

Welcome to PanoMAGIC

“VR Authoring For The Rest Of Us”

PanoMAGIC allows you to quickly create QuickTime VR panoramas.

Shareware

PanoMAGIC is shareware. You may use PanoMAGIC according to the terms of the included license agreement for as long as you like. You may only distribute unregistered copies of PanoMAGIC in the form of the original unmodified distribution package. You may not distribute registered copies of PanoMAGIC.

Why you should register PanoMAGIC

The unregistered version of PanoMAGIC places the banner on each panorama



Register PanoMAGIC to create panoramas without this banner and your own embedded copyright and movie information.

Registration

To register PanoMAGIC, please run the included 'Register' application. Registration requires payment of a fee for the full license to use PanoMAGIC. You will be supplied a registration serial number when the registration is accepted and shareware fee is paid. Details for payment are in the 'Register' application .

Further information is available at <http://www.vrtools.com>

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PanoMAGIC Requirements

PanoMAGIC requires a PowerPC MacOS compatible computer with QuickTime 2.5 installed. PanoMAGIC requires 4 MB of free RAM to run but memory usage is dependent on panorama picture size.

The Apple **QuickTime VR Components** included should remain in the same folder as PanoMAGIC: they allow QTVR 1 authoring.

The Apple **QuickTime VR** system extension required for viewing QuickTime VR 2.0 movies is not included; it is available from www.apple.com

ToolServer and the Apple **stitch** version 2 tool are not included and are available from Apple as part of the **QuickTime VR 2.0 Authoring Kit**

Registration

When you start PanoMAGIC it will request a registration number.

You will need to enter both your registration serial number and name before registration is accepted.

Choose with care the wording of the Name and Company fields.

The Name and Company information entered will form the template for the default copyright notice that PanoMAGIC adds to panoramas.

For example the text:

Name: Jon Summers

Company: Sumware Pty Limited

will produce the following default copyright notice:

©1997, Jon Summers

Sumware Pty Limited

Definitions

Pan - Horizontal position in the 360° cylinder of a panorama (X-axis)

Tilt - Vertical position. Zero is centre. (Y-axis)

FOV - Field Of View or Zoom (Z-axis)

Panoramic Picture - The image picture (usually encompassing a 360° view)

Panorama (Movie)- A QuickTime movie containing one or more nodes.

(Panorama) **Node** - A panorama movie contains one (or more linked) node(s).

(A) **Panorama** - refers to the movie (or imprecisely may refer to one node)

A single node panorama has one node. A multinode panorama has multiple nodes. Strictly, a movie contains nodes not 'panoramas'.

QuickTime VR runtime environment - QTVRPlayer, MoviePlayer, QuickTime Plugin for Web Browser, Director or mTropolis executables, PanoMAGIC and other QTVR aware applications.

MPW - (Macintosh Programmer's Workbench) - command line environment hosting executable tools (ie **Stitch** tool) and running command scripts.

ToolServer - MPW without a command line interface. Executes MPW scripts.

Picture Editor - Refers to any PICT editor but usually Photoshop.

Rectilinear - describes the image flatness of a wide angle lens (cf fisheye)

Aspect Ratio - the ratio of width to height (of an image, or a window)

Application Preferences

Edit/Preferences/Application... menu

Startup Action popup menu



PanoMAGIC executes the selected startup action when it is launched without a project. Select the option that most suits your work style.

Display VR popup menu



PanoMAGIC supports the display of QuickTime VR movies with either QuickTime VR version 1 and version 2. Select the version of QuickTime VR to use for displaying QuickTime VR movies.

This option effects all QuickTime VR movies to be displayed.

Limitation: PanoMAGIC cannot swap the QuickTime VR version from version 1 to 2 if any QuickTime VR version 1 movies are displayed.

Stitcher popup menu



You may choose the Stitcher application that is used in the project Stitch tab to stitch PICT files. Unless there is full AppleEvent support in the itemised application, it will be disabled. Currently ToolServer and MPW are supported. If the application is selected with the pop up menu and there is more than one copy of the application, you will be asked to Browse.

Picture Editor



You may choose the Picture Editor application that is used in the project Stitch tab to edit PICT files. If you do not choose a suitable Picture Editor application or the selected Picture Editor is not available, PanoMAGIC will search for and use Adobe Photoshop as the Picture Editor.

If the application is selected with the pop up menu and there is more than one copy of the application, you will be asked to Browse.

Application Options

More... button

These flags control important options for using PanoMAGIC
For this release, some options may not effect open projects
or may even require you to restart PanoMAGIC.

Enable Stitch Tab

Control enabling of and access to the Stitch Controller panel.

Enable Multi Node

Control enabling of and access to the MultiNode panel.

Default to Make VR2

Set the QuickTime VR creation version for new projects.

Show Splash Screen

Control the display of the PanoMAGIC startup screen.

Zooming Rects

Enable Zoom Rects effect for opening windows and showing data flow between
panorama and edit fields.

Drag Stitch Swap PICTs

Enable drag and drop swapping of pictures to change
the order of files in the Stitch Controller.

AppleEvent Receipts, AppleEvent Time Out Flags

Controls AppleEvent characteristics for tuning the control of ToolServer/MPW.
These may allow more reliable control on low end machines.

Open QuickTime Movies

PanoMAGIC can open and display *any* QuickTime movie, not just QuickTime VR panoramas, using the **QuickTime** menu.

QuickTime VR movies are displayed with an information panel under the movie that displays feed back to help in the authoring process.

Panorama Info Display

```
Movie: Vers=1.0 DefaultNode=65
Node: 65 "Place de l'Opéra" Pan=61.3° Tilt=-8.0° FOV=56.0°
Mouse: [-26.2°,1.4°][108.3,146.0]
HotSpot: 237 "Opéra " 'P134' 0 [0,0,0,0] <!487,!488,!489>
```

The **compass** arrow shows the approximate position of the view. North is 0°.

In the following explanation certain text styles are used to indicate:

Bold text is always displayed

Normal text is specific static info for the movie or node

Italic text describes some of the behaviour

Movie: **Vers**=n.n "*optional* moviename" **DefaultNode**=n

Node: n [Optional "nodename"] **Pan**=n.n **Tilt**=n.n **FOV**=n.n *live*

Mouse: [x°,y° *angles*] [x,y *coords*] *live*

If not over a hotspot, the fourth line is:

Track: **Vid**=n *video track* **HS**=n *hotspot track* **Pan**=n.n **Tilt**=n.n
FOV=n.n *pan tilt zoom ranges*

If over a hotspot, the fourth line is:

HotSpot: nnn *color* 'nnnn' *type* nnn [*rectangle*] {*cursors: over,*
down, up ; !=missing}

Implementation Limitations:

Opening a QuickTime VR 1 movie with QuickTime VR 2 display enabled does not show all info.

