SecurView® DX Advanced Multimodality Option
User Guide

Software Version 10.1 or later

MAN-05016 Revision 001

SecurView®
Breast Imaging Workstation

HOLOGIC®

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Libraries

Libtiff library © 1988-1997 Sam Leffler, 1991-1997 Silicon Graphics, Inc.

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MergeCOM-3 Advanced Integrator's Tool Kit – Version 4.8.0.0
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Contents

Chapter 1: Introduction

This chapter provides an overview of the SecurView® Advanced Multimodality Option, an optional component on a SecurView workstation equipped with three or four displays. The component, which provides softcopy reading of 2D and 3D image data, requires a valid license. This guide is a supplement to the *SecurView DX/RT Workstation User Guide*.

1.1. Warnings and Precautions

This guide uses the following conventions to provide technical and safety information of special interest.

⚠ **WARNING!** *An instruction that, if not followed, can result in a hazardous condition.*

⚠ **CAUTION:** *An instruction that, if not followed, can result in damage to the system.*

⚠ **Important:** *An instruction provided to ensure correct results and optimal performance, or to clarify limitations of the device.*

⚠ **Note:** *Information provided to clarify a particular step or procedure.*

Before using the SecurView Advanced Multimodality Option, consult the *SecurView DX/RT Workstation User Guide* for additional precautionary information.

⚠ **CAUTION:** *This is a medical device and it should not be considered to be a general-purpose computer. Users or service/administrative personnel may not amend, configure, or modify any hardware or software on this medical device with anything other than Hologic-approved components or software, including antivirus software. This device should be installed behind the institution firewall for network security and anti-virus protection. No ongoing computer-virus protection or network security for this medical device is provided (e.g., a computer firewall). Network security and antivirus provisions are the ongoing responsibility of the user.*

1.2.   Terms and Abbreviations

The table below gives an overview of technical expressions and their explanation.

Term	Definition
3D data	Images that belong to a volume of one acquisition at one time point
4D data	Several volumes of several acquisitions at several time points that belong to one examination (e.g., contrast enhancement)
Annotation	Textual information in form of free text or predefined terminology that is linked to a marking (e.g. rectangle, arrow)
Application Selector	Access to program modules, depends on user rights
Closing a study	Changing the study's reading status to 'Read' (or 'Read Once'), using the Close Study dialog
CR	Computed Radiography
CSP	Currently selected point
CT	Computed Tomography
Current study	Study with newest study date and time
DICOM	Digital Imaging and Communications in Medicine, an international standard used for developing, transmitting, printing, and archiving medical imaging information
Hanging Snapshot	An image display layout for the work area that specifies the number of Inspectors and tools windows. Defines how to customize a specified set of images in a specified layout on the MM Viewer display.
Image data set	A valid 4D volume over time, 3D volume or a 2D frame that is prepared and treated as a single entity for display
Image set	Defines images to be taken into account when the system automatically searches for the best matching ReportFlow at the time of opening a patient
Inspector	A window that displays images and tools in the Work Area, providing a variety of display options, especially for MRI and CT examinations
List of loaded studies	The group of studies that is opened either in the MG Viewer and MM Viewer at the time the Close Study dialog is opened
Locked by another user	A patient is locked by another user if the status Consultation Required (CR), Additional Images Required (AI), or Pending (PE), was set by a different user.
MG	Mammography
MG Viewer	The SecurView Mammography Viewer displays MG images on either one wide-screen or two portrait high-resolution displays.
MIP	Maximum Intensity Projection
MM Viewer	The SecurView Multimodality Viewer displays multimodality 2D and 3D image data on a color display.

Term	Definition
MPR-ortho	Multiplanar reconstruction – orthogonal; a presentation of one image in three projections (axial, coronal, sagittal).
MRI	Magnetic Resonance Imaging
NM Image	Nuclear Medicine Image
PACS	Picture Archive and Communications System
Patient Manager	Browser with a list of all patients whose studies/images are available on SecurView
PET	Positron Emission Tomography
Prior study	A study that is older than the newest study
ReportFlow	Combined order of Hanging Snapshots and functional steps
ROI	Region of Interest
ROI marking	A marking whose purpose is to mark an ROI (region of interest), for the purpose of obtaining kinetic information on injected contrast in a region. ROI markings cannot be associated with an annotation. ROI markings are displayed with a number.
SC	Secondary Capture
ScreenCapture	An image in DICOM Secondary Capture format that has been derived by converting the content of the entire MM Viewer with all its contents and displayed elements to DICOM Secondary Capture
Slab	Defined number of slices
Study	DICOM study identified by StudyInstanceUID. The reading status of a study can be 'Read', 'Read once' (only for modality MG), 'Not Read', 'Prior', and 'Changed'
Tiling	The display of more than one image at a time on a single display
US	Ultrasound
Worklist	List of patients who are selected for review on the MG Viewer and MM Viewer

1.3.   Warranty Statement

Except as otherwise expressly stated in the Agreement: i) Equipment manufactured by Hologic is warranted to the original Customer to perform substantially in accordance with published product specifications for one (1) year starting from the date of shipment, or if Installation is required, from the date of Installation ("Warranty Period"); ii) digital imaging mammography x-ray tubes are warranted for twenty-four (24) months, during which the x-ray tubes are fully warranted for the first twelve (12) months and are warranted on a straight-line prorated basis during months 13-24; iii) replacement parts and remanufactured items are warranted for the remainder of the Warranty Period or ninety (90) days from shipment, whichever is longer; iv) consumable Supplies are warranted to conform to published specifications for a period ending on the expiration date shown on their respective packages; v) licensed Software is warranted to operate in accordance with published specifications; vi) Services are warranted to be supplied in a workman-like manner; vii) non-Hologic Manufactured Equipment is warranted through its manufacturer and such manufacturer's warranties shall extend to Hologic's customers, to the extent permitted by the manufacturer of such non-Hologic Manufactured Equipment. Hologic does not warrant that use of Products will be uninterrupted or error-free, or that Products will operate with non-Hologic authorized third-party products.

Chapter 2:   Getting Started

This chapter provides an overview of the Multimodality (MM) Viewer and components, and describes the interaction between the Mammography (MG) Viewer and MM Viewer.

2.1.   Intended Purpose

The MM Viewer enhances the softcopy reading environment of your SecurView DX workstation. Apart from displaying MG images on the two high-resolution displays, you can also review 2D and 3D images of other modalities on a color display.

Within the same workflow you can review:

- MG images on the MG Viewer

- Other image modalities such as MR, US, CT, PET, NM, etc. on the MM Viewer

The MM Viewer offers:

- Special Inspectors such as 2D, 2D slab, MPR and 3D

- Reading of multimodality 2D and 3D image data such as MR, US, CT, PET, NM

⚠ **Important:** *Only the 2D Inspector guarantees original views of all slices while the 3D Inspector presents derived, not original images.*

The SecurView DX MM Viewer, by default, does not contain special Inspectors or workflow for dynamic data such as contrast-enhanced breast MRI.

2.2. Multimodality Viewer Components

The SecurView DX Multimodality Viewer consists of:

- Typically two high-resolution grayscale displays running the MG Viewer

- Typically one color display running the MM Viewer; you can also install two color displays.

- Keyboard and mouse

- Workflow keypad (see the *SecurView DX/RT Workstation User Guide* for details.)

⚠ **Important**: *The MM Viewer can display images with a grayscale resolution up to 8 bit. Some modalities produce images with a higher dynamic range (>8 bit). In these cases, the MM Viewer might not be able to display the image with the intended contrast resolution.*

⚠ **Note:** *The Multimodality Viewer always runs on the color display.*

MG Viewer and computer

Workflow keypad

Keyboard

MM Viewer color display
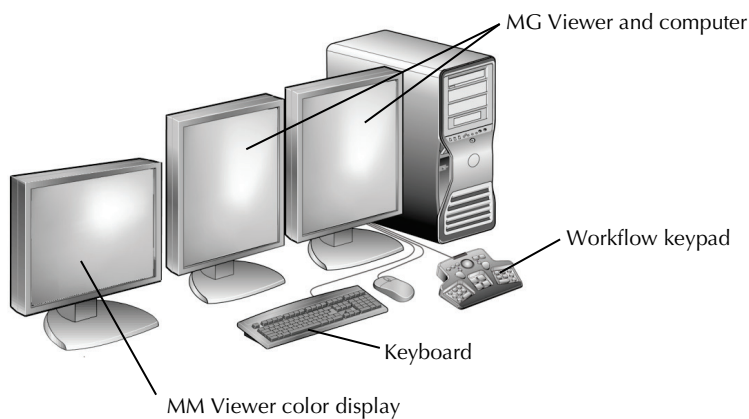
SecurView DX Workstation with Multimodality Viewer

2.3. Interaction of MG Viewer and MM Viewer

The SecurView Advanced Multimodality Option three-display system consists of the MG Viewer and the MM Viewer. The selection of patients for display is controlled by the worklist of the MG Viewer. The system settings provide the correct routing of image modalities to be displayed on different viewers. You can always move the mouse pointer between the MG Viewer and the MM Viewer. The work area becomes automatically active.

The figure below shows examples of image reviews on a SecurView DX workstation configured with the MM and MG Viewers.

- MG images are displayed on the **MG Viewer**.

- Images of other modalities are displayed on the **MM Viewer**.

- By default, the **Patient Manager** opens on the high-resolution display. A service engineer can modify the settings to open the Patient Manager on the color display of the MM Viewer.
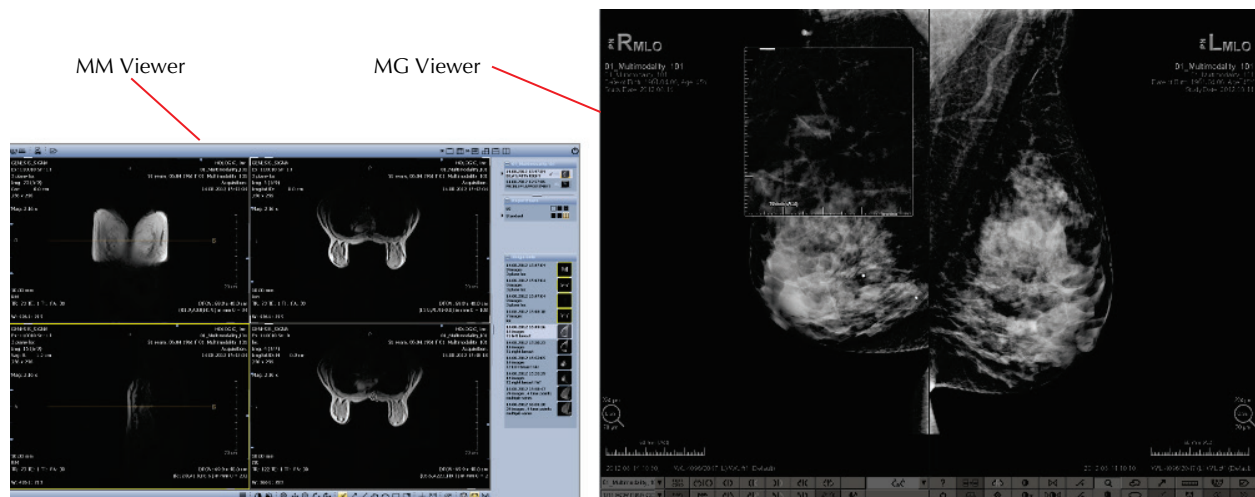
When you review a patient, the Patient Manager is positioned into the background. It is always possible to open the Patient Manager directly from each viewer by clicking Open Patient List on the toolbar (see **2.3.2. The Common Patient Manager for MM Viewer and MG Viewer**).

2.3.1. Reviewing Images

Image viewing is controlled by image routing as described above. Depending on these settings, it may happen that the currently selected patient is not routed to the MM Viewer. In this case, no MM Viewer is opened.

Use the worklist of the MG Viewer to select the patients to be displayed on the MM Viewer (see the *SecurView DX/RT Workstation User Guide*).

2.3.2. The Common Patient Manager for MM Viewer and MG Viewer

The MM and MG Viewers always use the same Patient Manager. When you open the Patient Manager, the pointer automatically moves to the Patient List.

To show the Patient Manager while reviewing patients:

- On the MG Viewer or MM Viewer toolbar, click **Open Patient List**, or

- Press **Open Patient List** on the workflow keypad.

To hide the Patient Manager:

- On the Patient Manager window, click **OK**, or

- On the MG Viewer or MM Viewer toolbar, click **Open Patient List** again.

⚠ *Note: On the workflow keypad, you cannot hide the Patient Manager when you press the Open Patient List button again.*

When the Patient Manager is open, you can nevertheless review patients on the MM Viewer. The Patient Manager remains open on the high-resolution displays. To reopen the Patient Manager:

- On the MG Viewer or MM Viewer toolbar, click **Open Patient List**.

In the reviewing mode you can:

- select patients for reviewing worklists

- retrieve a local search for patients

- retrieve a PACS search for patients

- resend the study states

- select and open patients for an emergency worklist

- open a single patient

- suspend and review one or more selected patients in the emergency mode

When you select the last three of the above options, the Patient Manager is automatically closed and the images of the selected patient are mainly displayed on the MG Viewer. Images based on other modalities than MG are presented on the color display.

2.3.3. Navigating Through the Worklist

The worklist is a list box on the left part of the toolbar and provides the patient's name and her read state with special marks, e.g., ++ for additional images, * for pending, # for read, or @ for arriving Notices. See the *SecurView DX/RT Workstation User Guide* for details on the worklist.

2.3.4. Exiting the Review Mode

To terminate the review mode:

- On the MM Viewer or MG Viewer, click **Exit**.

All displays show the background logos, and the MG Viewer and MM Viewer are closed. Only the **Application Selector** is displayed.

2.3.5. User Groups and Access Rights

Users of the Multimodality Viewer belong to user groups that are set on the MG Viewer. The Administrator and service users have extended rights specific to the Multimodality Viewer. The Multimodality Viewer is set up and configured by a service engineer. A radiologist is only responsible for creating ReportFlows and reviewing patients. See *SecurView DX/RT Workstation User Guide* for details on user groups and rights.

Chapter 3:   Main Elements of the User Interface

▶ **3.1. Work Area**

▶ **3.2. Inspectors**

▶ **3.3. Study Browser**

▶ **3.4. Toolbars**

▶ **3.5 Shortcut Menus**

▶ **3.6. Expanded Mode**

This chapter provides an overview of the Multimodality (MM) Viewer user interface.

With the MM Viewer you can read multimodality 2D and 3D image data such as MR, US, CT, PET, NM, etc. The MM Viewer uses special Inspectors such as Alternator, Mosaic, MIP, and MPR to display different modalities. The Multimodality Viewer consists of the work area with its Inspectors, several toolbars, and the Study Browser, as follows:
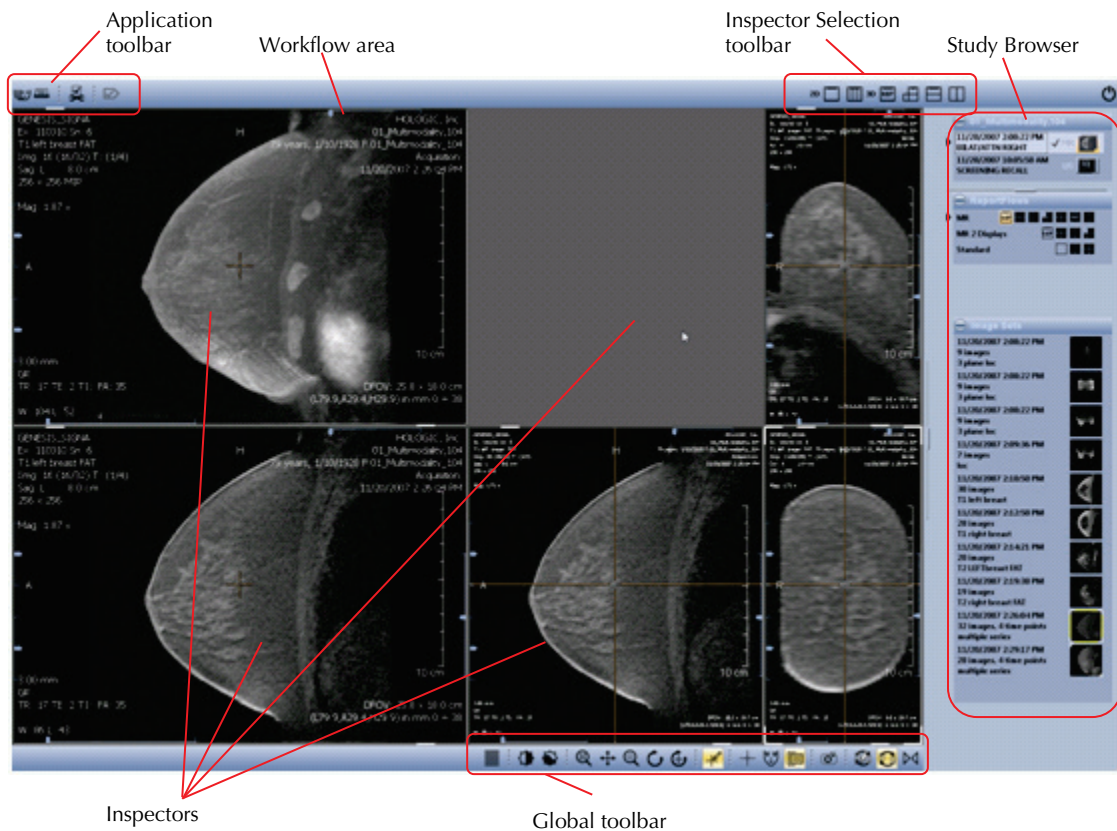
3.1.   Work Area

The main space of the display is called work area, and is used by the Inspectors. When a study is opened, a suitable ReportFlow is used to arrange a number of Inspectors that display the image data on the work area. You can add or remove Inspectors (see **3.2. Inspectors** for details).

3.1.1.   Arranging Several Work Areas

You can define one or more work areas.

To show the desired work area on the color display:

- On the Application toolbar, select the **Work Area**.

If the number of work areas exceeds the number of your color displays, you can easily select the desired work area.

On the Application toolbar, the work areas are indicated by a work area button:

3.1.2.   Opening the Shortcut Menu of the Work Area

The menu commands of the work area are accessible via the shortcut menu of the Application toolbar or direct from the work area (when the Inspectors do not use the whole work area). To open the shortcut menu:

- On the Application toolbar, right-click, or

- Point to an empty part of the work area and right-click.

The items of the shortcut menu are described in the following sections.

3.1.3.   For All Inspectors

This menu allows you to set the descriptors and the interpolation.

- **Display Descriptors** – Shows image descriptors overlaid in the viewers. Use this information to confirm which images should be shown by the corresponding viewer.

- **Interpolation** – Sets the interpolation for zoomed images **Always On** or **Always Off**.

3.1.4.   Display Setup

Click these menu commands to configure the display layout. All settings belong to existing hardware. If your Multimodality Viewer runs on two color displays (optionally, beside one or two high-resolution displays) you can configure the Multimodality Viewer to run on both color displays, but not on the high-resolution displays.

- **Use** – Select **Use Display 1** and/or **Use Display 2**, depending on your hardware.

- **Study Browser** – Select **Right** to display the Study Browser on the right side of the Multimodality Viewer. Select **Left** to display the Study Browser on the left side. The idea is to reduce the distance you have to move the pointer when you switch from the MG Viewer to the Multimodality Viewer, because you can place the color display left or right to the high-resolution grayscale displays.

3.1.5.   Show Work Area

This command allows you to select an existing work area or to add a work area. The currently selected work area is indicated by a highlighted number on the Application toolbar.

The Multimodality Viewer displays the patient's images in different Inspectors depending on the hanging. In some cases, it is helpful to use several Inspectors at the same time. You can also open another work area to add further Inspectors. The work areas are displayed one behind the other. Switch buttons on the Application toolbar let you select the desired work area.

1   Click **Show Work Area**, and then select the desired work area from the list.

2   Click **Add Work Area** to add another work area.

⚠ *Note: If a work area is empty (i.e., no Inspectors have been added), it is automatically deleted when another work area is selected.*

3.1.6.   Creating ScreenCaptures of Work Area

To create a snapshot of the current work area:

• Click **Create ScreenCapture of Work Area**.

All snapshots are appended to the active **Results Folder**.

3.2. Inspectors

An Inspector is a tile window on the work area that displays images, offers tools and provides a variety of display options, especially for MRI and CT examinations. Different types of Inspectors can be selected as the Alternator, the MIP or the MPR.

When a study is opened, a predefined ReportFlow is used to display the image data. The number of Inspectors, the type of the Inspectors, and the selection of the image data sets to be displayed in an Inspector depend on this ReportFlow.

You can define your own Hanging Snapshots or modify the currently displayed Hanging Snapshot. Such a new or modified Hanging Snapshot is automatically saved when the study is closed. See **Chapter 5: Tools for Image Viewing** for details.

3.2.1. Selected Inspector

The currently selected Inspector is highlighted by a yellow frame. Point to an Inspector to select it.

3.2.2. Alternator

The Alternator is the standard Inspector for the display of single images or multi-slice images. The Alternator offers several tools for image review, reformatting, annotation etc. Some indicators and overlays assist you when you review patients.
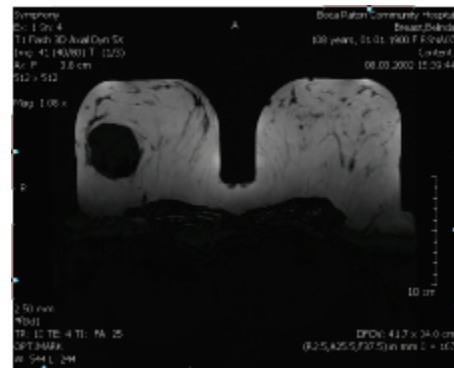
3.2.3. Mosaic

The Mosaic Inspector is used to get an overview of an image data set. The slices of an image data set are shown in a matrix of 3x3 or in a user-defined matrix. You can enlarge single slices from the matrix to the full size of the Inspector. The Mosaic Inspector provides fewer tools than the Alternator.

3.2.4. MIP

The MIP Inspector is designed for the efficient display of Maximum Intensity Projections of multi-slice image data sets. Different rendering modes such as local MIP (closest vessel projection) or minIP (minimum intensity MIP) are available. The subtraction mode is also supported by the MIP.
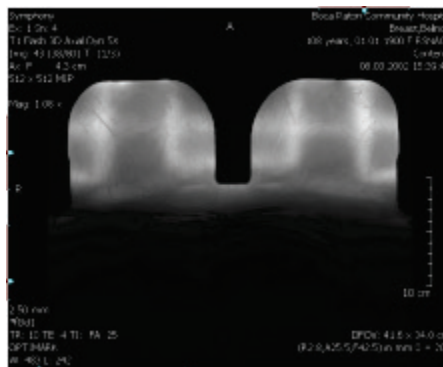
3.2.5. MPR

An MPR Inspector consists of two or three Alternators that are synchronized regarding the selected tool, CSP, time point, reference time point, data set, overlays, zoom W/L, subtraction, slab mode and thickness, scale, and panning. The image data set is shown in reformatted orientations in one Inspector, for example, axial, coronal and sagittal.
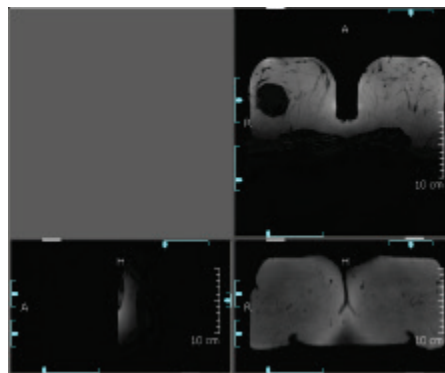
3.3. Study Browser

The panel on the side of the Multimodality Viewer provides an overview of the studies that may be evaluated. Drag the handle in the middle of the Study Browser to modify its width.

The Study Browser automatically lists the image sets that are initiated by the Patient Manager of the SecurView Advanced Multimodality Option. To see or hide the items of the section:

- Click the **Minimize** button (minus sign) to collapse the section (study list, ReportFlows, image sets, and optionally a results folder), and

- Click the **Expand** button (plus sign) to expand a minimized section.

3.3.1. Studies

The studies of a patient are listed highest in the Study Browser. If the Study Browser lists more than one study, the studies are clearly separated by highlighted study descriptions and are sorted in reverse order of acquisition with the newest studies at the top.

If for any reason studies accepted for preparation on the Multimodality Viewer could not be prepared, 'Missing Studies' is displayed above the Studies section.

If for any reason images of a study could not be prepared, 'Missing Images' is displayed above the Studies section.

Sorting Studies

By default, all studies are sorted by date and time. To set another sorting order:

1   In the study list, right-click to see the shortcut menu.

2   Point to **Sorting**, and then click **By Modality**.

The study list is reordered. The studies are separated by the modality, indicated by a heading.

3   If you want to revert the current sorting order, right-click to see the shortcut menu.

4   Point to **Sorting**, and then click **Reverse Chronological**. Now the list begins with the newest study.

Your settings remain unchanged until you select a new sorting order.

Opening and Viewing a Study

The currently selected study is always marked with an arrow. Also, the study thumbnail is highlighted.

⚠ **Note:** *Deviating from the MG Viewer, in the MM Viewer, the 'current' study is always the study that is actually displayed. The 'first prior' study is the study of the same modality that is located one line below the current study (by default, but depending on user settings). Note that the descriptor matching rule of the applied ReportFlow may define the 'first prior' study independent from the modality. That means, you can see, e.g., an ultrasound image as 'first prior' beside your 'current' MR image. When using another descriptor matching rule, you can see the next oldest MR image as the 'first prior'.*

1 Click once to select a study. All currently opened Inspectors and views remain unchanged. The Image Sets section displays the contents of your selection. This state is called 'open', i.e., the study is open.

2 Double-click a study to display the images in the Inspectors based on a Hanging Snapshot. This state is called 'seen by user', i.e., at least one study's image has been displayed in an Inspector and can be viewed by a radiologist.
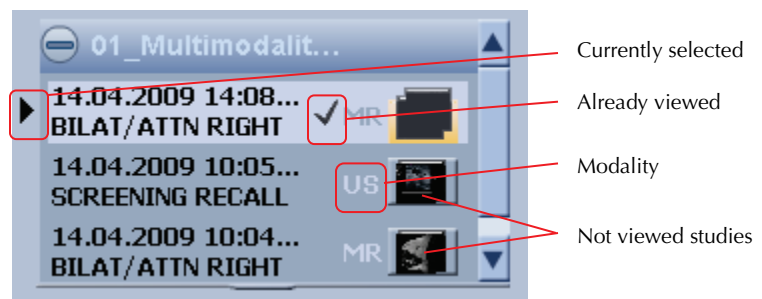
Opening More Than One Study

More than one study can be open at the same time, which is particularly useful if images from previous studies, or studies with a different modality, are needed for comparison.

1 Open one study, i.e., double-click.

2 Select the next study, i.e., single-click.

3 Drag images or image sets of this study to the work area.

The image sets section shows images from the selected study allowing you to compare the images from different studies. Inspectors that show such Hanging Snapshots are indicated by dotted lines.

Study Information

Each study in the study list provides detailed information as a tooltip. To see the tooltip:

- Point to a study item in the study list.

The tooltip shows patient name, Patient ID, birth date, gender, patient's age at study date, patient's age today, the name of the referring physician, study description, study date and time, and the modality.

Shortcut Menu of Study List

Beside the above-mentioned commands, the shortcut menu provides an option to display a window with the information logged during preprocessing
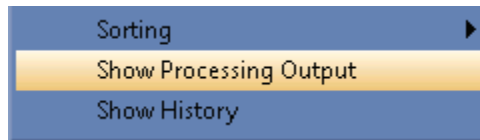
- On the shortcut menu, select **Show Processing Output**.

Showing History

The history gives an overview of the progress of a study from creation until closing. To view the history:

1 Right-click to see the shortcut menu.

2 On the shortcut menu, click **Show History**.

The Study History window appears in the foreground. This window lists opening, closing, and transferring actions of the study. Every item is labeled with date, time, and user.
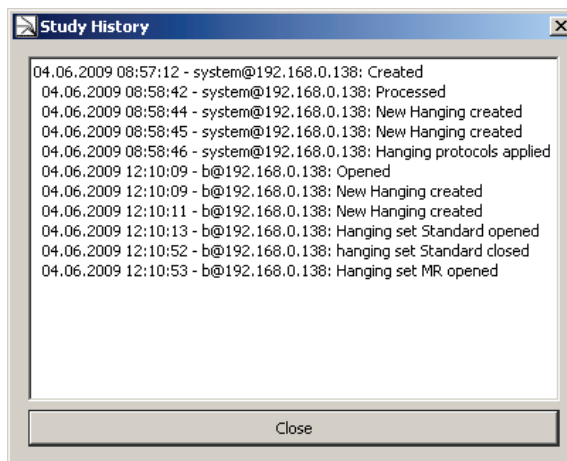
3 Click **Close** to close the window.

3.3.2. ReportFlows and Hanging Snapshots

ReportFlows are customized arrangements of images and associated data, placement of Inspectors, settings for Window/Level and other parameters.

ReportFlow
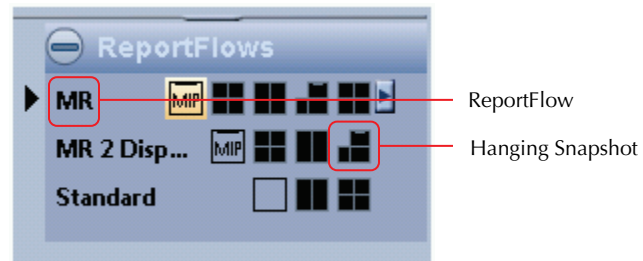
Hanging Snapshot

ReportFlows

ReportFlows contain Hanging Snapshots suitable for the image data set. When ReportFlows are assigned, image attributes such as the acquisition modality or the number of slices are taken into consideration.

Configuration of ReportFlows

The ReportFlows on the Study Browser provide different ways for presenting images. These ReportFlows can be predefined system level ReportFlows or ReportFlows that the user has defined. From the ReportFlows area, you can select the suitable Hanging Snapshot.

For example, the *Standard* ReportFlow presents all the images arranged in a standard Hanging Snapshot, i.e.,

- one image in the work area, with the maximum image size,

- two images side by side in a 1x2 configuration,

- four images in a 2x2 configuration.

Another ReportFlow, e.g., could provide an Inspector configuration of Alternators and MIPs.

To use the most suitable Hanging Snapshot:

- Click a ReportFlow, or

- Click the Hanging Snapshot icon to use this particular hanging.

In the work area, the Inspector configuration changes immediately and redisplays the images using the selected configuration. Images displayed in the work area are framed and the Hanging Snapshot icon corresponding to the currently displayed image set is highlighted. If the Hanging Snapshot has been modified by the user, the modifications are stored when the study is closed.

Resetting ReportFlows

When a ReportFlow has been modified by a user, it is possible to reset the ReportFlow to its initial status.

To reset a ReportFlow:

• Right-click a ReportFlow, and click **Reset ReportFlow** from the shortcut menu.

To reset all ReportFlows:

• From the shortcut menu, select **Reset All ReportFlows**, or

• On the Global toolbar, click **Reset**.

Reloading ReportFlows

When you reload the ReportFlows, the ReportFlows that are currently defined in the Multimodality Configuration Editor are used (see **7.3. ReportFlows**).

To reload a ReportFlow:

• Right-click a ReportFlow, and select **Reload ReportFlow** from the shortcut menu.

• To reload all ReportFlows, select **Reload All ReportFlows**.

3.3.3. Image Sets

An image set is a list of images that belong together, because they were acquired in one session, i.e., set of 4D data, established in a range of time, or set of 3D data built of several slices.

The Study Browser presents all available image sets of the selected study. The description informs about acquisition date and time, number of images and time points, the series description, and optionally the body part.

If an updated image set belongs to an existing entry of the study list, this entry is indicated by 'UPDATING' as long as it is being processed.

A preview of the images is shown next to a description. The image description indicates the type of image data:

- **Single images** are indicated by a thumbnail, the acquisition date, and a brief text description.

- **3D volume acquisitions** are indicated by a thumbnail showing a representative slice, the acquisition date, a brief text description, and the number of slices.

- **4D acquisition** image sets are shown in a similar way as 3D acquisitions, with a thumbnail, the number of slices, and the number of time points (TP).

- Images of **other studies** are indicated according to the single images with an additional number of time points (TP).

The thumbnails may be indicated by a colored frame or white edges.

- No frame and no white edges indicate that this image set does not fit the currently used descriptors. You nevertheless can drag this thumbnail to an Inspector and ignore the descriptor matching rule. A message window 'Invalid data set' is displayed if 3D information is missed in the image set.
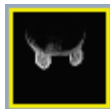
- A currently used image (set) is indicated by a yellow frame.
  Note: Images of other work areas are also indicated this way even when you cannot see them on the visible work area.
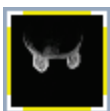
- The currently selected Inspector is indicated by a yellow frame with white edges. The Inspector tile itself is indicated by white edges.

