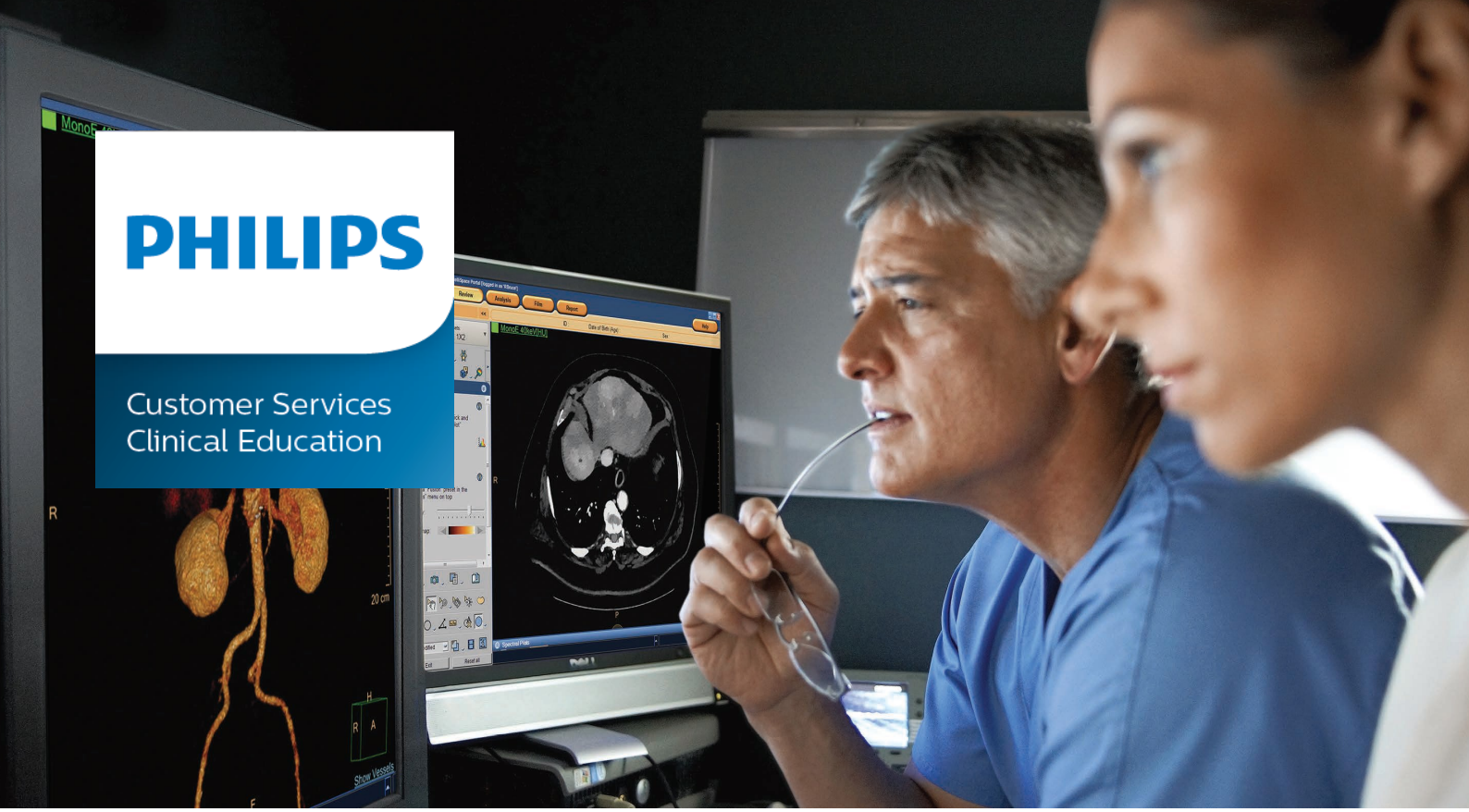


Automatic and manual Registration & Export to surgery

IntelliSpace Portal

MR Applications

Quick Step Guides

Application

MR processing settings can be used to change the settings for the processing and registration of MR image data. When processing is enabled the registration process within or between series is carried out automatically as soon as matching series arrive into the IntelliSpace Portal System. The automatic Registration compares all volumes of a multi-dimensional MR series with the first volume of the respective series and stores the registered series subsequently with the study. Furthermore, dynamic and diffusion-based series (such as BOLD images or DTI datasets) can automatically be aligned to a anatomical reference series. Both types of registrations can also be done manually in the MultiModality Viewer. In addition, a correct co-registration allows the export of derived series to other systems, e.g. a PACS.

