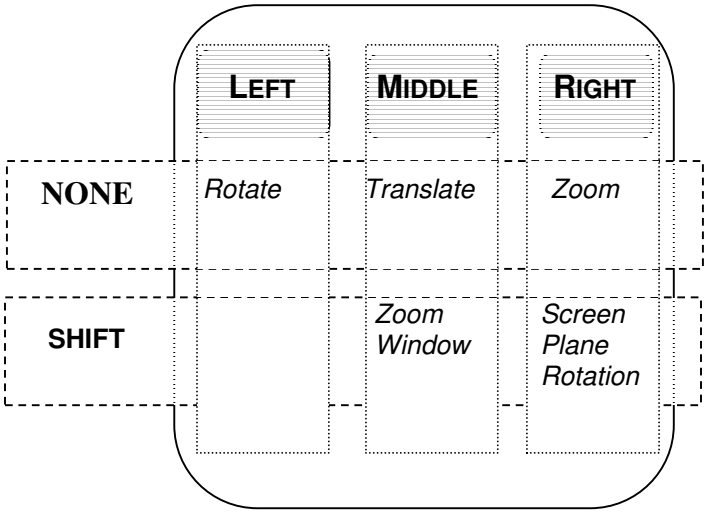
MOUSE OPERATIONS

Use the mouse in the graphical window as shown below.



FYI:

To stay in dynamic mode, press and hold the *CTRL* key.

To rotate or translate the image, place the mouse over a point on the image, and **not** in the background. This applies when the image is zoomed in so tightly that individual points are surrounded by background.

Overview of Steps

1. Configure the digitizer (first time only).
2. Open/import the first data file.
3. Subdivide by Range, as part of interpolation.
4. Import the second file, repeating the above steps.
5. Align the two images.
6. Alignment and comparison.
7. Global alignment (for 3 or more images).
8. Lock the image alignment (for 3 or more images).
9. Reduce the image overlap.
10. Save the aligned images

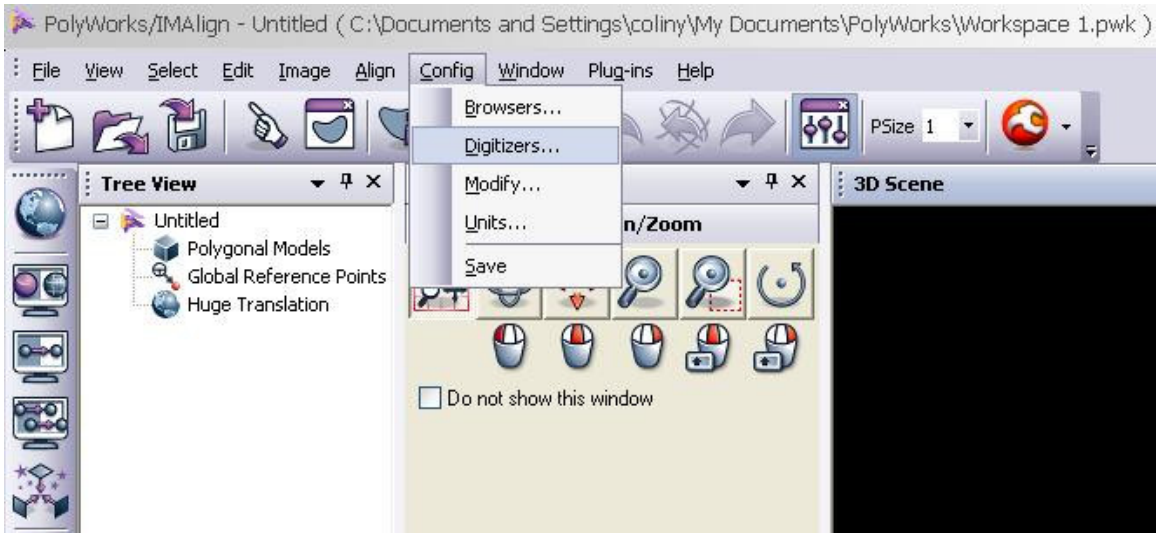
Step 1: Configure the Digitizer

Carry out this step the first time you use IMAlign.

1. Select *Config* → *Digitizers*.

2. Under *Recommended Settings* → *Digitizer*, set *Digitizer* to *Optech (in meters)*.

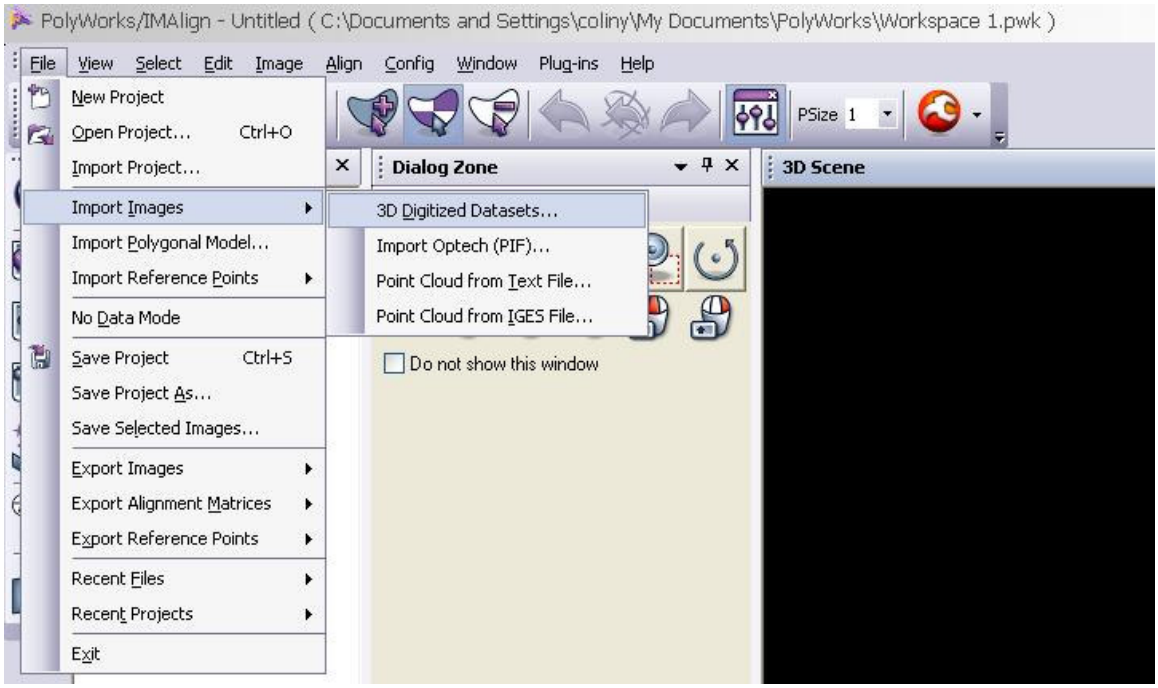
Select *Config* → *Save* to save the recommended settings for all future IMAlign sessions.