PanoMAGIC Project Overview

Project Organisation

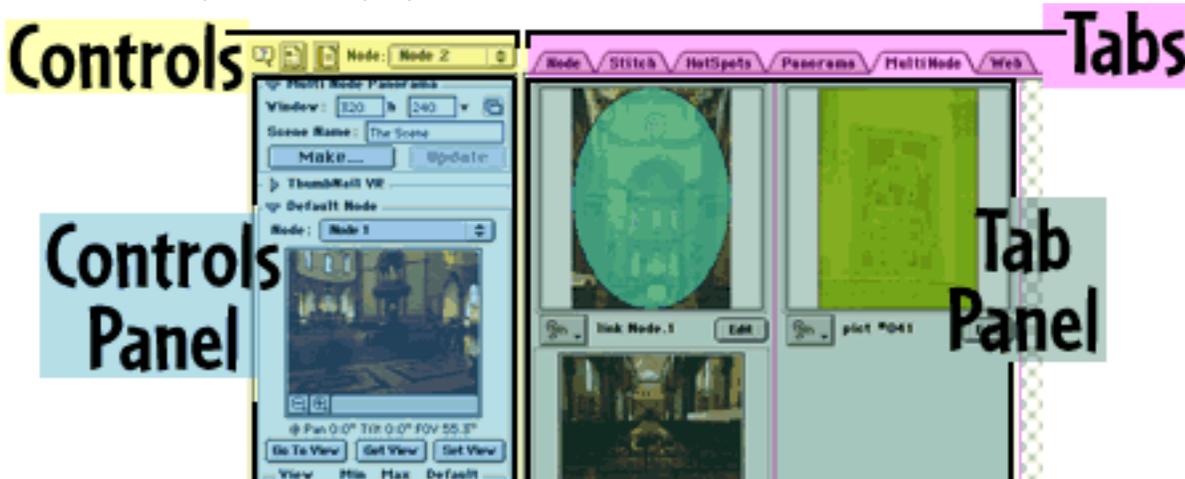
PanoMAGIC organises the production of QuickTime VR panoramas into projects. Each project has an associated Project Document file that stores information for creating panoramas.

Project Settings

Each PanoMAGIC project has options, changed by the dialog accessed by the **Project Settings** menu or by the shortcut **Project Settings** button.

Project Window

The project window is the window in which all QuickTime VR panorama authoring takes place. The project window has four main areas:



Controls

Balloon Help, Project Settings Button, Project Status Button and Node Selection Menu



Situated top left of the project window.

The **Balloon Help Button** toggles Balloon Help on/off.

The **Project Settings Button** is a shortcut to **Project Settings** dialog.

The **Project Status Button** is a shortcut to **Project Status** dialog.

The **Node Selection** popup menu changes the current node to edit.

Selecting another node changes the display in the control panel and the tab panel to that of the selected node.

Project Navigation

Navigate the project using the **Node Selection** popup menu to switch nodes and the **tabs** to select another authoring area.

Controls Panel

The area under the **Controls** is a control panel that changes depending on the **Tab** selected. A unique feature of PanoMAGIC is **Expandos**: triangular controls to allow you to reduce interface clutter or work on small screens.

Tabs Situated top right of the project window.



The left to right order of the tabs in the project window is the order of the process required to create panoramas. You do not have to complete every section as you may either use the Stitch Controller to stitch or you may import stitched pictures. When you select a different tab, the area under the tab changes and the controls in the control area at the left of the window change.

Node Tab



The Node Tab allows you to **Add** and **Delete** nodes and edit node **Properties**. There is a limit of three nodes per project if PanoMAGIC is unregistered.

Stitch Tab



The Stitch Tab allows you to graphically control the **stitching** of overlapping pictures into a panoramic picture using the Apple **Stitch** tool.

HotSpots Tab



The Hot Spots Tab allows you to add **hotspots** to the panoramic picture. The name of this tab is **Source** if no source PICT/movie has been chosen.

Panorama Tab



The Panorama Tab allows you to create a QuickTime VR **single node** panorama with or without hotspots, QuickTime VR version 1 or 2.

MultiNode Tab



The MultiNode Tab allows you to define **links** between the nodes of the project and create a QuickTime VR **multi node** panorama, version 1 or 2.

Web Tab



The Web Tab allows you to create and edit a simple consistent **HTML** script for the current **single node** panorama.

Tab Panel

The area under the **Tabs** changes depending on the **Tab** selected and usually contains a graphic based editor.

Node displays a representation of each node with links.



A floor plan can be imported as background.

Stitch displays each stitch source PICT.



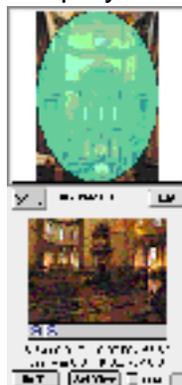
HotSpots displays the graphical hotspot editor.



Panorama displays the single node panorama.



Multinode displays each hotspot link.



PanoMAGIC Project Detail

There is a handy **Construction Status** table that shows the status of the current node. Visit this at various times during construction and note how the status changes. The **Action** statements are helpful in understanding the process that PanoMAGIC uses for QuickTime VR construction.

NODE TAB



Node Control Panel

This panel allows you to **Add** and **Delete** nodes, edit node **Properties** and import a **Floor Plan** as a background for node organisation.

The **Properties** button allows editing of the node name and comment. If you change the name of the node, this name is used to identify the node.

STITCH TAB



Stitch Control Panel

This panel allows you to **Import** pictures for stitching.

To select pictures, use the **Import PICTs...** button or drag&drop a folder from the Finder. The path and name of the folder appear under this button.

Importing Pictures

The table functionality prefers the PICT files to have a **Preview** (saved from Photoshop with **Preview**) or the panel will generate a temporary preview for each file every time it opens - this is very slow. PanoMAGIC will only import PICT files. Flatten your Photoshop layers and save as a PICT file with Preview.

Stitch Requirements - ToolServer or MPW

To stitch, you require the Apple **MPW** development tool suite, particularly **ToolServer** and the Apple **stitch** tool. Both the **stitch** tool version 1 and 2 from the **QuickTime VR Authoring Kit** are supported. Please be familiar enough with MPW to have stitched with the MPW tools. Be aware that memory limitations may cause **ToolServer/MPW** stitch tool to fail. The preferred Apple tool is **ToolServer** because PanoMAGIC cannot determine when **MPW** finishes the stitch.

File Naming Convention

The Apple **Stitch** tool has a strict filenames convention that requires the PICT file names be name as a two or three digit number with leading zeroes. The range of valid picture file names is **01** to **999**.

