

 VitreaCore™

Education and Reference Guide

VITALU®

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 VPMC-13775 A VitreaCore Education and Reference Guide

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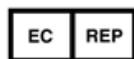
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Safety and Regulatory Considerations

PLEASE REFER TO THE **ABOUT VITAL IMAGES MEDICAL IMAGING SOFTWARE** DOCUMENT BEFORE USING THIS PRODUCT. This document includes important information regarding general Vitrea Safety and Regulatory considerations.



CAUTION: Federal law restricts this device to sale by or on the order of a physician, as directed by 21 CFR 801.109(b)(1).

Contact Us

- For general, non-technical support questions, contact us through our Web site: www.vitalimages.com.
- For customer technical support, contact us:
 - In the U.S., call the Customer Support line at 1.800.208.3005.
 - Outside the U.S., contact your Vital distributor.
 - Send an email to support@vitalimages.com.
- For a printed version of the Release Notes, Education and Reference Guide, or Installation Guides, contact Customer Support at 1.800.208.3005.

Release Notes

Vitrea® Release Notes contain late-breaking information not available at the time the Education and Reference Guide was released. This document is available from your System Administrator or from Vital Images.

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Introduction to VitreaCore

Contents

- VitreaCore Overview
- VitreaCore Windows
- Study Directory
- The Viewer Window
- The Report Window
- Troubleshooting VitreaCore

VitreaCore Overview

VitreaCore is a Web-based medical diagnostic aid that allows physicians to use PCs or notebook computers to gain remote access to 2D, 3D, and 4D advanced visualization. The software enables you to measure, rotate, and analyze images.

VitreaCore offers two viewer options: VitreaCore and Advanced Viewer. The viewer you choose depends on the workflow you want to complete. Consult the individual workflow modules to help you decide which viewer option to choose.

User Help

Click the Help tab at the bottom of the VitreaCore Viewer window to access detailed user documentation for VitreaCore.



To view the .pdf files, you need to have Adobe® Reader®.

Vital U

Vital U offers courses in a variety of settings to accommodate multiple learning preferences and schedules. We provide education at the Vital U customer education center, in cities around the U.S., at your facility, and on our Web site.

Learn advanced visualization software in our dedicated classroom or at a traveling classroom in a city near you. You can also bring a program to your facility and customize your education to your specific workflow. Our Web site offers distance learning through Vital U Live webinars and eLearning content that's available anytime.

In addition to our standard clinical applications, we offer specialty courses for applications in oncology, neurology, virtual colonoscopy and cardiology. Select courses offer CME and CE credits to U.S. based physicians and technologists.

Call the Vital U education coordinator at 952-487-9559 or e-mail vitalu@vitalueducation.com to register for in-house, on-site, road show, or for any other education-related questions.

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Classroom Learning

Fundamentals for Advanced Visualization Software

This three-day post-processing course teaches the fundamentals of Vital Images' advanced visualization software that creates 2D, 3D and 4D images of human anatomy. Participants receive an overview of the variety of applications and disciplines within the software including cardiac, peripherals, EP Planning, lung, tumor, joint disarticulation, perfusion, pulmonary, and renal. Learn to manipulate 2D and 3D images, including multi-planar reformatting (MPR), maximum intensity projection (MIP) and volumes, through hands-on exercises delivered by experienced Vital U clinical applications instructors. U.S. -based physicians and technologists can earn CME and CE credits from this course.

Each course module reinforces Vital U's standardized learning methodology with step-by-step instruction for image acquisition, protocol assignment, case analysis and image distribution.

Fundamentals for VitreaCore

This one-day post-processing course teaches the fundamentals of VitreaCore software that creates 2D and 3D images of human anatomy. Participants receive an overview of the variety of applications and disciplines within the software including basic 3D, MPR, and Vessel Probe. Learn to manipulate 2D and 3D images, including multi-planar reformatting (MPR), maximum intensity projection (MIP) and volumes, through hands-on exercises delivered by experienced Vital U clinical applications instructors.

Each course module reinforces Vital U's standardized learning methodology with step-by-step instruction for image acquisition, protocol assignment, case analysis and image distribution.

Distance Learning

Register for a schedule of live webinars demonstrating Vital Images software, while a physician or clinical applications instructor answers your questions. You can also explore a library of recorded webinars at your

convenience. View the schedule of dates and topics or register at vitalueducation.com.

Administrator Education

This course is designed for IT professionals, PACS Administrators, field engineers or anyone who services, installs or supports Vital Images' advanced visualization software. This course will teach your designated Vital Images software administrator how to get the most out of VitreaCore by fully integrating it with your medical imaging systems. For more information, contact the Vital U education coordinator at 952.487.9559 or e-mail vitalu@vitalueducation.com.

On-site Learning

Any of our educational programs can be brought to your facility. Our experienced applications instructors meet your learning needs by bringing Vital U courses and hardware, if needed, to your site. On-site learning customizes your education program to the specific workflow of your physicians and technologists.

Customized Options

Packages include multi-user and multi-session formats to meet your learning needs. To design your customized education program, contact the Vital U education coordinator at 952.487.9559 or e-mail vitalu@vitalueducation.com.

VitreaCore Windows

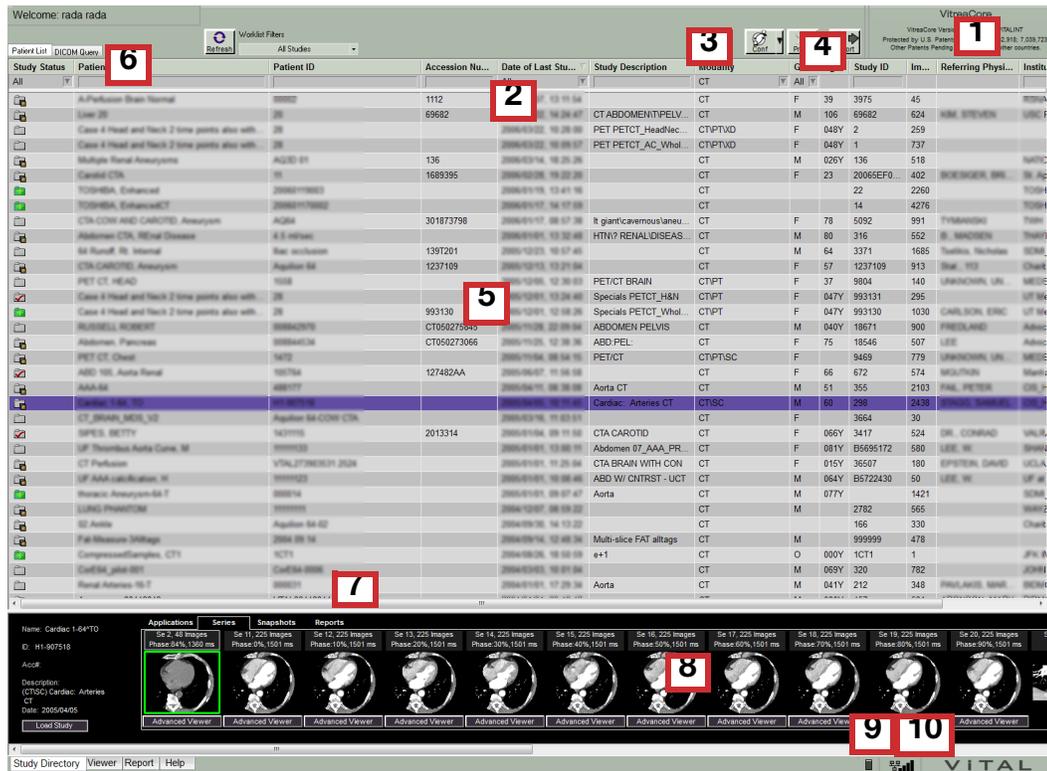
Tabs

Navigate through the VitreaCore windows by selecting the appropriate tab located at the bottom of the screen.



Study Directory

When you start VitreaCore, the Study Directory opens.



Callout	Description
1	Software Version
2	Column Headers
NOTE: Click to sort. Click then type the first few letters to search.	
3	Conference Button
4	Preferences Button
5	Patient List
6	DICOM Query tab
7	Series/Snapshots/Reports/Applications Tabs
8	Data Manager

Callout	Description
9	<p>Server Load Indicator</p> <p>Hover the cursor over the icon to display the amount of free server memory, in gigabytes.</p> <p>More black than white: More than 3.0 GB Server Memory Black and white: Between 2.0 and 3.0 GB Server Memory Orange: Between 1.0 GB and 2.0 GB Server Memory Red: Less than 1.0 GB Server Memory</p>
10	<p>Network Speed Indicator</p> <p>Hover the cursor over the icon to display the speed, or throughput, of the network you are using.</p> <p>Red: < 8.0 Mbps Network Speed Black: >20.0 Mbps Network Speed</p> <p>NOTE: This figure represents the effective throughput over all paths, such as the Internet, your office network, and/or your home network or WiFi connection, and may not represent the speed of your local network.</p>

Study Status Icons

In the patient list, in the Status column contain folder icons. The color represents the state of that study.

Icons	Description
 (Blue with blue arrow)	Incoming/Processing
 (Green with yellow star burst)	Unread
 (Green with yellow star burst and snapshots)	Unread with evidence
 (Red outline with padlock)	Locked study
 (Gray)	Read
 (Gray with snapshots)	Read with evidence

Icons	Description
 (Gray with red check mark)	Published
	Building DICOM study

NOTE: This icon is not an indication of the build process; it just indicates the data is received.

Patient List Column Headers

Filter and sort studies using the Patient List columns. Once you identify studies, use the Series Thumbnail area to load images.

Filter, Sort, and Search the Patient List

Use the column headers in the Patient List to filter the list, sort the list, or search for specific studies.

Patient List Right-click Menu

When you right-click on a study, a menu displays containing the following options:

Menu Item	Description
Load Study	If there is more than one series in the study, it loads two series in a 2-up 2D viewer in VitreaCore. If there is only one series, it loads the first image into a 1-up 2D viewer. If there are more images in the study, click the forward arrow to step through the images.
Delete Study by Schedule	Deletes the study from the server.
Email to Clinician	Sends the images in an email.
Change Status	Changes the status of the study: <ul style="list-style-type: none"> • Unread • Read • Published

Menu Item	Description
Change Study Lock	Lock a study from deletion, or unlock a study you locked.
	NOTE: You can only unlock a study you have locked. To unlock a study someone else locked, contact your System Administrator.
Save Media	Export data to media (CD/DVD/USB/Local Disk/Network Data).
DICOM Export	Export series to DICOM device.

Mark a Study as Read

The Mark as Read option and the Status column in the Patient List are only available if Enable mark study **as read** check box is selected during server configuration, and if you are logged on with radiologist privileges. For information about configuring the Vital Image Management Server (VIMS), contact your System Administrator.

Worklist Filters

Use a predefined Worklist Filter to sort the Patient List, or define and save your own filter.

Automatic Query

VitreaCore contains two automatic query/retrieve features:

- Configure a scanner to send all studies to the server automatically.
- Automatically set the client PC to query the server at regular default intervals to refresh the Study Directory. As soon as the client PC receives them, studies display on the Study Directory screen.

User- and System-specific Study Directory Screen Preferences

Click  to set Patient List preferences, such as:

- Specify the columns displayed
- Specify the timespan between automatic DICOM server queries

- Set other Patient List preferences

User Types

Loading studies into VitreaCore depends on your user type. The user types are determined by usernames and passwords. Your organization assigns user types to individual usernames and passwords depending on the role of the user.

NOTE: Contact your System Administrator for information regarding the usernames and passwords associated with the different user types.

- Clinician
- Diagnostic User
- Advanced Diagnostic User
- Administrator (not covered in this book)

NOTE: See the VitreaCore Installation and Administration Guide for information regarding the Administrator user type.

Clinicians

- Access VitreaCore.
- Load and interact in VitreaCore workflows using the **Load** button.
- Restore snapshots into VitreaCore.

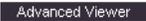


Diagnostic Users

- Access both VitreaCore Viewer and VitreaAdvanced Viewer. The VitreaCore Viewer is the default viewer.
- Load and interact in VitreaCore Viewer workflows using the **Load** button.
- Load and interact in Advanced Viewer workflows by right-clicking and selecting **Load in Advanced Viewer**.
- Restore snapshots into Advanced Viewer.



Advanced Diagnostic Users

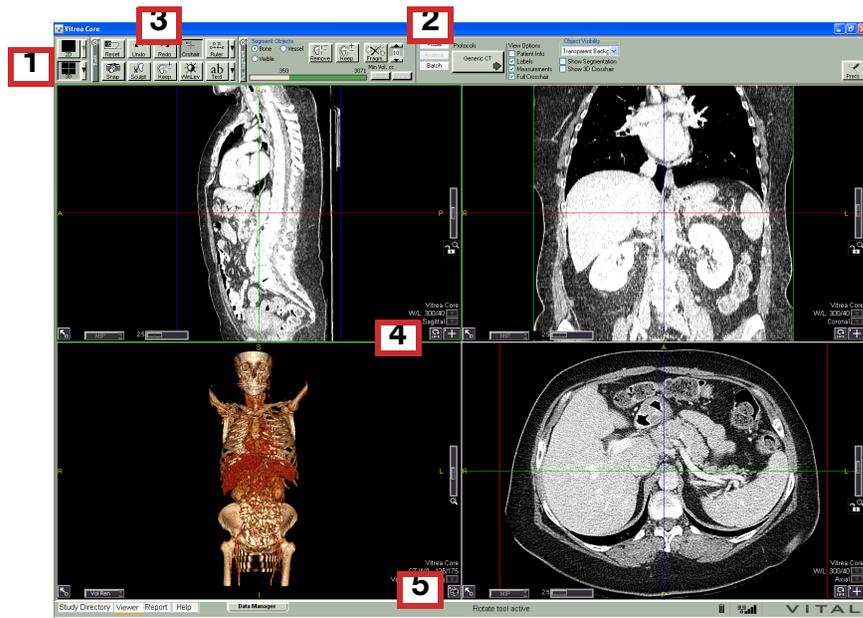
- Access both VitreaCore Viewer and VitreaAdvanced Viewer. The Advanced Viewer is the default viewer.
- Load and interact in Advanced Viewer Workflows using the **Advanced Viewer** button. 
- Load and interact in VitreaCore Viewer workflows by right-clicking and selecting **Load**. 
- Restore snapshots into Advanced Viewer.

Specific Access Controls by User Types

	Clinician	Diagnostic User	Advanced Diagnostic User
Load into VitreaCore	Y	Y	Y
Load into VitreaAdvanced Viewer	N	Y	Y
Restore workflow into VitreaCore by default	Y	N	N
Restore workflow into Advanced Viewer by default	N	Y	Y
Send DICOM image	N	Y	Y
Publish to Clinician	N	Y	Y
Delete study	N	N	Y
Vessel Probe	N	Y	Y
DICOM query	Y (if configured by System Administrator)	Y	Y
Create evidence (snapshots, batches, movies)	N	Y	Y
Delete evidence (snapshots, batches, movies)	N	Y	Y

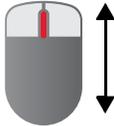
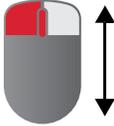
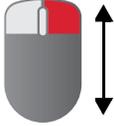
The Viewer Window

The Viewer window is the main working area in VitreaCore and includes the tools necessary to complete your workflow.



Callout Number	Description
1	Viewer Window Layout Buttons
2	Analysis, Visual, and Batch Tabs
3	VitreaCore tools
4	In-view tools
5	Information area and Status Bar

2D and MPR Mouse Functions

Mouse Button	Press to:
 Click	Activate Tool
 Middle-click and drag	Pan
 Left + Middle click and drag	Zoom
 Right-click and drag OR	Scroll
 Roll the mouse wheel	

3D Mouse Functions

Mouse Button	Press to:
 Click	Activate Tool Click then pause a moment to activate the tool
 Click and drag	Rotate Click then drag right away
 Middle-click and drag	Pan

Mouse Button	Press to:
	Left + Middle click and drag Zoom
	OR
	Left + Right click and drag

Keyboard Shortcuts

Adjust views and perform other operations using keyboard shortcuts

Key	Function
C	Activate Cobb Angle tool
E	Activate Ellipse tool
F	Activate ROI tool
G	Activate Angle tool
H	Activate Crshair tool
I	Switch to inverted view
M	Activate Arrow (Marker) tool
P	Activate Spine Labeling tool
R	Activate Ruler tool
S	Activate Snap tool
T	Activate Text or Text/Arrow tool
W	Activate Win/Lev tool
CTRL-Y	Re-do last undone action
CTRL-Z	Undo last action (repeat to undo multiple actions)

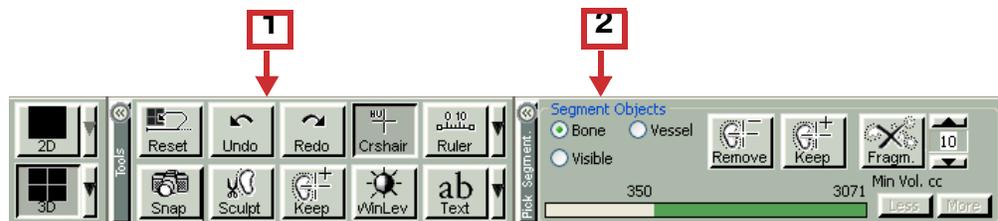
3D Keyboard Shortcuts

Key	Function
S-I [F2]	Rotate volume Superior to Inferior -- 180° azimuth, 90° elevation, 0° twist
I-S [F3]	Rotate volume Inferior to Superior -- 0°, -90°, 0°

Key	Function
A-P [F4]	Rotate volume Anterior to Posterior -- 0°, 0°, 0°
P-A [F5]	Rotate volume Posterior to Anterior -- -180°, 0°, 0°
L-R [F6]	Rotate volume Left to Right -- -90°, 0°, 0°
R-L [F7]	Rotate volume Right to Left -- 90°, 0°, 0°

Viewer Window Tools

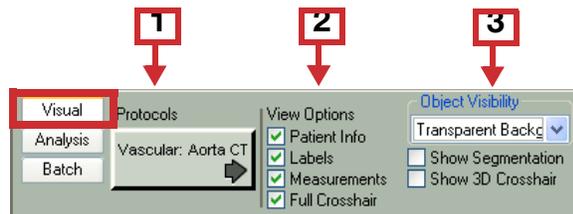
In the Viewer window, perform analysis or segment anatomy.



#	Description
1	VitreaCore Tools
2	Segment Objects Area

Visual Tab Controls

Use the Visual tab controls to change the protocol, show or hide view options, or change visibility settings.



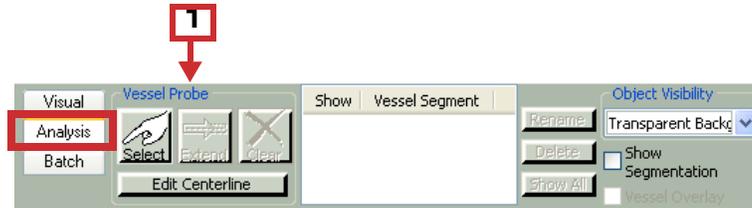
#	Description
1	Protocols button
2	View Options area
3	Object Visibility area

View Options

Option	Description
Patient Info check box	Show or hide patient info
Labels check box	Show or hide labels
Measurements check box	Show or hide measurements in the views
	TIP: Also shows or hides reference scale on the right side of the 2D and MPR views.
Full Crosshair check box	Show full crosshairs (including intersection) or partial crosshairs (not including intersection)
Show Segmentation check box	Show results of segmentation in the MPR views.
Show 3D Crosshair check box	Show or hide the crosshairs in the 3D view

Analysis Tab Controls

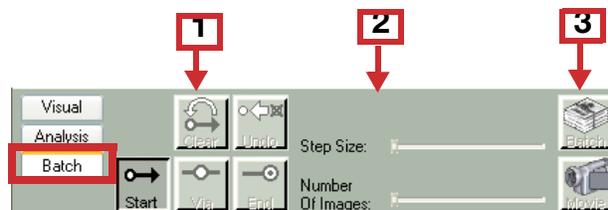
Use the Analysis tab controls to access Vessel Probe tools.



#	Description
1	Vessel Probe area

Batch Tab Controls

Make batches and movies on the Batch tab of the Viewer window.



#	Description
1	Batch creation buttons
2	Controls for setting Step Size and Number of Images
3	Batch output buttons

The Report Window

 See the Distribute Findings - VitreaCore chapter for detailed information about the Report Window.

Troubleshooting VitreaCore

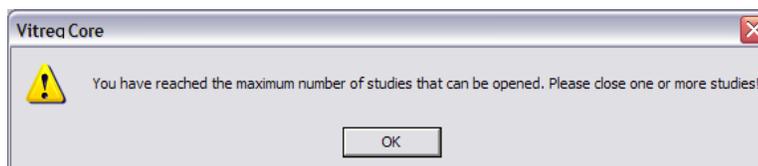
All of the available 3D rendering sessions are currently in use.

Typically indicates that the image server(s) are busy processing user requests for 3D images. Wait and try again later.

Cannot connect to server

Your VitreaCore client could not establish a connection to the VitreaCore image server. This could be due to a number of reasons, such as a local PC network connection failure, a general network failure, server failure, power outage, etc. Contact your IT or network administrator for possible issues.

