Medis
MEDICAL IMAGING

Medis Suite 4.0

User Manual

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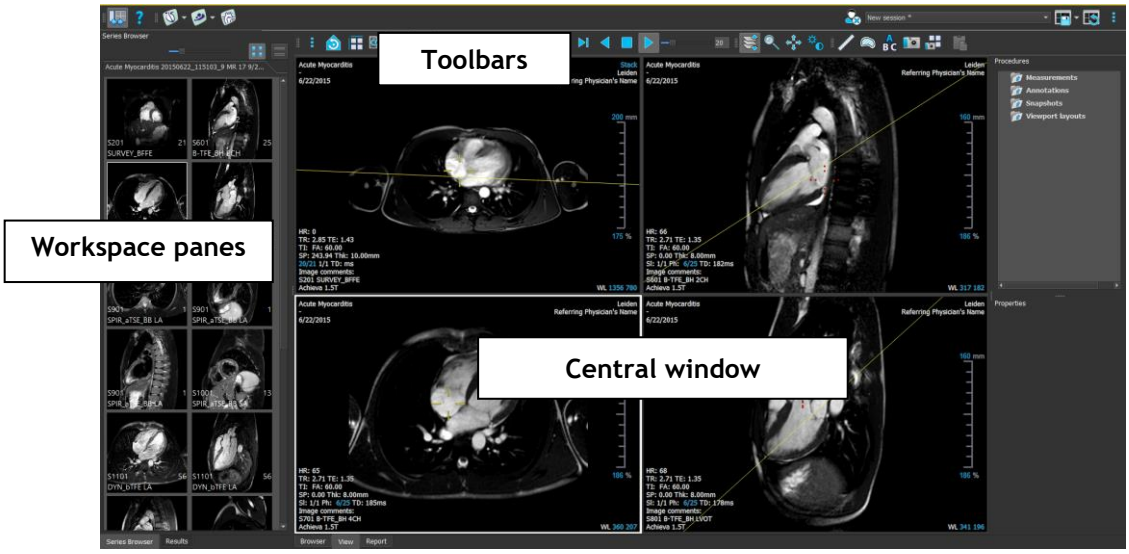
1 Medis Suite Workspace

This chapter covers the following topics:

- Overview
- Toolbars
- Workspace panes
- Central window

1.1 Overview

The main workspace of Medis Suite consists of toolbars, several workspace panes, and the central window area.



You can customize the main workspace by hiding or moving the workspace panes and toolbars. Any changes that you make to the main workspace are saved for each Windows user.

The central window area holds the **Browser**, **View** and **Report** tabs that are provided by Medis Suite. Next to that, the central window is the area where integrated Medis Suite applications will be displayed after launching them.

1.2 Medis Suite

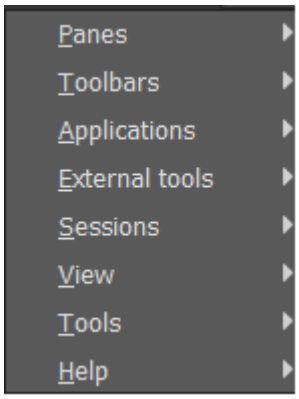
1.2.1 Menu

The menu contains commands to activate the functionality that you need when you are working with Medis Suite.

To make the menu visible:

- Click on the menu icon in the **Main** toolbar of Medis Suite.

The menu commands are organized into seven main menus: **Panes**, **Toolbars**, **Applications**, **Sessions, View, Tools,** and **Help**. For some of the commands, tool buttons are available in the toolbars as shortcuts.

Menu	Command	Function
	Panes	Show or hide a workspace pane
	Toolbars	Show or hide a toolbar
	Applications	Start one of the Medis Suite apps
	External tools	Start one of external tools
	Sessions	Save or reset a Medis Suite session
	View	Change the appearance of Medis Suite
	Tools	Access to options and tools
	Help	Access to user documentation and information about Medis Suite and all installed Medis Suite apps

1.2.2 Toolbars

The icons in the toolbars are shortcuts to frequently used menu commands. You can move toolbars to another part of the main window. You can also show or hide toolbars.

To move a toolbar

- Click on the double-bar grip handle of the toolbar and drag it.

  You can now move the toolbar to any location on the sides of the main window. Simply click and drag the toolbar to its new position. The position of the toolbar is saved for a next session when you close the application.

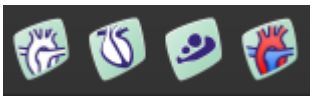
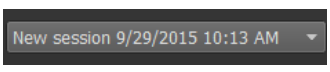
To show or hide a toolbar

1. Select **> Toolbars.**
2. Select a check box to show the toolbar, clear a check box to hide the toolbar.

To reset the toolbar layout

- Select **> View > Reset layout**, or press F12.

The state of the toolbars is saved when you close the application.

Icon	Function
General Toolbar	
	Show or hide the Medis Suite workspace panes
	Show user documents of Medis Suite and installed apps
Applications Toolbar	
The applications toolbar shows buttons for all apps that are installed for advanced image analysis and/or your available licenses. Examples of apps include 3D View, QMass, QFlow, QFlow 4D, QStrain, QAngio XA and QAngio XA 3D. Some apps may provide multiple buttons in the toolbar, one for each supported analysis. 	
External tools Toolbar	
The external tools toolbar will show the icons of the external tools that are configured in the Medis Suite options.	
Main Toolbar	
	Close patient/study
	Select one of the available sessions

Icon	Function
	Save / Save as of the active session
	Reset session
	Open the menu

1.2.3 Workspace Panes

By default, the workspace displays two panes on the left of the application area; the **Series Browser** pane and the **Results** pane.

You can show or hide panes, dock panes, combine panes into one tabbed panel and remove panes from a panel.

To show or hide a pane

- Select **> Panes**, and select a pane to show it. Clear its check box to hide it.

To show or hide all panes

- Click in the **General** toolbar, or press F11 to show or hide all panes.

To dock a pane

1. Click and drag the title bar of the pane.
2. Move the pane to the sides of the main window to select one of the dock areas.

   As the pane approaches a dock area, the area is highlighted with a dotted line. The pane can be combined with another pane or inserted separately.
3. When the dock area of your choice appears highlighted, release the mouse button.

   This docks the pane into the selected position.

To combine panes into one tabbed panel

- Click and drag the title bar of the pane to the title bar of the pane with which you want to combine it.

This creates a tabbed panel.

To remove panes from a panel

- Click and drag the title bar of the pane away from the panel.

To reset the panel layout

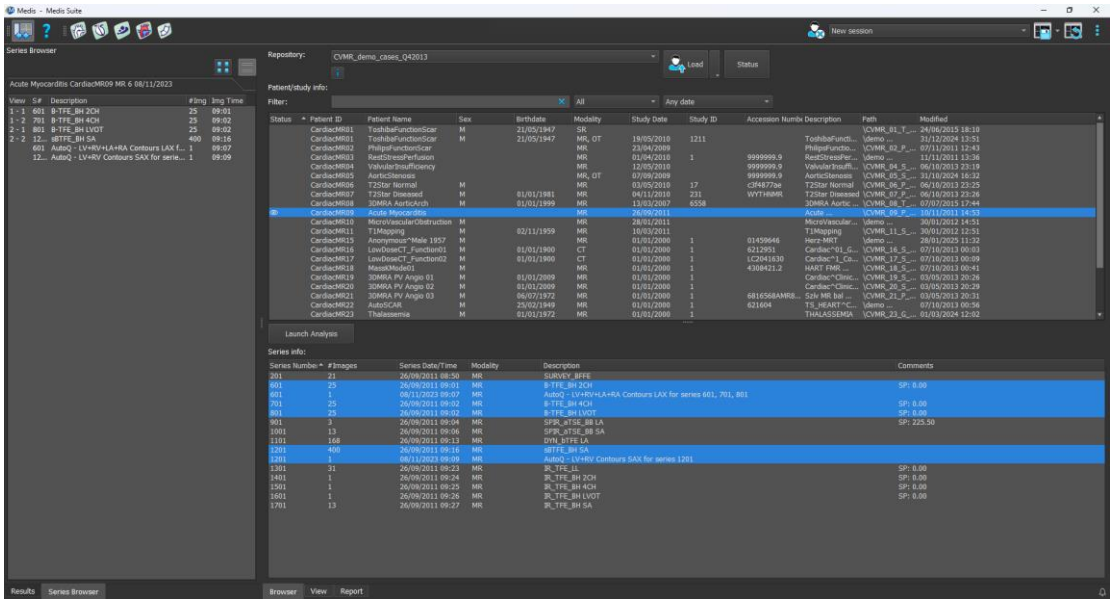
- Select **> View > Reset layout**, or press F12.

1.2.4 Patient/Study – Series Info Panes

The **Patient/Study Info** pane shows an overview of the patients in the active repository within Medis Suite.

The **Series Info** pane shows an overview and detailed information of the series that belong to the active Patient/Study.

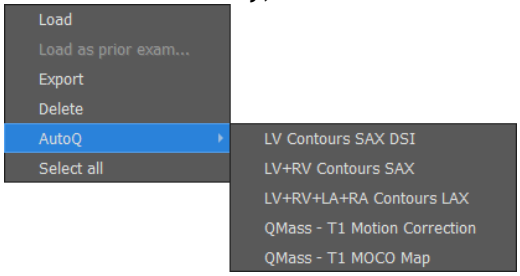
The **Info panes** show the data as combined in DICOM. The **Series Browser pane** shows the data after loading and sorting into Medis Suite.



When selecting and activating the patient-study in the Patient/Study Info, the patient is loaded in Medis Suite with all data or, when sessions are available for that Patient/Study, the last stored session will be loaded.

In the Series Info pane, the user can select and load data into Medis Suite via Drag 'N Drop or via right mouse button.

It is possible to delete data or initiate automatic contour detection on the selected data, using the context menu which is accessible via the right mouse



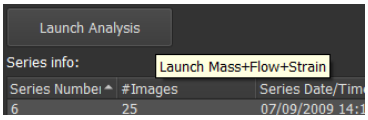
button. It is also possible to delete data or initiate automatic contour detection on the selected data.

The progress of the contour detection can be seen in the **Status dialog**.

When the contour detection has finished the AutoQ session file will be added to the study and will be visible in the Series Info pane.

1.2.5 Workflows

Workflows enable starting a predefined group of applications with automatically pre-loaded data. The workflow button(s) are located between Patient/Study Info and the Series Info.



The workflow button **"Launch Analysis"**, will start functional analysis applications and preload each application with corresponding data, if the data is available. The following steps will occur in Medis Suite.

- QMass will be loaded with short axis and long axis data and if available a corresponding AutoQ session file.
  - The functional short axis and long axis analysis will be started. This will result in short axis and long axis functional results in the report.
- QStrain will be loaded with short axis and long axis data and if available a corresponding AutoQ session file.
  - The strain short and long axis analysis will be started. This will result in strain short and long axis results in the report.
- QFlow will be loaded with flow data.
- The series data required for each type of analysis will be loaded in Medis Suite and shown in the Medis Suite Viewer.

Applications that have no corresponding series data will be automatically closed.

Support for custom workflows can be requested at Medis customer support.

1.2.6 Series Browser Pane

The **Series Browser** pane shows an overview and detailed information of the series that are loaded in Medis Suite.

The **Series Browser** pane is automatically activated when new or additional data is loaded into Medis Suite.

The **Series Browser** can present all series in image view and text view.

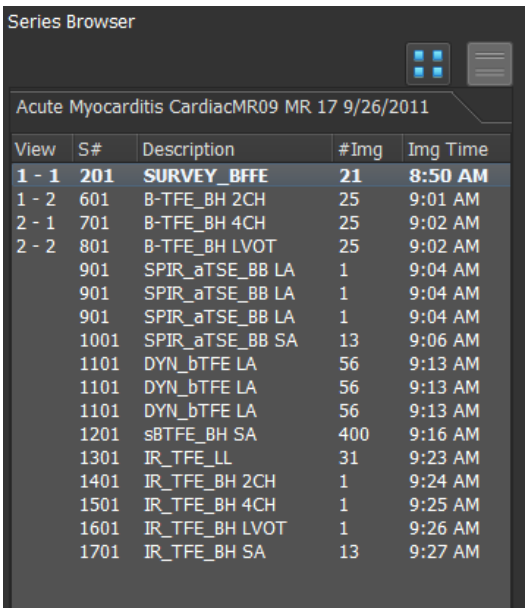
- The image view presents an overview of all series in an icon list. The overlay of each icon displays the following information:
  - The series number (e.g. S201)
  - The series description (e.g. SERVEY_BFFE)
  - The number of images contained in the series (e.g. 21)
  - The viewport in which the series is displayed (e.g. 1-2, row 1 and column 2)

When the View tab is active, the series displayed in the active viewport is highlighted with a white border. This highlight is not visible when the browser, report, or an app is active.

- The text view presents an overview of all series in a text list. Each item in the lists displays the following information:

    - The viewport number displaying the series (e.g. 1-2, row 1 and column 2)
    - The series number (e.g. 201)
    - For MR and CT series: The series description (e.g. SURVEY_BFFE)
    - For XA series: The acquisition angles (e.g. RAO 15, CRA 33)
    - The number of images contained in the series (e.g. 21)
    - The date and/or time of the acquisition (e.g. 8:50 AM)

    When the View tab is active, the series displayed in the active viewport is highlighted in bold text. This highlight is not visible when the browser, report, or an app is active.



If a series is displayed in multiple viewports, the first viewport number is displayed in the series browser, and appended with a '+' character, e.g. '1-2+'.

To activate the image view

- Click the image view icon on the **Series Browser** pane

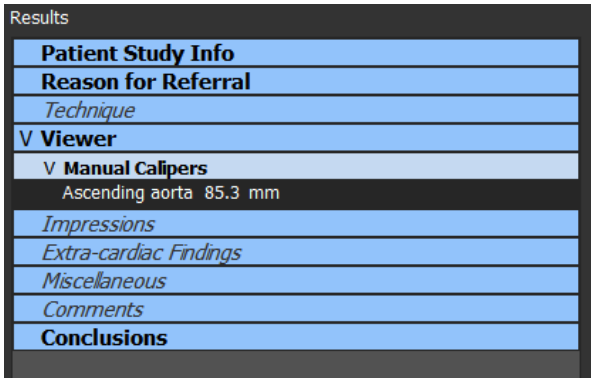
To activate the text view

- Click the text view icon on the **Series Browser** pane

1.2.7 Results Pane

The **Results** pane shows all results that are available for the current session of the current study. The results are gathered from the Medis Suite viewer and the running Medis Suite apps.

When Medis Suite apps are closed, their accompanying results will be removed from the Medis Suite **Results** pane and the report.



All Medis Suite results are grouped into paragraphs and sections. You can collapse and expand the sections and paragraphs of the tree by clicking “v” or “>” in the top-level nodes.

You can set the visibility of the results in the Medis Suite report from the **Results** pane.

To show or hide a result from the report

- Click on the name or any of the values of the result to toggle its visibility.

To show or hide a paragraph with all contained results from the report

- Click on the name of the paragraph to toggle its visibility.

