

Panotools Slicer and Multiplier

Version 0.0.4.1

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Program description:

This software will aid you in making some specific tasks easier which are normally hard to complete or impossible at all:

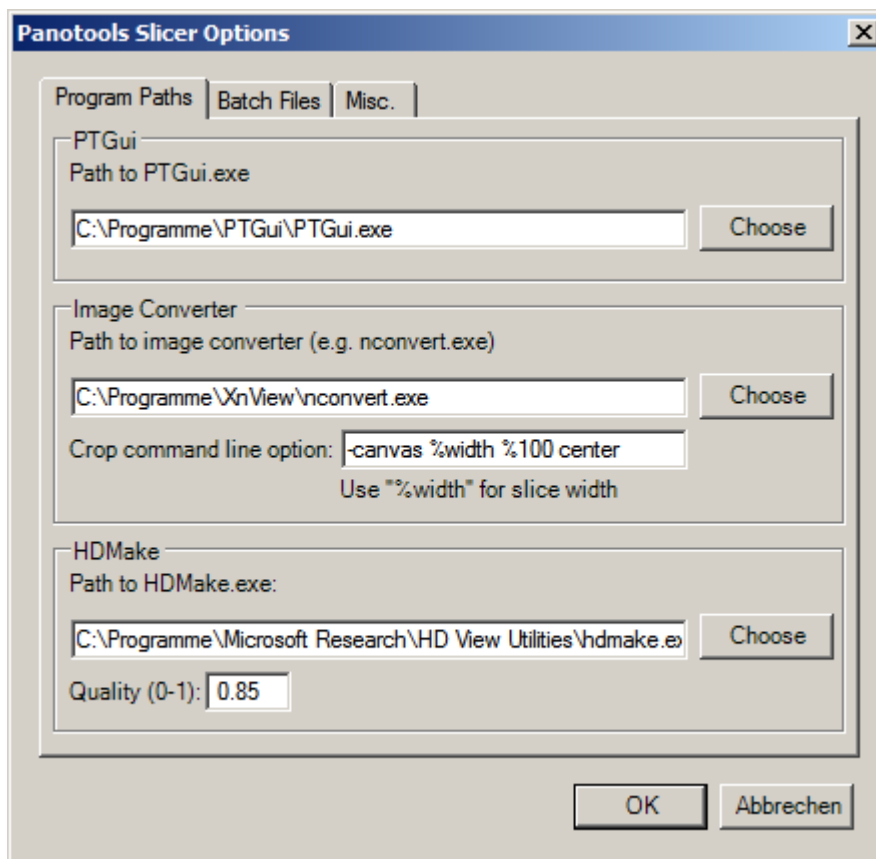
- Gigapixel panoramas: Will slice large panoramas (just like slicing bread). This will circumvent file size limitations and shorten rendering time.
Instead of rendering the complete horizontal FOV, a "viewing window" with a smaller FOV is used. The Slicer generates multiple partial project files by "dragging" this "viewing window" through the panorama. This only works for cylindrical and equirectangular panoramas: As long as your pitch doesn't change, the distortion caused by the projection is independent of the panorama's yaw.
 - Multiple panoramas with repeatable setup (precision heads, multi-camera setups): Will read all images from the input directory and create the according panoramas based on a template panorama.
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Installation and setup:

Prerequisites: Windows (2000, XP, Vista) and [NET 2 runtime](#) .

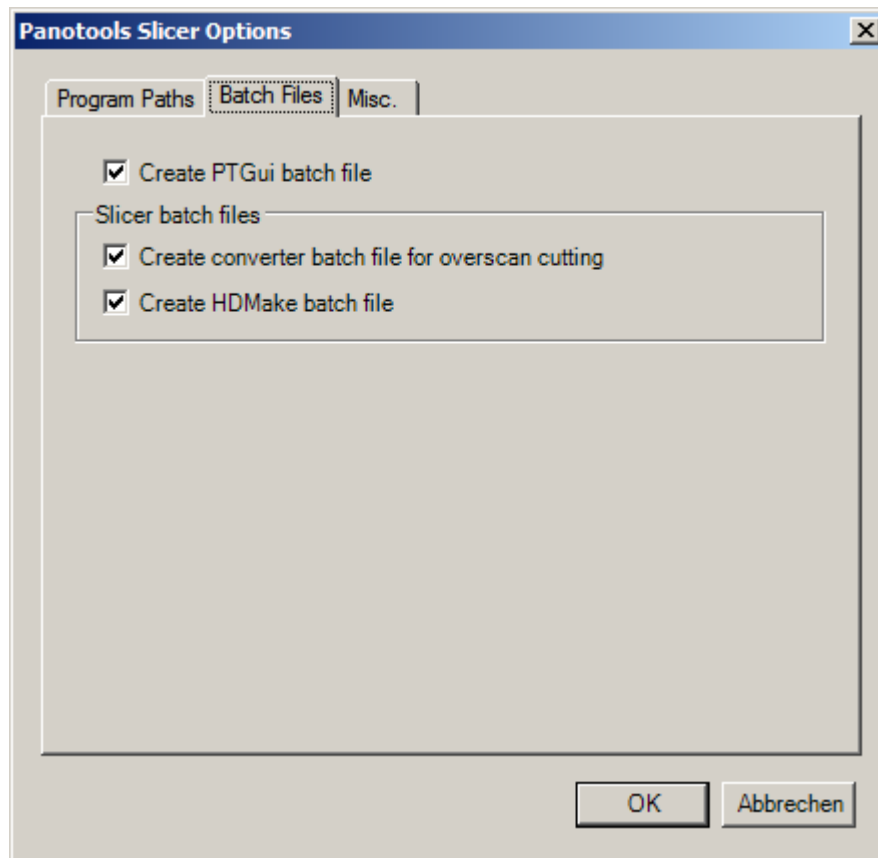
Download the ZIP file at <http://dativ.at/slicer> and unpack the files to any directory you like. For drag&drop operation you may create a shortcut on your desktop.