Maximum Open Studies



Indicates that you have loaded the maximum number of Studies (in the Study Directory, there are check marks next to each loaded Study). You cannot load any more studies until you unload one or more studies.

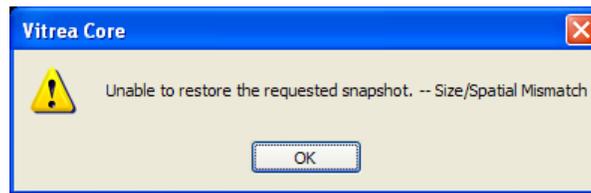
- After you click OK, the Close Studies dialog box displays, where you can unload, or close, one or more open studies.

Not enough memory to load volume

Indicates that either the image server is busy processing user requests, or that your image volume is too large to be processed. Wait and try again, or, if the volume is too large, try reconstructing it.

Snapshot Restore Troubleshooting

If you receive the dialog shown below, refer to the list of causes and resolution suggestions after the screen.

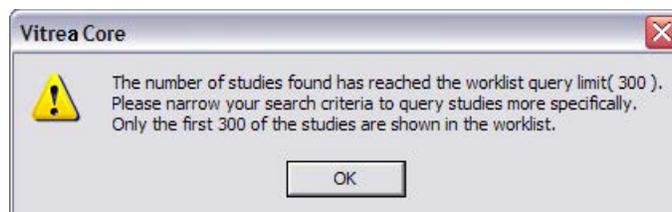


Cause	Suggestion
Missing or additional DICOM slices.	The snapshot is not restorable.
The volume build configuration has changed resulting in different interpolation settings being used.	Contact your administrator. The dataset has to be re-pushed to VIMS.
Other VIMS configuration changes.	Contact your administrator.

Volume load failed

Indicates that there may be a problem with the dataset. Contact the administrator.

Worklist Query Limit



Indicates that there are more studies on the server than your system is configured to retrieve.

- Limit your Study Directory results, if you are looking for a specific study.
- Change the Maximum worklist items setting in the User Preferences > Study Directory dialog box.

Select a Study

Contents

NOTE: This module demonstrates the various scenarios for loading studies into VitreaCore. Be sure you understand your user type as each user type has specific access controls.

- VitreaCore User Types
- Loading Studies into VitreaCore
- VitreaAdvanced® Through the Data Manager
- Loading Studies into VitreaCore Through a PACS Integration

VitreaCore User Types

TABLE 1. **Specific Access Controls by User Types**

	Clinician	Diagnostic User	Advanced Diagnostic User
Load into VitreaCore	Y	Y	Y
Load into VitreaAdvanced Viewer	N	Y	Y
Restore workflow into VitreaCore by default	Y	N	N
Restore workflow into Advanced Viewer by default	N	Y	Y
Send DICOM image	N	Y	Y
Publish to Clinician	N	Y	Y
Delete study	N	N	Y

	Clinician	Diagnostic User	Advanced Diagnostic User
Vessel Probe	N	Y	Y
DICOM query	Y	Y (if configured by System Administrator)	Y
Create evidence (snapshots, batches, movies)	N	Y	Y
Delete evidence (snapshots, batches, movies)	N	Y	Y

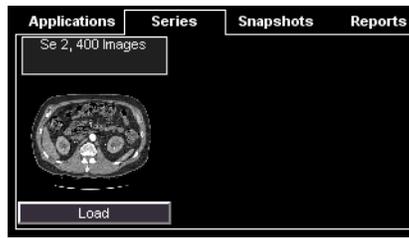
Loading Studies into VitreaCore

Use this procedure to load studies into VitreaCore.

The screenshot displays the VitreaCore software interface. At the top, there is a 'Welcome: rada rada' message and a 'Vitreacore' logo. Below this is a 'Patient List' section with a search bar and a 'Refresh' button. The main area is a table titled 'Study Directory' with columns for 'Study Status', 'Patient Name', 'Patient ID', 'Accession Nu...', 'Date of Last Stu...', 'Study Description', 'Modality', 'Ge...', 'Age', 'Study ID', 'Im...', 'Referring Phys...', and 'Insti...'. The table contains numerous rows of study data. At the bottom of the screenshot, there is a 'Study Preview' section showing a series of axial CT scan slices with various phase labels like 'Se 2, 43 Images Phase:0%, 100 ms' and 'Se 17, 225 Images Phase:0%, 100 ms'. The interface also includes a 'Study Directory | Viewer | Report | Help' menu at the bottom.

1. From the Study Directory, select a study.

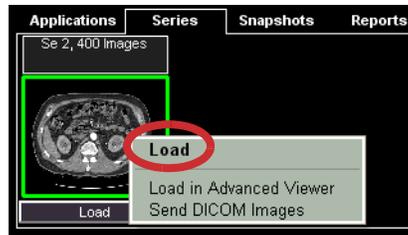
2. Select the **Series** tab.



3. In the Series Tray, select a series to load.

TIP: To load multiple series, press CTRL and click all the series to load.

4. Click  or right-click and select Load.

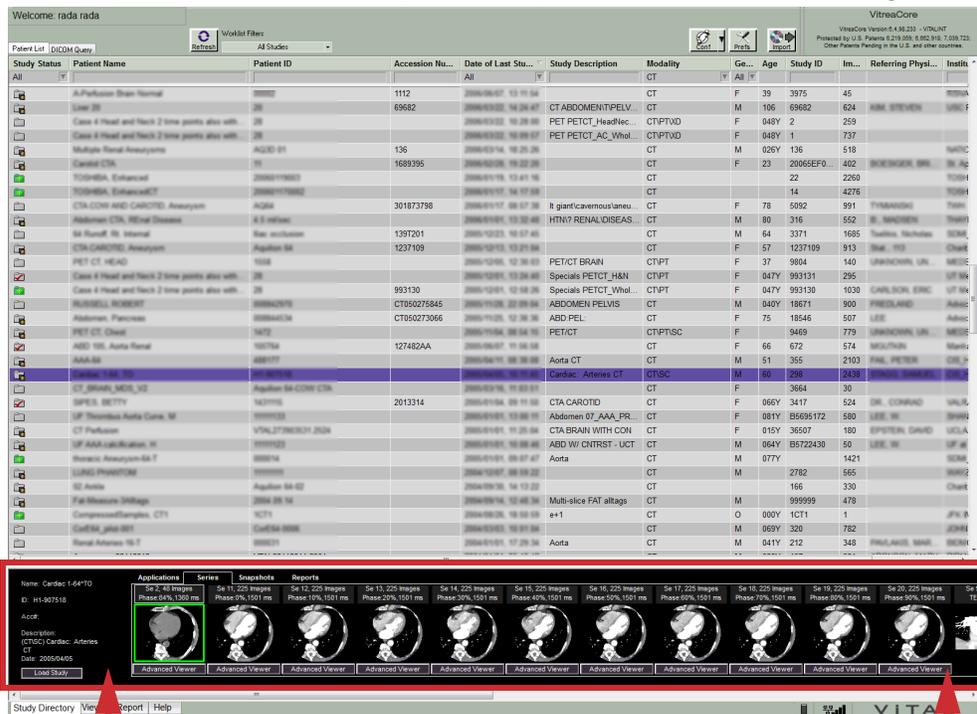


NOTE: See the VitreaCore Course Modules for detailed VitreaCore workflows.

VitreAdvanced[®] Through the Data Manager

 See the VitreaAdvanced Course Modules for detailed VitreaAdvanced workflows.

Use this procedure if the Study Directory contains the Data Manager.



The screenshot displays the VitreaAdvanced interface. At the top, there's a 'Welcome: rada rada' message and a 'VitreAdvanced' logo. Below this is a 'Study Directory' table with columns: Study Status, Patient Name, Patient ID, Accession Num..., Date of Last Stu..., Study Description, Modality, Ge..., Age, Study ID, Im..., Referring Physi..., and Institi. The table contains numerous rows of study data. Below the table, the 'Data Manager' view is shown, featuring a 'Name: Cardiac 144PTO' and 'ID: H1-90710' header. The 'Applications' tab is selected, showing a series of image thumbnails for different series (e.g., 'Se 2, 43 Images', 'Se 11, 225 Images', etc.). A red box highlights the 'Data Manager' area, and a red arrow points to the 'Data Manager' label below the screenshot.

Data Manager

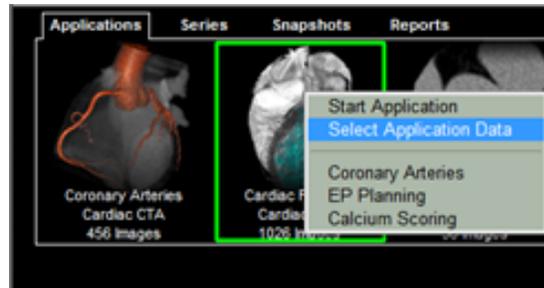
1. From the Study Directory, select a study.
2. Select the **Applications** tab.
3. Select the appropriate application view and double-click.

NOTE: This option loads all the data.

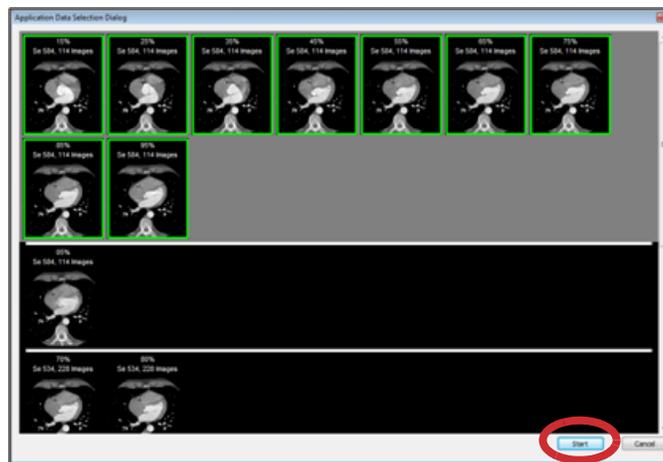
OR

Load a subset of the data:

- a. Right-click on the appropriate application view and select **Select Application Data**.



- b. Select a series to load and click **Start**.



TIP: If you do not see the application that applies to the workflow you are using, double-click the **Core 3D** thumbnail and choose a protocol and preset.

NOTE: Once the study loads, “Vitrea” displays in the upper-left corner.



Loading Studies into VES Through a PACS Integration

There are two ways to load studies into VitreaCore through a PACS integration.

Option 1

With PACS-Integrated VES, VitreaCore, or VitreaAdvanced automatically launches and loads the patient study or series you select from the PACS client.

NOTE: If Data Manager is not selected in the VES Administration Tool, see the VIMS Installation Guide.

1. From the PACS client, right-click on the image for the patient study and select **Load in VES** (or similar option).

NOTE: See the PACS user documentation for specific instructions on launching VitreaCore this way.



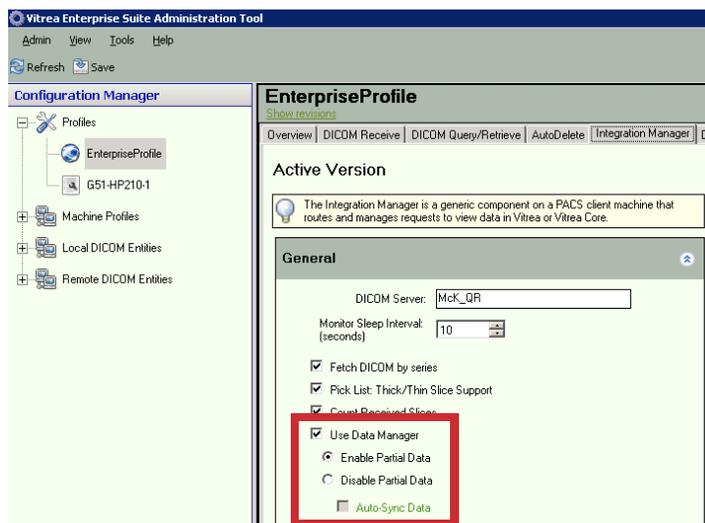
CAUTION: Verify that you have loaded the study you intended to load. If you load a study that contains multiple series or contains 3D reconstructions, a dialog box displays that asks you to select the series you want to load. Make sure to respond to dialog box. If you do not, it is possible to return to PACS and load a different study.

2. Select a protocol and preset from the Gallery window.

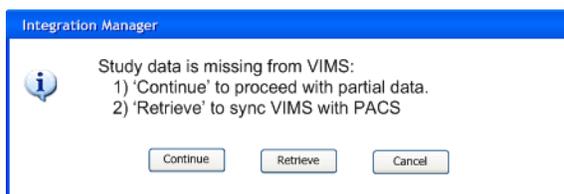
Option 2

1. Use the procedure below to load a study from the Data Manager.

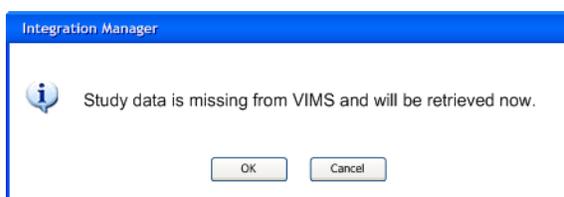
TIP: The Data Manager displays at the bottom of the screen if **Use Data Manager** is selected in the VES Administration Tool.



If **Enable Partial Data** is selected in the VES Administration Tool, you may be prompted to confirm if you would like to retrieve missing data for the request, or to proceed to the Data Manager with the data currently available on VIMS.



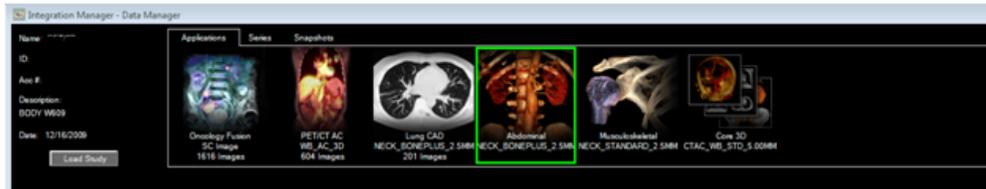
If **Disable Partial Data** is selected and **Auto-Sync Data** is unchecked in the VES Administration Tool, you may be prompted to confirm if you would like to retrieve the missing data, or return to PACS.



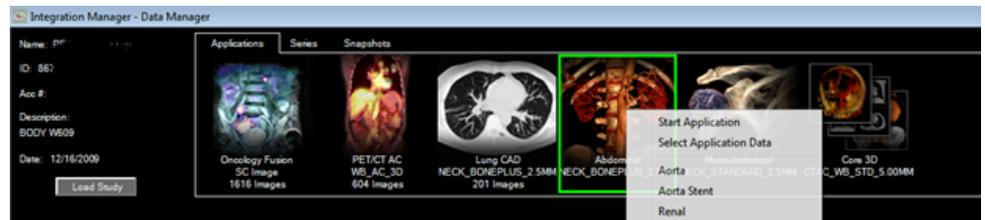
NOTE: If Auto-Sync Data is selected in the VES Administration Tool, the system will automatically determine what (if any) study is missing and will automatically begin retrieving the data.

2. On the Applications tab, perform one of the following:
 - Select the appropriate application view and double-click to launch the study.

TIP: This method of launching only loads the series that are defined as “best candidates” and are pre-selected.



- To select Application Data:



- a. Right-click on the Application and select **Select Application Data**.
- b. In the application selection dialog, select the appropriate selections and click **Start**.



TIP: Click **Cancel** to close the Application Selection Dialog.

Common Tasks

Contents

- Getting Started
- Study Directory Tasks
- Viewer Window Tasks
- 2D Imaging
- MPR Imaging in VitreaCore Viewer
- 3D Imaging in VitreaCore Viewer
- Image Batches
- Appendix

Getting Started

Log into VitreaCore

1. On the client PC, launch Internet Explorer® and enter the URL for the VitreaCore server. If you do not know the URL, contact your System Administrator.

NOTE: Ensure the following options are enabled in Internet Explorer: Download Signed ActiveX Controls, Run ActiveX Controls and Plugins, and Script ActiveX controls marked safe for scripting.

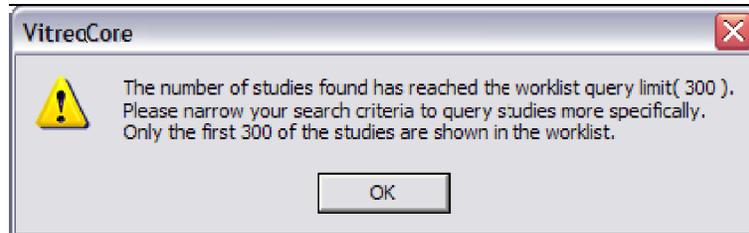
2. On the login screen, enter your Username and Password.

Internet Explorer is a registered trademark of Microsoft Corporation in the United States and/or other countries.

3. Click Sign In.

The VitreaCore system opens to the Patient List tab.

NOTE: If you receive the message shown below, there are more studies on the server than your PC is configured to display. Either filter the Patient List to limit the number of studies displayed, or go to the User Preferences - Study Directory dialog box to increase the maximum number of studies displayed.



Study Directory Tasks

 For detailed information regarding loading a study, see the Select a Study chapter.



Using the Patient List

Use the Patient List to select images for review and manipulation. The Patient List displays studies and series in the Patients/Studies Area. Thumbnails of the images contained in the Studies display in the Series tab. If VitreaCore is configured to automatically split series, the sub-series list sorts the images within the selected series into categories.

EXAMPLE If the selected series is a set of MRA images containing source, projection, and collapsed images, and auto-split is on, the sub-series list contains three sub-series. For information on configuring VitreaCore to automatically split series, contact your System Administrator.



CAUTION: Before you start processing, check the number of images on the Patient List tab and make sure that the entire series or study was received from the server.

Using Patient List Column Headers

The Patient List columns allow you to filter and sort the studies to better manage your caseload. Once you identify the desired studies, use the Series Thumbnail area to load images.

Filtering the Study List

When you set selection criteria to filter the list of studies, the Patient List displays studies matching the selection criteria and studies that are already open.

TIP: To further filter the Study List, set the selection criteria for multiple columns.

EXAMPLE:

1. Click in the field under the Modality header and select **CT** from the dropdown list.

The Patient List displays only CT studies.

2. Click in the field under the Date of Last Study header and select **<2 days** from the dropdown list.

The Patient List displays only CT studies occurring in the last 2 days.

- 3 Click the **Patient Name** header.

The Patient List displays CT studies occurring in the last 2 days, sorted by patient name in ascending order.

- 4 Click the **Patient Name** header again.

The Patient List displays CT studies occurring in the last 2 days, sorted by patient name in descending order.

Sorting Columns in Ascending or Descending Order

- Click the column header.

The list is sorted and an arrow displays to the right of the column header to indicate the direction of the sort. Click again to reverse the order.

Searching for Specific Studies in the Study List

- Click in the field below any searchable column header, type a text string, and press **Enter**.

Enter a value for the following columns: Patient Name, Study Description, Patient ID, Accession Number, Study ID, and Institution.

OR

Click in the field below any searchable column header and select an item from the dropdown list.

Select a value from a dropdown list for the following columns: Status, Date of Last Study, Modality, and Gender.

NOTE: The remaining column headers are not searchable.

Adjusting the Column Width

- Place the cursor on the line between columns, and drag the line.

Marking a Study as Read

The Mark as Read option and the Status column in the Patient List are only available if the Enable mark study as read box is checked during

server configuration, and if you are logged on with radiologist privileges. For information about configuring the VitreaCore server, contact your System Administrator.

1. In the Patient List window, select the desired study.
2. Right-click, and select **Mark as Read**.

The study's status on the Patient List tab changes to *Published* .

Using a Predefined Worklist Filter

- Select a filter from the Worklist Filters dropdown menu at the top of the screen.

The Patient List sorts according to the criteria in the filter. If the List is blank, or does not return the expected results, try another filter, or create your own.

Defining a Worklist Filter

1. Use the Patient List column header, sort and filter the List as needed.
2. Select **Save as New...** from the Worklist Filters dropdown menu at the top of the screen.
3. Edit the criteria in the Query Filter box, if needed, and enter a Filter Name.

NOTE: The Query Filter box contains criteria that matches those in the column headers.

4. Click Save.
The Filter is saved and is available the next time you select it from the list.
5. Select the filter you just created from the Worklist Filters dropdown menu.

Conferencing

1. Click  , then select Join Conference. The Join Conference dialog box displays.

TIP: The **Conf** button displays at the top of the Study Directory and at the bottom of the other windows.

2. Click the conference name in the list.

OR

In the Conference Name field, enter the conference name.

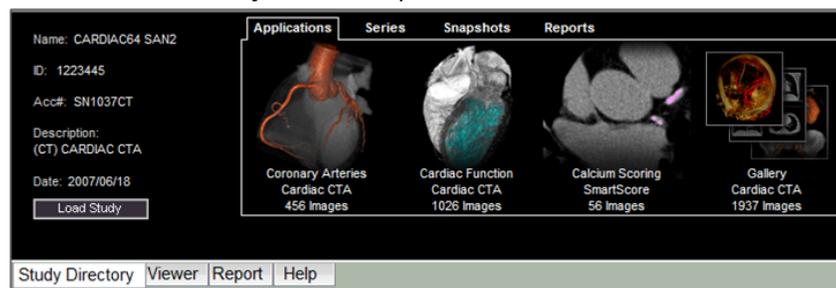
NOTE: The Conference Name and Password are context sensitive. Check for proper upper- and lower-case entry.