To show or hide a section with all contained paragraphs and results from the report

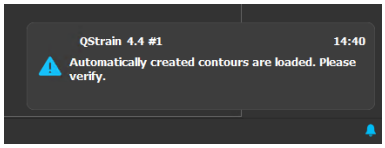
- Click on the name of the section to toggle its visibility.

Sections, paragraphs and results that are hidden in the report, are displayed in the **Results** pane with a grayed out and italic font.

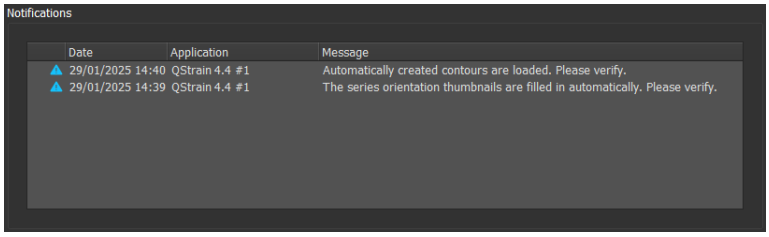
The Results pane is automatically activated when you activate the report.

1.2.8 Notifications

Notifications from analysis that could impact the results will be shown on the bottom right of Medis Suite. They will disappear within a few seconds. The blue notification indicator indicates that there are ( ) or are not ( ) notifications that have not been visited in the Status dialog.



In the status dialog all sent notifications during the lifetime of the Medis Suite instance will be collected.



Only notifications that could impact the results are shown.

1.3 Browser

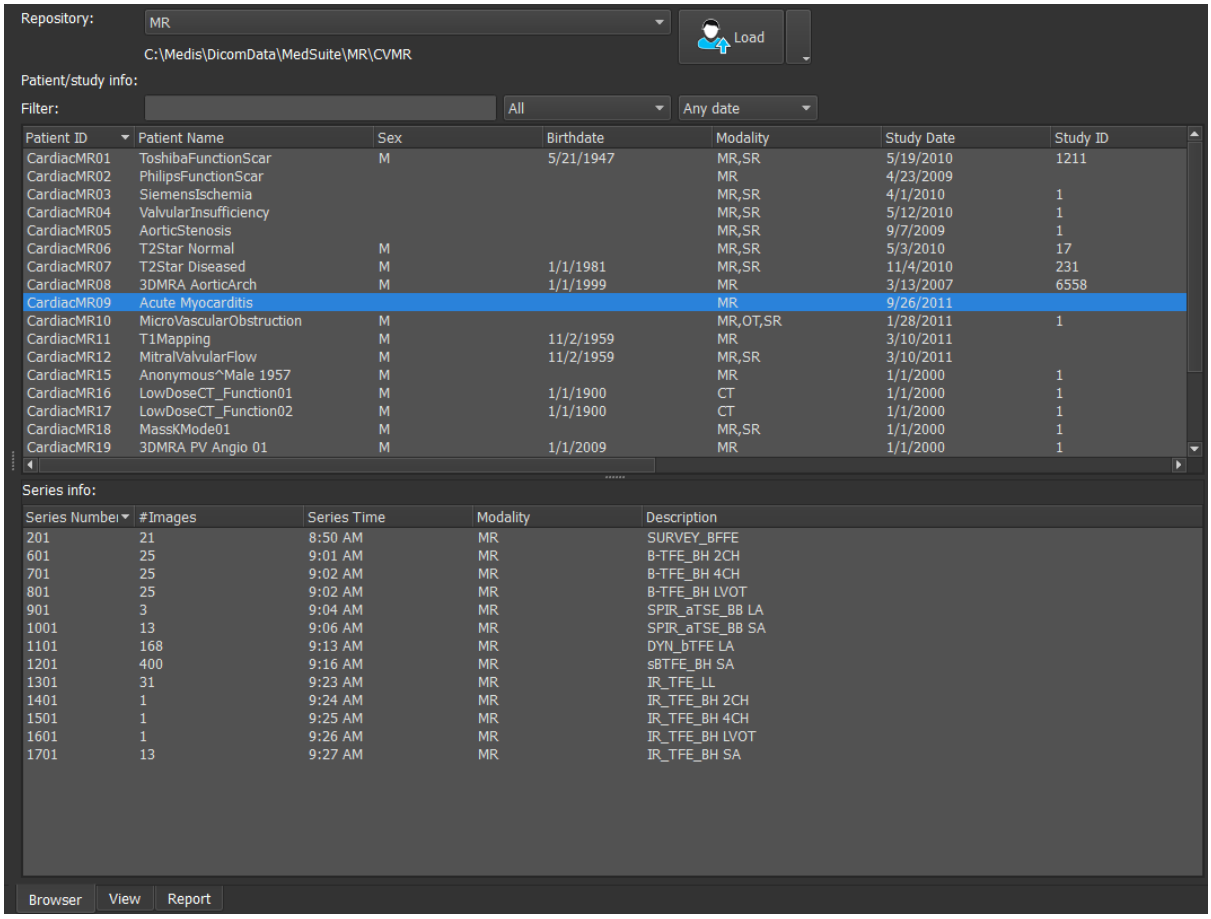
The **Browser** tab in the central window of Medis Suite provides functionality to import, view, filter, load, export, delete, and anonymize data.

Any data that you would like to process must be contained in a Medis Suite **Repository**. Local repositories are located on your local machine or network drive. Shared repositories are managed through a Medis Suite server. You can have one or multiple repositories to work with. All configured repositories are listed in the Repository drop down in the Browser.

The visibility of and access to each available Medis Suite repository can be allowed or blocked (role based access control) by your system administrator.

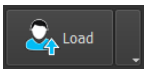
Export, delete, and anonymize data from a repository is functionality that can be allowed or blocked (role based access control) by your system administrator.

The Medis Suite repositories are not intended to be used for long term storage or archival of your data. Make sure that the image data, as well as the Medis Suite sessions and results are persistently stored and archived on another location, such as your PACS or VNA.



1.3.1 Repository configuration

To configure the Medis Suite repositories:

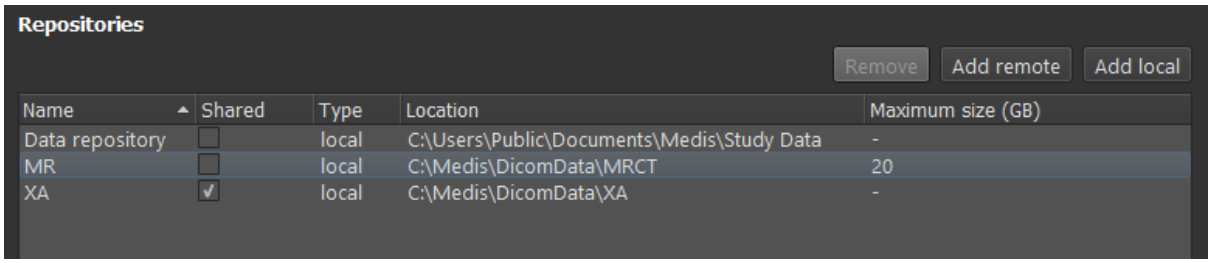
- Click on the dropdown icon next to the Load button 

in the Browser, and select **Configure…** This will open the Options dialog in the Repository section.
- Configure an existing repository, or add a local or remote repository.

or

- Click > Tools > Options (or Server options for a server configuration) and choose Repository.
- Configure an existing repository, or add a local or remote repository.

1.3.2 Local Repository Configurations



To add a local repository:

- Click

to add a new repository. Click in the Location field and select “Browse…” to select the root folder of your data repository. Double click in the Name field to edit the repository name.

By default, there is no size limit on a repository, which is depicted by “-”. A size limit can be configured for local repositories. If enabled, Medis Suite will clean up the repository every night by deleting the DICOM data that has not been used for the longest amount of time; recently accessed studies will remain in the repository. The cleanup will delete study by study from the repository, until the repository size meets the defined criteria. Only images will be removed, the Medis Suite sessions and results will never be cleaned and will always remain available in the repository.

To define a size restriction of a repository in gigabytes:

- Click on the field “Maximum size (GB)” and enter the number of gigabytes.

1.3.3 Shared Repository Configurations

When Medis Suite is installed in a client-server configuration, repositories can be shared between workstations.

On a client machine, in order to share a local repository, or to connect with shared repositories from other machines, Medis Suite must be connected to a Medis Suite server.

To connect to a Medis Suite server:

- Enter the computer name or IP address of the system that hosts the Medis Suite server.
- Test the connection by clicking the Test services button.
- Select the “Apply” button.

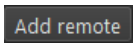
Your local repositories can now be shared with other Medis Suite workstations.

To share a local repository:

- Select the check-box in the “Shared” column of the repository list.

You can connect with remote repositories that are shared from other Medis Suite workstations.

To add a remote repository:

- Click 

to add a new repository.
- Click in the Location field and choose a repository from the list of shared repositories.

1.3.4 Selecting a Repository

To change the active Medis Suite repository:

- Open the Browser pane and open the repository dropdown box to see all configured repositories.
- Click on the name of the repository to activate it. For local repositories, the folder that is associated with the repository will be displayed directly underneath the dropdown box.

The Medis Suite repositories are defined and available for all users on the computer system. Which repository is activated is saved for each individual Windows user.

1.3.5 Import Data into Repository

Data can be imported into the Medis Suite repository directly from the Browser. This is especially useful to import data from CD, DVD, USB, or any folder on your computer or network.

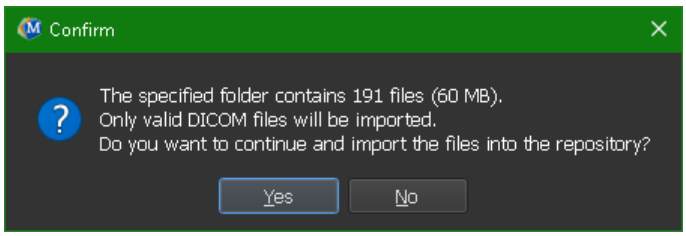
Importing data into a repository is functionality that can be allowed or blocked (role based access control) by your system administrator.

Medis Suite will automatically keep track of all files that are in your repository folders, if they are imported by Medis Suite, received by the Medis Suite DICOM connectivity module, or removed from the Browser.

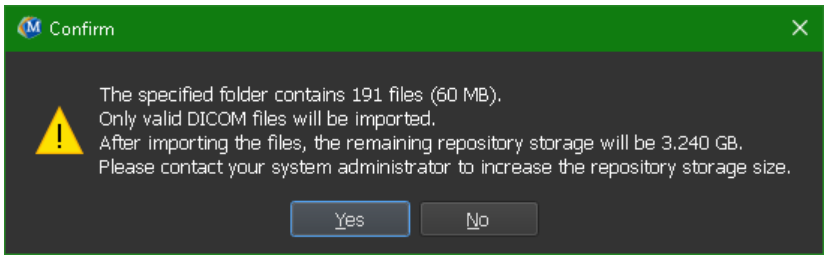
To import data into the Medis Suite repositories:

- Click on the dropdown icon next to the Load button

in the Browser and select **Import…**.
- Browse to the folder you would like to import and click **Select Folder**.
- The folder and any sub-folders will be scanned to determine the number of files and the size of the data set to be imported.
- A confirmation dialog box showing the number of files and the dataset size will be displayed. The contents of this dialog box will depend on the available resources. If there is sufficient disc space available for the repository:



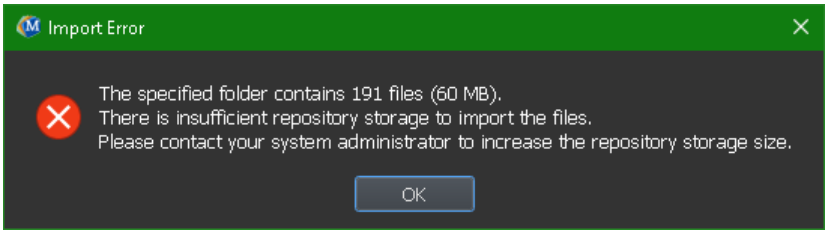
If the disk space is low, i.e. less than 10GB, but not yet critical:



In either case

- If **No** is selected, then no further action will be taken, and you will be returned to the Browser.
- If **Yes** is selected, then the dataset will be scanned, to identify valid[1] DICOM files. Only these files will be imported into the repository.

- If there are insufficient resources available for the import, the following dialog will be displayed:



In order to proceed with the import, extra storage must be made available.

- During the import, a series of messages will appear in the message box indicating the current state of the import. On completion, the number of files that were imported and ignored will be displayed:

Files that are copied into or deleted from the repository folder, for example, by using the Windows Explorer, are **not** automatically detected by Medis Suite; a rescan of the repository is required to process such repository modifications.

1.3.6 Rescan Repository

To rescan the files in a Medis Suite repository:

- Click on the dropdown icon next to the Load button

in the Browser and select **Rescan**. This will identify newly added or removed files.

Or,

- Press **F5** with the Browser window active. This will identify newly added or removed files.

[1] A valid DICOM file is a DICOM file that has a valid study instance UID.

Or,

- Press Ctrl+**F5** with the Browser window active. This will rebuild the repository.

Note: If the active repository is a remote repository, Ctrl+F5 will rebuild the repository on the remote machine. For very large repositories this operation can take considerable time and it is therefore not recommended. Only 'rebuild' the repository to fix inconsistency errors in your repository that cannot be handled by a 'rescan'.

1.3.7 AutoQ

Some of the Medis Suite apps provide preprocessing functionality, which is referred to as AutoQ algorithms. The AutoQ algorithms can be started manually, or automatically when data arrives in the repository.

To launch an AutoQ algorithms manually:

- Select one or multiple series in the browser.
- Right-click the selection.
- From the context menu, activate the AutoQ submenu, and the AutoQ algorithm of your choice.

The AutoQ algorithm will be started and preprocessing on the selected series will be performed as a background process without any user input. In the meantime, you can continue to work with Medis Suite.

Progress and status messages of the AutoQ algorithm will be presented in a separate tab which can be accessed by clicking on the AutoQ status button in the browser. An icon is also shown in the status column of the browser to indicate that the AutoQ algorithm is in progress. When completed, any output of the AutoQ algorithm will be added to the series list, and can be loaded into Medis Suite.

AutoQ algorithm can be connected with rule definitions that will check new data that arrives in your repository. If the data complies to the rule definitions (e.g. 'has the data an MR short axes cine series?') the corresponding AutoQ module will be started automatically.

Medis suite itself does not provide AutoQ algorithms, they are only installed with specific apps.

Automatic startup of AutoQ algorithms is disabled by default, and can be enabled for each repository in the Medis Suite options.

If your computer is connected with a repository coordinator (referred to as the server), Medis Suite will connect with the server to provide you access to the AutoQ algorithms that are installed on that computer. When you activate the AutoQ algorithms available on the server, it will be executed there, and it will not consume resources (CPU or memory) on your local system. For AutoQ modules from the server to show up in your browser, they should also be installed on your local system.