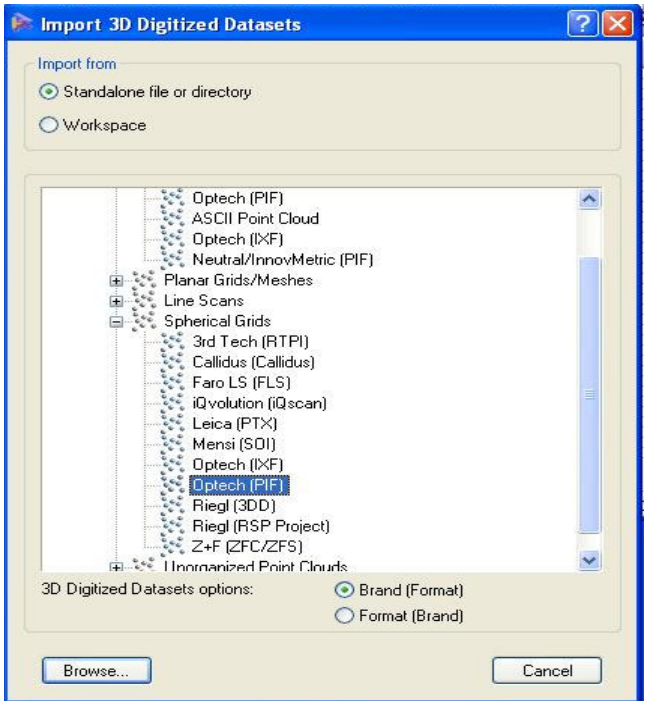
Step 2: Open/Import the First Data File

Before images can be aligned, they must be imported. Images are imported one at a time.

Select *File* → *Import 3D Digitized Datasets*.

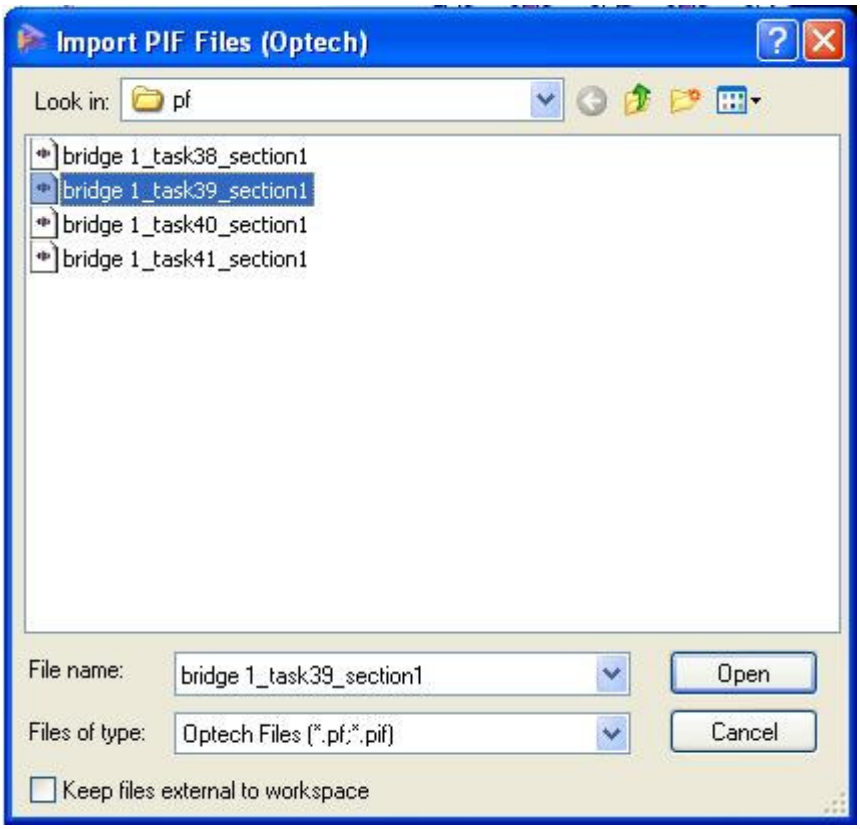


Select → *Spherical Grids* → *Optech (PIF)*



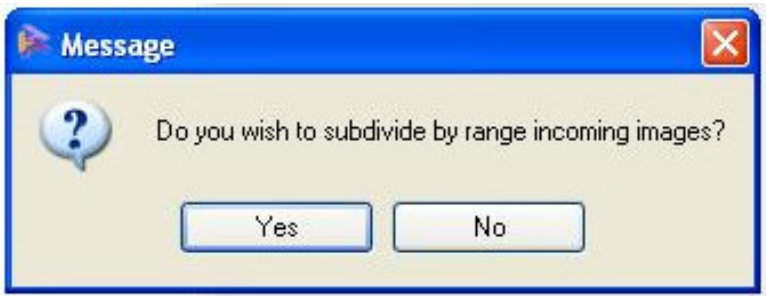
Navigate to the *.pf* file that you want, and press *Open*.

Note that **.pf* files are created by the ILRIS-3D Parser from scanner data.