Stitch PICTs Folder Path

The Apple **Stitch** tool has a limitation with the length of the path name to the PICT files. The path length is limited to **63** characters. You should put your pictures in a folder close to the top level of your drive (dont forget that a file on the Finder desktop actually has the path of 'Hard Drive:Desktop Folder:' thats already 27 characters!). The path and folder name will be ***italicised*** if the path exceeds the 63 character path limit. You can drag the folder temporarily to the top of the folder hierarchy to stitch but you should 'refresh' the stitch tab by switching tabs or nodes. PanoMAGIC tracks all files using aliases so it will find the new location of the pictures folder.

Picture Manipulation

To import a new batch of files, hold the **Option** key down when changing to the **Stitch** tab. The displayed pictures per row is a **Project Preference**.

Reverse Picture Order

A rectangular button with a light gray background and a dark border, containing the text "Reverse Picture Order".

If the file order needs to be reversed, use the **Reverse Picture Order** button.

PICT Drag&Drop

Drag&Drop inside Table: If the order of the files is wrong, drag&drop a PICT between the displayed PICTs to swap PICTs. This behaviour may be changed with the **Application Preference** option, **Drag Swap Stitch PICTs**.

Drag&Drop from Finder: If there are any PICTs imported (any PICTs in the table area and **Import** button is disabled), drag&drop **one** PICT file to **replace** (drop onto a picture) or **append** (drop onto checker board background).

Restrictions: The PICT file must follow the Apple Stitch tool naming convention (01 thru 999), it must be in the same folder as the other PICT files. Multi file drag&drop adds **one** file only, the last. There is no facility for **deleting** a PICT from the table. To **clear** the table, re enter the tab with the **Option** key down. There is no facility to drag&drop from the table to the Finder (this would cause the Finder to move the file if the destination is on the same disk - and would serve no useful purpose).

Rotation

A control element for rotation, consisting of a checkbox with an 'X' inside, followed by the text "Rotation:", a text input field containing "0.0", and a small circular icon with a degree symbol.

If the pictures need to be rotated for stitching, select the checkbox and enter the rotation degrees in the edit box to the right. This is the actual value sent to the stitcher to perform picture rotation.

Field of View



The **Field of View** box allows you to calculate the best stitch parameters

Rotation Icon

A small icon showing a picture being rotated, with the numbers "09" and "10" on either side.

In the **Field of View** box is a 'rotation icon' that indicates the rotation the **FOV Wizard** uses to rotate the pictures (only 4 orientations are supported)

FOV Wizard button

The first step in the stitching process is to calculate the lens and overlap values. The **Stitch Wizard** is an easy interface to the **ToolServer** application.

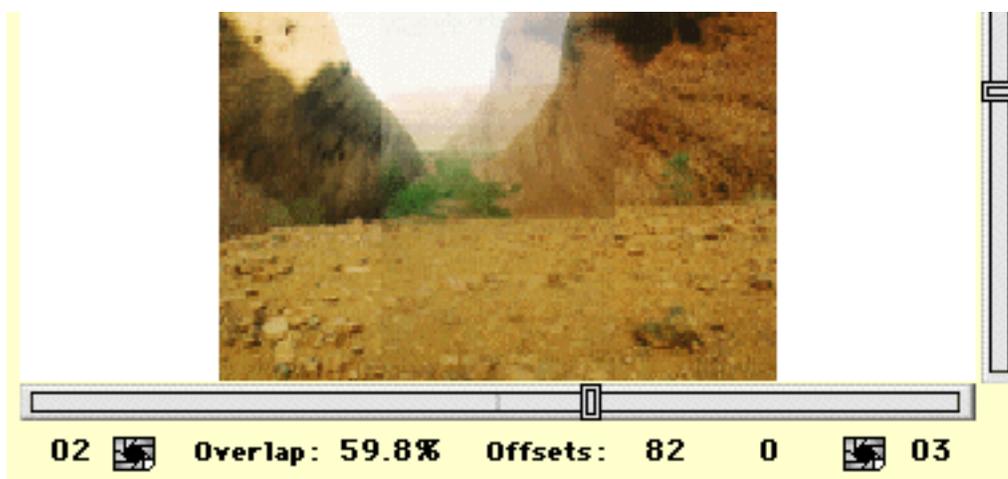
Activation: To 'activate' the **FOV Wizard** button, drag&drop a PICT from the table onto the **FOV Wizard** button. The dragged PICT and the next PICT in the table are used for overlap calculations. The PICT names appear on either side of the rotation icon.

FOV Wizard Dialog

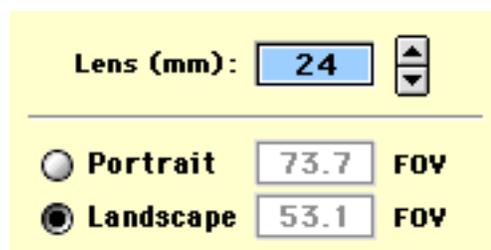
The **FOV Wizard** button opens a dialog which allows you to quickly adjust the approximate overlap of the two pictures. In order to calculate the optimum FOV at which to stitch the pictures, it is necessary to use values that are close to the best values.

Initially you will only be concerned with generating the FOV value and will need to manipulate the scrollbars to obtain a good visual overlap and by manipulating values in the **FOV Wizard** dialog.

Interactive Overlap Calculator



Use the **Warp** checkbox to control the display (Not available on 680x0)
Use the sliders that control the overlap and alignment of the pictures, aligning features at the **centre** of the overlap.



Lens Calculator

If you are unsure of the **-fov** value to use, the **Lens...** button will give an approximate FOV from the lens size of the camera used to take the pictures.

FOV Range

The **range** value is the plus / minus range that the **FOV Stitch** button uses when searching for the optimum FOV.

ToolServer

Before using the **FOV Stitch** button, **ToolServer** must be activated with the **ToolServer** button. If using **ToolServer** to stitch, the **ToolServer** button will return to **<ready>** when the stitch is complete. Do **not** use the **Done** button. If using **MPW** to stitch, PanoMAGIC cannot accurately gauge when the stitch has finished. When stitching has obviously finished, the **ToolServer** button will still be **<busy>**. Press the **Done** button to generate the **ToolServer** report.

FOV Stitch

The **FOV Stitch** button will start the process of searching for the optimum FOV for the pair of pictures. When the process finishes, the **ToolServer Log** window will appear. If no error occurred the best FOV will be displayed in the **ToolServer Result** field. To apply this result to the **FOV Wizard**, use the **Apply** button. The **ToolServer Log** window could be obscured by the **FOV Wizard** dialog. Exiting the dialog or **Command** dragging the **ToolServer Log** window will allow you to read the **ToolServer Log** and act accordingly. If you wish to check the overlap, use the **Run Interactive** button in the **FOV Wizard** dialog to run an interactive stitch.