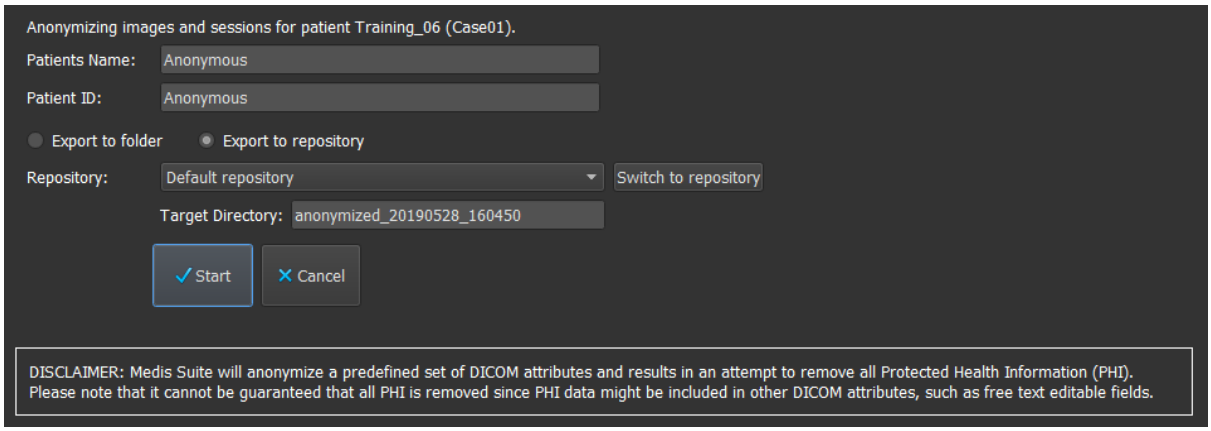
If you don't see the AutoQ button in the browser or the AutoQ submenu in the context menu, there are no Apps installed that provide AutoQ algorithms.

1.3.8 Anonymization

The data contained in the Medis Suite repository can be anonymized and exported from the patient study browser.

Anonymization data from a repository is functionality that can be allowed or blocked (role based access control) by your system administrator.

To anonymize and export a patient study:



- Select one patient study in the browser.
- Right-click the selection.
- From the context menu, select Anonymize.
- Specify the desired new value for Patient Name and Patient ID.
- Set the option to export to folder, or to repository.

  When exporting to a folder, set target path for the exported anonymized data. Medis Suite will create a new sub folder in this target path with the new patient name and patient ID, to export the output files. Optionally, Medis Suite can create a zip file with all anonymized data.

  When exporting to a repository, select the repository to export to, and specify a directory name that will be used in the repository to store the anonymized files.
- Select Start to anonymize and export the data.

Anonymization will always include all data from the selected study, it is not possible to anonymize a subset of the data.

All DICOM Secondary Capture images of reports and snapshots will be excluded from the anonymization and export process, as they are likely to contain burned-in patient information.

The Medis Suite session data will be included in the anonymization process. However, snapshots and viewport layouts will be removed from the session data, as they are likely to contain burned-in patient information. Results provided by apps will only remain in the Medis Suite session data if the app can anonymize the results. In other cases, the results will be removed from the session.

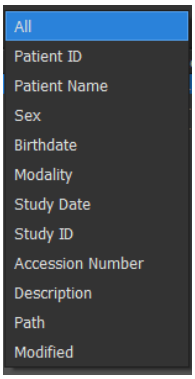
1.3.9 Loading a Patient

To search for a specific patient or study:

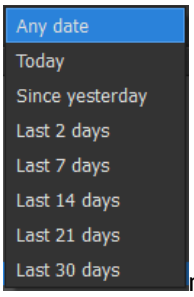
- Edit the Patient/Study info filter by entering the filter text.
-

  The Patient / Study list contents will be updated while you type.

- To filter out any specific patient or study properties, click the filter combo box (default selection: **All**) and select the column on which you would like to filter. Filter text can be cleared by clicking the blue 'X' button.

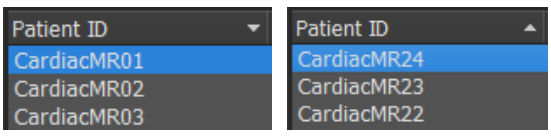


- To filter out studies on a specific date, click the study date box (default selection: **Any date)** and select the study date on which you would like to filter.



me

- To sort the patient / studies entries in the list, click on the header to sort in ascending (a to z) order. Click the header again to sort in descending (z to a) order.



To load a patient / study in Medis Suite:

- Select one patient / study entry in the list and click

.

Or,

- Double click on a patient / study entry in the list.

Medis Suite can only load data of one single patient / study. Loading a new patient / study will automatically unload any previously loaded patient / study.

To load one or multiple series from a patient / study in Medis Suite:

- Select one patient / study entry in the patient / study list.
- Select one or more series in the series list
- Click

.

Or,

- Select one patient / study entry in the patient / study list.
- Double click on one or more series in the series list.

The image files that are part of a patient / study can be exported, deleted, or anonymized. To start, right click on the appropriate entry in the patient / study list, and select the Export, Delete, or Anonymize menu item.

The export, delete and anonymize data from a repository is functionality that can be allowed or blocked (role based access control) by your system administrator.

1.3.10 Loading Prior Exams

To load prior exams of either the same or multiple patients, each prior exam is opened in a new instance of Medis Suite.

To load a Prior Exam in Medis Suite:

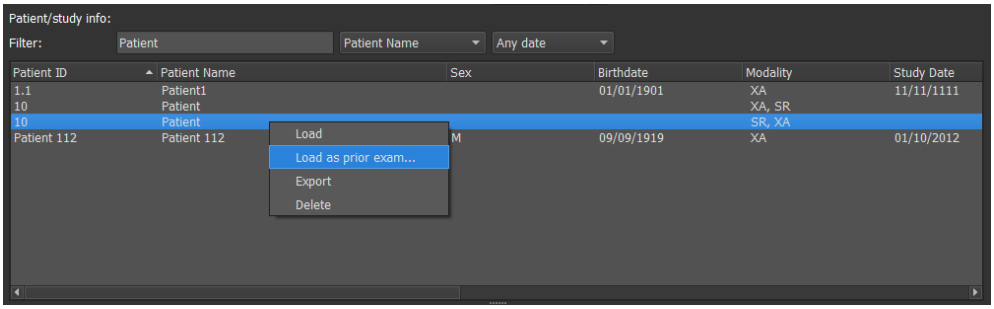
From the Browser, load the first study.

- Select a patient / study entry in the patient / study list.
- Select one or more series in the series list
- Click

.

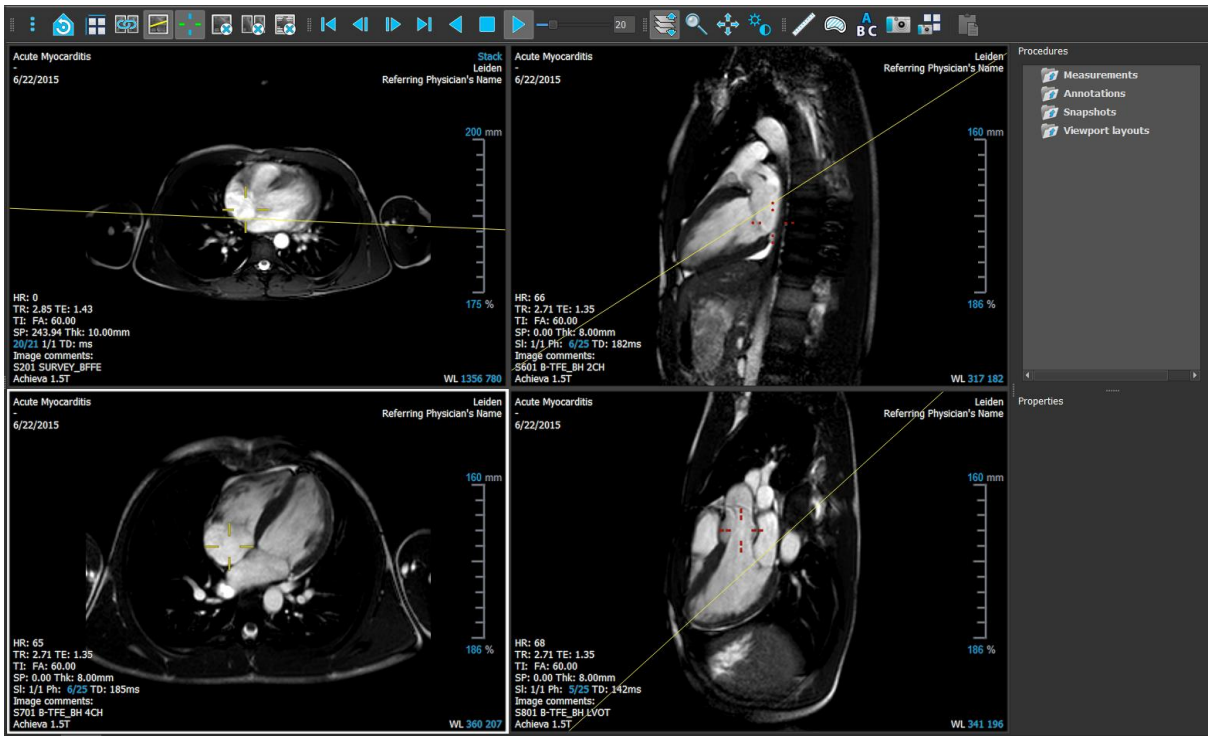
Load the next study as a Prior Exam. (This step can be repeated for multiple studies).

- Select the second / study entry in the patient / study list.
- Right-click and select “Load as Prior Exam...”



1.4 View

The **View** tab in the central window of Medis Suite provides the viewing functionality.



You can customize the viewer workspace by hiding or moving the workspace panes and toolbars. Any changes that you make to the viewer workspace are saved for each Windows user.

1.4.1 Menu

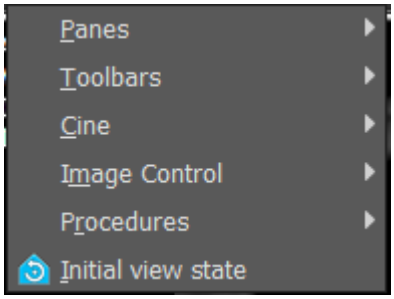
The menu contains commands to activate the functionality that you need when you are working with the viewer.

To make the menu visible:

- Click on the menu icon in the **General** toolbar of the viewer.

The menu commands are organized into five main menus: **Panes**, **Toolbars**, **Cine**, **Image Control**, and **Procedures**, and one menu command: **Initial view state**. For some of these commands, tool buttons are available in the toolbars as shortcuts.

Menu commands may be grayed out when you are performing a procedure, such as a distance measurement. You can make the menu commands active by canceling or finishing the procedure.

Menu	Command	Description
	Panes	Show or hide a workspace pane
	Toolbars	Show or hide a toolbar
	Cine	Control the time point selection
	Image Control	Set the image control
	Procedures	Start a new procedure
	Initial View State	Reset the view state (F12)

1.4.2 Toolbars

You can move toolbars to another part of the main window. You can also show or hide toolbars.

To move a toolbar

- Click on the double-bar grip handle of the toolbar and drag it.

  You can now move the toolbar to any location on the sides of the main window. Simply click and drag the toolbar to its new position. The position of the toolbar is saved when you close the application.

To show or hide a toolbar

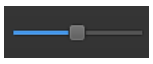
1. Click on the menu icon in the **General** toolbar of the viewer and select **Toolbars**.
2. Select a check box to show the toolbar, clear a check box to hide the toolbar.

Or,

1. Right-click in the toolbar area. This opens a context menu.
2. Select a check box to show the toolbar, clear a check box to hide the toolbar.

The state of the toolbars is saved when you close the application.

Icon	Function
General Toolbar	
	Show the menu
	Go to the initial view state, reset zoom \ pan \ window width \ window level
	Select the viewport layout
	Select synchronization mode
	Enable / disable cross reference line
	Enable / disable cross reference cursor
	Close active viewport
	Close all viewports
	Toggle the visibility of the image overlay
Cine Toolbar	
	Go to the first time point
	Go to the previous time point
	Go to the next time point
	Go to the last time point

Icon	Function
	Play a cine in a backward direction
	Stop the cine
	Play a cine in a forward direction
	Set the cine playback speed
Mouse Controls Toolbar	
	Stack
	Cine
	Zoom
	Pan
	Window width and window level
Procedures Toolbar	
	Calibrate the selected XA image
	Create a distance measurement
	Create an area measurement
	Create a text annotation

Icon	Function
	Create a snapshot of the active viewport
	Create a viewport layout snapshot
	Copy all measurement results to the clipboard

1.4.3 Workspace Panes

By default, the workspace displays two panes to the right of the viewer; **Procedures** and **Properties**.

You can show or hide panes, dock panes, combine panes into one tabbed panel and remove panes from a panel.

To show or hide a pane

- Click on the menu icon in the **General** toolbar of the viewer, select **Panes**, and select a pane to show it. Clear its check box to hide it.

To dock a pane

1. Click and drag the title bar of the pane.
2. Move the pane to the sides of the viewer window to select one of the dock areas.

   As the pane approaches a dock area, the area is highlighted with a dotted line. The pane can be combined with another pane or inserted separately.
3. When the dock area of your choice appears highlighted, release the mouse button.

   This docks the pane into the selected position.

To combine panes into one tabbed panel

- Click and drag the title bar of the pane to the title bar of the pane with which you want to combine it.

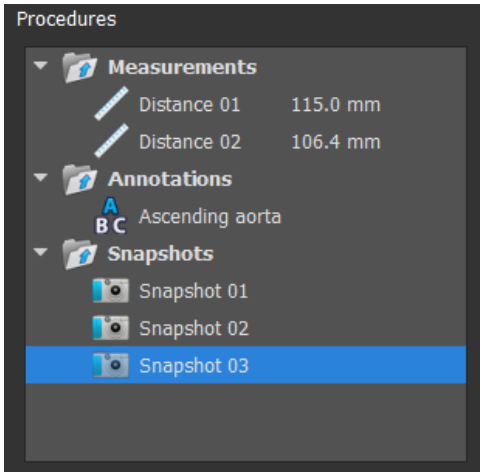
  This creates a tabbed panel.

To remove panes from a panel

- Click and drag the title bar of the pane away from the panel.

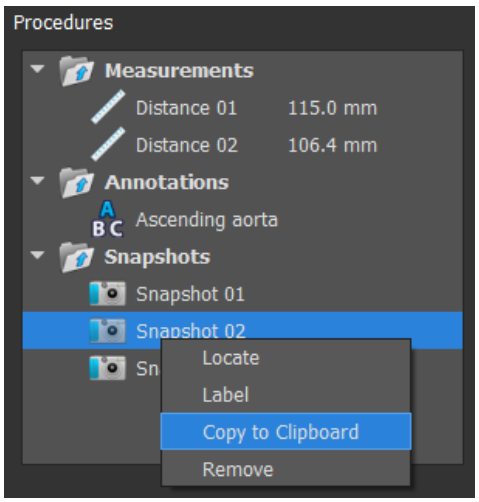
1.4.4 Procedures Pane

The **Procedures** pane lists the different procedures, such as, measurements, annotations and snapshots that are performed on the series that is loaded in the viewport.



You can collapse and expand the branches of the tree by double-clicking the top-level nodes.

