Zero Footprint Viewer

English

459801799891_A

Instructions for Use

IntelliSpace Portal

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1 Introduction

The Zero Footprint Viewer (ZFP) is a web based viewer (thin client) intended to be used by trained professionals, including but not limited to radiologists.

The ZFP software enables viewing images located on IntelliSpace Portal server, without installing IntelliSpace Portal client (thick client).

The Zero Footprint extends the availability of images that are available on IntelliSpace Portal to peer radiologists, other non-radiology physicians or referring physicians.

The software offers digital image processing, measurements, manipulation and quantification of images, communication and storage. Images are accessible to any web browser on a computer.

The ZFP Viewer is a multi-modality and multi-vendor standard advanced visualization viewing environment, that includes:

- Basic viewing capabilities including 2D, Slab, Fusion and Volume viewing modes.
- Viewing of CT, MR and NM (PET/SPECT) including multi-dimensional MR viewing and navigation.
- Multi-frame secondary captures of DX, CR, US, RF and XA modalities.

Studies are accessed via a bookmark URL link created on IntelliSpace Portal (the link can be shared with other users via email or any other communication tool that is available on the Portal Client).

WARNING

Zero Footprint Viewer should not be used for diagnosis.

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2 Indications for Use

The Zero Footprint Viewer (ZFP) is indicated for viewing, sharing, measuring, manipulating and quantifying of images by referring physicians, clinicians and radiologists, using a web-browser based viewer with access to hospital network.

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3 About This Instructions for Use

This guide includes information on Zero Footprint Viewer capabilities and basic workflow. For Intended Use, Safety and Security, and other IntelliSpace Portal information, please refer to the "Instructions for Use" included with your IntelliSpace Portal system before using the Zero Footprint Viewer.

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4 Pre-requisites

A supported browser should be installed on the system/device.

Supported Browsers

The Zero Footprint Viewer offers a platform independent (Windows, macOS, iOS, Android) Standard Advanced visualization viewing environment.

The following Web Browsers are supported:

- Microsoft Internet Explorer
- Microsoft Edge
- Google Chrome v61 and above
- Safari on Mac

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5 Launching Zero Footprint Viewer

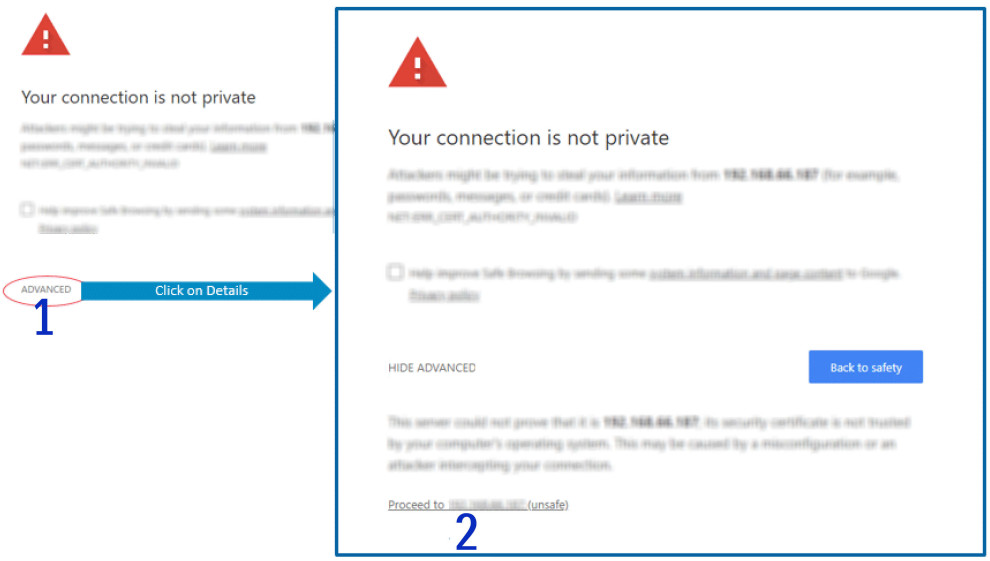
NOTICE

The procedure below provides instructions for Google Chrome browser. If you are using an alternate browser, select the option to continue to the site.

1. Launch **https://<Server IP>/ZFP** in a supported browser (see chapter “Supported Browsers” on page 11).

   If a "Self-signed" certificate was selected when ISP was installed, the **Your connection is not private** notification appears.

2. Select the **Advanced** (#1) option.



3. Select the **Proceed to xxx.xxx.xx.xxx (unsafe)** (#2) option.
4. Select **More information** > **Go on to the webpage (not recommened)**.
5. Enter your ZFP login credentials.

   The ZFP Study Directory opens.

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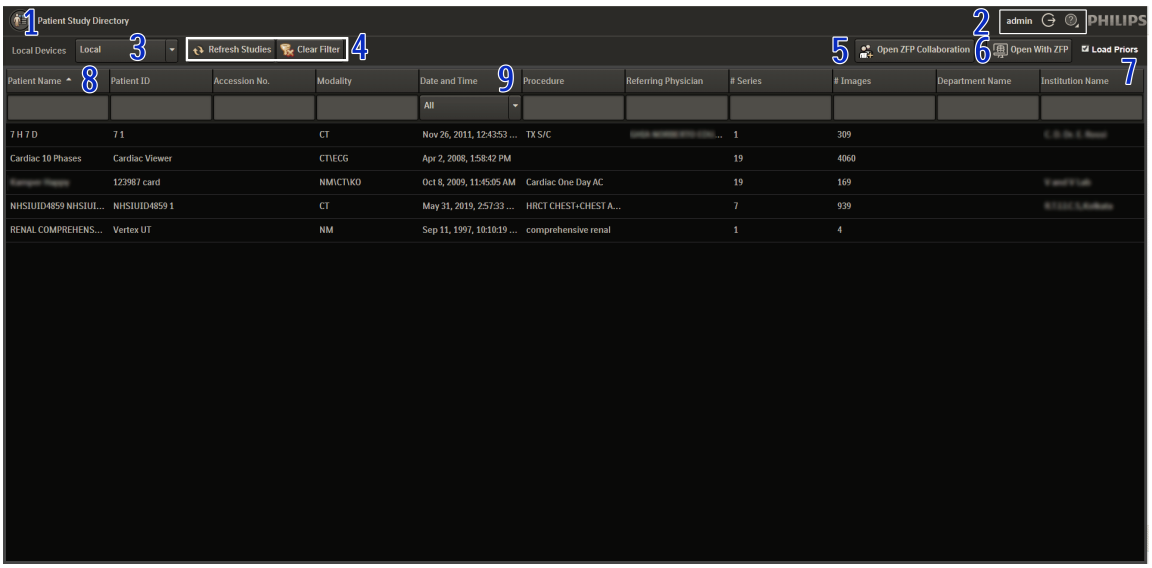
6 Patient Study Directory Screen Overview



1.  Patient Study Directory Icon- Used to access Patient Directory when located within the viewer.

2. User info/About/Logout/Configuration

Note: XXXXXX represents the name of the currently logged in user.

 Logout button

 Opens the About page.

3. **Device Selection** - List of available devices.

4.  **Refresh Studies** - Use this button to update the studies on the selected device.

 **Clear Filter** - Use this button to reset the filter.

5. **Open ZFP Collaboration** - See chapter “Collaboration” on page 55.

6.  **Open with ZFP**. See chapter “Opening a Study” on page 16.

7.	**Load Priors** - Used to retrieve prior studies for follow-up.
8.	Type in box for filtering. See chapter “Filtering and Sorting Studies” on page 16.
9.	Dropdown box for filtering. See chapter “Filtering and Sorting Studies” on page 16.

Filtering and Sorting Studies

There are two filtering/search options available in the Patient List.

- Type in the box below a column to search.
- The Date and Time column includes a dropdown list. Options include **All**, **Today**, **Last 2 Days**, **Last 3 Days**, **Last Week** and **Last 2 weeks**.

Sorting Studies

Click the title of a column to sort the column in ascending/descending order. An icon appears ( or ), indicating whether the column is sorted in Ascending or Descending order.

Sorting Columns

To change the order of columns:

1. Place your mouse at the top of the column that you want to move.
2. Drag the title to the desired location (you will see  2 arrows pointing up and down) and release the mouse button once the column appears in the desired location.

   The column is now located in a new location.

Opening a Study

1. Selecting one or more studies (Ctrl+click for multiple studies).
2. Click  **Open with ZFP** to launch the ZFP Viewer.