3. In the Password field, enter the conference password.
4. Click Join.

The participant's viewer displays the same image information as that of the conference owner's viewer. The owner controls the image display, mouse movement, and annotation information. All viewer attributes are updated in real time during the conference.

Using the Data Manager

The Data Manager displays below the Patient List. The Data Manager provides access to the **Applications**, **Series**, **Snapshots**, and **Reports** available for the currently selected patient.



Use the Data Manager to:

- Load a study into an application
- Load one or more series into either 2D or 3D viewers
- Send a series or study to a DICOM device (see the DICOM section)
- Restore a snapshot
- Save a snapshot locally
- Load reports

Accessing the Data Manager

- Select a study in the Patient List.

The Data Manager displays the data available for the patient, in the lower portion of the screen. This can include VitreaCore Series, Snapshots, and Reports.

Loading a Study into an Application

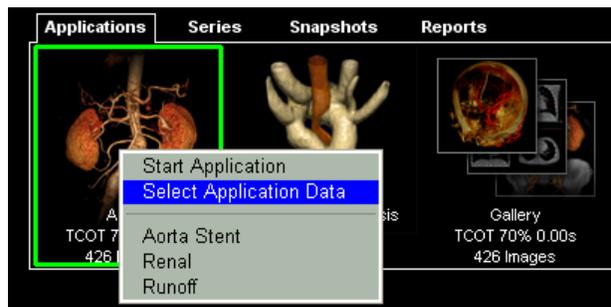
1. Select the **Applications** tab.
2. Double-click the appropriate application.

NOTE: This option loads all the data.

OR

Load a subset of the data:

- a. Right-click on the appropriate application view and select **Select Application Data**.



- b. Select a series to load and click **Start**.

TIP: If you do not see the application that applies to the workflow you are using, double-click the Gallery thumbnail and choose a protocol and preset.

Loading One or More Series

1. To select an individual series, click one of the thumbnails.

TIP: To select multiple series, CTRL-click or SHIFT-click to load.

TIP: To select multiple contiguous series, click the first thumbnail of the group, press and hold SHIFT, then click the last thumbnail of the group. A checkmark displays in the corner of each thumbnail.

TIP: To select multiple distinct series (non-contiguous), press and hold CTRL, then click each desired series. A checkmark displays in the corner of each thumbnail you clicked while holding down CTRL.

2. Right-click one of the checked thumbnails and select Load Study or Load.

Restoring a Snapshot

1. Select the **Snapshots** tab.
2. Double-click the desired snapshot icon.

OR

Click the Restore Snapshot bar of the icon. The snapshot displays in the Viewer tab.

Saving Snapshots and Movies Locally to Your Computer

1. Select the **Snapshots** tab.
2. Right-click the snapshot or movie thumbnail and select **Save As**.
3. In the dialog box, indicate the file location, file name, and file type.



CAUTION: Be careful when saving and working with these types of files. Patient information is not included on the snapshot or movie. It is possible to misrepresent or confuse these kind of snapshots or movies.

Loading Reports

1. Select the Reports tab from the Data Manager.
2. Right-click and select **Preview** to load the report.

Using DICOM Transfer

The VitreaCore system consists of a server and one or multiple client PCs. The client automatically queries the server at regular intervals to check for new studies. At any time, export studies to, send queries to, and retrieve studies from other DICOM servers or devices on the network. Manually query and retrieve studies from within the VitreaCore server.

When you are finished working with a study on the client PC, export it to other devices or servers on the network. Use the Save as DICOM File option to save a newly worked up study to the server. If you have DICOM forwarding set up for one or more devices on the network, the study you are saving to the server is automatically exported to the devices set up for forwarding.

Using Automatic Query

VitreaCore contains the following two automatic query/retrieve features:

- Configure a scanner to send all studies to the VitreaCore server automatically.
- The client PC automatically queries the VitreaCore server at regular default intervals to refresh the Study Directory. As soon as the client PC receives them, studies display on the Study Directory screen.

Querying a Device or Server Manually

1. Select the DICOM Query tab from the Study Directory.
The DICOM Query tab displays, where you query the local VitreaCore server or any remote servers to which you have access.
2. Select a server or device from the Server dropdown list at the top of the tab.

3. Specify sort criteria in the query list columns, if desired.
4. Click the Query button.

The query list is updated with studies from the selected server that match the specified sorting parameters.

NOTE: Although the query list displays matching studies, no studies are transferred to the local server until you select one or more desired studies and click the Query button.

Retrieving the Queried Studies

1. Highlight one or more studies from the query list.
2. Click the Query button.

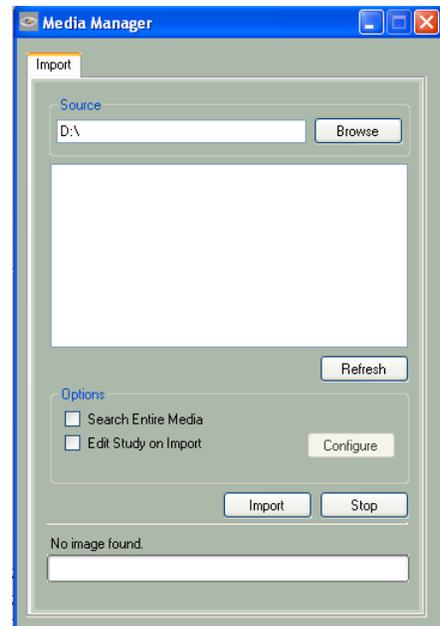
The selected studies are sent to the local server.

NOTE: The newly retrieved studies display in the Patient List the next time it is refreshed.

Importing Datasets from Media

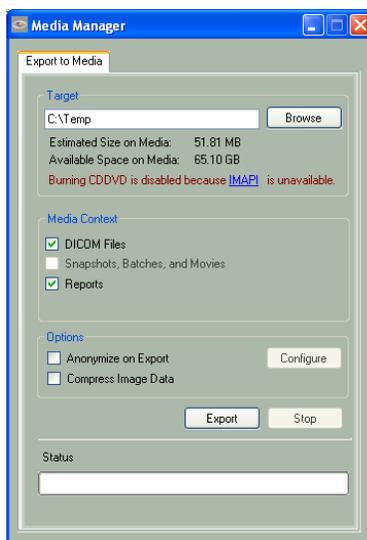
Import patient studies saved to a CD, DVD, USB, or a local disk.

1. Click  .
2. Use the Media Manager to browse for a file.
3. Configure searching options.
4. Click **Import**.



Export Data to Media

Right-click the study and select **Save to Media** to launch export Media Manager.



1. Click **Browse**, then navigate to the destination folder or drive.
2. Select the media to save which include DICOM files, snapshots, batches, movies, or report.
3. Click **Export**.
4. To remove identifying patient health information from the dataset prior to export, select the **Anonymize on Export** check box.

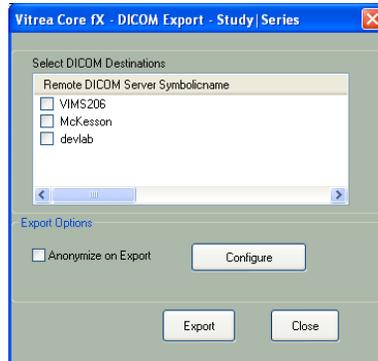
NOTE: This creates a special purpose, de-identified version of an already existing dataset. It neither replaces the original SOP instance nor acts as the primary representation of the clinical dataset in image archives. These de-identified images are useful, for example, in creating teaching or research files, where the identity of the patient should be protected, but still be accessible to authorized personnel.

5. To compress image data in order to save space on the media, select the **Compress Image Data** check box.

NOTE: This is useful for large datasets exported to CD/DVD media.

Export to DICOM

Right-click the study and select **DICOM Export** to launch the DICOM export manager.

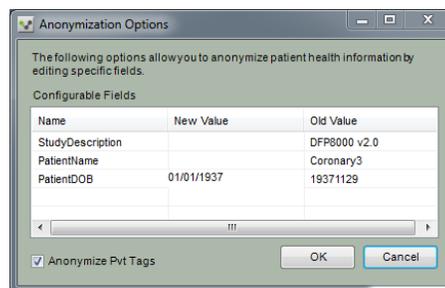


1. Select the DICOM device.
2. To remove identifying patient health information from the dataset prior to export, select the **Anonymize on Export** check box.

NOTE: When DICOM data with empty PatientID is imported into the VIMS Server, the StudyUID of the anonymized data will display as the PatientID within VitreaCore.

3. To set the Anonymization Options, click **Configure**.

The Anonymization Options dialog displays:



- a. Enter new values for the specific fields.
- b. To remove private tags from the study, select **Anonymize Pvt Tags**.

NOTE: For perfusion studies, it is recommended that you CLEAR the **Anonymize Pvt Tags** checkbox. Perfusion studies require the manufacturer's private tags to build volumes.

NOTE: If **Anonymize Pvt Tags** is selected, all private tags, including Vital private tags needed for snapshot restore, are removed from the study. Evidence does not display in the Report tab of the Data Manager, but it does display as a 2D series on the Series tab.

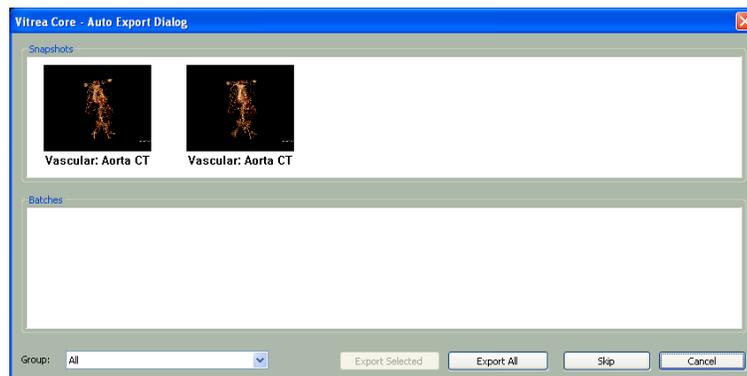
NOTE: If **Anonymize Pvt Tags** is cleared, all private tags are retained and any patient information in the private tags remain in the anonymized study. The study has new IDs, but any snapshots would still refer to original study. Evidence does not display in either the Report tab of the Data Manager or as a 2D series on the Series tab for the new patient name.

- c. Click **OK**.
4. Click **Export**.

Auto Export

Use auto export to export your DICOM findings back to PACS.

1. After you create your findings (snapshots or batches) and close the study, the Auto Export Dialog displays.



2. From the Group dropdown menu, select the location where you want to export the findings.

NOTE: For multi-site customer deployments where data is being pushed to a central VIMS location, the dropdown menu populates with a list of pre-configured group receive locations. The selected Group is matched based on the institution name stored in the original data. If no match is found, the populated list displays the last selected Group. The default group 'All' represents all possible receive locations.

3. Select one of the following options:

Option	Description
Export Selected	Export the selected snapshots and batches.
Export All	Export all snapshots and batches.
Skip	Does not export the findings, but the findings remain on VIMS.
Cancel	Close the Auto Export Dialog without exporting snapshots or batches.
	Close the Auto Export Dialog without exporting snapshots or batches.

Queue Management

Diagnostic and Advanced Diagnostic Users can see the status of activities within the VIMS system as it relates to DICOM export, DICOM print, and DICOM query and retrieve.

1. Select a study in the Patient List.
2. If necessary, click the **Show Hidden Icons** popout arrow in the

Windows® task bar.



3. Double click the Integration Manager icon. 

The Integration Manager opens which displays the status of DICOM activities. You can delete pending or failed activities.

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Viewer Window Tasks

Viewer Window Layout

Overview

The Viewer window is the main area in which you view and manipulate images. This window displays images in 2D and 3D formats.

2D Layout

This mode displays slices exactly as they were acquired by the scanner. Use the  and  buttons next to the series number to move to the previous or next series in the study, or click the dropdown next to the series buttons to select a specific series. Also change the Viewport layout to display multiple series at one time. The 2D layout allows you to:

- Adjust visualization settings using Window/Level, Pan, Zoom, Rotate, Flip, and Invert
- Perform measurements (ROI measurements on full fidelity images only)
- Display multiple series or studies from same or different modalities for comparison
- Display time-course or multi-phase series in movie (cine) mode
- With multiple series loaded, click  to lock/unlock series synchronization with regard to W/L, cine, pan, and zoom
- Switch to 3D mode

3D Layout

The Viewer window default layout is 4-up. Click  in the lower-right corner of the view to load the series into 3D. In the default layout, the lower-left viewport displays the 3D image. The remaining three viewports display the original study in the three orthogonal MPR planes.

- Click the MPR Rotate  button to move all MPR views one position clockwise.
- Click  to switch to a 1-up Viewer window layout (or maximize the view).
- Customize the default visualization by selecting a different Anatomy Protocol from the Protocols dropdown menu.

NOTE: While images are rendering, the *Updating Image...* message displays in the viewport.

Using the Viewer Window

Overview

Once you have an image loaded in the Viewer window, begin your evaluation activities. The features described below control the visualization settings that are used to display those images, and specify your Viewer window image layout.

Loading an Anatomy Protocol (Protocols)

Available in 3D mode only. Anatomy Protocols contain visualization settings (W/L, opacity, and color definitions) tailored for the type of exam you are viewing. Load one of the predefined protocols included for commonly-used applications.

1. Click  to render the 3D view (if not already in 3D mode).
The Viewer changes to a 4 Up, 3D mode.
2. From the **Protocols** dropdown menu on the **Visual** control, select the protocol you want to load.
The Protocol settings are applied to the 3D view.

Switching Anatomy Protocols

If you want visualization settings different from the ones that are currently loaded, switch to a different Anatomy Protocol at any time.

1. Click  , (if not already in 3D mode).

The Viewer changes to a 4-up, 3D mode.

2. From the **Protocols** dropdown menu on the **Visual** control, select the **Protocol** you want to load.

The Protocol settings are applied to the 3D image.

Accessing Tools with the Right-click Menu and Tool Pane

For easy access to common tools used for the selected protocol, right-click within a view.



Viewer Right-Click Menu



When you right-click on an image, a menu displays the following options:

Menu Item	Description
Monitor Layout	Determines the number of series that display in the window. Select a different protocol for the study, from the following Column x Row layouts: 1x1, 1x2, 1x3, 2x2, 2x3, 2x4, 3x3, 3x4, 4x4, 4x5
Viewport Layout (2D)	Determines the number of images that display in a viewport. Select a different image layout for the current series, from the following Column x Row layouts: 1x1, 1x2, 1x3, 2x2, 2x3, 2x4, 3x3, 3x4, 4x4, 4x5, Customize.
W/L Presets	The W/L Presets are based on exam type and modality. <ul style="list-style-type: none">• Abdomen• Head• Lung• Mediastinum• Vertebrae

Menu Item	Description
Image Properties	<p>Change the image properties of the viewport:</p> <ul style="list-style-type: none"> • Invert — apply an inverted MIP rendering to the MPRs • Rotate Right 90 Degrees — rotate the selected image 90° • Rotate Left 90 Degrees — rotate the selected image 90° • Flip Horizontally — flip the selected image along the horizontal center • Flip Vertically — flip the selected image along the vertical center • Reset — reset the image to the default properties
Interact Fast (3D)	Set the 3D interaction rate.
Lock 3D	Lock the 3D image.
Save Image	Save selected image as a Windows file.
Save Screen Capture	<p>Save a screen capture:</p> <p>(For Whole Screen) as Windows File — save the entire Viewer window as a Windows file.</p> <p>Copy to Clipboard — paste the selected image into another Windows application, such as Adobe PhotoShop® or Microsoft® Word.</p>
Print	<p>Print the image from the current viewport in secondary capture format to any configured printer accessible from your PC.</p> <p>You cannot print DICOM images from VitreaCore.</p>
Cine Start	Available only in 2D mode when not cineing. For time-series studies, auto-scroll through all time phases for a position. For non-nuclear medicine, non time-series studies, display all images in a continuous movie mode.

PhotoShop is a registered trademark of Adobe Systems Incorporated in the United States and/or other countries

Microsoft is a registered trademark of Microsoft Corporation in the United States and/or other countries

Menu Item	Description
Cine Stop	Available only when cineing. Stops the cine action.
Adjust Cine Setting	Available only when cineing. This dialog box allows you to adjust the settings of the currently-running cine. Adjust these settings as needed before you save the batch as a movie: <ul style="list-style-type: none"> • OK button: make your changes and click OK • Reset button: click to reset to default settings • Range: x To: x: specify which run of frames you want included • fps Slider: control the number of frames that display per second (fps) • Pause between cine loops: check the box to insert a pause (idle time) at the end of each cine loop, before the cine plays again • Delay (s): the length in seconds of the pause between cine loops.
Save Cine to Movie File	Available only when cineing. Save the cine as a Windows .avi movie file to a location on your PC or network. When you select this menu item, the Windows Save As dialog box displays.

Using the Crosshairs

- Click  and drag to display the HU values for CT images or Voxel Intensity for MR images.

Adjusting Window/Level

1. Click .
2. Click and drag in the viewport.
 - Drag left to decrease window width, which increases the contrast. Drag right to increase window width, which decreases the contrast.

- Drag down to increase window level. Drag up to decrease window level.
- Drag diagonally to adjust window width and level at the same time.

Changing Window/Level by Selecting a Preset

1. Right-click in the viewport, then select **W/L Presets**.

OR

Click the W/L dropdown in the lower-right of the viewport.

2. Select from the following options:

- **Abdomen (400/40)**
- **Lung (1500/-700)**
- **Head (100/45)**
- **Mediastinum (350/50)**
- **Vertebrae (2000/300)**

NOTE: To change the predefined window/level presets, contact your System Administrator.

Sculpting 3D Objects

1. Click  .

The cursor changes shape to indicate Sculpt mode.

2. In the viewport, click and drag to draw a freehand border. When you sculpt:

- Eliminate anatomy from view by drawing a contour line around it.
- Isolate anatomy in the view by drawing a contour line around it.

3. After you create the contour line, Keep and Remove buttons display



- To exclude the anatomy inside the border you drew, click **Remove**.

- To hide the anatomy outside the border you drew (and isolate the Anatomy inside the border), click **Keep**.

The sculpted 3D object displays in the original 3D viewport.

4. To display the results of the sculpting in an MPR view, select the **Show Segmentation** check box in the Visual tab.

Manual Sculpting

1. Click  .
2. Click  in the lower left corner of the Viewer window to 1-up the axial MPR.
3. Scroll to one end of the anatomy.
4. Draw contour lines around the anatomy you would like to include.

TIP: Scroll and draw a contour everywhere the anatomy changes size, shape, or location.

5. After you draw contours, select **Keep** or **Remove**.



TIP: When the Show Preview box is selected, it shows a preview in the 3D image.

6. Click  in the lower left corner of the Viewer window to return to the previous window.

Taking Snapshots

Capture images to export to PACS, add to a report, or restore workflow.

1. Click  .
2. Click in the view.
 - Click  to take one snapshot of the whole view,

OR

- Hold CTRL, then click in the view to take one snapshot of the whole viewer.

TIP: Patient information is automatically hidden when you take snapshots.

Trimming Images

Trim lines display as rectangular boxes in all three MPR viewports, and are color coded to the respective view:

- Sagittal: Blue
- Coronal: Green
- Axial: Red

Resize the trimmed region in one or more of the MPR viewports by dragging the lines in any Tool mode (WinLev, Crosshair, Snap, Ruler, Label, Sculpt).

All data outside the trim box is excluded. The 3D viewport (MIP/Volume Rendering) displays the new 3D image, including only the anatomy within the box.

1. Float the cursor over the trim line in the axial, sagittal, or coronal plane (or multiple planes) until the cursor changes to dual arrows.
2. Click and drag the edge of the trim box to eliminate the anatomy you do not want to see in the 3D image.
3. Repeat this procedure as needed.

Labeling Images

Add text labels or arrowtations (arrow annotations) to an image, edit text labels or arrowtations on an image, or delete text labels or arrowtations from an image. After you have labeled or annotated several images, use a variation of standard scrolling to scroll among only the labeled images. The Label menu contains options for creating the following items:

- Text labels

- Text labels with arrows
- Arrows without text
- Spine labels
- Customer-Defined Text

Once you choose a label tool, the cursor changes to a plus sign and a symbol for the type of label. When you click on an image, the annotation starts at the plus sign.

Entering a Text Label

1. Click  dropdown, then select **Text**.
2. Click in the image and enter the text label in the text box.
3. Press ENTER to accept the label.

Entering a Text Label with an Attached Arrow

1. Click  dropdown, then select **Text/Arrow**.
2. Click in the image and enter the text label.
3. Press ENTER to place the label.
4. Once you have placed the label, perform the following actions to adjust it:
 - Double-click on the text to edit it.
 - Click and drag the arrow tip to reposition it.
 - Click and drag the middle or end of the arrow to reposition the entire arrow.
 - Shorten or lengthen the arrow by clicking and dragging the end point.

Place an Arrow

1. Click  dropdown, then select **Arrow**.

2. Click in the image to deposit an arrow, or click and drag to create a larger than default arrow.
3. Once you have deposited the arrow:
 - Click and drag the arrow tip to reposition it.
 - Click and drag the middle or end of the arrow to reposition the entire arrow.
 - Shorten or lengthen the arrow by clicking and dragging the end point.