You can right-click a procedure to perform actions on the procedure. Depending on the type of procedure, you will get a context menu with several options.



Locate: The image at which the procedure was originally performed will be activated.

Locate may be grayed out. You can make this menu item active by canceling or finishing the active procedure.

Label: Change the label of the selected procedure.

Copy to Clipboard: The annotation label, distance measurement and value, area measurement and values, or the snapshot image is copied to the clipboard.

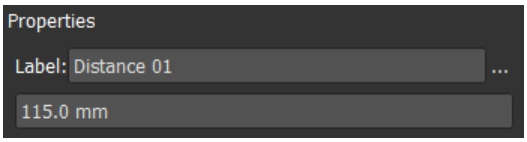
Remove: The procedure is deleted.

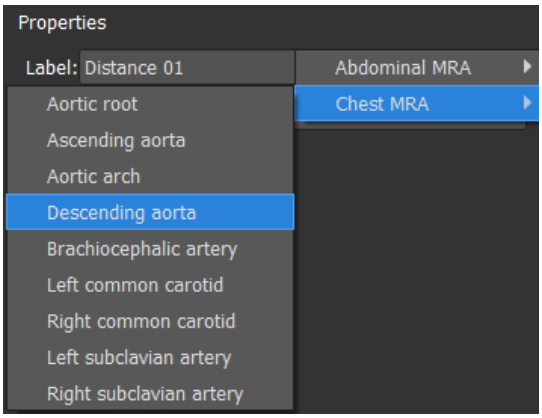
1.4.5 Properties Pane

The **Properties** pane shows the properties of the selected procedure.

To modify a Label

1. On the **Procedures** pane, select the procedure (E.g. A measurement procedure).
2. On the **Properties** pane, click the ellipsis ... on the right of the **Label** field and select a predefined label, or type a custom label and press Enter.





Or,

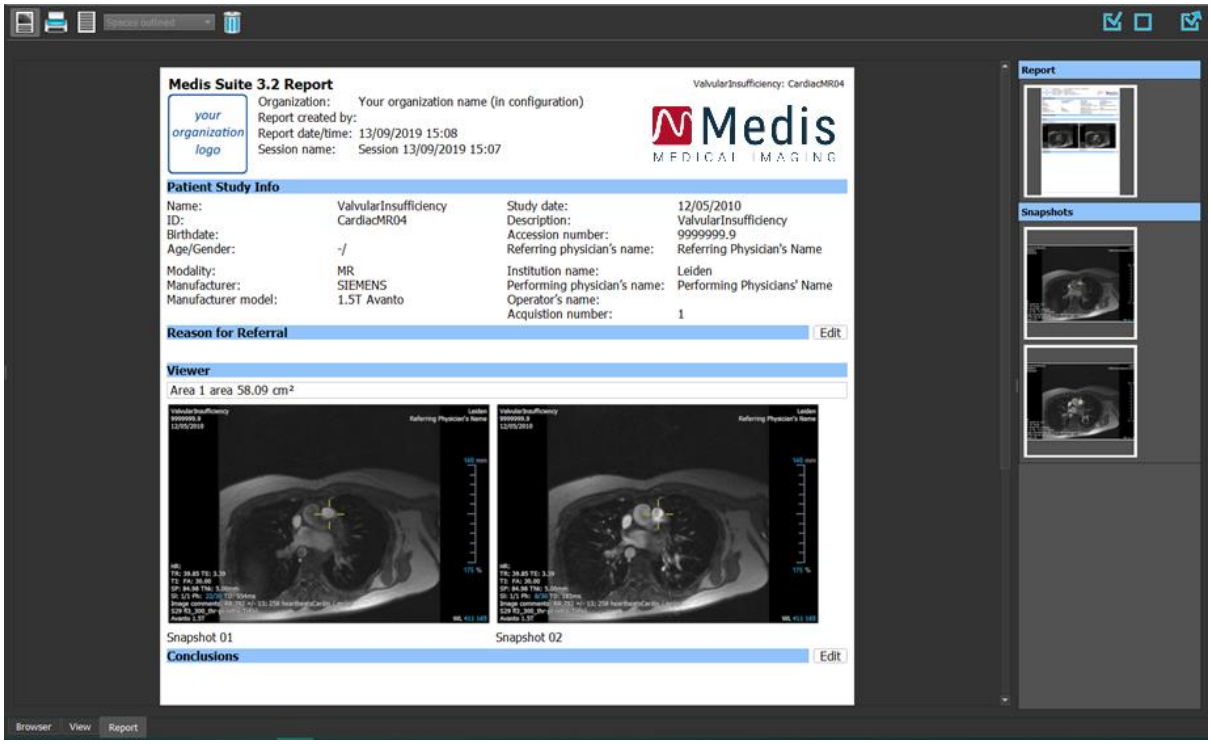
1. On the **Procedures** pane, right-click on the procedure and select **Label**.
2. Select a predefined label, or type a custom label and press Enter.

The predefined labels provided by Medis Suite are dependent on the modality of the active image data.

Working with the Medis Suite viewer is explained in more detail in chapter 2.

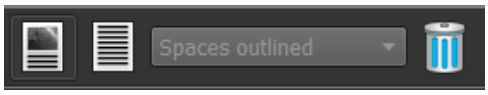
1.5 Report

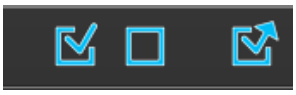
The **Report** tab in the central window of Medis Suite provides the reporting functionality.

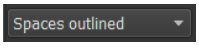


1.5.1 Toolbars

The positions and visibility of the toolbars in the **Report** tab are fixed.





Icon	Function
Report Toolbar	
	Show the graphical report
	Show the textual report
	Set the separator of the textual report output The separator selection is only active when the textual report is active.

Icon	Function
	Clear the report by hiding all results
Export Toolbar	
	Select all exportable results
	Deselect all exportable results
	Export the selected exportable results

More detailed information on working with the report and the export of results is given in chapters 5.4 and 7.

2 Viewing

2.1 Viewport

The image viewport displays all images that are contained in the currently loaded series.

The image overlay displays detailed information about the patient, the hospital, the image acquisition information, and the display settings.

When a series is “Lossy”, “Derived”, or “Resampled” this will be indicated as a warning in the image overlay at the bottom right corner of the viewport.

To adjust the visibility of the image overlay

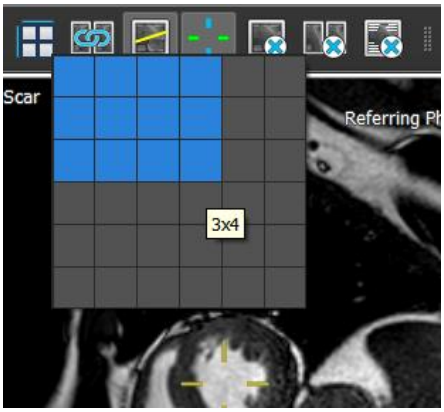
- Click in the general toolbar.
- All image overlays will be hidden on the first click. Subsequent clicks will display the image warnings, display settings, image acquisition information, hospital information and patient information.

The visibility of the image overlay will always be restored on loading a new patient.

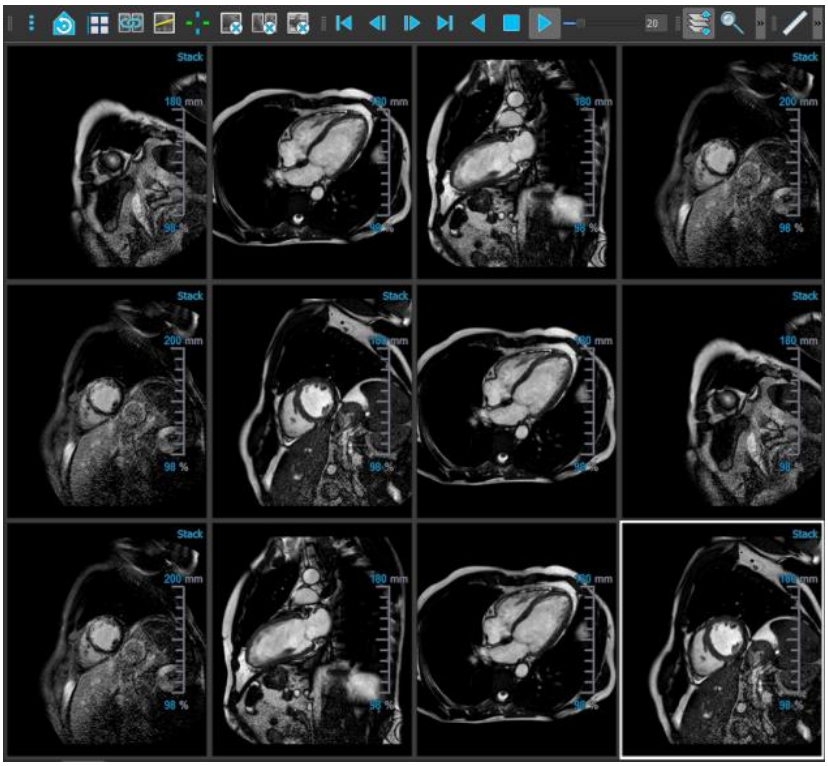
2.2 Viewport layout

To adjust the viewport layout

- Click in the general toolbar. A table of rows and columns will appear.
- Drag the mouse to determine the number of viewport rows and columns.



- The viewport layout will be applied.



To clear a series from a viewport

- Select the viewport.
- Click in the general toolbar.

To clear all series from all viewports

- Click in the general toolbar.

To enable or disable overlays in all viewports

- Click in the general toolbar, or press the Tab key. This will toggle off all overlays.
- Continue to click or press the Tab key to enable each sub-set of overlays.

2.3 Loading Series

Series can be loaded in the viewport from the **Series Browser**.

To load series in the viewport

1. Click an item in the image view or text view of the **Series Browser** to select it.
2. Click and drag the selected series from the **Series Browser** to the viewport.

   This will load the series into the viewport. When multiple slices are contained in the series, the middle slice is displayed by default. When multiple time points are contained in the series, the first time point is displayed by default. The **Series Browser** highlights the displayed series with a white border around the icon in the image view, or bold text in the text view.
3. Double click an item in the image view or text view of the **Series Browser** to select it.

To review all series in the active study

1. Press **Page Down** on your keyboard to load the next series into the viewport
2. Press **Page Up** on your keyboard to load the previous series into the viewport

2.4 Navigation

You can move forward or backward through the slices and time points in the series in several ways.

To move forward or backward through slices

Moving through slices can be done by using keys:

- Press arrow up or down to move to the previous or next slice.

Or,

- Press HOME or END to move to the first or last slice.

Moving through slices can be done by using interactive graphics:

- Click or right-click the interactive graphics for slice ('Sl') on the viewport to move to the first or last slice.

To move forward or backward through time points

Moving through time points can be done by using buttons:

- Click or on the Viewing toolbar to move to the previous or next time point.

Or,

- Click or on the Viewing toolbar to play a cine through the time points in backward or forward direction. Click to stop the cine.

Or,

- Click or on the Viewing toolbar to move to the first or last time point.

Moving through time points can be done by using keys:

- Press the left or right arrow key to move to the previous or next time point.

Or,

- Press CTRL + left arrow, CTRL + right arrow to play a cine through the time points in backward or forward direction. Press Esc to stop the cine.

Or,

- Press HOME or END to move to the first or last slice time point.

Moving through time points can be done by using interactive graphics:

- Click the interactive graphics for phase ('Ph') on the viewports to move to the next time point.

Or,

- Right-click the interactive graphics for phase (‘Ph’) and enter the desired number of the time point.

2.5 Cross Referencing

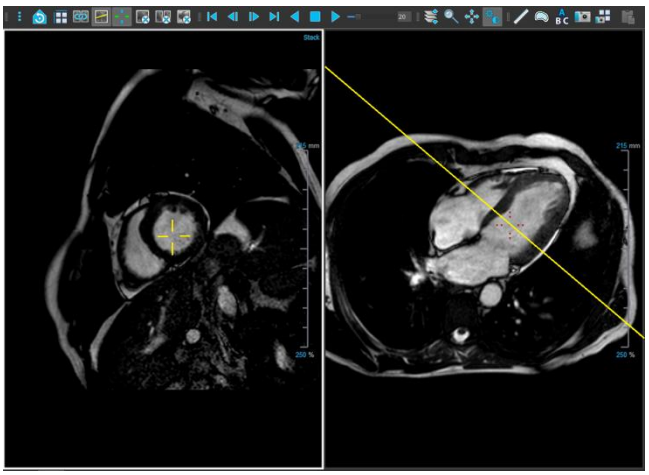
The scanline and cross hair tools enable the user to visually relate the active image and image position with that of the different series loaded in other viewports. Cross Referencing is visible when multiple related series are loaded.

To enable/disable the scanlines

- Click in the general toolbar to enable or disable scanlines.

To enable/disable the cross hairs

- Click in the general toolbar to enable or disable cross hair



A cross hair reference of the same color implies there is an exact or nearby position cross reference. A different color cross hair indicates the position is out of range of the cross hair in the active image.

2.6 Mouse Controls

2.6.1 Stacking / Cine

You can move through the slices and time points using **Stacking** (MR and CT images) or **Cine** (XA images) when you see the stack cursor .

To activate the stacking or cine mouse control

- Click or in the mouse controls toolbar.

Or,

- Select **Stacking** or **Cine** from the viewport context menu.

To stack forward or backward through slices (MR and CT images)

- Scroll the mouse wheel to stack through the slices.

Or,

- Click and drag the mouse forward and backward to stack through the slices.

With either technique, if scrolling reaches either end it will stop at the first or last slice.

The current slice number is displayed on the scale overlay graphics in the viewport ('Sl').

To stack or cine forward or backward through time points (MR, CT, and XA Images)

- Scroll the mouse wheel to stack through the time points (only in a single slice series).

  If scrolling reaches either end of the time points, it will stop at the first or last time point.

Or,

- Click and drag the mouse left and right or down and up to scroll through the time points.

  If dragging reaches either end of the time points, it will loop to the first or last time point and continue stacking.

The current time point number is displayed on the scale overlay graphics in the viewport ('Ph' or 'Frame').

2.6.2 Zooming

You can zoom in and out of the viewport using **Zooming** when you see the magnify cursor .

To activate the zooming mouse control

- Click in the mouse controls toolbar.

Or,

- Select **Zooming** from the viewport context menu.

To zoom in and out

- Click and drag the mouse forward and backward to zoom in and out.

Or,

- Click and drag on the interactive labels of the scale overlay graphics.

The current zoom factor is displayed on the scale overlay graphics in the viewport. The value above the scale is the physical size of the scale. The number below the scale indicates the relative zoom: 100% means one display pixel equals one acquisition voxel.

2.6.3 Panning

You can move the image within the viewport left, right, up and down using **Panning** when you see the hand cursor .

To activate the panning mouse control

- Click in the mouse controls toolbar.

Or,

- Select **Panning** from the viewport context menu.

To pan the image

- Click and drag the mouse in any direction.

Or,

- Middle-click and drag the mouse in any direction.

2.6.4 Window Width and Level

You can adjust the window width and level (WWL) when you see the WWL cursor .