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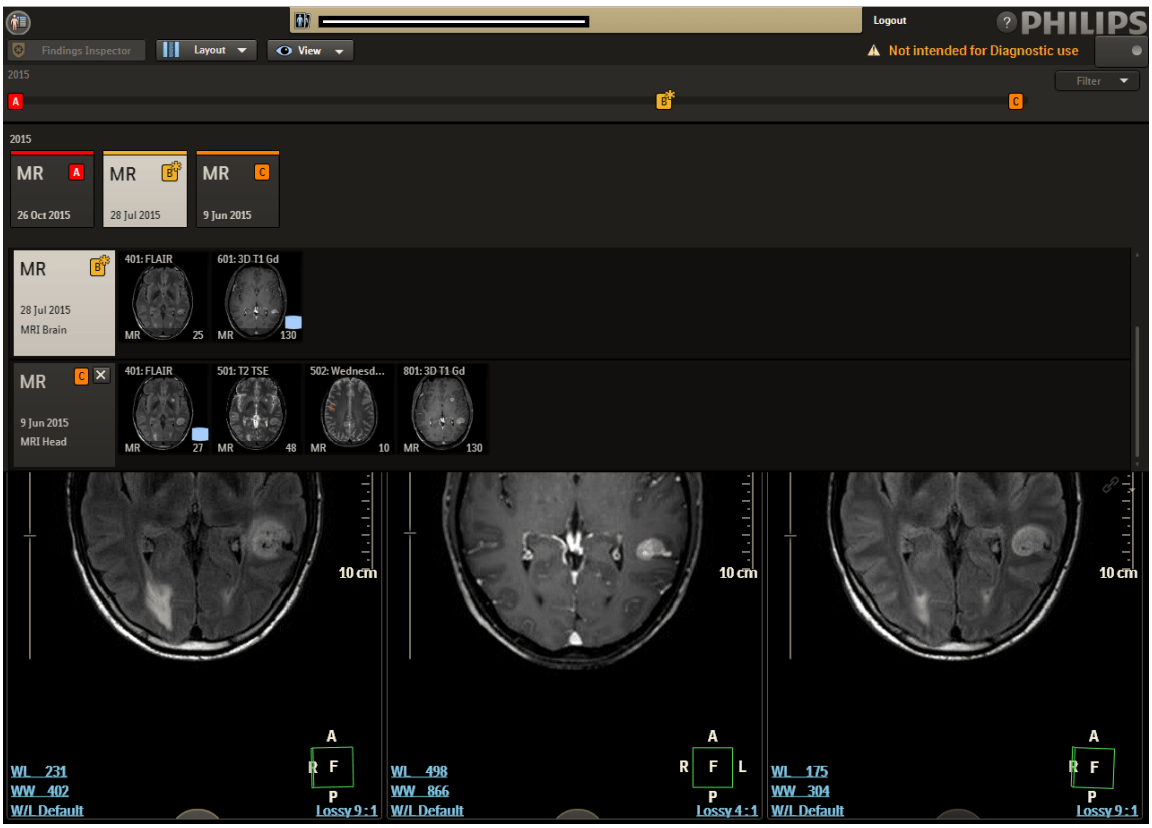
7 Zero Footprint Viewer Features

Timeline and Image Population

The timeline in the ZFP Viewer is an access point to all the patient's imaging history.

The timeline contains the following components:

1. Timebar – a quick scheme of all the patient's imaging history, from start to end within the respective time.
2. Exam rack - all the exams that belong to the patient, in chronological order.
3. Series rack(s) - all the series that belong to selected exams in the exam rack.



Populating Series to the Viewer

To access images for ZFP Viewer population:

1. Click on the **Timebar** (1) to access the timeline.
2. Within the Exam rack (2) click the exam of the images you would like to view. This will result with one of the following in the series rack (3):
   - If the exam was closed it will open, be assigned an identification icon and the series rack will open below.

– If the exam was open, the relevant series rack will scroll into the view.

3. In order to populate a series from the timeline, do one of the following:
   – Using the left mouse button, drag and drop the relevant series thumbnail into the required arrangement in the viewing area.

     Or

   – Click the left mouse button on the series thumbnail to populate the series to the viewer.

NOTICE

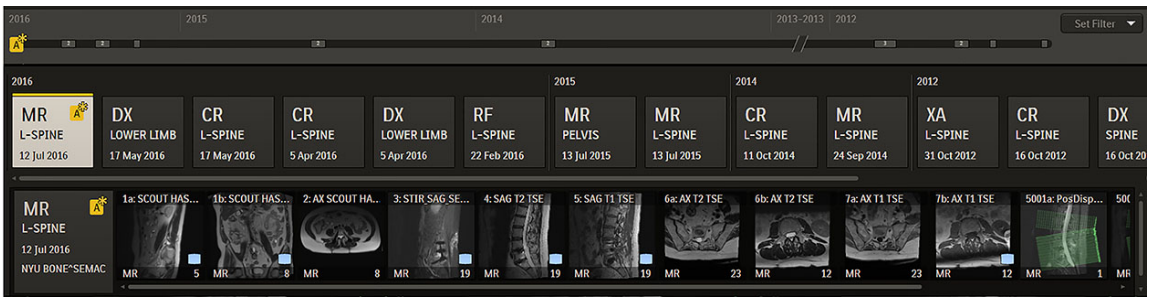
Single click population will first fill in the empty arrangements, replacing any existing active arrangement(s).

Populating an Exam

To populate a full exam to the viewer:

1. Click on the **Timebar** (1) to access the timeline.
2. Drag and Drop (using the left mouse button) the relevant exam thumbnail into the viewing area.

Filtering the Timeline



To filter the timeline, perform one of the following options:

- Click the **Set Filter** button on the right side of the timebar and select the filter parameters (i.e. modality, body part).

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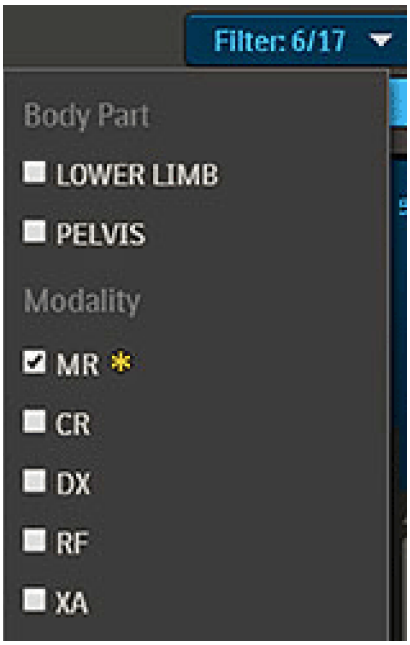
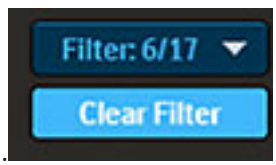


OR

- Right click on the exam you want to keep in the timeline and select filtering options from the drop-down menu.

NOTICE

To exit the filtered view, click the **Clear Filter** button.

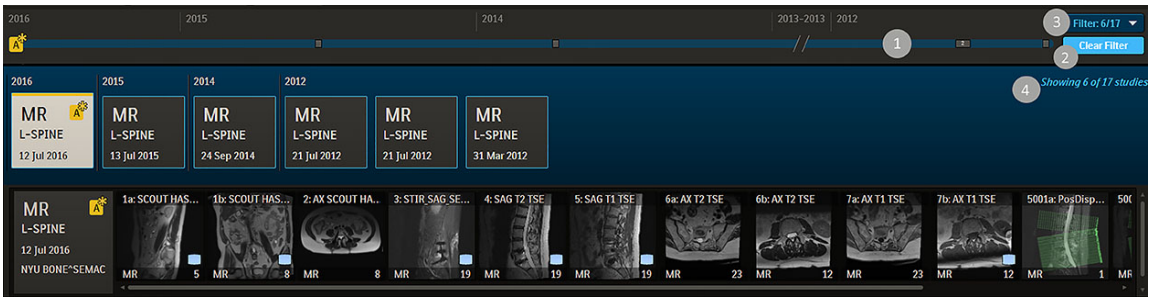


NOTICE

Filtering will be applied in reference to the selected exam in step 1 above, meaning the same modality, same body part or same modality and body part.

There are several indications that the timeline is filtered:

1. The timeline background color changes.
2. The **Clear Filter** button appears under the **Set Filter** button.
3. The text in the **Set Filter** button changes to show the number of visible exams out of the total.
4. Text displays in the exam rack to indicate the number of visible exams out of the total number.



Quick Series Selection

Quick Series Selector

To quickly access a populated exam series:

1. Click on the series name in the center of the arrangement header.

2. Scroll through the dropdown menu and select the required series to view.

NOTICE

Series that are already populated on the ZFP Viewer will have the blue monitor indication next to the title.

All Series Combined

Within the series selector you can find an option to view all series combined. Activating this functionality will result with the stacking of all series in one arrangement allowing you to scroll through all images of the exam without needing to populate each series separately.

1. Activate the quick series selector from the desired arrangement header.
2. Select the all series combined option.

Exam Identification

In addition to the display of the exam date and time, ZFP displays an icon that identifies the exam and related items throughout the full session. The icon includes a letter and a color indicating the position of the exam in the timeframe.

The exam that was selected from the worklist (current exam) displays an icon with a letter and an asterisk 

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NOTICE

In monochrome the glyphs display different grayscale intensities instead of colors.