- White edges in the upper left and lower right of the thumbnail indicate image sets that match the Inspector's descriptors.

Press [Ctrl] + [F1] or [Ctrl] + [F2] to switch through all fitting image sets. The Multimodality Viewer then exchanges the images in the selected Inspector and replaces them by the next fitting image set (see **4.3.1. Inspector Configuration, Exchanging Displayed Images**).

⚠ *Note: Once you have modified at least one Inspector, you cannot manually switch through all image sets.*

Updating Image Sets

SecurView manages additional images received for existing image sets depending on your current activity, i.e., note the following scenarios:

- The patient is not opened in the MM Viewer. All updated image sets are available in the Study Browser when the patient is opened. If applicable, the updated image sets will be displayed in the Hanging Snapshots. Whenever the patient has been viewed, the current state of the Inspectors and markings is maintained.

- The patient is opened in the MM Viewer, but none of the updated image sets is displayed in the current Hanging Snapshot. During processing, in the study list, 'UPDATING' is displayed instead of the study description. When processing is finished the relevant study will be removed from the study list. 'Updating study' is displayed above the study list. When this process is finished, the updated study is sorted into the study list, the checkmark indicating that you have seen this image set is removed, and you can open this study for review.

- The patient is opened in the MM Viewer, and images of the relevant study are displayed in the current Hanging Snapshot. During processing of images, in the study list, 'UPDATING' is displayed instead of the study description. The message is displayed: 'New images arrived for the study you are currently reviewing. The images are being updated now. Your current changes will be maintained.' When processing is finished the relevant study will be removed from the study list. 'Updating Study' is displayed above the study list. When this process is finished, the updated study is sorted into the study list, and this study is reopened in the Inspectors.

All Inspector settings (Window/Level, transformation, CSP, subtraction mode, rendering mode, slab thickness, time point, display/hide markings and labels, image information display, selected tool, scanlines) remain in the state before updating.

Image Sets Shortcut Menu

The shortcut menu of this section provides the following commands.

1 Click **Test Descriptor Matching** to open an information dialog that displays the matching results:

2 Point to **Force Descriptor** to see a submenu with a list of applicable descriptors. If '<empty>' is displayed, no descriptor is configured for manual assignment.

⚠ *Note: The configuration of descriptors is done by the service engineer.*

Select a descriptor of this list to apply to the image set. A checkmark indicates the currently selected descriptor.

3 Click **Select as Study Icon**. The indicator in the study list changes when you select another study.

Image Sets Tooltip

All image sets are indicated by a thumbnail and an abbreviated description of the image.

To read the full description:

• Point to an image set.

A window next to the pointer is displayed for 10 seconds:

3.3.4. Results Folder

This section collects all ScreenCaptures.
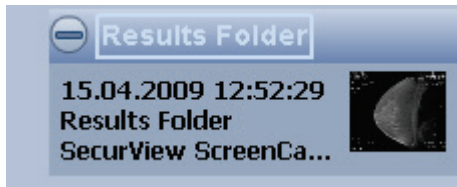
The currently selected results folder is always indicated by a framed title. When you already have created a results folder, you can see the indicated folder beside a results folder without a framed title.

Point to the folder and right-click to see a shortcut menu providing the following functions.

Rename Results Folder

Select **Rename Results Folder 'Results Folder'** to open the Rename Results Folder dialog:
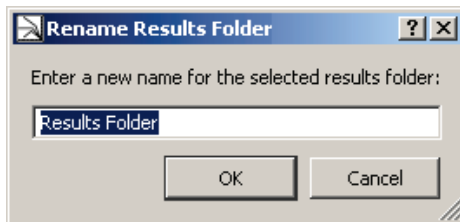
- **Type** the new name of your Results folder and click **OK**.

The section is titled with the name you have entered.

Delete Results from Results Folder

ScreenCaptures can be selected from the results folder.

⚠ *Note: If a study has been closed and all results have already been sent to a PACS, the deleted results are not deleted on the PACS.*

1   Select Delete 'snapshot' from 'Results Folder' or Delete the <n> selected results from the 'Results Folder' to delete ScreenCaptures. A confirmation dialog is displayed.

2   Click **Yes** to confirm the deletion.

⚠ *Note: Results can be deleted only by the user who has created them. Within a network, the results folders are permanently updated on every workstation so that the user has the same status on every workstation.*

Delete Results Folder

You can delete the whole results folder including its results. Select **Delete Results Folder 'Results Folder'** to open a confirmation dialog:
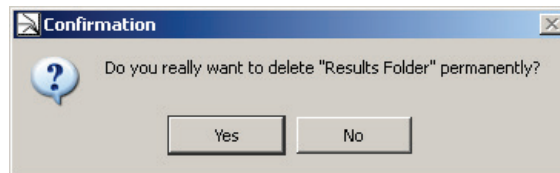
- Click **Yes** to delete the selected folder including its contents. You will get no more safety messages.

⚠ *Note: After deletion, no results folder is selected. When you create a new ScreenCapture, a new results folder is automatically created and your snapshot is stored in this folder.*

Create New Results Folder

By default, the Multimodality Viewer provides one results folder. Every user can create additional folders.

- From the shortcut menu, select **Create New Results Folder.**

A new folder is created and labeled as 'Results Folder <n>'. This folder is automatically selected, i.e., the label is highlighted by a frame.

Your next ScreenCaptures are stored in this folder until you select another folder as your default results folder.

Export the Selected Results

You can save your ScreenCaptures as a file on your file system. This may be helpful, e.g., when you want to use the result in another application.

1 Select the results you want to export. Hold down **[Ctrl]** and click to select more than one result.

2 On the shortcut menu, select Export The <n> Selected Results.

A dialog opens where you can select a path and enter a file name for the snapshot. SecurView suggests a default path that consists of the following: the 'Workspace' folder on your local drive, the patient name and ID, the current date and time, the string 'Snapshot', and a consecutive number.

3 In the **File type** list, select PNG image (default), JPEG image or TIFF image and then click **Save**.

Export All Results

If you want to export all ScreenCaptures to your file system, you do not have to select them individually. Instead use this command.

1 On the shortcut menu, select **Export All Results**.

A standard dialog opens where you can select a path and enter a file name for the snapshot. SecurView suggests a default path that consists of the following: the 'Workspace' folder on your local drive, the patient name and ID, the current date and time, the string 'Snapshot', and a consecutive number.

2 In the File type list, select PNG Image (default), JPEG image or TIFF image and then click **Save**.

Results from a PACS

When studies with ScreenCaptures are received from a PACS, the ScreenCaptures are shown in the same results folder where they were originally created. They are not shown as separate image data sets.

3.4. Toolbars

The work area and the Inspectors include individual toolbars with buttons for appropriate features. All toolbars of the Inspectors appear automatically when you point to the area of acceptance that is in the upper left and lower right part of the Inspector window.

3.4.1. Application Toolbar

This toolbar is located in the upper left area of the program window. Click these icons to perform tasks such as printing, navigating to work areas.

Definition of the buttons from left to right:

Patient List – Opens the Patient List. The radiologist may leave the patient he is working on to select another patient.

- Click **Open Patient List** to display the Patient List (see *SecurView DX/RT Workstation User Guide* for details).

The Patient List opens on the left high-resolution display. Note, that the service engineer may have configured the Patient List to be displayed on the color display.

Print – Opens the Print Tool dialog. See **Chapter 6: Printing** for details.

Multimodality Configuration – Opens the Multimodality Configuration Editor. An information dialog is displayed to inform you about missing rights. You can only change your personal settings. See **7.9. Personal Settings** for details.

Close Study – Opens the Close Study dialog. See **4.7. Closing a Study** for details.

Work Area Selection – The icons represent all available work areas. Click one of the icons to display the corresponding work area. The icon of the currently displayed work area is highlighted (see **3.1. Work Area**).

3.4.2. Inspector Selection Toolbar

The upper right section of the Multimodality Viewer provides a toolbar with icons for different Inspectors. Drag the desired Inspector to the work area to divide it into several tiles and/or to apply special features on the tile. The toolbar consists of three groups: 2D, 3D and Graph.

Alternator (2D) – Creates an Alternator in the work area to display images.

Mosaic (2D) – Used to display a number of images at once. Each image represents, e.g., a slice of a volume.

MIP (3D) – Shows a maximum intensity projection. By default, all slices of the volume are used for MIP calculation, i.e., a full volume MIP.

MPR (3D) – Displays the image as multiplanar reconstruction, a presentation of one image in three projections (axial, coronal, sagittal).

MPR Horizontal (3D) – Displays a 2-planes MPR in two projections one above the other (axial, coronal).

MPR Vertical (3D) – Displays a 2-planes MPR in two projections side by side (axial, coronal).

3.4.3. Subtools

Click the desired button to use the tool or click the arrow to select additional tools. These additional tools are then presented like a menu option.

3.4.4. Inspector Toolbar

The Inspector toolbar is located in the upper left or lower right area of the image window with US, CT, and other modalities. It is opened when the mouse pointer is near the toolbar mark (white line on the frame) of the Inspector. Most of the tools are the same for all types of Inspectors.

When there are additional tools available, a small black arrow is located below the icon. Click the arrow to see the additional tools.

The following table lists the buttons of the Alternator toolbar.

Button…	Function … (subtools are available depending on mode or context sensitivity)	Refer to…
	Every-Slice-Mode-Scrolling Direct Scrolling Cine Rotate around Central Axis Rotate around Currently Selected Point Increase/Decrease Slab Pan	**5.5. Navigating Through Slices/Time Points**
	Window/Level Sigmoid Nonlinear Window/Level	**5.6. Window/Level**
	Interactive Zoom Magnifier Small Magnifier Medium Magnifier Large	**5.2. Magnifier and Interactive Zoom**
	Original orientation Axial Coronal Sagittal Mediolateral Oblique L	**5.4. Reformatting, Panning, Rotating**
	Rotate 90 Clockwise Rotate 90 Counter Clockwise Flip Image	**5.4. Reformatting, Panning, Rotating**

Button…	Function … (subtools are available depending on mode or context sensitivity)	Refer to…
	Arrow Hide Annotations Measurement Angle Freehand Ellipse Rectangle Volume (VOI) Text	**5.7. Markings and Annotations**
	Currently Selected Point (hide/show)	**5.1. Current Point Selection**
	Show Scanlines Default Set Number of additional Scanlines	**5.8. Scanlines**
	Image Information Hide Image Information Minimum Image Information Maximum Image Information (Opaque)	**5.11. Image Information Overlay**
	Capture Single View	**5.14.1. Creating ScreenCaptures**
	Show Link Options Linking Off Register Currently Selected Point	**5.9. Linking Inspectors**

3.4.5. Global Toolbar

This toolbar is located below the work area. The tools apply to all Inspector windows. See also **3.6. Expanded Mode**.

Button…	Function… (subtools are available depending on mode or context sensitivity)	Refer to…
	Stacking ESM (Every Slice Mode)	**5.5. Navigating Through Slices/Time Points**
	Window/Level	**5.6. Window/Level**
	Sigmoidal Nonlinear Window/Level (expanded mode only)	**5.6. Window/Level**
	Interactive Zoom	**5.5.1. Scrolling**
	Pan	**5.4.3. Panning**
	Magnifier Medium	**5.2.1. Magnifier**
	Rotate around central axis	**5.4.4. Rotate around Central Axis / Rotate around Currently Selected Point**
	Rotate around CSP	**5.4.4. Rotate around Central Axis / Rotate around Currently Selected Point**
	Show/Hide Annotations	**5.7.14. Hiding/Showing Annotations**
	Arrow Annotation	**5.7.8. Drawing an Arrow**
	Measurement Annotation	**5.7.3. Drawing a Measurement**
	Freehand Annotation	**5.7.6. Drawing a Freehand Curve (ROI)**
	Ellipse Annotation	**5.7.2. Drawing an Ellipse (ROI)**
	Rectangle Annotation	**5.7.7. Drawing a Rectangle (ROI)**

Button…	Function… (subtools are available depending on mode or context sensitivity)	Refer to…
	Volume (VOI) Annotation	**5.7.9. Drawing a Volume (VOI)**
	Currently Selected Point (hide/show)	**5.1. Current Point Selection**
	Show/Hide Image Information	**5.11. Image Information Overlay**
	Capture Single View	**5.14.1. Creating ScreenCaptures**
	Show Link Options	**5.9. Linking Inspectors**
	Enable/Disable Linking	**5.9. Linking Inspectors**
	Reset	**3.3.2. ReportFlows and Hanging Snapshots**

Interactive Zoom is the most common method for magnification. Pressing the [+] / [-] keys on the keyboard has the same effect. Hold down [Ctrl] and drag to pan the image.

To delete or redraw all or some ROIs or VOIs, right-click an annotation to see the shortcut menu, and then select the appropriate option, or activate the annotation and press [Del].

3.5. Shortcut Menus

The elements of the Study Browser, the work area and the Inspectors provide more functions that can be accessed via shortcut menu commands. Right-click the object to see the shortcut menu. The following figures show examples of shortcut menu commands of the Alternator.
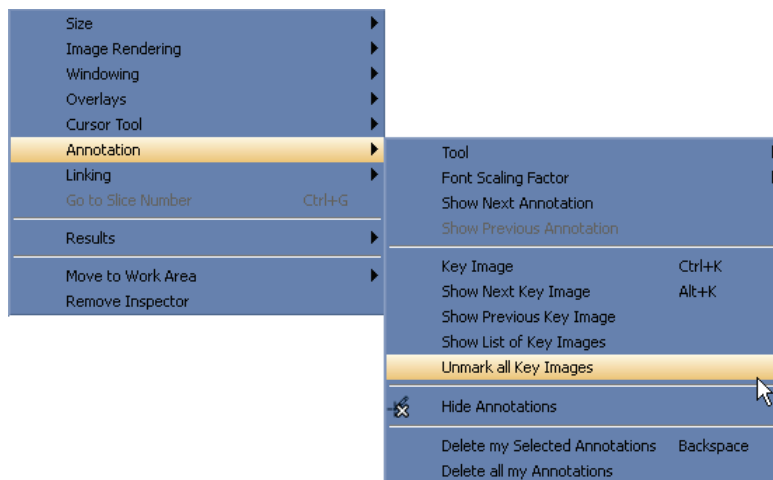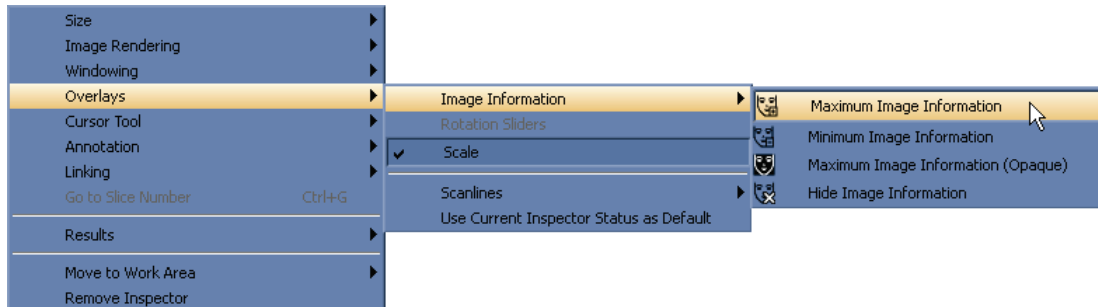
In many cases, the shortcut menu offers the same command as the toolbar buttons. See **3.3.4. Results Folder** for details on the shortcut menu of the Results Folders.

3.6. Expanded Mode

When the Multimodality Viewer is started for the first time, the expanded mode is active. To use only a reduced number of items/buttons in the shortcut menus and the toolbars, switch to the standard mode. See **7.9.6. Other Settings/Expanded Mode** for details on how to switch between the standard mode and the expanded mode.

Chapter 4: Inspectors and Image Data

This chapter provides an overview of the image data preprocessing of the MM Viewer, opening and closing studies within MM Viewer, and information about the MM Viewer inspector options.

4.1. Image Data Preprocessing of the MM Viewer

Image preprocessing is performed as a background process. The configuration of the MG Viewer determines which type of image shall be displayed on the MM Viewer. These image data sets are transferred to the MM Viewer and preprocessed. Preprocessing means sorting and assigning data as well as applying predefined ReportFlows. The image type (2D, 3D, time series, modality) is recognized automatically and taken into consideration for image preprocessing.

Only users with Administrator rights can configure image preprocessing.

When studies are opened, predefined ReportFlows can be selected to display the images.
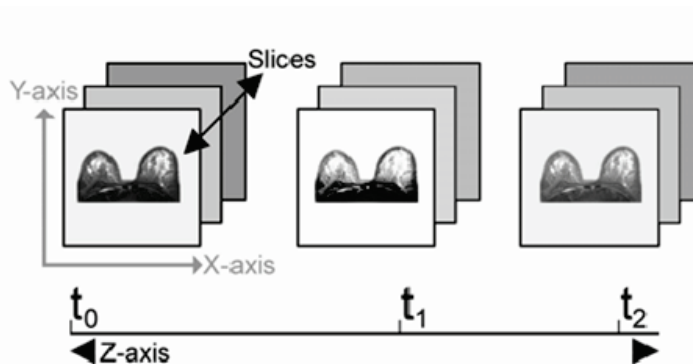
4.2. Opening Studies

The MM Viewer interacts with the MG Viewer so that the image data set of one patient is automatically opened on the MM Viewer and/or on the MG Viewer, depending on the modality they were acquired with and depending on the routing setup of the MG Viewer.

See **2.3.2. The Common Patient Manager for MM Viewer and MG Viewer** for details on the Patient Manager.

4.3.   Arrangement of Inspectors

4.3.1.   Inspector Configuration

You can display either one or more Inspectors at the same time. If you have opened several Inspectors, you can set the focus on one Inspector by clicking the image area. The active Inspector is indicated by highlighted frame borders.

Active Inspector
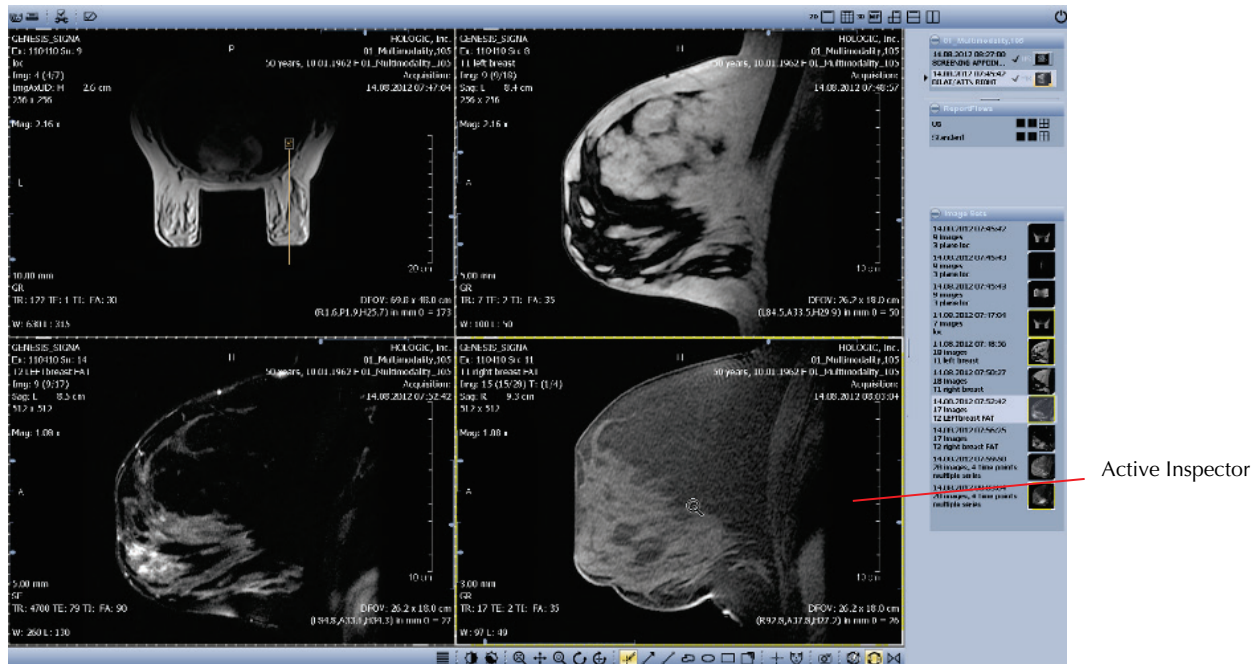
Predefined Hanging Snapshots

A study is generally opened with a predefined ReportFlow containing one or more Hanging Snapshots that have been defined for this type of study or for the type of image data sets that belong to the study. Depending on the configuration, there might be further ReportFlows with other Hanging Snapshots, which can be selected manually from the Study Browser.

Exchanging Displayed Images

When a study has more image data sets that match the descriptor matching rule of one Inspector, you can step through the matching image data sets.

1   Select the Inspector where you want to display the image sets.

2   Press [Ctrl] + [F1] to display the next image set.

3   Press [Ctrl] + [F2] to display the previous image set.

The image data sets of the work area are moved to the next work area (if existing) and are replaced by image data sets that have not been displayed so far.

⚠ **Note:** *This exchange does not work when the predefined Hanging Snapshot has been modified. Only image data sets that fit the defined Hanging Snapshot are displayed.*

Modification of the Inspector Arrangement

You can modify an opened, predefined Hanging Snapshot. The modification of the ReportFlow is saved, but you can reset all changes. See **3.3.2. ReportFlows and Hanging Snapshots**.

Adding/Replacing/Removing Inspectors

To add or replace an Inspector:

- From the Inspector Selection toolbar, drag the icon of the desired Inspector type to the work area, or

- From the Study Browser, drag the icon of an image data set to the blank work area (this always creates an Alternator).

Depending on the position of your pointer, the Inspector's size is 1/4, 1/2 or 1/1 of the work area's size (quadruple, horizontal, vertical tiling or full area).

If the new Inspector is placed (completely or partly) on top of an existing Inspector, the existing Inspector is replaced. This is indicated by a red frame border.

To place the Inspector on top of an existing Inspector:

- Hold down **Shift** and drag an Inspector. The new Inspector is 1/5 smaller than the Inspector it covers.

To remove an Inspector, make sure to see the extended toolbars and menus.

1   On the Inspector, right-click to see the shortcut menu.

2   Select Remove Inspector.

Adding/Replacing Image Data Sets

To add or replace an image data set:

- Drag the desired image data set from the Study Browser to the Inspector.

The new image data set is displayed in the Inspector. An image data set that was displayed in this Inspector is replaced by the selected image data set.

Modifying Size or Position of Inspectors

To move an Inspector to another position:

1   Point to the frame border of the Inspector.

2   When the pointer becomes a quadruple arrow, drag the Inspector to the new position.

To modify the size of an Inspector:

3   Point to the corner of the frame.

4   When the pointer becomes a double arrow, drag the corner to change the size of the Inspector.

4.3.2. Main Operating Elements of Inspectors

White frame corner for size modification and white line section for opening of the toolbar

Rotation slider rotation around longitudinal axis (body axis)

Inspector toolbar

Rotation indicator

Rotation slider rotation around latidunimal axis (around the horizontal of the image)

Timepoint slider

Scroll slices slider

Rotation slider rotation around viewing axis
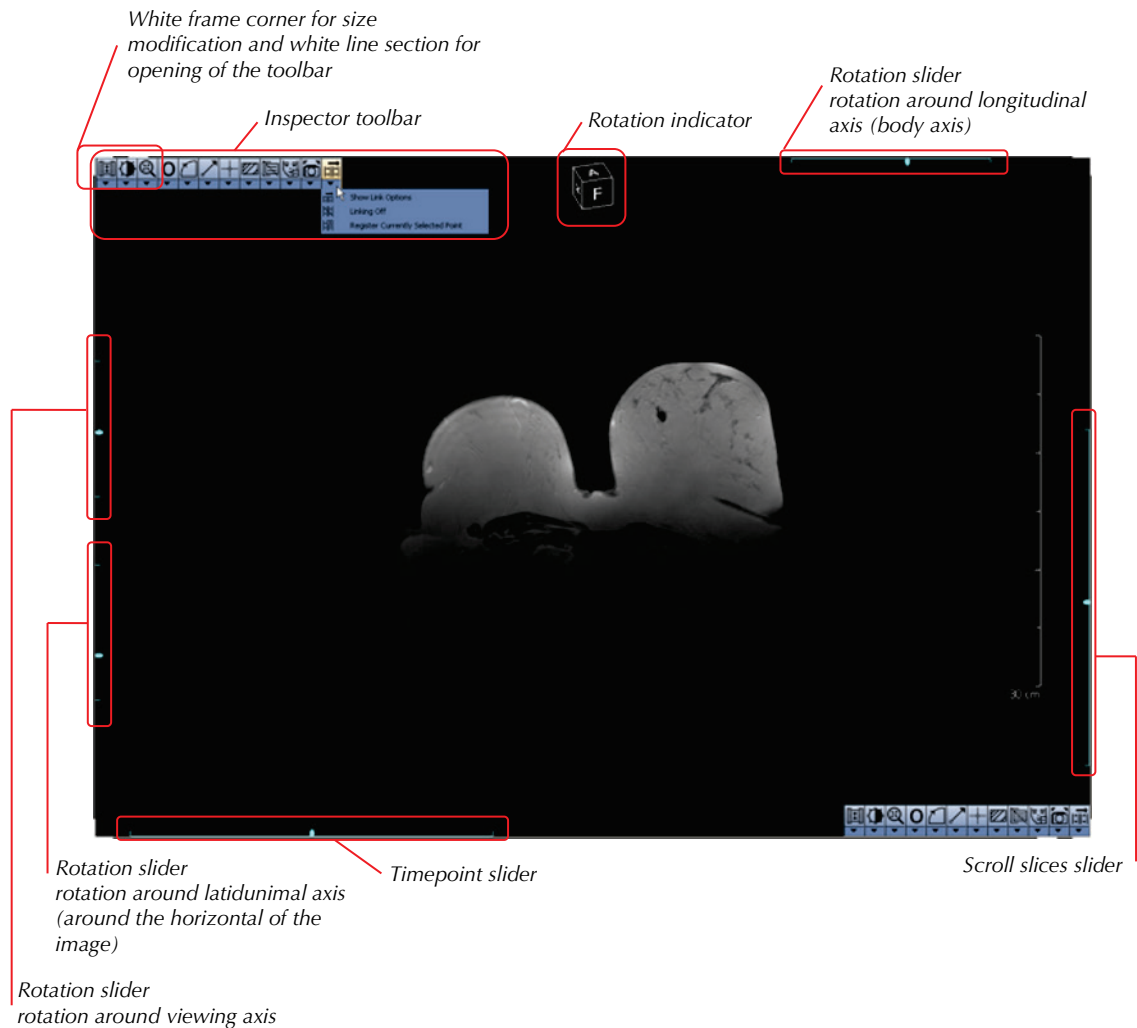
Highlighted Frame Corners and Sections

The white frame corner is used to modify the Inspector size. See **Modifying Size or Position of Inspectors**, page **35**. All four corners of the Inspector are highlighted when the Inspector is selected.

To open the Inspector toolbar:

• Point to the white frame segment next to the upper left or lower right corner.

Sliders

Scroll Slices Slider – The scroll slices slider is used to scroll through the slices of an image data set. This slider on the right side is only visible when the Inspector shows a multi-slice image. See **5.5. Navigating Through Slices/Time Points** for details on scrolling through slices.

Time Point Slider – The time-point slider is used to scroll through the time points of an image data set. This slider on the bottom is only visible when the Inspector shows an image data set with several time points. See **5.5. Navigating Through Slices/Time Points** for details on scrolling through time points.

Rotation Sliders and Rotation Indicator – The rotation sliders are used to rotate the image around its axes. See **5.4.2. Rotation by the Rotation Sliders** for details.

The rotation indicator shows the current rotation status of the image. The rotation indicator is rotated simultaneously with the image rotation.

Toolbars

To open the Inspector toolbar:

- On the Inspector, point to the highlighted sections of the frame next to the upper left and the lower right corner.

To open the subtool menu:

- On the toolbar, click the **arrow** below the buttons. Not all tools offer a subtool menu.
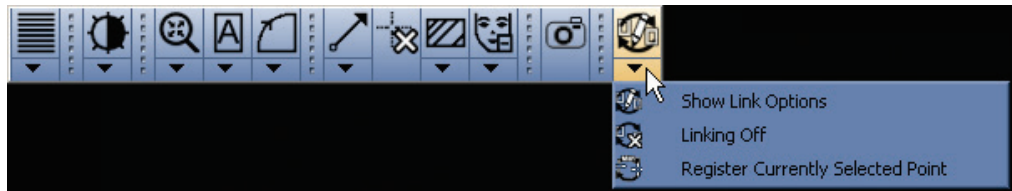
The toolbar's contents depend on the Inspector and on the Multimodality configuration (see **7.14. Inspector Toolbars Configuration**).

4.3.3.   The Alternator Inspector

The Alternator is the standard Inspector for reviewing single images, or groups of images consisting of slices and time points. You can scroll through these slices and/or time points.

Several tools for image reviewing and image editing are available. See **Chapter 5: Tools for Image Viewing** for details.

4.4.   The MIP Inspector

The MIP features are available in the MIP Inspector only. The slabs that can be defined in other types of Inspectors are displayed in the usual MIP Mode (see **4.4.4. MIP Modes**, **MIP (Maximum Intensity Projection)**).

The MIP (Maximum Intensity Projection) shows structures with a high intensity in a slab or a volume.

On the image overlay, a MIP is indicated by the image size followed by 'MIP':
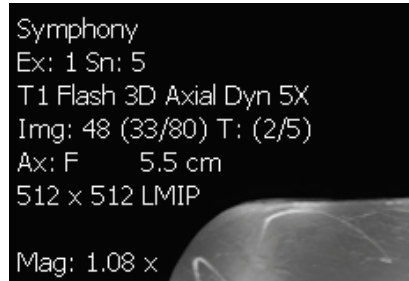
4.4.1.   Subtraction Mode for MIP

The subtraction mode can be combined with the MIP modes to show data such as vessel structures. The subtraction must be performed on images of different time points to show the difference of contrast agent enhancement.

See **5.10. Image Subtraction** for details on the subtraction mode.

4.4.2.   MIP Display of Subvolumes (VOI)

You can also show only a subvolume of the image data set. For this, the corresponding options in the shortcut menu and in the Inspector toolbar must have been made available by means of the Multimodality Configuration Editor (see **7.14.3. MIP Toolbar** for details on how to configure).

Any volume that has been defined by the Volume Annotation tool (see **5.7.9. Drawing a Volume (VOI))** can be used as a subvolume.

▶   **To display a MIP of a subvolume:**

- On the Inspector toolbar, click the **Subvolume MIP** button, or

- On the shortcut menu, point to **Image Rendering**, then click **Subvolume MIP.**

Select the desired subvolume from the list. The number of the subvolume corresponds to the annotation label.

4.4.3. Currently Selected Point in MIP

The MIP Inspector does not show single slices but the projection of the maximum intensity of several or all slices of an image. This means that:

- The crosshairs also represent the projection of the selected point.

- The intensity value of the selected point corresponds to the projected maximum. The image overlay shows the slice number of the point with the maximum intensity.

⚠ *Note: If the MIP Inspector is linked via the property Currently Selected Point (CSP) to an Alternator with the same image data set, the MIP Inspector shows the CSP on the slice with the maximum intensity.*

4.4.4. MIP Modes

The MIP mode is active by default when an MIP Inspector is opened.

⚠ *Note: The local MIP mode is only available when Full Volume has been set. The Volume Renderer is not available when Full Volume has been set.*

⚠ *Note: The different MIP modes are available in the MIP Inspector only. When slabs are defined in an Alternator, the MIP mode is active and cannot be changed.*

MIP (Maximum Intensity Projection)

The MIP mode shows structures of the slab/volumes with the highest intensity. This is especially helpful for finding and tracking vessels. The effect of the maximum intensity projection is enforced when a contrast agent is used.

The display of bones or other structures with a high intensity can easily be suppressed by selecting an adequate slab that does not contain these structures.

The MIP mode is active by default when a MIP Inspector is opened.

minIP (Minimum Intensity Projection)

The minIP mode is similar to the MIP mode. However, the structures with the lowest intensity are shown instead of the structures with the highest intensity, which can be helpful for thorax diagnostics.

▶ **To switch to the minIP mode:**

1 Right-click to see the shortcut menu.

2 Point to **Image Rendering**, then to **Rendering Mode**, and then click **minIP**.

local MIP (Local Maximum Projection)

In the local MIP mode, the intensity of the next local maximum in the line of sight is shown and not the absolute maximum intensity in the line of sight. This projection is also called closest vessel projection, because it can be used to display the nearest vessel. The local MIP mode is only available if Full Volume has been set. It does not work with slabs.