To activate the window/level mouse control

- Click in the mouse controls toolbar.

Or,

- Select **Window/Level** from the viewport context menu.

To adjust the window width and level

- Click and drag
  - Right or left to increase or decrease the width.
  - Down or up to increase or decrease the level.

Or,

- Right-click and drag
  - Right or left to increase or decrease the width.
  - Down or up to increase or decrease the level.

Or,

- Click on the window width or level interactive graphics and drag up or down to increase or decrease the window width or level.

Or,

- Right-click on the window width or level interactive graphics and enter the desires values.

The current window width and level values are displayed in the lower-right overlay graphics in the viewport.

Image Inversion

You can invert the image view, i.e. turn blacks to whites and whites to blacks from the “Invert image” option in viewport context menu.

2.6.5 Initial View State

To reset the zooming, panning and window width and level settings to the initial view state

- Click to reset the zooming, panning and window width and level.

3 Calibration of XA Images

XA images may be accompanied by isocenter calibration information that allows Medis Suite to automatically calibrate the image data. If this information is not available or if the object to be measured is not in the isocenter, the images must be manually calibrated before measurements can be done on the images. Medis Suite supports isocenter calibration, catheter calibration, line calibration, manual calibration, sphere/circle calibration, or can take over calibration values from another acquisition.

The calibration of an XA image is automatically taken over and applied in Medis Suite and all running apps that have analyzed the same XA image.

Errors in the calibration of an XA image can enlarge the subsequent measurement error. Therefore, the calibration procedure and the accuracy of its result have been topics of validation studies [1,2,3,4]. Using manual caliper measurements is superior to visual inspection (but inferior to stenosis analysis with automated edge detection methods) [5,6,7,8].

3.1 Performing Calibrations

To start a calibration

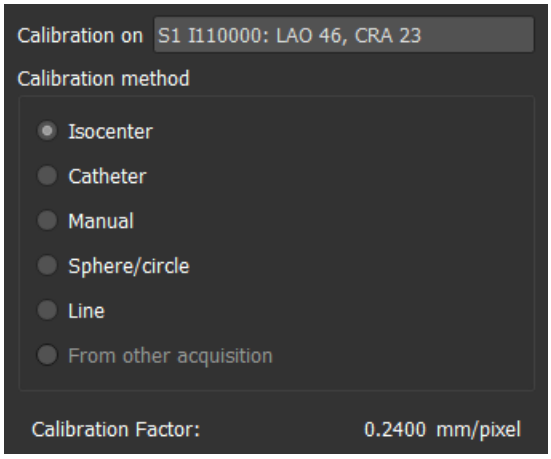
1. Select the viewport to calibrate.
2. Click in the toolbar, or select > **Procedures > Calibration**.
3. Select the calibration method and fill in the necessary information (see below).
4. Click **Done** to finish and apply the calibration factor to the XA acquisition.

   This adds the calibration to the Calibrations list in the **Procedures** pane. At any time while the calibration is still active you can press Esc to cancel the calibration.

3.1.1 Isocenter Calibration

If isocenter data is available for the image, the default calibration method is Isocenter. No further actions are required to use isocenter calibration.

The isocenter calibration factor is only valid for measurements at the level of the isocenter.



3.1.2 Catheter Calibration

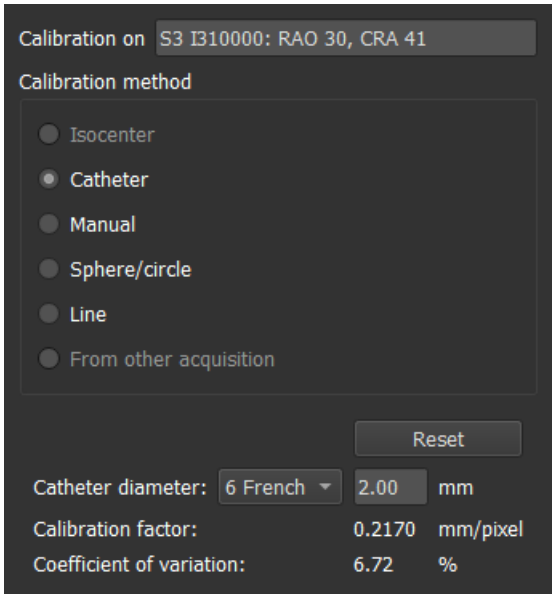
You can use the known diameter of a catheter to calculate the calibration factor that is required for performing accurate measurements and analyses.

The following selection criteria apply to catheter calibration:

- The frame that shows the catheter must be acquired with the same image intensifier size and angulation/rotation as the frame in which measurements or analyses are to be performed.
- The catheter must be shown with a minimum of motion.
- The catheter must be contrast-filled, clearly visible, and with a minimum overlap of contrast agent in the aorta.
- The catheter must be in the same plane as the measurements or analyses to be performed.
- The part of the catheter shown must be more than 5 times the diameter to ensure accuracy.

To perform catheter calibration

1. Select **Catheter** as the Calibration method.



2. In the viewport, make sure to select the image that best meets the selection criteria for catheter calibration.

3. Click in the image to specify the proximal point of the catheter, and then click to specify the distal point.

4. Verify that the catheter contours are correct.

5. Under **Catheter Diameter**, specify the known catheter size by selecting the size in French or typing the size in mm.

You can change the default catheter size. Click on the menu icon in the **General** toolbar of the viewer, select >**Tools > Options**… and then select **Calibration** under **Viewer**.

The calculated calibration factor and the coefficient of variation are shown. The coefficient of variation is an indication for the reliability of the calibration. You are warned if the variation coefficient exceeds the 8% threshold. When you get this warning, select a longer or straighter catheter segment.

6. Click **Done** to finish and apply the calibration.

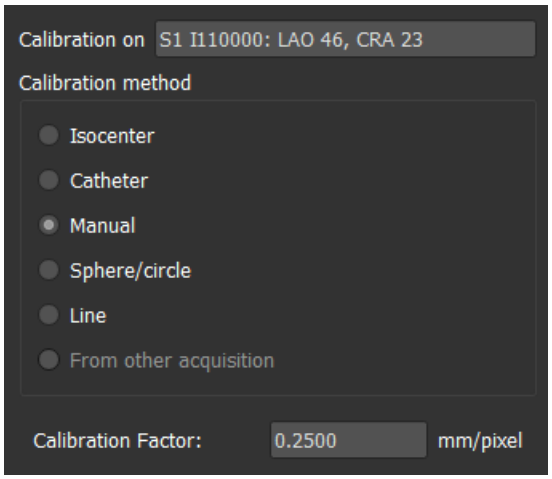
3.1.3 Manual Calibration

If the image or image run does not include a calibration device, you can resort to specifying the calibration factor manually.

Results obtained from images that have manual calibration applied are less reliable than results obtained from images calibrated using a calibration device.

To perform manual calibration

1. Select **Manual** as the Calibration method



2. Under **Calibration factor**, type the known calibration factor. Click outside the edit box or press Enter.

3. Click **Done** to finish and apply the calibration.

3.1.4 Sphere / Circle Calibration

You can use the known diameter of a circular or spherical object to calculate the calibration factor that is required for performing accurate measurements and analyses.

The following selection criteria apply to calibration based on circular objects, such as coins or spherical objects, such as billiard balls:

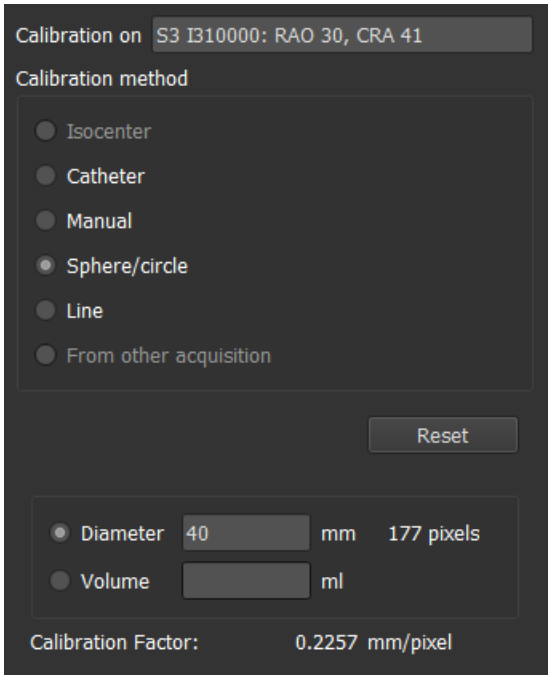
- The frame that shows the circular or spherical object must be acquired with the same image intensifier size and angulation/rotation angles as the frame in which the measurements or analyses will be performed.

- The circular object must be shown with a minimum of motion.

- The frame that shows the circular or spherical object must be acquired at the same height - being with the same distance to the image intensifier- as the object on which the measurements or analyses will be performed.

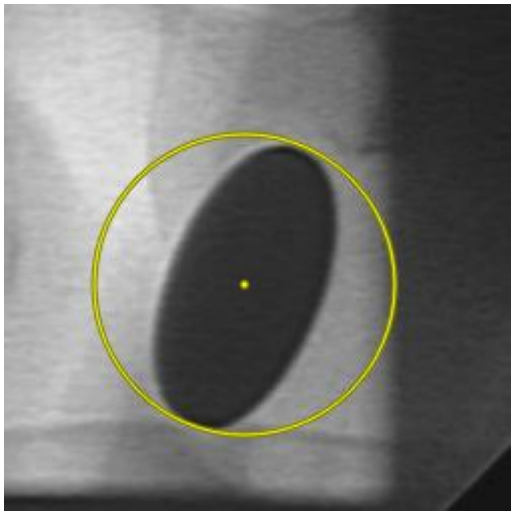
To perform sphere/circle calibration

1. Select **Sphere/circle** as the Calibration method.



2. In the viewport, make sure to select the image that best meets the selection criteria for sphere/circle calibration.

3. Click in the image to specify the center of the circle/sphere and then drag to specify the diameter.



4. Under **Enter the diameter or volume**, select whether you will be specifying the **Diameter** or the **Volume**.

5. Type the diameter in mm or the volume in ml. Click outside the edit box or press Enter.

You can change the default circle diameter or sphere volume. Click on the menu icon in the **General** toolbar of the viewer, select **Tools > Options…** and then select **Calibration** under **Viewer**.

The calculated calibration factor is shown.

6. Click **Done** to finish and apply the calibration.

3.1.5 Line Calibration

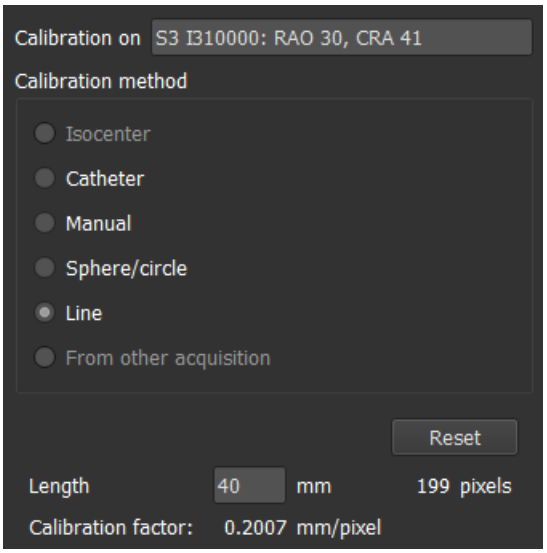
You can use the known length of an object (typically a ruler) to calculate the calibration factor that is required for performing accurate measurements and analyses.

The following selection criteria apply to line calibration:

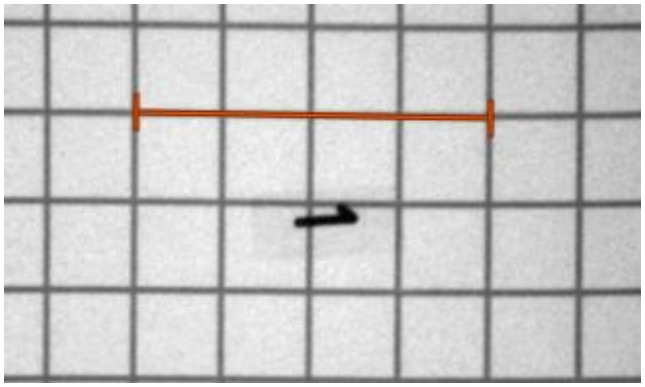
- The frame that shows the calibration object must be acquired with the same image intensifier size and angulation/rotation angles as the frame in which the measurements or analyses will be performed.
- The object must be shown with a minimum of motion.
- The frame that shows the object must be acquired at the same height -being with the same distance to the image intensifier- as the object on which the measurements or analyses will be performed.
- The part of the object of which the distance is measured should be parallel with the image intensifier.

To perform line calibration

1. Select **Line** as the Calibration method.



2. In the viewport, make sure to select the image that best meets the selection criteria for line calibration.
3. Click in the image to specify start point and then drag to specify the end point.



4. Under **Enter the line length**, type the distance in mm. Click outside the edit box or press Enter.

You can change the default line length. Click on the menu icon in the **General** toolbar of the viewer, select **Tools > Options…** and then select **Calibration** under **Viewer**.

The calculated calibration factor is shown.

5. Click **Done** to finish and apply the calibration.

3.1.6 Calibration from Other Acquisition

If the image or image run does not include a calibration device, you can resort to using the calibration factor of a similar image of the same study that was calibrated using a calibration device.

You must make sure that both image runs were obtained using the same acquisition settings and that the measurements or analyses are in the same plane as the calibration device on which the original calibration was performed.

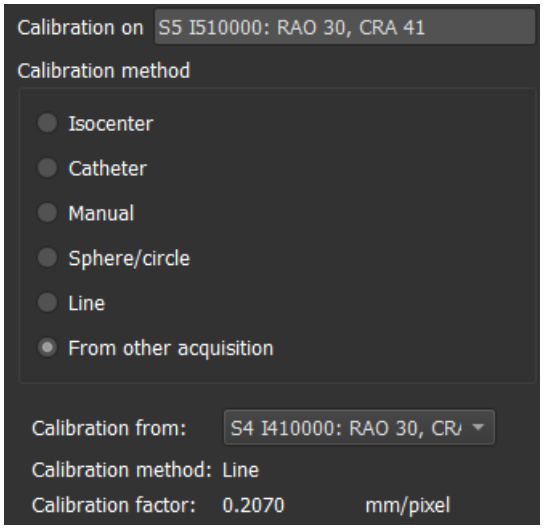
To perform calibration from other acquisition

1. Make sure that a catheter, line, sphere/circle or manual calibration is performed on one of the other images of the same study.

2. Select **From other acquisition** as the Calibration method.

You can only select '**From other acquisition**' if a catheter, line, sphere/circle or manual calibration is performed in one of the other acquisitions of this study. If no other calibration is available, the radio button will be disabled.

3. Select the other acquisition from the list with series and instance numbers and acquisition angles.



The calibration method and calibration factor of the other acquisition are shown. You are warned if the acquisition time, image intensifier size, magnification or acquisition angles differ too much from the other acquisition.