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Image Tools and Manipulations

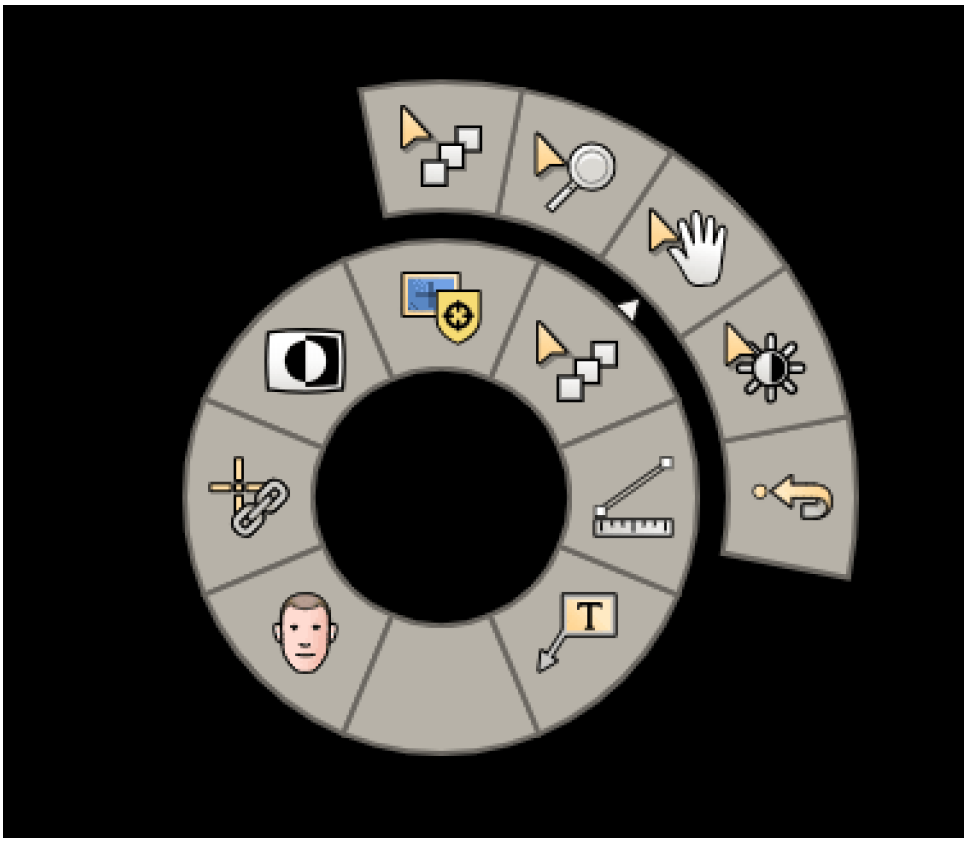
Context Menu

The Context Menu contains tools to help view and manipulate images. The menu consists of seven menu icons, where each one invokes corresponding tool icons when right-clicking on it.

Relevancy of the tools available (depending on where the menu was invoked), take into consideration image modality, image type and even pixel values.

Basic Viewing Tools

The basic viewing tools are the most commonly-used tools for manipulating images.



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Icon	Tool	Description
	**Scroll**	The Scroll tool enables navigation between the images of the series. • Vertical scroll manipulation enables navigation between series' slices. • Horizontal scroll for multi-dimensional data enables navigation between dimensions. • It is also possible to scroll using the mouse wheel or the keyboard arrow. For further information refer to chapter “Shortcuts” on page 34.
	**Zoom**	The Zoom tool enables zooming in and zooming out of the image in the arrangement. There are two configurable zoom types: • **Zoom to center** - Zooms the image in reference to the center of the image. – Select the zoom tool from the Inspection Reticle. – Use the mouse or keyboard shortcuts. • **Zoom-to-point** - Zooms the image in reference to the point from where it was invoked. – Select the tool from the Inspection Reticle. – Use the mouse or keyboard shortcuts. For further information refer to chapter “Shortcuts” on page 34.
	**Pan**	The Pan tool enables moving the image displayed in the arrangement area.

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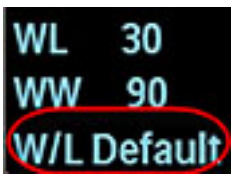
Icon	Tool	Description
	**Windowing**	The Windowing tool enables refining the image to windowing and improving it for viewing purposes. It is possible to manipulate image windowing from the following locations in the ZFP Viewer: • **Context Menu**- Available in the top right panel of the Context Menu. • **The mouse shortcut**. For further information refer to chapter “Shortcuts” on page 34. • **Functional Image overlays** - Depending on the modality, images have a functional image overlay in the bottom left corner. Click on the annotation and manually type in the preferred values.  • **Predefined Presets** - In CT, there is a list of predefined presets that can be toggled. Accessing the predefined presets is possible in two ways: – **Functional Image overlays** – Click on the predefined preset in the functional overlay to open a drop down menu with all the other Predefined presets available.  – Keyboard shortcuts are available to toggle between the predefined presets. For further information refer to chapter “Shortcuts” on page 34.
	**Swivel**	The swivel tool allows the re-slicing of the data in any direction.
	**Reset Tool**	The Reset tool reverts changes made to images in specific arrangements with regard to zoom, pan and windowing.

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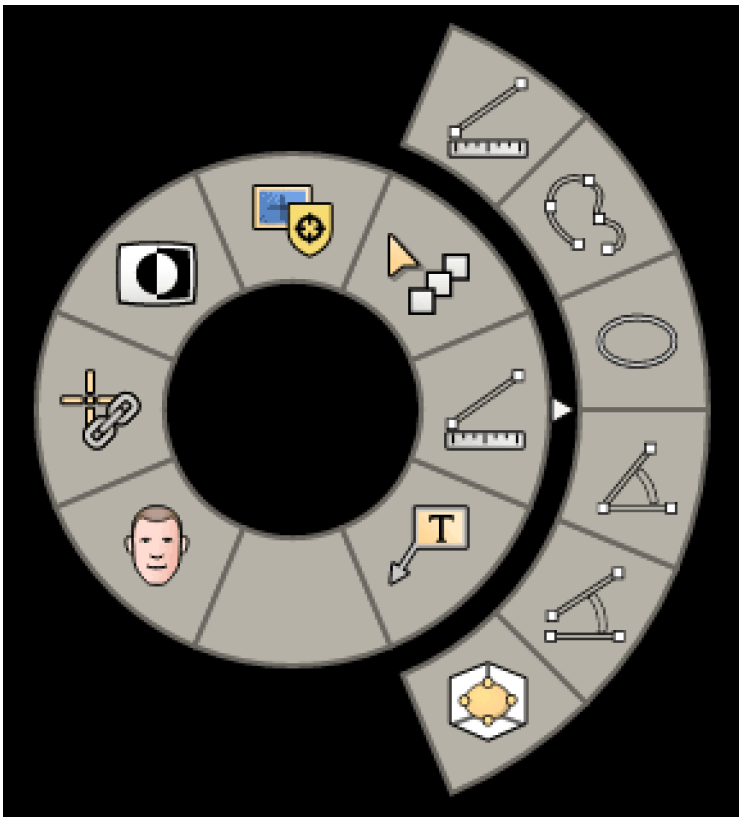
Measurement Tools



The ZFP Viewer provides a set of measurement tools in the Inspection Reticle.

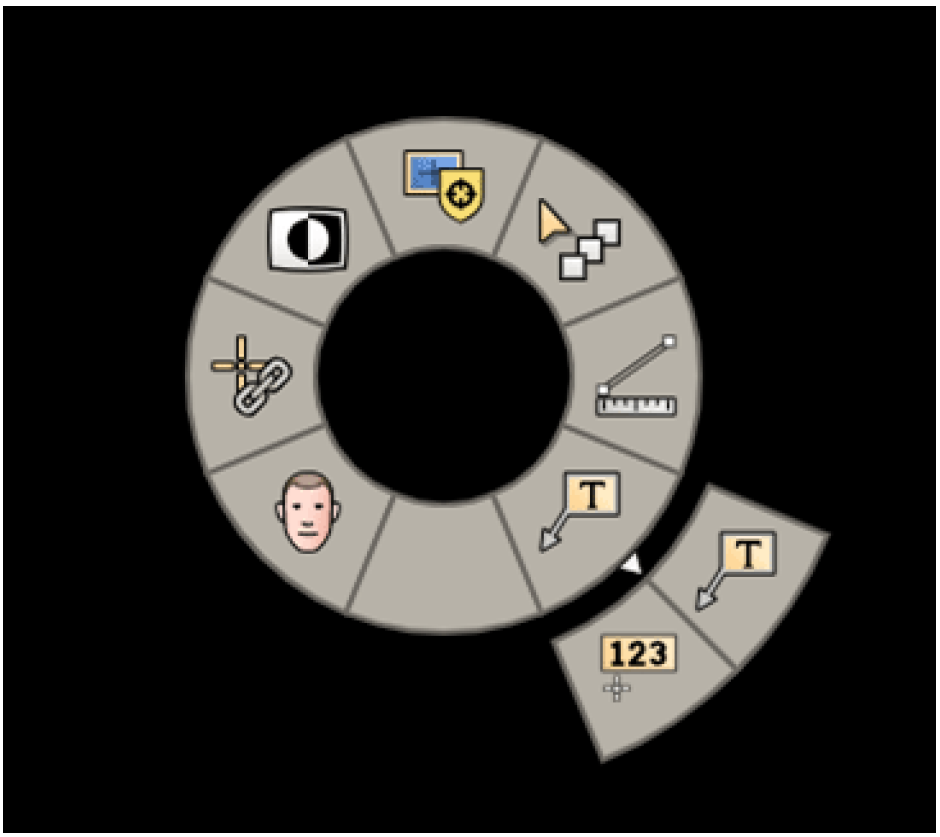
Relevant measurement tools are available according to currently selected image.

For further information on these tools, refer to chapter “Measurement” on page 35.