If you want to use the automation options, you have to set up the tool paths in the Slicer options. Choose <options> from the main menu:



Note: the command line option for crop will look for a placeholder named “%width” which will be replaced during runtime by the actual width of the panorama slice without the overscan borders.

If you want the Slicer to create some handy DOS batch files for you , you can specify on the next tab:

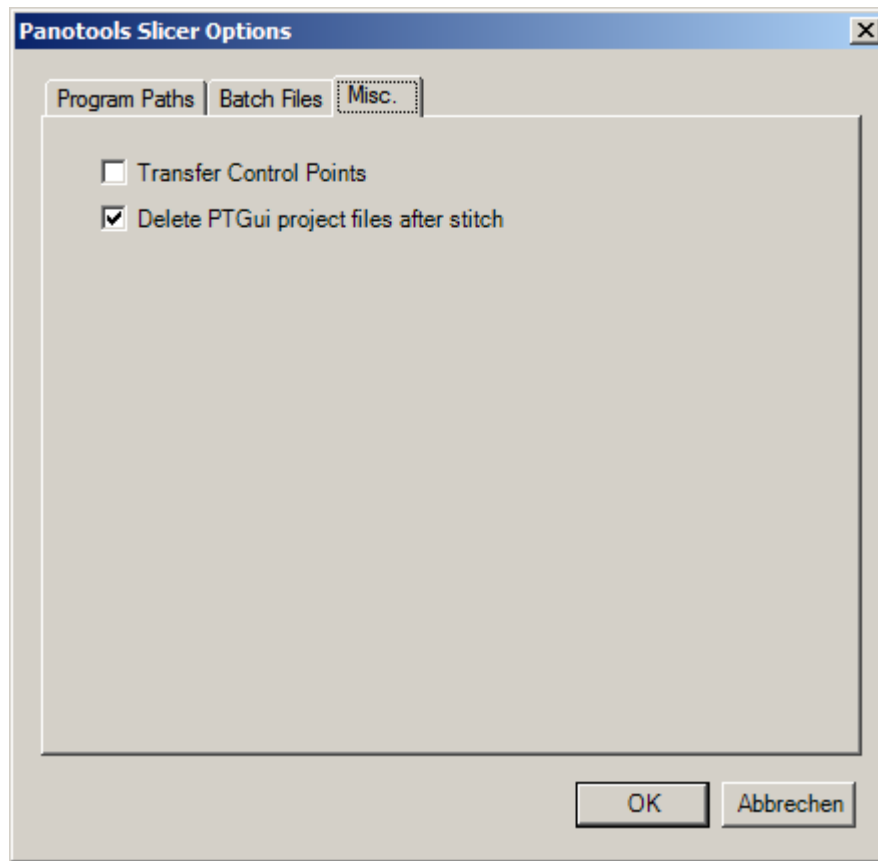


The batch files are created in the working directory (the directory where your .pts file resides).

The naming convention is as follows:

- [panorama_name]_batch.bat ... PTGui batch file call
- [panorama_name]_convert.bat ... Batch file for cutting away the overscan from the slices
- [panorama_name]_hdview.at ... Batch file for assembling a HDView panorama with all necessary helper files. The HDView HTML file is called [panorama_name].htm

Some misc options are collected in the third tab of the options screen:



- “Transfer control points”: As the panoramas are derived from a template project, it doesn't make much sense to include the control points. For multiplying, it is even very advisable to remove them as you can easily create and optimize new control points specific to this project. However, if you need the control points in the auto-generated projects, you can set this option accordingly.
- “Delete PTGui project files after stitch”: In full automatic mode, you may not keep the auto-generated project files as they do not contain any information that can't be restored from the main template. If you are using the program for multiplying, you may want to switch this option off.