Before you begin

The processing can be activated or disabled separately for the following registration types:

Dynamic Registration
Rigid registration within series, covering fMRI data and perfusion data.

Diffusion Registration
Affine registration within Series, covering DWI data and DTI data

Workflow

Enable automatic interseries Registration in General MR settings (Dynamic, Diffusion)

1. Under **Preferences** in the Patient Directory, open the Dialog box **MR** and then the item **Processing**.
2. To activate the automatic processing for a specific registration method select the **Enable checkbox** below the corresponding registration method.
3. After finishing the selection for a registration method, a specific rule should be created for every datatype that will be affected by the automatic processing.
3. Follow the steps below to create a processing rule
   - Click **Add**.
   - Select a registration method (Dynamic / Diffusion) in the Algorithm column.
   - Enter a **series description** or a protocol name according to the DICOM attribute definitions into the protocol column.
     Note: You need to add the **full text of the study description** or the **protocol name**.
   - You can add **multiple rules** for each algorithm.

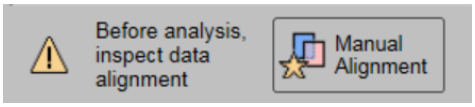
   If a series meets at least one of these rule, it will be processed automatically.

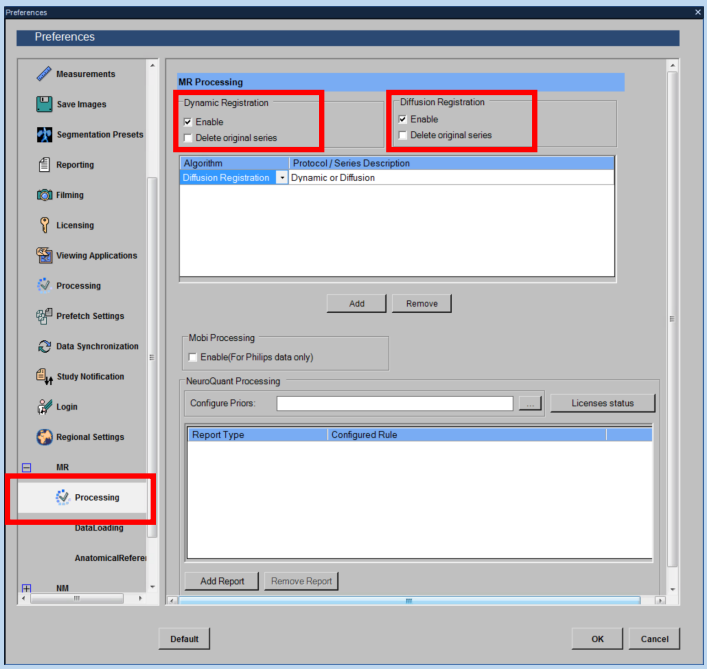
Enable automatic intraseries Registration (Anatomical Reference) in Anatomical Reference tab

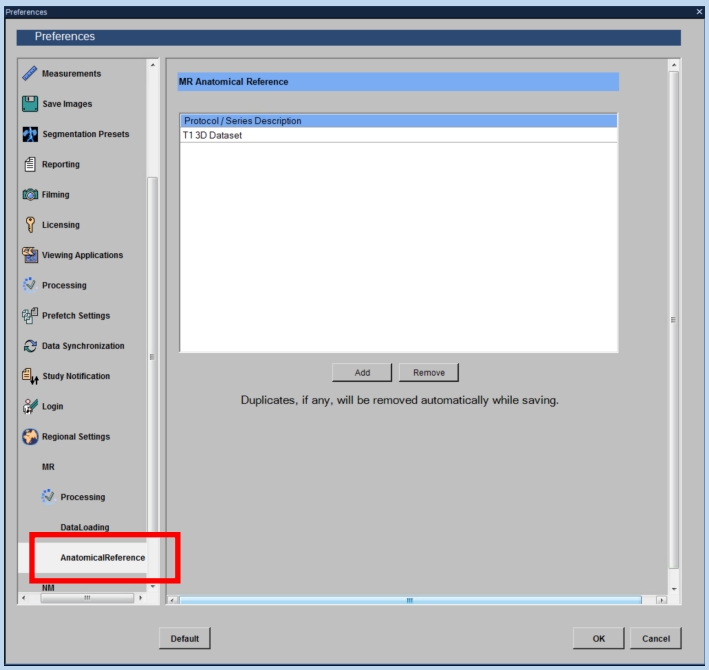
1. Under **Preferences** in the Patient Directory, open the Dialog box **MR** and proceed to the **Anatomical Reference** tab.
2. To activate the automatic registration, select **Add** and type in a **Protocol Name** or **Series Description.**