4. Click **Done** to finish and apply the calibration.

If the calibration in the other acquisition is modified, the calibration factor in the dependent image will also be updated. The calibration in the other acquisition cannot be changed to anything else than catheter, line, sphere/circle or manual.

3.2 Editing Calibrations

You can modify a calibration that was performed previously.

To edit a calibration

On the **Procedures** pane, right-click the calibration and select Edit from the menu.

Or,

While the viewport that contains the calibrated image is active, click in the toolbar.

It is not possible to delete a calibration. However, if isocenter data is available for the image, you can edit the calibration and select Isocenter as the method to reset the default calibration.

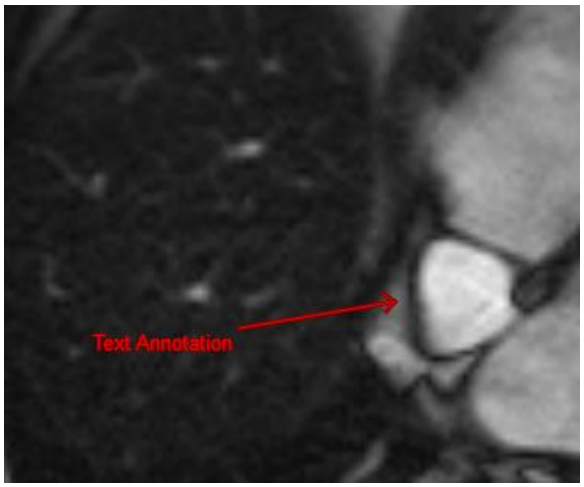
4 Procedures

Medis Suite supports the following procedures:

- Annotations,
- Distance measurements,
- Area measurements,
- Snapshots,
- Viewport layout snapshots.

4.1 Annotations

You can add annotations to a viewport to mark it for analysis or to draw attention to specific details. Annotations are displayed in the viewport. All annotations of the active series are listed on the **Procedures** pane of the viewer.



When you navigate to another series, slice or time point, your annotation is no longer displayed in the viewport. This is because the point to which the annotation refers does not lie on the currently visible image. To see your annotation again, right-click on the annotation on the **Procedures** pane and select **Locate**; or double-click on the annotation on the **Procedures** pane.

4.1.1 Creating Annotations

To create an annotation

1. Click in the toolbar, or select > **Procedures** > **Text Annotation**.
2. Click and drag in the image to draw the annotation arrow.
3. Select a predefined label, or type a custom label and press Enter.
4. Click and drag the arrowhead or the text to adjust the exact location of the image that you want to mark.

5. Click outside the annotation. The graphic changes to white indicating it has left edit mode.

   This adds the annotation to the Annotations list in the **Procedures** pane. At any time while the annotation is still active you can press Esc to remove the annotation.

4.1.2 Editing Annotations

You can modify the text and location of annotations that were added previously.

To edit annotation text

1. On the **Procedures** pane, select the procedure.
2. On the **Properties** pane, click the ellipsis on the right of the **Label** field and select a predefined label, or type a custom label and press Enter.

Or,

1. On the **Procedures** pane, right-click on the procedure and select **Label**.
2. Select a predefined label, or type a custom label and press Enter.

To edit the annotation location

1. Click the annotation graphic.
2. Click and drag the arrowhead or the text to adjust the exact location of the image that you want to mark.

4.1.3 Deleting Annotations

You can delete any annotation that was added to a viewport.

To delete an annotation

- Click the annotation graphic and press Delete.

Or,

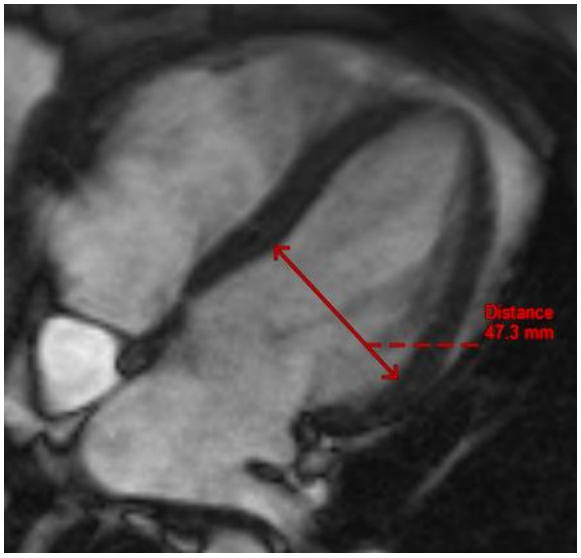
1. Select the annotation in the Annotations list in the **Procedures** pane.
2. Press Delete on your keyboard or right-click and select **Remove**.

   This deletes the annotation.

4.2 Distance Measurements

You can measure the distance from one point to another. When you have measured a distance, you can modify the annotation and the end points of the measurement. All distance measurements of

the active series are listed on the **Procedures** pane of the viewer. All distance measurements of the active session are listed on the **Results** pane of Medis Suite.



When you navigate to another series, slice or time point, your distance measurement may not be displayed on the viewport. This is because the points between which you measured do not lie on the currently visible image. To see your measurement again, right-click on the measurement on the **Procedures** pane and select **Locate**; or double-click on the measurement on the **Procedures** pane.

4.2.1 Creating Distance Measurements

To measure a distance

1. Click in the toolbar, or press the D key, or select > **Procedures > Distance Measurement**.
2. Click and drag in the image from the start point of the measurement to the end point.
3. Select a predefined label, or type a custom label and press Enter.
4. Click and drag either arrowhead or the text to adjust the points of the image between which you want to measure.
5. Click outside the measurement. The graphic changes to white indicating it has left edit mode.

This adds the measurement to the Measurement list in the **Procedures** pane. At any time while the measurement is still active you can press Esc to remove the measurement.

4.2.2 Editing Distance Measurements

You can modify the text and location of distance measurements that were added previously.

To edit distance measurement text

1. On the **Procedures** pane, select the distance measurement.
2. On the **Properties** pane, click the ellipsis on the right of the **Label** field and select a predefined label, or type a custom label and press Enter.

Or,

1. On the **Procedures** pane, right-click on the distance measurement and select **Label**.
2. Select a predefined label, or type a custom label and press Enter.

To edit distance measurement end points

1. Click the distance measurement graphic.
2. Click and drag either arrowhead to adjust the points in the image between which you want to measure.

4.2.3 Copying Distance Measurements

You can copy the result values of a distance measurement to the clipboard as textual output.

To copy a distance measurement

- On the **Procedures** pane, right-click on the distance measurement and select **Copy to Clipboard**.

The distance measurement label and value are copied to the clipboard.

4.2.4 Deleting Distance Measurements

You can delete any distance measurement that was added to a viewport.

To delete a distance measurement

- Click the distance measurement graphic and press Delete.

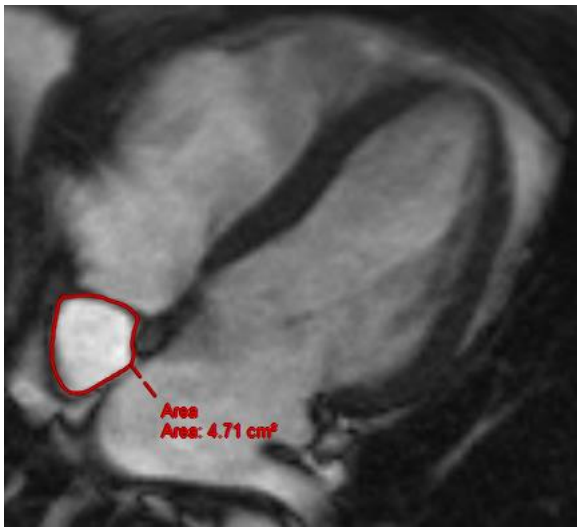
Or,

1. Select the distance measurement in the Measurements list on the **Procedures** pane.
2. Press Delete on your keyboard or right-click and select **Remove**.

   This deletes the distance measurement.

4.3 Area Measurements

You use the area measurement tool to draw and measure 2D areas. When you have measured an area, you can modify the area contour or annotation. All area measurements of the active series are listed on the **Procedures** pane of the viewer. All area measurements of the active session are listed on the **Results** pane of Medis Suite.



When you navigate to another series, slice or time point, your area measurement may not be displayed on the viewport. This is because the image on which you measured the area is not the same as the currently visible image. To see your measurement again, right-click on the measurement on the **Procedures** pane and select **Locate**; or double-click on the measurement on the **Procedures** pane.

4.3.1 Creating Area Measurements

To measure an area

1. Click in the toolbar, or press the A key, or select > **Procedures > Area Measurement** in the menu.

2. Click and drag to draw the area. The contour is automatically closed when you release the mouse button.

3. Modify the contour as necessary (see Editing Area Measurements below).

4. In the **Properties** pane, select the check boxes to include **Area**, **Circumference, or Signal Intensity (SI)** measurements in the image overlay.

5. Click outside the contour. The graphic changes to white indicating it has left edit mode.

This adds the measurement to the Measurement list in the **Procedures** pane. At any time while the measurement is still active you can press Esc to remove the measurement.

4.3.2 Editing Area Measurements

To modify the contour

1. Click the contour to make it active.
2. Near the existing contour click and drag an altered contour. The alteration will be combined with the original.

   Or,

1. Right-click on the contour and drag it, using the rubber-band tool .
2. Click outside the contour. The graphic changes to white indicating it is no longer in edit mode.

4.3.3 Copying Area Measurements

You can copy the result values of an area measurement to the clipboard as textual output.

To copy an area measurement

- On the **Procedures** pane, right-click on the area measurement and select **Copy to Clipboard**.

The area measurement label and value(s) are copied to the clipboard.

4.3.4 Deleting Area Measurements

You can delete any area measurement that was added to a viewport.

To delete an area measurement

- Click the area measurement graphic and press Delete.

Or,

1. Select the area measurement in the Measurements list on the **Procedures** pane.
2. Press Delete on your keyboard or right-click and select **Remove**.

   This deletes the area measurement.

4.4 Snapshots

You can save snapshots as evidence of a diagnosis. Snapshots are displayed on the **Properties** pane, and are listed on the **Procedures** pane. When a snapshot is created, you can modify the name at any time.

When you navigate to another series, slice or time point, the annotations and measurements shown in the snapshot may not be displayed on the viewport. This is because the points at which the annotations and measurements were created do not lie on the currently visible image. To return to the same slice where a snapshot was created, right-click on the snapshot on the **Procedures** pane and select **Locate**; or double-click on the snapshot on the **Procedures** pane.

4.4.1 Creating Snapshots

You can create a snapshot of the current state of the viewport.

To save a snapshot

1. Click in the toolbar, or press the S key, or select > **Procedures > Snapshot**.
2. On the **Properties** pane, click the ellipsis on the right of the **Label** field and select a predefined label, or type a custom label and press Enter.

4.4.2 Deleting Snapshots

You can delete any snapshot that was created.

To delete a snapshot

1. Select the snapshot in the Snapshots list on the **Procedures** pane.
2. Press Delete on your keyboard or right-click and select **Remove**.

   This deletes the snapshot.

4.5 Viewport Layout Snapshots

You can save and restore the layout and state of all viewports by creating a viewport layout snapshot. The snapshots are displayed on the **Properties** pane, and are listed on the **Procedures** pane. When a viewport layout snapshot is created, you can modify the name at any time.

4.5.1 Creating Viewport Layout Snapshots

You can create a snapshot of the current viewport layout.

To save a viewport layout snapshot

1. Click in the toolbar, or select > **Procedures > Viewport Layout**.

2. On the **Properties** pane, click the ellipsis on the right of the **Label** field and select a predefined label, or type a custom label and press Enter.

4.5.2 Deleting a Viewport Layout Snapshot

You can delete a snapshot of a viewport layout.

To delete a snapshot of a viewport layout

1. Select the viewport layout snapshot in the Viewport layouts list on the **Procedures** pane.
2. Press Delete on your keyboard or right-click and select **Remove**.

   This deletes the snapshot.

5 Medis Suite Apps and External Tools

Where Medis Suite procedures provide basic image analysis and results, for advanced image analysis and additional results Medis Suite integrates dedicated applications, or 'apps'.

The clinical apps that are available in Medis Suite include QMass, QFlow, 3D View, QTavi, QAngio XA, QAngio XA 3D. Additional apps are released on a regular basis, visit the Medis website to learn more about our products.

Medis Suite also supports apps for research use and/or investigation use only. These apps can be recognized by a purple color of the graphical user interface. Results of the research apps that are included in the Medis Suite report will be marked to be for research use and/or investigational use only.

Results from research apps should not be used for clinical decision making.

5.1 Starting a Medis Suite App

To start a Medis Suite app

- Click on the app icon in the **Applications** toolbar.

  This will start the app without loading any series.

Or,

1. Right-click in the image viewport.
2. From the context menu, select the app name.

   This will start the app, and load the series visible in the viewport into the app.

Or,

1. Select the series you want to load into the app in the **Series Browser**.

   Multiple series can be selected by holding the SHIFT or CTRL key.
2. Right-click on one of the selected series in the **Series Browser**.
3. From the context menu, select the app name.

   This will start the app, and load all selected series into the app.

Or,

1. Select the series you want to load into the app in the **Series Browser**.

   Multiple series can be selected by holding the SHIFT or CTRL key.
2. Click and drag the selected series onto the app icon in the **Applications** toolbar.

   This will start the app, and load all selected series into the app.

When the Medis Suite app is started, it will be displayed on a new tab in the central window area of Medis Suite. The launched apps will be displayed after the **View** tab and before the **Reporting** tab in the order they were started.

Multiple instances of Medis Suite apps can be started. They will be running next to each other and can be identified by a sequence number '#1', "#2', etc.

Multiple versions of an app can be installed, for example QMass version 8.0 and version 8.1. You can configure how Medis Suite handles multiple app versions when reloading data from a session. Click in the main Medis Suite toolbar, select Tools, Options and the select the **General** tab.

Results from the Medis Suite apps will be visible in the **Results** pane of Medis Suite automatically or by actively pushing results from the apps to Medis Suite. Refer to the user manuals of the Medis Suite apps for more detailed information.

5.2 Loading Series into Medis Suite Apps

You can load series into Medis Suite apps that were already running, appending or replacing data that was already loaded.

To load series into Running Medis Suite apps

1. Click on the tab that holds the running Medis Suite app in the central window of Medis Suite
2. Select the series you want to load into the Medis Suite app in the **Series Browser**.

   Multiple series can be selected by holding the SHIFT or CTRL key.
3. Double-click one of the selected series, or click one of the selected series and drag the selection onto the running Medis Suite app.

   The series will be loaded by the Medis Suite app and the first series will be activated.

Press SHIFT during dragging to add the data to the running Medis Suite app without modifying the app's series selection.

Press CTRL during dragging to unload previously loaded series from the Medis Suite app, and load the new series.

5.3 Closing a Medis Suite App

To close a Medis Suite app

- Click the 'X' on the tab that holds the running instance of the app.

When Medis Suite apps are closed, their accompanying results will be removed from the Medis Suite **Results** pane and the report.

When you switch to another patient or study in the **Browser**, all running Medis Suite apps will be closed.