Some exemplary application scenarios

Some considerations about slicing:

It is very advisable to do a test run before you start rendering the maximum output size. E.g. set the output width to 8000pixel, slice and render the panorama, and have a look if everything works as expected.

The fastest stitch is done by choosing a slice size that will easily fit your computer's capabilities. The capabilities depend on:

- available amount of RAM. Even if the RAM is not needed for PTGui, a large amount will be used for file caching by your system. If your system can manage to cache your source and temporary files in RAM, you can expect a speed increase of > 10x
For a 32bit system with 2GB of RAM, you may use a slice size of approx 20MPix as a starting point.
- The speed of your hard disk (of course). Still, it has to be said that even the fastest disk system is much, much slower than a stitch that can be done in RAM. If you consider to set up a fast stitching machine, spare the money for an expensive disk system and invest into a decent amount of RAM!
- The software you use (PTGui 32 or 64 bit). If the preconditions above are met, 64bit will speed up stitching with a factor of approx. 2-3x

Image processing toolchain and file type compatibility:

There are some known issues regarding image file types and the image processing toolchain:

- if no specific options are added, nconvert will strip down the image to 8bit and remove all EXIF data.
- hdmake can't read every TIFF compression algorithm. The best option is, to use uncompressed TIFF

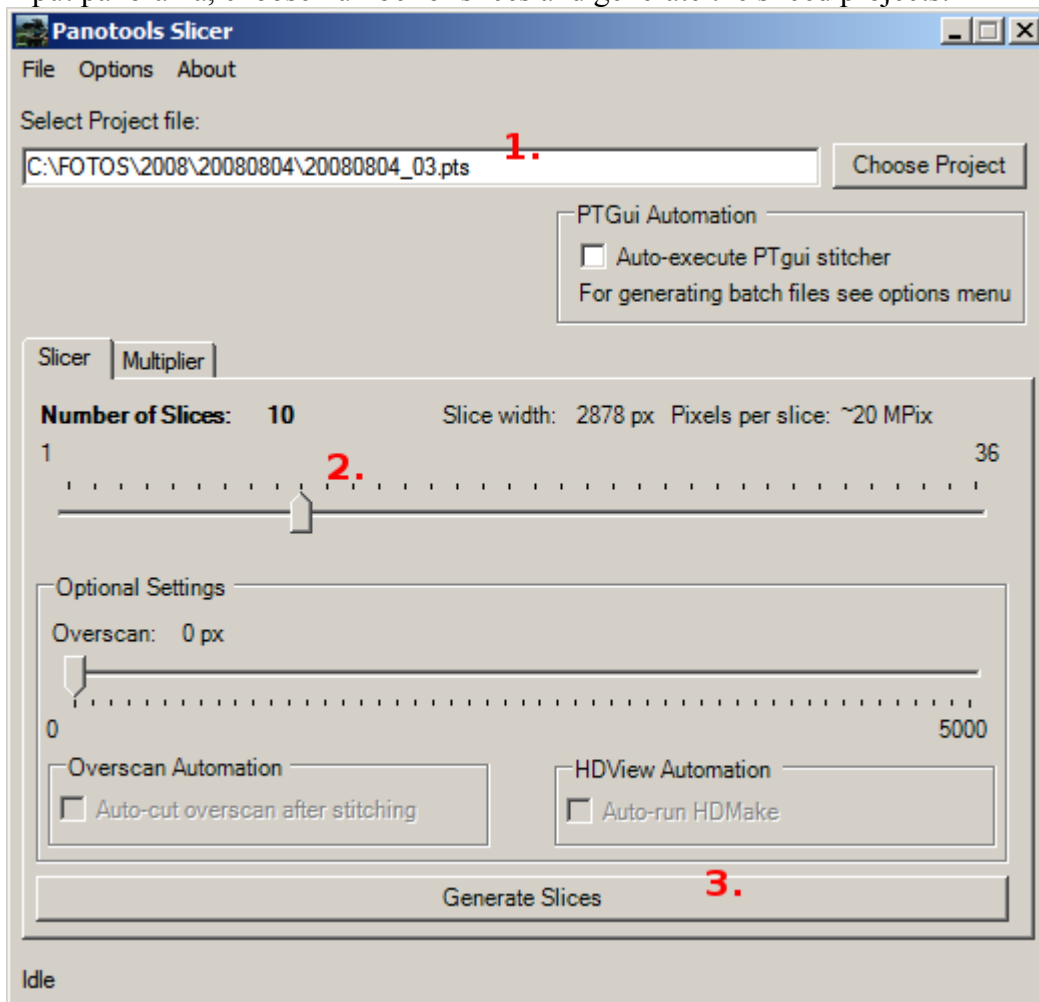
Issues about full automatic stitching

Full automatic slicing will only work, if you choose to create the output images in your working directory (the directory where your source .pts resides). This limitation is introduced due to the fact that a command line can only have a limited length. To be able to hand over as many images as possible to the command line, all paths are stripped off.