Dynamic and Diffusion series will now automatically be co-Registered/aligned with the corresponding anatomical dataset. This is of high importance for the accuracy of MR Fiber-Tracking and BOLD imaging.

The alignment should always be verified within the application (MR Diffusion FiberTrack, MR IViewBOLD).

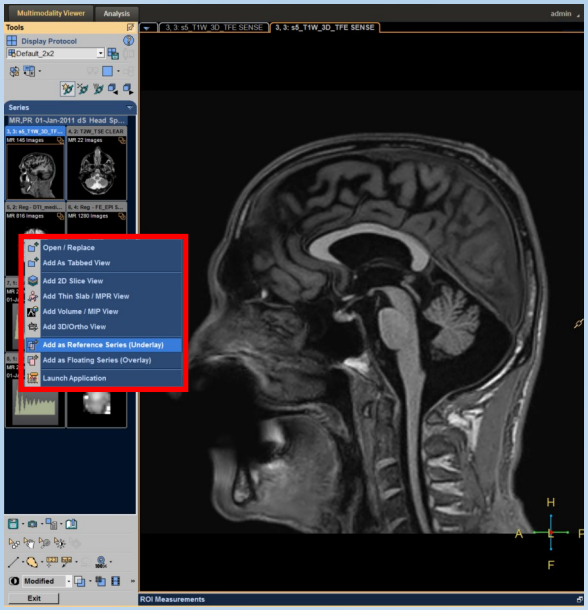


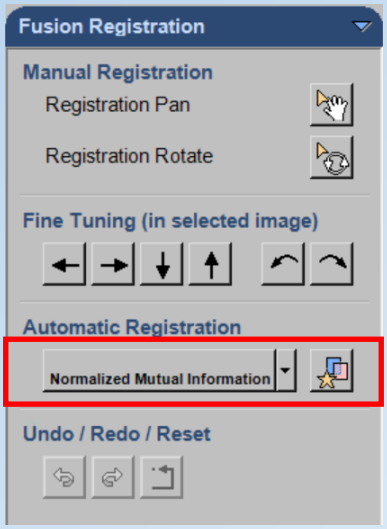


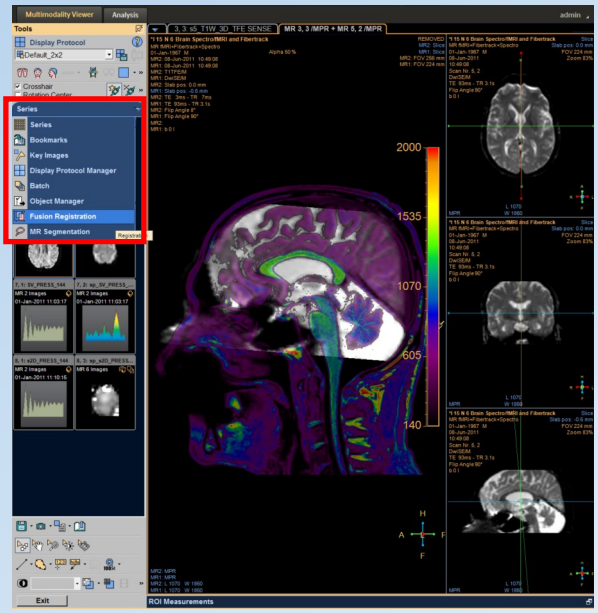


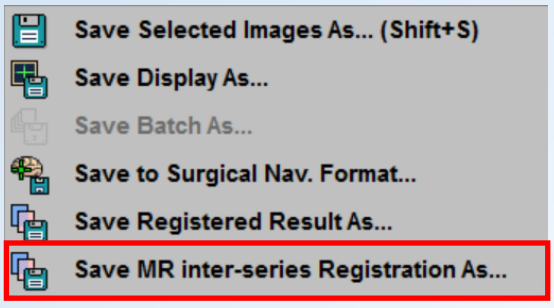
Manual registration of datasets in the MuliModality Viewer

