

# Integrated Registration - Image Fusion / Multi Date Registration

VolumeShare 7 • Quick Reference Guide

Integrated Registration is an extension to the Volume Viewer application, dedicated to the registration of multi-modality images, and comparison of volumetric datasets from Computed Tomography (CT), Magnetic Resonance (MR), Positron Emission Tomography (PET) or Single Photon Emission Computed Tomography (SPECT), and 3D X-Ray Angiography (XA).

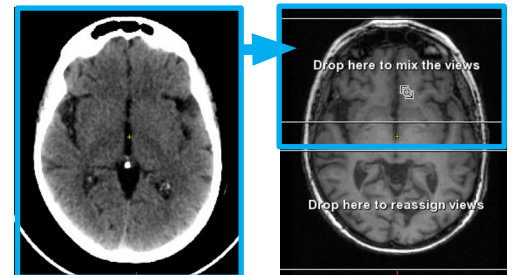
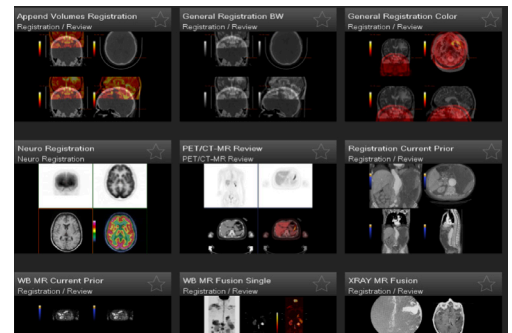
## 1. Image Fusion

1. Either select **data sets to merge** (multi-modality Images, RT structure sets) and **launch** in Volume Viewer – **Integrated Registration**, then select appropriate protocol.

OR:

Load data sets in any **Volume Viewer Multi-Volume** protocols and **merge** volumes. (Drag volume to be merged on top of the other, and drop in the top **Drop here to mix views** box)

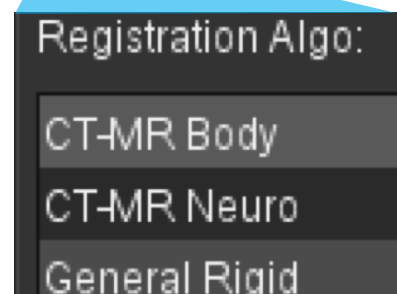
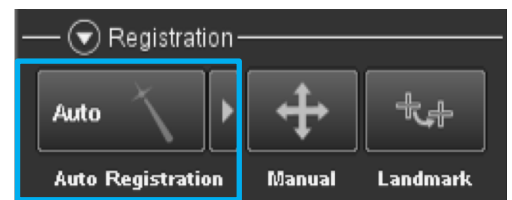
Then open **Integrated Registration Tool** (in the visualization toolbar)



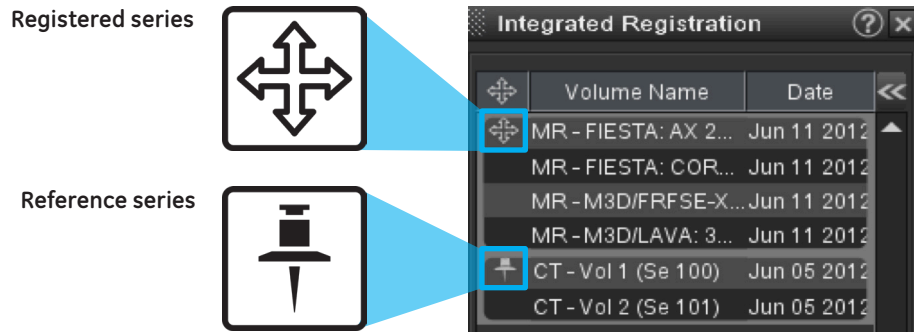
2. **Registration** will be performed based on selected registration method:

**Auto:**

- **Automatic registration** can be performed at load or by clicking on **Auto**
- **Rigid / non-rigid** (2 CT data only) method depending on data. (Edit preferences using preferences tool)
- The software automatically identifies the best **reference series** and data sets to be **registered**.
- Reference/Registered series can be edited by right clicking on the following icons and **set series as reference/moving**



(see next page)



**Manual:**

- Left click and drag to **translate**
- Grab **green** rotation arrows with left mouse button to **rotate** around cursor location

**Regional:**

- While in Manual mode, hold **Alt GR** (or **Alt**) keys and use mouse to draw ROI boundaries. Release key to calculate result.