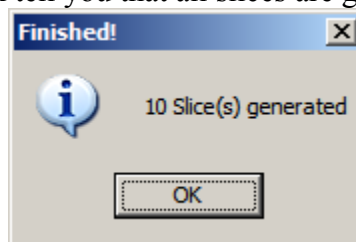
If you want to use a different path for the resulting images, you are advised to use the auto-generated batch files, which should be moved to the images directory before calling.

Basic slicing of a gigapixel panorama:

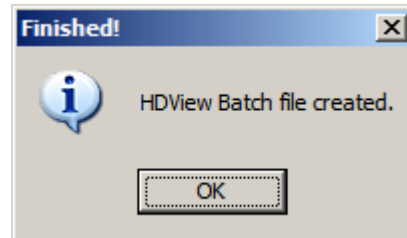
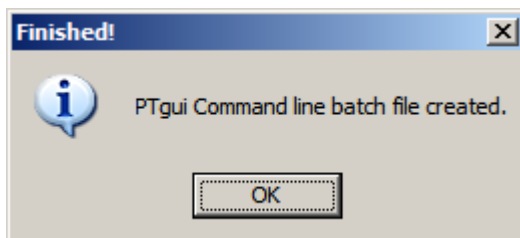
Open your input panorama, choose number of slices and generate the sliced projects:



After some seconds, the software will tell you that all slices are generated:



If you have chosen to have the batch files created (which is the default option), you will be informed about that:



Now you can drag the generated .pts files onto the PTGui batch stitcher, or simply double-click the PTGui command line batch file (“[panoramaname]_batch.bat”).

You can then use the slices directly to feed HDMake (using the generated batch file), but you can also post assemble the slices in an image editing software like VIPS/NIP or Photoshop (assuming that your software can handle that large images....)

Slicing with overscan

Slicing a panorama may have one mayor drawback: If you have large brightness differences (e.g. by shooting the panorama in auto-exposure mode) or there are a lot of moving objects in the panorama, the slices may have visible seams. This is, because there won't happen any blending across the slices.

To circumvent this, you have to sacrifice some of your speed increase to render a larger area for each slice. It gives the blender a chance to “see” how image continues beyond the slice's borderline.

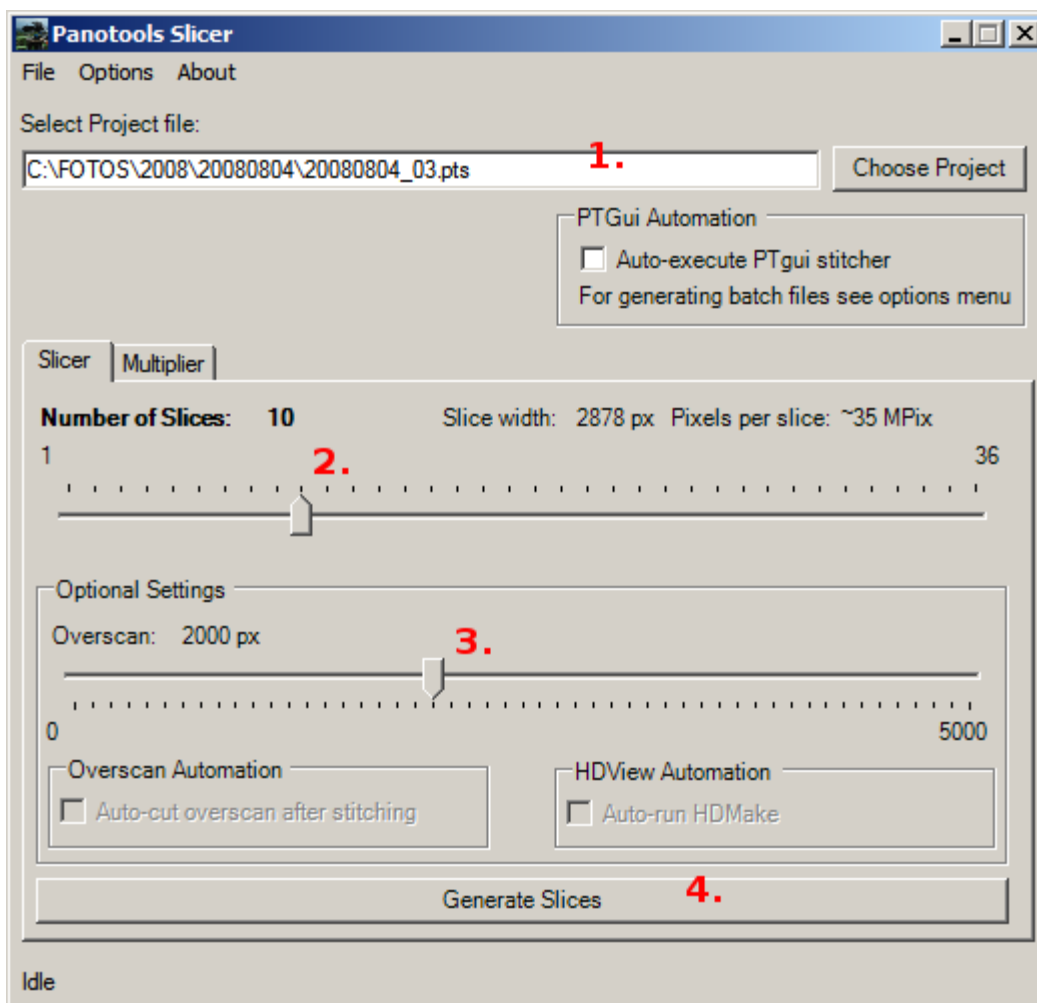
This is what the application calls “**Overscan**”. Overscan is redundant data and has to be cut away after rendering.