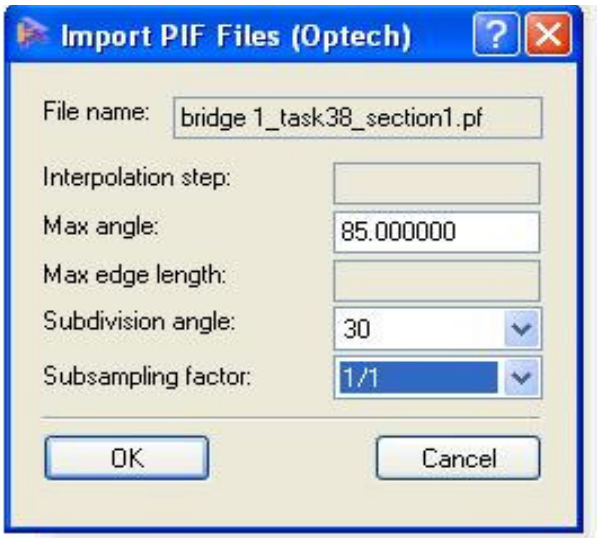


Step 3: Subdivide by Range, as part of interpolation.

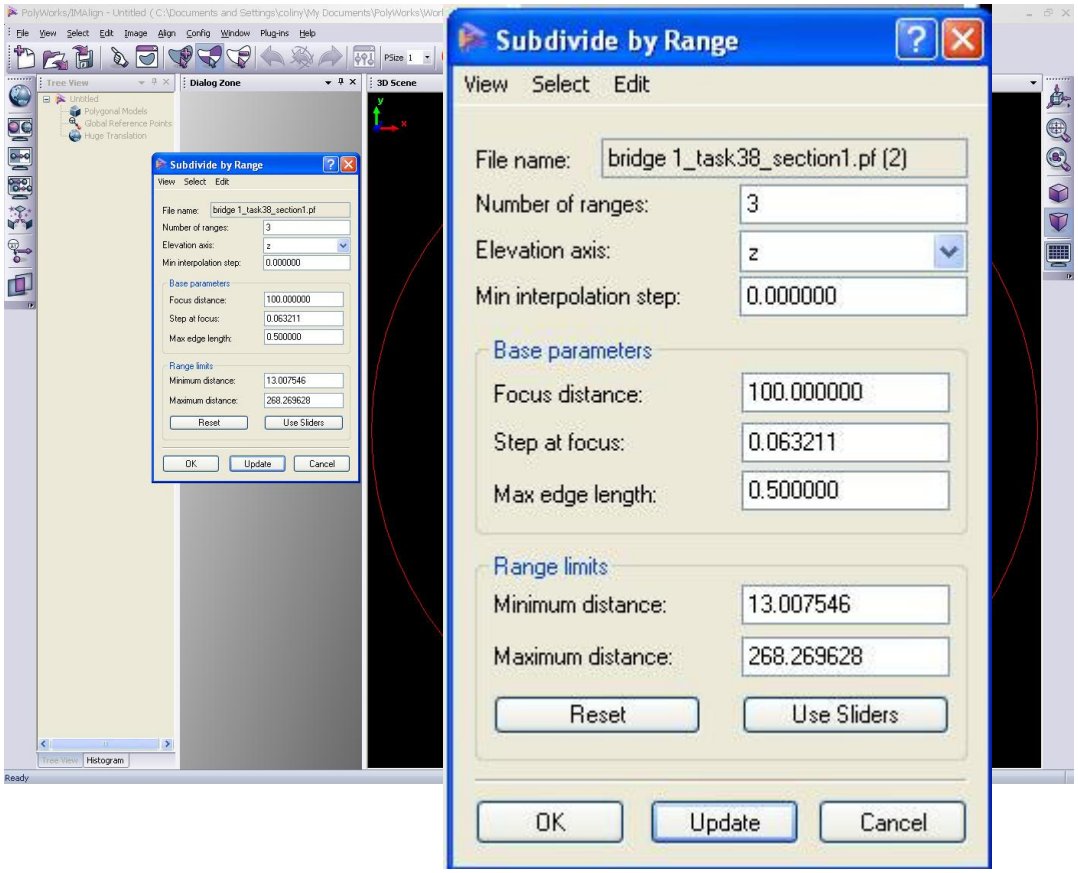
Select → "Yes" when asked to Subdivide By Range



Select → OK when you set the following values



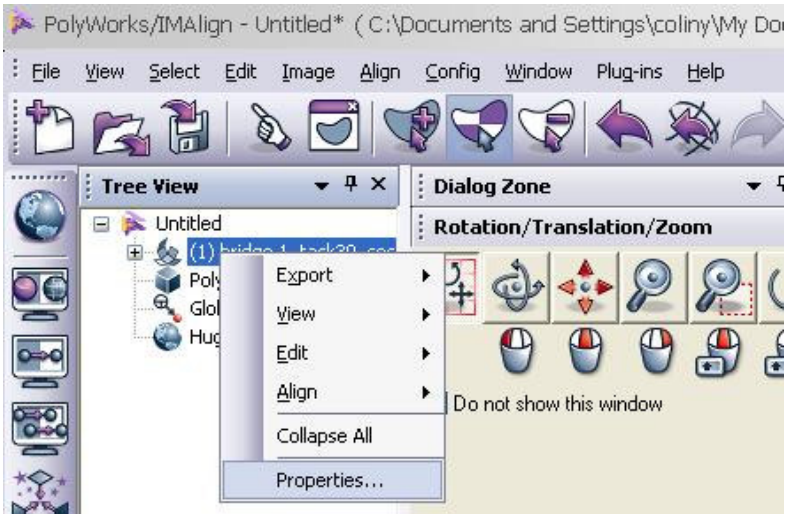
Change the step at focus to the spot spacing of the scan or a higher value. The spot spacing value can be found in the Parsing Log text file found in the parsed Pf folder.