Procedure for very wide angle lenses

The previous method may not be reliable for very wide angle lenses (15-17mm). Initially, set the camera lens with the **Lens Calculator**. (If you have cropped the width of the PICTs, adjust the **FOV** downwards) Use the horizontal scroller to obtain a reasonable visual overlap in the center. Repeat the next steps until a satisfactory result is achieved:

- Run the **Interactive Overlap Stitch**.

 - If an error results, carefully adjust the overlap and overlap range.
 - Apply the result to set the more precise overlap.

- Run the **FOV Stitch**.

 - If an error results, carefully adjust the FOV and FOV range.
 - Apply the result to set the more precise FOV.

HELPERS

PanoMAGIC uses external applications to perform needed services such as stitching and picture editing. The icon buttons labelled **ToolServer** and **PictEditor** launch and quit these applications. See the **Application Preferences** to select the **Stitcher** and **PictEditor Applications**.

ToolServer Button

The Helper button labelled **ToolServer** launches and quits the Apple **Toolserver** application that does the actual stitching. Use this button when ready to stitch and also when you no longer require the services of **ToolServer**, which may require a large amount of RAM to stitch.

If using **ToolServer** to stitch, the **ToolServer** button will return to **<ready>** when the stitch is complete. Do **not** use the **Done** button. If using **MPW** to stitch, PanoMAGIC cannot accurately gauge when the stitch has finished. When stitching has obviously finished, (after the "Rotating PICT" message) the **ToolServer** button will still be **<busy>**. Press the **Done** button.

PictEditor Button

The Helper button labelled **PictEditor** launches and quits the chosen **Picture Editor** application (usually Photoshop). Use this button when you want to retouch the input source PICTs or the panorama picture and when you no longer require the services of the **PictEditor**, which may require a large amount of RAM.

The panorama picture can be edited with the **Retouch Panorama** button whether the panorama was generated by the stitcher or imported in the **HotSpots** tab, if the **PictEditor** is running and the stitcher is not active.

Stitching the Panorama Picture

[You may at this stage want to examine the **Project Preferences (Stitch)**.

This document assumes familiarity with the Apple **Stitch** parameters and the reader is directed to the Apple User Manuals for the **Stitch** tool. Balloon help is available for this Preference panel]

To select the first picture to start the stitch, drag& drop a picture onto the **Stitcher** button. The picture number appears next to **Start**:

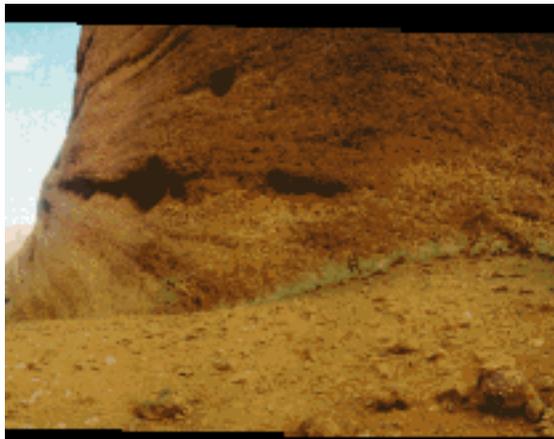
The **Stitcher** button uses the last calculated FOV and overlap from the **FOV Wizard** dialog. A pre-stitch dialog confirms the values to be used: **Apply** will save the values without performing the **Stitch**.

You may wish to run the stitch **interactively** for greater control.

After a successful stitch, examine the **ToolServer Log** carefully to note any problems which can usually be fixed with an interactive stitch.

Stitch Trouble Shooting

As much as PanoMAGIC presents an easy-to-use interface to the ToolServer/Stitch process to achieve excellent panoramic picture image quality, the limitations of using an external stitcher may cause problems.



Pictures not level (rotation)

This presents as a progressive drop or rise of the stitch in the progress window. The solution is to decrease or increase the rotation angle, but only by a fraction of a degree (previous PICT shows effect of 1° increase in rotation)

Pan head not level

This presents as a progressive drop then rise of the stitch in the progress window. Review your photographic technique. If necessary, adjust the source pictures vertical alignment in Photoshop: use the vertical overlap in the report generated by the stitcher to jog the picture up or down.

Picture does not wrap properly (cannot join last to first picture properly)

This presents as a noticeable discontinuity at the join in the final panorama. The wrapping of the panorama is controlled by the **skew** flag in the **Stitch** tab of the **Project Settings**. Turn the **skew** flag **OFF** to ensure the panorama wraps. The horizontal and vertical range values can be thought of as the amount that the stitcher 'slides' the pair of warped pictures around to find the best pixel match for each pair of images. If there is a slight rotational problem (see **Pictures not level** section above) or the fov is slightly inaccurate, the values used for the horizontal and vertical ranges may be too low for the stitcher to find a good pixel match for the wrap.

Large Variations in Offsets during Stitching

The process of scanning transparencies/negatives or prints introduces errors in alignment. Review your scanning process to reduce alignment errors.

Large Variations in Horizontal Offset (camera alignment)

A camera panorama head that is not mechanically indexed may lead to unacceptable variations in the horizontal offsets.

Large Variations in Vertical Offset (scanning errors)

Vertical alignment error is due to scanning errors. Methods to minimise common scanning errors include:

Overscan: Scanning with a solid mask obscures the actual edge of the exposure. It can be advantageous to remove material from the mask to allow overscan to image at least one edge of the exposure. This method allows accurate minor rotation corrections in Photoshop. Or lightly mark each corner of the negative as reference alignment points; crop to remove the marks.

Too Much Overlap with Imperfectly Rectilinear Wide Angle Lenses

You can reduce stitcher artifacts caused by lens imperfection by cropping the width of the PICT (the stitcher is remarkably accurate down to 35% overlap: a 17mm lens gives 55% overlap and the images can be safely cropped - savings are made by the choice of a cheaper imperfectly rectilinear lens)

Post Stitch Recommendations

It is recommended that you shut down **ToolServer** to free available RAM .

Picture Editing

You can edit the stitched panorama picture directly by activating the **Picture Editor** button and using the **Edit Stitch Picture** button.

The default picture editor is **Adobe Photoshop™**, but you may select another with the **Application Preferences**. You may also edit a stitch source PICT by dragging the source PICT image onto the **Picture Editor** button.

The **Picture Editor** button immediately changes to **<ready>**; please be patient as it takes a few moments for the **Picture Editor** to fully launch.