The calculation and positioning of the overscan is as follows:

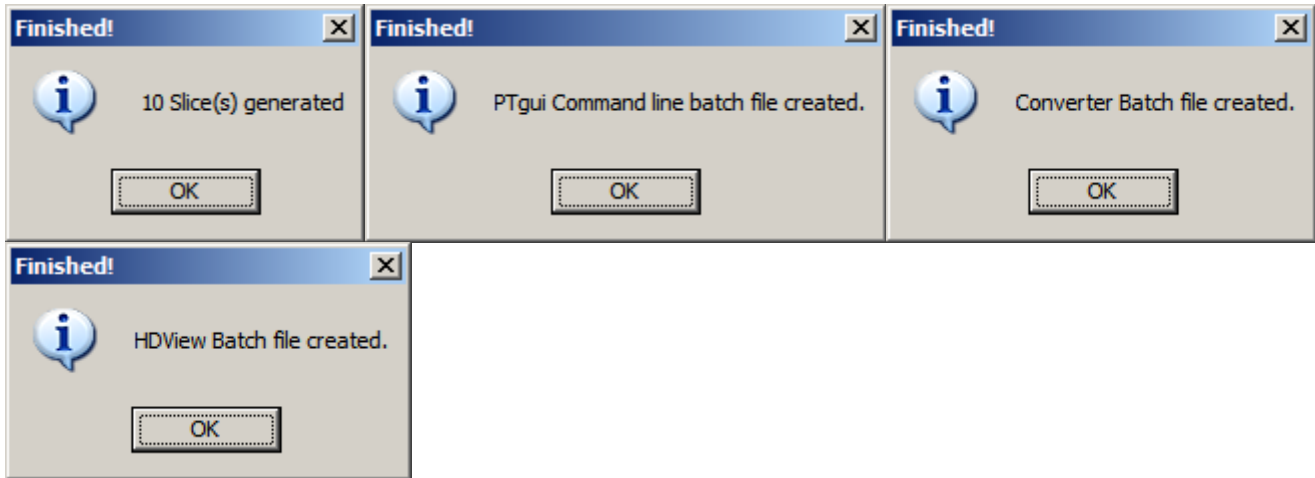
Positioning: $\text{overscan}/2 \mid \text{panorama slice} \mid \text{overscan}/2$

Size: width of one source image < overscan < width of 2 source images

Example: Your source images are 2000 pixel wide, so the overscan should be at least 2000 pixel. So the half of the source images on the left and on the right are included in the rendered slice.