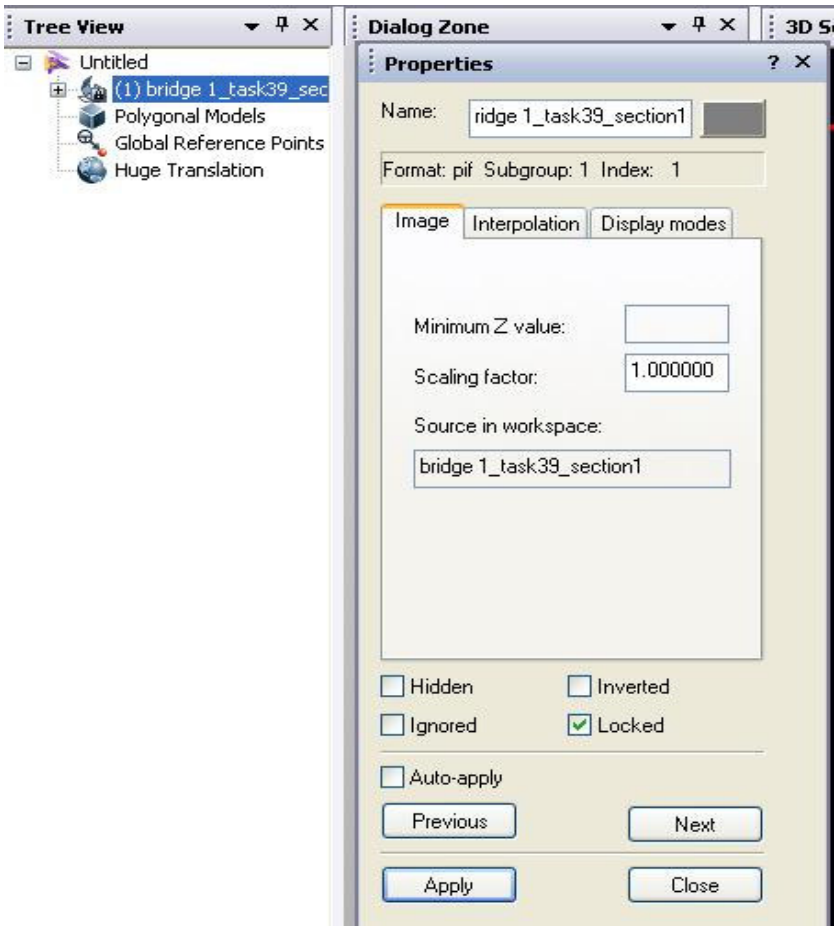
Select → OK

Locking the First Image

1) Click on the scan located on the tree window and then right click on the mouse to bring up an Object Properties box. Select Properties.



2) Select → the "Locked" option and press "Apply" button.



3) The image is now locked and another scan can be imported next.

Step 4: Import the Next Image

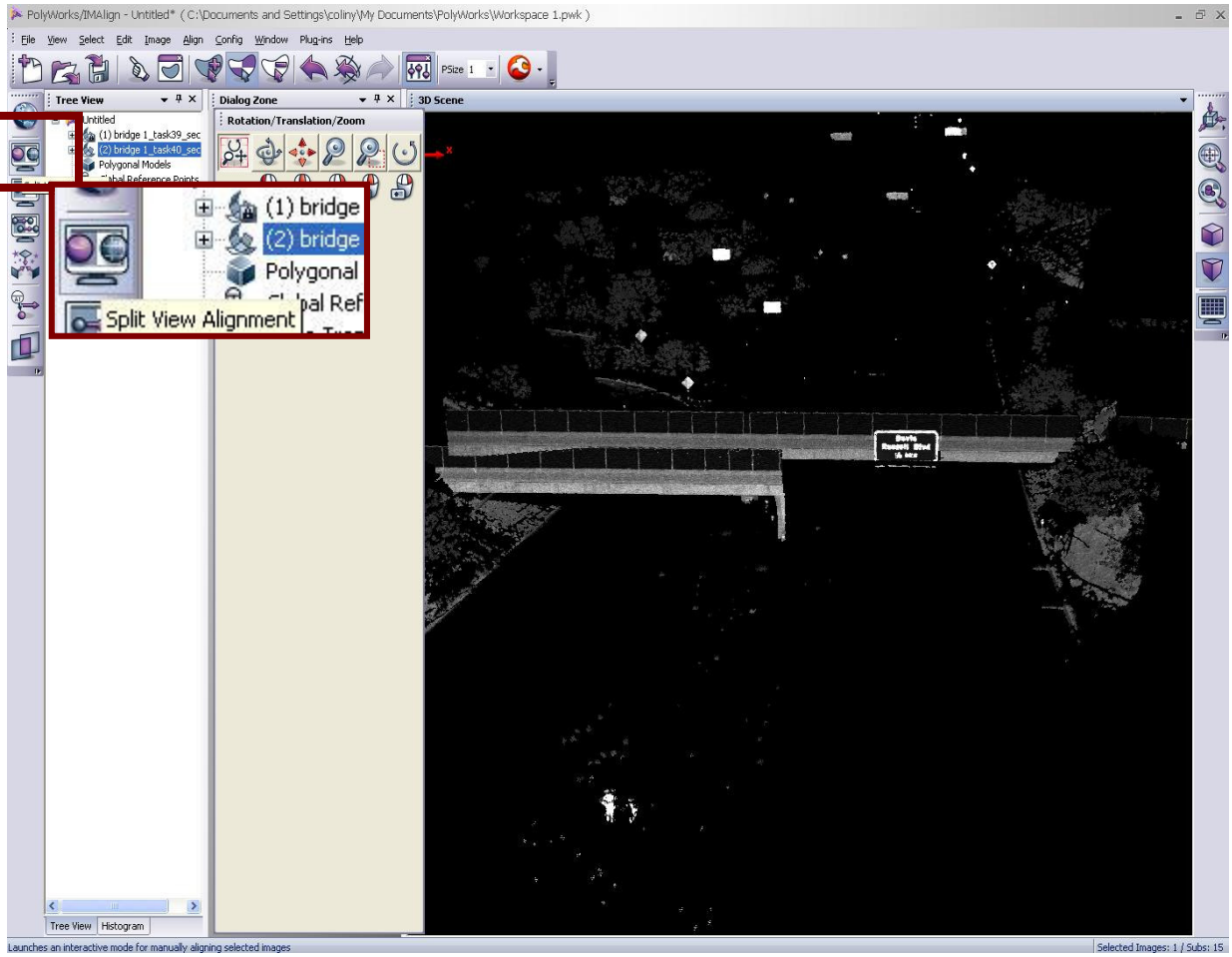
1. Repeat the above steps to import the next image.

