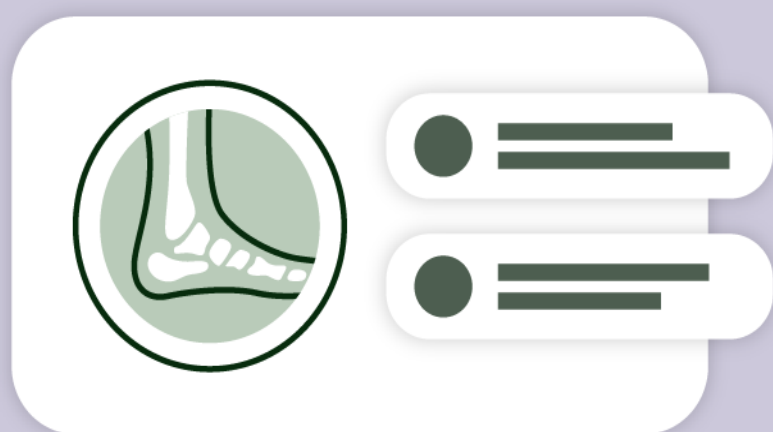


Intelerad Medical Systems

InSight Quick Reference Guide

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**intelerad**

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NB

This guide is intended as a basic introduction to Insight 9. More in-depth information is available via the online help manual, accessed via the help button:



# 1 Patient Explorer

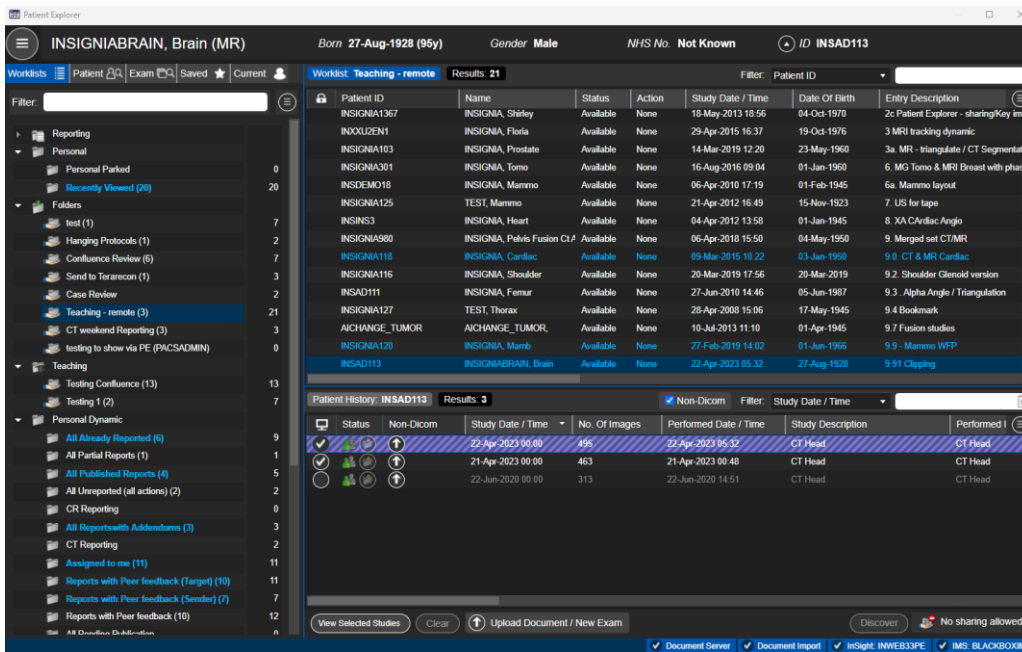


Figure 1

From the highlighted tabs in (Figure 1), various levels of searches can be undertaken:

- **Worklist** – shows various folders containing lists of patient/studies
- **Patient** - At least one bold field must be used (Patient ID, Family name or Date of Birth) for the search to run
- **Exam** - At least one bold field must be used (Booking Ref, Family Name, Date of Birth or Exam date) for the search to run.
- Note: You will notice a green tick appear when valid data has been entered into a search field. Exam Date (performed) - The "Exam Date" drop down allows for the quick selection of preselected time periods, including a "Custom" section for the inclusion of a specific date or range. A red exclamation mark is shown where there is invalid / unmatched data. To save the search settings simply click on the **Save** button. This will only be enabled once a valid search has been made.