Icon	Tool	Description
	**Line**	The Line tool enables you to measure the distance between two points.
	**Spline**	The Spline tool enables you to measure the distance of a curved line.
	**Ellipse**	The Ellipse tool enables you to measure a region of interest (ROI).
	**Angle**	The Angle tool enables you to measure the angle between two connecting lines..

Icon	Tool	Description
	**Open Angle**	The Open Angle tool enables you to measure the angle between two non-connecting lines.
	**3D Segmentation**	The 3D Segmentation tool enables an area to be segmented on CT/MR images and measures the volume and main diameters.

Image Annotation Tools



The ZFP Viewer provides a set of annotations tools in the Inspection Reticle.

Relevant annotation tools are available according to currently selected image.

Icon	Tool	Description
	**Pixel Value**	The Pixel Value tool enables you to measure the value of a specific pixel. For further information refer tochapter “Pixel Value Tool” on page 40.
	**Arrow and Text**	The Arrow and Text tool enables an arrow annotation to be marked and free text added. For further information refer to chapter “Arrow and Text Tool” on page 40chapter “Arrow and Text Tool” on page 40.

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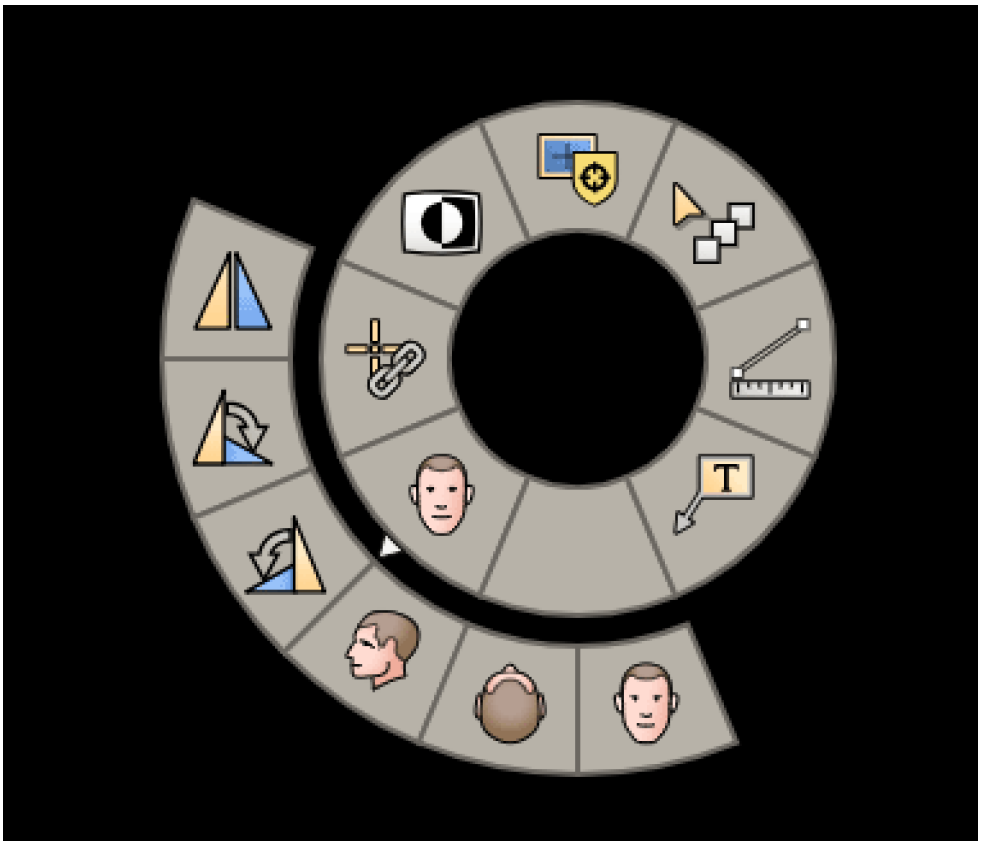
Image Orientation Tools

The Image Orientation tools allow manipulation of image orientation.



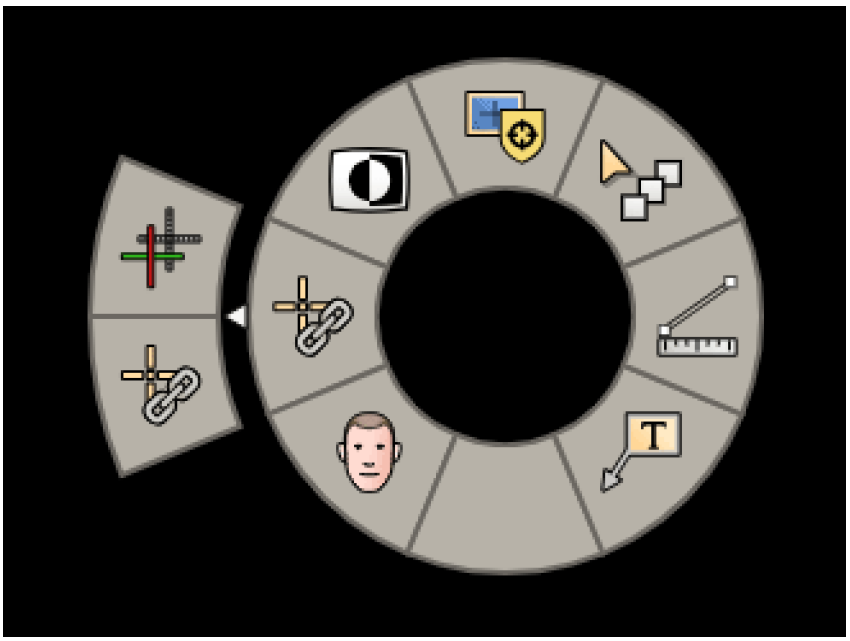
Icon	Tool	Description
	**Rotate clock-wise**	Rotates the image 90 degrees to the right.
	**Rotate coun-ter-clockwise**	Rotates the image 90 degrees to the left.
	**Mirror-flip**	Mirror- flips the image left to right.
The Change Orientation tools enables changing the image orientation of the main image in volume viewing mode (Slab and 3D).		
	**Axial view**	Changes the main image to axial orientation.

Icon	Tool	Description
	**Coronal view**	Changes the main image to coronal orientation.
	**Sagittal view**	Changes the main image to sagittal orientation.

NOTICE

When activating the Change Orientation tools in 2D viewing mode the arrangement will switch to Slab viewing mode and apply the selected orientation.

Relate and Reference Tools



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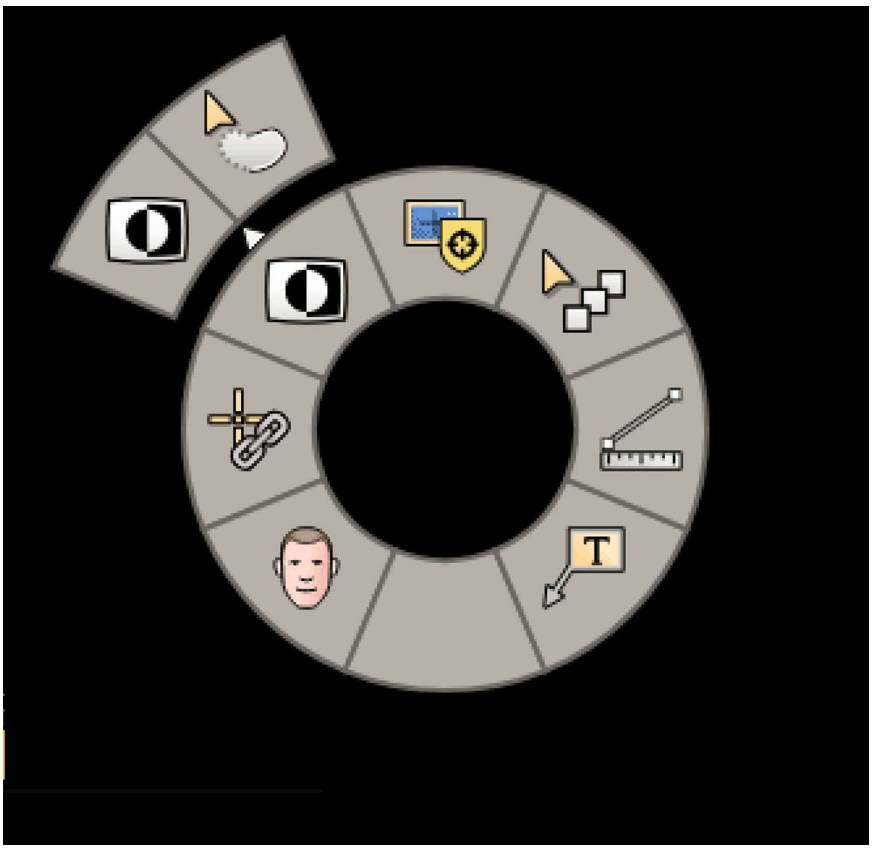
Icon	Tool	Description
	**Relate**	The Relate tool enables orientation around the volume in different orientations. 1. Select the tool from the Context Menu. 2. Click on the point to align. All relevant images align to the relevant location and the Relate tool icon appears on the image, indicating the relate point. It is also possible to activate the Relate tool by clicking on the **R** Keyboard shortcut. This toggles the tool on and off.
	**Hide/Show Reference Lines**	When in Slab or 3D viewing mode, the Hide/Show Reference Lines tool provides the ability to hide or show the reference lines that appear on the reference images. Click on the **Hide/Show** icon to hide/show the reference lines for a selected image.