2. Remember to set the proper S*tep* value for each image file.

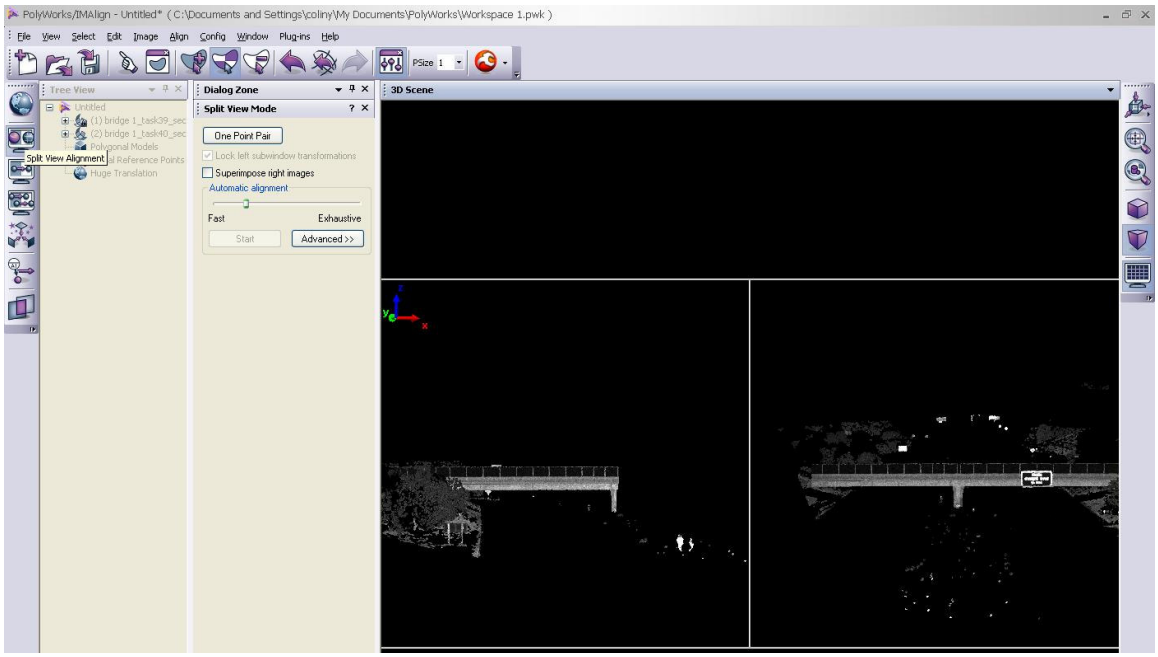
You can import more than two images.

Step 5: Align the Two Images

You will see that there is two images below after you have imported them. Click on the Split View Alignment Option button as seen below so that you can separate them.

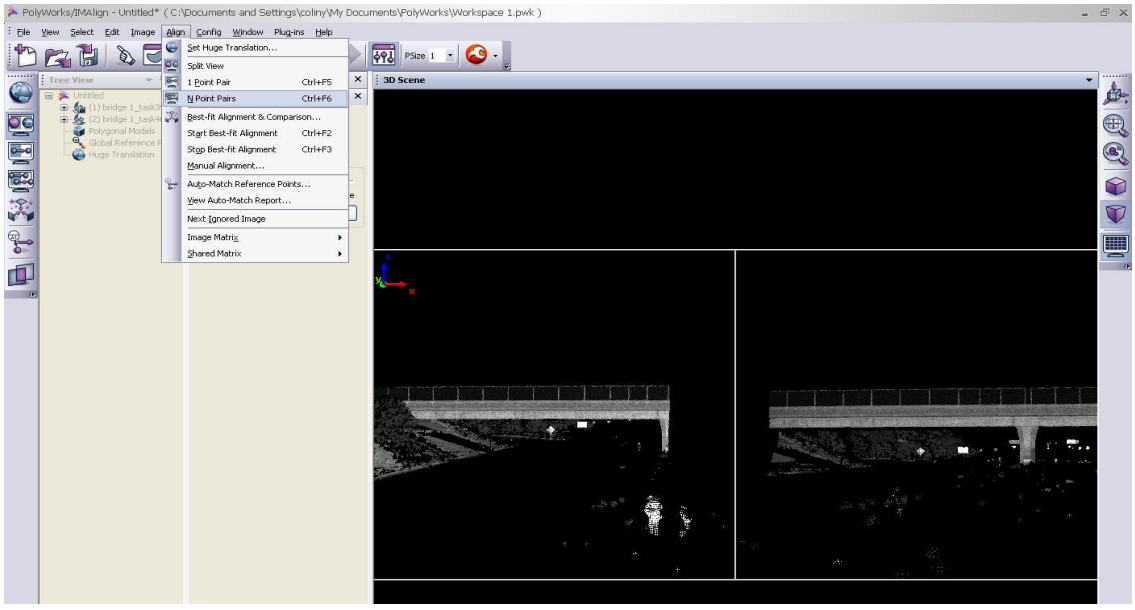


Re-orient the newly added images, aligning the two images to approximately the same perspective, by using the left image as your reference as seen below.