▶ **To switch to the local MIP mode:**

1 Right-click to see the shortcut menu.

2 Point to **Image Rendering**, then to **Rendering Mode**, and then click **local MIP**.

Adjusting the Threshold Value

To avoid background noise being displayed as maximum, a suppression threshold can be modified:

1 Right-click to see the shortcut menu.

⚠ *Note: The local MIP threshold dialog is only available when local MIP is selected as current mode.*

2 Open the **local MIP threshold** dialog:

- Point to **Image Rendering**, then to **Rendering Mode**, and then click **Set local MIP threshold**, or

- Press [T].
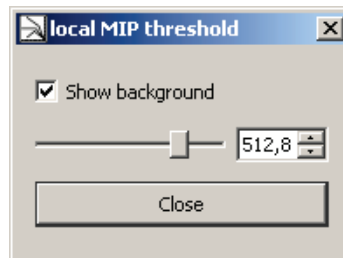
3 Select **Show background** to show the background color for any projected point with an intensity value below the threshold. If the checkbox is cleared, the maximum value is shown.

4 Drag the **threshold** slider, or use the date box to adjust the threshold value.

5 Click **Close** to save the settings and to close the dialog.

Average

The average mode is used to smoothen noise. It can be used to improve the visual quality of a high-resolution low-dose multi-slice CT scan, comparable to a scan with a thicker slice. For this purpose, a slab of 2 until 8 slices is typically used. If the Average mode is used with an increased number of slices, the visualization result is like a localizing scan or a radiography.

▶ **To switch to the average mode:**

1 Right-click to see the shortcut menu.

2 Point to **Image Rendering**, then to **Rendering Mode**, and then click **Average**.

4.5.   The Mosaic Inspector

The Mosaic Inspector is used to get an overview of multi-slice image data sets, which also can contain multiple time points.

The available tools of the Mosaic Inspector are a subset of the Alternator tools.

4.5.1.   Layout

By default, the Mosaic Inspector is opened in a 3x3 matrix. The layout can be changed by means of the predefined layouts in the Inspector toolbar or by the options of the shortcut menu.

1   To select a predefined layout (**Matrix 1x1**, **Matrix 2x2**, **Matrix 3x3**, **Matrix 4x4**), click the corresponding matrix on the toolbar.
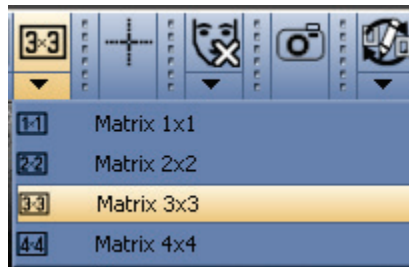
2   To define a new matrix layout, right-click to see the shortcut menu, point to **Layout**, then point to **Columns**, and select the desired number of columns (1 to 6).

3   Right-click to see the shortcut menu, point to **Layout**, then point to **Rows**, and select the desired number of rows (1 to 6).
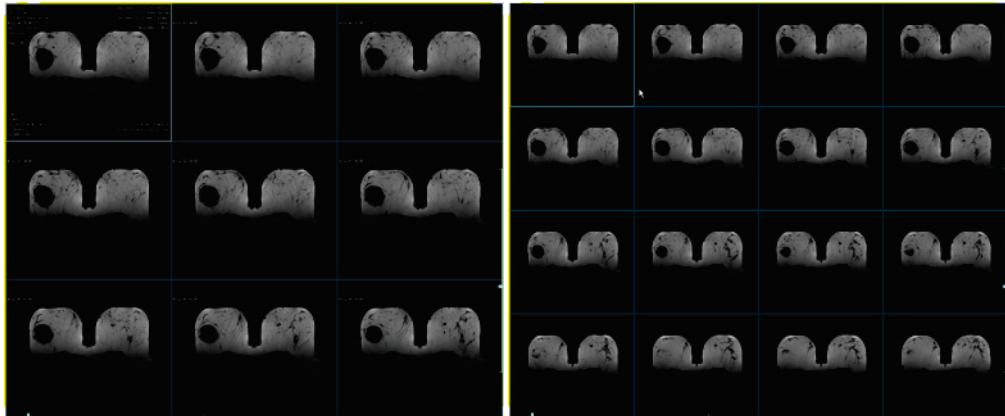
4.5.2. Mode, Sorting

The images can be sorted by slice numbers or by time points.

1 To sort the images by the slice number (default), right-click to see the shortcut menu, point to **Mode**, and click **Slices**.

⚠ *Note: The Mosaic Inspector displays only the time point slider, when time points are available. The scroll slices slider is always available.*

2 To sort the images by time points (if the image data set contains several time points), right-click to see the shortcut menu, point to **Mode**, and then click **Time points**.

3 To invert the sort order, right-click to see the shortcut menu, point to **Mode**, and then click **Ascending**. If the check mark in front of the item is cleared, the sort order is descending.

4.5.3. Image Information

A reduced text overlay is shown in any image of the Mosaic Inspector. The full information is shown in the currently selected image.

Because of the reduced size of the images, the overlays might be unreadable. See **4.5.4. Navigation** for details on displaying a selected image in an enlarged single view.

If the size of the single images is too small (e.g., in a 4 × 4 matrix), the text overlay may be hidden.

4.5.4. Navigation

The operating elements for navigating through time points are only available if the image set contains several time points.

If there are not enough images in the data set to fill all cells of the matrix, the empty cells are labeled with **Slice out of bounds** or **Time out of bounds**.
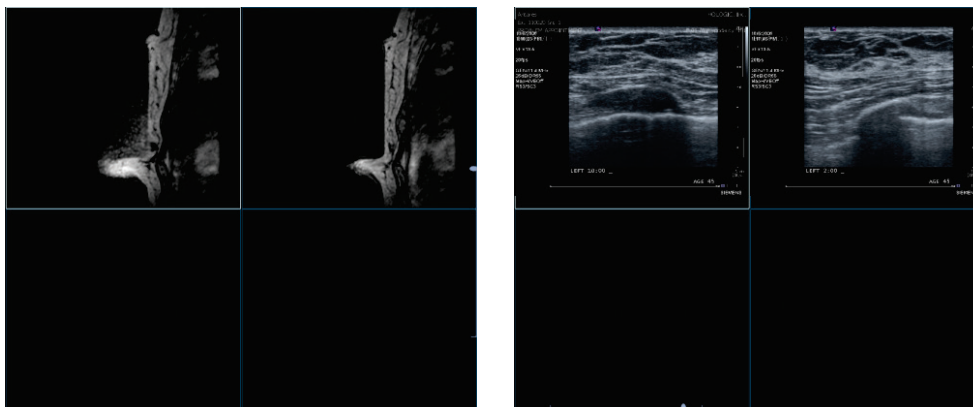
If you select an empty cell, the images are shifted in such a way the first image in the sort order is shown in the selected cell.

To navigate through time points:

- Drag the slider on the lower left of the Inspector, or

- Hold down [Ctrl] and press the [Left{Arrow] / [Right{Arrow] keys.

To navigate through slices:

- Drag the slider on the right side of the Inspector, or

- Hold down [Ctrl] and press the [Up{Arrow] / [Down{Arrow] keys, or

- Rotate the mouse wheel. Note, depending on your user preferences (see **7.9.4. Inspectors and Work Area**) individual or all images in the Mosaic Inspector are exchanged.

- Drag the scroll slices slider to shift the entire row of images out of the Inspector and replace it with the previous or next entire row.

4.5.5. Single View Mode

To show one image in full size (size of the Inspector):

1   Select the cell with the desired image.

2   Hold down [Ctrl] and double-click the cell. The matrix switches to a 1:1 matrix and the desired image appears.

3   To return to the previous matrix, hold down [Ctrl] and double-click the image. The formerly displayed matrix becomes active and the image appears in the first cell on the upper left side.

4.6. The MPR Inspector

While the Alternators show images in only one orientation, the MPR Inspector is a group of Alternators that show one image in two or three orthogonal orientations.

4.6.1. Types of MPR Inspector

Three different types of MPR Inspectors are predefined. You can change the orientation of the images in any tile.
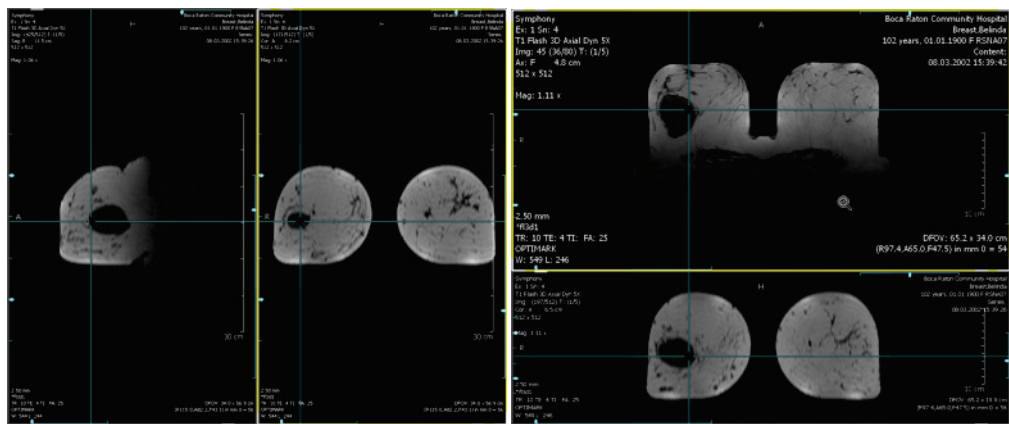
MPR Horizontal   MPR Vertical
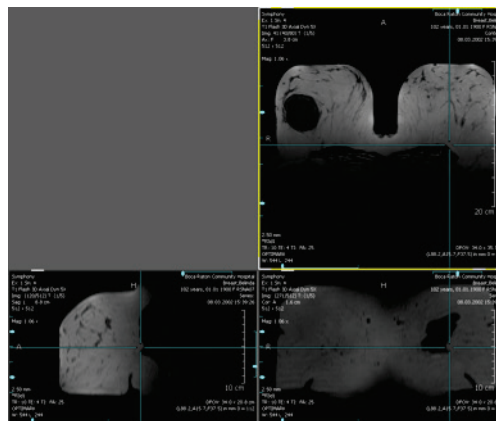
MPR 3

4.6.2. Crosshairs

The crosshairs of the MPR Inspector are different from the crosshairs of the Alternator. Small crosshairs are replaced by navigator lines over the full extent of the tile.

The navigator lines mark the position of the slice(s) currently shown in the other tiles.

4.6.3. Internal Linkage

All cells of the MPR navigator are linked via the following properties:

- Selected Tool
- Currently Selected Point
- Time Point
- Reference Time Point
- Dataset
- Overlays
- Zoom
- Window/Level
- Subtraction
- Slab Mode
- Slab Thickness
- Show/Hide Overlay
- Scale
- Panning

Any modification to one of these properties in one tile is also performed in the other tiles. You can switch on and off this internal linkage.

The toolbar and the shortcut menus are the same as those of the Alternator.

4.7. Closing a Study

Every radiologist can close any study with the state **Not Read** or **Read Once** (if a study in the MG Viewer is read by another user and assigned to be read twice). The Close Study dialog on the MM Viewer and on the MG Viewer look and work in the same way, no matter which viewer opened the dialog. See the *SecurView DX/RT Workstation User Guide* for details.

This section only describes topics specific to the MM Viewer.

On the Application toolbar, click **Close Study** to open the Close Study dialog.
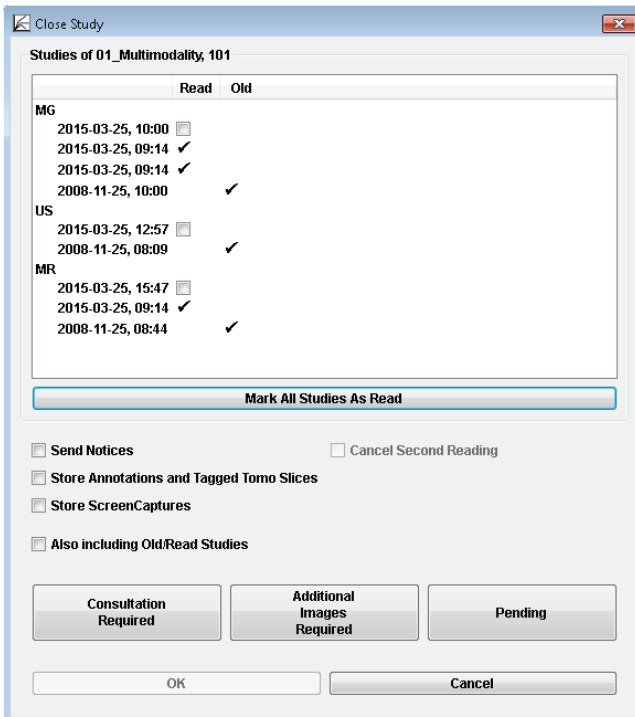
The dialog offers various options for how to close studies:

- To save annotations or other image manipulations of the MM Viewer to an archive system (PACS), ScreenCaptures have to be created. Select **Store ScreenCaptures** for studies being marked **Read** to send them to the archive system.

- Sending new multimodality ScreenCapture images on the MM Viewer for **Read** or **Old** studies via **Store ScreenCaptures** and **Also including Old/Read Studies** is possible only if new or changed annotations, measurements, or tagged tomosynthesis slices also exist for **Read** or **Old** studies on the MG Viewer.

⚠ *Note: The check boxes **Send Notices**, **Store Annotations and Tagged Tomo Slices**, and **Cancel Second Reading** have no meaning for MM Viewer studies.*

Chapter 5: Tools for Image Viewing

▶ **5.1. Current Point Selection**

▶ **5.2. Magnifier and Interactive Zoom**

▶ **5.3. Displaying Images in Different Scaling Modes**

▶ **5.4. Reformatting, Panning, Rotating**

▶ **5.5. Navigating Through Slices/Time Points**

▶ **5.6. Window/Level**

▶ **5.7. Markings and Annotations**

▶ **5.8. Scanlines**

▶ **5.9. Linking Inspectors**

▶ **5.10. Image Subtraction**

▶ **5.11. Image Information Overlay**

▶ **5.12. Curved MPR**

▶ **5.13. Key Image Marker**

▶ **5.14. Saving Results**

This chapter provides an overview of the MM Viewer image tools and describes each option in detail.

⚠ *Note: Any modifications to the images in the Inspectors are stored in the MM Viewer software only. They are not sent to an archive system (PACS) when the study is closed. To save annotations to an archive system, create a ScreenCapture of the Inspector or work area. ScreenCaptures are saved as results and can be transferred to an archive when the study is closed.*

5.1. Current Point Selection

5.1.1. Currently Selected Point

The currently selected point (CSP) allows navigating through a data set and evaluating a specific point or ROI. Many image manipulations are based on the currently selected point.

The CSP can be used to link two or more Inspectors. If the CSP is moved to another position, slice or time point, the image display in the linked Inspectors is updated corresponding to this new CSP position.

The position of the CSP is displayed as crosshairs in all Inspectors.

You can drag the CSP to any position of the Inspector. The mouse pointer becomes an arrow as soon as it is near the crosshairs of the CSP, regardless of the currently selected tool.

To hide the CSP crosshairs in the Inspector:

- Click the **CSP button** on the Inspector toolbar, or

- Click the **CSP button** on the Global toolbar.

By default, the position of the CSP is indicated in the image overlay:

- L and R indicate the distance of the CSP from the center to left/right side of the patient.

- A and P indicate the distance of the CSP from the center to the anterior and posterior of the patient.

- H and F indicate the distance of the CSP from the center to the head and foot of the patient.

- O indicates the gray value of the CSP.

5.1.2. Second Point

You can set a second CSP to mark a position of interest temporarily. To set a second CSP, first ensure you are in expanded mode (see **7.9. Personal Settings** for details on how to configure the shortcut menu commands). Then:

- On the Inspector, right-click to see the shortcut menu and select **Cursor Tool > Currently Selected Point > Set second Point**, or

- Press **[Shift] + [P]**.

The application saves the first CSP in the background, and allows you to place a second CSP.

⚠ *Note: You can display only one CSP at the same time. When a second CSP has been placed, you can switch between the original CSP and your new CSP. Drag the second CSP to another position and proceed with the next step.*

To switch between two CSP:

- Point to **Cursor Tool > Currently Selected Point > Exchange with second Point**, or

- Press **[P]**.

5.2. Magnifier and Interactive Zoom

5.2.1. Magnifier

To use the magnifier:

- On the Global toolbar, click **Magnifier Medium**, or

- On the Inspector toolbar, click **Magnifier Small** or **Magnifier Large**, or

- Right-click to see the shortcut menu and point to **Cursor Tool**, and then click **Magnification** for the same options, or

- Press [A].
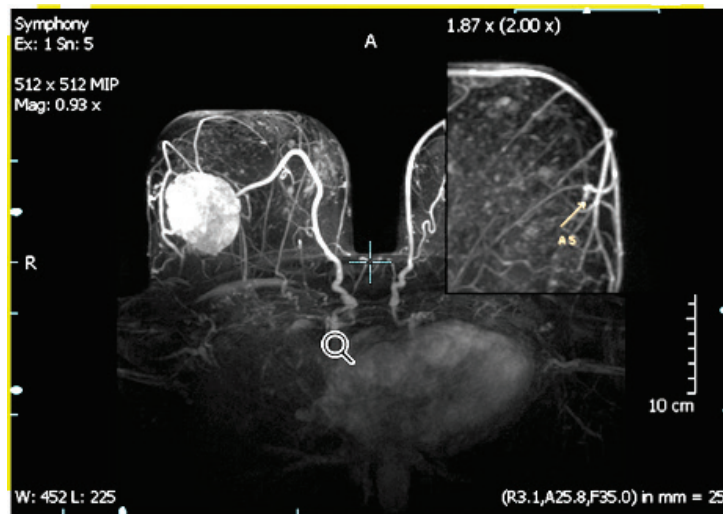
A magnified square appears as long as you press the mouse button.

To magnify other regions, hold down the button and drag.

Fixing the Magnifier Area

As long as the left mouse button is held, the magnifier area is visible and can be dragged to any place in the Inspector.

1   Double-click to fix the magnifier area at the current position.

2   You can drag the magnified area.

3   Double-click the magnifier area to remove it.

Magnification Factor

The magnification factors are displayed in the magnifier window. The absolute magnification factor is the magnification factor of the original image data. The relative magnification factor (in brackets) is the magnification factor relative to the displayed image data.

To change the magnification factor, first double-click to fix the magnification area, and then rotate the wheel button.

5.2.2.　Interactive Zoom

This tool is activated by default when the Inspector is initially opened. To activate the tool:

- On the Global toolbar, click **Interactive Zoom**, or

- On the Inspector toolbar, click **Interactive Zoom**, or

- Right-click to see the shortcut menu, and click **Cursor Tool > Magnification > Interactive Zoom**.

To zoom in or zoom out:

- Drag the mouse **up** and **down**, or

- Press [Ctrl] + [+] to zoom in or [Ctrl] + [-] to zoom out.

The currently selected point is the reference point for zooming.

The ruler in the Inspector is automatically adapted to the zoom factor.

5.2.3.　Full Screen Display

To activate the full screen mode:

- On the Inspector toolbar, click **Full Screen**, or

- Hold down [Alt] and double-click to enlarge the Inspector to full screen, or

- Press [Ctrl] + [Shift] + [F].

By default, the button for the **Full Screen** mode is not displayed in the Inspector toolbar. You can modify the Inspector toolbar in the Multimodality Configuration Editor (see **7.14. Inspector Toolbars Configuration**), if you want to use a button for full screen display.

To deactivate this mode:

- Right-click to see the shortcut menu, and select **Size > Hide Full Screen**, or

- Press [Esc], or

- Press [Ctrl] + [Shift] + [F] again.

5.3. Displaying Images in Different Scaling Modes

By default, an image is scaled to fit the Inspector. You can adjust the image size.

1   Right-click the Inspector to see the shortcut menu, and point to **Size**.

2   To display the image in the original resolution, click **Show 1:1**.

⚠ **Important:** *Use this mode (1:1) to display the images in their original resolution.*

This mode is used to display 1 pixel of the original image data as 1 pixel in the Inspector.

To adjust the image to fit the Inspector:

- Right-click the Inspector to see the shortcut menu, and click **Size > Fit To Inspector**, or

- Press [Ctrl] + [F] to display the image adjusted to the Inspector size.

All additional image information overlays remain unchanged, i.e., all textual information is displayed in the same size independent from the selected scaling mode but, e.g., annotations are rescaled.

This shortcut menu also provides commands to zoom in or zoom out. See **5.5.1. Scrolling**.

5.4. Reformatting, Panning, Rotating

The rotation indicator and the characters shown in the top and in the left area of the Inspector indicate the current orientation of the image.

These characters are:

- H (Head) or F (Foot)

- L (Left) or R (Right)

- A (Anterior) or P (Posterior)

5.4.1. Reformatting

If the displayed image is part of a 3D data set, it is possible to view not only the original acquired slices but also the reformatted slices, orthogonal to the acquired images. To display the image in the desired orientation, click the corresponding icon in the toolbar.

Depending on the type of image data, several types of orthogonal reformatting can be selected:

Axial (also [Alt] + [A])

Coronal (also [Alt] + [C])

Sagittal (also [Alt] + [S])

Axial upside down

Original
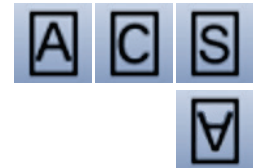
This last orientation is the original orientation of the image data set. This orientation is also available for 2D images and for images that have not been acquired in a standard orientation to allow a fast return to the original orientation.

For image data sets that have been acquired in an oblique position (e.g., Gantry Tilt) the following orientations exist:

Axial, **Coronal**, **Sagittal (Patient)**: Reformatting is performed corresponding to the patient coordinate system, i.e., orthogonal to an assumed vertical scan direction. The icons of the toolbar buttons are marked by lowercase letters.
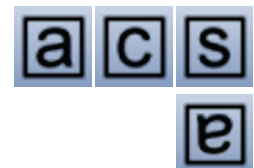
Axial, **Coronal**, **Sagittal (Image)**: Reformatting is performed corresponding to the coordinate system provided by the scan direction, i.e., orthogonal to the scan direction.

Mediolateral oblique R and **Mediolateral oblique L**: This orientation is only available for unilateral MR image data sets. In the MIP Inspector, the image is displayed in an orientation according the orientation of MG images to compare the MR with the mammogram.

5.4.2. Rotation by the Rotation Sliders

If the shown image is part of a 3D data set, it is possible to show not only the original acquired slices but also the reformatted slices in oblique orientation to the acquired image orientation. The Rotation Sliders are used to rotate the image around the axes (oblique reformatting).

See **4.3.2. Main Operating Elements of Inspectors** for details on the position of the sliders. The following sliders can be available:

Rotation around longitudinal axis (body axis)
The slider at the upper right rotates the image around the body axis.

Rotation slider, rotation around viewing axis
The upper slider at the left rotates the image around the viewing axis.

Rotation around latitudinal (horizontal) axis
The lower slider at the left rotates the image around the latitudinal axis.
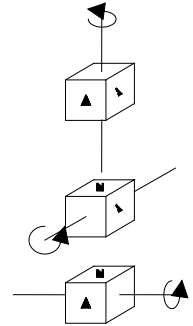
The **Rotation Indicator** shows the current rotation status of the image. It rotates simultaneously to the image rotation.

5.4.3. Panning

To shift the image within the window:

- On the Global toolbar, click the **Pan** tool, and drag the image within the Inspector to a new position, or

- Right-click and drag the image.

5.4.4. Rotate around Central Axis / Rotate around Currently Selected Point

To rotate the image with the CSP or the central axis as reference point:

- On the toolbar, click **Rotate around Central Axis** or **Rotate around Currently Selected Point**, and drag the mouse to rotate the image, or

- Press [Alt] and drag the mouse to use this tool, even when another tool is activated.

⚠ *Note: 3D Images: The image is rotated in all dimensions. When the mouse is moved horizontally, the image rotates around a vertical axis. When the mouse is moved vertically, the image rotates around a horizontal axis.*
2D Images: The image is rotated within the image plane.

The **Rotate around Currently Selected Point** tool is available in the expanded mode only.

5.4.5. Rotating 90 deg/Flipping

Rotates images in 90-degree steps (clockwise or counter-clockwise) or flips an image to mirror the original. To gain access to the subtools, click the arrow below the icon.

- On the toolbar, click **Rotate 90 Clockwise** / **Counterclockwise** (axial images acquired in the prone position can be displayed in the true anatomic position).

- On the toolbar, click **Flip Image** (sagittal images of opposite sides can be displayed as mirror images, MR images can be flipped to display the image oriented the same as a mammogram).

5.5. Navigating Through Slices/Time Points

When an image data set is loaded into an Inspector, the central slice is shown, by default. Use the Initial Slice Selection item of the Multimodality Configuration Editor to set the initial slice (see **7.9.4. Inspectors and Work Area**). You can scroll to the next/previous slice. The number of the slice is displayed in the image overlay. The slider on the right side of the Inspector shows the slice position, the bottom slider the time point (if existing).

1   Select the desired tool, i.e., Direct Scrolling, Every-Slice-Mode Scrolling (ESM), or Cine.

2   Point to the desired Inspector.

3   To navigate with the mouse:

- Drag the mouse pointer up and down to scroll continuously.

- Drag the mouse forward (away from you) to scroll to higher slice numbers.

- Drag the mouse backward (toward you) to scroll to lower slice numbers, or

- Rotate the mouse wheel to scroll to the slice, or

- Drag the slider on the right side of the Inspector up or down.

5.5.1. Scrolling

1   On the Inspector toolbar, click the **Direct Scrolling** tool.

2   To scroll through slices:

- Rotate the mouse wheel, or

- Drag the mouse forward/backward to scroll to the next/previous slices.

The current slice number as well as the highest slice number is shown in the image overlay.

Display of slices depends on your scrolling speed. Some slices may not be displayed if you scroll too fast. Use the **Every-Slice-Mode Scrolling** tool to display every slice.

5.5.2. Every-Slice-Mode Scrolling (ESM)

With the ESM tool, every slice is displayed while scrolling. No slice is left out. Scrolling might be slower in this mode.

1   On the Inspector toolbar, click the **Every-Slice-Mode Scrolling** tool to activate the every-slice mode.

2   To scroll through slices:

- Rotate the mouse wheel, or

- Drag the mouse forward/backward to scroll to the next/previous slices.

The current slice number and the highest slice number are shown in the image overlay.

5.5.3. Automatic Stacking - Cine

1 On the Inspector toolbar, click the **Cine** tool to activate automatic scrolling. The slices are scrolled beginning with the actual slice going up to the last slice and then back.

2 Click **Cine** again to stop automatic stacking. It stops at the currently visible slice.

The cine mode does not scroll through time points if 2D+t or 3D+t image data sets are displayed.

5.5.4. Slab Size

Slabs are packages of slices. The slab size defines how many slices are contained in a slab. The slab size must be defined for the MIP (maximum intensity projection) in the Alternator. It cannot be defined when **Full Volume** is selected in the shortcut menus.

If the slab size is bigger than 1, the projection of the gray value of the pixel with the maximum intensity of all slices at the same coordinate is displayed, i.e., with the definition of a slab, the MIP mode is activated.

To define the slab size:

- On the Inspector toolbar, click the **Increase/Decrease Slab** tool. Drag the pointer up or down to increase or decrease the slab size, or

- Press [Shift] + [S] to increase the slab size, or press [S] to decrease the slab size, or

- Right-click to see the shortcut menu, point to **Image Rendering**, then to **Slab Thickness**, and then click the desired slab thicknesses: 1, 2, 4, 8, 16, 32, 64, 128, Custom Slab Size, Full Volume.

When you click **Custom Slab Size**, a dialog is opened:
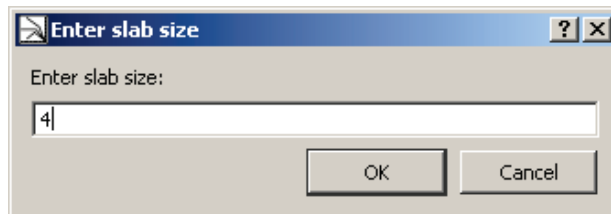
Type or select the slab size.

The currently used slab size is shown in the image overlay, e.g., 'Slab: 4 MIP':
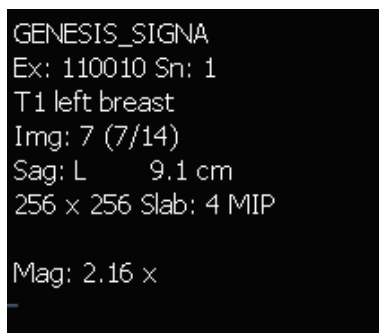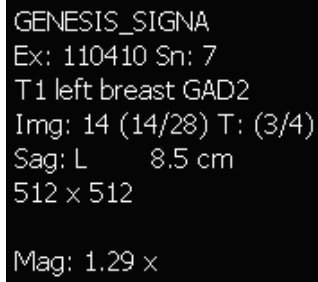
⚠ **Note:** *You can scroll through the slices when a slab is defined. The complete slab scrolls so that the MIP function persists, but the slices of the slab are changing.*

5.5.5. Scrolling through Time Points

When an image has more than one time point, a slider for time points is displayed at the lower left of the Inspector. To step to a time point:

- Point to the **Time Point Slider,** and drag the slider to a particular time point, or

- Hold down [Ctrl] and press the [Left{Arrow] / [Right{Arrow] keys to step backward/forward.

The selected time point is shown in the image overlay, e.g., 'T: (3/4)':

```
GENESIS_SIGNA
Ex: 110410 Sn: 7
T1 left breast GAD2
Img: 14 (14/28) T: (3/4)
Sag: L       8.5 cm
512 x 512

Mag: 1.29 x
```

5.6. Window/Level

The adjustment of Window/Level allows the dynamic change to width and center (visible range of grayscales and center of this range). Modification to Window/Level (windowing) becomes visible as changes to brightness and contrast.

The image data contain more gray values than a display can represent. The Window/Level settings determine the range of gray values displayed. Values above or below this range appear as white or black pixels. The smaller the range the better the resolution of the visible range of the grayscale. It is important to define a range that does not hide important information but also does not waste gray values for irrelevant information.

For the adaptation of the windowing, two different curve types are available:

- Linear Window/Level

- Sigmoid Nonlinear Window/Level

The currently selected Window/Level curve is indicated in the lower part of the Inspector as long as the Window/Level settings are modified.

5.6.1. Manual Selection of Window/Level

⚠ **Important**: *The MM Viewer does not support nonlinear grayscale conversions on a per slice basis for 3D/4D images. Please refer to your image modality manufacturer to determine if this feature is used in the images.*

To select the Window/Level tool:

- On the shortcut menu, select the **Window/Level** tool for the linear curve type or the **Sigmoid Nonlinear Window/Level** tool for the nonlinear curve type, or

- On the Global or Inspector toolbar, click the corresponding button.

To modify the Window/Level values:

- Drag the mouse to change Window/Level, or

- Alternatively, press and hold the wheel button of the mouse.

Horizontal direction changes the window:

- Drag right to decrease the contrast (window width increases), or

- Drag left to increase the contrast (window width decreases).

Vertical direction changes the level.

- Drag up to make the image brighter (level increases), or

- Drag down to make the image darker (level decreases).

The currently set values for Window/Level are shown in the image overlay (e.g., 'W: 130 L: 75'):

You can specify an acceleration factor that affects the mouse movement (see **7.9.4. Inspectors and Work Area**).

5.6.2.   Predefined Window/Level Values

You can use predefined values for Window/Level. Some values are predefined by the software, other values can be defined in the Multimodality Configuration Editor (see **7.11. Window/Level Presets**). Presets are valid for special types of images (like CT).

To select a preset value:

- Right-click to see the shortcut menu, and click **Windowing > Presets**.

The shortcut menu only provides presets that are suitable for the current type of image data.

5.6.3.   Inversion of Windowing

To invert the windowing:

- On the shortcut menu, click **Windowing > Inverted**, or

- Press [I] (not [Shift] + [I]).

To reverse the inversion, click **Inverted** once again.

5.6.4.   Expand LUT

With this option the window is adapted to the range of gray scales in the image. The image overlay W/L displays the new values.

To expand the LUT:

- Right-click to see the shortcut menu, and click **Windowing > Expand LUT**.

5.6.5.   Presets for Windowing

A received image set may contain one or more windowing presets. To use these settings:

- Right-click to see the shortcut menu, and select **Windowing > Presets > Original Preset**, or

- Press [F2]

If a received image set contains more than one windowing preset, you can switch to the next preset:

- Click **Windowing > Presets > Next Original Preset**.

The shortcut menu only provides presets that are suitable for the current type of image data.