Entering Spine Labels

1. Click  dropdown, then select **Spine Labeling**.

A dialog box displays, containing controls for placing predefined labels on the vertebrae.

2. Click the type of spine label in the left column in the dialog box: C (cervical), T (thoracic), L (lumbar), S (sacral), / (fractions such as $\frac{1}{2}$ or $\frac{3}{4}$, and labels such as C1/T1 and T12/L1).

The right column updates with labels C1-C7, for example, if you selected C in the left column.

3. Select the **Copy to similar images** box if you are placing spine labels on an image displayed in a key image viewport, and you want to apply your labels to all other key images that are in the same plane of acquisition (if any exist).

EXAMPLE If the key image window contains four sagittal images and two axial images, and you add spine labels to one of the sagittal images, then the same labels automatically display in the same position on the other three sagittal images. You might need to reposition the labels slightly on the other images.

4. Click **Sequence: Auto, Ascending** (up the spine), or **Descending** (down the spine). Each time you click, the next label in the sequence is placed on the image.
 - **Auto** – Add ascending or descending labels automatically.

- **Ascending** – Add spine labels in the order of the vertebrae as you move up the spine.

EXAMPLE If you start with **L2**, the next label would be **L1**, and then **T12**, **T11**, ... **T1**, **C7**, **C6**, ... **C2**, **C1**. If you continue past **C1**, the next label would be **S5**, continuing up the spine.

- **Descending** – the opposite order of ascending (above).
5. Click the first label you want to add, then click in the image where you want to place the label.
 6. To add the next label of the same type and in the same sequence (for example, to add C2 after C1 with Ascending order checked), click the image to place the next label.
 7. To add a label out of sequence, click the first label you want to add, then click in the image where you want to place the label.
 8. In the dialog box, click the next label you want to add, then click the image where you want to place the next label.
 9. Keep clicking where you want the system to place the next label(s) in the sequence you selected.
 - To undo a label, click **Undo**.
 - To move a label, click and drag it.
 - To delete all labels you placed on the image(s), click **Delete All Labels**.
 - To delete an individual label, position the cursor on it, then press DELETE.

When you are finished, click  in the upper right corner of the dialog box.

Entering Custom Text

1. Click , then select **Text** from the dropdown menu.
2. Select the predefined text you want to place on the image.

3. Click in the image.

The label displays on the image.

- Type the label name in the text box.
- Click and drag to move the label.
- Double-click it to edit the label.

Scrolling Through Annotated Images

- Press and hold CTRL and roll the mouse wheel.

OR

Press and hold CTRL, then press the UP ARROW or DOWN ARROW key.

Reformatting Labels

1. Right-click the label, then select **Choose Text Font/Color**.
The Font dialog box displays.
2. Adjust the font and/or color.
3. Click **OK**.

Editing Label Text

1. Right-click the label, then select **Edit Text**.
OR
Double-click the label.
2. Edit the text.
3. Click outside the text box to accept the changes, or press Enter.

Changing Label Background

- Right-click the label, then select **Switch Background Mode to Opaque** or **Switch Background Mode to Transparent**.

Editing Arrow Properties

1. Right-click the arrow, then select **Change Arrow Width/Color**.
The Arrow Width/Color dialog box displays.
2. Edit the arrow size and/or color.
3. Click **OK**.

Deleting Labels or Arrows

- Right-click the label or arrow you want to delete, then select **Delete**.

OR

Click the label or arrow or float the cursor over the item you want to delete, then press DELETE.

- To delete all labels and arrowtations from an image, click  dropdown, then select **Delete All**.

OR

Right-click an image, and select **Delete All**.

	Reset	Resets the volume to its original state, at the time you loaded it.
	Undo	Undo the last sculpt action. Does not undo or redo measurements, labels, or other annotations.
	Redo	Recover the last sculpt action. Does not undo or redo measurements, labels, or other annotations.

Viewport Window Controls

Each viewport window, which displays the MPR or 3D image, contains several controls that allow you to work with each image independently.

Button	Name	Use
	Zoom Slider	<p>Allows you to independently control and lock the zoom level in each viewer window.</p> <ul style="list-style-type: none">• Click and drag the control up to zoom in, slide down to zoom out• Click at the top or bottom of the control to zoom in or out by preset increments• Click the magnifying glass icon to lock and zoom all MRP windows simultaneously

Button	Name	Use
	MPR Options	<ul style="list-style-type: none"> • Average: A shading setting that displays data using the average data values for all voxels in an image. This setting is particularly useful for viewing coronal and sagittal views of noisy images. • Vol. Render: uses all voxel values. The separate MPR Volume Render option gives you the capability of viewing a 3D MIP rendered volume side-by-side with MPR volume rendered images. • MIP: A shading setting that displays data using only the highest data values for each voxel of the image. MIP is a good setting to use when competing features composed of voxels with similar or higher values might be obscuring the feature of interest. <p>With the separate MPR MIP option, view a volume rendering side-by-side with MPR MIP images.</p> <ul style="list-style-type: none"> • MinIP: A shading setting that displays data using only the lowest data values for each voxel of the image. MinIP is a good setting to use when features composed of similar or higher voxel values might be obscuring a feature of interest composed of lower voxel values in a scanned image. <p>This setting is particularly useful when looking at air or fluid in mini-slabs. For example, lung airways or dilated pancreatic or bile ducts.</p>
	MPR Thickness	Slider control, for MPR views only. Move the slider to change the slice MPR thickness. The corresponding thickness measurement displays beneath the slider as well as in the lower-left corner of the viewer.
	MPR Rotate	Move all views one position clockwise with each click.
	Mode select dropdown	Dropdown to select view mode: <div style="border: 1px solid gray; padding: 5px; width: fit-content; margin-left: 20px;"> Sagittal Coronal Axial Volume Render Full 3D </div>

Button	Name	Use
	Window/ Level Dropdown	Dropdown to select a preset window/level value
	Orthogonal	In the lower-right corner of each MPR viewport. Indicates the MPR view is currently displaying orthogonal views. Click to enter oblique mode.
	Oblique	<p>Located in the lower-right corner of each 3D MPR viewport, after you click . Create an oblique MPR image. Click to enter Oblique mode. <i>/Oblique</i> is added to the orthogonal view name (such as <i>Sagittal/Oblique</i>), the trim lines are hidden, and crosshairs now define the oblique plane.</p> <p>The crosshairs rotate around the intersection of the lines. Click and drag either line to rotate the crosshairs around the intersection point to define the oblique plane. Drag the intersection to move the rotation point, and then rotate the crosshairs.</p> <p>After you rotate the crosshairs in one of the MPR views, the other two MPR views display images at oblique angles, but the view where you rotated the crosshairs continues to display slices in an orthogonal plane.</p>
	Curved	One of the MPR views displays an image in an orthogonal plane. The other two MPR views can display curved images. Define a curve on one MPR view and the resulting image displays on another view.
	3D	Located in the lower-right corner of each 2D MPR viewport. Switch to 3D viewing mode. Behaves the same as the 3D button on the toolbar. This mode enables the 3D Toolbar Buttons, Visual and Batch Controls, and View Options.

Performing Measurements

Perform all of the measurements on 2D images of all modalities. After you have created measurements on 2D images, choose to scroll among only the images containing measurements using a variation on standard scrolling. For CT and MR views, create all types of measurements.

NOTE: You cannot perform ROI measurements on lossy images. Verify the image is at full fidelity before performing this measurement.

Draw multiple rulers, angles, or contour lines on one image. If you perform multiple measurements on an image, the results of the measurements are stacked in the lower right corner of the viewer. Also delete, move, or adjust existing measurements. Also move measurement results.

When you right-click on an image, or click the arrow of a measurement button , a dropdown menu displays the following options:

- Ruler
- Angle
- ROI-Ellipse
- ROI-Freehand
- Cobb Angle
- Delete All

Measuring Distance

1. Click the Ruler dropdown arrow  and select Ruler.
2. Click the desired starting point to indicate the beginning of the line.
3. Click the desired end point to indicate the end of the line.
4. If necessary, move, delete, or adjust the line when you are finished.

The system displays the measured distance (in mm or pixels) in the upper-left corner of the viewport.

Measuring Angles

1. Click a measurement tool dropdown arrow (for example, Ruler), then select .
2. Click to deposit the first point, which is the end of the first line segment.

3. Click to deposit the second point, which is the intersection of the angle.
4. Click to deposit the third point, which is the end of the second line segment.
5. The system calculates the angle at the intersection.
 - If necessary, move, delete, or adjust the lines when you are finished.

The system displays the angle (degrees) formed by the intersection of the two lines in the upper-left corner of the viewport.

Measuring Cobb Angles

1. Click a measurement tool dropdown arrow (for example, Ruler), then select  .

2. Click on the first point to begin the first line segment.
3. Click on a second point to end the first line segment.
4. Click on a third point to begin the second line segment.
5. Click on a fourth point to end the second line segment.

Vitreacore draws a line perpendicular to the beginning point of the first line segment and a second line perpendicular to the beginning point of the second line segment, then calculates the angle between two lines.

- If necessary, move, delete, or adjust the lines when you are finished. The Cobb Angle measurement displays in a text box in the lower right hand corner of the viewport.

Measuring an Elliptical ROI:

NOTE: You cannot perform ROI measurements on lossy images. Verify the image is at full fidelity before performing this measurement.

1. Click a measurement tool dropdown arrow (for example, Ruler), then select ROI-Ellipse  .

2. Click and drag to draw an elliptical contour line, enclosing the ROI. VitreaCore displays the average data value, standard deviation for the data values, and the area inside the contour line in the upper-left corner of the viewport.

Measuring a Freehand ROI:

NOTE: You cannot perform ROI measurements on lossy images. Verify the image is at full fidelity before performing this measurement.

1. Click a measurement tool dropdown arrow (for example, Ruler), then select ROI-Freehand . The icon shows a hand-drawn line with the word 'Free' below it.
2. Click and drag to draw a freehand contour line, enclosing the ROI.

Scrolling Through Images with Measurements

- Press and hold CTRL and roll the mouse wheel.

OR

Press and hold CTRL and press the UP ARROW or DOWN ARROW keys.

Deleting Measurements and Results

- Right-click the measurement (or measurement result) to display the right click menu, then select Delete.

OR

Float the cursor over the center of the ROI to select it, then press DELETE.

Moving a Measurement

1. Float the cursor over the line segment until the cursor changes to a four-way arrow.
2. Click and drag.

Adjusting the Length of the Line Segment

1. Float the cursor over the line segment until the end points change into dots.
2. Click and drag from an end point.

Reformatting the Measurement Result

1. Click the measurement or result you want to reformat.
2. Right-click to display the right-click menu, then do one of the following:
 - To change the text font, select Choose Label Font/Color.
 - To change the label background mode, select Switch Label Background Mode to Opaque, or conversely, Switch Label Background Mode to Transparent.

Moving a Cobb Angle

- To move a line segment, float the cursor over the middle of the segment until the cursor changes into a four-way arrow, then click and drag.

Adjusting the Cobb Angle or Length of the Line Segment

1. Float the cursor over the end point until the end point changes into a dot and the cursor changes into a four-way arrow.
2. Click and drag the end point.

Moving a Contour Line

1. Float the cursor over the middle of the contour line until the cursor changes to a four-way arrow.
2. Click and drag.

Changing the Shape of an Elliptical Contour Line

1. Float the cursor over the contour line until dots display along the border and the cursor changes to an arrow.

- Click on any of the dots and drag to adjust the contour line.

Deleting All Measurements on an Image

- Click  , then select Delete All to remove all measurement annotations on the image.

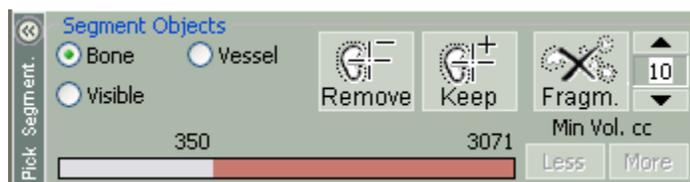
View Options

The toolbar area of the Viewer window contains View Options controls, which determine the types of information and labels displayed on the images and batches.

Option	Description
Patient Info	When checked, displays patient, hospital, and other DICOM information.
Labels	When checked, displays text and arrow annotations.
Measurements	When checked, displays measurements made with the Ruler tool options.
Full Crosshair	When checked, displays full-length crosshairs that do not meet in the center (to not obstruct the focal point).

Segmenting Objects

Use point-and-click segmentation for keeping or removing segments of bone or other visibly distinct segments such as soft tissue, stents or metal plates, or even the scanner table. The Segment Objects box provides the following controls for segmentation:



- Select **Bone** to segment bone, based on HU thresholds and connectivity.

- Select **Vessel** to segment vessels based on HU thresholds and connectivity.
- Select **Visible** to segment any visibly distinct region.

Keeping a Selected Region (Keeping in Foreground)

Select **Keep** to place the selected region in the foreground and move everything else to the background. When you select **Keep**, the tool displays in green.

Removing a Selected Region (Placing in Background)

Select **Remove** to move the selected region to the background and place everything else in the foreground. When you select **Remove**, the tool displays in red. The default is Bone.

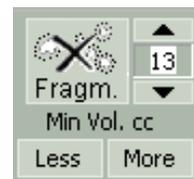
Removing Fragments

- Click  to remove all visibly distinct regions smaller than the number of cubic centimeters listed in the Segment Objects area.

Editing the Results

- Change the cubic centimeters threshold in the text box,

TIP: Type a lower number to remove smaller fragments, and type a higher number to remove larger fragments.



- Use the up and down arrows, or
- Use the Less/More buttons.

TIP: To use Less and More buttons to remove additional fragments: Click **Less** to reduce the size threshold for fragments. The value in the Min Vol field decreases by 3 cc each time you click the button. Removed fragments bigger than the new number are restored. Click **More** to increase the size threshold for fragments.

- Select the segmentation threshold bar to adjust the segmentation thresholds. When the cursor is over the threshold limit, the cursor changes to arrows so you can drag the bar.

Showing Segmentation in MPR Views

When the Show Segmentation box is checked, MPR views also show the results of any segmentation done in the 3D view. If the Show Segmentation box is cleared, the MPR views continue to display whole MPR images, even if parts of the volume have been segmented.

To show segmentation in MPR views:

Select the Visual control  and check the **Show Segmentation** box.



- If you select Show Segmentation, and you have excluded a region in the volume view, that region is not displayed in the MPR views.
- The 3D crosshairs box in the 3D view represent positions and orientations of crosshairs and planes of the MPR views. These lines are color coordinated with the MPR view borders and crosshairs, with blue for sagittal, green for coronal, and red for axial.

To display or remove 3D crosshairs:

Select the **Show 3D Crosshair** check box. Clear the **Show 3D Crosshair** box to remove.

Vessel Analysis - Object Visibility Area

From the Object Visibility dropdown, choose from several visibility options.



NOTE: If you select Semi-Transparent, even when Show Segmentation box is checked, the MPR views do not show the background as semi-transparent.

To select visibility options:

Select one of these options from the Object Visibility dropdown:

All: To display both foreground (included) and background (excluded) regions.

Transparent Foreground: To render the background partially opaque.

VesselsOnly: To remove everything except the probed vessel(s) from view.

Tinted Vessels: To display the probed vessels shaded in red.

Semi-Transparent Background: To view both included and excluded regions, but view the background (excluded region) as semi-transparent. This option allows you to use regions in the background as landmarks, without obscuring the included tissue view.

Tinted Foreground: Tint the foreground (included region) red.

Vessels on Semi-Transparent: To view the vessels on a semi-transparent background. This option allows you to use regions in the background as landmarks, without obscuring the vessels.

To use the Vessel Overlay box:

- Select the Vessel Overlay check box to display curved reformat and cross-sectional views, and the vessel indicator line. Clear the Vessel Overlay check box to hide.

Performing Vessel Probe

When you probe a vessel, the VitreaCore software traces the vessel lumen, highlighting it with a vessel indicator line. The vessel indicator displays in the 3D view.

NOTE: Vessel Probe is not recommended for probing the aorta.

1. Click .

2. Click the vessel.

TIP: VitreaCore adds a listing to the Vessel Listing.

TIP: If the probe tool did not select enough of the vessel, extent it:

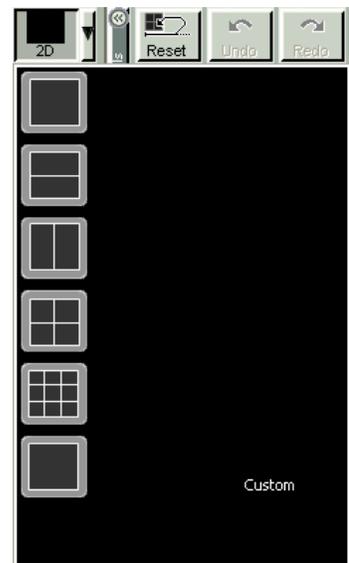
a. Click .

b. Click a point farther along the already selected vessel.

2D Imaging

Use the 2D formats to view slices as they were acquired by the scanner.

Four labels display along the sides of the views indicating orientation of the image: S - Superior, I - Inferior, A - Anterior, P - Posterior, L - Left, R - Right



Panning Images

1. Click and hold the mouse wheel button with the cursor on the image.
2. Drag the image in the viewport.

Inverting/Rotating/Flipping Images

1. Right-click the image.

The Image Properties dropdown menu contains the following options:

- **Invert:** Invert the image grayscale settings, so black turns white and vice versa. Select **Invert** again to reset to normal grayscale settings.
- **Rotate Right 90 degree:** Rotate the image clockwise by 90 degrees.
- **Rotate Left 90 degree:** Rotate the image counter-clockwise by 90 degrees.
- **Flip Horizontally:** Flip the image horizontally along the centerline.
- **Flip Vertically:** Flip the image vertically along the centerline.
- **Reset:** Reset any of the operations above, except Invert.

2. Select the option.

Zooming In and Out

- Drag the Zoom slider on the right of the image.
- Left + middle-click and drag up or down.

Scrolling Manually in 2D or MPR Views

- Roll the mouse wheel.
- Right-click on the image and hold, then drag.
- Move the image slider at the top of the viewport (multiple monitor configurations only).

Scrolling Through 2D Images Containing Labels or Measurements

- Press and hold CTRL, then roll the mouse wheel.
- OR**
- Press and hold CTRL, then press the UP ARROW or DOWN ARROW. Only those images that contain labels or measurements display.

Scrolling Automatically in 2D Views

- Click a button in the Cine Tools area.



Visual Control

The Visual Control contains more options for 2D and 3D modes.

Visual Control 2D

The Visual Control 2D apply to 2D images and scan images.

Control	Function
 Cine Tools	For time-series studies, auto-scroll through all time phases for a position. For non-nuclear medicine, non time-series studies, display all images in a continuous movie mode. Cine forward  , backward  , and stop  . When Cine is active, the right mouse menu changes to include these options: <ul style="list-style-type: none">• Cine Stop• Adjust Cine Setting• Save Cine to Movie File
	Display the next series, if the current series is not the last series in the study.
	Display the previous series, if the current series is not the first series in the study.
 Se: 2	Displays when more than one series are loaded. <ul style="list-style-type: none">• Click the Series dropdown to select a different series to populate within the viewer of focus. The series descriptor text updates accordingly to indicate the currently displayed series.

View Options 2D

The View Options determine what patient data and annotations display on the image.

Option	Description
Patient Info	When checked, displays patient, hospital, and other DICOM information.
Labels	When checked, displays text and arrow annotations.
Measurements	When checked, displays measurements made with the Ruler tools.
Full Crosshair	When checked, displays crosshairs that meet in the center. Default displays crosshairs that do not meet in the center, so as not to obstruct the focal point.

Comparing Multiple Series

Load multiple series and manipulate them as a group. Creating a group locks images for each volume at a starting point. Once loaded, cine each series to the slice at which you want to begin the comparison, then lock the series to synchronize the comparison. Then cine through the multiple series in unison.

NOTE:  Use the Global Lock button to lock and unlock the Zoom for all images in the comparison. Lock the Window/Level for all images by using the button arrow.

1. From the Study Directory, select two or more studies.
2. Click the Series tab and select two or more series (hold CTRL and click on each desired image).
3. Right-click and select Load.
All selected series display in the 2D viewer.
4. To synchronize the W/L, click .
5. To cine the series in unison, click the synchronize button in each viewer.

The synchronize button changes to a locked state .

- To remove a series, click the synchronize button to unlock it from the set.

MPR Imaging in VitreaCore Viewer

In MPR imaging mode, manipulate images, perform measurements, and define and display multi-planar or oblique reformatted images. Trim and sculpt to remove unwanted tissue. To be viewable in 3D, a series must be CT or MR and must meet specific image spacing and orientation requirements.

Creating an Oblique Image

In oblique MPR mode, display images in planes other than sagittal, coronal, or axial. Create an MPR view of a feature that lies in a plane other than the sagittal, coronal, or axial planes, such as spinal anatomy.

In oblique MPR mode, change the orientation of the MPR views by rotating the crosshairs in one or more of the MPR views.

1. Click  to enter Oblique mode.

The mode button displays in oblique mode , the viewports now have “/Oblique” added to the orthogonal view name (such as *Sagittal/Oblique*), the trim lines disappear, and crosshairs now define the oblique plane.