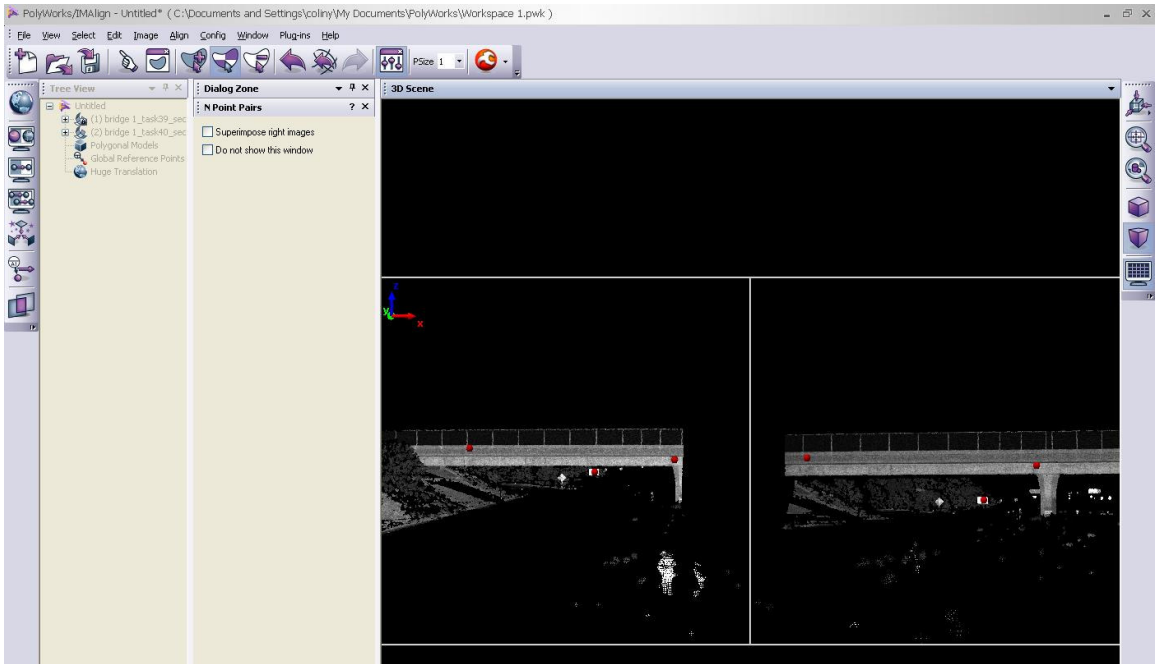


To start aligning the images select:

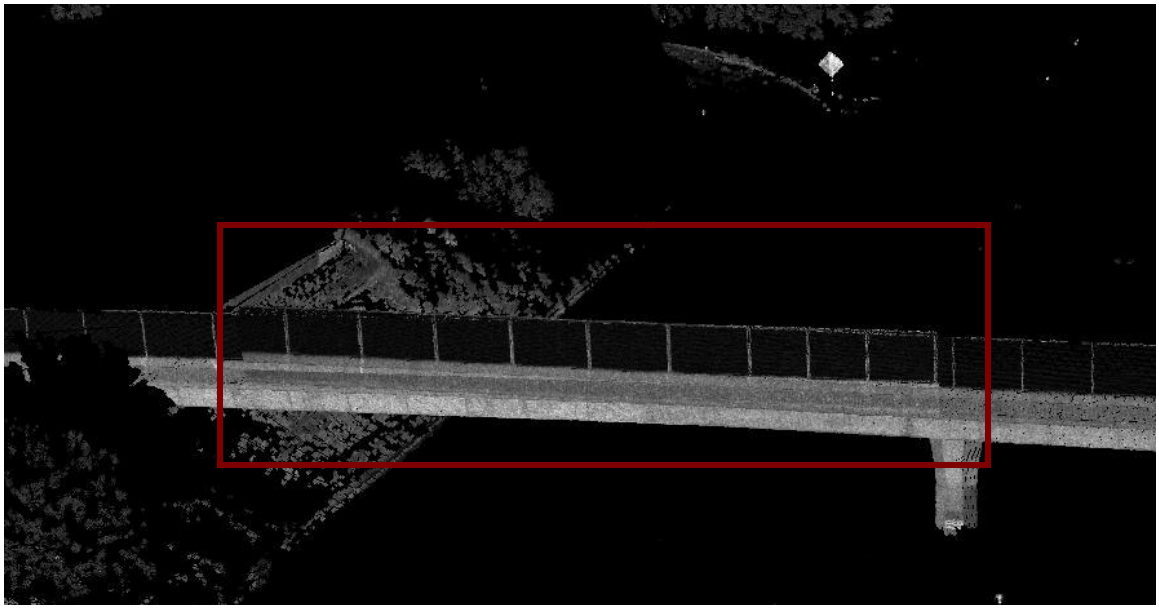
Align → N Point Pairs (as seen below)



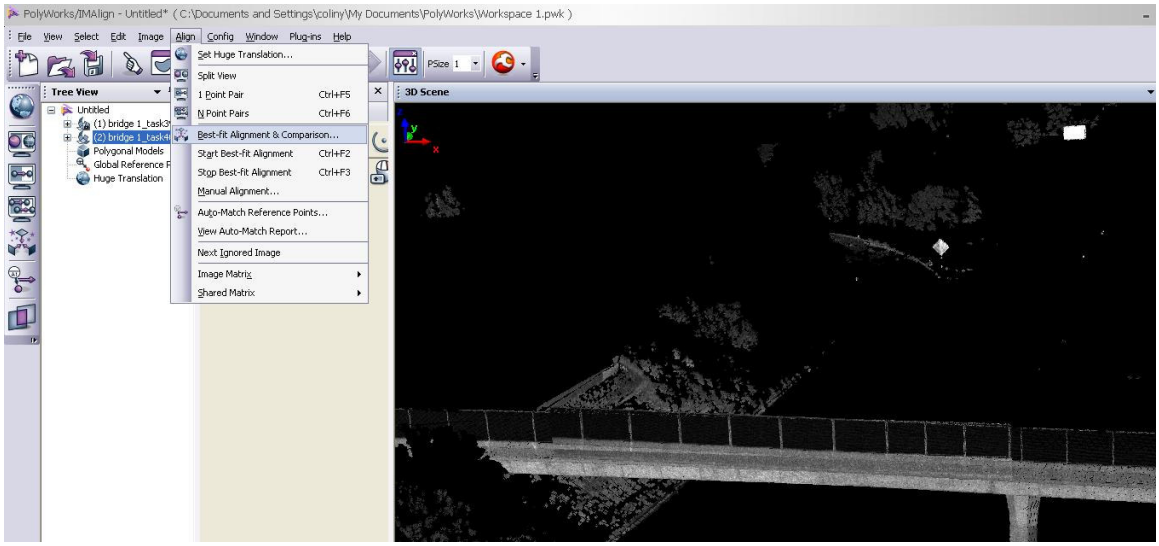
A pointer shaped as a pencil will pop up. The user can now select common features found on the two images with a minimum of three common features, which needs to be selected for the alignment to work as seen below. When you are done selecting, click on your right mouse button to bring the two images together.