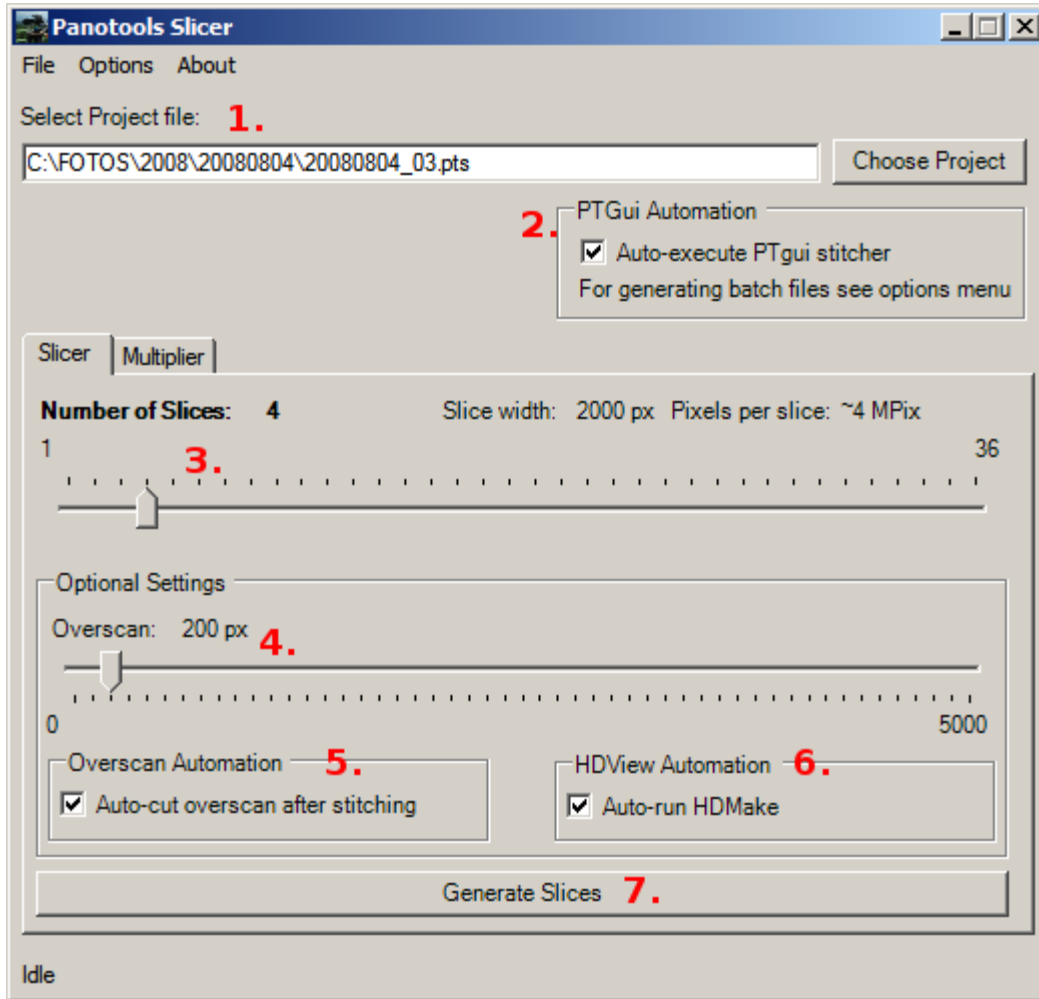
After some seconds you are informed about what the Slicer did for you:



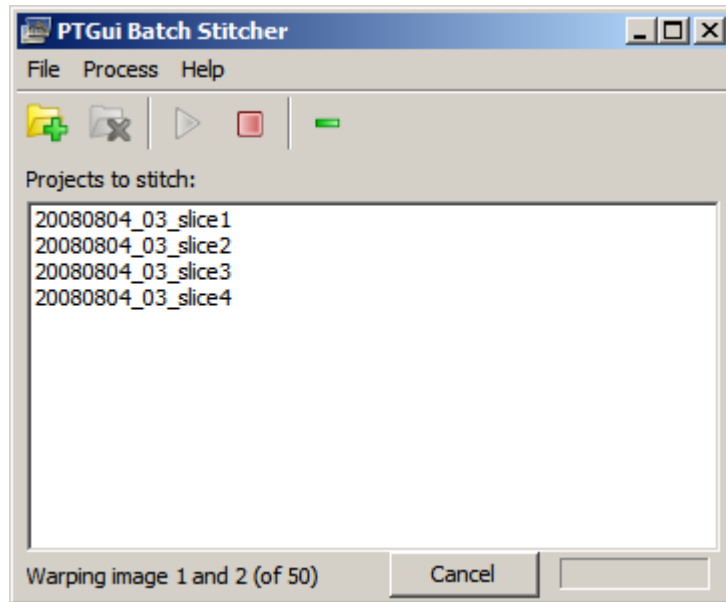
You will notice that there is one more batch file created, the “Converter batch file”. This batch file will do the cutting of the redundant image areas for you. You can run the batch files in the above order (PTGui, Converter, HDView) and – if needed do some manual work in between.

Full automatic slicing with overscan and HDView panorama creation

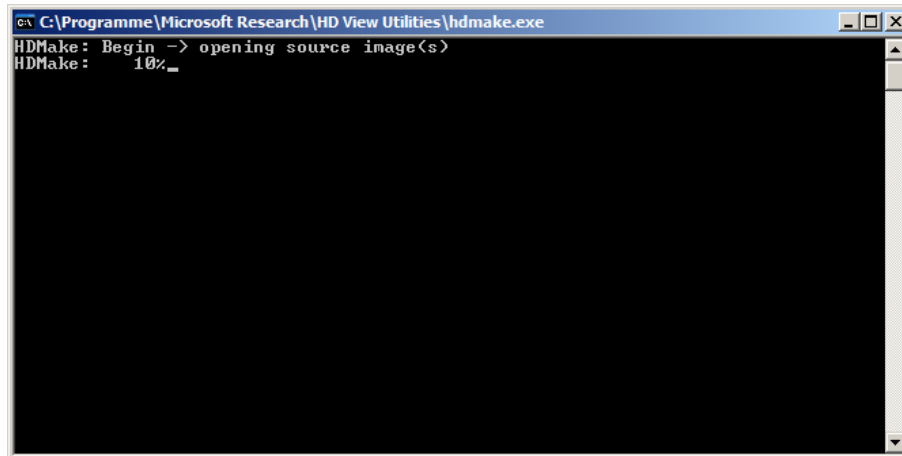
This example will create a sliced panorama from the source PTGui file, use some blending overscan and automatically do the necessary steps to create a viewable panorama, ready to be uploaded to a web server.