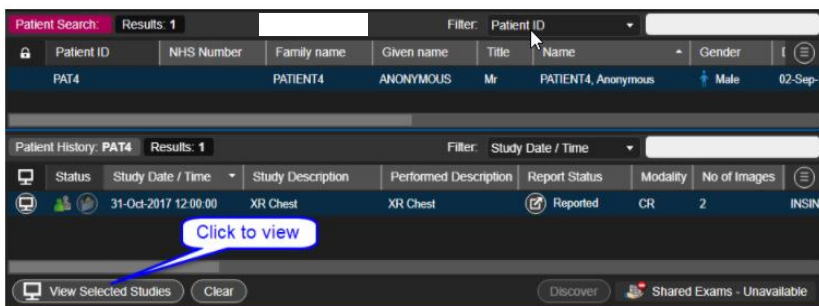
From a resultant search, to select and view studies:



Figure 104. The Patient Explorer history panel.

Tick the studies required to view (indicated in figure 104) followed by:

- a double click on the patient item
- clicking on the "View Selected studies" button - figure 105



## 2 Display Panel

A thumbnail bar will be displayed on the viewer with a subset of images loaded to view:



When further display sets are required for viewing the user drags the thumbnail on display. However, depending on where the user releases the mouse button the image will replace that currently on display or load next to it. The position where the next display set can be displayed is indicated by a series of "drop zone" markers and a central spot. The users' choice is indicated by the blue overlay displayed when hovering over one of the arrow options. In this example the second image set will occupy the bottom half of the display area when the mouse button is released. Two sets of placement option arrows are available. Those on the display border (external placement options) act on the entire display, whilst those within a series (internal placement options) act on the series in question.

Once an image is loaded, the function menu/toolbar becomes available at the bottom of the screen (Figure 2):

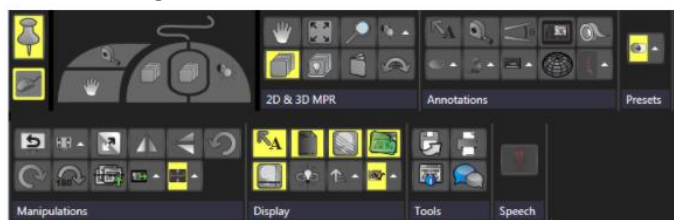


Figure 2

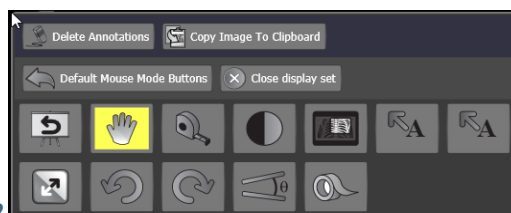


Figure 3

It also shows to the left a mouse panel (when on show) that indicates the functions assigned to each mouse button (5 are supported). Selected or enabled functions are shown with a yellow background. Fig 3. Shows the quick menu, that

appears upon a single click of the mouse, which contains a subset of the main tool set, per modality.


The Patient History jacket, (Icon Figure 4), lists those examinations stored on PACS for the currently loaded patient

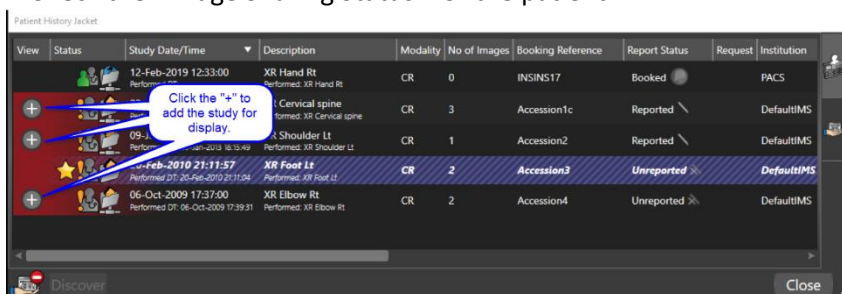


Figure 4

it is positioned on the left corner of the Status bar.