Invert and Enhancement Tools

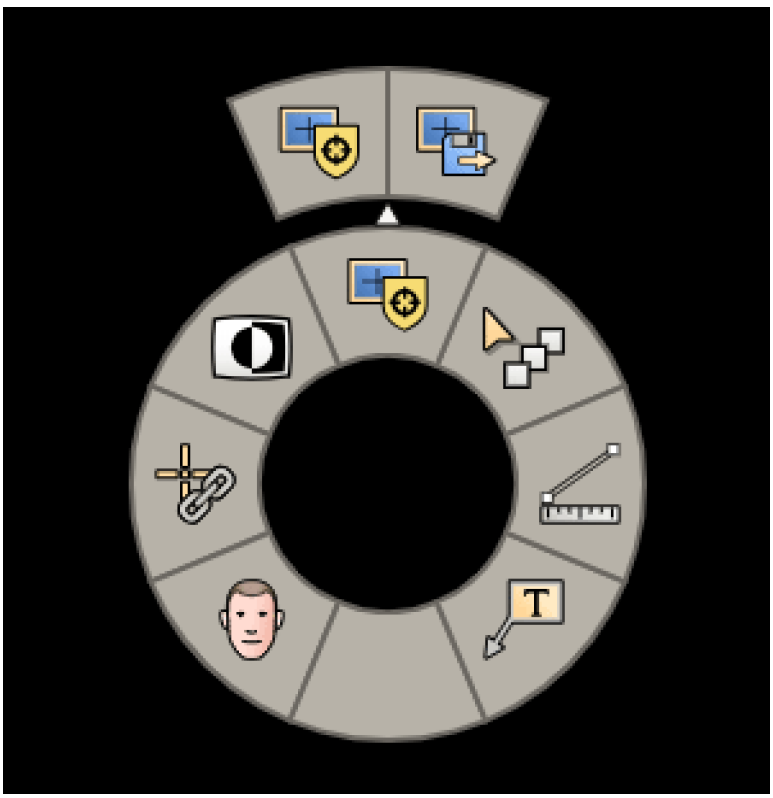
The Invert and Enhancement tools are available from the top left panel of the Inspection Reticle and enable a selected image to be enhanced and/or inverted.



Icon	Tool	Description
	**Invert**	The Invert tool enables the inversion of colors on an image.
	**Enhance**	Select the tool and use the left mouse button to manipulate it on a selected image.

Findings and Exporting Image Tools

Findings and Exporting Image tools enables images to be captured during the current session only and exported.



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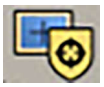
Icon	Tool	Description
	**Line**	In order to add the selected image as a saved finding in the current session, click the **Add as Finding** icon in the Context Menu. The image available in the arrangement that the Context Menu was invoked from will be added to the exam's finding list of the exam. The finding is not saved under the study; it is displayed under findings for reference within the same session.
	**Spline**	In order to export an image to be saved locally click on the **Export Image** icon in the Context Menu. The image available in the arrangement that the Context Menu was invoked from will be exported and you will be able to save the image to the location of your choice.

Calibration Tool

The Calibration tool is available for exams from the following modalities:

- XA
- DX
- CR
- RF

This tool enables calibration in case it is missing on the images or to fix an existing calibration. To apply calibration perform the following steps:

1. Select the tool from the Inspection Reticle.
2. Click on the image to mark the start point.
3. Click on the image to mark the end point.
4. A dialog box opens.
5. Enter the known distance between the two points marked then click outside the dialog box to apply the changes.
6. In case you need to edit the created calibration, select the tool again from the Inspection Reticle.
7. The previously-created calibration measurement appears.
8. Adjust to edit the calibration.

NOTICE

Changing the exam's calibration will automatically apply the measurement changes on all findings within the affected images.

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Fusion Tools

When loading a PET CT exam to the viewer, a fusion default fusion layout is loaded automatically and can be used to view the PET CT images. For these cases, a set of tools dedicated to adjusting fusion overlays appear in the Inspection Mode tool panel.

Icon	Tool	Description
	**Pan overlay**	Enables overlay adjustment via the pan tool. The pan will apply only on the overlay.
	**Rotate overlay**	Enables overlay adjustment via the rotate tool. The rotate will apply only on the overlay.
	**Reset overlay**	Resets changes made on the overlay and reverts to the default orientation.

Multimodality Viewing-Additional Functionality

In addition to the functionalities and tools detailed in the previous section, there are tools and functionalities available that are specific to modality and data type. The additional tools are detailed below according to modality type.

CT and MR: Multi-dimensional Data

Viewing Multi-dimensional data (e.g. Perfusion, diffusion etc.) is possible within the series.

1. Populate the multi-dimensional data to the viewer.
2. Scroll up and down to scroll through the Z axis.
3. Scroll left and right to scroll through the dimensions.

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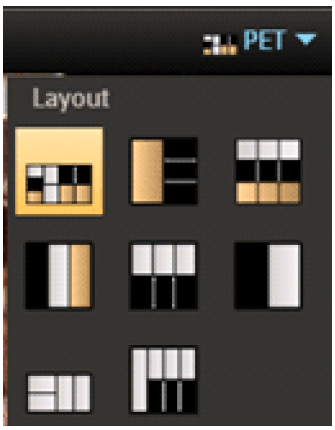
4. On the left upper side of the image you will see a functional annotation that represents the phase you are in. You can manually change the phase to move to a different dimension.

PET CT: Fusion Layouts

When loading a PET CT case to the viewer the images load in a default Fusion layout. You can change the layout and select from a set of layouts:

1. Click on the viewing mode button in the top right area of the arrangement.
2. Select the desired layout.



WARNING

The system is only based on the available pre-registration of the fused series.

PET: Measurements SUV

Measuring an ROI or pixel value on a PET image will provide SUV measurements that are calculated based on Body Weight.

WARNING

The SUV calculation method is always based on body weight.

Within the default layout, a measurement on the fusion image is automatically mirrored on the CT image and vice versa.

Ultrasound: Automatic Stacking of Static Images

When viewing ultrasound, all static images are stacked to one thumbnail.

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1. Populate the series/ thumbnail to the viewer.
2. Scroll through the images to view all.

Shortcuts

Mouse Operations

The ZFP viewer allows accessing basic viewing tools using the mouse buttons. The available tools and manipulations are shown below.

Tool	Mouse Shortcut
Fast scroll	Left mouse button
Slow scroll	Mouse Wheel
Inspection Reticle	Right mouse button
Windowing	Middle mouse button
Pan	Middle mouse button + left mouse button
Zoom	Middle mouse button + right mouse button
Swivel volume	Right mouse button + left mouse button
Swap arrangements	Right mouse button + drag and drop to the desired arrangement

Keyboard Shortcuts

Functionality	Tool	Keyboard Shortcut
Image and Series Navigation	Scroll slice up/down	Up/Down arrows
	Scroll to different dimensions	Left/Right arrows
	Jump to first slice	Home
	Jump to last slice	End
	Navigate to next/previous series	**, / .**
	Populate next unseen series in current exam	U
	Reset Unseen Series in exam	Shift + U
General Viewing	Move to 2D view	Shift + S
	Move to Slab view	Shift + M
	Move to 3D view	Shift + V
	Zoom in/out	+/-

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	Hide/Show measurements	Shift + H
	Hide/Show grid	G
	Toggle Relate mode	R
	Play/Pause cine	Pause-Break
	Revert from Maximized mode	Esc
	Link All	L
	Link Exams	E
Viewing Slab/3D	Volume rendering mode	Shift + 1-5, 7 where 1=Average, 2=MIP, 3=VIP, 4=MinIP, 5, 7=SurfaceMIP
	Windowing (CT only)	1, 2, 3, 4, 5, 6, 7, 8, 9, 0
	Volume image background color (CT only)	B
	Flip volume image	D
	Rotate volume image	Left/Right arrows
	Move to Axial view	A
	Move to Coronal view	C
	Move to Sagittal view	S
Findings	Add as finding	Space
	Navigate between findings	Shift + Z

Measurement

Measurement tools provide ways to quantify distance, angle, area and volume.

Measurements appear on the images and can be edited/deleted at all times after creation.

To create a measurement, select the relevant tool from the Inspection Reticle and draw the measurement on the image.

Line Tool

The Line tool allows you to measure the distance between two points. To create a measured line perform the following steps:

1. Select the Line tool from the Inspection Reticle.
2. Click on the image to create a start point.
3. Click on the image again to create an end point.

4. A line is created.
   – Hover over the line to highlight it and display grab points.
   – Click on a grab point and drag it to the required location.

Moving the Line Tool

1. Move the line by hovering over it with the cursor and moving the cursor towards the middle of the line - the cursor changes to the  Move icon.
2. Click and move the line to the required location.

Spline Line

The Spline Line allows you to measure the distance of a curved line. To create the Spline Line perform the following steps:

1. Select the Spline Line tool from the Inspection Reticle.
2. Click on the image to show the start point for the line.
3. Click on the image again to add a connection point.
4. Double-click on the image to create the end point.
5. A spline line is created.
   – Hover over the line to highlight it and display grab points.
   – Click on a grab point and drag it to the required location.