After roughly aligning the two images together you can see that there is a slight misalignment on the image below. IMAlign now finds the best alignment between the images automatically. To do this, IMAlign uses an iterative algorithm that computes an optimal alignment by minimizing the 3D distance between surface overlaps in a set of 3D images acquired from unknown viewpoints. IMAlign searches a radius around each point to find the matching point from the other image.

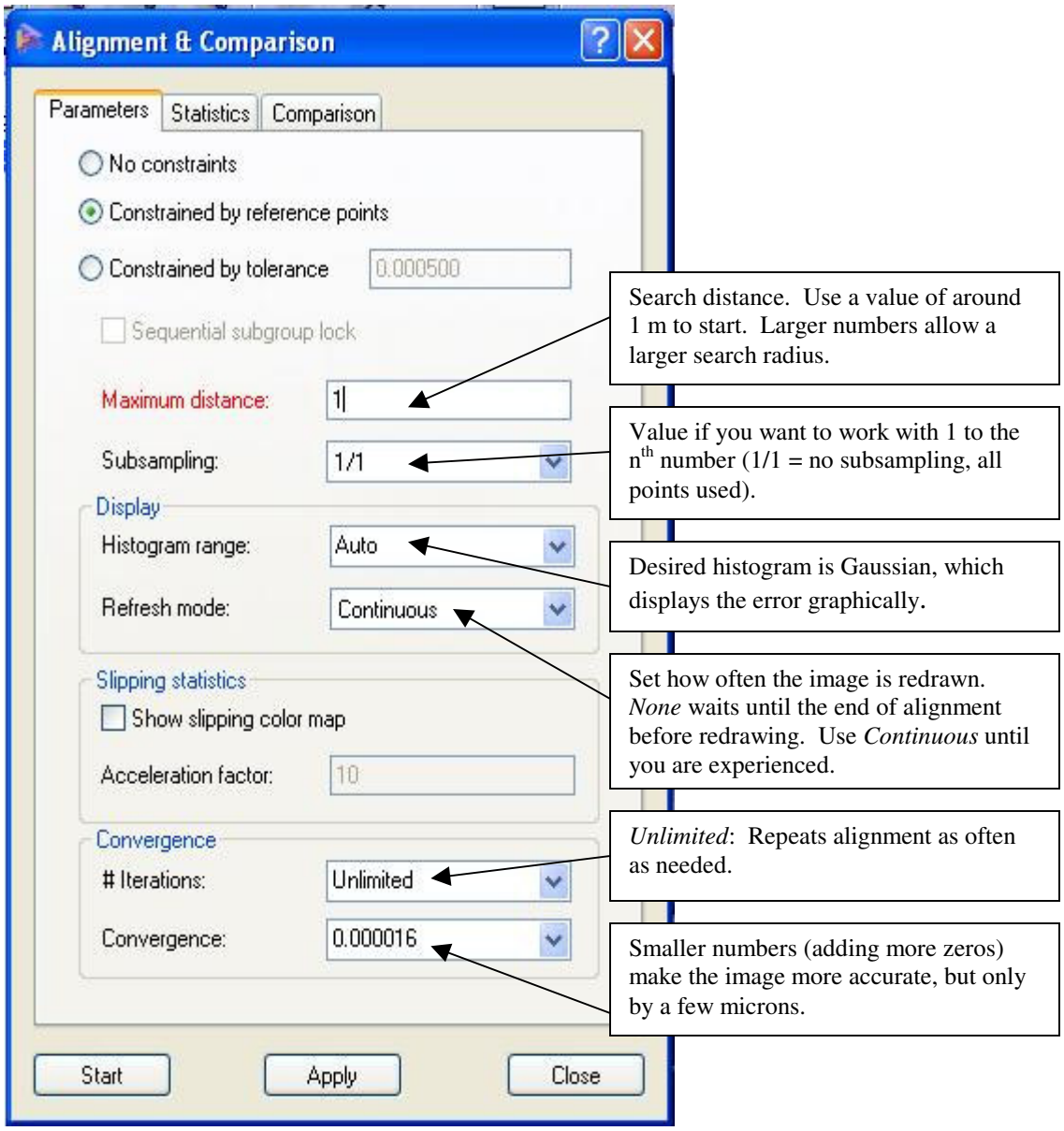


To align the images more precisely choose Align → Best-fit Alignment & Comparison as seen below.