5.4 External Tools

Medis Suite can be configured to launch 3rd party tools, for example to parse and process the results available in Medis Suite. External tools will not run embedded in the Medis Suite window on a tab, but will be launched to run independent from the Medis Suite environment.

Before Medis Suite will launch an external tool, it can export sessions, reports, results, snapshots and movies that you can be used as input for the external tool.

To start an external tool

- Click on the external tool icon in the **external tools** toolbar.

Configuration of the external tools is performed through the "External tools" tab of Medis Suite options dialog. The configuration includes the location of the external tool, the icon to be displayed in the external tools toolbar or menu, optional command line parameters, the startup and shutdown properties, as well as the pre-launch export options.

Errors in the configuration of external tools or misuse of external tools can lead to unexpected results, such as data loss. Carefully verify that the proper information is exchanged between Medis Suite and the external tool.

Medis Suite provides an external tool template to export results into the CMR-COOP database. To use this external tool, you will require a CMR-COOP account and have to download the accompanying external tool from the CMR-COOP website and install it on your local system.

Medis Suite provides an external tool template to export results into the Cohesic database. To use this external tool, you will require a Cohesic account and have to setup our results gateway service to connect to the Cohesic server using your credentials.

6 Reporting

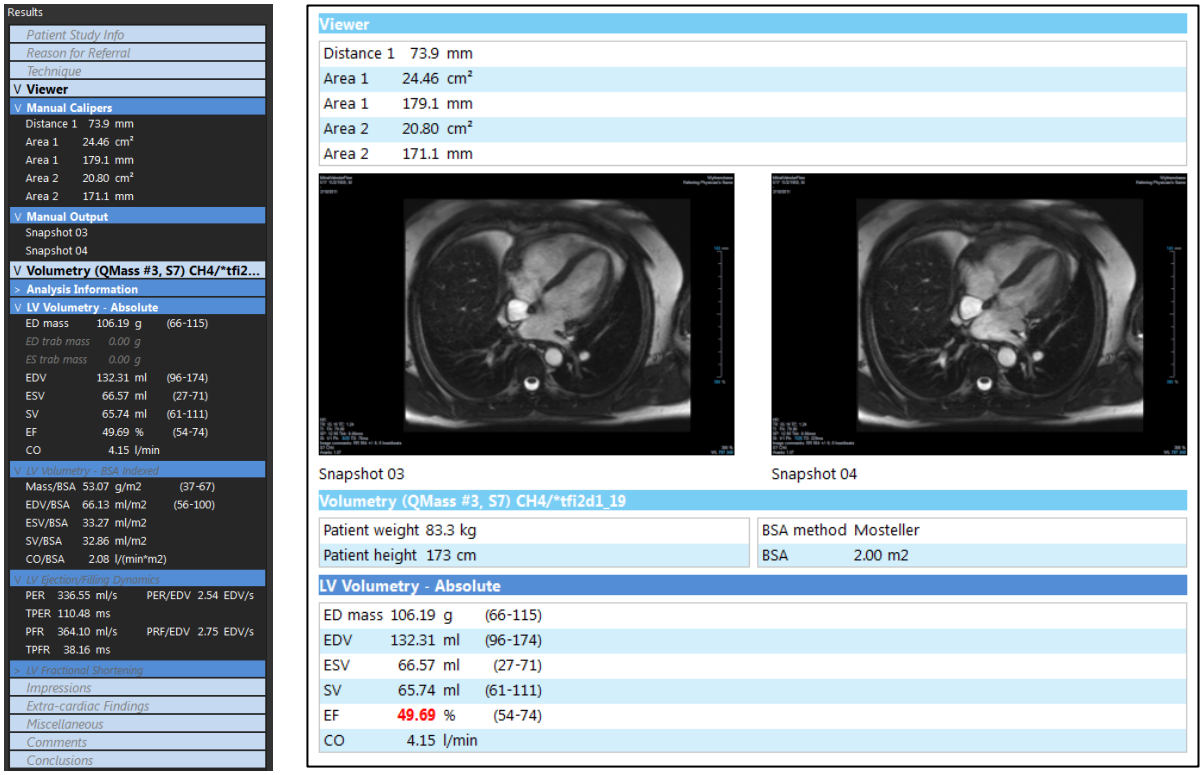
All results available in Medis Suite, either from the Medis Suite viewer or from any of the running Medis Suite apps, within the active session of the active study can be used to generate a combined report.

Next to the results from the Medis Suite viewer and the Medis Suite apps, the following sections can be included in the report:

- Patient Study Info
- Reason for Referral
- Technique
- Impressions
- Extra-cardiac Findings
- Miscellaneous
- Comments
- Conclusions

6.1 Create a Report

You can create a Medis Suite report from the **Results** pane, by showing or hiding results, paragraphs or sections from the report.



To show or hide a result from the report

- Click on the result name or any of the result values to toggle the visibility.

To show or hide a paragraph with all contained results from the report

- Click on the paragraph name to toggle the visibility.

To show or hide a section with all contained paragraphs and results from the report

- Click on the section name to toggle the visibility.

To hide all results from the report

- Click in the toolbar.

To print the report

- Click in the toolbar.
- Select the target printer and click OK.

Sections, paragraphs and results that are hidden in the report, are displayed in the **Results** pane with a grayed out and italic font.

The **Results** pane is automatically activated when you activate the report.

Your organization name and logo can be configured in the Medis Suite options. To open the options dialog, click in the **Main** Medis Suite toolbar, and select Tools, Options.

6.2 Modify a Report

You can modify the following sections from the report:

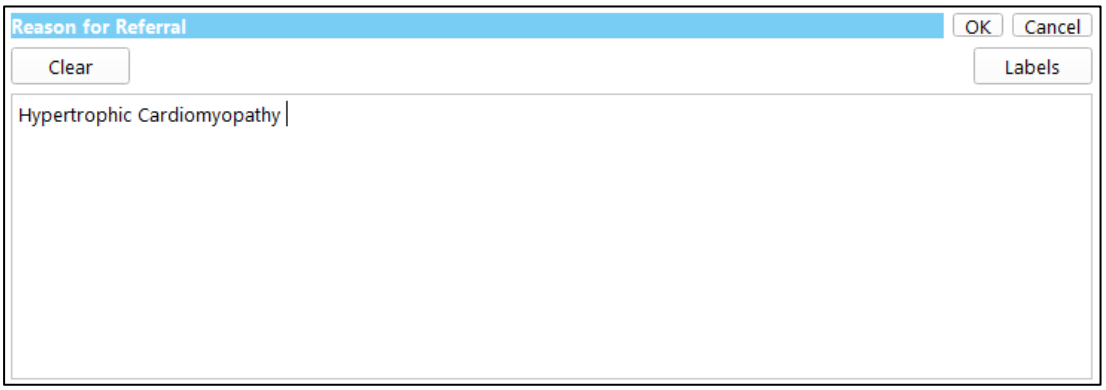
- Reason for Referral
- Technique
- Impressions
- Extra-cardiac Findings
- Miscellaneous
- Comments
- Conclusions

To modify an editable section from the report

1. Make sure the editable section is visible in the report.

   If the section is not visible yet, click on the section name to show it.

2. Click Edit.

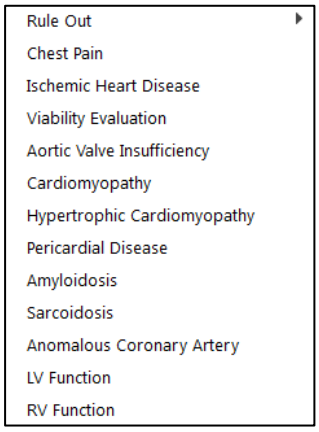


3. Modify the section data by:

   - Remove, modify or add text using the keyboard.

   Or,

   - Click Labels to open a list of predefined labels and select one of the labels.



   By default, the label will be appended at the end of the text in the edit box. To insert the label at another location, select that location with your mouse first.

4. Click OK to close the edit box.

6.3 Textual Report

By default Medis Suite will show the report in a graphical layout. In addition, you can generate a textual report to allow copy-and-paste of results from Medis Suite to another application.

To open the textual report

- Select from the report toolbar

The textual report only includes the results that are visible in the graphical report. To change the report content, modify the selections in the **Results** pane.

To copy results from the textual report

1. Press CTRL+A or select **Select All** from the context menu.
2. Press CTRL+C or select **Copy** from the context menu.

   The entire textual report content is copied to the clipboard.

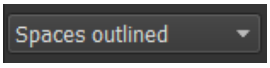
Or,

1. Select a part of the textual report content.
2. Press CTRL+C or select **Copy** from the context menu.

   The selection is copied to the clipboard.

You can paste the information to, for example, another report or spreadsheet with CTRL+V. It may be required to change the outlining of the textual report content to get a proper result.

To change the outlining of the textual report content

- Select 

from the report toolbar and select one of the available outline options:
  - Spaces outlined
  - Space separated
  - Tab separated

To paste results into a Microsoft Excel workbook, use the **Tab separated** outlining, and past the results as text with the **Paste special** command of Microsoft Excel.

To reopen the graphical report

- Select from the report toolbar.

7 Exporting

From the Report tab you can export reports and results.

The export of the report and results is functionality that can be allowed or blocked (role based access control) by your system administrator.

The following items are available for export from Medis Suite:

- Report
- Snapshots
- Values

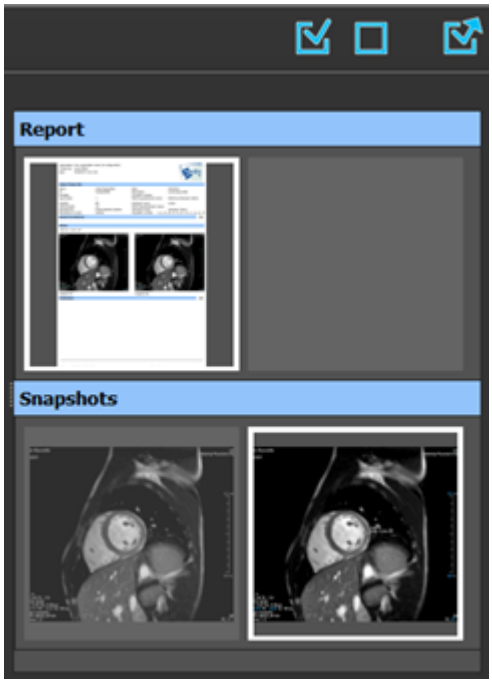
In addition, the Medis Suite apps can add items to the export list, for example:

- Images
- Snapshots
- Movies
- Values

The report, snapshots, images, and movies are displayed as a thumbnail in the export list on the Report tab.

7.1 Select Results for Export

You can select the report, snapshots, images, and movies from the export list to mark them for export.



To include or exclude results for export

- Click on a thumbnail image to include or exclude the result for export

Or,

- Click to include all results for export.

Or,

- Click to exclude all results for export.

Results that are included for export have a thumbnail that is visible in normal colors and is highlighted with a white border. Results that are excluded for export have a thumbnail that is grayed out and has no border.

7.2 Export Results

You can export all selected results in DICOM format to your repository or PACS for future review or reference.

The export targets and formats of the results can be set in the Medis Suite options.

To export results

- Click to export the selected results.

7.3 Export to Common Image Format

Results can also be exported in common image formats.

To export a single result into a common image format:

- Right click on the result to export, and select Export…
- In the Export dialog, select the output format, specify a filename, and click OK.

To export a group of results into a common image format:

- Select or deselect the results in the group you would like to export.
- Right click on the header of the result group, and select Export selected…
- In the Export dialog, select the output format, specify a filename, and click OK.

8 Sessions

Status information of Medis Suite can be saved. The session can be reloaded to continue or review the image analyses performed by Medis Suite.

Medis Suite sessions contain the following information:

- The running Medis Suite apps.
- All results from Medis Suite and the running Medis Suite apps.
- The visibility status of all results in the report.
- Information added to the editable sections in the report.

If supported by the Medis Suite apps, sessions can also contain the following information:

- The series loaded by the Medis Suite app.
- Analysis settings and results (such as contours) created by the Medis Suite app.

8.1 Working with Sessions

Medis Suite can maintain multiple sessions for each study, but only a single session can be active at a time. All sessions can be accessed through the session combo-box in the Main toolbar.

After loading a study, Medis Suite will automatically create a new session that is identified by the date and time on which the session was created, and your name.

You can save sessions and create new sessions. Once loaded into Medis Suite, sessions cannot be removed.

A session is marked as modified whenever results are changed, the report content is changed, or Medis Suite apps are started or stopped. A modified session can be identified by an "*" displayed in the name.

To save a Medis Suite session

- Select from the Main toolbar and click Save session

  The name of the session is updated to indicate that it is saved.

Or,

- Select from the Main toolbar and click Save session as…

  Specify the name of the session and click OK.

  The name of the session is updated to indicate that it is saved.

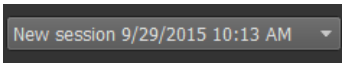
Once a session is saved, its contents cannot be overwritten or modified by Medis Suite.

To reset a Medis Suite session

- Select from the Main toolbar.

  A new session is created.

To select a Medis Suite session

- Open the session combobox in the Main toolbar 

and select the Medis Suite session.

When you switch or reset a session, all open Medis Suite apps will be closed and their results will be removed from Medis Suite. The Medis Suite apps that were contained in the newly activated session will be started and their results will be loaded in Medis Suite.

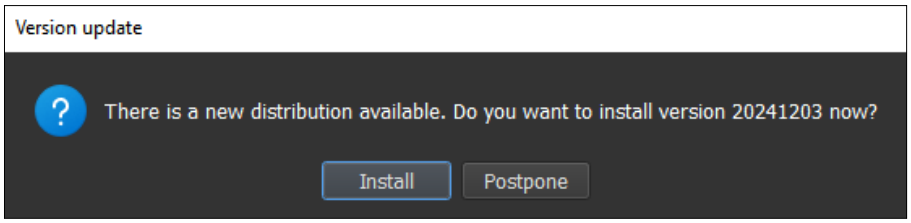
Before Medis Suite closes a modified session, you will be asked if you want to save the session.

9 Client-Server Software Updates

In a Client-Server system setup, software updates for Medis Suite can be deployed from the server to the clients.

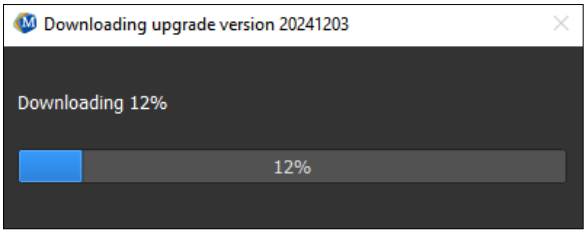
An upgrade of a Medis Suite distribution, is started by upgrading the server installation of Medis Suite manually. Once the server is upgraded the client can be upgraded.

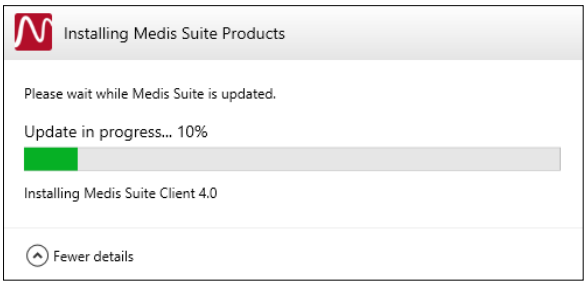
On a client machine, when Medis Suite is started, a query will be sent to the server for a software update. In case of an available software update Medis Suite, on the client, will ask the user whether to upgrade immediately, or to postpone the software update.