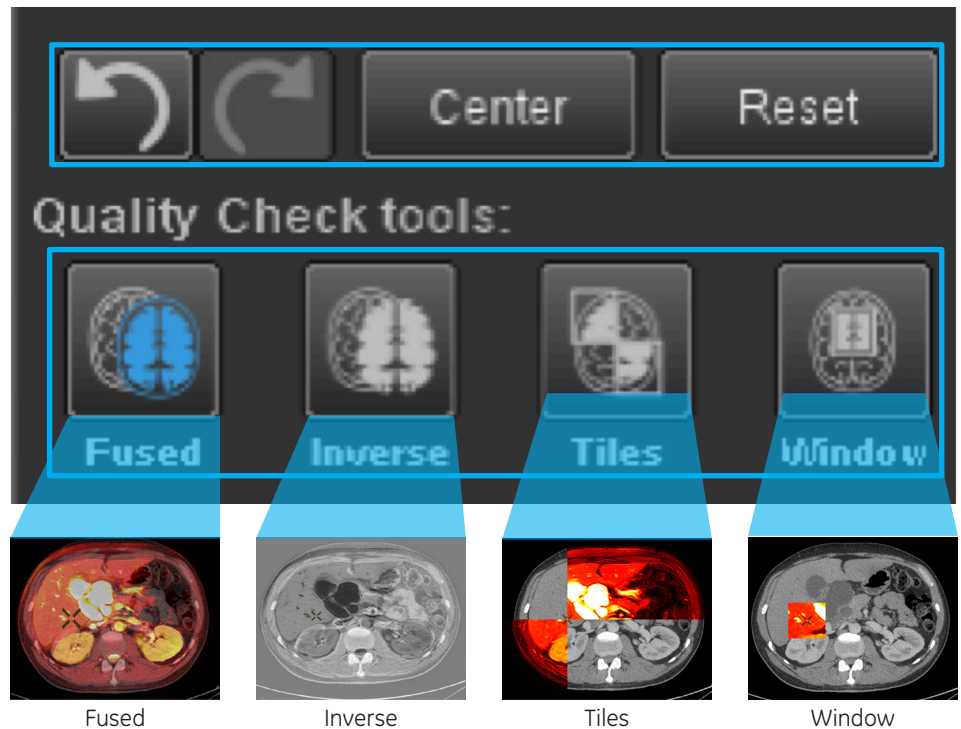
**Landmark:**

- Find **matching anatomical positions** in both volumes
- Use **insert** key or tick the checkboxes in the Landmark column to place landmarks on each of these volumes at the matching locations
- Place landmarks on both volumes until registration is reached

**3. Registration Edition/Display Tools**

Use these **tools** to **undo/redo/recenter/reset** last action(s)

Use **blend modes** tools to **check registration**



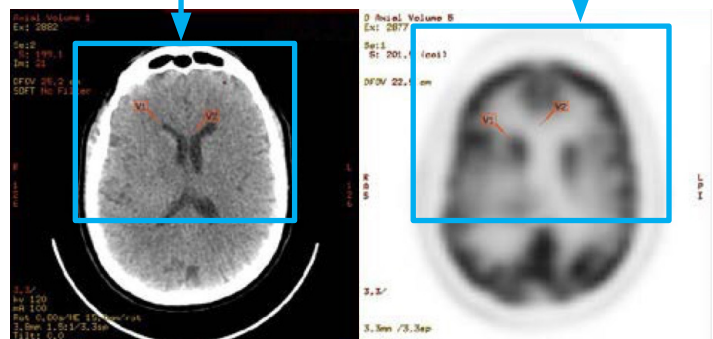
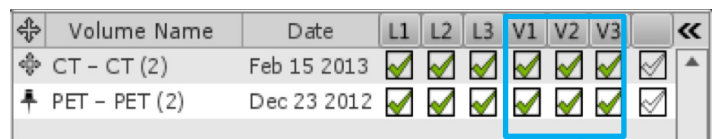
## 4. Validate / Export

To merge groups and Export as a new DICOM series:

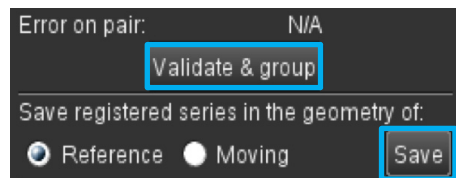
Place 3 (or more) validation pairs of points (V1, V2, V3,..) on identical locations in the Reference and Registered series (drag the cursor, or use the Shift key).