Moving the Line

1. Move the line by hovering over it with the cursor and moving the cursor towards the middle of the line - the cursor changes to the Move icon.
2. Click and drag the line to the required location.

Ellipse Tool

The Ellipse tool enables you to measure a region of interest (ROI). To create an ellipse measurement, perform the following steps:

1. Select the Ellipse tool from the Inspection Reticle.
2. Click on the image to create a start point.
3. Click on the image again to create an end point.

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4. An ellipse is created.
   - Hover over the ellipse to highlight it and display grab points.
   - Click on a grab point and drag it to the required location.

Moving the Ellipse Measurement

1. Move the ellipse measurement by hovering over it with the cursor and moving the cursor towards the middle of the line - the cursor changes to the Move icon.
2. Click and move the ellipse measurement to the required location.

Angle Tool

The Angle tool enables you to measure an angle between two connecting lines. To create the angle measurement perform the following steps:

1. Select the Angle tool from the Inspection Reticle.
2. Click on the image to create a start point for the first line.
3. Click on the image again to create an end point for the first line.
4. Continue and click on the image on the start point to create a second line.
5. Click on the image again to create the end point for the second line.
6. An angle measurement is created.
   - Hover over the angle measurement to highlight it and display grab points.
   - Click on a grab point and drag it to the required location.

Moving the Angle Measurement

1. Move the angle measurement by hovering over it with the cursor and moving the cursor towards the middle of the line - the cursor changes to the Move icon.
2. Click and move the angle measurement to the required location.

Open Angle Tool

The Open Angle tool enables you to measure an angle between two non-connecting lines. To create the Open Angle measurement perform the following steps:

1. Select the Open Angle tool from the Inspection Reticle.
2. Click on the image to create a start point for the first line.

3. Click on the image again to create an end point for the first line.
4. Continue and click on the image on the start point to create a second line.
5. Click on the image again to create the end point for the second line.
6. An open angle measurement is created.
   – Hover over the angle measurement to highlight it and display grab points.
   – Click on a grab point and drag it to the required location.

Moving the Open Angle Measurement

1. Move the open angle measurement by hovering over it with the cursor and moving the cursor towards the middle of the line - the cursor changes to the Move icon.
2. Click and move the open angle measurement to the required location.

3D Segmentation Tool

The 3D Segmentation tool allows you to segment an area on CT/MR images and measure the volume and main diameters.

3D segmentation can be used only on volumetric CT/MR datasets and is performed in Slab rendering mode.

When 3D segmentation is activated in 2D rendering mode, the viewport automatically changes to Slab mode.

To create 3D segmentation in Slab view, perform the following steps:

1. Select the 3D segmentation tool from the Inspection Reticle.
2. Position the center of the contour in the center of the lesion.
3. On the keyboard, press and hold down the Shift key while using the mouse center button to modify the contour size until it matches the boundaries of the lesion.
4. Click on the left mouse button to create a 3D segmentation.

CAUTION

Verify correctness of the contour on all three views (Axial, Coronal and Sagittal) before creating the 3D segmentation.

To create 3D segmentation using only the mouse, perform the following steps:

1. Select the 3D segmentation tool from the Inspection Reticle.
2. Position the center of the contour in the center of the lesion.

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3. Hold down the left mouse button and drag the mouse cursor to the boundaries of the lesion.
4. Release the left mouse button.

Tips for Successful Segmentation

1. 3D segmentation is best performed when there is a contrast between the lesion and its surrounding tissue. In order to improve the accuracy of 3D segmentation, modify windowing levels so that there is maximum contrast between the lesion and its surroundings.
2. 3D segmentation accuracy is optimal when slice thickness is small (2mm or lower) and the distance between slices is small (2mm or lower).
3. It is possible to create 3D segmentation using any orientation. Use the orientation where the lesion is largest, for optimal results.
4. During segmentation, all orientations are centered around the anatomy which is selected by the mouse cursor. Use the scroll and mouse movements to focus on the center of the lesion before changing size and creating the segmentation. After segmentation completes, the system will calculate the following:
   - Volume (cm^3)
   - Long axis – the longest diameter of the segmented lesion, in the orientation of the original slices (displayed on the slice where the longest diameter is detected)
   - Short axis – the longest diameter of the segmented lesion, which is perpendicular to the long axis (displayed on the slice where the longest diameter is detected)

To edit an existing 3D segmentation, perform the following steps:

1. Switch viewport to Slab rendering mode.
2. Click on the 3D segmentation color tissue.
3. Use the left mouse button to hold and move the contour of the 3D segmentation. Release the mouse button when the contour is on the edge of the lesion.

CAUTION

To ensure correct volumetric measurement, verify the correctness of segmentation in all images of the lesion. Scroll up/down to verify the segmentation is accurate and edit as needed.

To delete an existing 3D segmentation in 2D/Slab view, perform the following steps:

1. Click on the 3D segmentation label (Volume: XXX cm^3).
2. In the Finding panel, click the **Delete Finding** button.

To delete an existing 3D segmentation in Slab view only, perform the following steps:

1. Click on the 3D segmentation color tissue to enter Edit mode.
2. On the keyboard press **Delete**.

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Annotations

Annotation tools provide ways to quantify pixel value, mark an arrow annotation and add free text and mark the spine vertebrae.

Annotations appear on the images and can be edited/deleted at all times after creation.

To create an annotation, select the relevant tool from the Inspection Reticle and draw the annotation on the image.

Pixel Value Tool

The Pixel Value tool enables you to measure the value of a specific pixel. To create a Pixel Value measurement perform the following steps:

1. Select the Pixel Value tool from the Inspection Reticle.
2. Click on a specific point on the image to measure the pixel value.
3. A pixel value measurement is created.
   - Hover over the angle measurement to highlight it and display grab points.
   - Click on a grab point and drag it to the required location.

Arrow and Text Tool

The Arrow and Text tool enables you to mark an arrow annotation and add free text. To create the arrow and text measurements perform the following steps:

1. Select the Arrow and Text tool from the Inspection Reticle.
2. Click on the image at the specific point to create the arrow head.
3. Click on the image again to create an end point for the arrow line.
4. A text box opens for entering free text.
   - Enter the required text then click outside the box to save the entered text.
   - When text is not required, just click outside the box to close it.
5. An arrow and text box (if text is entered) are created.
   - Hover over the arrow to highlight it and display grab points.
   - Click on a grab point and drag it to the required location.
   - In the event that you want to add text or edit existing text, simply click on the text box to edit the text.
   - In the event that you want to add text to an arrow, highlight the arrow then double-click on it.

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Moving the Arrow and Text Box

1. Move the arrow and text box by hovering over it with the cursor and moving the cursor towards the middle of the line - the cursor changes to the  Move icon.
2. Click and move the arrow and text box to the required location.

Viewing Modes and Inner Tiling

It is possible to view volumetric images in three different viewing modes:

- 2D
- Slab
- 3D

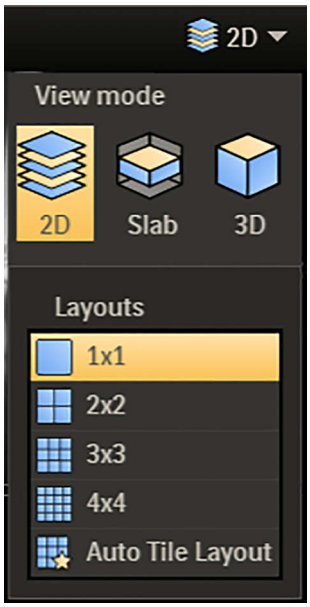
After setting a viewing mode, it is also possible to change the inner tiling of the arrangement.

Changing Viewing Mode

To change the viewing mode, perform the following steps:

1. Click on the **Viewing Mode** button on the right side of the arrangement header.

2. In the drop-down menu select the required viewing mode.



Changing Inner Tiling

The selected viewing mode affects selection of the available inner tiling.

To change the inner tiling of the arrangement, perform the following steps:

1. Click on the Viewing Mode button on the left side of the arrangement header.

2. In the drop-down menu select the required inner tiling.

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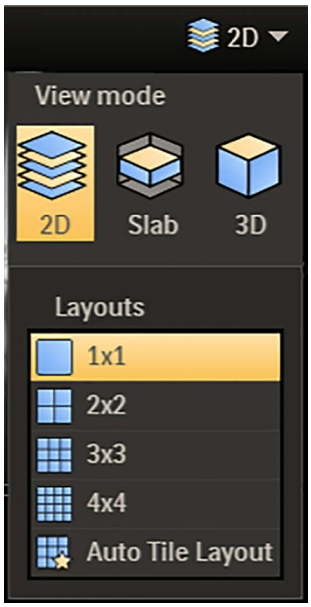

Link

The ability to link between series allows you to scroll, zoom and pan series together while maintaining the same anatomy being shown on both images. The series may be from the same exam – for which the link is showing a slice from the same spatial position, or from different exams – for which the link is based on registration algorithm results.

When layout is in Slab or 3D viewing modes, the link also maintains the same orientation on all series. When populated, the system divides the shown series to “link groups” according to whether these series are on the same spatial space or are registered. The system displays the link chain icon on the viewport of each series that belongs to the link group of the currently-active series.