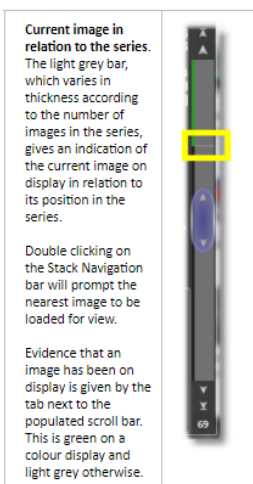
Once on display the user can:

- See all Examinations and relevant details (Status, Site, Booking reference, etc)
- Review reports by clicking on the report icon 
- Load any additional examination by ticking the '+' adjacent to relevant item
- Remove an examination from display by ticking the '-' adjacent to the entry
- Order any of the columns by clicking on the relevant header
- Check the "Image Sharing Status" for the patient



### 3 Stack Navigation



Traditional stack navigation is by holding down the left mouse button and dragging down/up within the display port.




Multi-planar series from the same examinations (both CT or MR for example) maybe viewed with various Cross Refer



. Cross Sectional Examinations sent to PACS that contain volumetric data, may be viewed in 3D with InSight (MPR Mode). When in MPR mode, additional tools (icons) are presented to the user on the Series title bar that can be

used to alter the layout of the 3D view port , reset the image orientation  and to link to other series on

display . Additional tools / icons are visible within the view port to alter the slice thickness, display

Maximum Intensity Projection (MIP)  by clicking on the mm displayed and Volume Rendered (VR) projections.

The same basic functionality is available in the 3D mode as the 2D mode: windowing (including pre-set values), Right click menus, zoom etc. Each 3D view port is bounded by a colour (red, blue and yellow), indicated in the other view ports as a cross reference line of that colour; these are made visible on mouse over and otherwise remain as Cross Reference stub lines displayed on the margins of each image display port.

## 4 CT and MR Cross Referencing and Triangulation.

Where multi-planar series are loaded for view, Cross Reference Lines can be shown on image sets that are from the same examination and are of a different plane to one another. A cross reference line depicts the intersection of two image planes and is displayed on all related non-focal images as a solid line. To enable Cross Reference lines, right click on the image and select **Show Cross Reference Lines** (after ensuring that **Annotations** are enabled). Alternately click on the Skull>Display Options>Show Cross Reference Lines.

Two types of line are used:

- Solid - depicts the intersection of an in-focus image plane (Green Colour; white on grey scale displays)
- Dashed - depicts the intersection of other (non-focal) image planes (Blue colour; grey on grey scale displays).

The Cross Reference line (figure 5) will be updated in real time to give an indication of the current image plane relative to other image sets.

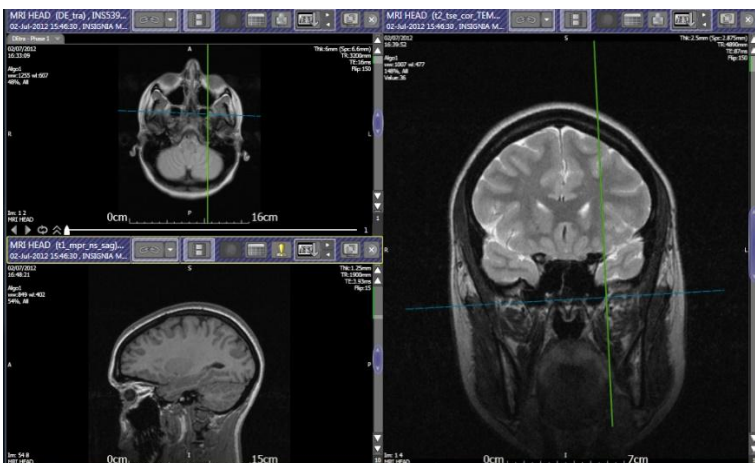


Figure 5.

Linked to MR Cross referencing is 3D localisation.