On the client, the update consists of the following steps:

- A download of the software from the server takes place.
- A progress / status dialog will be shown.
- The active Medis Suite will be closed.
- The software will be updated.
- When finished the dialog shows the result.
- Medis Suite will be started.

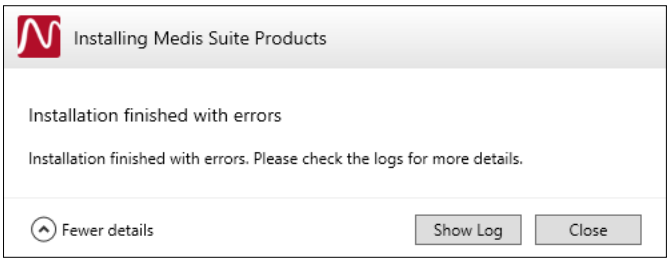




After the distribution update Medis Suite will automatically start. It is advised to directly perform the Post Install Test from the Tools menu.

In case of errors during the update the status dialog will show the following information:

- The error that occurred.
- The path to the location of the logfiles of the software update process.



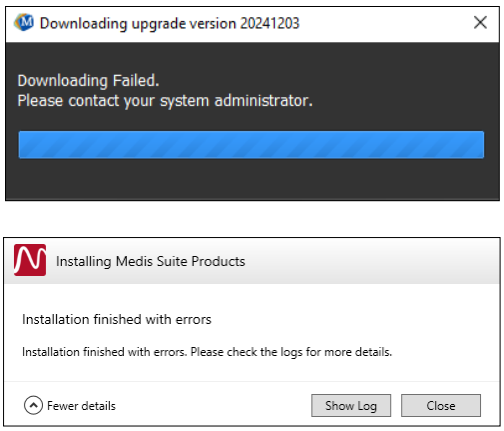
Medis Suite installed in standalone mode does not support automatic updates.

9.1 Options

Client-Server options can be enabled or disabled from both the server side as for the client side. The default for Client and Server is enabled. The setting can be changed on the Options -> Services page.

9.2 Troubleshooting software updates

During a software update process a failure of the software update will be notified to the user via the progress and status dialog.



The path to the logging of the software update process is displayed on the dialog. The generic path is: "C:\ProgramData\Medis\Deployment\Logs\". For each update process there is a specific folder with logs. The logfile folder name is in the format of: Log_YYYYMMDD_HHMMSS (eg. Log_20240709_171412).

10 DICOM Connectivity

Medis Suite supports the following DICOM services:

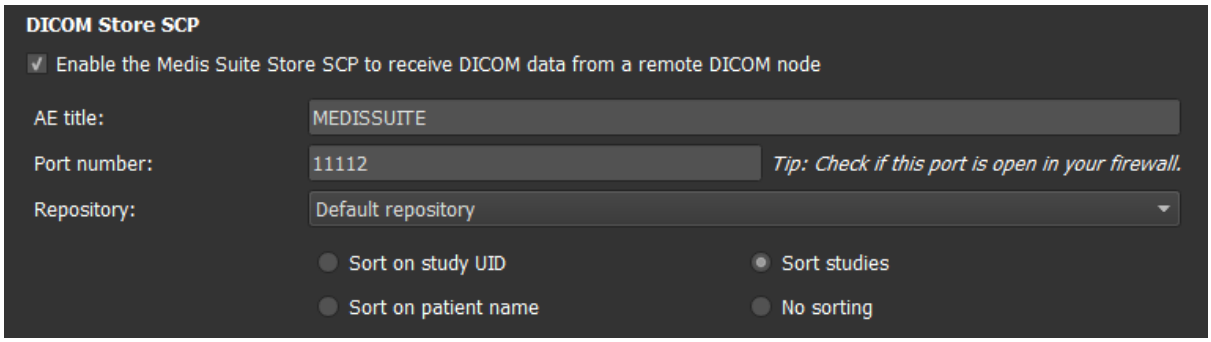
- Echo SCU to test the DICOM connection with a remote DICOM node, such as a PACS.
- Store SCP to receive data from a remote DICOM node, such as a PACS;
- Store SCU to send data to a remote DICOM node, such as a PACS;
- Find SCU and Move SCU to query and retrieve data from a remote DICOM node, such as a PACS.

In order to create an efficient setup with DICOM connectivity, you can share the DICOM connectivity service on the Medis Suite server machine with one or more Medis Suite client machines.

To configure the DICOM connectivity of the Medis Suite server

- Go to the machine that acts as a Medis Suite server and start Medis Suite.
- Click in the **Main** Medis Suite toolbar, select Tools, Options and select the DICOM connectivity tab.

To enable the Store SCP:

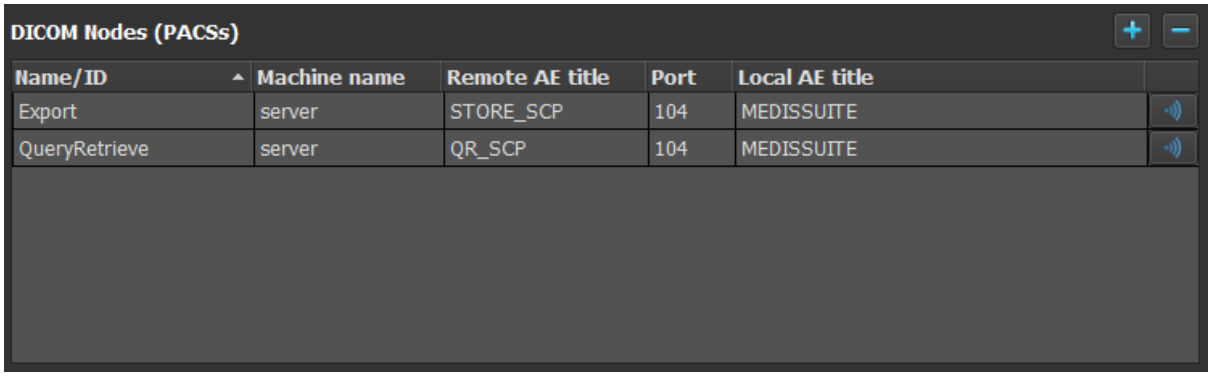


- Select the check box “Enable the Medis Suite Store SCP…”
- Set the appropriate AE title and port number for the Store SCP of Medis Suite.

  The default settings are MEDISSUITE and port number ‘11112’.
- Select the repository to store received data.

In order to establish a successful connection, make sure to register the Medis Suite Store SCP with its AE title and port number on the PACS as a destination DICOM node.

To enable the Store SCU:



- Click to add a new DICOM node.
- Set the appropriate Remote AE title, port number, and machine name of the SCP on the PACS, and enter an appropriate node name.
- Click to test the newly defined DICOM node.
- Select the newly defined DICOM node from the dropdown list of Export nodes.

To enable the Find SCU and Move SCU to enable Query and Retrieve:

- Click to add a new DICOM node.
- Set the appropriate Remote AE title, port number, and machine name of the SCP on the PACS, and enter an appropriate node name.
- Click to test the newly defined DICOM node.
- Select the newly defined DICOM node from the dropdown list of Query/Retrieve nodes.

To configure the DICOM connectivity of the Medis Suite client

- Go to the machines that act as a Medis Suite client and start Medis Suite.
- Click in the **Main** Medis Suite toolbar, select Tools > Options, and select the Services tab.

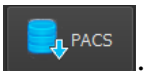
- Enter the machine name or IP address of your Medis Suite server.

- Click ‘Test services’ to verify the connection with your Medis Suite server.
- The Medis Suite client machine will now be able to use the DICOM connectivity functionality from the Medis Suite server.

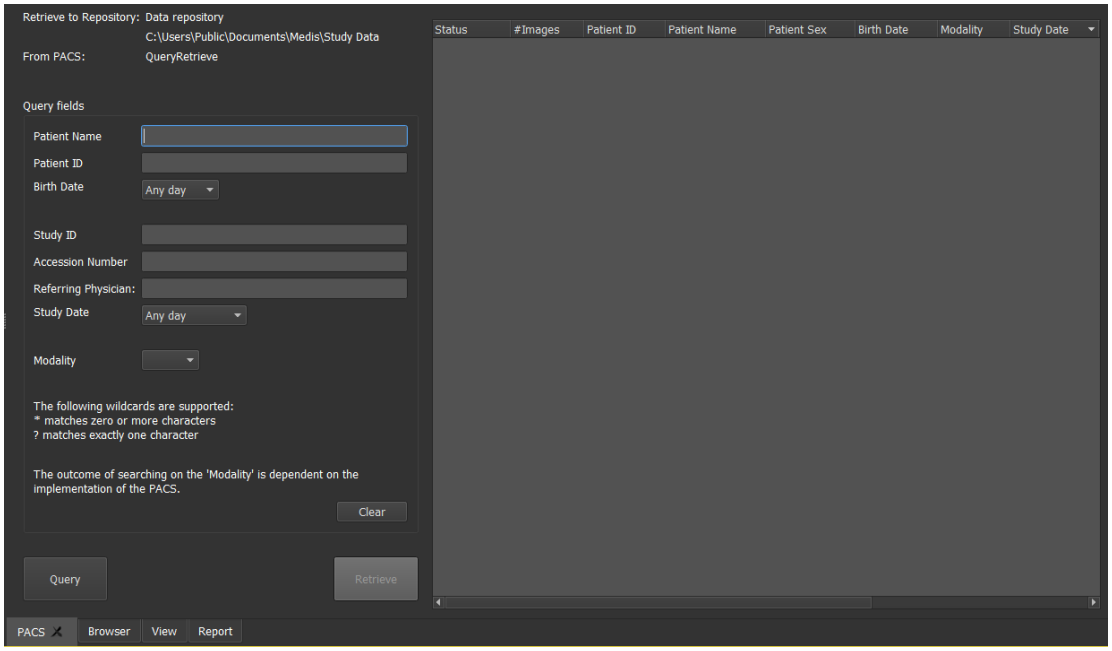
11 Query / Retrieve from PACS

Medis Suite supports both Query and Retrieve from a predefined PACS.

To query and retrieve from a PACS

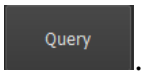
- Open the Browser tab, and click 

. The PACS tab will be opened.



The PACS button will only be visible and enabled when a DICOM node is configured for DICOM Query and Retrieve.

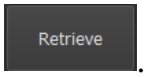
Query a PACS

- Using the Query fields to define the search criteria.
- Click 

.
- Matching patient and study information will be displayed in the list.

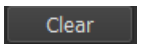
Retrieve from PACS

- Select an item from the list of patient and study information.

- Click 

.
- The patient/study will be retrieved and appended to the repository.
- Go to the Browser tab to confirm that the patient data is appended to the repository, and load the data into the Viewer.

Clear results

- Click 

and the previous queried results will be cleared.

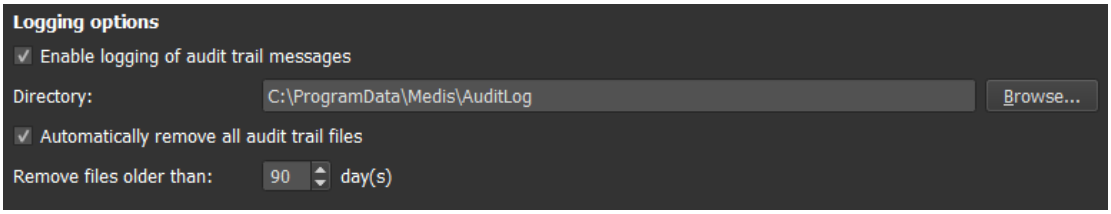
12 Audit Trail

Medis Suite supports audit trailing functionality to maintain a log of relevant actions performed by Medis Suite or any of the integrated apps.

In order to create an efficient setup with audit trailing, you can share the audit trailing service on the Medis Suite server machine with several Medis Suite client machines.

To configure the audit trailing of the Medis Suite server

- Go to the machine that acts as a Medis Suite server and start Medis Suite.
- Click in the **Main** Medis Suite toolbar, select Tools, Options, and select the Audit Trail tab.



- Select the check box “Enable logging of audit trial messages”
- Edit the directory where the audit trail must be stored.
- Enable or disable the auto cleanup of audit trail files.

If you want Medis Suite to store data on a network drive, the Medis Suite Audit trail Windows service will require additional privileges that must be configured by your system administrator. Also, make sure to use the UNC network folder path (e.g. “\\machine\foldername”) instead of a drive mapping (e.g. “N:\foldername”).

To configure the audit trailing of the Medis Suite client

- Go to the machines that act as a Medis Suite client and start Medis Suite.
- Click in the **Main** Medis Suite toolbar, select Tools > Options, and select the Services tab.
- Enter the machine name or IP address of your Medis Suite server.

- Click ‘Test services’ to verify the connection with your Medis Suite server.
- The Medis Suite client machine will now be able to use the audit trail functionality from the Medis Suite server.

13 Troubleshooting

Menu commands or toolbar buttons are disabled

Menu commands or toolbar buttons may be grayed out when you are performing a procedure, such as a distance measurement. You can make them active again by canceling or finishing the procedure.

Annotation or measurement is not visible

When you navigate to another location in the volume, your annotation or measurement may not be displayed on the viewport. This is because the point to which the result refers does not lie on the currently visible slice. To see your result again, right-click on the result on the Procedures pane and select **Locate**; or click on the result on the Procedures pane.

14 Literature

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7. Koning, G, Reiber JHC, von Land CD. Advantages and limitations of two software calipers in quantitative coronary arteriography. Int J Cardiac Imag 7, 15–30 (1991).
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15 Shortcut Keys

When you are working with Medis Suite, you can use several combinations of keys on your keyboard and mouse actions to quickly perform the following tasks.

Medis Suite and apps may use the same shortcut key for different functionalities. Which application handles your shortcut key is dependent on which application has 'focus'.

Press	To
Layout	
F10	Maximize or restore the active image viewport
F11	Show or hide the workspace window panes
F12	Reset toolbar and workspace window pane layout
Image control	
Middle-click and drag, or Ctrl and drag	Pan
Ctrl+Shift and drag	Zoom
Alt+Shift and drag	Stack
Ctrl+I	Invert image
Procedures	
D	Create a distance measurement
A	Create an area measurement
H	Hide the graphics in the image viewport

Press	To
S, or CTRL+SPACE	Create a snapshot
Esc	Stop editing the procedure
Delete	Delete the currently selected procedure
SHIFT+Delete	Delete all procedures
Navigation Controls	
HOME	Display the first time point
END	Display the last time point
Arrow up	Display the previous slice
Arrow down	Display the next slice
Arrow left	Display the previous time point
Arrow right	Display the next time point
CTRL+arrow left	Play cine backward
CTRL+arrow right	Play cine forward
Esc	Stop playing cine
Page Up	Display the previous series
Page Down	Display the next series