1. Select and load the study for registration to the **Multi-Modality Viewer.**
2. For a better overview, select a 1x1 layout. Then load the **anatomical reference series** to the main window of the MM viewer.
3. From the series browser on the left hand side of the screen, select the series for co-registration, e.g. a DTI dataset by a right mouse button click. From the context menu, select Add as Reference Series (Underlay).
4. A merged, but not yet registered series will be generated. To initiate the registration process, select **Fusion Registration** from the Series tab. (Figure 3).
5. The **Registration Tools** will now be available within the task guidance. The standard method "Normalized Mutual information "is automatically selected as registration method.
6. Click the control panel (Start automatic Registration) next to the registration method to start the automatic registration process. You can also perform the registration manually or make corrections.
7. Befor saving, check the adjustments carefully. It can also be helpful to use orthogonal views on the right hand side of the main window.
8. To save the co-registered series, select **MR Inter-Series Reg**. from the **Save as...** menu.







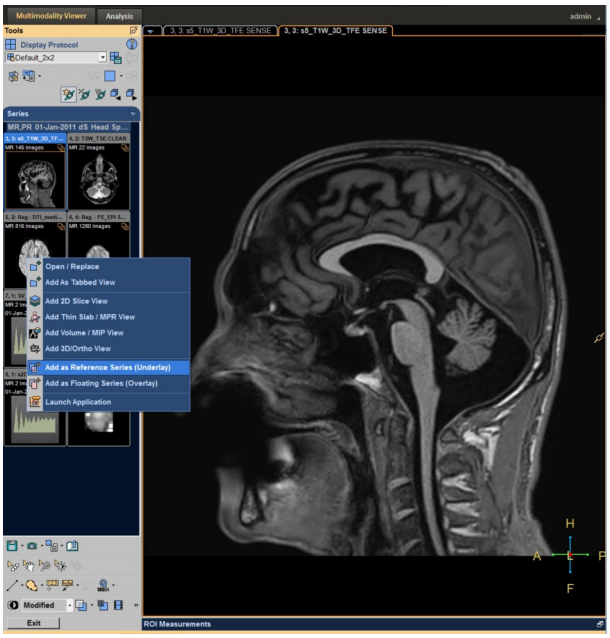


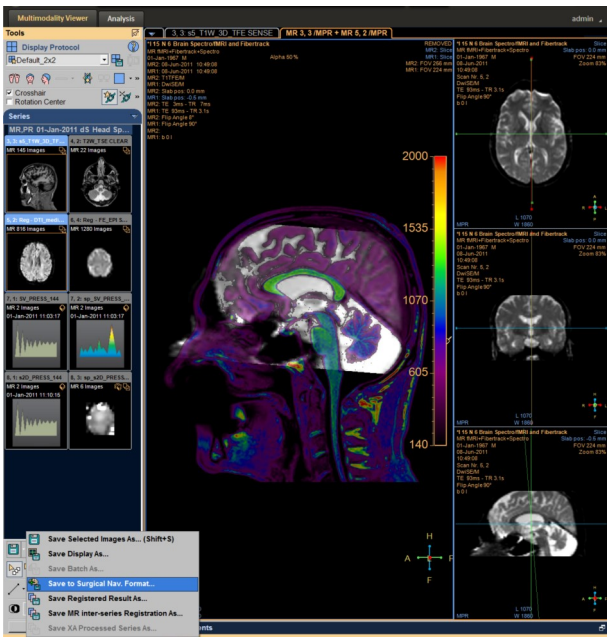
Preparation of a co-registered dataset for an Export to a Neurosurgical Navigation System (Export to surgery)

1. Select a already **co-registered dataset** from the series selector in the MultiModality Viewer and load it to the main viewport. Then select the fMRI, DTI or combined series that needs to be exported to a Neurosurgical Navigation System by using the right mouse button and select "**Add as Reference Series (Underlay)**" from the context menu.

2. Proceed to the Save as… menu and select "**Save to Surgical Nav. Format**" (Fig. 7).

3. Determine the destination and description for the dataset within the context menu.





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