2. Decide which MPR view you want to use to rotate the other MPR planes.
3. In the selected view, position the cursor over either of the crosshairs, anywhere except where they cross.

The cursor turns into two opposing arrows.

4. The crosshairs rotate around the intersection of the lines. Click and drag either line to rotate the crosshairs around the intersection point to define the oblique plane.

TIP: Drag the intersection to move the rotation point, and then rotate the crosshairs.

After you rotate the crosshairs in one of the MPR views, the other two MPR views display images at oblique angles, but the view where you rotated the crosshairs continues to display slices in an orthogonal plane.

NOTE: Rotate the crosshairs in more than one MPR view. If you do this, none of the MPR views display images in an orthogonal plane. Each MPR view can display images in any possible plane.

Using Double Oblique Rotation

Double oblique allows you to interactively rotate obliquely around a single pivot point in the image. Use this to rotate around anatomy such as a vessel.

1. Select Oblique Mode.
2. Select and position the crosshair.
The center of the crosshair acts as a fulcrum point.
3. With the cursor in one of the MPR views, the cursor changes to the oblique rotate tool .
4. Click and drag to rotate the image.

TIP: Rotate up/down and left/right at the same time.

Using Manual Curved Reformat

In Curved MPR mode , use one of the MPR views to define a curve, so the curved images display in one of the other MPR views. This is useful if you want to create an MPR image of a curved vessel or spine. In Curved MPR mode, each of the three MPR views serves a unique purpose.

- Choose one view, called the Reference view, to define the curve. Change one of the crosshairs to follow along a curve (vessel or spine).
- Use the Curved view to display the curved images.
- Use the Transverse view, perpendicular to the Curved view, to display cross-sectional views with a blue box at the point where the curve intersects the view.

1. Click  .
2. Choose one view (Reference) to define a curve.
3. In the Reference view, switch to the Curved MPR mode.
4. Click one end of the crosshair to define the curve and drag it to the start of the curve.
 - This line is now the Curved line.
 - The yellow line in the Curved view is the Centerline.
 - The line intersecting the Centerline is the Transverse line. This line is displayed in both Reference and Curved views.
 - Boxes on both ends of the Curved line become solid.
 - The view corresponding to the Transverse line is now labeled *Transverse* in the lower right corner.
 - In the Curved view, a short, straight line overlaps the Transverse line at intersection of the Centerline and Transverse lines. This line is the Measuring line.
5. Fine-tune:
 - In the Reference view, click in the centerline and drag it to follow the curved feature. An “X” is deposited on the line at each point you click.
 - In the Transverse view, click and drag the blue box (centerline) to the desired location (center of the vessel, for instance).
6. When you reach the end of the curved area of interest, click and drag the other end of the crosshair to the end of the curve.

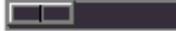
- Perform the double oblique rotation feature automatically. The cursor automatically changes to the oblique rotate tool icon , allowing you to rotate the image around the centerline.

Adjusting the MPR Rendering Option

- Click on the MPR Rendering dropdown. The option is applied to all MPR views. 

Adjusting the MPR Slice Thickness

In the MPR viewports, the acquisition slice thickness displays in the lower left corner.

- Drag the in-viewer MPR Thickness slider right to increase or left to decrease slice thickness. 

Selecting MPR Options

Change the configuration of the MPR viewers by selecting an option from the in-viewer MPR options dropdown menu.

1. From the in-viewer dropdown menu at the bottom of each viewer, choose from the following settings:

The settings apply to the MPR images.

2. Add Thickness to render in the selected setting.

NOTE: The range of the MPR Thickness Control is specified by the type of MPR option you selected.

- Average — A shading setting that displays data using the average data values for all voxels in an image. This setting is particularly useful for viewing coronal and sagittal views of noisy images.
- Vol. Rend. — uses all voxel values - The separate MPR Volume Render option gives you the capability of viewing a 3D MIP rendered volume side-by-side with MPR volume rendered images.

- MIP — A shading setting that displays data using only the highest data values for each voxel of the image. MIP is a good setting to use when competing features composed of voxels with similar or higher values might be obscuring the feature of interest.

Use the separate MPR MIP option to view a volume rendering side-by-side with MPR MIP images.

This setting is particularly useful when performing these operations:

- Differentiating between contrast and calcium in vessels
- Viewing thick slab MPRs with many tiny, loose body bone fragments
- Viewing carotids, the Circle of Willis, renals, runoffs, or any vessel to show plaque
- Viewing a thick slab MPR, showing all liver vessels in one plane
- MinIP — A shading setting that displays data using only the lowest data values for each voxel of the image. MinIP is a good setting to use when features composed of similar or higher voxel values might be obscuring a feature of interest composed of lower voxel values in a scanned image.

MPR Right-Click Menu

The right-click menus in VitreaCore may differ slightly from the ones shown, depending on various factors, including the type of study, the imaging mode (2D or 3D) and your level of user privileges.

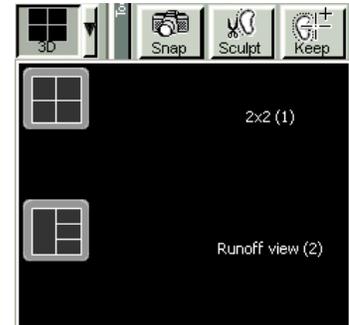
The Default W/L menu item changes to W/L Presets for CT MPR views for series viewable in 3D. For MPR views for series not viewable in 3D, it is Default W/L.

Menu Item	Description
Monitor Layout	Select the type of layout. For example, 2 x 2.
CT W/L Presets	Available only for CT studies, and only in MPR views and in 2D views for series that are viewable in 3D. Change to a predefined window/level preset.

Menu Item	Description
Image Properties	<p>Manipulate the image. A dropdown menu displays the following options:</p> <ul style="list-style-type: none"> • Invert: Invert the image grayscale settings, so black turns white and vice versa. Click again to restore original grayscale settings. • Clockwise Rotation 90 degree: Rotate the image clockwise by 90 degrees. • Counter Clockwise Rotation 90 degree: Rotate the image counter-clockwise by 90 degrees. • Flip Horizontally: Flip the image horizontally along the centerline. • Flip Vertically: Flip the image vertically along the centerline. • Reset: Reset all operations, except Invert.
Hide Centerline	Hide the centerline.
Lock 3D	Lock the study in 3D.
Snapshot	Take a snapshot of the current image and display it in the Data Manager Snapshots tab.
Save Image	Select to save the image.
Save Screen Capture	Save a screen capture of the current viewport in DICOM or Windows formats (or to the Windows Clipboard).
Print	Print the image from the current viewport in secondary capture format to any configured printer.
Reset MPR	Select to reset the MPR.

3D Imaging in VitreaCore Viewer

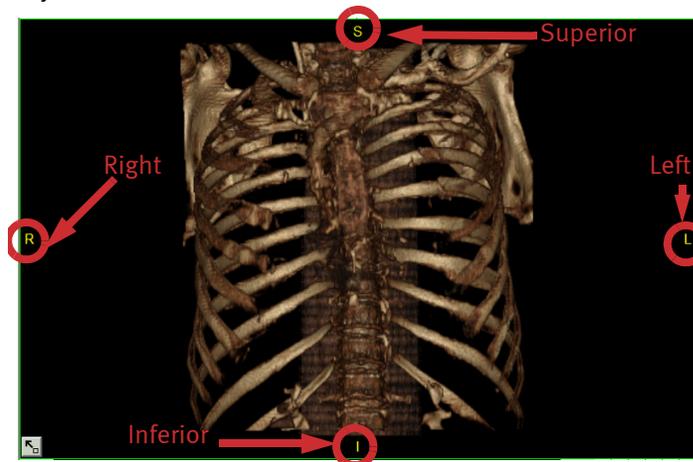
In 3D imaging mode, manipulate images, perform measurements, and define and display multi-planar or oblique reformatted images. Trim and sculpt to remove unwanted tissue. To be viewable in 3D, a series must be CT or MR and must meet specific image spacing and orientation requirements. Use the tools described below in 3D imaging mode.



CAUTION: Before you start 3D processing, check the number of images on the Study Directory screen and make sure that the entire series was received from the server.

Image Orientation Labels

In 3D mode, image orientation is depicted by yellow letter labels on each side of the viewports. The default orientation is Superior (S) on top, Inferior (I) at the bottom, Right (R) on the right side, and Left (L) on the left side. As you rotate, invert, or flip the images, the orientation labels in all viewports adjust to reflect the new orientation.



Orientation labels consist of one letter. The most dominant orientation is listed first, the second most dominant is listed second, and the least dominant is listed third.

EXAMPLE
S = Superior
SA = Superior Anterior
RSA = Right Superior Anterior

Rotating 3D Images

3D image rotation is the default left mouse button behavior in 3D mode, when the crosshair button is active. When you select one of the other tools, the left mouse button then controls the function of that tool.

- Click on the image and drag.

OR

If you have been using one of the other 3D tools:

- a. Click and hold the left mouse button until the arrows below the icon disappear.
- b. With the cursor on the 3D or slab image, click and drag the mouse to move the 3D image in the corresponding direction.

NOTE: Network performance may affect the image rotation speed and response time.

Displaying a Point of Interest (POI)

Isolate and display a specific section of the volume using POI, and further isolate the point of interest in the volume view.

1. Click the  button in the 3D viewer.

The button changes to the  volume view, and the POI at the MPR viewer crosshairs displays in the 3D view.

2. Refine the POI:
 - Drag the crosshairs in one of the MPR views to change the POI location displayed in the volume view.
 - Click and hold the right mouse button in the 3D view, then drag to increase or decrease the POI area.

Visual Control 3D

The Visual Control 3D contains Multi Planar Reformatted images in the Sagittal, Coronal formats, as well as 3D volume and the original Axial scans.

A number of predefined clinical viewing Anatomy Protocols are available from the Protocols dropdown menu. Choose the Protocol that best visualizes the anatomy you are working on.

Control	Function
Protocols	Only for 3D views. Select a Protocol from the dropdown menu. Anatomy Protocols contain visualization settings (W/L, Opacity, and color definitions) tailored for the type of exam you are viewing.

Using 3D Presets and Anatomy Protocols

Overview

When you load a volume or study, VitreaCore assigns an anatomy protocol based on the study description. The protocol changes the color, opacity, and window/level to highlight relevant data elements for that exam type. The default protocols are starting points; change the protocol to suit the exam type by selecting a new one from the Protocols pull down menu.

Regard the VitreaCore protocols and associated presets as a convenient starting points. As such, each protocol may not necessarily provide the optimal viewing settings for any particular volume. For this reason, VitreaCore provides controls for fine-tuning each image.

Picking an Anatomy Protocol

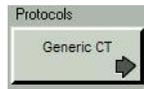
Keep the system-assigned anatomy protocol, or select a different one.

To select a protocol:

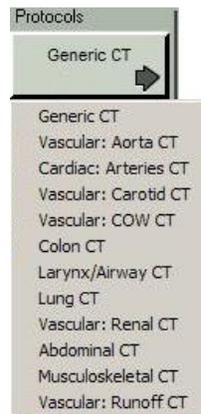
1. Click  (if not already in 3D mode).

The Viewer changes to a 4-up, 3D mode.

2. From the Protocols dropdown menu on the Visual control



menu.



NOTE: If you are initially working in VitreaAdvanced and switch to VitreaCore, you may notice slight differences in the names of the protocols and presets. Choose an option that is similar to your selection in VitreaAdvanced.

3. Double-click the preset that best presents the exam type.

The settings are applied to the 3D image.

3D/MPR Right-Click Menus

3D Right-Click Menu

The right-click menus in VitreaCore may differ slightly than the ones shown, depending on various factors, including the type of study, the imaging mode (2D or 3D) and your level of user privileges.

Menu Item	Description
Monitor Layout	Select the type of layout. For example, 2 x 2.
Image Properties	<p>Manipulate the image. A dropdown menu displays the following options:</p> <ul style="list-style-type: none"> • Rotate Right 90 degree: Rotate the image clockwise by 90 degrees. • Rotate Left 90 degree: Rotate the image counter-clockwise by 90 degrees. • Flip Horizontally: Flip the image horizontally along the centerline. • Flip Vertically: Flip the image vertically along the centerline. • Reset: Reset all operations, except Invert.
Interact Fast	<p>Determines the speed with which the 3D image rotates. To increase the rotation speed, if “Interact Speed” is selected, the image resolution is temporarily reduced to increase speed. Once rotation is complete, image quality is restored.</p> <ul style="list-style-type: none"> • Disable: No resolution reduction - slowest • Interact Speed 1: Fast • Interact Speed 2: Faster • Interact Speed 3: Fastest (most reduction)
Lock 3D	Lock the study in 3D.
Save Image	Select to save the image.
Snapshot	Take a snapshot of the current image and it displays in the Data Manager Snapshots tab.

Menu Item	Description
Save Screen Capture	Save a screen capture of the current viewport in DICOM or Windows formats (or to the Windows Clipboard).
Print	Print the image from the current viewport in secondary capture format to any configured printer.

Image Batches

Make batches of 3D images, which are a sequence of images you can cine or save as a movie. Use the Viewer window to set up the window format and orient the images to include in the batch. The images must be of the same patient volume and format. Before you create the batch, remove the patient information from the images.

On the Batch tab of the Viewer window, select the starting and ending points for the sequence of images for the batch. Then, specify the increment between the images you want to include or the number of images, or the System can calculate those for you.

Once you create a batch:

- Print it on a PostScript or DICOM printer
- Send it to a DICOM device
- Save it as a digital movie (Windows .avi movie format)

Tips for planning your image batches

Plan your image batches and digital movies to achieve a sequence of images that meets your expectations. If you do not plan, you may forget to show a particular view of the region of interest, you may not use the desired display option or imaging controls, or may end up with other undesired results.

Listed below are tips for planning your image sequence, for both image batches and movie.

Determine what information you want your digital movie or batch sequence to show. Here are some questions that may help you organize your images:

- What views of the image do I want to show?

Use only one patient volume and one kind of format throughout the digital movie or batch. For example, if you start with a 3D view of a volume for Jane Doe, use that format and volume throughout.

- What VitreaCore settings reveal the important features I want to show?

Prevent audience confusion by identifying a logical progression. Develop your image sequence in the same step-by-step procedure you would use for a written report.

Begin your image sequence with a familiar frame of reference for the viewer.

EXAMPLE If the viewer can easily recognize a part of the anatomy from a certain angle, such as a posterior pelvic view, start with the view at that angle and then rotate the image and zoom in as needed to focus on a region of interest.

Plan the sequence of images to convey the story you want to tell.

EXAMPLE One type of sequence begins with the entire image in a familiar orientation, such as an anterior cardiac view. In subsequent images, as you zoom in, parts of the anatomy fade away, revealing a particular region of interest, such as a mitral valve prolapse.

Make smooth transitions-avoid changing too much at once.

Change the view over a series of images, especially in digital movies, so that the viewer can follow the sequence and think about what is shown.

Batch Formats, Views, and Modes

Create a batch of the images in one Viewer using viewer formats:

- 1-up MPR image
- 3D image

Throughout the creation of a batch, you must use the same patient volume, format, format view (a view from any format that has a volume view other than the single Volume format), and, for 3D views, you must use the same volume mode, throughout the creation of a batch.

EXAMPLE If you start with a volume for Jane Doe and start with an image in the MPR axial view in orthogonal mode, you cannot switch to John Doe, nor can you change to sagittal view, oblique mode during the batch generation process.

Adjusting the Number of Images

This slider indicates the number of images for the batch or digital movie. The initial value is 1. Adjust the Number of Images slider after you define all images for the batch, or accept the value that VitreaCore automatically calculates when you select the ending image of a batch or movie.

Adjusting the Step Size

This slider indicates the interval between images in a batch. The initial Step Size value is 1. Adjust the Step Size slider after you define all images for the batch, or accept the automatic Step Size value that VitreaCore calculates when you select the ending image of a batch or movie.

The value for a step description can be in slices, millimeters, or degrees, depending upon whether the batch is made with the MPR Volume or Volume format.

NOTE: The Number of Images value and the Step Size value are inversely related to one another: as the step size decreases, the number of images increases.

EXAMPLE The distance between the starting image and the ending image in an MPR axial view batch is 25mm. The total number of images in the batch is 75 images. You cannot slide the Number of Images field to 100 while keeping the Step Size value at 25mm. Instead, when you increase the Number of Images to 100, VitreaCore automatically decreases the Step Size to a value that is less than 25 millimeters.

Creating a 3D Batch

1. Load the series in the Viewer window or a viewport.

2. Click  .

The three MPR views display and the 3D view is rendered in the lower-left viewport.

3. Evaluate the 3D view and determine the features and orientations you want to include in the batch.
4. Orient the 3D image in the desired starting position.
5. Select the  tab.

The Batch controls display, and the  button is active.

6. Click the 3D image to define the starting position of the batch.
A green check mark displays in the bottom of the image.
7. Orient the image to the next position you want included in the batch.
8. Click  to include the image in the batch.
9. Set Via points on a number of images to make sure they are included in the batch.

NOTE: In the absence of Via points, VitreaCore plots the shortest course to the ending orientation, and may skip an image you want to include.

10. At the last image orientation, to include in the batch, click .

TIP: Adjust the **Step Size** or **Number of Images**.

11. Change the start and/or end points:

- Click  to undo and reset the end point.
- Click  to start over.

12. Click  to create the batch. The batch is created in a popup window, and also displays in the Viewer window after creation.

13. Use the Viewer Window right-click menu to modify the layouts, save and delete images, and create labels.

Creating an MPR Batch

1. Load the series in the Viewer window or a viewport.

2. Click .

The three MPR views display and the 3D view displays in the lower-left viewport.

3. Evaluate the series and determine which range of slices in which orthogonal view you want to include in the batch.
4. Scroll to the first slice you want to include in the batch.
5. Select the **Batch** tab.

The Batch controls display, and the  **Start** button is active.

6. Click the MPR image you want to use to create the batch.
A green check mark displays in the bottom of the image.

7. Scroll to the last image you want to include in the batch and click .

TIP: Adjust the **Step Size** or **Number of Images**.

8. Change the start and/or end points:

- Click  **Undo** to undo and reset the end point.
- Click  **Clear** to start over.

9. Click  **Batch** to create the batch.

The batch is created in a popup window, and also displays in the Viewer window after creation.

10. Use the right-click menu in the Viewer window to modify the viewport and image layouts, add labels, and cine.

Appendix I

User Preferences

Overview

Set user preferences in the User Preferences dialog box, which contains the following options, based on your access privileges:

User Preferences (User ID-specific settings)

All users can customize their own preferences in the following areas. These settings are activated each time the user logs in:

- User Information (password and email address)
- WW/WL Settings (Window Width/Window Level)
- Study Directory
- Label
- Fonts
- Diagnostic Tools (Test Network Speed)
- Worklist Filter
- Vessel Probe Settings
- Background Image Streaming
- Data Manager Tab Settings
- Application Tab Settings
- Output Settings
- Report Tab Settings
- Export And Import

Local Settings

Settings specific to the client PC. Any user can customize these settings.

- Background Image Streaming

Setting User Preferences

Overview

All users can customize their own preferences in several areas. These settings are activated each time the user logs in.

Changing Your email Address or Logon Password

Your first name, last name, user ID, initial password, and privilege levels are set up by your System Administrator on the VitreaCore server. You can use the User Preferences dialog box to change your email address or password. To request changes to your user ID, first or last name, or level of privileges, contact your System Administrator.

1. Click  .

The User Preferences dialog box displays.

2. In the left pane, click User Information.

The current User Information displays in the right pane.

3. To change your email address, enter the new address in the Email Address field.

4. To change your password, do the following steps:

- a. Click Change Password.

The Change Password dialog box displays.

- b. In the Old Password field, enter your old password.

- c. In the New Password, enter your new password.

- d. In the Confirm Password field, enter your new password again.

- e. Click Save.
The Change Password dialog box closes. If you receive a *Wrong Password* message, you have incorrectly entered your current password. Re-enter your current password and try again.

5. When you are done, click Save.

Defining User-specific Window/Level Presets

All users can define their own custom WW/WL (window width/window level) presets in the User area of the User Preferences dialog box. Administrator-level users can also define system-wide WW/WL settings in the System area of the User Preferences dialog box.

1. Click  .

The User Preferences dialog box displays.

2. In the left pane, under your User ID, click **WW/WL Settings**.

3. In the right pane, click New.

The New WW/WL dialog box displays.

4. In the **Name** field, enter a name for the preset.

5. In the first **WW/WL** field, enter the Window Width (WW) setting.

6. In the second **WW/WL** field, enter the Window Level (WL) setting.

7. Click Save.

Edit an existing WW/WL preset

1. Double-click the name of the preset you want to edit.

A dialog box displays the current WW/WL settings.

2. Change any of the settings as necessary.

3. Click **Save**.

Delete a custom preset

NOTE: Be sure you want to delete the preset. Clicking Delete immediately deletes the preset without asking for a confirmation.

1. In the WW/WL Settings list, select the WW/WL setting you want to delete.
2. Click Delete.

Setting User-specific Study Directory Screen Preferences

Use the User Preferences dialog box to customize the appearance and behavior of the Study Directory screen. In this area:

- Specify the columns that display
- Specify the timespan between automatic DICOM server queries
- Set other Study Directory preferences

NOTE: The changes you make here do not take effect until the next time you log in.

1. Click  .

The User Preferences dialog box displays.

