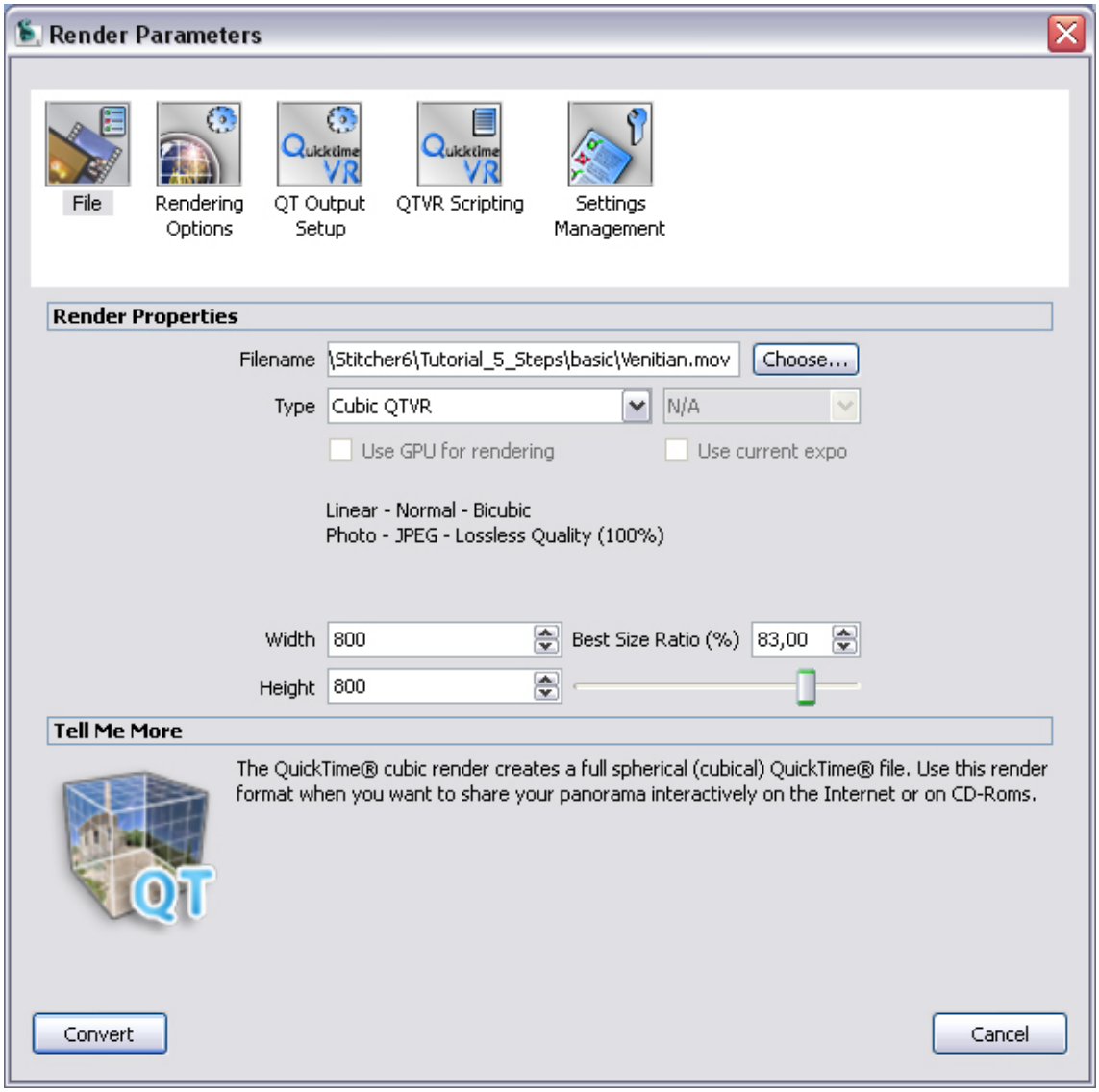
   In our example, the bottom part of the panorama is a black area, so we want to prevent viewers from tilting to that position. We have therefore locked the **Min TILT** value.

5. To quit the Authoring Controls tool, close the edit dialog, then select **Tools > Authoring Controls**, or click **the white cross** at the top right corner of the General Information.

   NOTE Do not change the point of view after setting the Authoring Control otherwise your Authoring Control values will not make sense anymore without the initial points of reference.

6. Open the **Render Parameters** dialog by clicking  , or select **Render > Render.**

7. Set the render parameters **path**, **filename**, **size** and **QTVR options** as you see them in the next screen shot.



8. Launch the **Convert** process.

Congratulations! You have successfully completed the full Stitcher workflow from stitching a panorama, and to creating a QTVR movie.

View the result with the file **Venitian.mov**.