## 5 3D Localisation and Triangulation.

These functions are enabled when viewing MR and CT images that have multiple planes.

To use the **Localisation function**, hold down the **SHIFT** key and left click on the image. All other related image sets will navigate to the nearest image plane to that point. If Cross Reference Lines are displayed the image planes will be made obvious. Note that occasionally the nearest image may be the first or last in a series which may not coincide to the point clicked on the in-focus image. When changing focus from one display set to another the first click will only gain focus. Subsequent **SHIFT + clicks** will perform 3D Localisation on other display sets.

The **Triangulation function** (figure 6) is invoked by holding down the SHIFT key and left clicking anywhere on an image. All other referenced image sets on display will show a cross hair that indicates the point clicked on. The cross hair seen is green (with a circle outer) if the point clicked on in the reference image is on or near the plane of the referenced images or Red (no circle outer) if the plane is more distant to the reference image.

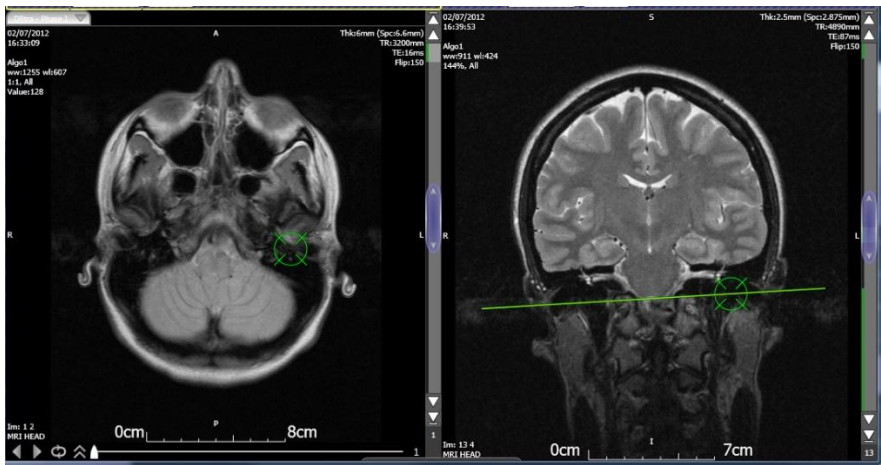




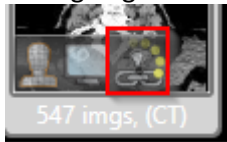
Figure 6.

## 6 2D Registration - Shift + Left Click

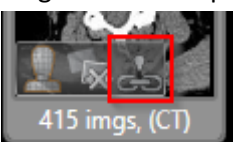
Insight will now co-register between studies allowing use of the Shift + left mouse click function. This will now navigate to the nearest cross-referenced slice between studies and displays a target icon.

Indicators will be displayed on the thumbnails  and at the top left of the banner bar  to signify that the co-registration has been completed.

During Registration



Registration complete



The registration will work between, 2D - 2D, 2D - 3D/MPR and 3D/MPR - 3D/MPR.

## 7 Multi-phase navigation

Multi-phase (4D) series can be reviewed as temporal (time) biased series or phased biased series. Each mode presents the sequences differently and alters how windowing is applied as follows:



**Time biased mode**

- Time phase cine scroll tool displayed on the bottom of the display port - fig 7



Figure 7

- Single anatomical sweep available for normal scrolling
  - Anatomical scrolling = vertical mouse movement scrolls from image 1 to n
  - Time phase scrolling = horizontal mouse movement scrolls from phase 1 to m

- Windowing applied to all phases



### Phased biased mode

- All anatomical sweeps and phases available for scrolling
- Vertical scrolling = anatomical slices 1 to n, time phase 1 followed by anatomical slices 1 to n, time phase 2 and so on for all time phases
- Time phased scrolling = horizontal mouse movement scrolls from phase 1 to m
- Time phase cine scroll tool displayed on the bottom of the display port - figure 8

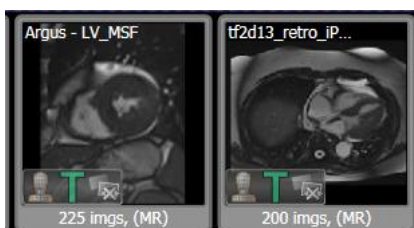


**Figure 8**

- Windowing applied to individual phases

The user can set the default display method in the User Config>General>Modalities section and alter this on a case by case basis using a keyboard shortcut, from the quick toolbar or from the Display Options function panel.