5.7. Markings and Annotations

You can mark and describe suspicious areas on an image with different tools to create an annotation. All annotations are saved as image overlays. They are also part of snapshots and can be printed.

⚠ *Note: You can only modify or delete your own annotations. It is not possible to modify or delete annotations that have been created by other users. If the user takes over a patient, the user can modify or delete the annotations of this patient.*

5.7.1. General

To select an annotation tool:

- On the Inspector toolbar, open the subtool menu of the annotations, and select the desired annotation tool, or

- Right-click to see the shortcut menu of the Inspector, and select **Annotation > Tool > **desired annotation tool, or

- On the Global toolbar, click the desired tool.

By default, not all annotation tools are available in the toolbar. The settings can be modified in the Multimodality Configuration Editor (see **7.14. Inspector Toolbars Configuration**).

Mouse Pointer

The appearance of the mouse pointer changes depending on the selected tool. The pointer of every tool includes an arrow. This arrow must be used for positioning the annotations.

Annotation Label (Measurements)

Every annotation has a unique label. The label consists of a letter (L for measurement, polyline, angle; R for ROI; A for arrow; V for VOI) and a figure that changes whenever the annotation is modified. An annotation description (text) can be added to any annotation.

Measurement values in the labels are shown in mm. However, measurement length can be displayed in mm only if pixel size information is received with the image. To show the measurements in pixels:

1 Right-click the annotation to see the shortcut menu.

2 Click **Show Measurement in Pixel**.

3 Click **Show Measurement in Pixel** again to display the distance in mm.

Annotation Descriptions

When you have drawn a marking, an annotation description box opens automatically, and allows you to type a description.

To close the entering mode:

- Press [Esc].

When you press [Esc] before you have typed any text, the text box is closed and no description is shown.

⚠ *Note: Annotations are 'personal'. It is not possible to delete or modify annotations created by other users.*

⚠ **Note:** *If the image set consists of several slices, a specific annotation can be shown on the annotated slice only or in all slices. Open the shortcut menu of the annotation to set style and position:*
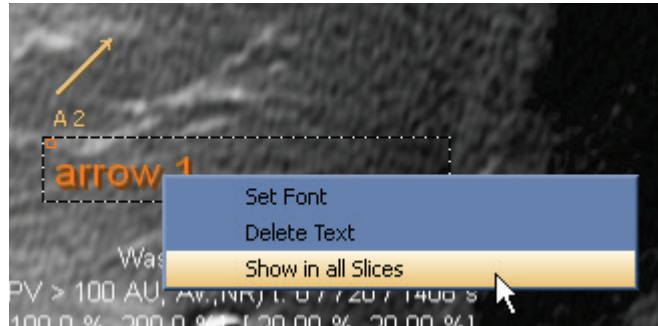
⚠ **Note:** *When you select an ROI tool (e.g., ellipse or freehand), you must draw the region immediately after clicking into the Inspector. Otherwise, the ROI will be too small to modify afterward. When you finish drawing the marking (i.e., release the mouse button), the text label automatically opens.*

5.7.2. Drawing an Ellipse (ROI)

To draw an ellipse:

1 Select the **Ellipse** tool.

2 Click to define the starting point.

3 Drag the pointer to define the end point of the longitudinal axis of the ellipse. Note the following:

- The text box for the annotation description is automatically opened.

- An ellipse has four handles for editing. You can see and select the handles when you point to the ellipse.
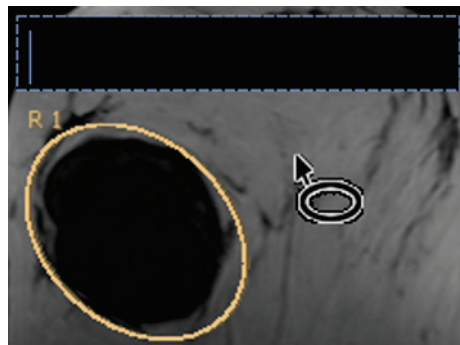
5.7.3. Drawing a Measurement

Select this tool to measure the distance between two points or to draw a line.

1 Select the **Measurement** tool.

2 Click to define the starting point.

3 Drag the pointer to define the end point.

4 Release the mouse button to finish the drawing.

An additional label next to the line shows the length.

⚠ *Note: Measurement lengths will be calculated in pixels if the images do not contain sufficient information to convert pixels to physical length (e.g., mm).*

⚠ *Note: Measurement lengths are calculated by using pixel spacing conversion factors provided by the data source. Please refer to the data source guides for accuracy claims.*

5.7.4. Drawing an Angle

Select this tool to get the angle between two lines.

1 Select the **Angle** tool.

2 Click to define the left point of the upper line. The lower line is placed automatically beneath.

3 The text box for the annotation description is automatically opened.
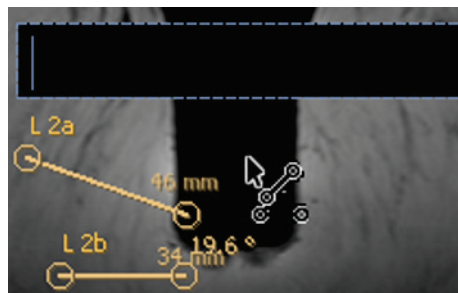
4 Type the annotation description. When you leave out this step, you can select **Edit Text** from the shortcut menu.

5 Point to a handle that is automatically highlighted.

6 Drag the handles of the lines to modify the length and the position. Note the following:

- Additional labels next to the lines show the angle between the lines and the length of the lines. The values are updated when the lines are edited.

⚠ *Note: Measurement lengths are calculated by using pixel spacing conversion factors provided by the data source. Please refer to the data source guides for accuracy claims.*

5.7.5. Drawing a Polyline (ROI)

Select this tool to draw a polyline and to measure the distance between the end points of the segments and the angles between the segments. The polyline tool is not available in the toolbars by default. The settings can be modified in the Multimodality Configuration Editor (see **7.14. Inspector Toolbars Configuration**).

1 Select the **Polyline** tool.

2 Click to define the starting point of the first segment.

3 Point to the end of the first segment, and click.

4 Point to the end of the second segment.

5 Repeat step **4** until you have created all segments you want.

6 Double-click the end point of the last segment to finish drawing. Note the following:

- A text box for the annotation description opens automatically.

- Additional labels next to the segments show the length and the angles between the segments.

⚠ *Note: Measurement lengths are calculated by using pixel spacing conversion factors provided by the data source. Please refer to the data source guides for accuracy claims.*
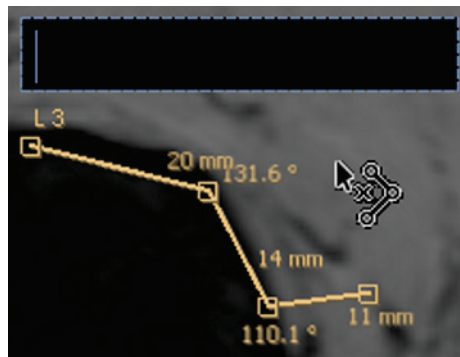
Editing Polylines

1 To remove points, right-click the concerned point to see the shortcut menu, and click **Delete Point**.

2 To remove segments, right-click the concerned segment to see the shortcut menu, and click **Delete Segment**.

3 To generate an interpolated line from the polyline, right-click the polyline to see the shortcut menu, and click **Interpolate**.

4 To close the polyline (connect the first and the last point of the polyline by a new segment), right-click to see the shortcut menu, and click **Close Curve**. The label is changed from 'L' to 'R' to indicate the ROI.

5.7.6.   Drawing a Freehand Curve (ROI)

This tool can only be used when the image is displayed in an orthogonal direction.

1   Select the **Freehand** tool.

2   Click to define the starting point of the line.

3   Drag the mouse pointer to draw the line.

4   Release the mouse button to finish drawing. Note the following:

- The freehand curve is automatically closed.

- A text box for the annotation description opens automatically.

- The marking has no handles so that form and size cannot be edited.

5.7.7. Drawing a Rectangle (ROI)

To draw a rectangle:

1 Select the **Rectangle** tool.

2 Click to define the starting point.

3 Drag the pointer to define the opposite corner of the rectangle.

4 Release the mouse button to finish drawing. Note the following:

- A text box for the annotation description opens automatically.

- A rectangle has four handles and lines that may be edited.
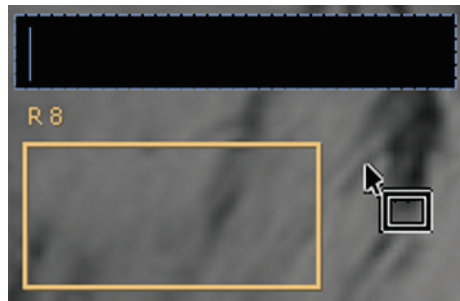
5.7.8. Drawing an Arrow

To draw an arrow:

1 Select the **Arrow** tool.

2 Click to define the position of the arrowhead. Note the following:

- The arrow is placed in a predefined orientation and size.

- A text box for the annotation description opens automatically. The annotation has one handle that allows you to drag the position, direction, and size of the marking.

- If you enlarge the arrow, it becomes thicker. To reduce the width of the arrow, open the shortcut menu on the arrow, and select **Thin**.
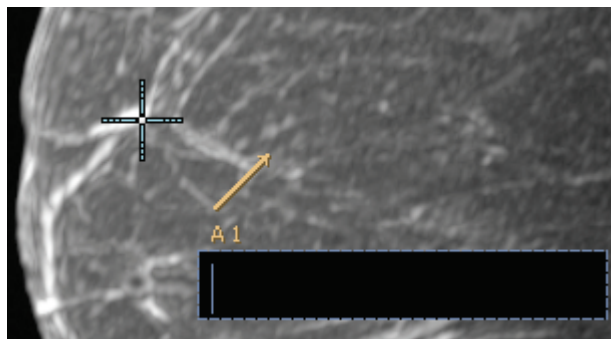
5.7.9.   Drawing a Volume (VOI)

Use this tool to mark a cubic volume of interest (VOI).

1   Select the **Volume** tool.

2   Click to define the starting point of a rectangle. This rectangle is the projection of the volume.

3   Drag the pointer to define the opposite corner of the rectangle.

The depth of the volume cannot be defined within this step. It is predefined as the average of width and height of the visible rectangle. The currently shown rectangle presents the middle of the volume in z-direction.
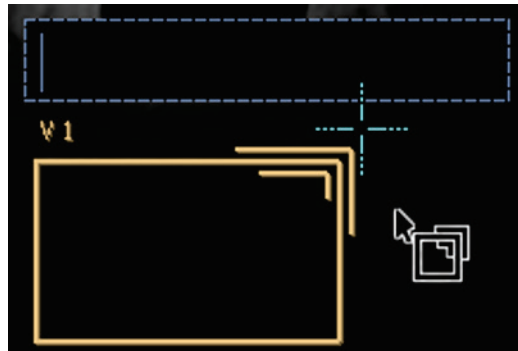
4   Release the mouse button to finish drawing. The text box for the annotation description is automatically opened.

Editing Volumes

You can use the MPR Inspector to get an impression of the size and the position of a volume.

1 Display the same image data set in the MPR.

2 The volume is visible as a rectangle (projection) in all orthogonal orientations.

3 Drag the handles of the rectangles to modify the size of the rectangle and the size of the volume in one dimension.
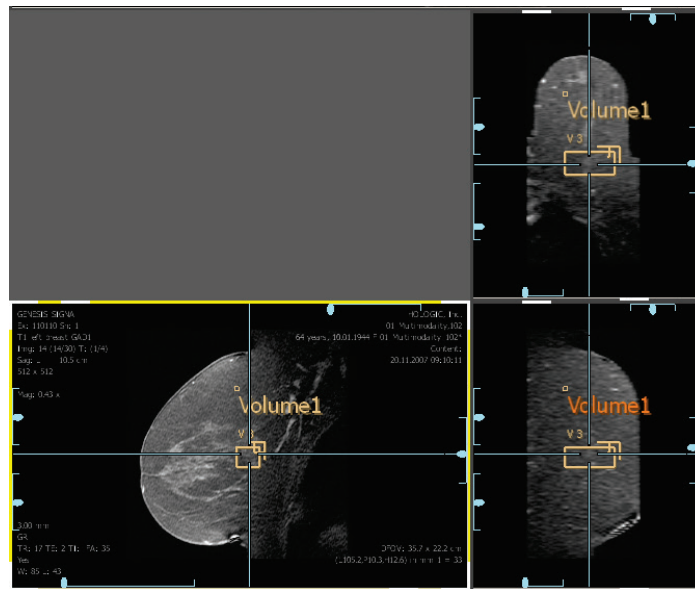
5.7.10. Adding or Editing an Annotation Description

Adding an Annotation Description

1 Right-click the concerned annotation to see the shortcut menu, and select **Add Text**.

2 A text box opens. Type the string.

3 Press [Esc] to close the text box.

The content of the text box is shown as an annotation description.

Editing an Existing Annotation Description

1 To edit the content of an existing annotation description:

- Double-click the text to open the text box, or

- Click **Edit Text** on the shortcut menu.

2 To delete the annotation description:

- From the shortcut menu, click **Delete Text**.

3 To edit the font style of an annotation:

- From the shortcut menu, click **Set Font**.
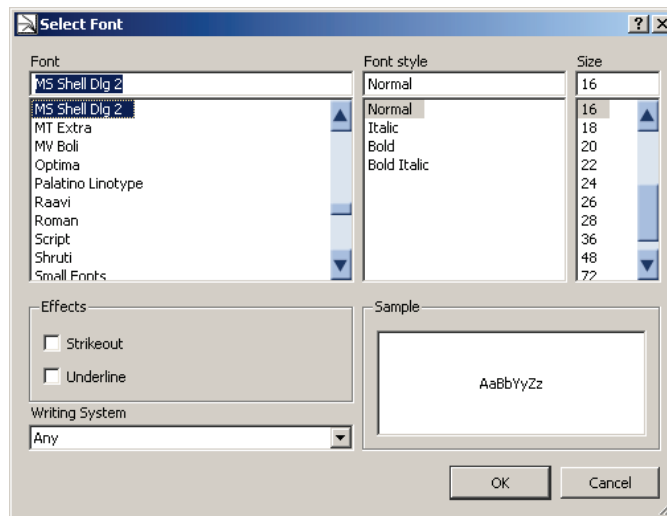
Use the boxes/lists **Font, Font style, Size, Effects** and **Writing system** to modify the appearance of the selected annotation description. Note that the default settings remain unchanged, so the other annotation descriptions do not change and the annotation description of your next annotation appears in the original setting.

5.7.11. Text

In addition to the graphical marking tools, you can use pure text annotations to mark a suspicious area of the image.

1 On the Inspector toolbar, select the **text annotation** tool.

2 Point to the desired image area, and click once. The pointer changes to an insert line.

3 Type your text annotation.

The text field appears as an input box with up to 20 characters per line. Do not worry about line breaks. The application inserts line breaks automatically.

To finish entering the text and leave the annotation mode unchanged:

- Press **[Esc]** or click anywhere outside the text field.

5.7.12. Moving/Editing Annotations

Moving

Annotations can be moved by the mouse pointer. Point to the annotation so that the pointer changes to a quadruple arrow. Drag the annotation. Release the mouse button to place the annotation at the pointer position.

Modification of size and form

If the annotation has handles, drag these handles to modify the annotation. Rectangles (also the projection of a volume) can also be edited by dragging one of the lines. Point to a line so that the pointer changes to a double arrow. Drag the line. Release the button to place the line at the pointer position. The rectangle is automatically scaled.

5.7.13. Deleting Annotations

You can delete annotations regardless of the currently selected tool. When you point to an annotation, it is automatically selected.

To delete all annotations in an Inspector:

- On the Inspector, right-click to see the shortcut menu, then select **Annotation > Delete all My Annotations**.

To delete all selected annotations in an Inspector:

1 Select the annotations to delete (to select more than one annotation, hold down **[Ctrl]** when clicking).

2 On the Inspector, right-click to see the shortcut menu, then point to **Annotation,** then click **Delete My Selected Annotations**. A confirmation dialog is displayed.

3 Click **Yes** to delete the selected annotation.

To delete a single annotation:

- Select the annotation and press **[Backspace]**, or

- Click **Delete 'annotation type'** on the shortcut menu.

5.7.14. Hiding/Showing Annotations

To hide the annotations:

- Click **Show Annotations** on the toolbar, or

- On the Inspector, right-click to see the shortcut menu, and select **Annotation > Hide Annotations**.

To show the annotations:

- Click **Show Annotations** again, or

- From the shortcut menu, select **Annotation > Show Annotations**.

5.7.15. Showing Annotations on Multiple Slices

The annotations are shown on the annotated slice only. To see an annotation on all slices:

- Right-click the corresponding annotation to see the shortcut menu, and click **Show in all Slices**.

To see annotations on neighboring slices as well:

1   Open the Multimodality Configuration Editor.

2   Click **Preferences**, then **Personal Settings**.

3   In the **Annotation display on the neighboring slices** box, set the number of neighboring slices. The number defines the number of slices before and after the annotated slice. The default setting is 0 (annotations visible on annotated slice only).

The annotations on the neighboring slices are semitransparent and do not have handles. The setting affects all annotations in all Inspectors.

5.7.16. Special Functions for ROI Annotations

ROI Annotations as Shutter

ROI annotations can be used as a shutter, i.e., the image outside the annotation is hidden (black).

1 Right-click the annotation to see the shortcut menu.

2 Click **Use as Shutter**. Repeat to disable the shutter.
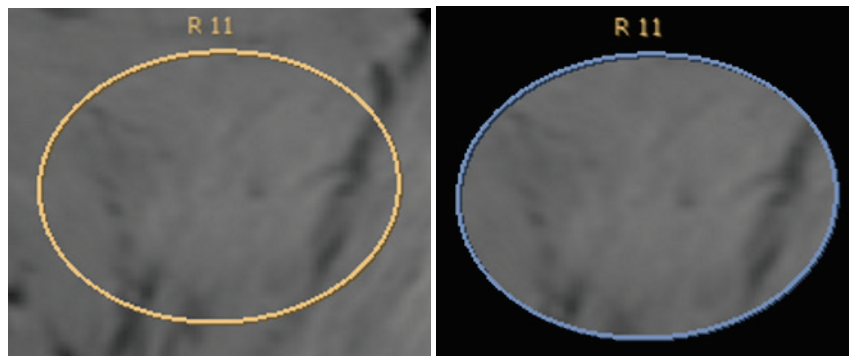
Rectangle annotation in normal mode and as shutter

Adapting Window/Level to ROI

To adapt the Window/Level settings to the range of gray scales inside the area of the ROI:

1 Right-click the ROI annotation to see the shortcut menu.

2 Click **Fit LUT to ROI**.

Adapting Zoom Factor to Display the ROI in Maximum Size

To enlarge the ROI suitable to the Inspector size:

- Right-click the ROI annotation to see the shortcut menu, and click **Fit ROI to Inspector**.

The image is zoomed to display the annotation in maximum size.

5.7.17. Showing Annotated Image Plan (ROI Annotations)

If **Show Annotation in All Slices** is enabled or the parameter **Annotation display on the neighboring slices in** the personal settings is not '0', annotations are displayed not only on the annotated slice but also on neighboring or all slices. To see the originally annotated slice:

- Right-click the annotation to see the shortcut menu, and click **Show Annotated Image Plan**.

5.7.18. Showing Next/Previous Annotated Slice

To step through all slices that have been annotated:

- Right-click the Inspector to see the shortcut menu, and select **Annotations > Show Next Annotation** or **Show Previous Annotation**.

Show Next Annotation / **Show Previous Annotation** are not available in the shortcut menu when there are no annotations in the corresponding direction of the data set.

5.7.19. Persistence of Annotations

Annotations are also saved when the study is left without being closed. If the study is opened again, the annotations are visible for all users of the workstation (or network) but they can be edited or deleted only by the user who has generated them.

Annotations are not sent to the archive when the study is closed. If you want to send annotations to the PACS, you must take ScreenCaptures that are transferred when the study is closed (see **4.7. Closing a Study**).

5.8. Scanlines

Scanlines display the position of the slice that is currently displayed in one Inspector as a line in another Inspector that displays the same image data set or a different image data set (with the same DICOM frame of reference). The orientation of the image sets in the Inspectors must be different (at least 10°). You can also show the range of slices (first/last slice) or all slices as scanlines.
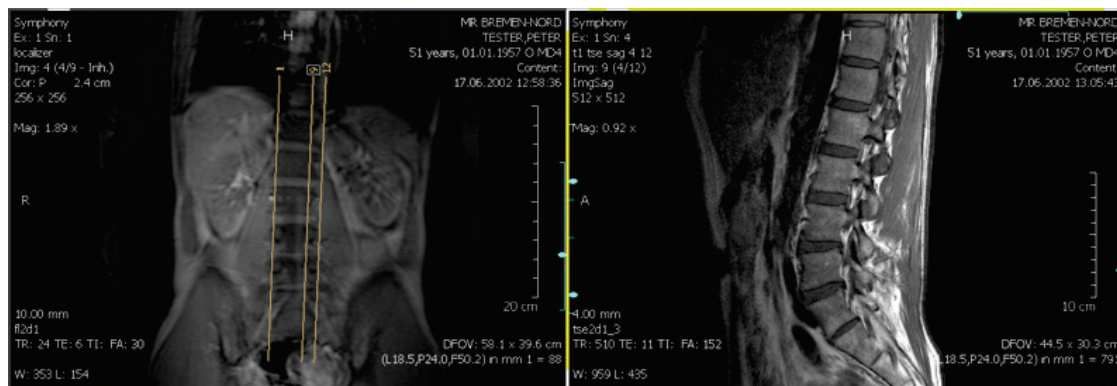
1   On the Inspector toolbar, click **Hide Scanlines/Show Scanlines** to activate/deactivate the display of the scanlines. This must be performed only for the Inspector that shall display the scanlines.

2   On the Inspector toolbar, click the subtool **Set Number of Additional Scanlines** of the **Hide Scanlines/Show Scanlines** tool to display additional scanlines.

3   A dialog is opened where you can enter the number of additional scanlines (maximum 50):
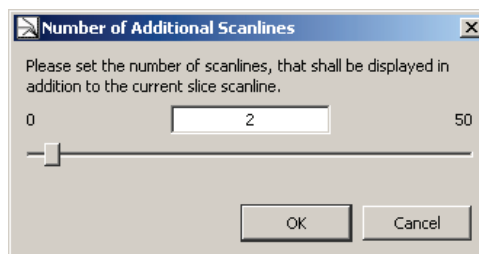
Typical values are:

0 = no additional scanlines
1 = slice in the center of the image data set
2 = first slice and last slice of the image data set
3 = first slice, last slice and slice in the center of the image data set

Type the number of additional scanlines, or move the slider to select the number.

4   On the Inspector toolbar, click the subtool **Default** to activate the display of scanlines in image data sets that are recognized as localizer.

5   The same functions are available on the shortcut menu. Point to **Overlay,** and then click **Scanlines.**

6   The shortcut menu offers the additional items **Current Slice** and **Display Current First and last Slice**, which correspond to the settings of the values 0 and 2 in the subtool **Select Number of Additional Scanlines**. To select the shortcut menu commands, point to **Overlay**, then point to **Scanlines**, then to **Display Mode**.

5.9. Linking Inspectors

You can link specific properties (such as Window/Level, zoom, pan, inversion, etc.) of the Inspectors while displaying images.

5.9.1. Global Enabling/Disabling of Linking

To enable or disable the current linking of all Inspectors:

- On the Global toolbar, click **Enable/Disable Linking**.

5.9.2. Enabling/Disabling of Linking for a single Inspector

To disable the linking of a specific Inspector:

- On the Inspector toolbar, open the subtool list of the **Linking** tool, and click **Linking Off**. The linking of all properties is disabled.

To enable the linking again, click the same tool again.

5.9.3. Establishing a Linking

You cannot link two Inspectors via a property that is available for one of the inspectors only. To select a property that applies to all Inspectors:

- On an Inspector, right-click to see the shortcut menu, and click **Linking > Show Link Options,** or

- On the Inspector toolbar, open the subtool menu of **Linking**, and click **Show Link Options**, or

- On the Global toolbar, click **Show Link Options**.

The **Edit Link Options** dialog is displayed:
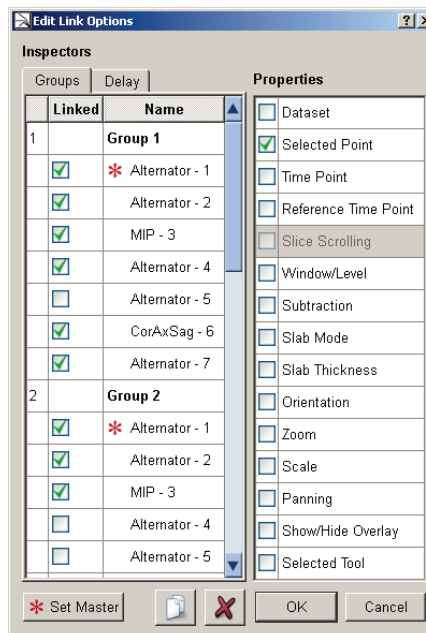
Note the following:

- The left part of this window shows all currently defined groups of Inspectors.

- The right area of this window shows the properties that are available for linking Inspectors.

- The Inspectors marked in the left area are linked by the properties that are marked in the right area.

- As long as the Edit Link Options dialog is opened, you can identify the Inspectors by a large indicator number that appears in the work area.

To add a group:

- Click the **New Group** button.

To define several groups:

- Select the corresponding check boxes to add the desired Inspectors.

To define the properties:

- Select the corresponding properties in the right area.

To set an Inspector as master:
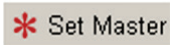
- Mark the desired Inspector, and click **Set Master**. The master's property settings are used when new Inspectors are created or after linking has been disabled/enabled. A master is indicated by an asterisk.

When you click an **Inspector** name, the field inverts and the selected Inspector is highlighted with a yellow frame.

When you click a **group field** (like 'Group 1'), all associated Inspectors are highlighted.

To finalize your settings, click **OK**. The dialog closes and the synchronization feature is enabled.

To remove a group:

- Select the group, and click **Remove Group**.

If you attempt to synchronize data sets that do not cover the same range of coordinates, a warning message is displayed in the Inspectors that cannot perform the linking.

5.9.4. Linking Properties

Link Data set

Synchronizes the image data set, i.e., the same data set is shown in all Inspectors of the group.

Link Selected Point

Synchronizes the currently selected point. This item is useful for comparing different views or images of the same body part. All viewers present the selected point as the crosshairs.

⚠ *Important: When you link the currently selected point, this CSP may not represent the same point if two image sets with different common frame of reference are compared.*

⚠ *Note: You can synchronize a selected point, an alternate selected point, or slice scrolling only.*
Since MPR Inspectors use the Selected Point synchronization by default, you cannot synchronize slice scrolling when your synchronization group contains an MPR Inspector.

Link Time Point

Synchronizes the current time point for 4D data sets.

Link Reference Time point

Synchronizes the reference time point for 4D data sets.

Link Slice Scrolling

Synchronizes the slices when scrolling through the slices of one Inspector. An offset between the slice numbers of the different Inspectors is kept. When the final slice of the currently selected Inspector is reached, scrolling continues in the linked Inspectors. Link Slice Scrolling cannot be used with **Link Selected Point** at the same time. Link Slice Scrolling cannot be used in a group with an **MPR**.

Link Show/Hide Overlays

The Multimodality Viewer allows you to overlay the images with some patient related information. There are four different levels to display the image overlay. Once you select, e.g., **Maximum Image Information** from the initial Inspector, all synchronized Inspectors will display the same kind of patient-related information.

Link Zoom

Synchronizes the same zoom factor for all Inspectors.

Link Window/Level

Synchronizes the Window/Level settings.

Link Subtraction

Synchronizes modifications of the subtraction mode.

Link Slab Mode

Synchronizes the setting of image, e.g., MIP, local MIP, etc.

Link Slab Thickness

Synchronizes the thickness of slab.

Link Panning

Synchronizes the panning (moving) of the images within the Inspectors.

Link Orientation

Synchronizes the orientation so that panning, rotating, etc. is performed on all Inspectors.

Link Selected Tool

When you select a tool from the Inspector toolbar, all linked Inspectors select the same tool, i.e., when you select, e.g., the Magnifier Glass, the other Inspectors will run this tool the same way but do not show this as the mouse pointer.

Link Scale

When you select this property, the scaling of the Inspectors in the group is synchronized.

5.9.5.   Delayed Linking

When linking is established, modifications in one Inspector are immediately shown in the linked Inspectors.
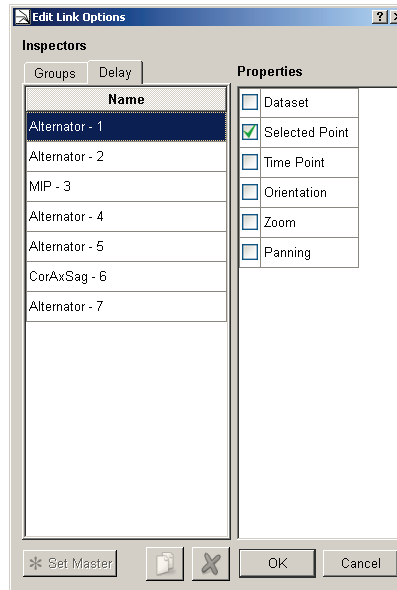
It is also possible to delay the linking, e.g., if Window/Level is linked, the modification to Window/Level in one Inspector is not shown in the linked Inspectors before the mouse button is released, i.e., before modification to Window/Level has been finished.

To enable delayed linking:

- Open the **Delay** tab, and select the **properties** to be delayed.

5.9.6.   Automated Linking

When an Alternator, MIP, Mosaic or MPR Inspector is dragged to the work area, and when it is not the first Inspector of this type, and when the existing Inspectors are not linked, a new linking group with all Inspectors of the work area is established. The Inspectors are linked by the property **Selected Tool**.

When a new Inspector is dragged to a work area that includes Inspectors linked via the property **Selected Tool** only, the new Inspector is added to the group of existing Inspectors.

5.9.7.   Range of Linking Property Exceeded

A warning symbol is displayed if Inspectors are linked via the CSP and if there are no corresponding coordinates in the linked Inspector (in one Inspector the CSP has moved to a position that is out of range in the second Inspector). Point to the symbol to see the message **'Selected Point' cannot be displayed synchronously**.

The warning symbol is not displayed in the Inspector where the position of the CSP has been changed.

5.9.8. Linking with Prior Studies (Different Frames of References)

When studies with different frames of reference are linked via the property CSP, a warning symbol is displayed.

The studies, however, can be linked, i.e., it is possible to link studies that have different slice thicknesses or that have been acquired with different orientations. Such registrations may probably not work with studies acquired with different patient positions.

To register the CSPs:

1 Search for a significant structure that is visible in both images.

2 Place the CSPs in both Inspectors on this structure.

3 On the Inspector toolbar, click **Register Currently Selected Point**.

4 The pointer changes to a registration icon. Click the Inspectors to register and establish the linking.

5 A warning icon is displayed to indicate the Inspectors are linked manually.

⚠ *Note: If the manually registered Inspectors are linked via the property **Slice Scrolling**, the property slice scrolling is automatically removed from this group.*

If the CSP of the linked Inspector cannot be synchronized (out of range), a warning symbol is displayed. Perform the following steps to correct the registration:

1 Disable the linking of one of the Inspectors.

2 Hold down **Shift** and drag the CSP of the Inspector to a new position, corresponding to the CSP of the other Inspector.

3 Reestablish the linking.

5.10. Image Subtraction

The subtraction mode can be used to display differences between images of the same image data set that have been acquired at different time points.

If the subtraction mode is activated, the Inspector shows the difference of the intensity values between an image acquired at time point t_c and the reference image acquired at time point t_0.
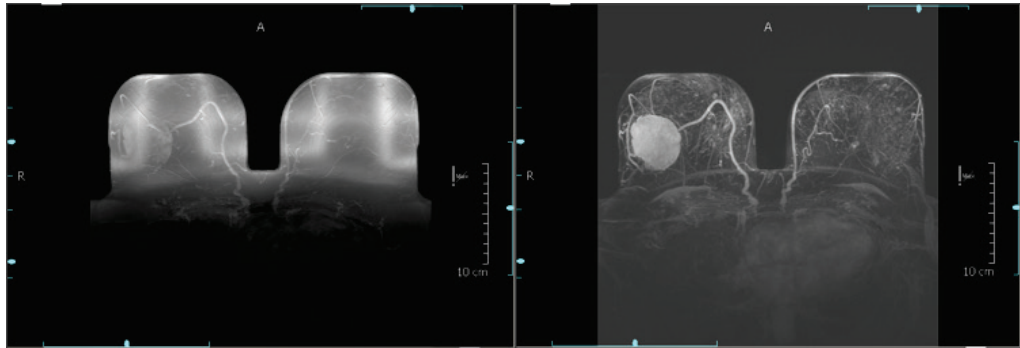
MIP Inspector without (left) and with (right) subtraction mode

To activate the subtraction mode:

1   Open an image data set with at least two time points in an Alternator or MIP Inspector.

2   Right-click the Inspector to see the shortcut menu.

3   Point to **Image Rendering**, then to **Subtraction Mode**, then click **Difference**.

Absolute Difference

To show the absolute value of the difference calculation, select **Absolute Difference** instead of **Difference**.