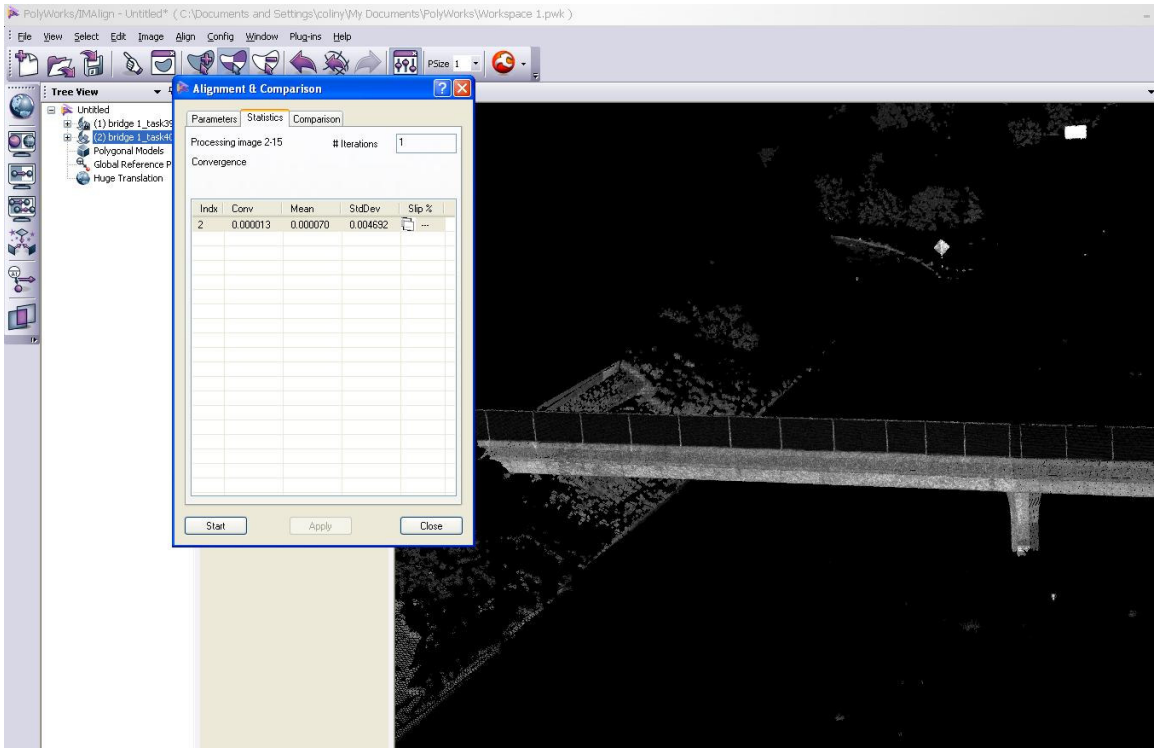
A dialogue will pop up like the one below. Start with a Maximum Distance of 1m, then use 0.1 and then finish with 0.01.

Step 6: Alignment and comparison.



Select → Start

Another dialogue box now appears showing the statistics of the alignment. The lower the standard deviation value the better the alignment.



Step 7: Global Alignment (for 3 or more images)

Once all images are aligned, use global alignment to eliminate sequential errors. This process is similar to the previous step, but with different values.

1. Unlock the images except for one scan (usually the first scan you imported).

2. Select *Align → Best-fit Alignment & Comparison*.

3. On the Maximum Distance Option start with a value of 1m, when that process is done then use 0.1 and then finish with 0.01.

4. Subsampling set to 1/1 (no subsampling).

5. Set *Histogram range* to Auto and Refresh Mode to Continuous. Leave the rest of the options as default.

If you do not see much change, stop this process.

Step 8: Lock the Images (for 3 or more images)

1. When you are sure that all the images are aligned, select *the scans from the tree window right click on the mouse then Select → Edit → Lock.*

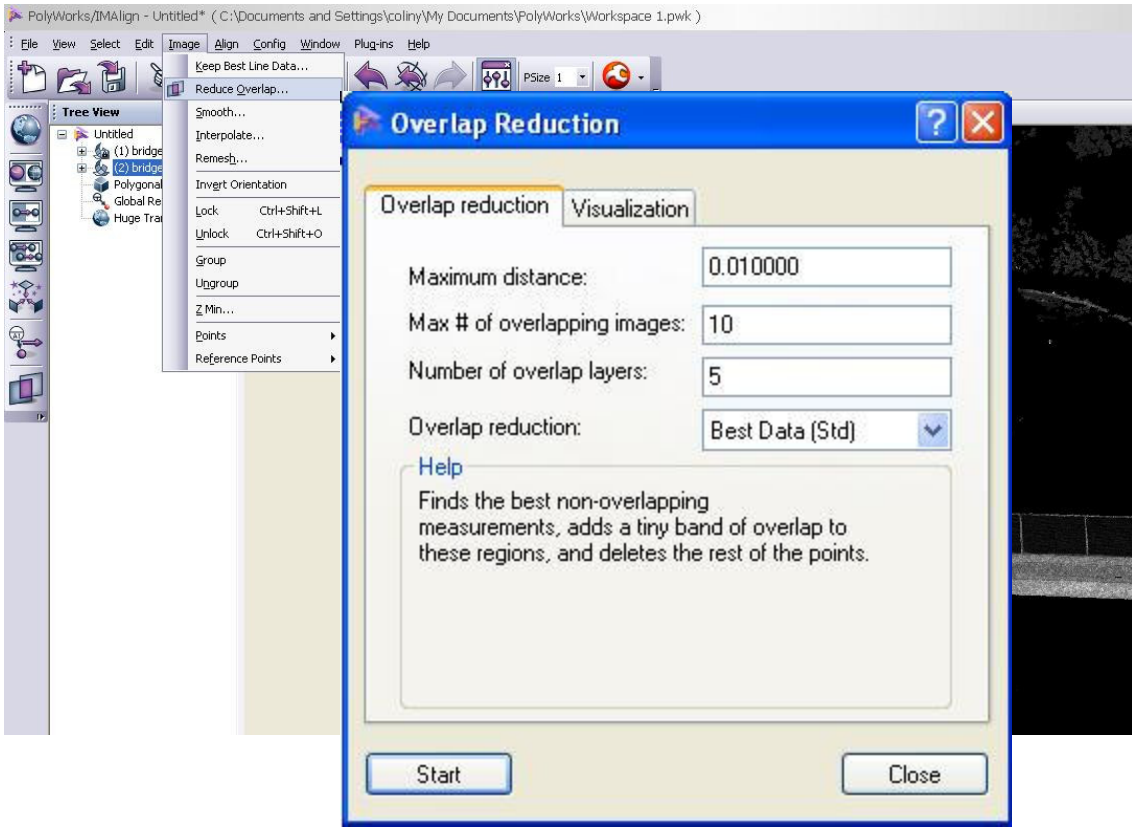
Step 9: Reduce the Overlap

Before saving, carry out this step to discard identical points from the merged data set.

1. Select *Image* → *Reduce Overlap*.

2. In the *Overlap Reduction* dialog box, select *Best Data (Std)* from the scrolling list. IMAlign will find and keep the point with the best viewing angle for that data set.

3. Select → Start



Step 10: Save the Aligned Images

1. Select File → Save Project As..