WARNING

The correctness of a link between series should be reviewed.

Manipulating Link Behavior

It may be necessary to break the link for the following reasons:

1. Dissatisfaction with the registration results and suspecting that scrolling one series has resulted with wrong slices on the other series.
2. You want to ‘pause’ an image on a specific anatomical location, such that it would not scroll away by changing the location of other displayed series.

The system provides a quick way to ‘break’ links between series and exams and to restore them.

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Breaking a Link

To break the links between shown exams click the Link icon.

When only a single exam is shown in the layout, a dropdown menu displays. Select **Unlink All** to break the links.

Fixing a Link

To correct a link and align slices to more correct anatomical locations, perform the following steps:

1. Click the **Link** icon to break links between exams, or from the Link dropdown menu select **Unlink All**.
2. Scroll, zoom or pan images until they show the same anatomical location and the images are aligned as required.
3. Click the **Link** icon again to set the link back at this specific location.

   The system considers the currently-shown location as an appropriate match and saves it as the current link. From this point forward any scroll made to either viewport will maintain the relative difference in order to keep showing matched anatomical locations on all viewports.

Restoring Default Links

After breaking or fixing a link, it may be necessary to return to the application's default link and show the images as when the exams were first loaded.

To restore default links, perform the following steps:

1. From the Link icon display the dropdown menu by hovering the mouse cursor over the Link icon.
2. Select **Restore Default Link** from the menu list.
3. The system reverts all changes made and restores links, placing them on the anatomical matching location according to registration results.

Link Chain Icon

The viewport shows a series that participates in a link group with a currently-active series.

The viewport shows a series that participates in a link group with currently active series, but all links were broken.

Scroll, zoom and pan manipulations are not synced to another series within the link group.

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Link Menu

The Link menu displays the following menu options:

1. Unlink Exams/Link Exams - whenever multiple exams are shown on a layout this option is available. When you select to unlink, the system breaks the link in order to fix a bad registration between exams or in order to scroll each exam series without also scrolling the other exam together. When only a single exam is presented or if you selected **Unlink All** previously, this option is not available.
2. Unlink All/Link All – when you want to scroll a series independently within an exam, or when you want to fix the alignment of a series within the same exam, this menu option breaks all link groups. This option breaks the link between exams as well as within each exam, so each series will scroll on its own.
3. Restore Default Link – reset link groups to system default (as after loading the exam again). The link groups will be set back and the shown location will reset to correlate the currently active viewport
4. Parameters – link synchronously modifies other shown series, such as scrolling to the same location, zooming and panning together, windowing to the same HU value (CT only). This menu controls whether a certain operation is applied/not applied on another series in the link group.

Parameters

When Parameters is selected from the Link menu, the following options are available:

1. Zooming – when checked (indicated by a yellow rectangle each series of the link group will zoom together.
2. Panning – when checked, each series of the link group will pan together.

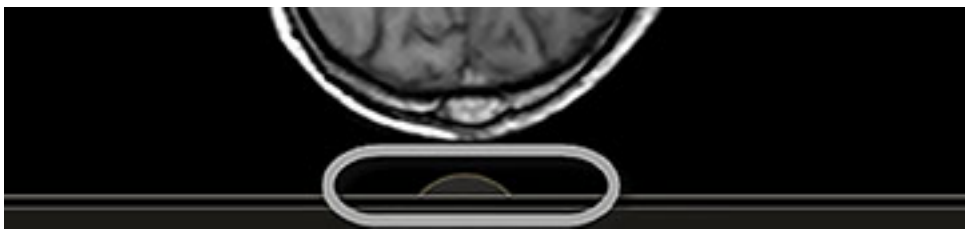
3. Windowing – when checked, each CT series of the link group will window together. The operation will be in effect provided that the series within the link group has the same windowing values before the start of the windowing operation.
4. Scroll & Swivel – this option is always grayed out. The essence of the link is that the series of the same link group scroll together and change orientation (swivel) together when in Slab or 3D viewing mode.

Cine/Movie Bar

The Cine tool allows easy navigation through exam and series images without the need to go to the timeline. For multi-frame data the cine tool is applied automatically and images play to show an easy view of the acquisition. The Cine tool is available in the lower area of every arrangement and applies only to that arrangement.

To run the Cine tool, perform the following steps:

1. Hover over the Cine tool hint in the lower, center area of the arrangement to show the Cine tool.



2. 

   Click the **Play** button to start scrolling slices.

3. 

   Click the **Pause** button to pause scrolling slices.

4. 

   Click the **Next** or **Previous** image button to move only one slice at a time in the required direction.

5. 

   Click the **Nex**t or **Previous** series button to move through the series of the same exam.

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6. 

Click on the **Frame per Second** icon to adjust the scrolling rate and adjust the speed bar to the required speed rate.

7. 

Pin the Cine bar so it remains visible in this arrangement without reverting to being hidden.

NOTICE

When loading multi-frame data the Cine tool is pinned automatically.

Scroll Bar

In every arrangement that contains more than one image, a scroll bar displays on the left side of the arrangement.

Move the scroll bar up to move slices up and move the bar down to move slices down.

NOTICE

To scroll through multidimensional sequences use the fast scroll tool and scroll horizontally through the images. When findings are created on a specific series or corresponding series an indication appears on the scroll bar.
For further information refer to chapter “Findings Hints” on page 48 .

Findings Hints

Findings hint provides an easy method of reviewing and navigating to Findings created for the patient.

A Findings hint displays all Findings that can be accessed by scrolling through the images.

When Findings are created, its location appears as a circle on the scrollbar.

Findings created on the same series are marked with a full circle; Findings created on another series or another exam are marked with a dashed circle.

Navigating to a Finding

To immediately navigate to the Finding location, click on the circle on the scroll bar.

Navigate to Grouped Findings

When multiple Findings appear next to each other, they will appear as a single circle. Clicking on the circle displays the first Finding.

To navigate to a specific Finding within grouped Findings, hover the mouse cursor over the circle to display Finding cards for all grouped Findings then click on the relevant card to display the selected Finding.

Findings

Findings in ZFP

A Finding is a clinically-significant observation, such as a measurement, an image or a layout of images captured for future use.

A Finding captured on an image by a user in the ZFP Viewer is temporarily stored during the current session only and cannot be saved and shared with other ZFP users.

A Finding includes a preview image of the measurement, as well as the measurement properties.

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Findings can be used to easily navigate to measurements/key images.

Findings Inspector

- Key images saved on IntelliSpace Portal can be viewed in ZeroFootprint Viewer via the Findings Inspector.
- The in-session findings created in ZFP viewer will also be available in the Finding Inspector temporarily. The user can toggle all of the findings.

Viewing a Finding Preview

Each column displays the Findings from one exam.

Exams are sorted by date and time from new (left side) to old (right side).

When clicking on a Finding card, a large preview image of the finding display.

Creating a Finding

Automatic Capture

Whenever a user creates a measurement or annotation on an image, it is captured automatically as a Finding, and temporarily stored for the pertinent exam in the Timeline window.

Manual Capture

A user can manually capture a Finding that is temporarily stored in the pertinent exam in the Timeline.

Viewing Details of a Finding

Each Finding is represented by a Finding card that includes:

- The name of the Finding
- A representative image
- Details about the Finding size, such as length, volume, angle, etc.

Opening a Finding

The Finding card, available in the following places, can be displayed in the ZFP Viewer:

- Timeline - double click on the card or drag the card to the viewer

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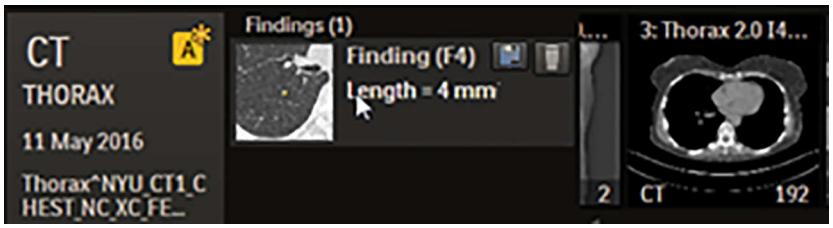
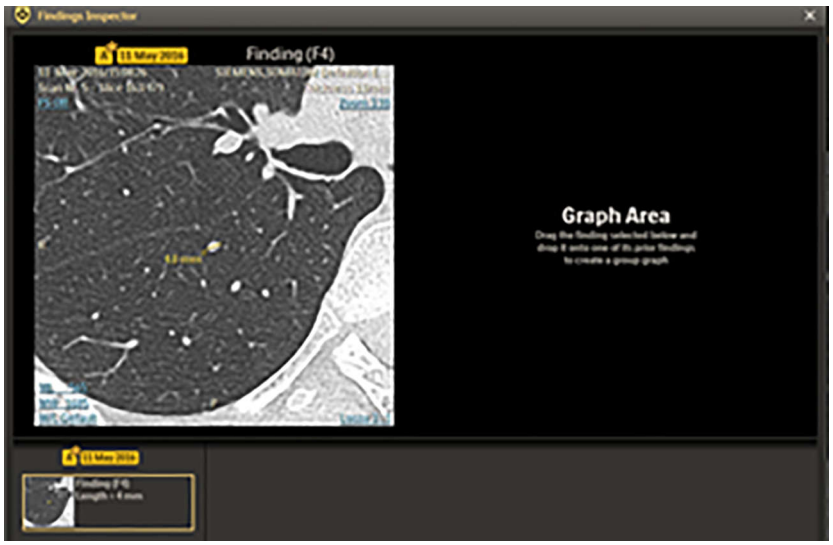


- Finding Inspector - double click on the card or drag the card to the viewer



- Finding hint - click once to navigate to the Finding's location

Deleting a Finding

To delete a Finding, select one of the following options:

- Hover the mouse cursor over the measurement to delete in the viewer then on the keyboard press **Delete**
- Click on the measurement to delete in the viewer then on the keyboard press **Delete**
- On the Finding card click **Delete**
- Right-click on the **Finding** card then click **Delete**

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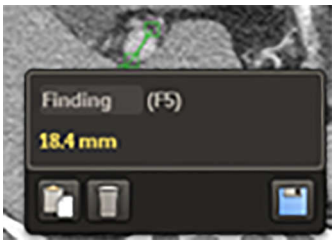

Viewing All Findings in an Exam

All Findings in an exam can be viewed from the following places:

- The Timeline - when selecting an exam. For further information refer to chapter “Timeline and Image Population” on page 17.
- The Finding inspector - under the relevant exam. For further information refer to chapter “Findings Inspector” on page 49.