The usual retouching techniques for newly stitched panorama pictures are to resize and crop the panoramic PICT and apply an **Unsharp Mask**. It is important to understand the way that PanoMAGIC uses the panorama picture to create the QuickTime VR movie: PanoMAGIC does **NOT** respect the actual size of the panorama picture, but rather images the picture into a selectable **Imaging Area**. This allows rapid turn around to achieve a selected final file size, important for web delivery. For example the default **Panorama** picture size is 496 by 2400. If the stitched picture is say 532 by 2387, automatic scaling may introduce artifacts including distortion. It would be safest for you to scale the picture in the **Picture Editor** to 2400 high and crop the width to 496. Also see: **Just In Time Imaging Size**

Panoramic Picture Orientation

Flatten and Rotate

The MacOS graphic system has a limitation on the width of a PICT: hence the **normal** orientation of a panoramic picture for QuickTime VR is 90° CCW (the top of scene is the left of the picture image). You usually sharpen and color balance after 90° CW rotation to 'operator' normal orientation. If the **Picture Editor** complains that it cannot save as a PICT, you have not rotated the PICT back to 90°CCW. PanoMAGIC is smart enough to realise that you may forget to reorient the panoramic picture and will rotate an image that is wider than it is tall, to the preferred orientation when needed. However, rotation incurs a time penalty and higher RAM usage.

Just In Time Gamma Correction

PanoMAGIC has the option for applying **Gamma Correction** while creating the panorama, so it may not be necessary to apply gamma correction in the **Picture Editor**. Gamma correction may be required because Windows monitors are inherently much darker than MacOS monitors. To balance the picture for acceptable viewing on both platforms may require extensive selective editing to flatten the overall contrast.

HOTSPOT TAB



PanoMAGIC's built in hotspot editor has many powerful features that you will learn by reading this chapter.

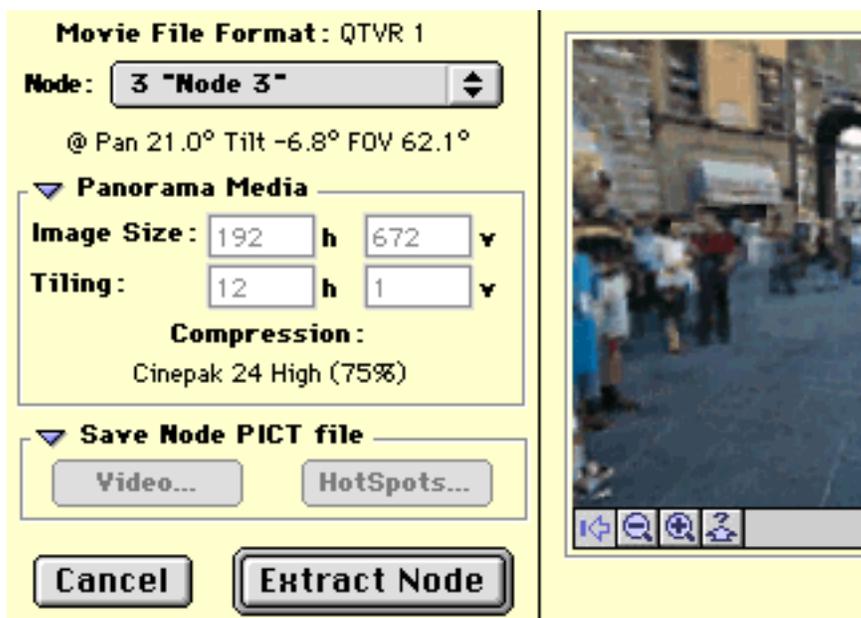
IMPORT SOURCE

The **Import Source** buttons allows you to select a panoramic picture file or a node from an existing QuickTime VR panorama. If you have stitched a picture with the **Stitch Controller** that panoroama picture file is automatically used.



Import Movie Node

The video image track for any panorama node may be imported.



Limitations:

- The original movie must be available to make the panorama.
- Hotspots are not extracted. Create hotspots in the **HotSpots tab**.
- PanoMAGIC does not extract the source picture from the node (this would lead to loss of quality due to decompression and recompression)
- PanoMAGIC copies the original image track of the node to make the new panorama node and cannot change: image size, tiling scheme, tile size, compression scheme or perform gamma correction.
- QTVR 1 movies require the dimensions of the source images be the same for each node. Creating a multinode will fail if this is not observed.
- PanoMAGIC cannot import non panorama movies (diced movies)

To clear the current source file (PICT or movie node), select another **tab** (leave the **HotSpot tab**) then reselect (re-enter) the **HotSpot tab** with the **Option** key down. (This is a temporary implementation)

HOTSPOT BACKGROUND PICTURE

The panoramic source picture may be extremely large and requires a few moments to open, rotate and display. PanoMAGIC creates a reasonably sized picture to use as the hotspots' background picture (**NodeNN.hsBack**).

The background picture for an imported node is created from an image extracted from the node.

The **Project Preferences (HotSpots)** control the **Background Width** (the width the picture is scaled to) and the **Background Zoom** (initial zoom factor). Leaving the **HotSpot tab** will cause a request to save the **background picture** as **NodeNN.hsBack**. If this file is saved and exists the next time the **HotSpot tab** for this node is entered, the back PICT will be used instead of the original panorama (The modification time of the panorama file is checked, so creating or editing the panorama picture will cause a new **background picture** to be created). **Important:** Always save the background picture when required: the folder is always correctly set to the project folder. (See also: **Thumbnail VRs**)

HOTSPOT TOOLS



The four standard hotspot editor tools are the arrow or selection tool, the rectangle shape tool, the oval shape tool and the polygon shape tool.

HOTSPOT COLOR

The color of a hotspot uniquely identifies it. PanoMAGIC ensures that every hotspot in a node has a unique color or identity.

Select any color in the palette by clicking its square.

The hotspot color palette indicates the **Selection Color** by highlighting the colour square. The **Selection Color** hilite has two modes:



a plain box outline indicates the color has not been assigned to any hotspot in the current node.



a dotted box outline indicates the color has been assigned to a hotspot in the current node.

The value of the **Selection Color** is displayed.

Selection Color : 73

If the **Selection Color** hilite indicates that the hotspot is assigned and you attempt to create another hotspot, the palette will automatically search forward through the table to find the next available color and make that the new **Selection Color**.



Reassign the hotspot color by drag&drop of an unassigned color from the palette onto the hotspot.

HOTSPOT CREATION

To create a new hotspot, select a tool shape. Try a simple shape

such as the rectangle tool. Create the hotspot with click&drag to define the hotspot bounds. To allow creation of a hotspot larger than the viewing area, the background scrolls automatically when the mouse reaches the sides. To delete a hotspot, select it and hit the **delete** key.

The **Polygon** tool allows creation of complex shaped hotspots and requires multiple clicks to define the vertices of the polygon (maximum 32 vertices) To finish a polygon, click in the square that denotes the first point or double click to join the last point to the first point.

If you want to stop creating a **polygon**, double click in the start square. Because a polygon must have three or more vertices, if you start creating a **polygon** by mistake, to stop immediately, double click before defining any points.