Definition of the Reference Time Point

To define the reference time:

1   On the Inspector, right-click to see the shortcut menu.

2   Point to **Image Rendering**, then to **Reference Time** and select the desired time.

Definition of the Time for Subtraction (tc)

Use the slider to select the time points. You cannot select $t_c = t_0$ because this would result in a black image.

Image Overlay

If the subtraction mode is activated, the corresponding information is displayed in the image overlay. The default display is (t_x/n) (= time point x of n) for time series. For the subtraction mode (t_c-t_0/n) is displayed, for the Absolute Difference (t_c-t_0/n) (abs.).

Deactivating the Subtraction Mode

To deactivate the subtraction mode:

1   On the Inspector, right-click to see the shortcut menu.

2   Point to **Image Rendering**, then to **Subtraction Mode**, and click **Original Data**.

5.11. Image Information Overlay

5.11.1. Switching Image Information

To turn on or off an image overlay with specific patient and image information:

- On the Global toolbar, click **Hide/Show Image Information** to turn on/turn off the overlay in all Inspectors simultaneously, or

- On the Alternator toolbar, click **Image Information** to switch to the next option that is always shown as a tooltip. The click order results in **Maximum Image Information** to display all configured image overlay, **Minimum Image Information** to reduce the image overlay, **Image Information (opaque)** to show the maximum Image Information overlay on full colored background, or **Hide Image Information** to hide all image overlays.

5.11.2. Default Image Information Overlay

Information about the default setting is given in **7.12. Image Information**. It is not the task of the Radiologist users to modify the image overlay.

5.12. Curved MPR

The Curved MPR function calculates a series of slices along an interesting structure that is marked by a polyline annotation.

To use Curved MPR, a polyline annotation must be drawn. By default, this annotation type is unavailable in the toolbars. You can activate the corresponding button and the shortcut menu item by means of the Multimodality Configuration Editor, Preferences tab, Inspector Toolbars and Inspector Shortcut Menus.

1   Open the image in an Alternator.

2   Draw a polyline annotation along the structure. The number of slices does not depend on the number of polyline sections, but it might be helpful to set more points in small radii to get a more meaningful orientation of the slices.
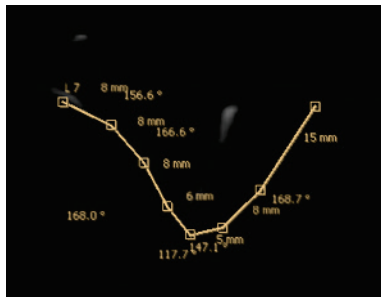
3   On the shortcut menu, point to **Image Rendering, Curved MPR**, then click **Orthogonal Plane**. The image is rotated to an orientation orthogonal to the polyline.

4   Use one of the scroll slices modes to scroll through the slices along the polyline.

5   To visualize the position of the slices, use a second Alternator that displays the image in the original orientation the polyline has been drawn.

6   Activate the scanlines in this Inspector.
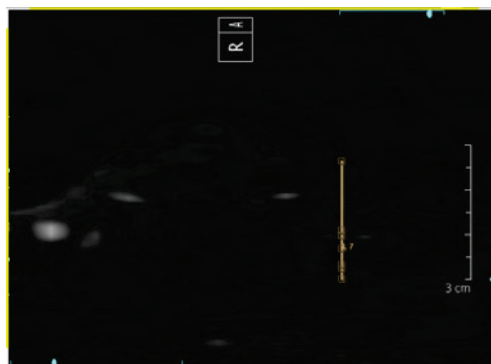
Slices and Curved MPR
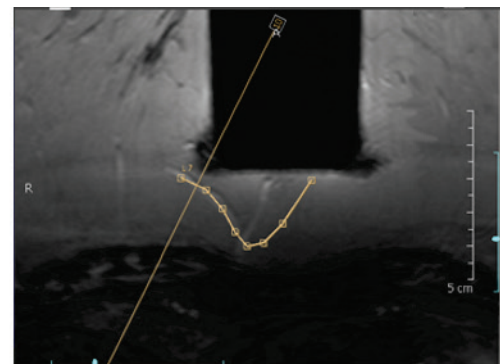
Curved MPR in original
orientation and scanlines

7   To stop the Curved MPR mode, delete the polyline or select another orientation from the toolbar.

5.13. Key Image Marker

Identifies the current slice as a key image. Key images are indicated by a specific icon to identify the images in printings. The key image can contain annotations. The print functionality also lists all key images.

To mark the current image as a key image:

- On the shortcut menu, point to **Annotation**, then click **Key Image** to mark the image (slice) as a key image, or

- Press **[Ctrl]** + **[K]** to mark/unmark the current image as a key image. The slice is indicated by means of an icon in the lower left corner.

To navigate to the next key image:

- On the shortcut menu, point to **Annotation**, then click **Show Previous Key Image** or **Show Next Key Image**.

To remove the mark of all key images:

- On the shortcut menu, point to **Annotation**, then click **Unmark all Key Images**.

To open a list of key images where you can select a desired key image:

- On the shortcut menu, point to **Annotation**, and click **Show List of Key Images**. A dialog opens and lists all key images.
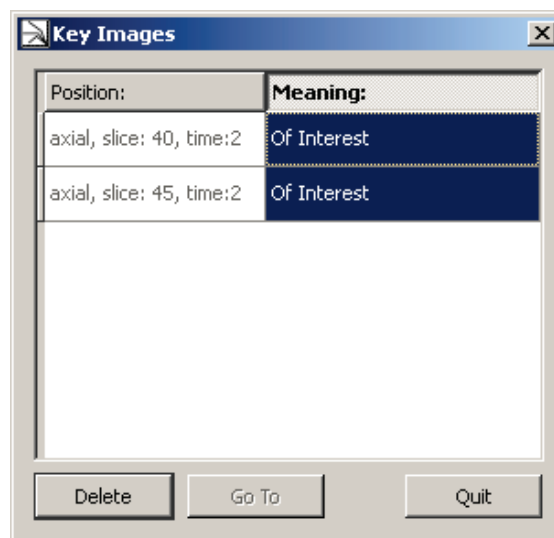
To display the key image and keep the dialog open:

- In the dialog, double-click the desired key image, or

- Select the key image and click **Go To**.

To edit the meaning of the key image:

- Double-click the entry of the right column. Then type a new meaning and press **[Return]**.

To delete a single key image, select the key image and click **Delete**.

To close the dialog, click **Quit**.

5.14. Saving Results

The Multimodality Viewer provides several tools for documentation and diagnostic findings. Examples are:

- Modifications to Window/Level

- Annotations are automatically saved as presentation states.

- Reformatting image views, MIP and volume rendering, or images with color overlays is provided.

- Printing images on paper or film using the print functions.

When a study is closed, the results the MM Viewer created are not sent to the archive system. They are saved in the MM Viewer database until the study is deleted.

If you want to save the results, you must take a ScreenCapture. ScreenCaptures are automatically sent to the archive system when the study is closed. To enable this option, the Service engineer must set a DICOM destination in the MG Viewer.

ScreenCaptures created on a TWS are not transferred to the archive when the study is closed.

If ScreenCaptures have been taken and the study is left without being closed, the ScreenCaptures are not transferred to the configured ScreenCapture destinations, but remain on the system.

5.14.1. Creating ScreenCaptures

ScreenCaptures are usually taken from Inspectors that display reformatted images or images with annotations. The ScreenCaptures are saved in the Result Folders. See **3.3.4. Results Folder** for details on the administration of Result Folders and Results (ScreenCaptures).

▶ **To create a ScreenCapture of the image in the current orientation:**

- On the Inspector toolbar, click the **Capture Single View** tool (or press [Ctrl] + [S]) and click an Inspector to get a ScreenCapture of the image in this Inspector, or

- On the Global toolbar, click the **Capture Single View** tool and click an Inspector to get a ScreenCapture of the image in this Inspector.

This tool is persisting, i.e., select another tool or press [Esc] to deactivate. The mouse cursor returns to its original behavior.

If the original resolution of the image is higher than the currently displayed resolution, the following dialog appears:
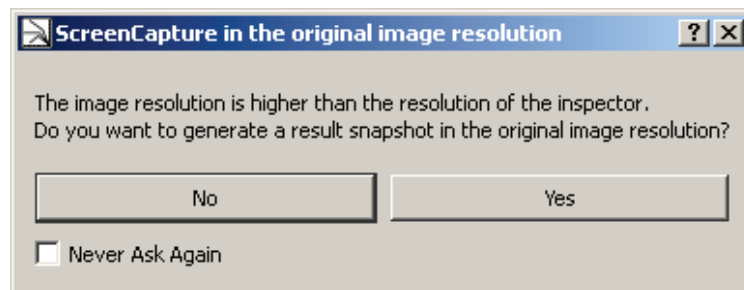
▶ **To define the resolution:**

- Click **No** for a ScreenCapture in the display resolution.

- Click **Yes** for a ScreenCapture in the original image resolution.

- Select **Never Ask Again** to save your choice during this session. The dialog will not appear again.

After a short while (an hourglass is displayed as mouse pointer) the captured image is appended to the active Results Folder in the Study Browser and is stored in addition to the patient's images.

These ScreenCaptures contain also the annotations and can be used for later diagnostics. To view these images, just drag them from the Results folder to an Inspector.

5.14.2. Exporting Single ScreenCaptures

Instead of saving a ScreenCapture to the Results Folder, you can export a file.

1 Right-click the Inspector to see the shortcut menu.

2 On the shortcut menu, click **Results > Export Image**. A dialog opens where you can enter/select:

- the filename

- the destination folder

- the file type

3 Click **Save** to release the capture and the export.

5.14.3. Exporting an Image Series as AVI

A complete image data set or parts of it can be exported as a series to an AVI file.

1 Right-click the Inspector to see the shortcut menu.

2 On the shortcut menu, click **Results** > **Export Images as AVI**. A dialog opens where you can select from the following options:
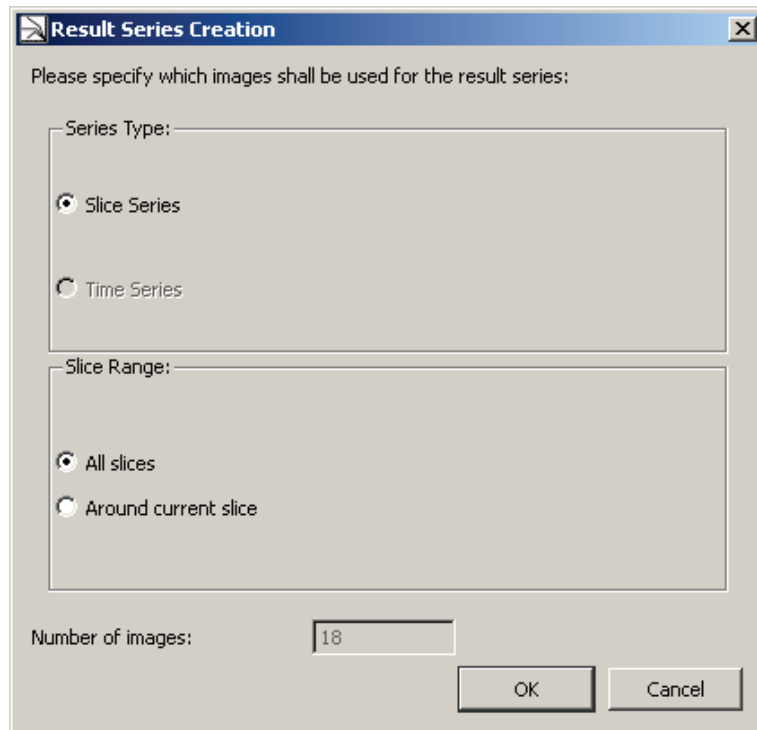
- **Series Type:** select a series of slices or a series of time points
- **Slice Range:** select if all images shall be added to the file or a range of images around the currently displayed image
- **Number of Images:** when you select a range of images, this setting defines the size of the range.

3 Click **OK** to confirm. A dialog opens where you can enter/select:

- the filename
- the destination folder

4 Click **Save** to release the capture and the export.

Chapter 6: Printing

▶ **6.1. The Print Selection Overview and Detailed Print Settings**

▶ **6.2. The Print Preview Area**

▶ **6.3. Layout and Options**

▶ **6.4. Creating Custom Print Layouts**

This chapter provides an overview of the print tool. The print tool offers a full range of print setup from type of printer to layout of the film or paper and the inclusion of patient demographics and image characteristics.

- Click **Print** to open the tool window when a study is opened.

⚠ *Note: A service engineer must configure the printer.*
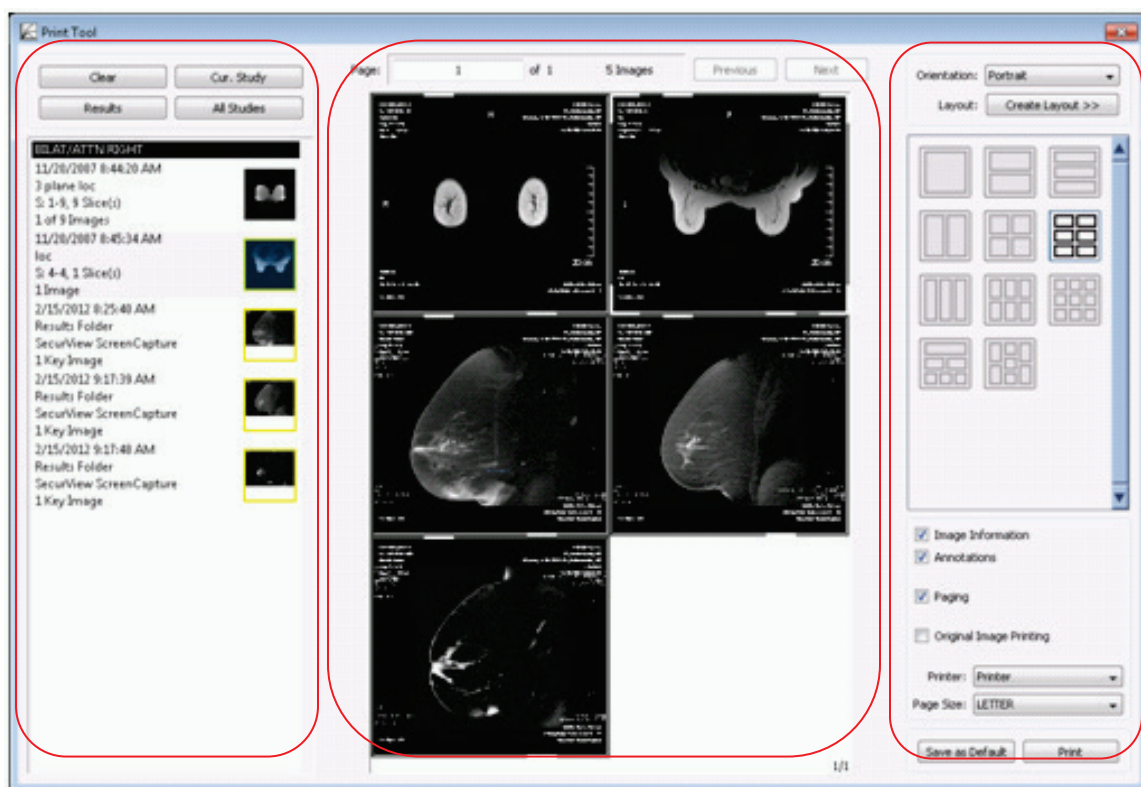
| Print Selection Overview | Print Preview | Layout and Options |

The **Print Selection Overview** lists the results, image sets of the study, or the key images. This panel acts similarly to the Study Browser. The images are shown in the default full-page layout and in the order they are shown in the image list. The currently displayed image of the print preview area is highlighted.

⚠ *Note: If more space is needed, resize this window to the desired length and height.*

6.1. The Print Selection Overview and Detailed Print Settings

The print selection overview lists the results or image sets that are part of the print job. Each image has a thumbnail and a brief description. The description shows the capture day and time, the scan view, the number of images in the image set, and the number of printouts.

1   Drag an image up or down to change its order in the list.

2   Right-click an image and select **Remove Image Set** to remove the image set from the list.

At the top of the print selection overview, you will find four buttons:

- **Clear** – removes all images from the list.

- **Current Study** – resets the list and lists all image sets of the current study.

- **Results** – resets the list and lists all results of the current study.

- **All Studies** – resets the list and lists all image sets of all studies.

The images currently shown in the preview area are marked with a frame in the image list.

To display the Detailed Print Settings dialog:

- In the **Print Selection Overview**, double-click a thumbnail, or

- Right-click a thumbnail to open the shortcut menu, and select **Detailed Print Settings**.
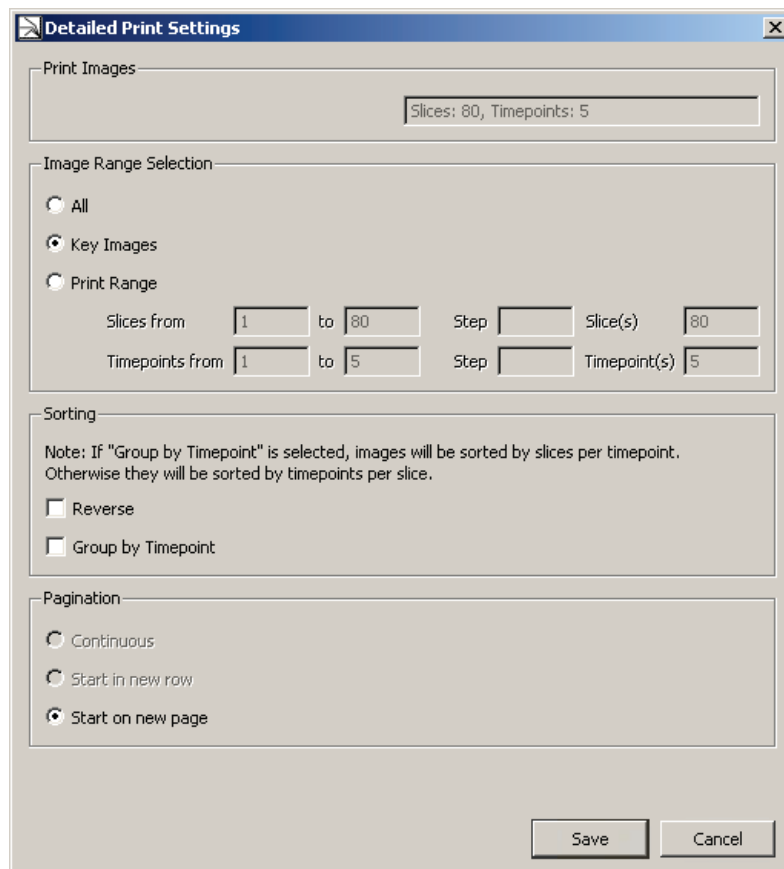
Print Images gives an overview of the underlying slices and timepoints. You cannot modify this box.

- Image Range Selection shows the number of slices and timepoints.

  – Select All to print all images of all time points that are listed under Print Images.

  – Select **Key Images** (if key images are available) to print key images only.

  – Select **Print Range** to modify the number of slices or the number of time points. Then enter the first **Slice** of the corresponding image set to be printed in the 'from' field, and the last slice to be printed in the 'to' field.

To define the number of images you want to print:

- Enter a **Step**, e.g., step = 5 will print every 5th image of the image set, and press [Tab] to move the pointer, or

- Enter a number of **Slice(s)** to be printed. This means, when the image set has, e.g., 50 slices, and you enter slice(s) = 5, every 10th slice will be printed.

To specify the timepoints of the images you want to print:

- Enter the first **Timepoint** in the 'from' field, and enter the last timepoint in the 'to' field.

- Optionally, enter a **Step** to print a specified number of images, e.g., step = 5 will print every 5th timepoint of the image set, and press [Tab] to move the pointer, or

- Enter a number of **Timepoint(s)** to be printed. This means, when the image set has, e.g., 10 timepoints, and you enter timepoint(s) = 2, every 5th timepoint will be printed.

To specify the sorting and grouping of the images you want to print:

- In the **Sorting** area, select **Reverse** to reverse the order of images in an image set.

- Select **Group by Timepoint** to sort the images by slices per time point. Otherwise they will be sorted by time points per slice.

To specify the print layout:

- In the **Pagination** area, select one option for page numbering. The options are only available when at least the second image set is selected.

- **Continuous**: Prints the first image on top of the first page, and prints all following images according the selected layout. No breaks are included between different image sets.

- **Start in new row**: Switches to a new row when printing the next image set.

- **Start on new page**: Includes a page break when printing the next image set.

6.2. The Print Preview Area

This print preview area shows the layout of the current page. On top of the print preview area a page count and an image count are shown.

1   Click **Next** to see the next print preview.

2   Click **Previous** to see the previous print preview.

3   In the **page** box, type the page number, and press **[Enter]** to see the preview of a desired page.

⚠ *Note: Check the total page count to avoid creating very large print jobs. Open the Detailed Print Settings dialog to reduce your printouts.*

4   Drag a thumbnail from the Print Selection Overview to the Print Preview area. All images from that set are added to the page where dropped.

5   In the Print Preview area, right-click an image to see the shortcut menu. Select **Remove image from page** to remove that image slice from the layout.

6   In the Print Preview area, right-click an image to see the shortcut menu. Select **Remove corresponding image set** to remove the entire image set associated with that image slice.

The image slice or image set is removed, and the number of images in the image list is reduced.

7   In the Print Preview area, right-click an image to see the shortcut menu. Select **Start in new Row** to insert a break, and place the image in a new row.

The image moves to the beginning of a new row based on the current layout.

8   Press **[Esc]** to close the shortcut menu without any selection.

6.3. Layout and Options

The Multimodality Viewer comes with 11 predefined print layouts to choose from. Each icon represents the image layout via a box diagram. The first thumbnail of the print selection overview is shown in the top left box of the print preview area. The subsequent images are filled-in from left to right. See **6.4. Creating Custom Print Layouts** for details on user-defined print layouts.

6.3.1. Selecting a Layout

1 Select the desired page orientation, either **Portrait** or **Landscape.**

2 Click a **layout** thumbnail to change the layout of the print preview area.

The print preview area changes, and displays the images according the selected layout. The images also automatically update when their order in the print selection overview is changed. When the images are created without annotations or image information overlays, the print tool can also import and overlay this data:

3 Select **Image Information** to include the image information overlays.

4 Select **Annotations** to overlay annotations in the image sets onto the print images.

5 Page numbers are also included in the footer. Select **Paging** to show page numbers in the footer.

6.3.2. Original Image Printing

Original Image Printing allows printing of the images using the original DICOM data, without user annotations and without the image information overlays.

▶ **To print DICOM data directly:**

1 Select Original Image Printing.

The orientation is automatically set to portrait. The layout is specified as a single image per film. No additional information, no annotation, and no paging can be selected.

⚠ *Note: Result images cannot be printed using Original Image Printing. If Result images are included in the print selection, the following message is displayed:*
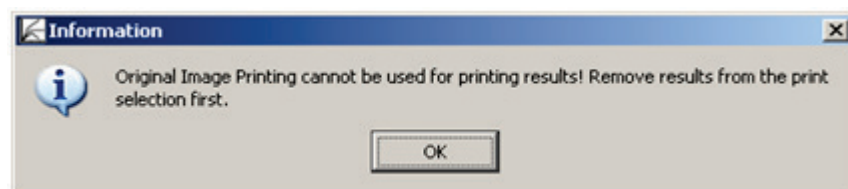
2 Click **Print**.

The Print Job dialog opens:
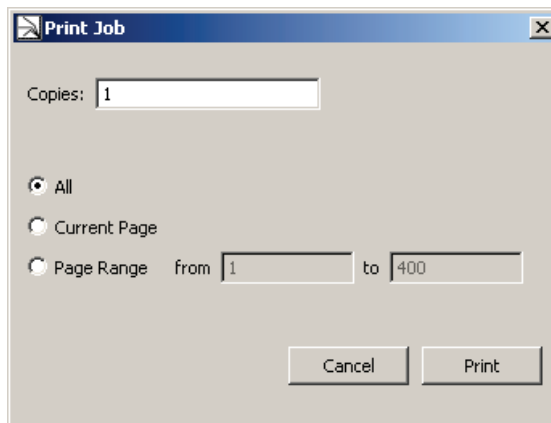
3   Type the number of **copies** to be printed.

4   Select the images to be printed:

- **All** – includes all images as shown in the print selection overview.

- **Current Page** – prints only the page currently shown in the print preview area.

- **Page Range** – prints the pages starting on the page specified in the 'from' box and ending on the page specified in the 'to' box.

5   Click **Print** to start printing.

6.3.3. Printing to Film

The printer is configured by the service engineer.

1   To print to a film, select a film printer from the **Printer** box.

2   From the **Page Size** box, select the film size.

3   Click **Print**. The Print Job dialog opens.

4   Type the number of **copies** to be printed.

5   Select the images to be printed:

- **All** – includes all images as shown in the print selection overview.

- **Current Page** – prints only the page currently shown in the print preview area.

- **Page Range** – prints the pages starting on the page specified in the 'from' box and ending on the page specified in the 'to' box.

6   Click **Print**.

6.3.4. Printing to a Paper Printer

Printing to paper sends the image layouts to the standard printer installed on the workstation.

1 To print to paper, select a paper printer from the **Printer** box.

2 In the **Page Size** box, select the paper size.

3 Click **Print**.

The Windows print dialog appears and can be used to set print settings, page settings, and preview.

⚠ ***Important:*** *Patient Information overlays may cover image data.*

6.4. Creating Custom Print Layouts

The Multimodality Viewer Print Tool can also create custom image layouts.

1 In the upper right of the Print Tool dialog, select **Create Layout...** A pull-down menu provides three items:

- **Create Matrix Layout** – The resulting layout consists of evenly divided columns and rows as in a table, e.g., a matrix layout with four columns and two rows:
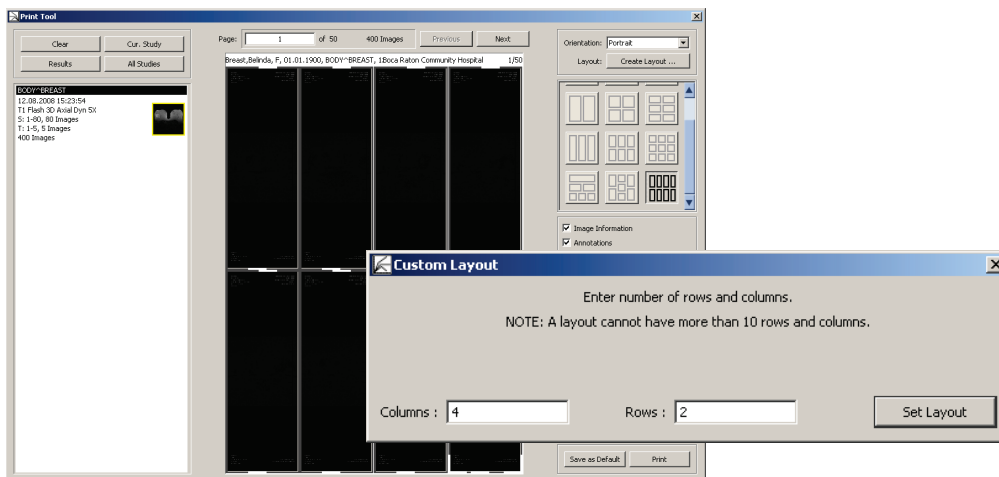
- **Create Row Layout** – The resulting layout consists of the defined number of columns per row, e.g., a row layout with three rows divided into two, then four, then two columns (2,4,2):
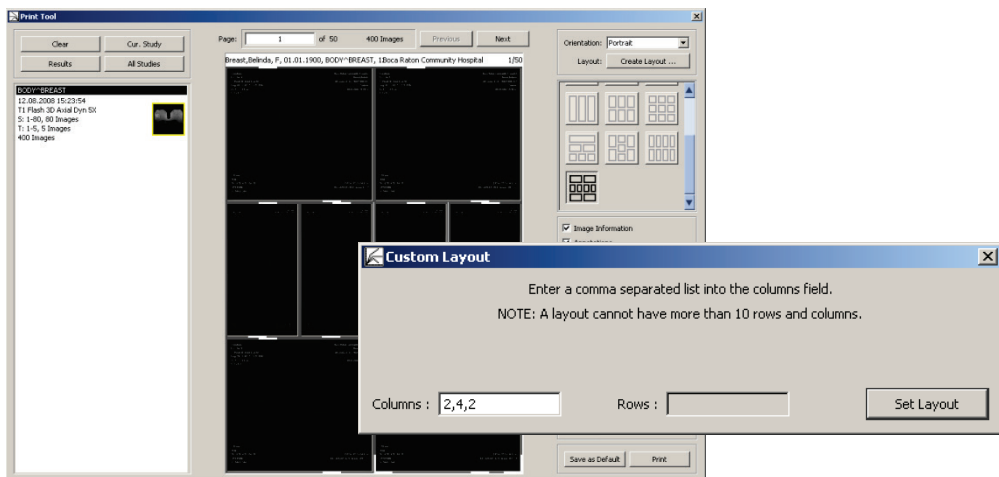
- **Create Column Layout** – The resulting layout consists of the defined number of rows per column, e.g., a column layout with three columns divided into two rows, then four rows, then two rows (2,4,2):
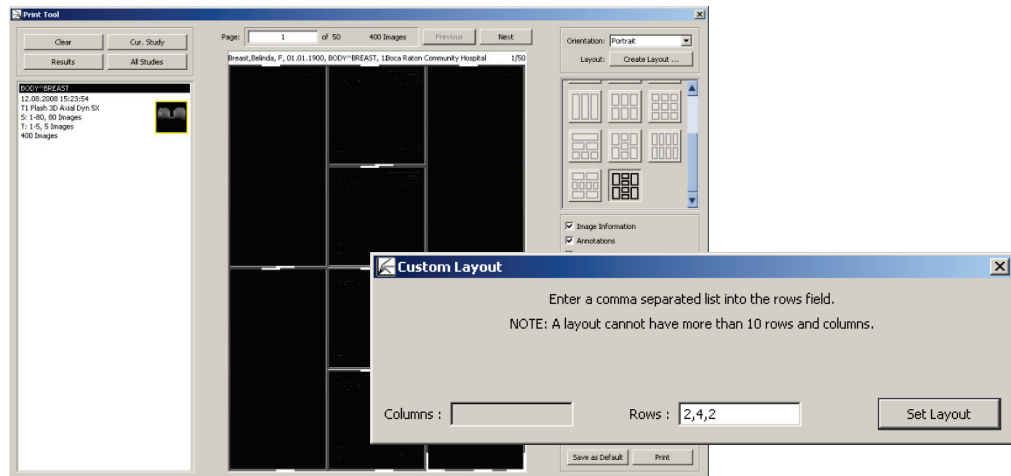
2 Select one menu command as shown above. The **Custom Layouts** dialog opens to specify the number of columns and/or rows.

3 Select Set Layout.

The newly created layout is applied to the current image list and a new icon in the layout list is created with a matching box diagram.

Chapter 7: Administrator Tasks

This chapter provides an overview of Administrator and Radiologist tasks.

7.1. Radiologist's Tasks

The Multimodality Viewer provides its own configuration menus. Every user can open the Multimodality Configuration Editor. Radiologist users have limited access:
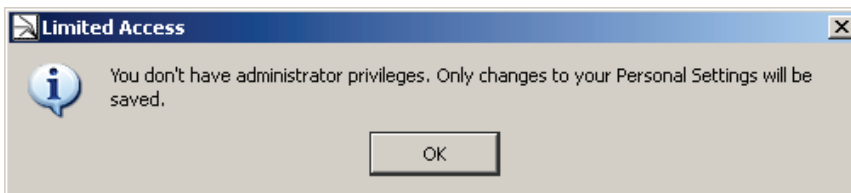
⚠ *Note: All settings must be saved to remain permanently. If you close the Configuration Editor window without saving, a message window opens. Use this feature to save settings, if the Save button is unavailable.*

⚠ *Note: If you are not sure about your settings, you should Revert them. Then all changes are ignored, and the parameters are set back to initial values.*

On the Application toolbar, click **Multimodality Configuration** to open the Multimodality Configuration Editor. The window consists of two sections Workflow and Preferences.