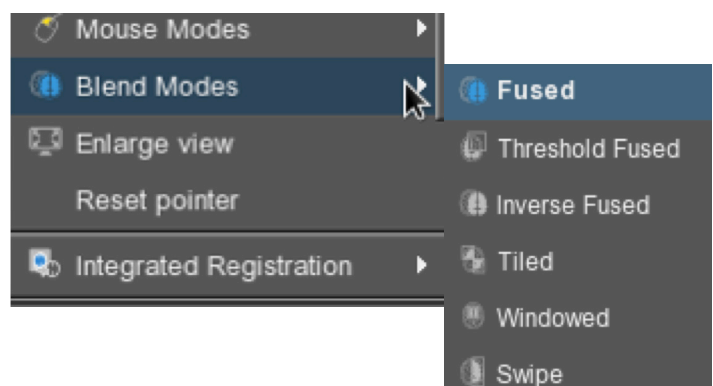
**Validate** each point by ticking the corresponding boxes once a new point is placed.



Then **Validate & group** to form one series, and **Save** series.



To **check the registration, Blend modes** can be chosen using the right click menu > **Blend Modes**.



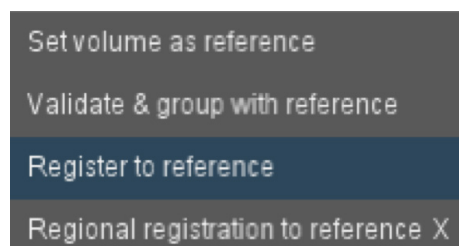
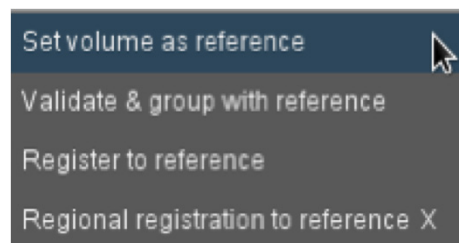
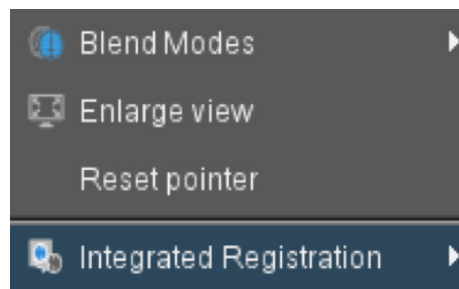
## 2. Semi-automatic Multi Date Registration

Select data sets and launch in desired Volume Viewer review.

1. Right click on the reference series and select ***Integrated Registration > Set the volume as reference.***

2. Then right click on the series to be registered and select ***Integrated Registration > Register to reference.***

The system will register the series to be registered to the chosen reference series.

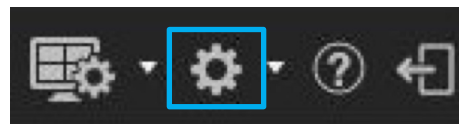


## 3. Manual Multidate Registration

- **Unlink** the viewports by clicking the ***Link/Unlink icon*** (Visualization toolbar)
- **Register** the volumes to one another
- **Link** the viewports



**Note:** To be able to link/unlink viewports, ***viewports preferences*** must be set to ***Link/Unlink viewports between series.***



**WARNING!** To assure an efficient and safe use of Volume Viewer Apps, it is essential for you to read the User Guides and the Customer Release Notes before attempting to start. The entire documentation is available on your system. Make certain that your documentation is readily available at all times. You shall under no circumstances use Volume Viewer Apps if the documentation is not available. If you need help, please contact the Online Center.

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