Mark that Findings Exist in this Anatomical Location

A scrollbar on images includes a Findings hint, which suggests that Findings were created in that anatomical location. For further information refer to the section chapter “Findings Hints” on page 48.

Layout Management

The layout displayed on the monitor can be changed by using the Layout Manager tool.

To change the layout displayed on the monitor, perform the following steps:

1. Click on the **Layout** button in the top panel of the viewer.
2. In the Layout panel select the preferred layout for the monitor.
3. To apply changes on all available monitors:
   - Click on the checkbox in the bottom of the panel.
   - Select the layout to apply on all monitors.

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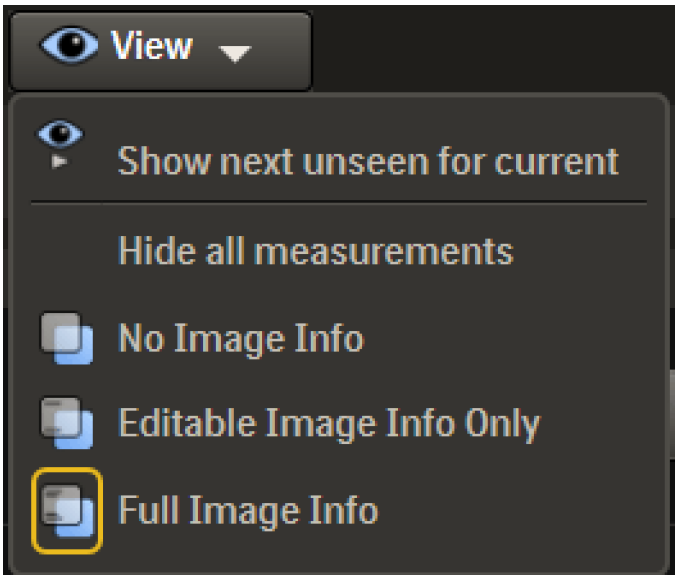
View Menu

The View menu controls the display of the entire viewing area.



The menu enables the following operations:

- Viewing the next group of unseen series
- Toggling the display of previously created measurements
- Toggling the display of image information

View Next Group of Unseen Series

To replace all of the displayed series of a current exam with series that were not yet viewed, click the **View next group of unseen series** button or use keyboard shortcut (default: U) to replace all series in a single click.

Once all series of the current exam are viewed, the **Show next unseen for current** button has a checkmark and is disabled.

NOTICE

To revert the state of the series to "un-viewed" and perform the operation again, use the keyboard shortcut (default: CTRL+U).

Hide/Show Measurements

It is possible to control whether existing measurements are displayed. This is useful when the measurements are obscuring the underlying anatomy or if it is necessary to perform interpretation without seeing previously created measurements.

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When measurements are hidden, all existing measurements (when selecting "Hide") will be hidden in the viewer. Newly created measurements are always displayed.

Hide/Show Information Details

It is possible to adjust the level of information you would like to see on the image.

Controllers are available in the upper panel of the Inspection Reticle.

You can set the level and toggle between options according to your preference and needs.

Show Full image information – Displays all image information.

Show editable image information - Displays only adjustable information, such as zoom factor and windowing level, All nonfunctional information is hidden.

No image information - All image information is hidden.

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8 Collaboration

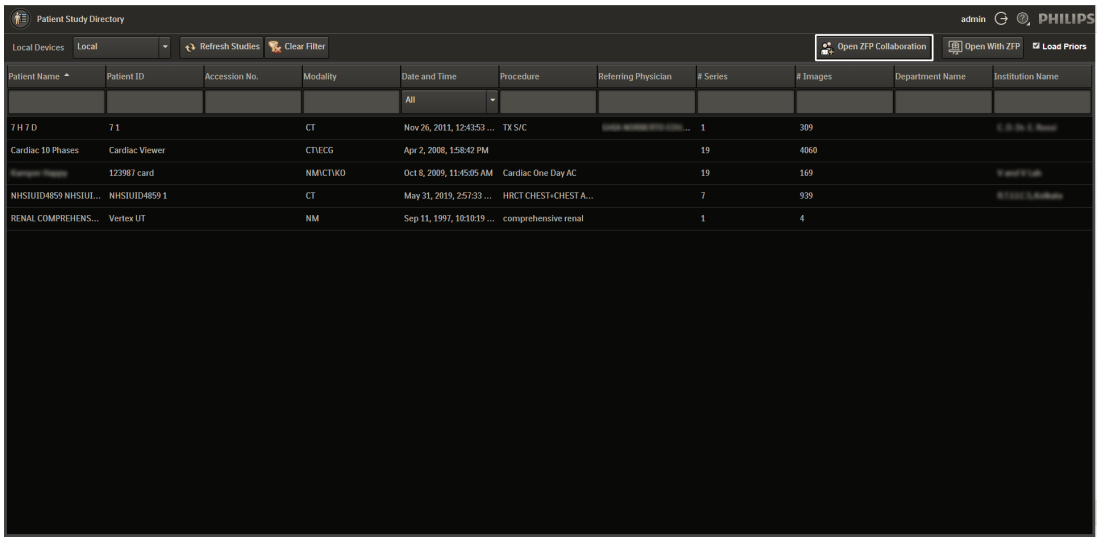
The Zero Footprint (ZFP) Viewer Collaboration feature is a mechanism that enables opening studies and screen sharing with other IntelliSpace Portal users.

Note the following:

- Zero Footprint Viewer Collaboration feature supports sharing studies for the following modalities: CT, MR and PET-CT.
- PET-CT fusion layout is not supported — if a PET-CT study is opened in a Collaboration session the study will be displayed in a standard layout and not a fusion layout.
- When "Load Priors" option is enabled, only studies for supported modalities will be loaded.

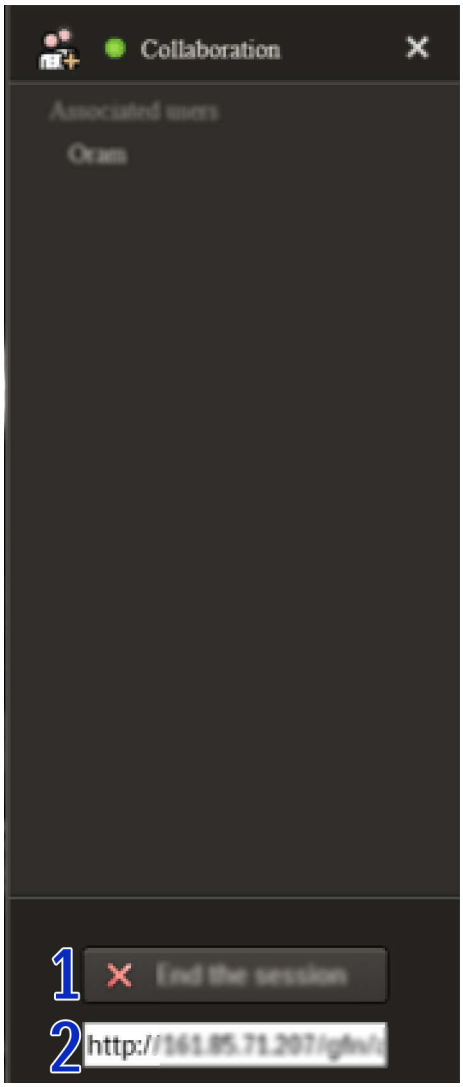
To start a collaboration session:

1. Click on the  **Open ZFP Collaboration** button in the top right corner of the screen to begin a collaboration session.



2. Click the  **Start the session** button in the window that opens.
3. Type your name and click **OK**.

   The color on the  Collaboration icon changes to green. This indicates an active collaboration session.
4. Copy the URL displayed at the bottom of the Collaboration window (#2) and share with the Recipient User.



- Once a Recipient user joins, their user name details are updated in the Collaboration window.
- When collaboration starts, all interactions performed by the initiator are visible to the Recipient user/s.
- A notification appears when a user joins or leaves the session.
- **End the session** (#1) ends the Collaboration session.

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