7.2. Workflow

To configure the Workflow section:

- On the Application toolbar, click **Multimodality Configuration** and select the Workflow section to setup its features, or

- Press [Alt] + [Shift] + [W].
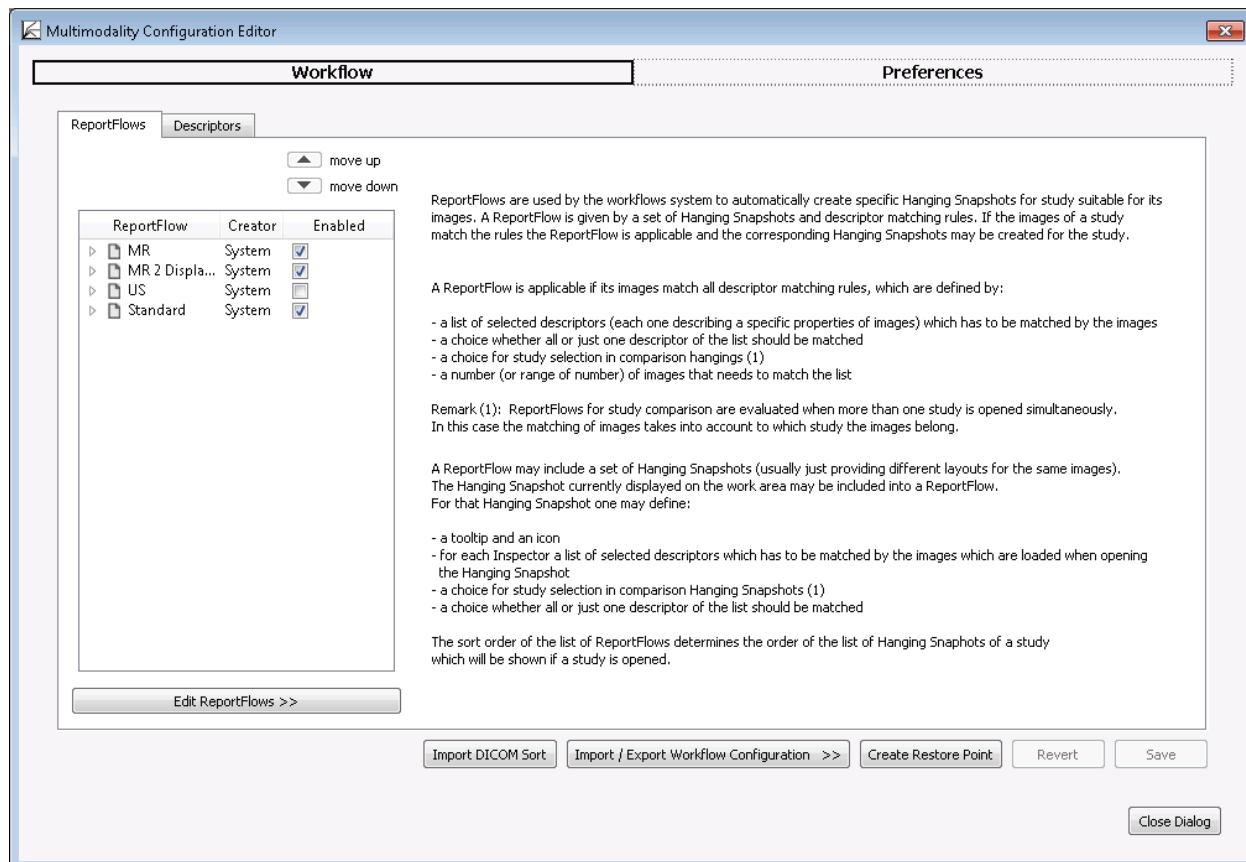
7.3. ReportFlows

ReportFlows are used to automatically create specific Hanging Snapshots for a study suitable for its images. A ReportFlow is given by a set of Hanging Snapshots and descriptor matching rules. If the images of a study match the rules, the ReportFlow is applicable and the corresponding Hanging Snapshots may be created for the study.

It is the Administrator's or service engineer's task to create and modify system level ReportFlows, but every Radiologist user can modify his own user-defined ReportFlows. You can select and deselect ReportFlows that you want to use or leave out. The Administrator or service engineer can select and deselect only system level ReportFlows.

The following items define descriptor matching rules:

- A list of descriptors that has to be matched by the images.

- Selection of whether the images match all or just one descriptor.

- The time point of the study.
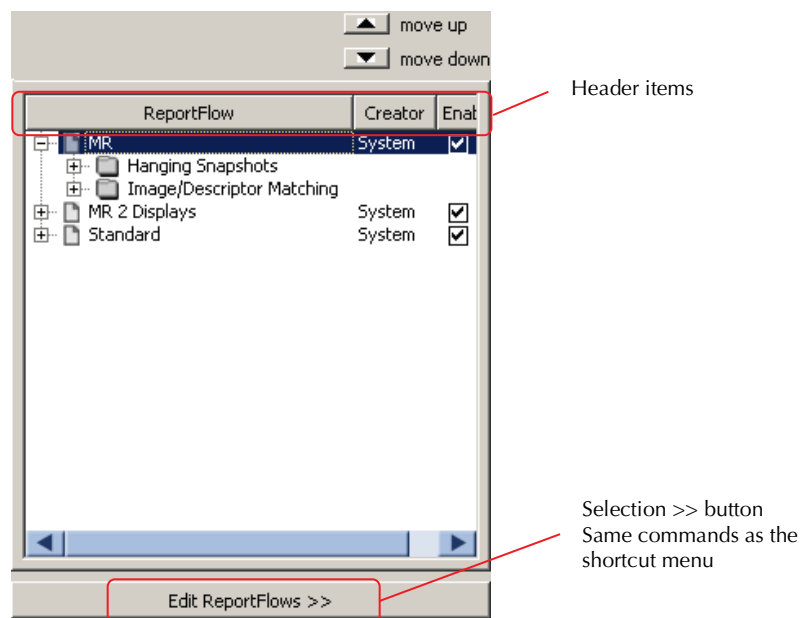
The ReportFlows tab displays a list of all system level and user-defined ReportFlows. The main characteristics are shown in the 'ReportFlow', 'Creator', and 'Enabled' columns.

1   Click **[+]** to expand the ReportFlow. The Hanging Snapshots and descriptors are indicated by sub-folder icons.

2   Click **[+]** to expand the sub-folders.

The corresponding Hanging Snapshots are indicated with tiling icons and their tooltip. The descriptors match the listed items.
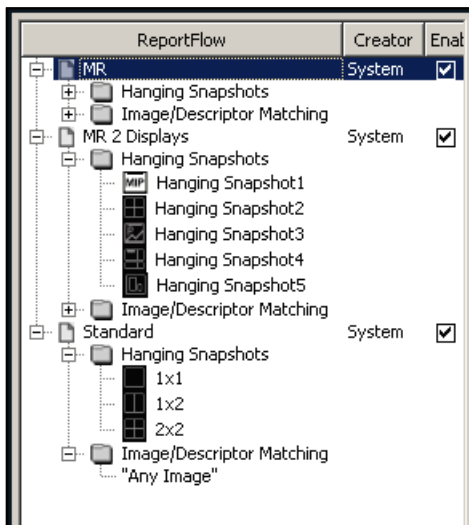
7.3.1. Sorting the Available ReportFlows

All ReportFlows are listed in an initial order.
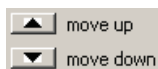
1 To move an item, select the ReportFlow and click **move up** or **move down** above this list. The list is immediately updated.

2 Click **Save** to make the order available for the radiologists. All system level ReportFlows are displayed at the beginning of the Study Browser, the user-defined ReportFlows are attached.

⚠ *Note: When a radiologist has arranged the order, all ReportFlows added afterward by an Administrator or service engineer will appear at the bottom of the list. When a service engineer adds Hanging Snapshots afterward, these items are also appended to the list.*

7.3.2. Copying ReportFlows

The easiest way to create a ReportFlow is to copy an existing one.

1   Point to a ReportFlow that mainly matches your requirements.

⚠ *Note: This instruction explains your steps using the shortcut menu. Alternatively, click Edit ReportFlows >>.*

2   Right-click to see the shortcut menu:

> Create new ReportFlow
> Export ..
> Import ..
> Delete ReportFlow
>
> Copy
> Paste
>
> Add from Work Area
> Update from Work Area
> Delete Hanging Snapshot
>
> Add Image Descriptor Matching ..   ▶
> Delete Descriptor

3   Click **Copy**. The selection is copied to the clipboard.

4   Point to the ReportFlows list and right-click to see the shortcut menu.

5   Click **Paste** to insert a copy of the selection. The copy is named like the original but is given an additional number, e.g., 'Test' will become 'Test1'.

7.3.3. Renaming ReportFlows

As the copy of the ReportFlows is named by the system, you should rename the copy.

1   Double-click a ReportFlow to rename it:

| ⊞ ▯ Test | System | ☑ |
| ⊞ ▯ Test1 | System | ☑ |
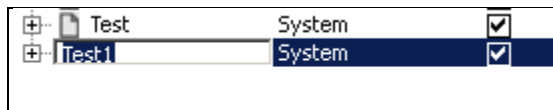
2   The item is highlighted.

3   **Type** the new name. The current name is automatically overwritten.

4   Press **[Enter]** to apply changes.

7.3.4. Applying ReportFlows

SecurView automatically selects the ReportFlow for each study when a study is opened. In this case, only modified ReportFlows are reapplied.

To apply ReportFlows manually to the currently opened patient, follow these steps:

1 Save your settings and close the MM Configuration Editor.

2 Click **Yes** to confirm the 'Reload ReportFlows' message.

The ReportFlow appears in the Study Browser. SecurView reloads the ReportFlows of the current patient and uses the first Hanging Snapshot of the ReportFlow.

3 To use another ReportFlow or Hanging Snapshot, select the item. Point to an item to see the tooltip that helps identify the ReportFlow or Hanging Snapshot.

If the Hanging Snapshot or the ReportFlow doesn't exist (was renamed or deleted), but if it was opened before the reloading process started, then SecurView displays the first Hanging Snapshot of the first ReportFlow.

7.3.5. Exporting ReportFlows

A service engineer or Administrator can export system level ReportFlows as well as user-defined ReportFlows.

1 Select the ReportFlow(s) that you want to export.

2 On the shortcut menu, select **Export...**.

3 A standard dialog appears where you can navigate to the desired folder if you do not want to use the default 'Workspace' folder.

⚠ *Note: When you have selected more than one ReportFlow to be exported, one file contains all ReportFlows. Use a suitable name.*

4 Type another name if required. The file extension is '.hps'.

The stored ReportFlow is always a system-level ReportFlow.

7.3.6. Importing ReportFlows

A service engineer or Administrator may use this menu command to import a ReportFlow.

1 Select a ReportFlow to make the Import... command available.

2 Right-click to see the shortcut menu.

3 Click **Import...**. A standard dialog is displayed.

4 Select the file (*.hps) to import.

5 If a ReportFlow with the selected name already exists, a dialog appears.

- Select **Apply to all existing ReportFlows** to apply your next click to all imported ReportFlows.

- Click **Replace** or **Skip** depending on your task.

An Information dialog confirms that the ReportFlow has been imported or skipped.

7.3.7. Deleting ReportFlows

Every user can delete his ReportFlows, i.e., a service engineer or Administrator can only delete system level ReportFlows, a Radiologist can only delete user-defined ReportFlows.

1   Point to a ReportFlow.

2   On the shortcut menu, select **Delete ReportFlow**.

3   A confirmation dialog is displayed. Click **Yes** to delete the ReportFlow.

7.4. Hanging Snapshots

7.4.1. Creating Hanging Snapshots

In some cases it is helpful to create a new Hanging Snapshot instead of modifying an existing one. First, create the Hanging Snapshot within the Multimodality Viewer, then copy this Hanging Snapshot to the ReportFlow. By using this technique, the Service user can open patients in the Multimodality Viewer.

1 Click the Study Browser but leave the Configuration window open. Move the Configuration window if necessary.

2 From the Inspector Selection toolbar, drag the desired Inspector to define the kind of inspector: Alternator, Mosaic, MIP, MPR.

3 From the shortcut menu, click **Remove Inspector** if desired.

4 Arrange the Inspectors to single, double, or quadruple tiling in the new Hanging Snapshot.

5 Drag a suitable image or image set from the Image Sets section of the Study Browser to an Inspector (or directly to the work area).

6 In the Inspectors, define the desired settings.

Feature	Action to set/shortcut to use/items to be set
time point	Drag lower slider or press [Ctrl] + [Left{Arrow] / [Right{Arrow]
subtraction mode and reference time point	(Original Data, Absolute Difference, Difference) On the shortcut menu, click **ImageRendering/Subtraction Mode**. On the shortcut menu, click **Image Rendering/Reference Time**.
rendering mode	(MIP, minIP, Average, local MIP) In the MIP Inspector, click the MIP toolbar button or press [Ctrl] + [M] or [Ctrl] + [A].
slab mode	On the Alternator's shortcut menu, click **Image Rendering/Slab Thickness** and select a value, or press [S] / [Shift] + [S].
orientation	only axial, coronal, sagittal; press [Alt] + [A], [Alt] + [C] or [Alt] + [S]
image scaling, zoom	[Ctrl] + [F], [Ctrl] + [+],[Ctrl] + [-]
selected tool	of the Inspector toolbar
image overlay	click **Maximum Image Information** or **Hide Image Information**
link options	click **Linking/Show Link Options** to define Inspector groups.

7.4.2.   Adding a Hanging Snapshot

    1   Open the Multimodality Configuration Editor window.

    2   In the ReportFlows tab, select an existing (system level) Hanging Snapshot.

    3   To expand the desired ReportFlow, click **[+]**.

    4   Select the Hanging Snapshot group.

    5   Right-click a Hanging Snapshot to see the shortcut menu.

    6   Click **Add from Work Area** to insert the Hanging Snapshot from the work area to the current ReportFlow:

    The new Hanging Snapshot is appended to the group of Hanging Snapshots. The preview shows thumbnails of the current work area. The settings (matching criteria and descriptors) overlay the previews.

7.4.3. Updating a Hanging Snapshot

1 In the ReportFlows tab, select an existing (system level) Hanging Snapshot.

2 To expand the desired ReportFlow, click **[+]**.

3 To expand the group of Hanging Snapshots, click **[+]**.

4 To update a Hanging Snapshot, on the shortcut menu, click **Update from Work Area**.

The layout and definitions are immediately updated and displayed in the Preview of Work Areas:
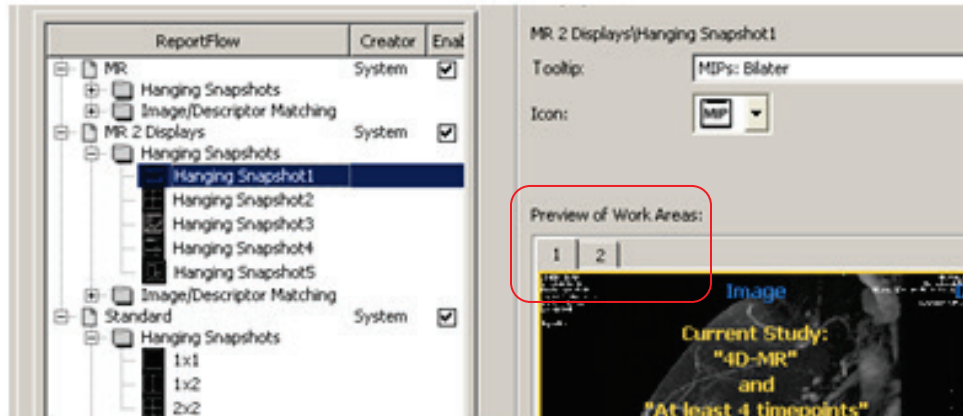
7.4.4. Modifying Hanging Snapshots

Every ReportFlow consists of Hanging Snapshots and descriptors. These parts must be modified according to your requirements.

1 Click **[+]** to expand the ReportFlow.

2 Click **[+]** to expand the group of Hanging Snapshots.

3 To display a preview, select the desired Hanging Snapshot.

4 Select the image descriptor matching items. Every selection is indicated by a check mark and displayed in the preview. See the Image Descriptor Matching section for details on the descriptor configuration.

5 To specify the time point, in the **Descriptors are from** list, select 'All Studies', 'Current Study', 'First Prior Study', 'Second Prior Study', 'Third Prior Study', 'Oldest Prior Study', or 'All Prior Studies'.

6 Select 'AND – All selected Descriptors match!' or 'OR – One selected Descriptor matches!' for logical combination of multiple selection. The operator is displayed as 'and' or 'or' in the preview:
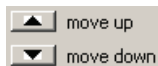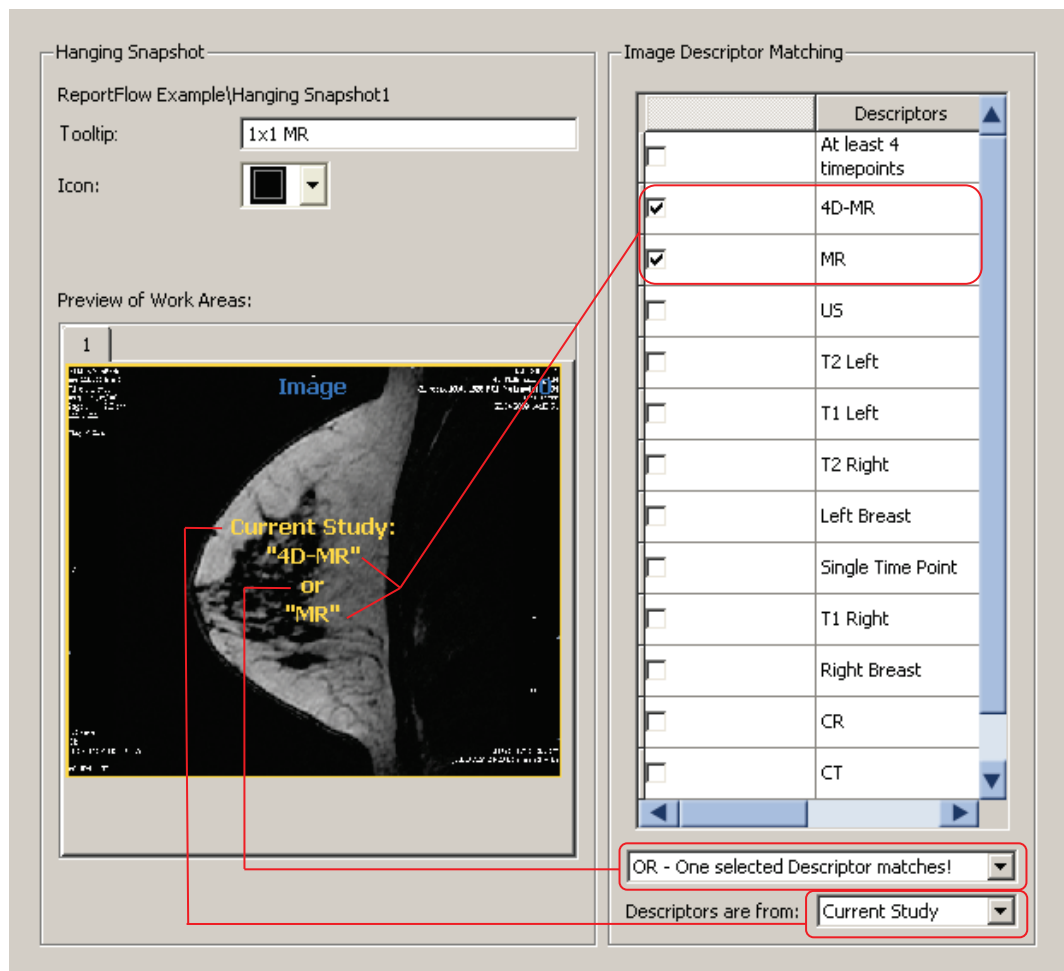
7 Select the Hanging Snapshots and click **move up** / **move down** to sort.

8   To define the tooltip and icon, in the Hanging Snapshot section, type the tooltip and select an icon:
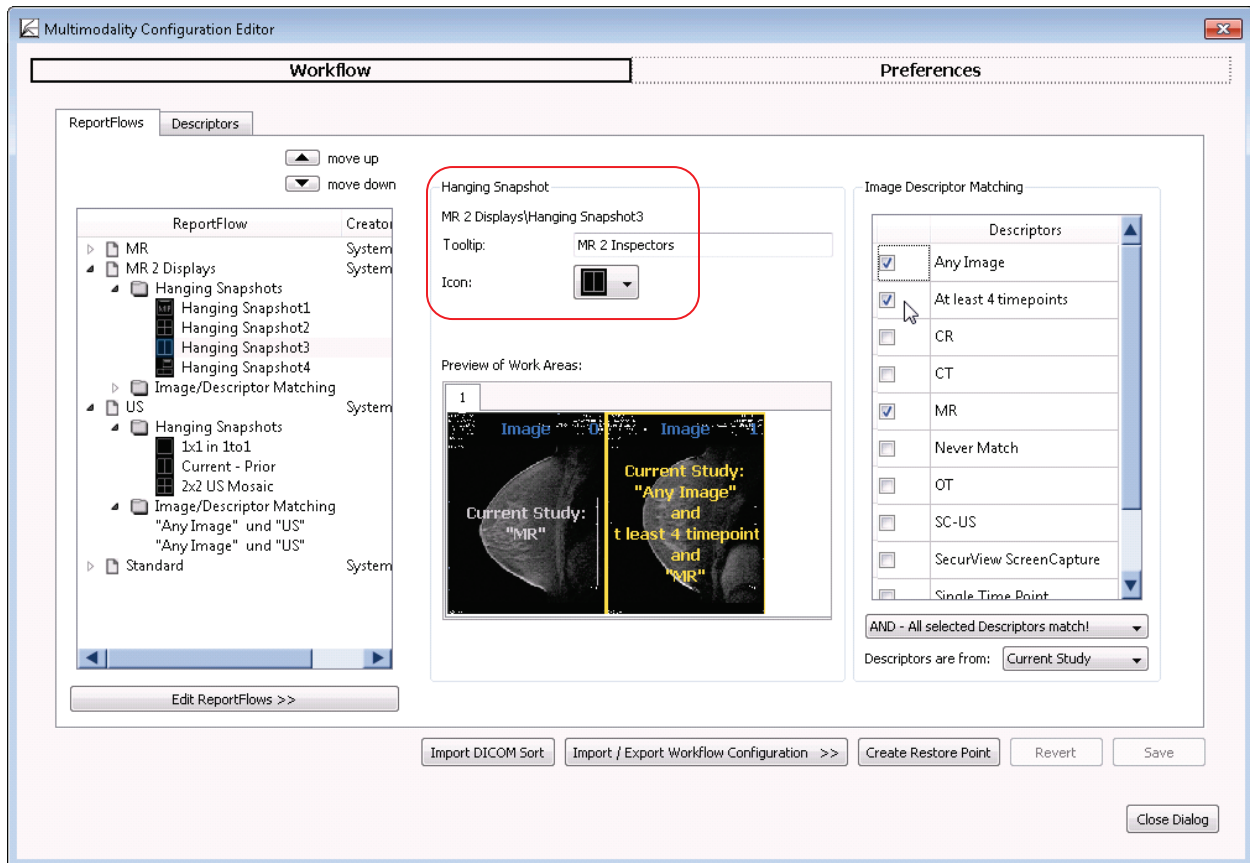
9   **Save** your settings.

10 Select the next Hanging Snapshot you want to modify.

7.5.   Descriptors

A descriptor is used to describe a specific kind of image. An image matches a descriptor if its properties match the criteria defined by the descriptor. For example, a descriptor may be used to select all MR images of the left breast. Descriptors may be used to assign matching images to an Inspector, to define ReportFlows, etc. The criteria describing properties of an image are defined by:

- an attribute of an (preprocessed) image set, e.g., 'Modality'

- a comparison operator, e.g., '=='

- a value to compare the attribute with, e.g., 'MR'

In general, a preprocessed image set matches a descriptor if its properties satisfy all of the criteria of the descriptor, or one of its variants. If a descriptor has (multiple) variants (each one given by a set of criteria), an image set matches the descriptor if it matches all criteria of one of the variants.

A descriptor matching rule consists of one or more descriptors, a logical AND or OR condition to combine the descriptors, and a time point of matching study.

At least the following descriptors are delivered with the software: '4D-MR', 'Any Image', 'At least 4 timepoints', 'CR', 'CT', 'MR', and 'US'.
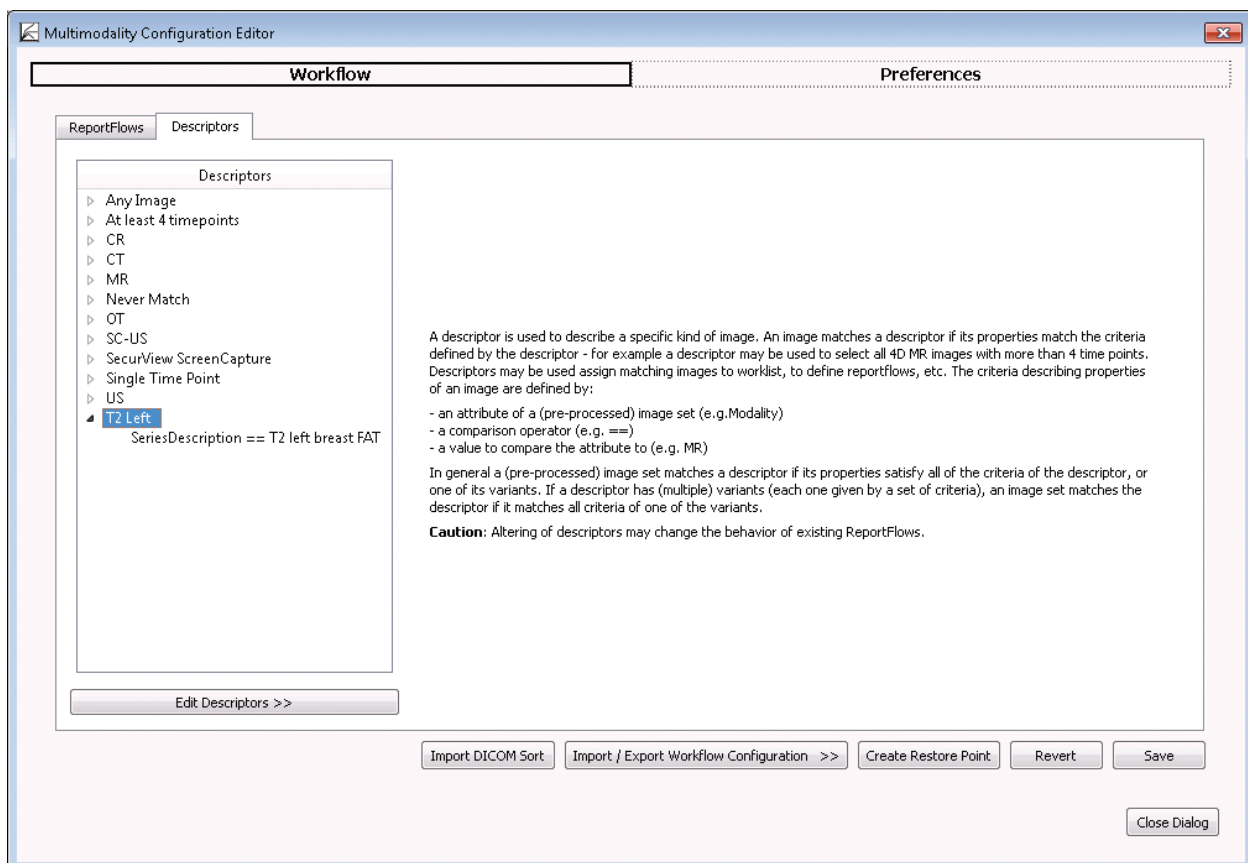
7.5.1. Creating Descriptors

You can create new descriptors.

1 In the list of descriptors, right-click to see the shortcut menu.

2 Select Create new Descriptor.

3 An item called 'New Descriptor1' is added to the list. Double-click the descriptor item to rename it. Enter a suitable name.

4 To expand the tree node, click **[+]**.

5 To activate the right area of the window, select the 'Undefined' criterion.

6 From the list box, select a predefined criterion.

7 Depending from your selection, different values and operators need to be set or typed:

- Group – group number from DICOM tag

- Element – element number from DICOM tag

- Match if any slice matches – select if the element tag is only valid when all slices match

- Tag description – description of your selection

- Operator – select one of the following operators: == (is equal), != (is not equal), like (part is equal), not like (part is not equal), > (greater than), >= (greater than or equal), < (smaller than), <= (smaller than or equal), exists, does not exist

- Value to compare – type the value or string the image shall be compared with

8 Optionally, create a user-defined criterion. Select 'Generic DICOM Tag' and set and type all values.

9 **Save** your changes. The modified and appended descriptors are available in the ReportFlows tab.

7.5.2.   Creating Descriptor's Criteria

You can create criteria to add them to a descriptor.

1   In the list of descriptors, right-click to see the shortcut menu.

2   Select Add Criterion.

An item called 'Undefined' is appended to the list of criteria. Select this item to set and type different values and operators. See steps described above.

Descriptors may also be composed by one or more variants, where each variant consists of one or more matching criteria.

3   In the list of descriptors, right-click to see the shortcut menu.

4   Select **Add Variant**. An item called 'Variant1' is appended to the descriptor. The variant consists of an 'Undefined' criterion.

5   To rename a variant, double-click the item and type the desired name.

⚠ *Note: An image set matches a descriptor if its properties satisfy all of the matching criteria of the descriptor, or if the image set matches all criteria of one of the variants.*

```
⊟ New Descriptor1
   ⊟ Variant1
      ├ Undefined
      └ Undefined
   ⊟ Variant2
      └ Undefined
⊟ New Descriptor2
   ├ Undefined
   └ Undefined
```
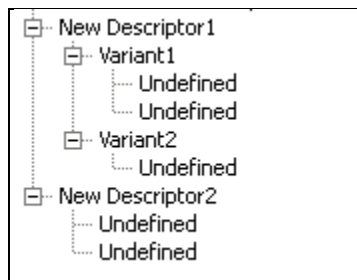
7.5.3.   Copying Descriptor's Criteria

You can copy a criterion from one descriptor to another.

1   Right-click a source criterion to open the shortcut menu.

2   Select **Copy**.

3   Select the target descriptor and right-click to see the shortcut menu.

4   Select **Paste**. The criterion is added to the current descriptor and may be modified.

7.5.4.   Modifying Descriptors' Criteria

You can modify new or existing descriptors.

- Select the criterion even if it is 'Undefined'. The right area of this dialog provides fields for selecting and editing.

- Select the desired criteria and set the concurrent operator and value(s).
  Note that the operators 'like' and 'not like' are not case sensitive.

- Click **Save** to save your settings.

The following table gives an overview of all criteria:

Image Set Attribute	Definition	Operators[1]
Advanced Processor - All Names	Compares the list of advanced processes performed on an image to a comma-separated list of strings. ⚠ **Note:** *The system no longer provides this criterion for configuration of new descriptors. Existing descriptors with this criterion are still valid; configuration of such descriptors allows removal of the criterion.*	==, !=, like, not like
Advanced Processor - Last Name	Compares the list of advanced processes performed on an image to a comma-separated list of strings. ⚠ **Note:** *The system no longer provides this criterion for configuration of new descriptors. Existing descriptors with this criterion are still valid; configuration of such descriptors allows removal of the criterion.*	==, !=, like, not like
Advanced Processing Description	Compares the description of the advanced processes performed on an image to a string. ⚠ **Note:** *The system no longer provides this criterion for configuration of new descriptors. Existing descriptors with this criterion are still valid; configuration of such descriptors allows removal of the criterion.*	==, !=, like, not like
Any Image	No restriction. Any image matches this property.	n/a
Body Part	Compares an image's Body Part tag (0018,0015) to a string.	==, !=, like, not like
Convolution Kernel	Compares the Convolution Kernel (0018,1210) of an image to a string.	==, !=, like, not like

---

1 The Operators definition is as follows: '==' equal, '!=' not equal, '>=' not less than, '<=' equal to or less than.

Image Set Attribute	Definition	Operators[1]
Generic DICOM Tag	Compares a manually selected DICOM Tag (using group and element values) to a string or number.	==, !=, like, not like, >, >=, <, <=, exists, does not exist
Image Comments	Compares an image's comment (0020,4000) to a string.	==, !=, like, not like
Image is 2D	Matching image represents a 2D image.	is, is not
Image is 2D + Time	Matching image represents a time sequence of 2D images.	is, is not
Image is 3D	Matching image represents a 3D volume.	is, is not
Image is 4D	Matching image represents a time sequence of 3D volumes.	is, is not
Image Modality	Compares the image's modality (0008,0060) to a string.	==, !=, like, not like
Image Orientation	Compares the image orientation (0020,0037) to the possible values.	==, !=
Image Type {I, II, III, IIIff}	Compares an image type I, II, III, or IIIff to a string. ⚠ **Note:** *I…IIIff reflects the first three and all following parts of the DICOM image type (0008,0008).*	==, !=, like, not like
Number of Slices	Compares the number of slices to a numeric value.	==, !=, >, >=, <, <=
Number of Time Points	Compares the number of time points to a numeric value.	==, !=, >, >=, <, <=
Patient {X, Y, Z} Position	Compares the image's center {x-, y-, z-} coordinate to a numeric value.	==, !=, >, >=, <, <=
Receiving Coil	Compares the receive coil name (0018,1250) to a string.	==, !=, like, not like
Registered Image	Tests whether an image set represents registered image data. ⚠ **Note:** *The system no longer provides this criterion for configuration of new descriptors. Existing descriptors with this criterion are still valid; configuration of such descriptors allows removal of the criterion.*	is, is not
Result Image	Tests whether an image is a result image created by the MM Viewer.	is, is not
Sequence Name	Compares the sequence name (0018,0024) to a string.	==, !=, like, not like

Image Set Attribute	Definition	Operators[1]
Series Description	Compares the series description (0008,103E) to a string.	==, !=, like, not like
Slice Distance	Compares the slice distance of an image to a numeric value [distance derived from image position (0020,0032)].	==, !=, >, >=, <, <=
Study Description	Compares the study description (0008,1030) to a string.	==, !=, like, not like
Visible in GUI	Compares an internal type defining Image Sets for display or processing (like DICOM Presentation intent type 'for Presentation' or 'for Processing').	is, is not

7.6. Importing DICOM Sort

The Multimodality Viewer is provided with a configuration file that controls the preparation and sorting of incoming DICOM images into 2D, 3D, or 4D image sets to be reviewed within the MM Viewer.