2. In the left pane, click **Study Directory**.

The Study Directory Settings panel displays on the right. Refer to the table below to enter the desired changes:

Setting	Description
Show Columns in Study Directory	Select the check box to the left of each column you want to include in the Study Directory.
Auto Query area	Auto Query specifies how often your workstation automatically queries the server to update the Study Directory with new studies.
Auto Query	Select the check box to enable Auto Query.
Time Span ___ minutes	The number of minutes between the automatic DICOM queries your PC makes to the server. Default is 1 minute.

Setting	Description
<p>EXAMPLE If there were 400 studies on the server, and all searchable columns of the Study Directory were set to display All, the Study Directory would display only 300 of the 400 studies on the server.</p>	
Enable reference line for CT Scout images	Select the check box for automatic display of reference lines when viewing CT scout series.
Save Worklist Presentation on Exit	<p>This box is selected by default. Select the box to configure the Study Directory to save the current criteria (such as the position of the columns, the query filter values, and/or the width of columns) when you log off. The settings automatically restore the next time you log on. To turn off this feature, clear this box.</p> <p>NOTE: If this box is clear, then the default values apply. For an Administrator, the default query is to Show All Studies. For Advanced Diagnostic and Diagnostic users, the default query is to show all studies that arrived 'Today'. For a Clinical user, the default query is to show all studies in the 'Last Week'. If there are no records that match a query filter, the status bar displays a "No studies match the search criteria" message.</p>
Auto close previous opened 3D volume when opening a new 3D dataset	Select the check box to automatically close the opened 3D volume when you open another study. This option frees up memory, resulting in faster system response.
Show support button for feedback	Select the check box to display the support email button: 
2D Left Mouse Centered Zoom	Select the check box to enable 2D centered zoom.

Setting	Description
Compress Level for 3D Image: High __ Low	Determines how much the 3D image is to be compressed. Higher compression results in faster image display but lower image quality.
Auto Export Dialog	Select one of the auto export options: <ul style="list-style-type: none"> • Ask to Save and Show • Always Save and Never Show • Never Save and Never Show

3. When you are finished configuring the Study Directory settings, click **Save**.

The changes become active the next time you log in (log out of VitreaCore and log back in to make the changes take effect).

Setting User-specific Label Preferences

To change the appearance of label text and arrows:

1. Click  .

The User Preferences dialog box displays.

2. In the left pane, click **Label**.

Setting	Description
Customized Text Annotation area	This area allows you to enter custom text labels you can use to annotate images.
Add	To add an annotation, click Add , enter text into the Add New Text Annotation dialog box, and click OK.
Delete	To delete one of the annotations, select the annotation and click Delete.
Delete All	To delete all annotations without displaying a confirmation request.
Up	To move a frequently-used annotation up in the list, select the annotation and click Up.

Setting	Description
Down	To move an infrequently-used annotation down in the list, select the annotation and click Down.
Arrow area	The Arrow area allows you to customize the appearance of the annotation arrows you can place on images.
Width	To change the default arrow size, select an arrow size from the dropdown Width menu. The default width is 6.
Color	To change the default arrow color, select a color from the dropdown Color menu. The default color is Cyan.
Background Mode area	
Transparent	To change the default background of text labels select Transparent or Opaque. The default is Transparent.
Opaque	
Save typed annotation as customized text annotation.	To save all annotations you type as predefined annotation text: as you type annotations, the software saves them and makes them available as Customized Text Annotations. Select: <ul style="list-style-type: none"> • Check Save typed annotation as customized text annotation. The default is cleared.

3. When you are done changing the Label settings, click **Save**.

NOTE: You can still change the appearance of the crosshairs for a particular study when you are in the Viewer window. Change it here if you want to change the default appearance for every study.

Changing the Screen Fonts

1. Click  .
The User Preferences dialog box displays.
2. In the left pane, click **Fonts**.
3. From the dropdown Category menu, select from the following options:

- Study Directory
 - DICOM Header
 - Label
 - Measurement Label
 - Menu
4. Click **Change Font...** The Font dialog box displays.
 5. Select the desired font settings (font, style, size, effects, and color).
 6. Click **OK**.
 7. When you are satisfied with how the font looks in the preview window, click **Save**.
 8. To change the font in another category, select a different category in step 3 above, then repeat this procedure.

Create a new Worklist Query Filter:

1. Click **New**.
The Query Filter dialog box displays.
2. Enter filter criteria and a **Filter Name**.
3. Click **Save**.
The new Worklist Filter is saved and is available from the Worklist Filter dropdown menu.

Delete a Worklist Query Filter:

1. Select and highlight the Filter name.
2. Click **Delete**.
The Filter is deleted and is no longer available from the Worklist Filter dropdown menu.

Vessel Probe Settings

Vessel Probe Settings allow you to add pre-defined names to use while naming vessels within Vessel Probe.

Setting	Description
Add	To add a vessel name, click Add , enter text into the Add New Pre-Defined Vessel Name dialog box, and click OK.
Delete	To delete one of the vessel names, select the annotation and click Delete.
Remove All	To delete all vessel names.
Up	To move a frequently-used vessel name up in the list, select the annotation and click Up.
Down	To move an infrequently-used vessel name down in the list, select the annotation and click Down.

- When you are done changing the Label settings, click **Save**.

Background Image Streaming

Background Image Streaming has two modes:

- LAN
- WAN

It has settings for prefetch entire study and interactive prefetch.

Data Manager Tab Settings

Define the default first tab displayed when a study is selected:

- System settings: the settings defined for all users as set by the System Administrator.
- Default settings:
 - If the study contains reports, the Report tab will be shown first, otherwise
 - If the study contains snapshots, the Snapshot tab will be shown first, otherwise

- If the Application tab is available, the Application tab will be shown first, otherwise
- The Series tab will be shown first in all other cases.
- Custom settings:
 - Select the tab to display first.
 - Application tab
 - Series tab
 - Snapshot tab
 - Report tab
 - If, for a particular study, the preferred tab is empty, the Series tab will be shown.
 - Unless Snapshot tab is the preferred tab, the Snapshot tab will not populate until you select it.

Application Tab Settings

Enable or disable the Application Tab.

Output Settings

Enable or disable the option to save Windows files.

Report Tab Settings

Enable or disable the Report tab.

Export and Import Setting

Enable or disable DICOM Export, Import Media, and Save Media.

Local Settings

Background Image Streaming

To enable disc cache (saving images to your local hard drive in advance of viewing), check the Enable disc cache box and enter a Disc Cache Size (default: 200 MB).

When you are done changing the background image streaming settings, click **Save**.

NOTE: If you cannot check the Enable disc cache box, contact your system administrator.

Network Speed

Testing Network Speed

To achieve optimal performance with VitreaCore, the network you are transferring files on must be running at a minimum speed. High network traffic or other factors affect system performance. You can test the speed of your network connection at any time by checking it with the Ping Data Size option in User Preferences.

NOTE: The performance you experience with VitreaCore depends greatly on the speed of the network. For optimal performance, make sure your network is running within the acceptable network speed range.

- For on-site access, 10/100M Base T network
- Acceptable 100M Base T network Speed Range: 5000-12000 KB/sec
- For off-site access, >1.0M bps bandwidth

1. Click  .

The User Preferences dialog box displays.

2. In the left pane, click **Diagnostic Tools**.

In the right pane, the Ping box displays

3. Enter a data packet size between 16 and 6144 and click Ping.

The system checks the network speed five times.

4. Make sure three or more network speeds fall within the acceptable range. You should experience optimal system performance. If your

system still seems slow, contact your System Administrator or Vital Images.

5. If fewer than three network speeds fall within the acceptable range, your network infrastructure may be the cause of the slow performance. Contact your System Administrator.

Appendix II

Error Messages

All of the available 3D rendering sessions are currently in use.

Typically indicates that the image server(s) are busy processing user requests for 3D images. Wait and try again later.

Cannot connect to server.

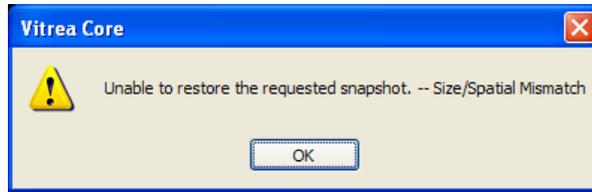
Your VitreaCore client could not establish a connection to the VitreaCore image server. This could be due to a number of reasons, such as a local PC network connection failure, a general network failure, server failure, power outage, etc. Contact your I.T. or network administrator for possible issues.

Not enough memory to load volume.

Indicates that either the image server is busy processing user requests, or that your image volume is too large to be processed. Wait and try again, or, if the volume is too large, try reconstructing it.

Snapshot Restore Troubleshooting

If you receive the dialog shown below, refer to the list of causes and resolution suggestions after the screen.

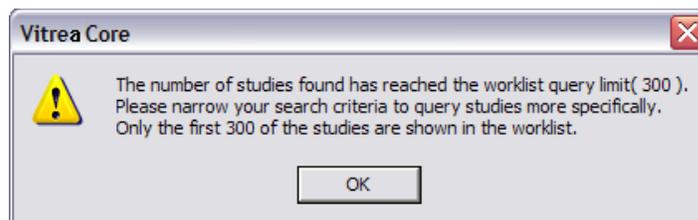


Cause	Suggestion
Missing or additional DICOM slices.	The snapshot is not restorable.
The volume build configuration has changed resulting in different interpolation settings being used.	Contact your administrator. The dataset has to be re-pushed to VIMS.
Other VIMS configuration changes.	Contact your administrator.

Volume load failed.

Indicates that there may be a problem with the dataset. Contact the administrator.

Worklist Query Limit



Indicates that there are more studies on the server than your system is configured to retrieve. You can:

- Limit your Study Directory results, if you are looking for a specific study
- Change the Maximum worklist items setting in the User Preferences | Study Directory dialog box.

Distribute Findings

Contents

- Distribute Findings Overview
- The Report Window

Distribute Findings Overview

VitreaCore saves snapshots, batches, and movies you create to the Report window. On the Report window:

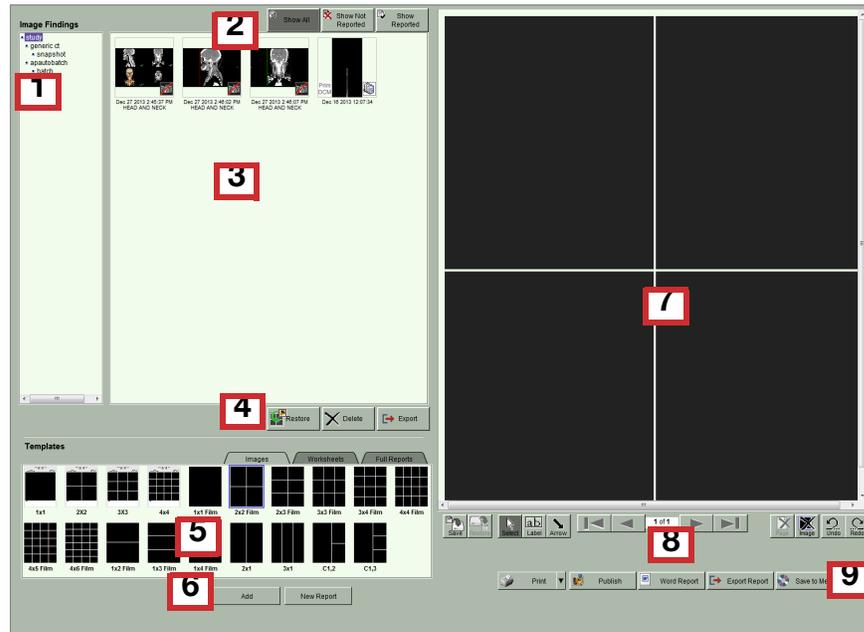
- Create, export, print, or publish/post reports containing up to 24 patient images per page.
- Use protocol-specific templates with editable text fields.
- Add image batches and digital movies.
- Add arrows, annotations, and comments to the report.
- Use snapshots to restore a previous workflow to the Viewer window.
- Save the snapshots or batches to any networked DICOM device or PACS.

Access the features below from the Report window:

- A Findings list, which allows you to filter the entire list of snapshots to review and select based upon workflow,
- A set of protocol-specific report templates including text pages with selectable and editable text fields,
- Tools for selecting snapshots, working with snapshots, adding pages to the report, and working with reports.

The Report Window

Vitreacore saves snapshots, batches, and movies you create to the Report window. From here, create and distribute reports.



Callout Number	Description
1	Findings list
2	Filtering buttons
3	Findings tray
4	Findings management buttons
5	Templates layouts
6	Report management buttons
7	Report page
8	Report tools and navigation buttons
9	Report distribution buttons

Findings List

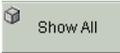
Click a line in the Findings list to filter snapshots, batches, and movies that display in the Tray.



Filtering Buttons



Use the snapshot filtering buttons to display snapshot currently in or not currently in the report.

Click:	To:
	Display all snapshot, batch, and movie thumbnails for the patient study.
	Display only snapshots, batches, or movies not currently included in the report.
	Display only snapshots, batches, or movies currently included in the report.

Findings Tray

Displays thumbnail images of snapshots, batches, and movies.

1. To select a finding, click the thumbnail image.

TIP: To select more than one finding, press CTRL and click the thumbnail images.



NOTE: Findings with  in the lower-right corner are not restorable into VitreaAdvanced.

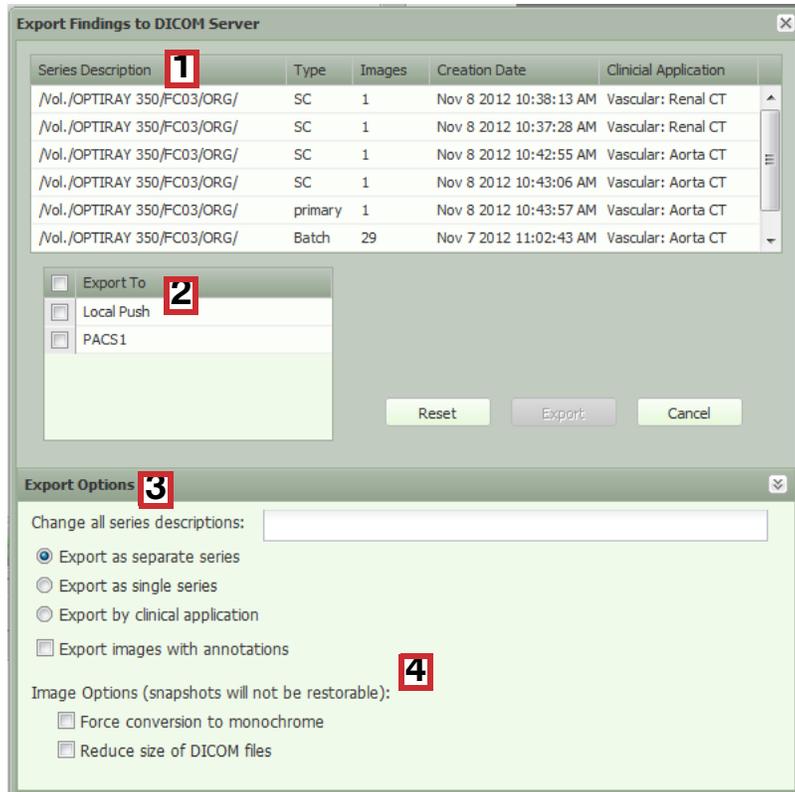
2. Double-click the snapshot to preview a larger image of a finding.
3. To preview a movie, double-click the movie thumbnail, or click the Movie link.
4. To review a batch of images, double-click the batch thumbnail then right-click and drag on the image.

Findings Management Buttons



Use the Findings Management buttons to distribute findings.

Click:	To:
	Restore a workflow back to the Viewer window. The snapshot workflow will be restored.
NOTE: Findings with  in the lower-right corner are not restorable into VitreaAdvanced.	
	Delete the selected snapshot, batch, or movie.
	Export the selected snapshot or batch to destination.



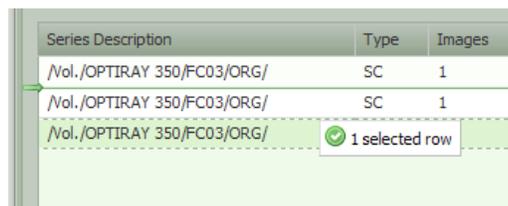
Callout Description

1

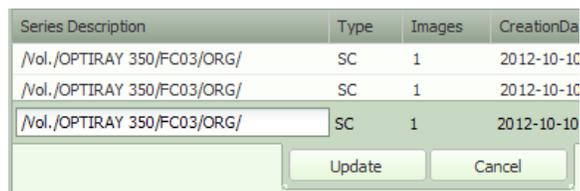
Series List: a list of the selected findings and the associated series information. Findings are listed in order of how they were selected.

TIP: Click a header to sort the list by that field.

To change the order of the series to be exported, select a series description and drag it up or down.



To rename the series description, double-click a series name and enter a new description. Click **Update** when finished.



Callout	Description
2	<p>The Export to: box displays a multi-selection list of export destination servers.</p> <p>Select the check box for the appropriate destination(s).</p> <p>Select the check box in the header to select all destinations listed.</p>
3	<p>Export Options:</p> <p>TIP: To display the full panel of Export Options, click  on the right side of the Export Options title bar.</p> <p>Change all series descriptions — modify the series descriptions for all series in the series list. This may be left blank.</p> <p>Export as a separate series — export selected snapshots and batches in the Series List as separate item(s). This does not modify the series grouping. This is the default option.</p> <p>Export as a single series — export all selected snapshots and batches as a single group with the same series ID.</p> <p>Export by clinical application — export each selected snapshot image or batch grouped by protocol used to create the snapshot/batch. Each group is a single series with the same series ID.</p> <p>For example: all findings created with the Vascular: Renal CT protocol are grouped in a single series and all findings created with the Vascular: Aorta CT protocol are grouped in another series.</p> <p>Export Images with annotations — exports images with annotations (rulers, angles, arrows, labels, etc.) included. This is applied to all evidence and makes the snapshots secondary capture. The snapshots are restorable.</p>

Callout	Description
4	<p>Image Options:</p> <p>NOTE: Snapshots exported with either of these options selected are not restorable.</p> <p>Force conversion to monochrome — converts snapshots and batches to grayscale monochrome.</p> <p>Reduce size of DICOM files — removes private tags and reduces the size of the files.</p>

Restoring Saved Images and Workflows (into VitreaAdvanced Viewer window only)

From the Report window, restore a snapshot for the currently loaded volume to the VitreaAdvanced Viewer window.

NOTE: Snapshots are not restorable into the VitreaCore Viewer window.

When you restore a saved image to the VitreaAdvanced Viewer window, the “workflow” is also restored. The workflow includes images of the patient volume and the state of the Viewer window at the time the image was saved, including:

- Selected protocol and preset
- Visual settings at the time you took the snapshot
- Viewer window format
- 3D or MPR mode(s)
- Any labels, rulers, and arrows
- Any segmentation or calcium scoring results

NOTE: Findings with  in the lower-right corner are not restorable into VitreaAdvanced. These include snapshots taken in the VitreaCore Viewer window.

NOTE: Batches and movies are not restorable.

NOTE: In order to restore a snapshot saved using a licensed option, a license for that option must be available.

NOTE: Restore workflows from snapshots saved for the currently loaded volume only. If you try to restore a snapshot from a volume that is not currently loaded, you will be prompted to load the volume first.

Findings Management Right-Click Menu

Use the right-click menu to perform various tasks.



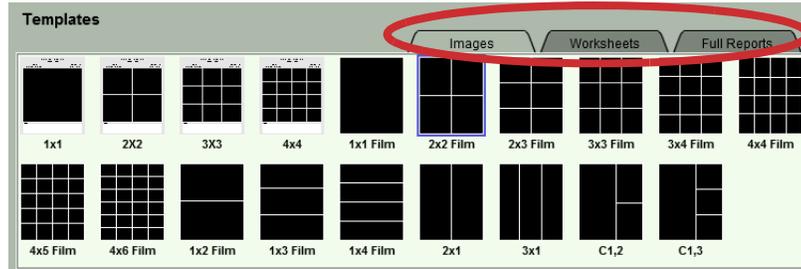
Select:	To:
Add All	Select Add All to automatically place all snapshots at the end of your report, or press CTRL and click to select snapshots and drag to the report template.
Select All	Select all of the snapshots, batches, and movies in the Findings tray.
Delete	Delete the selected snapshot, batch, or movie.
Export	Export snapshots to DICOM.
Preview	View the selected snapshot, batch, or movie.
Restore	Restore a workflow to the Viewer window state to when the snapshot was taken.
Series Description	Modify the series description.



Template Layouts

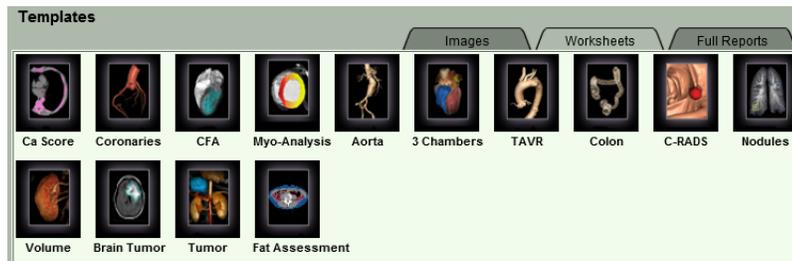
Select a tab to display the different template types: Images, Worksheets, Full Reports. Use the Templates area to select general and protocol-specific report templates.