Project Preferences (HotSpots) allows the option to **reset** the **polygon** tool back to the arrow tool after the hotspot has been created.

HOTSPOT SHAPE EDITING

To move a hotspot, select it by clicking the hotspot, then drag it. To change the hotspot shape and size select the hotspot and carefully click & drag a **vertex handle** which are small white squares at the vertices of the hotspot.



Hotspots are normally fully confined to the picture area, but they may be moved off the picture area with an **option** key drag.

POLYGON SHAPE EDITING

To **add** a new vertex to a polygon, first ensure that the **polygon** tool is selected and while holding the **option** key down, click the selected polygon **exactly** on the line segment where you want the new vertex.

You may immediately begin to manipulate the new vertex.

Polygon shapes may display one solid black **selection handle**. This selected polygon point may be **deleted** only if the Polygon tool is selected. (Beta version. Polygons draw with debugging lines with **CapsLock** down)

PICTURE ZOOM, HOTSPOT ORDER...

The picture zoom controls at the lower right of the picture allow you to zoom the picture in and out. Study the **HotSpot** menu to zoom the picture in and out and change the stacking order of the hotspots. The **tab**, **shift tab**, **page up**, **page down**, **home** and **end** keys allow you to select the next, previous, first or last hotspot. **Shift** click to select more than one hotspot. A group of selected hotspots can be moved as a group with the arrow keys. There is no cut, copy, paste or clear support, nor is undo supported.

HOTSPOT PROPERTIES



To invoke the **HotSpot Property Editor**, select a hotspot and either use the **Properties** button, the **Edit Properties** menu item or **double click**.

HOTSPOT PROPERTIES EDITOR

Edits the hotspot properties: name, comment, url, link type and cursors.

The **Name** field is the hotspot name (displayed in the QTVR 2 controller for QTVR 2 authored panoramas). The **Comment** field is for any comment text. These fields are added to the movie and are available to the movie's

QuickTime VR runtime environment. The **URL** field text is used in the **HTML** tab editor for defining the hotspot url. These fields are drag&drop targets: Drag text into the fields. The **URL** field also accepts '.htm' and '.html' files.

LINK TYPE

For **MultiNode** movie links, use the **MultiNode Editor**. The hotspot type is a four character identifier that identifies the hotspot type. The defined types are:

- undf** undefined type
- link** multinode jump link type
- navg** object movie type (supported for QTVR1 only)
- stil** still picture type (not supported)

PanoMAGIC does not fully support Object movies or Still Pictures.

You may use any other unique 4 character identifier to define your own hotspot types. The QuickTime VR runtime environment ignores your defined types but the hotspot type is available to multimedia authoring applications such as Director, Apple Media Tool and mTropolis, for special handling of hotspots. If the hotspot type is a **MultiNode** jump link, the id of the destination node is displayed. You may specify a secondary identifier, useful for hotspot handlers in multimedia authoring applications using QuickTime VR 1. The secondary identifier is unsupported in QuickTime VR 2



HOTSPOT CURSORS

PanoMAGIC can add information to the movie to instruct the QuickTime VR runtime to use custom hotspot cursors instead of the default hotspot cursors.

You can test the panorama movie custom cursors inside PanoMAGIC.

See **Project Preferences** to select and enable a hotspot cursor resource file.

If the **Project Preferences** allow defining custom cursors, the **Cursors** box will be enabled. The three types of cursors are:

- mouse **Roll Over** cursor, when the mouse moves over a hotspot,
- Mouse Down** cursor, when the mouse is clicked in the hotspot, and
- Mouse Up** cursor, when the mouse is let go in a hotspot.

The pop up menus next to the cursor edit fields allow selection of a cursor from the imported hotspot cursor resource file. Set the cursor field to zero to use the default cursor. When creating the CURS and crsr resources, it is advisable to keep the resource numbers separate.

Add Panorama Cursor Fields option in the **Project Preferences** controls whether PanoMAGIC adds hotspot cursor information to the panorama movie.

QuickTime VR 1 Runtime Limitations:

QuickTime VR 1 does not correctly handle missing cursor resources; it displays a garbage cursor (actually the first 32 bytes of your Mac's memory) and will probably cause QuickTime VR to crash on 680x0 CPU Macintoshes.

QuickTime VR 1 does not support color cursors (crsr resources).

ADDING CURSORS TO QUICKTIME VR

PanoMAGIC does not add the cursor resources to the movie; it sets the hotspot cursor parameters in the movie to instruct the QuickTime VR runtime environment to use them. It is your responsibility to ensure that all cursors are available to the final QuickTime VR runtime environment. Do not add custom cursors to web delivered VR (unless you want to crash 68K machines)



HotSpots : Make Unique...

It may be easier for handling hotspots in your multimedia authoring environment (Director, mTropolis AMT, etc) if the hotspot color is unique for every hotspot in the project: Use the **HotSpots:Make Unique...** menu item to renumber each hotspot starting from color ID 1. This may fail if there are more than 253 hotspots in the project. (0 and 255 cannot be used as colors).

PANORAMA TAB (Single Node)



PanoMAGIC creates QuickTime VR **single node** panoramas with a choice of QuickTime VR version 1 or 2 file formats with or without hotspots.

PANORAMA TAB PANEL

PanoMAGIC displays the created panorama movie below the tabs.

PANORAMA CONTROLS PANEL

The **Panorama** controls panel contains the parameter editors for creating a single node panorama.

The **Window Size** is the size of the Panorama movie (less controller height).

Controls are disabled if the panorama source is missing. See the **Stitch** documentation to **create** a panoramic picture or the **HotSpots** documentation to **Import** a panoramic picture or movie node.

The **Make** button starts the process of creating the panorama movie, with the checkbox option of adding (any) hotspots.

The **Update** button quickly updates the movie to change the **window size, pan, tilt, zoom** and **correction** only.

The movie is recreated by using the existing video and hotspot tracks and hence the following parameters are not changed: **Image Size, Tiling Scheme, Compression, Gamma Correction.**

It is possible to change the creation version of the QuickTime VR panorama at this stage in the **Project Settings**.

View Min Max Default box

The **View Min Max Default** box controls the fine tuning of the panorama creation settings. They require a panorama to be active (**Create then tune**)

View	Min	Max	Default
Pan °	0.0	360.0	0.0 °
Tilt %	± 100.0		0.00 %
FOV %	0.0	100.0	75.00 %

Correction: Full

@ Pan 176.3° Tilt -1.1° FOV 62.9°

Reset Go To View Get View

The values in the **Pan, Tilt** and **FOV** fields and the **Correction** popup set the view of the panorama whenever the movie file is made or updated.

The **Reset View** button restores the panorama view to the default view in the file ((the view when the panorama is opened).

The **Go To View** button restores the panorama view to the 'Gotten' view.