The configuration file must be edited by a Hologic service engineer. See the *SecurView DX Advanced Multimodality Option Installation & Service Manual* for details.

7.7. Import / Export Workflow Configuration

You can manage the settings of the Multimodality Configuration at any time. The settings are stored in a file based on your current settings. Alternatively, you can read other settings from a file and add the information to your configuration or replace your configuration during import.

1   In the Multimodality Configuration Editor, click **Import / Export Workflow Configuration >>** to see the shortcut menu:

> Import Workflow Configuration
> Export Workflow Configuration
> Import and Replace Workflow Configuration
> Import Workflow Configuration from old workspace ...
> Repair current Workflow Configuration
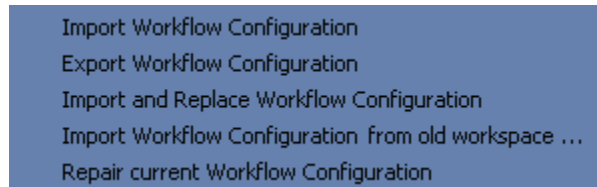
2   Select the command to be executed.

7.7.1. Importing Workflow Configuration

By default, the workflow configuration files are stored in the MAP folder under the program directory.

1   Click **Import Workflow Configuration**. The Choose a File to Open dialog is displayed.

2   Double-click an .ads file to import the configuration information.

3   If the import process finds currently used elements with the same name, the system displays 'ReportFlow with name Standard already exists. How do you want to proceed?'. Select either **Replace**, **Skip**, or **Cancel**.

4   When the import procedure has finished, an Information dialog is displayed:

> **Information**
>
> Descriptor: '4D-MR' imported.
> Descriptor: 'Any Image' imported.
> Descriptor: 'At least 4 timepoints' imported.
> Descriptor: 'CR' imported.
> Descriptor: 'CT' imported.
> Descriptor: 'MR' imported.
> Descriptor: 'US' imported.
>
> OK
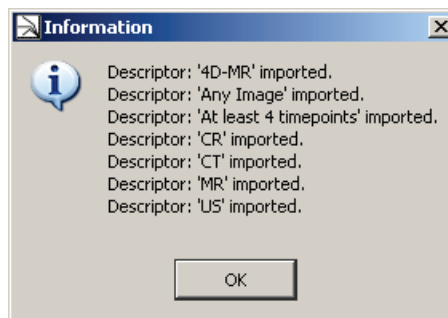
7.7.2. Exporting Workflow Configuration

Before modifying your workflow configuration settings, you can export it.

1 Click **Export Workflow Configuration**.

2 A dialog is displayed where you can select the parts you want to export:
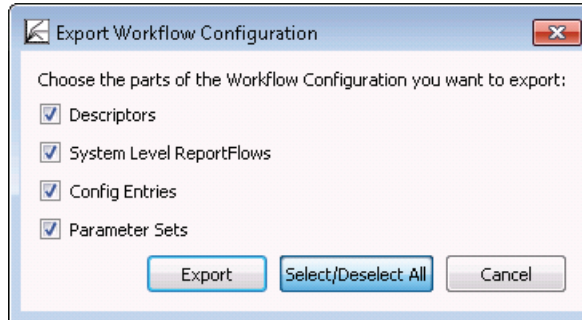
3 Click **Select/Deselect All** to check or clear all parts at once.

4 Click **Export** to open a standard dialog where you can set the path and file name where the workflow configuration is stored. The file type is '.ads'.

7.8. Preferences

This section of the Multimodality Configuration Editor window consists of two major windows Preferences and Printers, that both contain several tabs. In the lower area, you have access to the **Revert** and **Save** buttons.

The Multimodality Viewer allows the radiologist to set some parameters individually. This section describes parameters that can be set by the service engineer or Administrator.

⚠ *Note: All settings must be saved to be stored permanently. If you close the dialog without saving, a message window opens.*

*If you are not sure about your settings, you should **Revert** them. Then all changes are ignored, and the parameters are set back to initial values.*

7.9. Personal Settings

Personal settings are those settings that affect only the preferences for the user currently logged in. These are the only settings that a non-administrator user may change. The window consists of some group areas with list boxes where you can make your personal settings.

To open the Multimodality Configuration Editor:

- In the **Application** toolbar, click the **Configuration Editor** button.

The Personal Settings tab of Preferences opens:
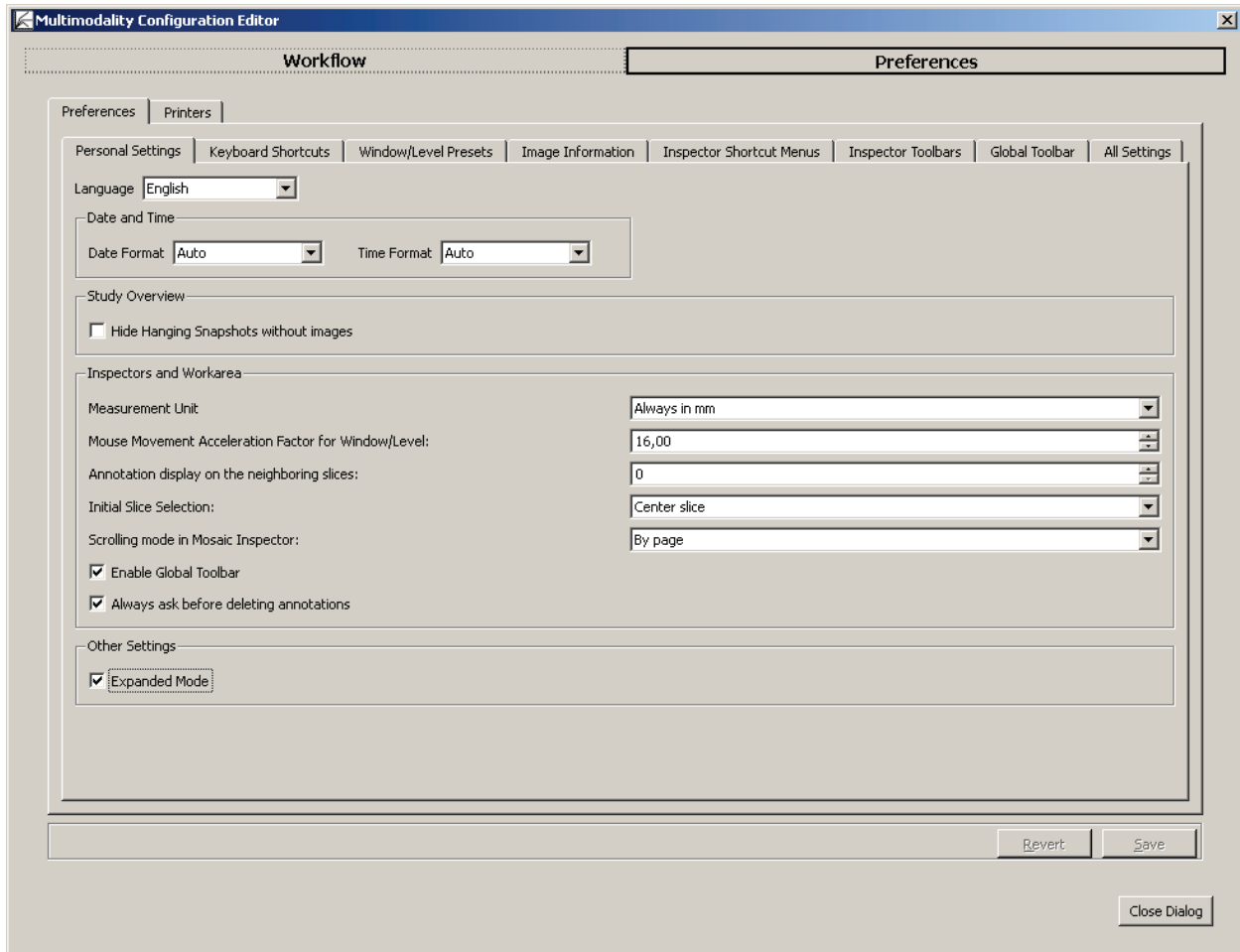
7.9.1. Language

The Multimodality Viewer supports multiple languages. After installation, the language is automatically set to match the language of the operating system.

1   In the **Language** box, select a language (English, Brazilian Portuguese, French, German, Italian, or Spanish) for the program user interface.

2   The new language is not immediately set after saving the settings. Restart the MM Viewer to view your selection.

7.9.2. Date and Time

The Format boxes allow you to select the format for date and time. 'Auto' uses the settings of your Windows.

- In the **Format** boxes, select the desired format. Your format is then used within the user interface.

7.9.3. Study Overview

1 In the **Study Overview** area, select **Hide Hanging Snapshots without images** depending on your preference.

2 Close the study and reopen it to see the effect.

7.9.4. Inspectors and Work Area

This section provides the following settings:

Measurement Unit

You can choose between Auto, Always in mm, and Always in cm. Your selection is used for Annotations, e.g., line or double line. When Auto is selected, the best fitting unit is automatically used, i.e., 'cm' for objects larger than 1 cm, and 'mm' for objects smaller than 1 cm.

⚠️ *Note: Measurement lengths are displayed in pixels when the necessary information to convert pixels to mm/cm is not available in the images.*

Mouse Movements Acceleration Factor for Window/Level

To modify the acceleration factor:

- Click the arrows, or

- Type a value. Use comma as the decimal separator.

A mouse movement acceleration factor of 1,0, e.g., means that moving the mouse by one pixel on the display changes the window or the level by 1.

Annotation Display on the Neighboring Slices

Annotations of one slice normally become hidden when you move to the next slice.

- Enter a value other than '0' to display annotations in the neighboring slices of a 3D image set as well.

Initial Slice Selection

To select an initial slice:

- Select **First**, **Center**, or **Last Slice** that is displayed when you open an image set.

Scrolling Mode in Mosaic Inspector

To set the scroll wheel effect in the Mosaic Inspector:

- Select **By page** to exchange all currently displayed images of the Mosaic Inspector, or

- Select **By image** to exchange individual images when you rotate the mouse wheel in the Mosaic Inspector.

Enable Global Toolbar

- Select this box to show the Global toolbar.

- Clear the box to hide the Global toolbar.

Many tools can be used via keyboard shortcuts, so it might be easier to hide unused toolbars and use this space to enlarge the work area.

7.9.5. Always Ask Before Deleting Annotations

To display a confirmation dialog when deleting an annotation:

- Check this box to display the confirmation dialog:
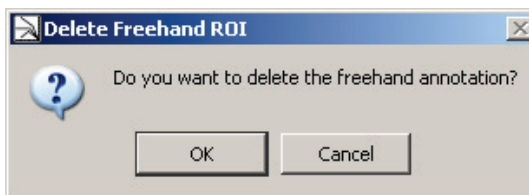
- Click **OK** to delete the annotion and its label.

7.9.6. Other Settings/Expanded Mode

1 Select **Expanded Mode** that provides all tools on the toolbars. This is the default setting.

2 Clear the check box to set the toolbars to the standard mode.

⚠ *Note: An Administrator or service engineer can set the tools and icons to be displayed in the standard mode and expanded mode. Also, the initial setting of the expanded mode does not display all tools and icons!*

3 Press [Ctrl] + [Shift] + [X] to switch from one mode to the other during your session. The following message appears:
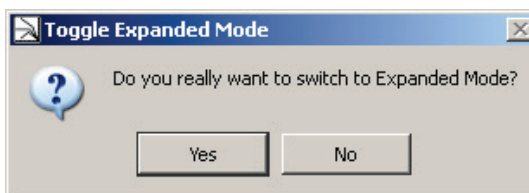
4 Click **Yes** to expand the Global toolbar and shortcut menus.

7.10. Keyboard Shortcuts

The keyboard shortcuts are set by Administrators or service engineers. Radiologist users can modify only their own keyboard shortcut settings.
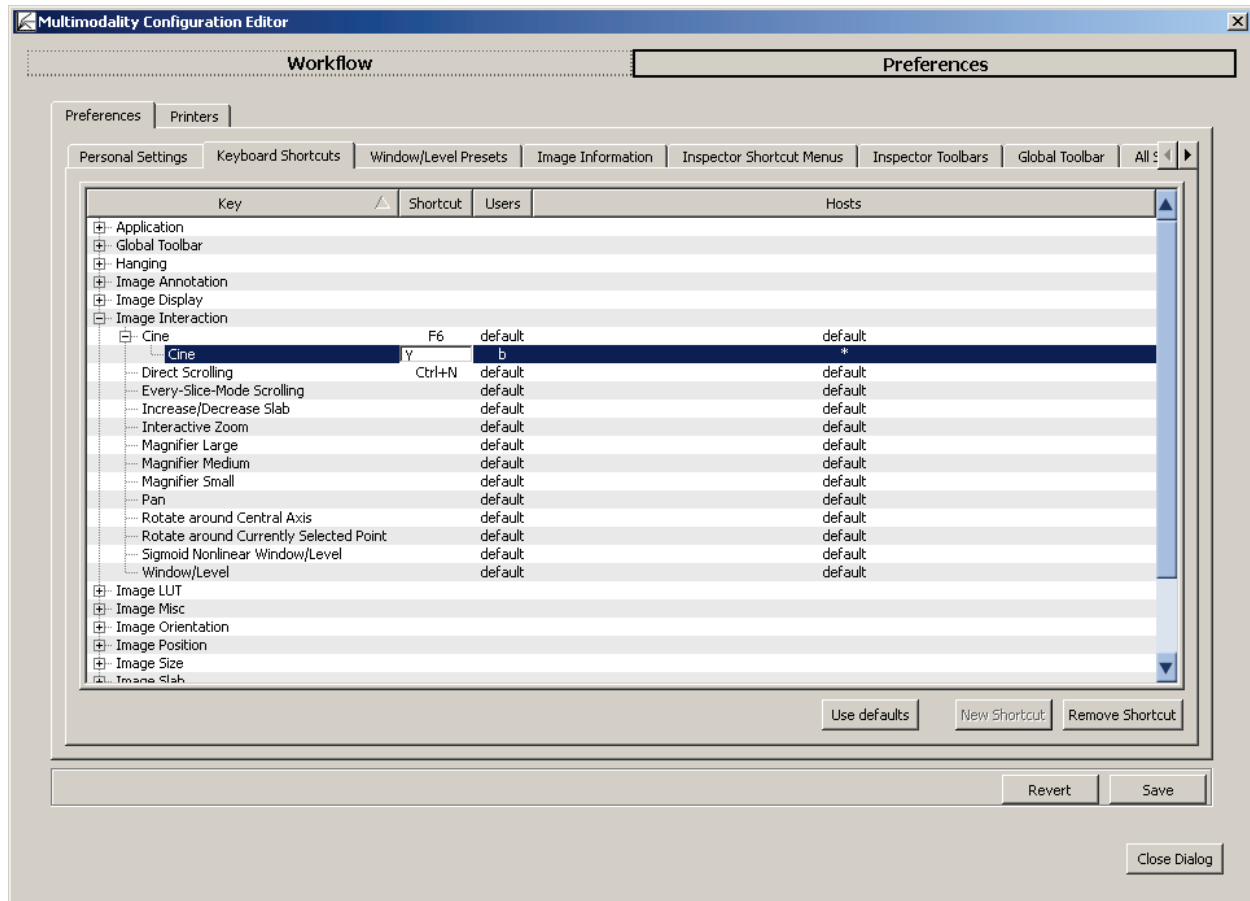
This tab provides all commands of the Multimodality Viewer.

1 Click **[+]** to expand the Key. Every command is listed by its internal name, the (default) Shortcut, the Users who the shortcuts are assigned to, and Hosts.

2 To add a user-level shortcut, follow these steps:

- Select an item.

- Click **New Shortcut** to duplicate this item.

- Double-click the **Shortcut** field of the new item. The field changes to a white edit box.

- Press the key combination on your local keyboard, e.g., press **[Ctrl]** + **[Alt]** + **[Spacebar]** at the same time. Your shortcut always suspends the formerly set shortcut.

  ⚠ *Note: All currently defined and default keyboard shortcuts are listed. In case of conflicts, a message is displayed.*

- Click another column. Your new shortcut is then listed or a message informs you that the shortcut is already used:
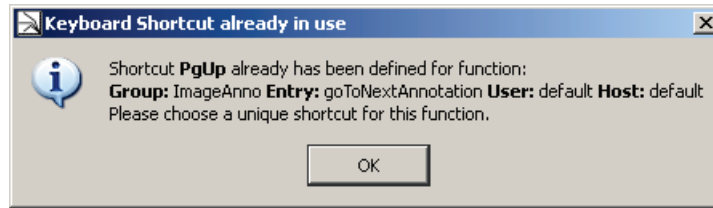
You can assign one shortcut per host. This means one command may be executed by different shortcuts on different workstations.

- User and Host are set as * first. Double-click the asterisk and open the list box to choose the desired user or host.

- **Remove Shortcut** is available when a user has selected his user-level shortcut or the Administrator or service engineer has selected an entry that is not set to 'default'.

7.11. Window/Level Presets

This tab provides default settings to be modified only by Administrators or service engineers.
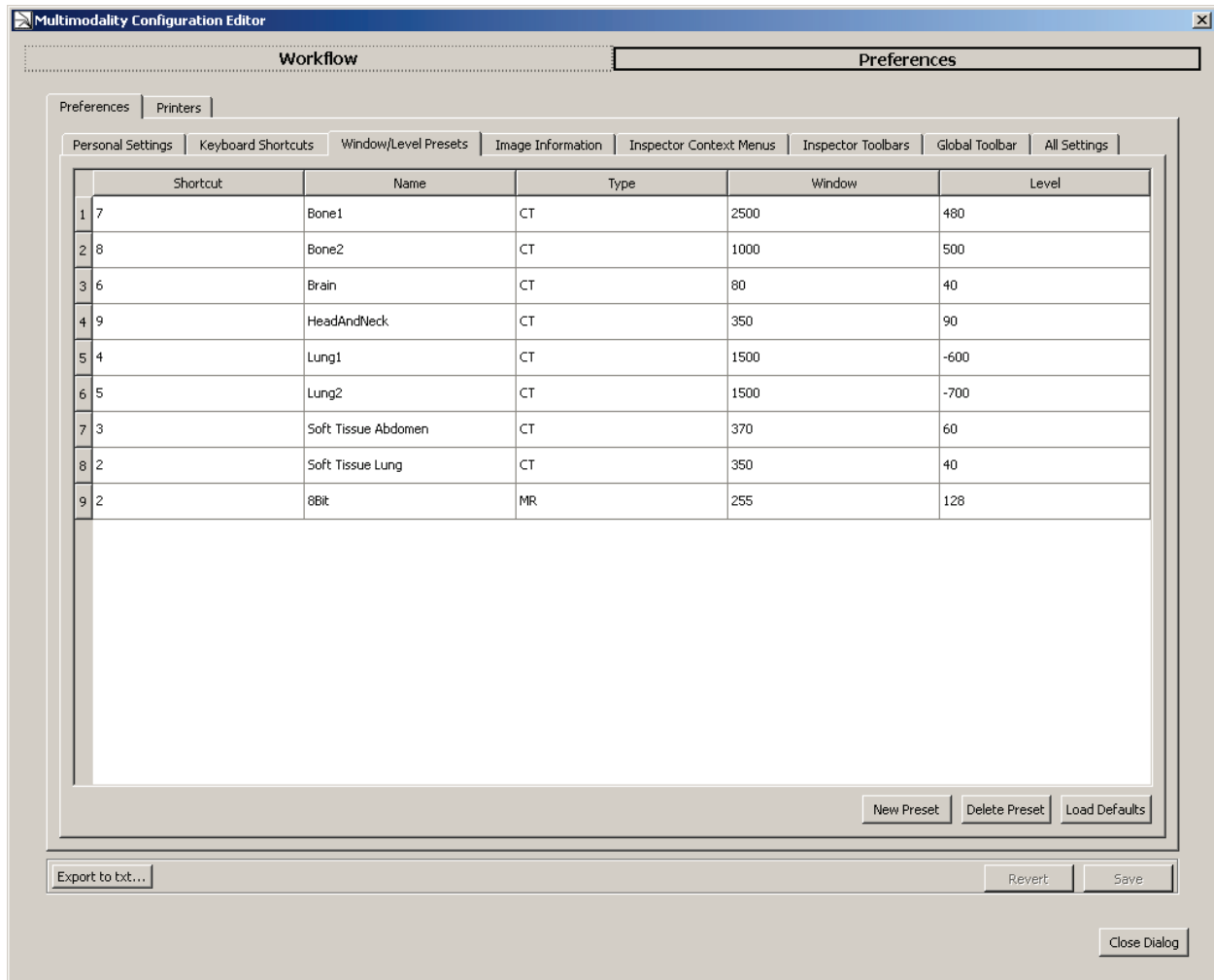
The Window/Level Presets tab lists the keyboard shortcut, a corresponding name, the type (i.e., modality), and the values for Window and Level. The list items are grouped by the type and sorted by their keyboard shortcut. You can modify, add and delete presets, and load the default settings.

You must log off to activate the new Window/Level presets. First close this window. If your changes have not been saved, a message is displayed:
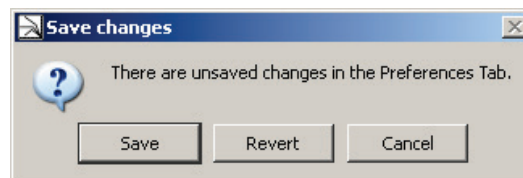
- Click **Save** to save your changes.

- Click **Revert** to use the old values.

7.11.1. Modifying Presets

1 Double-click the cell you want to modify. The value or string is selected.

2 Type the desired value or string. You can type a decimal value for W/L. Type a comma or a point as a decimal separator.

⚠ *Note: Decimal values always are rounded to integers when displayed as image overlay.*

3 Press [Enter] to stop editing, or click another cell.

If the new name already exists, a message is displayed that asks you to enter a unique name.

If the keyboard shortcut is already assigned to another preset of the currently selected type, a message is displayed that asks you to enter a unique keyboard shortcut.

4 Click **Save** to make the new value available.

7.11.2. Adding a New Preset

1 Click **New Preset** to add a new row.

A new row is created below the last one. The name for this new preset is New Preset 1, the type is MR, Window is 512, and Level is 256.

2 Double-click the cell you want to modify.

3 Type the desired value or string. Read the note above when entering values.

4 Press [Enter] to stop editing, or click another cell.

5 Click **Save** to make the new value available.

7.11.3. Deleting a Preset

As Administrator or service engineer you can delete presets, i.e., delete a row of the currently displayed list of Window/Level Presets.

1 Select the row you want to delete, i.e., on the left side, click the **row number**.

2 Click **Delete Preset** to delete the selected presets including its shortcut, name, type, and W/L values.

No confirmation message is displayed. The row is immediately deleted.

7.11.4. Loading Defaults

1 Click **Load Defaults** to load the default presets.

2 The default presets are displayed. All values and strings are replaced by the default presets. Added presets are deleted.

7.12. Image Information

This tab provides default settings for Administrators or service engineers only. The Image Information tab allows you to configure the information that is displayed as image overlay in the Multimodality Viewer.
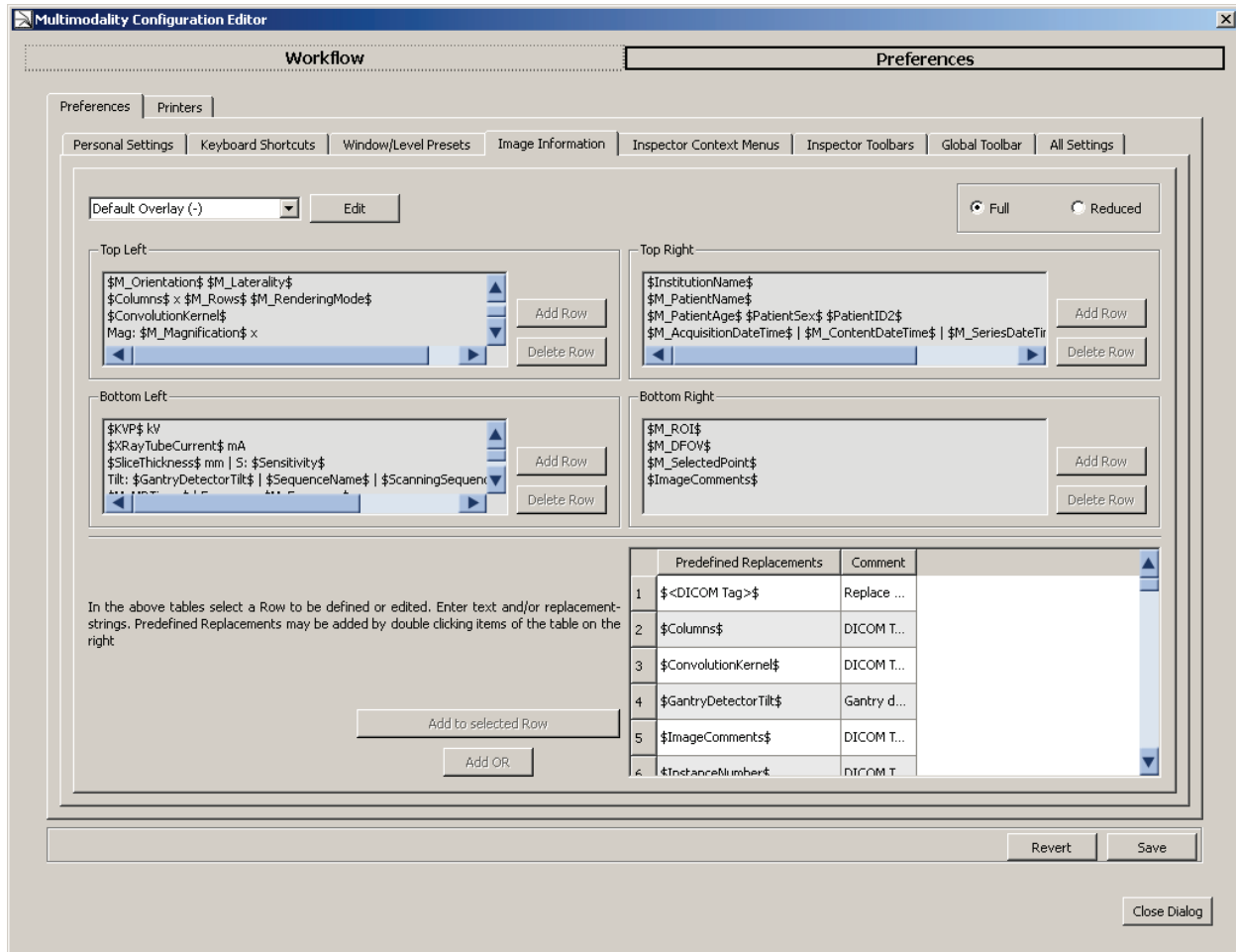
This tab combines the settings for different overlays (default, printing) that are always modified the same way. The following sections describe the settings of the default overlay.

7.12.1. Full or Reduced Overlay

Select one option to define your next activities for the **full** or the **reduced** overlay. To get complete image information, define both a full and a reduced set. While reviewing, the Radiologist user can always switch between these modes.

7.12.2. Adding, Removing, or Copying Image Overlay Sets

1   Click **Edit** to display the Edit Overlay Sets dialog:
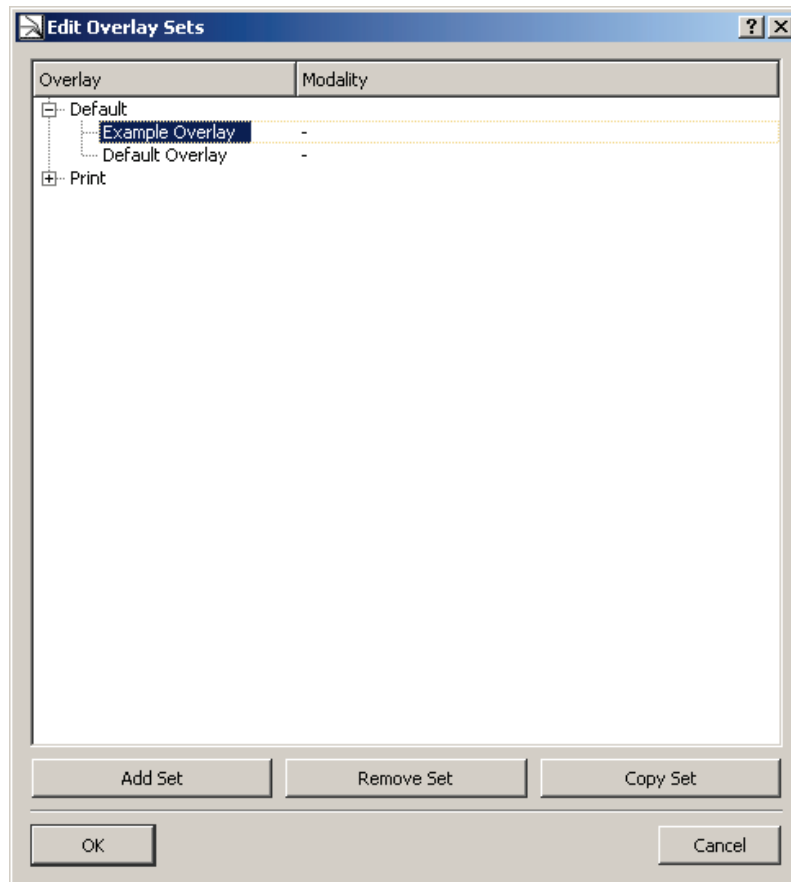
2   Click **[+]** to expand the list of currently used overlays.

3   Select the overlay you want to remove or copy. Click **Remove Set** to remove, or **Copy Set** to copy your selection.

Both actions are immediately performed. The copy is placed above your selection.

4   Click **Add Set** to create a new overlay set above your selection.

5   Double-click the new set to rename it and type the desired name. Press **[Enter]** when you are ready.

6   In the **Modality** column, select an item to activate the current overlay according to this modality. Select '-' to select no modality.

7   Click **OK** to close this dialog and proceed with detailed settings on the Image Information tab.

7.12.3. Creating and Modifying an Overlay Set

You can only modify overlay sets that are not provided with the software installation.

1   In the **Overlay** box, select the overlay you want to modify. Do not select default overlays.

The Image Information tab shows four areas, Top Left, Top Right, Bottom Left, and Bottom Right to indicate the content of the desired areas within the Inspectors or printouts.

2   Click **Add Row** beneath the desired area. A placeholder *New Row 1* is added.

3   In the lower left area, select the **Predefined Replacement**, e.g., '$ManufacturersModelName$'. The number to its left automatically is highlighted.

4   Click **Add to selected Row** to place your predefined replacement next to the placeholder.

5   Click **Add OR** to add an or indicator '|'. Repeat steps 3 to 4 to add the alternative replacement.

6   Then:

- Repeat steps **3**–**5** to add more predefined replacements to the currently selected row, or

- Repeat steps **2**–**5** to add predefined replacements to new rows.

7   Select the next area, and then select the predefined replacements as described before.

⚠ **Note:** *If you made a mistake, just double-click the desired row to switch to the direct edit mode.*

When editing directly, you can delete and modify any character. Be careful to type the correct string, otherwise your text is always displayed instead of the variable content.