Select the Images tab to select a layout for the images.

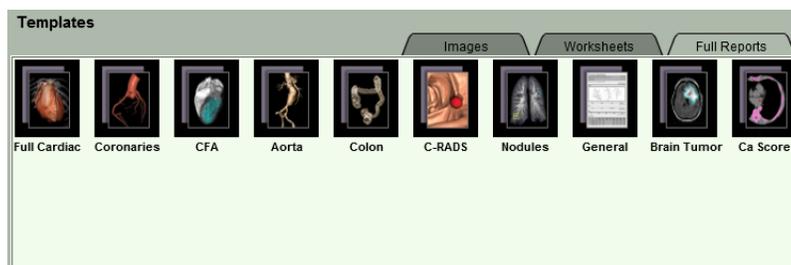


Select the Worksheets tab to select a worksheet template. The worksheets are a one-page report.

TIP: Select the worksheet template that is appropriate for the study you are working on.

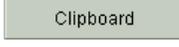


Select the **Full Reports** tab to select a specific report template.



Template Buttons

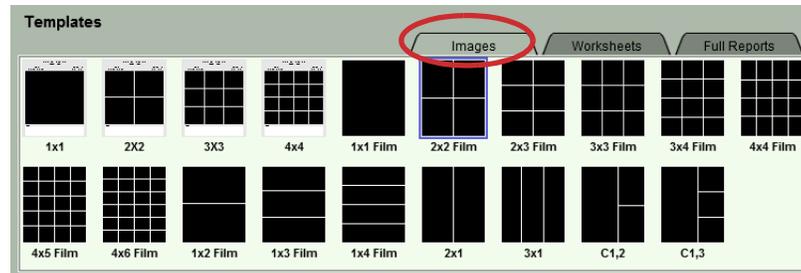
Use the Template buttons to change or add pages to the report.

Click:	To:
	Add a new page of the selected template to the end of the report.
	Replace the current report page with the selected template/layout.
	Copy the contents of the Report template to the Windows clipboard. Paste the contents into a Word document or another text program (email, 3rd party reporting application).
NOTE: Microsoft Word must be installed in order to paste the contents into a Word document.	
Right-click and select 	Create a new report, insert a new page of the selected template before or after the report page displayed, or append a page.

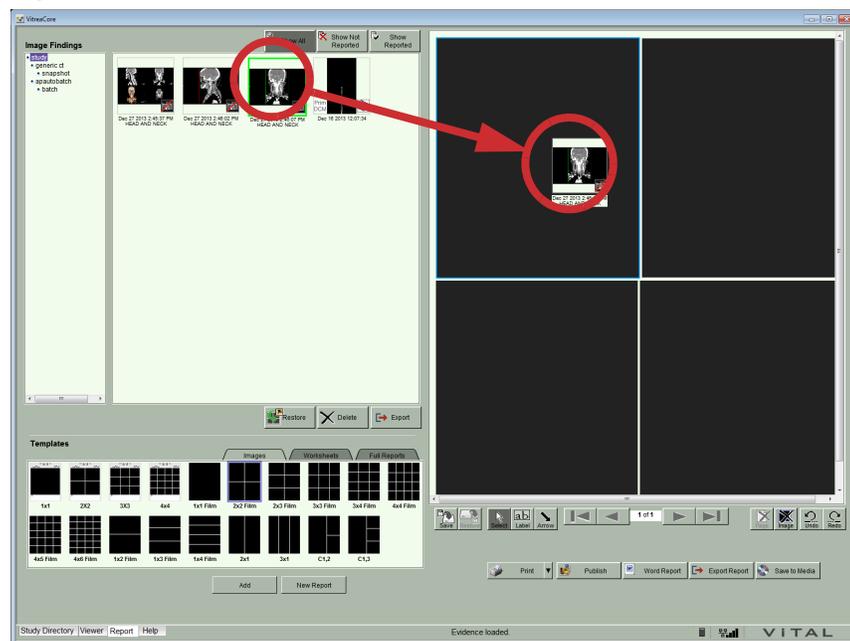
Create the Report

Create the report on the Report window.

1. In the Templates section, select the Images tab.



2. Select a template and click **Add**.
3. To add snapshots, batches, or movies, drag the thumbnail to an image area of the report.



TIP: To replace an image in one of the frames, drag and drop a different thumbnail on top of it.

NOTE: When you place an image in a frame, be sure that the margins do not cut off important information such as anatomy or measurements.

4. To add text areas to the report, click the ab label  and type new text and press Enter.
5. To edit text areas on the report, click any text with a rectangle, then type new text.

Report Tools



Use the Report Tools buttons to save, restore, or mark-up a report.



Click:	To:
	Save a draft of the report.
	Restore a saved draft report.
	Select a report pane.
	Add a label to a report pane. TIP: To edit a label, click it, then click the text box. TIP: To delete a label, click it, then press DEL.
	Add an arrow to a report pane. TIP: To delete an arrow, click it TIP: When you hover over the arrow, it turns yellow.
	Delete the current report page.
	Delete the selected image from the report page.
	Undo the last action.
	Redo the last undone action.

Save and Restore a Draft Report

1. Click  to save the current findings as a draft report.
2. Click  to restore a report for viewing or to add new findings.
3. To add new findings to a saved report, restore the report in the Report tab. Use the Viewer tab to create new findings.

TIP: Restore a report before adding new findings. If restoring a workflow from a snapshot, both the workflow snapshot and the report need to be restored.

Report Navigation



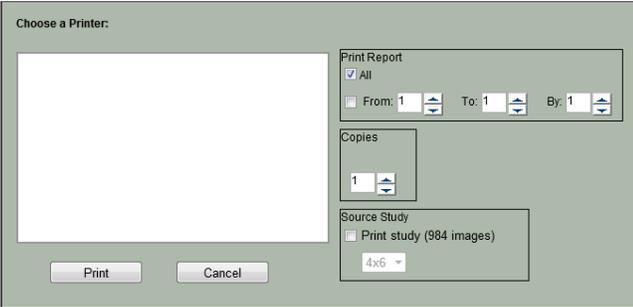
Use the Report Navigation buttons to navigate between pages of a report.

Click:	To:
	Jump to first or last report page.
	
	Jump to previous or next report page.
	

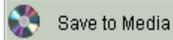
Report Distribution



Use the Report Distribution buttons to distribute the report.

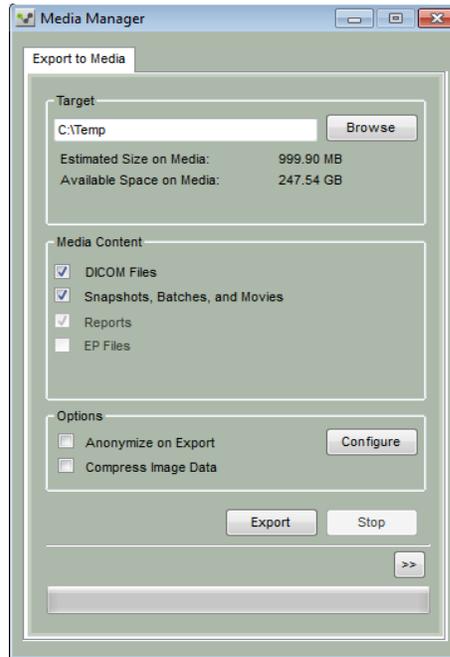
Click	To
	Print a paper report for distribution. TIP: Use the Preferences button on the Print dialog box to set the orientation to landscape if desired (for example, templates C1,2 and C1,3 may print better in landscape orientation).
	Print the report to a DICOM printer. 
	Post the report to PACS.
	Create a Microsoft Word version. TIP: This is useful if you want to share the report with a non-VitreaCore user. NOTE: Microsoft Word must be installed in order to create a Microsoft Word version.
	Export the report to a DICOM server.

Click To

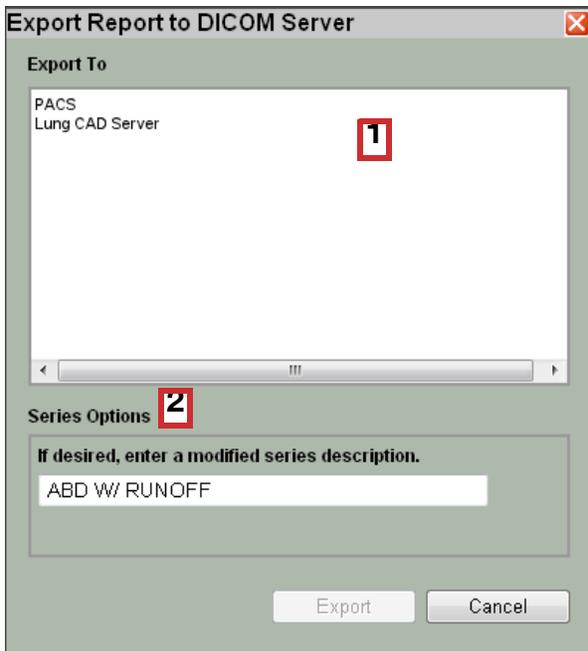


Save the report to media using the Media Manager.

NOTE: Media Manager is available from the Study Directory.



Export to DICOM Servers

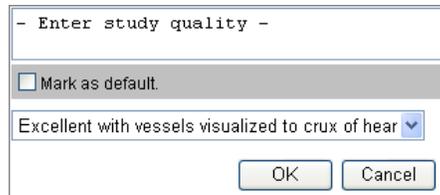


#	Description
1	The Export to: box displays a multi-selection list of desired export destination servers.
2	Series Options: Series Description - Enter text in this field to apply it as the series description for all selected snapshot/batches upon export.

Customized Templates

Customize the text areas on the report templates.

1. Click a heading or text area enclosed by a box.



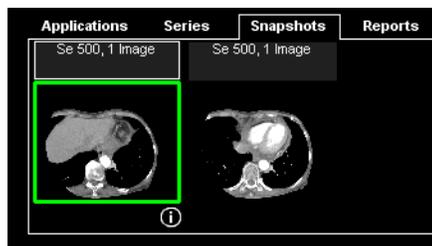
A dialog box for editing report templates. It features a text input field at the top containing the placeholder text "- Enter study quality -". Below this is a checkbox labeled "Mark as default". Underneath the checkbox is a dropdown menu currently displaying "Excellent with vessels visualized to crux of hear". At the bottom of the dialog are two buttons: "OK" and "Cancel".

2. Enter the new text.
3. Click outside the box.

Send Images to PACS or Other Server from the Study Directory

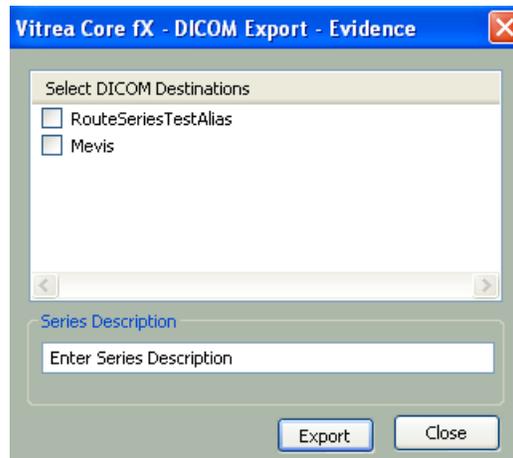
To send an image to a PACS or other server:

1. Select the Data Manager tab. If you have taken snapshots, they are saved on the Snapshots tray.
2. Select the Snapshots tab.



3. Right-click on the thumbnail image.
4. Click DICOM Export.

The VitreaCore - DICOM Export - Evidence dialog box displays.



5. Select the desired destination server from the list.
6. Click Export.

Auto Export Findings

Auto export your DICOM findings back to PACS.

1. After you create your findings (snapshots or batches) and close the study (or select the Study Directory tab), the Auto Export Dialog displays.

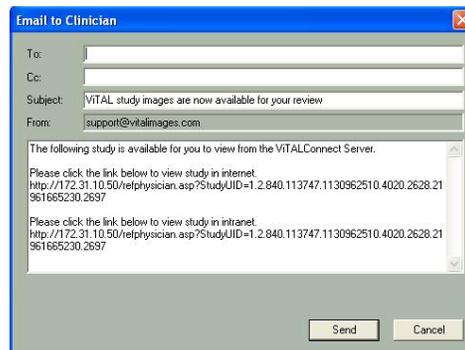


2. Use the Group dropdown to select the location where you want to export the findings.
3. Choose to **Export Selected** or **Export All** snapshots or batches.

Email to Clinician

This option, accessible from the Study Directory, allows you to send an email to a physician that includes a link to a selected study.

1. Right-click the desired Study in the Study Directory.
2. Select **Email to Clinician** to display the Email to Clinician screen.



The following study is available for you to view from the VITALConnect Server.

Please click the link below to view study in internet.
<http://172.31.10.50/relphysician.asp?StudyUID=1.2.840.113747.1130962510.4020.2628.21951665230.2897>

Please click the link below to view study in intranet.
<http://172.31.10.50/relphysician.asp?StudyUID=1.2.840.113747.1130962510.4020.2628.21951665230.2897>

3. Enter the clinician's email address and any additional comments, and click Send.

Bone and Spine

Contents

- I Select Study
- II Choose Protocol and Preset
- III Perform Analysis
 - Use 3D Trim
 - Sculpt in 3D
 - Perform a Manual Curved Reformat
 - Spine Labeling
 - Use Cobb Angles
 - Take Snapshots
- IV Distribute Findings

Bone and Spine Overview

Complete the procedures within this module to analyze and review suspected bone fractures and perform measurements.

Bone and Spine Lesson

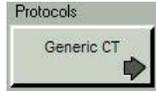
I. Select Study

Follow the instructions in the Select Study Chapter to load a musculoskeletal study.

II. Choose Protocol and Preset

VitreaCore skips this step. No action is required.

1. If the Musculoskeletal protocol is not selected, click the Protocols

dropdown menu  on the Visual tab.

2. Select the **Musculoskeletal** CT protocol.

III. Perform Analysis

Use 3D Trim

Trim lines display as rectangular boxes in all three MPR viewports, and are color coded to the respective view:

- Sagittal: Blue
- Coronal: Green
- Axial: Red

Resize the trimmed region in one or more of the MPR viewports by dragging the lines in any Tool mode (WinLev, Crosshair, Snap, Ruler, Label, Sculpt).

All data outside the trim box is excluded. The 3D viewport (MIP/Volume Rendering) displays the new 3D image, including only the anatomy within the box.

1. Float the cursor over the trim line in the axial, sagittal, or coronal plane (or multiple planes) until the cursor changes to dual arrows.
2. Drag the edge of the trim box to eliminate the anatomy you do not want to see in the 3D image.
3. Repeat this procedure as needed, in any of the orthogonal views, until you have isolated the desired anatomy.

Sculpt in 3D

1. Click  .

The cursor changes shape to indicate Sculpt mode.

2. In the 3D viewport, click and hold, and drag to draw a freehand border.
3. After creating the contour line, Keep and Remove buttons display



. Perform one of the following:

- To eliminate the anatomy inside the border you drew, click **Remove**.
- To eliminate the anatomy outside the border you drew (and isolate the Anatomy inside the border), click **Keep**.

The sculpted 3D object displays in the original 3D viewport.

4. To display the results of the sculpting in an MPR view, select the Show Segmentation check box in the Visual tab.

 See the Additional Procedures section for information on Manual Sculpt.

Perform a Manual Curved Reformat

In Curved MPR mode , use one of the MPR views to define a curve, so the curved images display in one of the other MPR views. This is useful if you want to create an MPR image of a curved spine. In Curved MPR mode, each of the three MPR views serves a unique purpose.

- Choose one view, called the Reference view, to define the curve. Change one of the crosshairs to follow along the curve of the spine.
- Use the Curved view to display the curved images.
- Use the Transverse view, perpendicular to the Curved view, to display cross-sectional views with a blue box at the point where the curve intersects the view.

To use Manual Curved Reformat:

1. Click  .
- 2 Choose one view (Reference) to define a curve.
- 3 In the Reference view, switch to the Curved MPR mode  located in the lower right corner of the screen.
- 4 Click on the box at either end of the plane you will use to create the curve, e.g. blue box for a sagittal image.

A yellow line displays in the coronal image and the empty boxes become solid to represent the active line.

- 5 Plot points along the area of interest:
 - In the Reference view, click in the curve plane and drag it to follow the curved feature. An “X” is deposited on the line at each point you click. To move through the dataset, right-click and drag to fine tune the placement.
 - In the Transverse view, click and drag the blue box (centerline) to the desired location. This line is now the Curved line.
 - The yellow line in the Curved view is the Centerline.
 - The line intersecting the Centerline is the Transverse line. This line is displayed in both Reference and Curved views.
 - The view corresponding to the Transverse line is now labeled *Transverse* in lower right corner.

- 6 When you reach the end of the curved area of interest, click and drag the other end of the crosshair to the end of the curve. The cursor automatically changes to the oblique rotate tool icon, allowing you to rotate the image around the centerline.

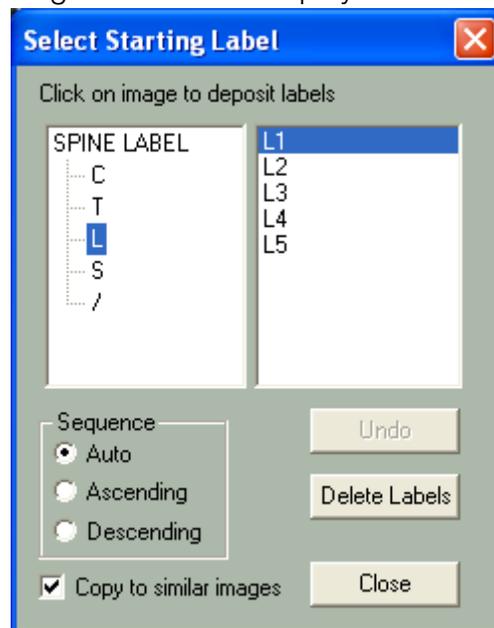
Spine Labeling

Use the Label button to place labels on the vertebrae using the semi-automatic spine labeling tool.

1. Click the Label button  and select Spine Labeling from the dropdown menu.

The Label button changes to the Spine button .

The Select Starting Label screen displays.



2. Click one of the characters to enter the following types of spine labels:
 - C – for cervical vertebrae
 - T – for thoracic vertebrae
 - L – for lumbar vertebrae
 - S – for sacral vertebrae
 - / - for specifying disk spaces such as C7/T1 and T12/L1.

3. As you click in the image, the labels are numbered consecutively as you enter more labels.
 - a. Specify an Auto, Ascending, or Descending auto-number order by selecting the corresponding radio button.
 - b. The Copy to similar images check box copies the labels to similar spine images displayed in the viewport (for instance, if you specify an Image Layout greater than 1x1, the labels are copied to all images displayed in the layout, allowing you to compare a range of labeled slices).

Use Cobb Angles

Measure a Cobb angle by drawing two line segments. The line segments do not need to intersect. The software calculates the angle that would exist between them if they were extended far enough to intersect.

To add a Cobb angle:

1. Click the arrow of a measurement tool button (for example,

Ruler)  , then select .

2. Click on one side of the disk or vertebrae of interest. Click again on the other side.
3. Repeat step 2 on a comparative disk or vertebrae.

VitreaCore draws a line perpendicular to the beginning point of the first line segment and a second line perpendicular to the beginning point of the second line segment, then calculates the angle between the two lines.

The Cobb Angle measurement displays in a text box in the lower right hand corner of the viewport.

To move a Cobb angle measurement:

- a. Float the cursor over the line segment until the cursor changes to a four-way arrow.
- b. Click and drag the measurement to the desired location.

Take Snapshots

1. Click  to activate the camera.



2. Move cursor to image.
3. Click  to take pictures to save to the server.

Snapshots which include measurements, rulers, W/L, or segmentation options viewed from the Snapshots tab located in the Data Manager tab at the bottom of the screen.

4. To hide the patient information, clear the Patient Info check box in the View Options area at the top of the screen. Select the check box to show the patient information.

IV. Distribute Findings

The snapshots you save in the Viewer window are saved to the Report window.

1. Click  at the bottom of the window.
2. Follow the instructions in the Distribute Findings chapter to distribute your findings.

Additional Procedures

Manual Sculpt

1. Click  .
2. Click  in the lower left corner of the Viewer window to 1-up the axial MPR.
3. Scroll to one end of the anatomy.
4. Draw contour lines around the anatomy you would like to include.

TIP: Scroll and draw a contour everywhere the anatomy changes size, shape, or location.

5. After drawing contours, select **Keep** or **Remove**.



TIP: When the Show Preview box is selected, it shows a preview in the 3D image.

6. Click  in the lower left corner of the Viewer window to return to the previous window.

Oblique MPR Mode

In Oblique MPR mode, change orientation of the MPR views by rotating the crosshairs in one or two of the MPR views.

1. Right-click in the view, then click  .
2. In one of the MPR views, position the cursor over one of the crosshairs  .

TIP: This view remains in Orthogonal mode, and the other two views display images at oblique angles.

3. Drag the crosshair in the view while watching the other views.

TIP: As you drag, the crosshairs rotate around their intersection point, staying perpendicular to each other.

TIP: Rotate crosshairs in more than one view.