The **Get View** button sets the default view. Manipulate the panorama directly and lock-in these values with the **Get View** button.

Note: **Zoom Rects** shows the direction of the flow of information:

- setting from the movie view (**Get View**)
- setting the movie view from the edit fields (**Go To View**)

The panorama movie file is not changed unless it is remade or updated.

QTVR1 Limitation:

The QuickTime VR 1 file format does not support setting a default **Correction Setting** or a default **Quality Setting** into the panorama movie file. Panoramas open with **Full** correction and **Default** quality (high quality static, low quality motion).

Media Control box

The **Imaging Size** is **not** the actual size of the panoramic picture.

PanoMAGIC uses the Imaging Size to create the QuickTime VR video tracks and will resize (and possibly distort) the picture to fit the size **as selected**.

You should ensure that your panoramic picture will scale properly. This strategy is taken so that file size of the movies can be easily changed without effecting the source picture. You should choose the best compromise of image size that suits the tiling scheme and minimises distortion.



(Just In Time) **Imaging Size**

PanoMAGIC enforces strict image and tiling size ratios to circumvent problems with the QuickTime VR runtime environments on Windows.

Best Tiling Size - after directly editing new imaging size values, use this menu item to enforce the size ratios (this occurs also when you **Make** the panorama)

Scaling... - (Currently under development)

From Source - Image size calculations from source PICT or Movie

Use PICT/Movie Uses Image size from source

Use Aspect Ratio Calculates width using entered height and the calculated aspect ratio of the source file.

From Panorama - Image size calculations from created Panorama

Use Panorama Uses Image size from created Panorama

Use Aspect Ratio Calculates width using height and aspect ratio.

Project Settings Quickly transfer read/write the **Project Default Image Size**

The QuickTime VR file format use to create the panorama is displayed here.

Compression

Select the QuickTime VR video track compression for the movie.

The normal setting for QuickTime VR is **CinePak, Best Depth, Quality 75%**. The **Preview** option allows you to preview the effects of the compression scheme on the panoramic picture.



Gamma Correction

You may apply **Gamma Correction** to the movie to change the contrast. This is an important cross platform consideration as QuickTime VR movies are much darker on PC monitors than on Macintosh monitors. The master switch for gamma correction is a **Project Preference**.

Make Thumbnail VR

To link nodes in **MultiNode** authoring, PanoMAGIC uses a very small preview or Thumbnail VR (**MultiMode** linking does not use a full size movie) The **checkbox** to the right of the **Make Thumbnail VR** button controls the automatic creation of the thumbnail when the **Single Node Panorama** is made. See **Project Preferences** for Thumbnail options.

Shareware Banner



This banner is applied to every panorama movie created with an unregistered copy of PanoMAGIC.

MULTINODE TAB PANEL



PanoMAGIC creates linked **MultiNode** panorama with a choice of QuickTime VR version 1 or 2 file formats.

MULTINODE TAB PANEL

PanoMAGIC creates a table of the hotspots for the current node and displays each destination link. The **link popup menu button** allows quick selection of the panorama node to link. The node link items in the popup require that the ThumbNail VR has been made.

MULTINODE CONTROLS PANEL

The **MultiNode** controls are similar to those of the Single Node **Panorama** tab, please refer to the **Panorama** tab documentation. Right of the **Window Size** area is an 'Update aspect ratio' icon button; after changing the window size, use this button to synchronise the aspect ratio of each displayed ThumbNail VR: this allow set up of the default and link nodes at the window size ratio.

MULTINODE CONTROLS

The **Multi Node Panorama** box allows you to name the multinode scene ('scene' refers to the complete multinode panorama movie).

Make... and Make As... (Option key)

Creates the multinode panorama from scratch: all nodes are compressed and this may take a long time.

Update as well as setting the current default view, checks each source file and compresses as necessary. It also checks the hotspots and will only create and compress the hotspot track for each node, if it has changed (position, color).

Default node popup menu selects of the default node when the movie opens. The view parameters in the **Panorama** tab for the default node are used to set this node view, allowing interactive set up of the default view.

WARNING: QuickTime For Windows 2.1.2

The QuickTime VR runtime in QuickTime for Windows does NOT respect the default node. Sadly, you must ensure that the default node is the first node.

Make ThumbNail VR

The **Make ThumbNail VR** button creates the ThumbNail VR for the current node only.

Make All ThumbNail VRs

The dependency on the **link popup menu** for setting the linking node views requires that the ThumbNails exist. If any are missing they can be quickly recreated here.



LINK POPUP MENU

Each hotspot/link cell has a **link popup menu button** to select the linking node. The **bold, disabled** node item is the current node. You cannot link a node to itself. All other **disabled** node items require recreation of the node Thumbnail. To link nodes, select a destination node with the **link popup menu button** and manipulate the displayed thumbnail panorama.

The **Set This View** button stores the view of the destination node. This is the view of the destination when the node changes with a hotspot link jump. The **Go To View button** restores the thumbnail VR to the stored values. The current link type is displayed as well as the destination node number.

QTVR 2 Features:

Set the link to **Go Back** which goes back to the last node, or set the link to **Default Node** which goes back to the default node.

These features are not supported in the QuickTime VR 1 runtime.

WEB TAB



PanoMAGIC creates HTML for single node panoramas for embedding QuickTime VR panoramas in web pages. The Apple QuickTime plugin v1.1 only supports QuickTime VR 1 panoramas and objects.

The HTML text can be freely edited.

WEB PANEL

PanoMAGIC creates editable html text for the current node.

Certain values for the html are extracted from the project data to ensure that the html is consistent with the panorama.

WEB CONTROLS

The **File Name** field is the name of the html file to be exported.

It defaults to **NodeNN.html**, and may be changed.

The **Create** button creates the default html text, which will replace **all** the current text if the editor. Default header and footer are added if header and footers are not specified in **Project Preferences**.

The **Export** button exports the html text to a text file. The default name is the file name in the **File Name** field, although you may change this when you select the folder in which you save the file.

PROJECT SETTINGS



Each PanoMAGIC project has options that affect all nodes. The **Project Preferences dialog** is accessed by the **Project Preferences** button in the **Project Window** or from the **Edit/Preferences/Project...** menu.

[Note **Balloon Help** is incomplete]

Stitch Settings Tab



Set the number of PICTs per row displayed.

Set Stitch parameters. Detailed documentation is available in the Apple **QuickTime VR 2.0 Authoring Kit**. Balloon help is available.

Editors Settings Tab



The Editors panel controls general options for the HotSpot, Multinode, (Single Node) Panorama and MultiNode tabs of the project window.

HotSpot Editor

Control the width of the background picture.

Control the default zoom for new nodes.

Control saving and using a background picture.

Control resetting the hotspot tool.

MultiNode Editor

Control number of cells per row displayed.