- After pressing the “Generate” button, PTGui batch sticher will appear:

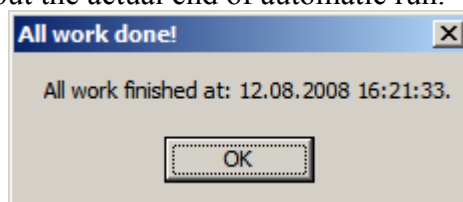


- After stitching, the slices will be automatically cutted. This step is only visible in the status bar of the Slicer application.
- The cutted slices are then fed to HDMake. You will see a DOS box popping up, showing the progress of the panorama assembly.



As you probably don't want to wait in front of the computer until all those steps are finished, you may use this time to go to lunch, out for a walk, or improve your guitar playing skills.

The software will you inform about the actual end of automatic run.



Please note, that if you have set the options to have batch files created, that – although the program won't specifically inform you about that – the files can also be found in the working directory.

Multiplying a PTGui panorama

Multiplying assumes that all your source image files are located at or below the directory where the template is located.

The rest is a pretty straightforward process:

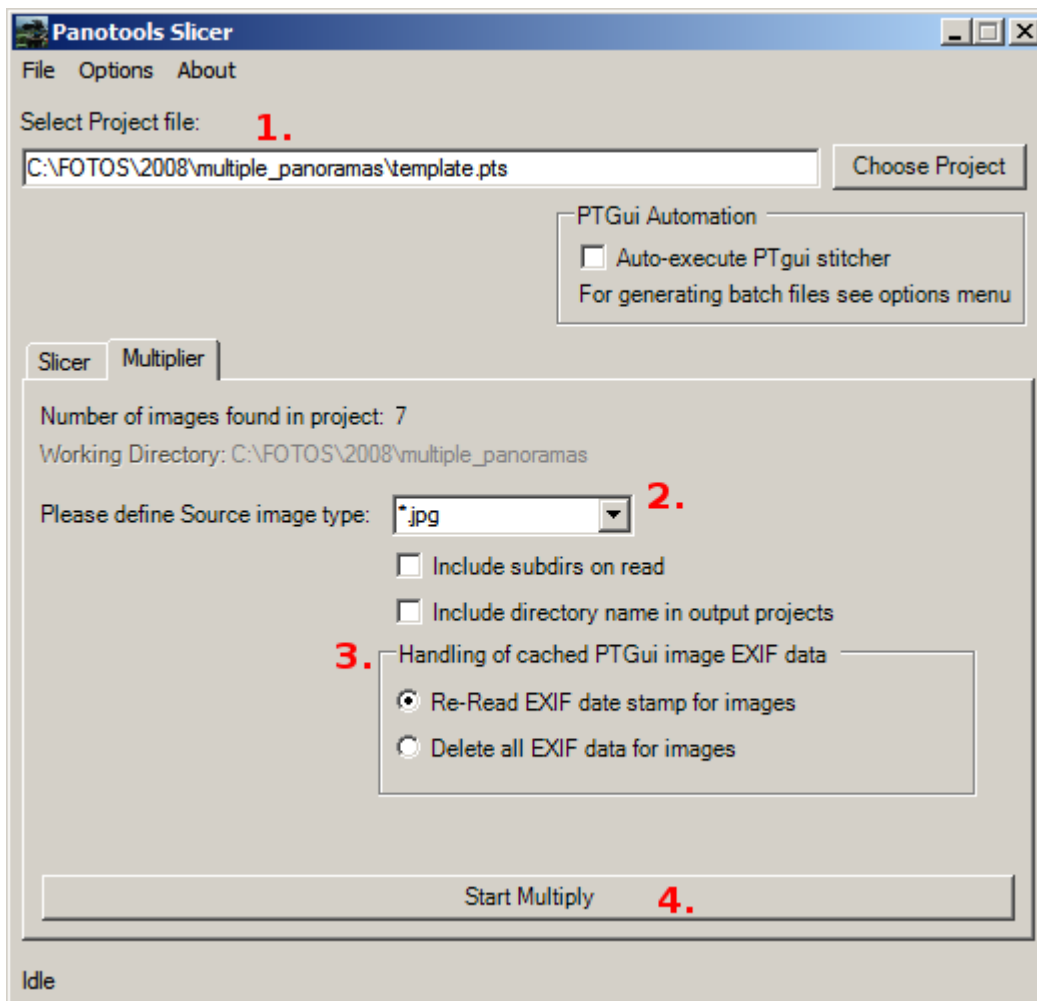
- Choose your template
- Choose the file type of your source image files
- Choose how to handle cached EXIF data:

This is important as PTGui caches EXIF data in the project file. If you don't change this cached data, the stitched panoramas will have the EXIF date stamp from the source project.