InSight automatically groups Multiphase series (4D) together to make their review of images more efficient; denoted by the letter "T" in the thumbnail. Such image sets can be automatically linked for stack navigation and zoom- figure 9



**Figure 9 (green T).**

Navigation through them can either be time (temporally) or anatomically (spatially) based as follows:

- 2D Stack mode - up and down mouse movement navigates anatomically along the normal plane for:
  - a single phase when in "Time" biased mode
  - all phases when in "Phase" biased mode
- MPR mode fly through - up and down mouse movement navigates anatomically along the normal plane of the image set. Left and right mouse movement navigates temporally at the given anatomical position
- 2D Cine / 3D MPR cine - anatomical cine is performed using the normal cine controls. Temporal cine is performed using the temporal cine controller at the bottom of the image, seen here in figure 10



**Figure 10**

This will allow for temporal stack navigation; the normal stack control bar (usually on the right of the image port) will remain for anatomical navigation, where there are 2 or more anatomical slices.



The number of phases on display is initially determined by the modality setting which is either "Time" or "Phase" biased.

- Time biased - a single image port
- Phase biased offers the following:
  - Automatic layout - for 1 or more than 4 phases a 1 x 1 grid layout is used
  - Automatic layout - for 2 phases a 2 x 1 grid layout is used
  - Automatic layout - for 3 or 4 phases a 2 x 2 grid layout is used

These settings can be over-ridden by a workflow protocol or manually using the grid layout tool. The series title bar has a Grid layout tool that allows various sized phase grids to be selected - figure 11.



Figure 11.

Should an MPR view be used the 3D grid layout can be altered using the 3D grid layout icon - figure 12.



Figure 12.

A typical multi-phase view is shown below. Each series port has a tab that when selected displays a list of all available phases - figure 13.

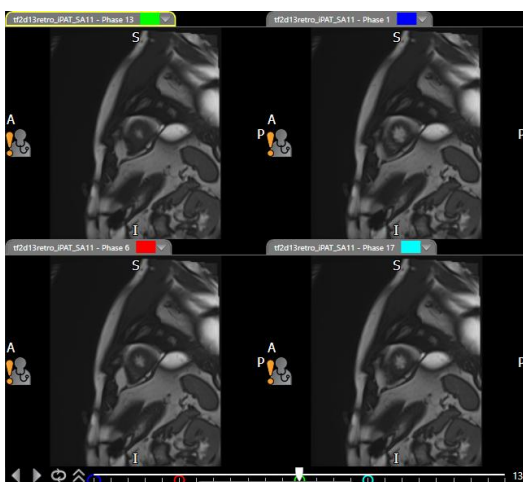


Figure 13.

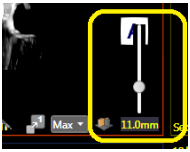
To select a different phase to display click on the "Phases" tab located in the top left of the image port. A list of all available phases will be shown together with a series thumbnail for ease of selection.

## 8 Quick Volume



This tool allows you to create estimated volumes using 3 dimensions (LxWxD x volumetric factor). There are 3 types of measurement that can be used to calculate the estimated volume are ellipse, cylinder and bullet depending on the structure being evaluated.

## 9 MPR Slice/Slab thickness bar



Users now click on the current thickness indicator to reveal the slider.

## 10 Keyboard shortcut to switch between MPR views

To quickly navigate between the projections: Axial, Coronal and Sagittal assign a keyboard shortcut to each of the projections. For example:

- A - switch to the axial (transverse) slices (MPR Axial)
- C - switch to the coronal slices (MPR Coronal)
- S - switch to the sagittal slices (MPR Sagittal)

Select the active display port by clicking in it and press the required shortcut key. The active display port will be updated with the chosen projection and the previous projection will be displayed in the substituted display port.