7.12.4. Top Left Overlay

Please refer to the following figures and tables to see the original setting of the image overlays.

```
┌─ Top Left ─────────────────────────────────────────────────┐
│                                                             │
│  $ManufacturersModelName$ | $Manufacturer$                  │
│  Ex: $StudyID$ Sn: $SeriesNumber$                           │
│  $SeriesDescription$ | $ProtocolName$ | $StudyDescription$  │
│  Img: $M_InstanceNumber$ $M_SliceMacro$ $M_TimeMacro$ $M_Esm$ │
│  $M_Orientation$ $M_Laterality$                             │
│  $Columns$ x $M_Rows$ $M_RenderingMode$                     │
│  $ConvolutionKernel$                                        │
│  Mag: $M_Magnification$ x                                   │
│                                                             │
│                                                             │
│                                                             │
│                                                             │
└─────────────────────────────────────────────────────────────┘
```

Line[a]	Id	Description
Top left		
1 (1)		Manufacturer's Model Name or Manufacturer
2 (2)	Ex ... Sn	Study ID, Series Number
3		Series Description, Protocol Name, or StudyDescription
4 (3)	Img T Subtr. ESM	DICOM image number, in brackets relative slice number (starting with 1) / number of slices + if so, time point / number of time points + if so, subtraction time point 1 -2 and absolute + if so, 'ESM' for every slice mode + if so, 'inh' (for inhomogeneous image sequences)
5	Sag: R/L x Cor: A/P y Ax: I/S z	Reformatting (Sag, Cor, Ax) and position (i.e., R/L for right/left, A/P for anterior/posterior, H/F for head/foot) and distance to center of image data set), e.g.: Sag: R 10.5 cm means10.5cm left of center, Hint: 'no geom. info', if the geometric information of the DICOM data is incomplete.
(4)	oblique: log, lat	In oblique mode: Angle longitude in degree L (for image direction patient's left side) or R (for image direction patient's right side), angle latitude in degree F (for image direction patient's feet) or H (for image direction patient's head)
6 (5)		Width x height of image set in pixels (of displayed orientation) + if so, depth (number of slices in slab mode)
7		Convolution kernel (CT, MR, Pet only) (MR: Image type parameter 3)
8 (6)	Mag: ... x	Magnification factor of the current image

a Numbers in brackets are valid for reduced image overlay

7.12.5. Top Right Overlay

```
┌─ Top Right ─────────────────────────────────────┐
│ $InstitutionName$                               │
│ $M_PatientName$                                 │
│ $M_PatientAge$ $PatientSex$ $PatientID2$        │
│ $M_AcquisitionDateTime$ | $M_ContentDateTime$ | $M_SeriesDateTime$ | $M_S
│                                                 │
│                                                 │
│                                                 │
│                                                 │
└─────────────────────────────────────────────────┘
```
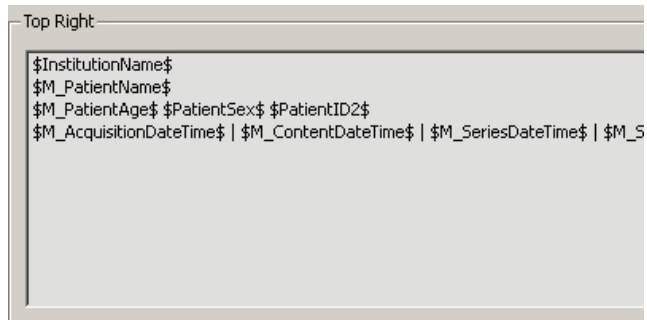
Lineª	Id	Description
Top right		
1 (1)		Name of Institution
2 (2)		Patient name
3 (3)		Current age of patient, patient birth date, sex, patient ID
4(4)		Acquisition date and time (content, series or study)

a Numbers in brackets are valid for reduced image overlay

7.12.6. Bottom Left Overlay
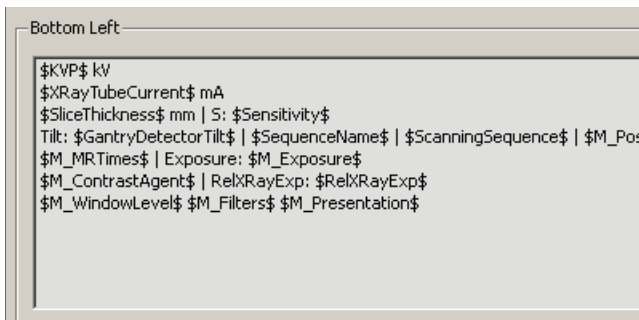
Line[a]	Id	Description
Bottom left (line numbering starts from bottom)		
7		Voltage (KVP) in mA
6		Current in x-ray tube in mA
5		Slice thickness in mm or sensitivity
4	CT: Tilt	CT: Gantry tilt (against table)
		MR: Sequence name or scan sequence or positioner angle
3		CT: Time for scan in seconds
		MR: Repetition(TR), Echo(TE), Inversion Time(TI),
		Flip Angle(FA)
2		Contrast agent bolus or rel. XRay exposure
1 (1)	W: ... L:	Window/Level settings
	W2 ... L2	+ if so, Window/Level of 2nd window
		+ if so, description of used filter (e.g., sharpen, Gauss), Filter, Presentation

a Numbers in brackets are valid for reduced image overlay

7.12.7. Bottom Right Overlay

```
┌Bottom Right─────────────────────────────────────────────┐
│ ┌─────────────────────────────────────────────────────┐ │
│ │ $M_ROI$                                             │ │
│ │ $M_DFOV$                                            │ │
│ │ $M_SelectedPoint$                                   │ │
│ │ $ImageComments$                                     │ │
│ │                                                     │ │
│ │                                                     │ │
│ │                                                     │ │
│ │                                                     │ │
│ └─────────────────────────────────────────────────────┘ │
└─────────────────────────────────────────────────────────┘
```
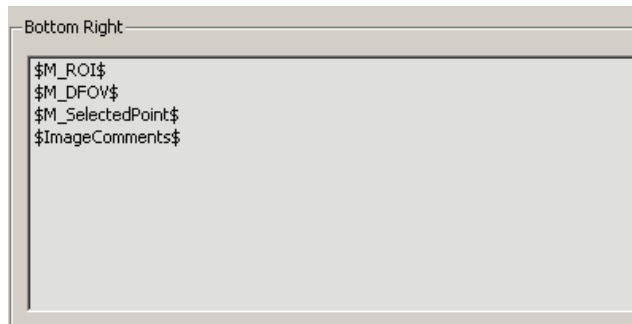
Line[a]	Id	Description
Bottom right (line numbering starts from bottom)		
4		for selected ROI: size of enclosed area
3	AFOV or DFOV	Range of acquisition on (AFOV) can be changed to displayed range of acquisition (DFOV) in the setup menus (Inspector_Display Image Info).
2 (1)		Currently selected point: (xi, yi, zi) ti = W, where xi,yi,zi: pixel coordinates t for time point (in seconds), W: Value of the point in AU or HU
1		Image comment (DICOM Image Comment)

a Numbers in brackets are valid for reduced image overlay

7.13. Inspector Shortcut Menus

You can set the menu commands to be available in the shortcut menus of all Inspectors. The settings are valid per user.

The **Inspector Shortcut Menus** tab lists all menu items that are included in the software, grouped by the type of Inspector.

1 Select the desired menu command to show it in your shortcut menu.

2 Clear the command to hide it from your shortcut menu.

An unavailable check box indicates a submenu item that is only available when you have selected the tool. The following menu items are set by default in the Expanded mode, but not in the Standard mode.

7.13.1. Alternator Menu

Tool	Submenu Command	Std.	Exp.
Size		yes	yes
	Show / Hide Full Screen	no	no
	Zoom In	no	yes
	Zoom Out	no	yes
Image Rendering		no	yes
	Orientation	no	yes
	Slab Thickness	no	yes
	Subtraction Mode	no	yes
	Transformation	no	yes
	Display in	no	no
	Curved MPR	no	no
	Time Point	no	yes
	Reference Time	no	yes
	Combined Timepoint/Slice Navigation	no	yes
Windowing		yes	yes
	Expand LUT	no	yes
Overlays		yes	yes
	Scanline	no	yes
	DICOM Image Overlay	no	no
	Current Patient Coordinates	no	no
	Use Current Inspector Status as Default	no	yes
Cursor Tool		no	yes
	Magnification - Magnifier Small	no	yes
	Magnification - Magnifier Medium	no	yes
	Magnification - Magnifier Large	no	yes

Tool	Submenu Command	Std.	Exp.
	Magnification - Interactive Zoom	no	yes
	Window/Level	no	yes
	Pan	no	yes
	Rotate around Central Axis	no	yes
	Rotate around Currently Selected Point	no	yes
	Scroll Slices - Direct Scrolling	no	yes
	Scroll Slices - Every-Slice-Mode Scr.	no	yes
	Scroll Slices - Cine	no	yes
	Scroll Slices - Custom Slab Size	no	yes
	CSP - CSP on / CSP off	no	yes
	CSP - Set second point	no	no
	CSP - Exchange with second point	no	no
Annotation		yes	yes
	Tool - Polyline	no	no
	Tool - Angle	no	no
	Tool - Volume (VOI)	no	yes
	Tool - Rectangle	no	yes
	Font Scaling Factor - 0.50	no	no
	Font Scaling Factor - 0.70	no	no
	Font Scaling Factor - 0.90	no	no
	Font Scaling Factor - 1.10	no	no
	Font Scaling Factor - 1.30	no	no
	Font Scaling Factor - 1.50	no	no
	Key Image	no	yes
	Show Next Key Image	no	yes
	Show Previous Key Image	no	yes
	Show List of Key Images	no	yes
	Unmark all Key Images	no	yes
Linking		yes	yes
	Register CSP	no	yes
Go to Slice Number		no	yes
Move to Work Area		no	yes
Remove Inspector		no	yes

7.13.2. Mosaic Menu

Tool	Submenu Command	Std.	Exp.
Size		yes	yes
	Show Full Screen / Hide Full Screen	no	no
	Zoom In	no	yes
	Zoom Out	no	yes
Image Rendering		no	yes
	Orientation	no	yes
	Transformation	no	yes
	Display in	no	no
Windowing		yes	yes
	Expand LUT	no	yes
Layout		yes	yes
	Columns - 5	no	yes
	Columns - 6	no	yes
	Rows - 5	no	yes
	Rows - 6	no	yes
Cursor Tool		no	yes
	CSP - Set second point	no	no
	CSP - Exchange with second point	no	no
Linking		yes	yes
	Register CSP	no	yes
Move to Work Area		no	yes
Remove Inspector		no	yes

7.13.3. MIP Menu

Tool	Submenu Command	Std.	Exp.
Size		yes	yes
	Show Full Screen / Hide Full Screen	no	no
	Zoom In	no	yes
	Zoom Out	no	yes
Image Rendering		no	yes
	Subvolume MIP	no	yes
	Orientation	no	yes
	Subtraction Mode	no	yes
	Transformation	no	yes

Tool	Submenu Command	Std.	Exp.
	Display in	no	no
	Rendering Mode	no	yes
	Curved MPR	no	no
	Time Point	no	yes
	Reference Time	no	yes
Windowing		yes	yes
	Expand LUT	no	yes
Overlays		yes	yes
	Scanline	no	yes
	DICOM Image Overlay	no	no
	Current Patient Coordinates	no	no
	Use Current Inspector Status as Default	no	yes
Cursor Tool		no	yes
	CSP - Set second point	no	no
	CSP - Exchange with second point	no	no
Annotation		yes	yes
	Tool - Polyline	no	no
	Tool - Measurement	no	yes
	Tool - Angle	no	no
	Font Scaling Factor - 0.50	no	no
	Font Scaling Factor - 0.70	no	no
	Font Scaling Factor - 0.90	no	no
	Font Scaling Factor - 1.10	no	no
	Font Scaling Factor - 1.30	no	no
	Font Scaling Factor - 1.50	no	no
	Key Image	no	yes
	Show Next Key Image	no	yes
	Show Previous Key Image	no	yes
	Show List of Key Images	no	yes
Linking		yes	yes
	Register CSP	no	yes
Results		no	yes
Move to Work Area		no	yes
Remove Inspector		no	yes

7.13.4. MPR Menu

Tool	Submenu Command	Std.	Exp.
Size		yes	yes
	Show / Hide Full Screen	no	no
	Zoom In	no	yes
	Zoom Out	no	yes
Image Rendering		no	yes
	Orientation	no	yes
	Slab Thickness	no	yes
	Subtraction Mode	no	yes
	Transformation	no	yes
	Curved MPR	no	no
	Time Point	no	yes
	Reference Time	no	yes
Windowing		yes	yes
	Expand LUT	no	yes
Overlays		yes	yes
	Scanline	no	yes
	DICOM Image Overlay	no	no
	Current Patient Coordinates	no	no
	Use Current Inspector Status as Default	no	yes
Cursor Tool		no	yes
	CSP - Set second point	no	no
	CSP - Exchange with second point	no	no
Annotation		yes	yes
	Tool - Polyline	no	no
	Tool - Angle	no	no
	Tool - Volume (VOI)	no	yes
	Tool - Rectangle	no	yes
	Font Scaling Factor - 0.50	no	no
	Font Scaling Factor - 0.70	no	no
	Font Scaling Factor - 0.90	no	no
	Font Scaling Factor - 1.10	no	no
	Font Scaling Factor - 1.30	no	no
	Font Scaling Factor - 1.50	no	no
	Key Image	no	yes

Tool	Submenu Command	Std.	Exp.
	Show Next Key Image	no	yes
	Show Previous Key Image	no	yes
	Show List of Key Images	no	yes
	Unmark all Key Images	no	yes
Linking		yes	yes
	Register CSP	no	yes
Go to Slice Number		no	yes
Move to Work Area		no	yes
Remove Inspector		no	yes

7.14. Inspector Toolbars Configuration

You can set the toolbar icons to be displayed in the Inspector toolbars. You can switch between the standard mode and an expanded mode by mean of [Ctrl] + [Shift] + [X]. The configuration settings are valid per user.

The **Inspector Toolbars** tab lists all icons and tools that are included in the software. Most of these icons include a submenu that provides additional commands.

1   Click the **Inspector** button to select the Alternator, Mosaic, MIP, MPR.

2   Select the desired tool to show it in your standard and/or your expanded mode.
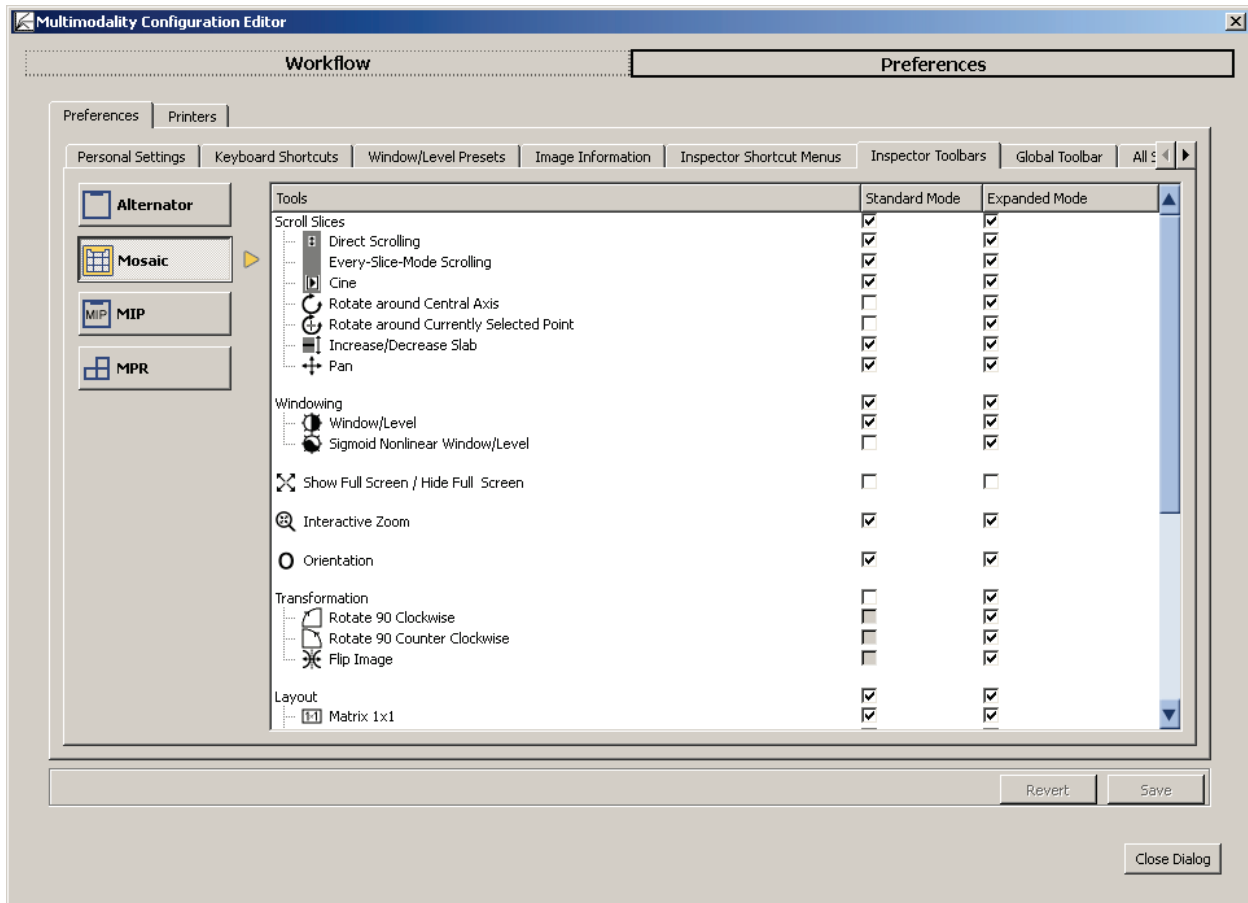
An unavailable check box indicates an item that is only available when you have selected the tool.

The icon and its submenu commands are set by default as follows. The following tables list only those commands that are not selected by the standard mode.

7.14.1. Alternator Toolbar

Tool	Submenu Command	Std.	Exp.
Scroll Slices		yes	yes
	Rotate around Central Axis	no	yes
	Rotate around CSP	no	yes
Windowing		yes	yes
	Sigmoid Nonlinear Window/Level	no	yes
Show/Hide Full Screen		no	no
Magnification		yes	yes
	Magnifier Small	no	yes
	Magnifier Large	no	yes
Transformation		no	yes
	Rotate 90 Clockwise	no	yes
	Rotate 90 Counter Clockwise	no	yes
	Flip Image	no	yes
Annotation		yes	yes
	Polyline	no	no
	Angle	no	yes
	Rectangle	no	yes
	Volume (VOI)	no	yes
Scanlines		no	yes
	Show Scanlines / Hide Scanline	no	yes
	Default	no	yes
	Set Number of Additional Scanlines	no	yes
Image Information		yes	yes
	Maximum Image Information	no	yes
Linking		no	yes
	Show Link Options	no	yes
	Linking On / Linking Off	no	yes
	Register CSP	no	yes

7.14.2. Mosaic Toolbar

Tool	Submenu Command	Std.	Exp.
Scroll Slices		yes	yes
	Rotate around Central Axis	no	yes
	Rotate around CSP	no	yes
Windowing		yes	yes
	Sigmoid Nonlinear Window/Level	no	yes
Show/Hide Full Screen		no	no
Transformation		no	yes
	Rotate 90 Clockwise	no	yes
	Rotate 90 Counter Clockwise	no	yes
	Flip Image	no	yes
Image Information		no	yes
	Hide / Minimum / Maximum Image Inform.	no	yes
	Maximum Image Information	no	yes
Linking		no	yes
	Show Link Options	no	yes
	Linking On / Linking Off	no	yes
	Register CSP	no	yes

7.14.3. MIP Toolbar

Tool	Submenu Command	Std.	Exp.
Scroll Slices		yes	yes
	Direct Scrolling	no	no
	Every-Slice-Mode Scrolling	no	no
	Cine	no	no
Magnification		yes	yes
	Magnifier Small	no	yes
	Magnifier Large	no	yes
Rendering Mode		no	yes
	MIP	no	yes
	minIP	no	yes
	Average	no	yes
	Local MIP	no	yes
	Set local MIP threshold	no	yes
Show/Hide Full Screen		no	no
Transformation		no	yes
	Rotate 90 Clockwise	no	yes
	Rotate 90 Counter Clockwise	no	yes
	Flip Image	no	yes
Annotation		yes	yes
	Measurement	no	yes
	Polyline	no	no
	Angle	no	yes
Subvolume MIP		no	yes
Scanlines		no	yes
	Show Scanlines / Hide Scanline	no	yes
	Default	no	yes
	Set Number of Additional Scanlines	no	yes
Image Information		yes	yes
	Maximum Image Information	no	yes
Linking		no	yes
	Show Link Options	no	yes
	Linking On / Linking Off	no	yes
	Register CSP	no	yes

7.14.4. MPR Toolbar

Tool	Submenu Command	Std.	Exp.
Scroll Slices		yes	yes
	Rotate around Central Axis	no	yes
	Rotate around CSP	no	yes
Windowing		yes	yes
	Sigmoid Nonlinear Window/Level	no	yes
Show/Hide Full Screen		no	no
Magnification		yes	yes
	Magnifier Small	no	yes
	Magnifier Large	no	yes
Orientation		no	yes
Transformation		no	yes
	Rotate 90 Clockwise	no	yes
	Rotate 90 Counter Clockwise	no	yes
	Flip Image	no	yes
Annotation		yes	yes
	Polyline	no	no
	Angle	no	yes
	Rectangle	no	yes
Scanlines		no	yes
	Show Scanlines / Hide Scanline	no	yes
	Default	no	yes
	Set Number of Additional Scanlines	no	yes
Image Information		yes	yes
	Maximum Image Information	no	yes
Linking		no	yes
	Show Link Options	no	yes
	Linking On / Linking Off	no	yes
	Register CSP	no	yes

7.15. Global Toolbar

The Global toolbar includes tools that affect all images and Inspectors.

You can set the toolbar icons to be displayed in the Global toolbar. You can switch between the standard mode and an expanded mode by mean of [Ctrl] + [Shift] + [X]. The configuration settings are valid per user.
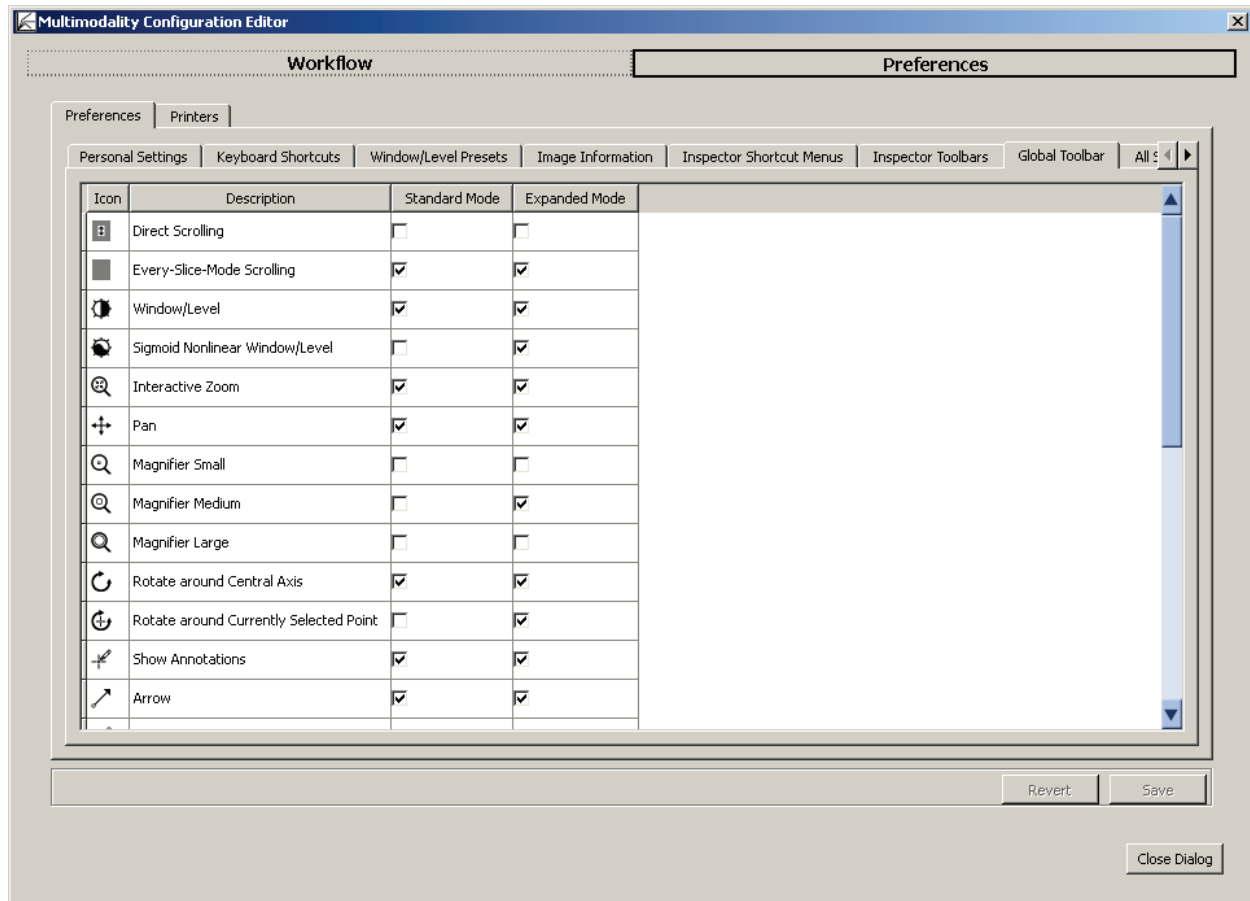
The tab presents all toolbar icons, their name, and two columns with check boxes.

▶ **To modify the settings, do the following:**

1   Scroll through all items and select the desired function in the Global toolbar. By default, the expanded mode includes nearly all icons and functions.

2   Select the Personal Settings tab to enable the standard or the expanded mode, by default.

3   If the **Save** button is not enabled, select the Personal Settings tab and click **Expanded Mode** twice.

4   Select the desired tool to show it in your standard and/or your expanded mode.

The default settings are as follows:

Icon and Tool	Default in standard	Default in expanded
Direct Scrolling	no	no
Every-Slice-Mode Scrolling (ESM)	yes	yes
Window/Level	yes	yes
Sigmoid Nonlinear Window/Level	no	yes
Interactive Zoom	yes	yes
Pan	yes	yes
Magnifier Small	no	no
Magnifier Medium	no	yes
Magnifier Large	no	no
Rotate around Central Axis	yes	yes
Rotate around Currently Selected Point	no	yes
Show Annotations	yes	yes
Arrow	yes	yes
Measurement	yes	yes
Polyline	no	no
Angle	no	no
Freehand	yes	yes
Ellipse	yes	yes
Rectangle	no	yes
Volume (VOI)	no	yes
Text	no	no
Currently Selected Point (CSP)	yes	yes
Image Information	yes	yes
Capture Single View	yes	yes
Show Link Options	yes	yes
Linking	yes	yes
Reset	yes	yes

7.16. All Settings Tab

This tab lists all keys, i.e., functions, their values, assigned users, and hosts, and gives a description that explains the function of the key. The All Settings tab is for use by Hologic service engineers.

7.17. Setting up a Printer

The setup procedure for a printer is based on a printer template that has to be installed first and then adapted. The Multimodality Viewer is delivered with some printer templates that may be configured by a Hologic service engineer.

Chapter 8: Keyboard Shortcuts

Chapter 8 provides an overview of the MM Viewer keyboard shortcuts.

8.1. General Shortcuts

The tables below list general keyboard shortcuts that provide users with direct access to special program features of the MM Viewer without selecting the desired menu item or clicking the button.

⚠ **Note:** *All keys of the following tables are presented in capital letters (as on your physical keyboard), but that does not mean that you have to uppercase them. Refer to key combination and press* [Shift] *only if this is mentioned.*

Key shortcuts	Effect	Alternative
[Ctrl] + [Shift]+ [X]	Switch between standard/expanded toolbar mode	
[Alt] + [Shift] + [W]	Open Workflow tab of Multimodality Configuration Editor	Click button on Application toolbar
[Alt] + [Shift] + [P]	Open Preferences tab of Multimodality Configuration Editor	Click button on Application toolbar
[Ctrl] + [P]	Open Print Tool window	Click button on Application toolbar
[Esc]	Close dialog window	

8.2. Global Toolbar Shortcuts

Tools of the Global toolbar can be activated by pressing the keyboard shortcut:

Key shortcuts	Effect	Alternative
[F11]	Select Ellipse annotation	Click button on Global toolbar
[F12]	Select Freehand annotation	Click button on Global toolbar
[Down{Arrow]	Select Measurement tool	Click button on Global toolbar
[F9]	Select Window/Level tool	Click button on Global toolbar
[F8]	Reset all settings	Click button on Global toolbar
[Ctrl] + [Shift]+ [E]	Select Scrolling ESM tool	Click button on Global toolbar

8.3. Hanging Shortcuts

Tools of a hanging can be activated by pressing the keyboard shortcut:

Key shortcuts	Effect	Alternative
[Ctrl] + [F1]	Image sets matching the descriptors (in study browser indicated by white corners) are shown in the associated Inspector. This Inspector must be activated.	
[Ctrl] + [F2]	Image sets matching the descriptors (in study browser indicated by white corners) are shown in the associated Inspector.	
[Ctrl] + [Shift] + [I]	Switch interpolation on/off	
[Ctrl] + [Shift] + [G]	Switch OpenGL on/off	

8.4. Annotation Shortcuts

Tools of an annotation can be activated by pressing the keyboard shortcut:

Key shortcuts	Effect	Alternative
[Alt] + [K]	Display next key image	Shortcut menu command
[Backspace]	Remove selected annotation	Shortcut menu command, displays confirmation dialog, too.
[Ctrl] + [K]	Mark current image as key image. If already a key image, clear the mark.	Shortcut menu command

8.5.   Image Window Shortcuts

There are some shortcuts to be used while viewing the patient images:

Key shortcuts	Effect	Alternative
[Ctrl] + [Shift]+ [F]	Switch to full screen mode and back	
[PageDown]	Switch image overlay from maximum, over reduced, to no information.	Click button of Inspector toolbar
[F6]	Activate cine mode	Shortcut menu of Alternator
[Ctrl] + [N]	Activate direct scrolling	Shortcut menu of Alternator
[I]	Invert image data	Shortcut menu of Inspector
[F2]	Switch to original presets	Shortcut menu of Inspector
[Ctrl] + [S]	Create ScreenCapture	Shortcut menu of Inspector
[Ctrl] + [Shift]+ [S]	Export image as .png to file	Shortcut menu of Inspector
[Ctrl] + [C]	Copy image to clipboard	
[Alt] + [A]	Select axial orientation	Shortcut menu of Inspector
[Alt] + [C]	Select coronal orientation	Shortcut menu of Inspector
[Alt] + [S]	Select sagittal orientation	Shortcut menu of Inspector
[Ctrl] + [Down{Arrow]	Decrement slice number	Drag slider
[Ctrl] + [Up{Arrow]	Increment slice number	Drag slider
[Ctrl] + [Left{Arrow]	Decrement time point	Shortcut menu of Inspector
[Ctrl] + [Right{Arrow]	Increment time point	Shortcut menu of Inspector
[Shift] + [P]	Set second CSP	
[P]	Switch between CSP and second CSP	
[Ctrl] + [G]	Open 'Enter slice number' dialog	Shortcut menu of Alternator
[A]	Select Magnifier medium	Shortcut menu of Inspector
[Ctrl] + [+]	Zoom in	Shortcut menu of Inspector
[Ctrl] + [-]	Zoom out	Shortcut menu of Inspector
[Ctrl] + [F]	Fit image to Inspector	Shortcut menu of Inspector
[Shift] + [S]	Increase slab	Shortcut menu of Alternator
[S]	Decrease slab	Shortcut menu of Alternator

Key shortcuts	Effect	Alternative
[Ctrl] + [D]	Switch subtraction mode from difference, over abs. difference, to original data.	Shortcut menu of MIP Inspector
[T]	Open 'local MIP threshold' dialog	Click button on local MIP Inspector toolbar
[Ctrl] + [A]	Select rendering mode Average	Shortcut menu of MIP Inspector
[Ctrl] + [M]	Select rendering mode MIP	Shortcut menu of MIP Inspector
[Ctrl] + [V]	Select rendering mode Volume Rendering	Shortcut menu of MIP Inspector

8.6. Study Browser Shortcuts

Tools of the study browser can be activated by pressing the keyboard shortcut:

Key shortcuts	Effect	Alternative
[5] (Num pad)	Open Close Study dialog	Click icon on Application toolbar
[Left{Arrow]	Open next Hanging Snapshot of current ReportFlow	Click icon on ReportFlow section
[End]	Open previous Hanging Snapshot of current ReportFlow	Click icon on ReportFlow section
[Ctrl] + [Page{Down]	Open next ReportFlow	Click icon on ReportFlow section
[Ctrl] + [Page{Up]	Open previous ReportFlow	Click icon on ReportFlow section

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