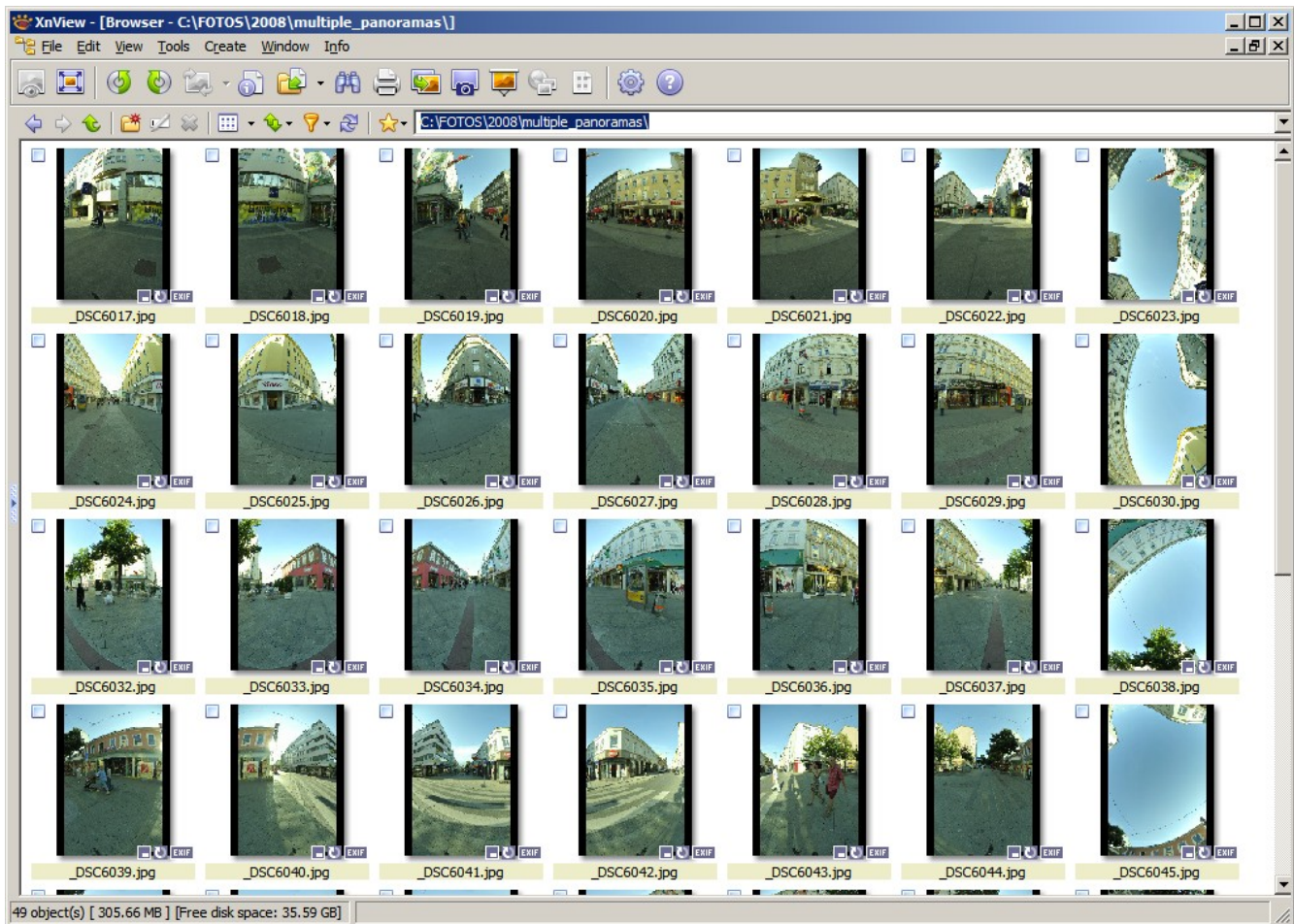
At the moment, the best option is to re-read the EXIF date.

(One of the next versions of PTGui (>=8.0) may have a modified batch stitcher that will re-read EXIF information if it is missing the the project file.)

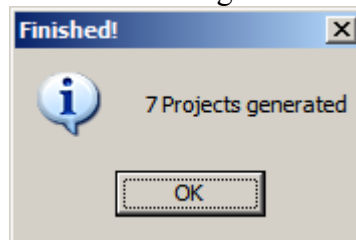
- Start the multiply process.



The program will do a rough check if the number of source images is correct. It will not check, if the grouped source images will really be the ones that will result in a correct panorama. This has to be visually checked by you, e.g. by arranging the source images in an image viewer:



After the run, Slicer will tell you about the number of generated PTGui projects:



The files are named in the form:

[first source image name]_[number of images in project]_images.pts

As with the slicer, you can choose to automatically run the PTGui batch stitcher after successful generation of the project files by setting the appropriate PTGui automation option.