**Note:** To allocate the keyboard shortcuts A, C, and S (for example) to these functions create a new Mouse Mode "Preset Group - 3D CT" or if assigning to the Default set, ensure that the key has not been assigned to any other function. If so, they must be de-allocated from these before they can be assigned to the new function.

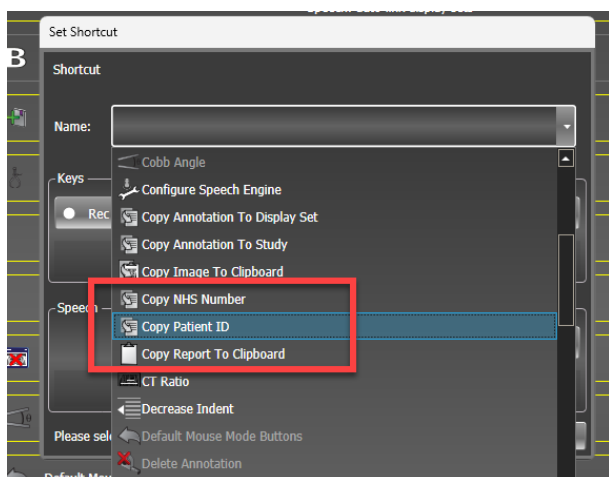
Other shortcuts can be assigned to:

- MPR 3D Volume Rendered projection
- MPR Maximum Intensity volume projection.

## 11 Copy Functions

Shortcuts can now be made that copies patient information to the clipboard as seen in the figure below:

- INSIGHT-1673 The NHS number.
- INSIGHT-1703 The Patient Primary ID.
- The report text.

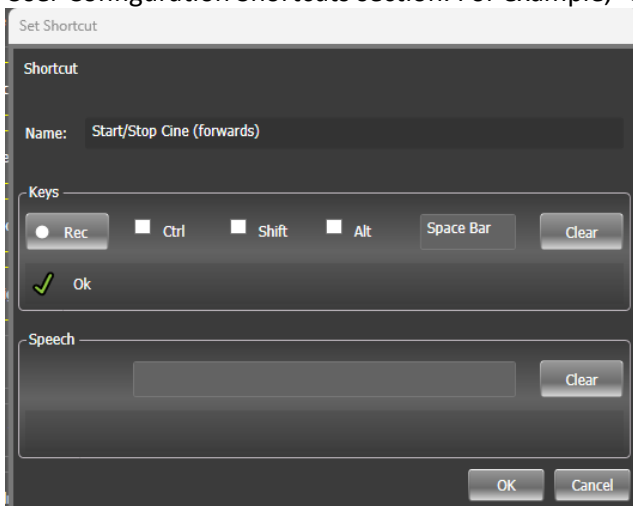


The NHS number and Primary ID can also be copied from the image banner bar with a single click



## 12 Keyboard shortcut for starting cine

A keyboard shortcut can now be used to start and stop cine motion and temporal cine motion. These are set in the User Configuration Shortcuts section. For example, "Spacebar" as seen in **Error! Reference source not found..**



## 13 CT Presets

These normally are accessed via keyboard shortcuts, numbers 1-6 or by using the icon in the centre of the function menu/toolbar.



## 14 Shortcuts


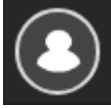

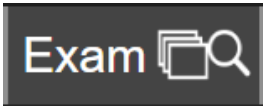


Various default shortcut keys are available to enhance the usability of the Viewer software. Most are applied to the Left mouse button. The most commonly used shortcut keys are given below:

Key	Current Use	Key	Current Use
F1	Help	F2	Patient Explorer
F3	Previous Patient	F4	Next Patient
F5	Previous Workflow step	F6	Next Workflow step
F7	Re-apply current workflow step	F8	Lifecycle action - QA/Report (Save Changes)
F9	Lifecycle (Discard Changes)	F10	Clear Patient from Display
F11	Re-apply Structured display	F12	Currently unused
CTRL + A	Cobb's Angle	CTRL + B	Zoom mode
CTRL + D	Pan mode	CTRL + E	Area windowing
CTRL + F	Cine mode	CTRL + G	Magnify mode
CTRL + H	Horizontal flip	CTRL + I	Invert greyscale
CTRL + J	Add tape	CTRL + L	Lateral flip
CTRL + M	Measure mode	CTRL + N	Add Annotation
CTRL + O	Show / hide demographics	CTRL + Q	Delete Annotation
CTRL + R	Region Of Interest	CTRL + S	Smart Stack mode
CTRL + T	Calibrate	CTRL + V	Stack mode
CTRL + W	Window mode	CTRL + Z	Reset Windowing
CTRL + \	Tabar Masking on / off	CTRL + U	Hot Spot
U	Temporarily Un-link display sets	CTRL + P	Spine Labelling
CTRL+1,2...	Apply Workflow protocol step	0 – 9	Apply window pre-set
Spacebar	Quick Toolbar		
- (minus)	Reduce grid layout	+ (plus)	Increase grid layout
<	Load Previous Series	>	Load Next Series
Arrow Up, Arrow Left	Back one image in Series	Arrow Down Arrow Right	Forward one image in series







Patient Explorer	
Key	Current Use
Tab	Normal tab operation
Enter/Return	Perform Search / View images
Space	Select / Unselect history items

# 15 Function Menu / Tool Bar Overview







## 15.1 General Functions

	Access Patient Explorer Options / Worklist Settings		Show Current Patient on Display
	Access PACS Worklists		Exam Level Search
	Patient Level Search		Show Saved Searches



## 15.2 Study Status / Study Location Icons

	Auto Registered Study		Study is currently downloading to workstation
	Study is located on Workstation		Images are on a foreign system and they are local to that system.
	Study is located on Departmental Server		Images are on a foreign system and they are not local to that system.



## 15.3 Study Sharing Icons












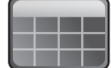




	Image sharing is up to date		Image sharing has failed for this patient
	Image sharing update is in progress		Image sharing is not available for the user (permissions)
	Image sharing information not available (press the refresh button to update the information)		Image sharing not available for the patient (possibly no NHS number)

## 15.4 Push Referral Icons












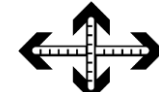


	Create Push Referral		Review Referral Status
---	----------------------	--	------------------------

## 15.5 General Functions











	Open the Patient Explorer Window		Park the current study
---	----------------------------------	--	------------------------

	Patient History Jacket		Show Notes Panel
	Previous Patient / Next Patient in PACS Worklist/Folder		Show Report
	Save into a Folder		Show Structured Displays
	Access User Actions		Display Set Linking
	Add Bookmark		Switch to 3D orientation / Switch to 2D orientation
	Previous / Next Workflow Step		Change grid size
	Switch Display Set		Show / Hide cine controls
	Undo all changes to Image Presentation		Reset Mouse buttons to Modality Default

## 15.6 Standard Image Manipulation Tools

	Pan		Measure
	Zoom / Magnify		Cobb Angle
	Window Level / Spot Window		Quick Volume Measure
	Stack Navigate / Smart Stack		Arrow / Text annotation
	Freehand Rotate		Invert Image
	Ellipse, Rectangular, Polygon ROI		Min/Max Measurement
	Cardiothoracic Ratio		Multi Phase / Time Phase Mode







### 15.7 3D/MPR Functions (tools available in 3D Mode)

	Clipping		Measure
	Zoom		Cobb Angle
	Window Level		Quick Volume Measure
	Flythrough		Hot Spot
	Freehand Rotate		Spine Label

### 15.8 MSK/Orthopaedic Specific Measurements

	Hip Dysplasia		Perpendicular Line Angle
	Parallel Line Measure		Alpha Angle

### 15.9 Mammography Functions

	Align the centroid of grouped images		Show the Image Real Size / Show the Image Full Size
	Fit to Screen / Fit to Anatomy		Quadrant/Sextant View
	Show Previous / Next matching display set within the Patient history		Show Previous / Next matching display set within the current study