Control resolution of hotspot picture.

New Node Defaults

Control default imaging size.

Control default window size.

QuickTime VR Settings Tab



The QuickTime VR panel controls general options for the creation of QuickTime VR single and multinode panoramas.

QuickTime VR Version

Choose the QuickTime VR file format version for the creation of single node and multinode panoramas.

Tiling

Set the tiling scheme for dicing of the panorama picture into the QuickTime VR video track. A tiling scheme of 1x24, using an image area of 496x2400, will produce a QuickTime video track of 24 frames of 496x200 pixels.

Default Zoom

Set the initial percentage zoom for the **Panorama** tab zoom fields.

Cross Platform Format checkbox

Set the option to create cross platform QuickTime VR files. Cross platform format QuickTime VR panoramas are playable on PCs and on the Web.

Allow Gamma Correction checkbox

Master control for performing gamma correction of panorama pictures.

Zoom-In Limit: menu

Restrict minimum zoom. Stops zoom in before over pixelation. Use 1:2.0 for slightly pixelated minimum zoom. Actual minimum zoom value depends on the image size and movie window size.

Partial Panoramas: menu

Panoramas are by default assumed to be full 360°. To restrict the **Pan** in the **Min Max** fields in the **Panorama** and **MultiNode Default Node tabs**, set to **Full Sized PICT**. This requires that you pad the panoramic picture (add white space to either end) if the actual image size is less than 360° (insufficient PICTs). To calculate the amount of padding, stitch a full 360° panoramic picture (with source PICTs giving 360°) to calculate the normal aspect ratio of the lens.

UNIMPLEMENTED: PanoMAGIC does not implement unpadded partial panoramas.

Low Resolution Tracks menu (**In progress-UNIMPLEMENTED**)

Select the resolution of the optional low resolution video and hotspot tracks. The percent value is the approximate increase in file size.

Fast Start Movies menu (**In progress- UNIMPLEMENTED**)

PanoMAGIC can optimise the order of the data in the panorama movie for delivery on CD-ROM or to support browser plugins that stream the movie.

No Fast Start: The unoptimised movie data order is:

- all panorama image data
- all hotspot image data
- and general panorama data

With a Lo Resolution Track, the unoptimised movie data order is:

- all panorama image data
- all hotspot image data
- all lo res panorama image data
- all lo res hotspot image data
- and general panorama data.

Linear Fast Start: The movie data order is optimised for fast start with regard to the default node:

- general panorama data
- [default node hotspot image data] multinode only
- [default node panorama image data] multinode only
- all hotspot video image data
- and all panorama image data.

With a Lo Resolution Track the movie data order is optimised for fast start with regard to the default node and then lo resolution data:

- general panorama data
- [default node lo res hotspot image data] multinode only
- [default node lo res panorama image data] multinode only

all lo res hotspot image data
all lo res panorama image data
[default node hotspot image data] multinode only
[default node panorama image data] multinode only
all hotspot video image data
and all panorama image data.

Interleaved Fast Start: The movie data order is optimised for fast start with regard to the default node, and then interleaving of the hotspot and video image data:

general panorama data
[default node hotspot image data] multinode only
[default node panorama image data] multinode only
interleaved hotspot and panorama image data.

With a Lo Resolution Track the movie data order is optimised for fast start with regard to the default node, then lo resolution data, and then interleaving of the hotspot and video image data:

general panorama data
[default node lo res hotspot image data] multinode only
[default node lo res panorama image data] multinode only
interleaved lo res hotspot and lo res panorama image data
[default node hotspot image data] multinode only
[default node panorama image data] multinode only
interleaved hotspot and panorama image data.

The interleaving refers to the placing of the hotspot image data next to the video image data. There is no perceived benefit in attempting to interleave the hotspot and video data on a tile by tile basis, which could lead to poorer response in the QuickTime VR runtime reading the movie from CD-ROM. Interleaved is the same as Linear Fast Start for single node panoramas.

ThumbNail Resolution: menu

Select the resolution for the thumbnail VRs.

Auto Create ThumbNails: checkbox

You may prefer to automatically create the thumbnail when you create a single node panorama.

Panorama Settings Tab



Embedded Copyright Notice

PanoMAGIC adds copyright information when it creates a panorama movie.

The Copyright notice can be viewed in MoviePlayer.

The initial copyright notice for new projects is derived from the name and company information supplied when PanoMAGIC is registered.

The copyright can be modified in the registered version of PanoMAGIC.

Embedded Movie Info

PanoMAGIC adds movie information when it creates a panorama movie.

The movie info can be modified in the registered version of PanoMAGIC.

The Movie Info can be viewed in MoviePlayer.

Embedded Source Info

PanoMAGIC adds source information when it creates a panorama movie. The source info may describe the source material for the Panorama movie. The Source Info can be viewed in MoviePlayer.

HotSpot Cursors box

PanoMAGIC can add hotspot cursor information to the panorama movie to instruct the QuickTime VR runtime to use custom cursors. PanoMAGIC does not add the cursor resources to the movie. It is your responsibility to ensure the cursors are available in the final QuickTime VR runtime environment.

Add Panorama Cursor Fields

Controls the addition to the movie of the hotspot cursor fields. If this option is disabled, the movie hotspot cursor fields are set to zero (use default cursors). If this option is enabled, the **HotSpot Properties Editor** allows you to select cursors from a popup menu if the **Cursor Resource File** is defined.

PanoMAGIC Use Cursors

PanoMAGIC can test custom cursor hotspots directly. Open the panorama and the cursors will be used. QuickTime VR 2 caches the cursors so they may not be available in open movies if this option has just been selected.

Cursor Resource File

Select the resource file that contains the custom cursors. Black&White 'CURS' and color 'crsr' resources can be created with ResEdit.

Cursor Implementation Limitations:

The cursors may not be correct if multiple PanoMAGIC projects are open. QuickTime VR 1 does not support color cursors. QuickTime VR 2 supports custom cursors only for mutinode link hotspots. Do not use custom cursors for web delivered panoramas as custom cursors will not be available within the plugin environment of the browser.

Web Settings Tab



HTML Header and **HTML Footer** text fields

Enter text to replace the default header and footer use to generate HTML scripts for embedding panoramas in web pages.

Other Stitchers

PhotoVista

If you do not have access to **MPW/ToolServer/Stitch**, you can stitch with **PhotoVista**, a very easy to use tool. It is available from MacOS software retailers or <http://www.livepicture.com> (a demo copy is available online).

Stitch in PhotoVista (PanoMAGIC cannot control it), save as **cylindrical** PICT format (or TIFF if very large); retouch in PhotoShop and rotate.

Import the panoramaic PICT into the **HotSpots/Source tab**.

Warning: PhotoVista exports QuickTime VR movies with invalid data.