TIP: To move the crosshair intersection point, click the spot where you want the crosshair to intersect.

4. To “walk” a vessel,  click and drag in the view.

TIP: The center of the crosshairs act as a fulcrum point.

Use Double Oblique Rotation

Double Oblique Rotation allows you to rotate two planes such as coronal and axial, or sagittal and axial, and by clicking and dragging on the desired planes.

To use Double Oblique Rotation:

1. Select Oblique mode .
2. Select and position the crosshair.
The center of the crosshair acts as a fulcrum point.
3. With the cursor in one of the MPR views, press CTRL.
The cursor changes to the oblique rotate tool .
4. Click and drag to rotate the image.
5. Rotate inferior/superior and left/right at the same time.

Aorta

Contents

- I Select Study
- II Choose Protocol and Preset
- III Perform Analysis
 - Segment the Aorta
 - Probe Vessels
 - Edit the Vessel Centerline
 - Use the Object Management List
 - Take Snapshots
- IV Distribute Findings

Aorta Overview

The aorta, along with many other vessels and structures connected to it, can be segmented from bone and other anatomy to make it easier to view suspected aneurysms, stenosis, and other features.

Aorta Lesson

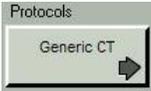
I. Select Study

Follow the instructions in the Select Study Chapter to load a vascular aorta study.

II. Choose Protocol and Preset

VitreaCore skips this step. No action is required.

1. If the Vascular: Aorta CT protocol is not selected, click the Protocols

dropdown menu  on the Visual tab.

2. Select the **Vascular:** Aorta CT protocol.

III. Perform Analysis

Segment the Aorta

Use point-and-click segmentation to keep or remove segments of bone or other visibly distinct segments such as soft tissue, stents or metal plates, or even the scanner table.

1. From the Segment Objects area, select Vessel.

2. Verify  is selected.



3. Click on the aorta in the 3D or 2D image.

NOTE: Contiguous soft tissue anatomy is included automatically.

4. Select Less, More, or Fragn. as needed.

 See the Additional Procedures section for information on sculpting the aorta, segmenting the bone only, and removing fragments.

NOTE: Modify the upper and lower HU (Hounsfield Unit) values.

Probe Vessels

After you set up the Viewer window to best visualize the vessel you want to probe, use the Select button to probe the vessel.

1. Locate the vessel you want to probe in the MPR or 3D view.

2. On the Analysis tab, click .

The cursor changes to a pointing finger.

3. Click the vessel in the MPR or 3D view.

Two CPR views and one cross-sectional view (or multiple cross-sectional views in 1-up format) display.

NOTE: Multiple cross-sectional views display only if you switch to the 1-up Viewer Window format.

- a. Click  to try again, then repeat step 3.
- b. To probe another vessel, repeat this procedure.
- c. To rename a vessel, see Use the Object Management List.

Edit the Vessel Centerline

If you use Vessel Probe to probe a vessel, manually fine-tune the centerline if needed.

1. Click the  button.

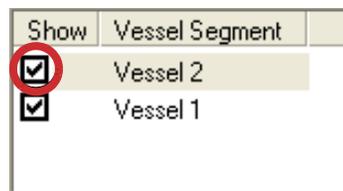
NOTE: The MPR views switch to Curved Reference  mode and display the probed vessel centerline.

2. Edit the centerline as needed:
 - a. In the Reference view, click and drag the desired centerline to the desired position. Grab the desired boxes or create a new one by clicking and dragging the centerline.
 - b. In the Curved view, use the Oblique Rotate  tool to rotate around the centerline. Adjust the yellow centerline as needed.
 - c. In the Transverse view, a cross-section of the vessel displays, and the centerline is marked as a blue box. Drag and adjust the box as needed.
 - d. Scroll through the MPRs to gain contrast and follow the vessel.
 - e. One-up  any of the MPRs for a closer view.
3. When finished editing, click the  button.

Use the Object Management List

As you probe vessels, each new vessel segment is added as a line in the Object Management list. Vitrea automatically assigns each vessel segment a sequential number.

- a. In the Object Management list, switch active vessels, rename vessels, and delete vessels.
- b. Use the **Show** boxes to determine which probed vessels are visible.

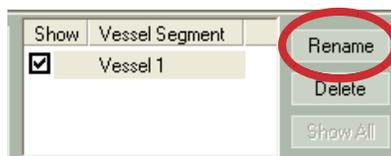


1. To switch active vessels:
 - a. Click a vessel name in the Object Management list (select a vessel that is not grayed out).

The views update to display the new active vessel.

OR

- b. With a Vessel Probe tool selected, press SPACEBAR to scroll through the vessels in the Object Management list.
 2. To rename a vessel:
 - a. With the vessel you want to name selected, click **Rename**.



The rename dialog box displays.

- b. In the **New name** field, enter the name for the vessel.

EXAMPLE Left Iliac, Right Iliac

- c. Click **OK**.

NOTE: Vessels cannot have duplicate names.

3. To delete a vessel from the Object Management list:
 - a. Select the vessel in the Vessel Segment column.
 - b. Click **Delete**.
4. To change the vessels displayed in the viewers:
 - a. To display one vessel, clear the **Show** box for all other vessels.
 - b. To display all vessels you have probed, click **Show All**.

NOTE: The **Show** boxes only affect which vessels display if you have selected an option on the Vessels tab in the Visibility Options area.

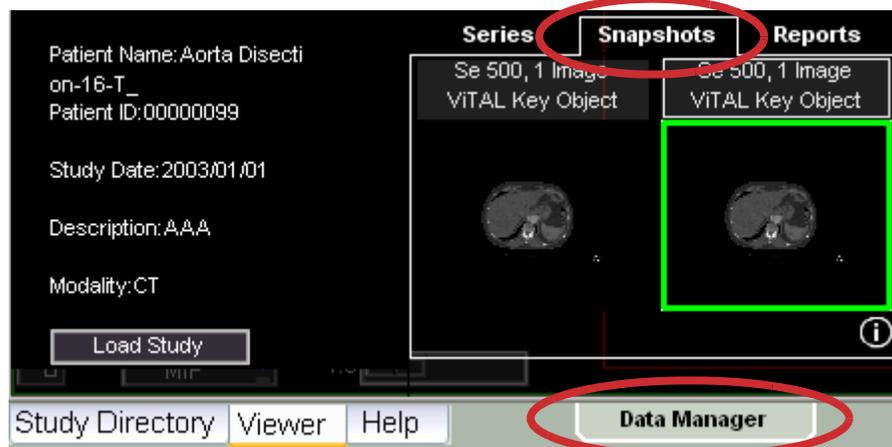
- a. To display one vessel, clear the **Show** box for all other vessels.
 - b. To display all vessels you have probed, click **Show All**.

Take Snapshots

1. Click  to activate the camera.
2. Move cursor to image.
3. Click  to take pictures to save to the server.



NOTE: Snapshots taken in the Advanced Viewer are viewed from the Snapshots tab located in the Data Manager tab at the bottom of the screen.



4. To hide the patient information, select the Visual tab. Clear the Patient Info check box in the View Options area at the top of the screen. Select the check box to show the patient information.

IV. Distribute Findings

The snapshots you save in the Viewer window are saved to the Report window.

1. Click **Report** at the bottom of the window.
2. Follow the instructions in the Distribute Findings chapter to distribute your findings.

Additional Procedures

Use the 3D MIP

This procedure allows you to assist in viewing calcifications.

1. Click on the 3D image.
2. Click  dropdown menu and select MIP.
3. To render the MPRs, select options from the  dropdown menu and use the  slider bar to increase thickness to the desired level.
4. Review the MPRs.
5. Take a snapshot.

Manual Sculpt

1. Click .
2. Click  in the lower left corner of the Viewer window to 1-up the axial MPR.
3. Scroll to one end of the anatomy.
4. Draw contour lines around the anatomy to include.

TIP: Scroll and draw a contour everywhere the anatomy changes size, shape, or location.

5. When you are finished drawing contours, select **Keep** or **Remove**.



TIP: When the Show Preview box is selected, it shows a preview in the 3D image.

- Click  in the lower left corner of the Viewer window to return to the previous window.

Sculpt in 3D

- Click  .

The cursor changes shape to indicate Sculpt mode.

- In the 3D viewport, click and hold, drag to draw a freehand border.
- When you are done creating the contour line, Keep and Remove

buttons display  . Perform one of the following:

- To eliminate the anatomy inside the border you drew, click **Remove**.
- To eliminate the anatomy outside the border you drew (and isolate the Anatomy inside the border), click **Keep**.

The sculpted 3D object displays in the original 3D viewport.

- To display the results of the sculpting in an MPR view, select the Show Segmentation checkbox in the Visual tab.
- If necessary, repeat steps 2 and 3 above to sculpt the 3D image again.

Exclude Bone

Use segmentation for keeping or removing segments of bone or other visibly distinct segments.

- From the Pick Segmentation area, select Bone.



- Click on the bone in the image.
- Select Less, More or Fragn. as needed.

Remove Fragments

1. Click  .

This removes all visibly distinct regions that are smaller than the number of cubic centimeters listed in the Segment Objects area.

To edit the results:

- Change the cubic centimeters threshold in the text box,

TIP: Type a lower number to remove smaller fragments, and type a higher number to remove larger fragments.



- Use the up and down arrows, or
- Use the Less/More buttons.

2. Use window/level to further separate the structures to remove.

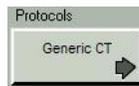
Choose Protocol and Preset for Renal Artery

Use the Vessel Probe option to segment and evaluate contrast-filled renal arteries. Probe the renal arteries to investigate them.

VitreaCore skips this step. No action is required.

1. If the Vascular: Renal CT protocol is not selected, click the Protocols

dropdown menu



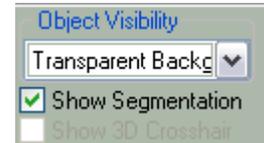
on the Visual tab.

2. Select the **Vascular: Renal** CT protocol.

Apply Object Visibility

1. After you select a vessel using Vessel Probe, Vitrea segments the anatomy and creates a Curved Planar Reformation (CPR). These images are located in the 3D image frame in the two vertical boxes.
2. Change Object Visibility to the desired setting.

- Select one of these options from the Object Visibility dropdown menu:



- To remove everything except the probed vessel(s) from view, select Vessels Only.
- To display the probed vessels shaded in red, select Tinted Vessels.

TIP: Vitrea creates a 1mm cross-section orthogonal to the center line running through the CPR. This is the image located at the top of the CPR, in the blue box.

TIP: The bottom of the CPR contains two slider bars. The top one allows you to rotate the CPR by dragging it left or right. The lower bar allows you to add thickness to the CPR.

Perform Stenosis Measurement

1. Probe the vessel.
2. Scroll in the CPR views to display a point before the stenosis.
3. Click  .
4. Click and drag across the width of the lumen, then release the mouse button to end the ruler.

The ruler and the measurement (in millimeters) display in the cross-sectional and CPR views.

NOTE: Draw rulers and measure in any cross-sectional view. Place only one ruler per cross section.

NOTE: Draw only one ruler in each cross-sectional view or CPR view, but redraw it as many times as necessary.

Optional To delete a ruler from a CPR view, scroll or change the magnification.

- Scrolling or changing the magnification does not delete rulers from the cross-sectional views. Rulers drawn in the cross-sectional views remain in the CPR views. Rulers drawn on CPR

views delete automatically if you rotate the CPR views, modify the vessel boundaries, navigate along the vessel, or change magnification.



5. Adjust the crosshair position to display a point inside the stenosis.
6. Repeat step 4.

Vitreia displays the current maximum and minimum diameter measurements in green and red, respectively, in the curved reformat views. Any other measurements display in cyan (light blue).

Vitreia calculates the percentage of stenosis by comparing the maximum (normal) and minimum (stenosed) measurements. The

percentage and the formula used to calculate it display at the bottom of the right CPR view.

7. Repeat this procedure to draw as many rulers as you want.

The maximum diameter, minimum diameter, and percentage stenosis update with each ruler you draw.

Perform Automatic Curved Reformats

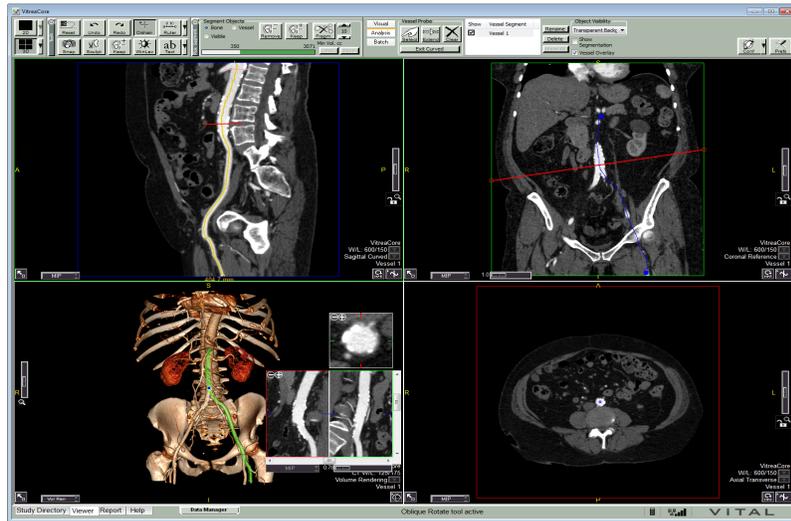
In performing curved reformats, choose one view, called the Reference view, to define the curve. By selecting the Reference view, change one of the crosshairs to follow along the curve of the vessel.

Using the Vessel Probe tools to perform an automatic curved reformat, probe the vessel, then select the Reference view. Vitrea automatically makes all of the same adjustments as in the manual curved reformat, and plots the centerline for you.

1. To perform an automatic curved reformat:
 - a. Probe the vessel in a 3D or MPR view.
 - b. Choose a Reference MPR view by switching it from Orthogonal MPR to **Curved Reference** mode  .

NOTE: The view you choose for the Reference view should be roughly along the length of the vessel, or parallel to it.

In the Curved MPR view, Vitrea plots the **Centerline** and displays its length (mm).



- If necessary, adjust the centerline. In the Reference or Transverse MPR views, click and drag to move any of the automatically-plotted points to more closely trace the centerline.
- Use any of the methods described in Work with Crosshair Position Indicators to reposition the crosshairs.
- As you move the crosshair position indicator, the system updates the intersection of the Transverse line and Centerline in the Curved MPR view.



- To examine the Curved MPR view more closely, click **Maximize** .
- To change from 1-up format back to the original Viewer format, click **Minimize** .

Peripheral

Contents

- I Select Study
- II Choose Protocol and Preset
- III Perform Analysis
 - Trim Table on Axial View
 - Segment Objects
 - Remove Fragments
 - Probe the Peripheral Arteries
 - Take Snapshots
 - Take Additional Snapshots
 - Use 3D MIP Option
- IV Distribute Findings

Peripheral Overview

Probe left and right peripheral arteries and review them for possible plaque, stenosis, or aneurysm.

Peripheral Lesson

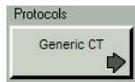
I. Select Study

Follow the instructions in the Select Study Chapter to load a peripheral vascular study.

II. Choose Protocol and Preset

VitreaCore skips this step. No action is required.

5. If the Vascular: Runoff CT protocol is not selected, click the Protocols

dropdown menu  on the Visual tab.

6. Select the **Vascular:** Runoff CT protocol.

III. Perform Analysis

Trim Table on Axial View

1. Move the mouse pointer over the line posterior to the body and drag anterior.
2. Click and drag anteriorly to remove the table in the 3D view.

Segment Objects

Use point-and-click segmentation to keep or remove segments of bone or other visibly distinct segments such as soft tissue, stents or metal plates, or even the scanner table.

1. Select Bone from the Segment Objects area.



TIP: Remove is automatically selected for you when Bone is selected.

2. Click on the image where you want to remove segments of the bone.

TIP: Click  to window level.

Remove Fragments

- Click .

This removes all visibly distinct regions smaller than the number of cubic centimeters listed in the Segment Objects area.

To edit the results:

- Change the cubic centimeters threshold in the text box,

TIP: Type a lower number to remove smaller fragments, and type a higher number to remove larger fragments.



- Use the Less/More buttons.

TIP: Use window/level to further separate the structures to remove.

Probe the Peripheral Arteries

1. Click  on the Analysis tab.
2. To probe the left peripheral artery:
 - a. Click the vessel in either the 3D or MPR image.

Optional Click  and click a point farther along the probed vessel.

b. Rename the vessel.

3. To probe the right peripheral artery:

a. Verify  is active.

b. Click the vessel in either the 3D or MPR image.

c. To extend the probed vessel, click  and click a point farther along the probed vessel.

d. Rename the vessel.

e. Apply Object Visibility to the desired setting.

- Select one of these options from the Object Visibility dropdown menu:



- To remove everything except the probed vessel(s) from view, select Vessels Only.
- To display the probed vessels shaded in red, select Tinted Vessels.
- To better visualize the vessels and related anatomical reference points, select Semi-Transparent Background.

 See the Additional Procedures section of this module for further information about Vessel Probe.

Take Snapshots

1. Click  to activate the camera.



2. Move cursor to image.

3. Click  to take pictures to save to the server.

Snapshots which include measurements, rulers, W/L, or segmentation options are viewed from the Snapshots tab located in the Data Manager tab at the bottom of the screen.

4. To hide the patient information, select the Visual tab. Clear the Patient Info check box in the View Options area at the top of the screen. Select the box to show the patient information.

Take Additional Snapshots

1. Rename individual sections of the peripheral artery.
2. Probe the peripheral artery:
 - a. Locate the common femoral, popliteal, anterior tibial, and posterior tibial.
 - b. Center the vessel in the CPR.
 - c. Rename the vessel in each section.
 - d. Center the image in the CPR view.
 - e. Take a snapshot.



See the Additional Procedures section of this module for information on performing a curved reference, editing a centerline, vessel probe layout, and performing stenosis measurement.

Use 3D MIP Option

Use this procedure to assist in viewing calcifications.

1. Click on the 3D image.
2. Select VesselsOnly from the Object Visibility dropdown menu.
3. Click  dropdown menu and select MIP.
4. To render the MPRs, select options from the  dropdown menu and use the  slider bar to increase thickness to the desired level.
5. Review the MPRs.

6. Take a snapshot.

IV. Distribute Findings

The snapshots you save in the Viewer window are saved to the Report window.

1. Click  at the bottom of the window.
2. Follow the instructions in the Distribute Findings chapter to distribute your findings.

Additional Procedures

Perform a Curved Reference

This protocol is useful for Peripheral Artery viewing and analysis.

1. After the vessel is probed, select the image in MPR view (axial, coronal, or sagittal).
2. Choose a Reference MPR view by switching it from Orthogonal MPR  to Curved Reference mode .
3. The Curved Reference image will have a yellow centerline in it.

TIP: Click and drag to rotate the curved reference image.

Probe Vessels

After you set up the Viewer window to best visualize the vessel you want to probe, use the Select button to probe the vessel.

1. Locate the vessel you want to probe in the MPR or 3D view.

2. On the Analysis tab, click  .

The cursor changes to a pointing finger.

3. Click the vessel in the MPR or 3D view.

Two CPR views and one cross-sectional view (or multiple cross-sectional views in 1-up format) display.

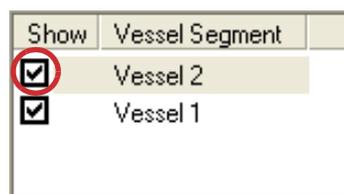
NOTE: Multiple cross-sectional views display only if you switch to the 1-up Viewer Window format.

- a. If you do not receive the expected result or would like to start over, click  to try again, then repeat step 3.
- b. To probe another vessel, repeat this procedure.
- c. To rename a vessel, see Use the Object Management List.

Use the Object Management List

As you probe vessels, each new vessel segment is added as a line in the Object Management list. Vitrea automatically assigns each vessel segment a sequential number.

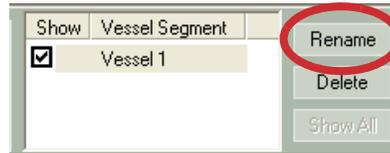
- a. In the Object Management list, switch active vessels, rename vessels, and delete vessels.
- b. Use the **Show** boxes to determine which probed vessels are visible.



1. To switch active vessels:
 - a. Click a vessel name in the Object Management list (select a vessel that is not grayed out).

The views update to display the new active vessel.
- OR
- b. With a Vessel Probe tool selected, press SPACEBAR to select or clear the Show check boxes in the Object Management list.

2. To rename a vessel:
 - a. With the vessel you want to name selected, click **Rename**.



The rename dialog box displays.

- b. In the **New name** field, enter the name for the vessel.

EXAMPLE Left Iliac, Right Iliac

- c. Click **OK**.

NOTE: Vessels cannot have duplicate names.

3. To delete a vessel from the Object Management list:
 - a. Select the vessel in the Vessel Segment column.
 - b. Click **Delete**.
4. To change the vessels displayed in the viewers:

NOTE: The **Show** boxes only affect which vessels display if you have selected an option on the Vessels tab in the Visibility Options area.

- a. To display one vessel, clear the **Show** box for all other vessels.
 - b. To display all vessels you have probed, click **Show All**.

Work with Cross-sectional and CPR Vessel Views

Perform the following operations on the reformatted views:

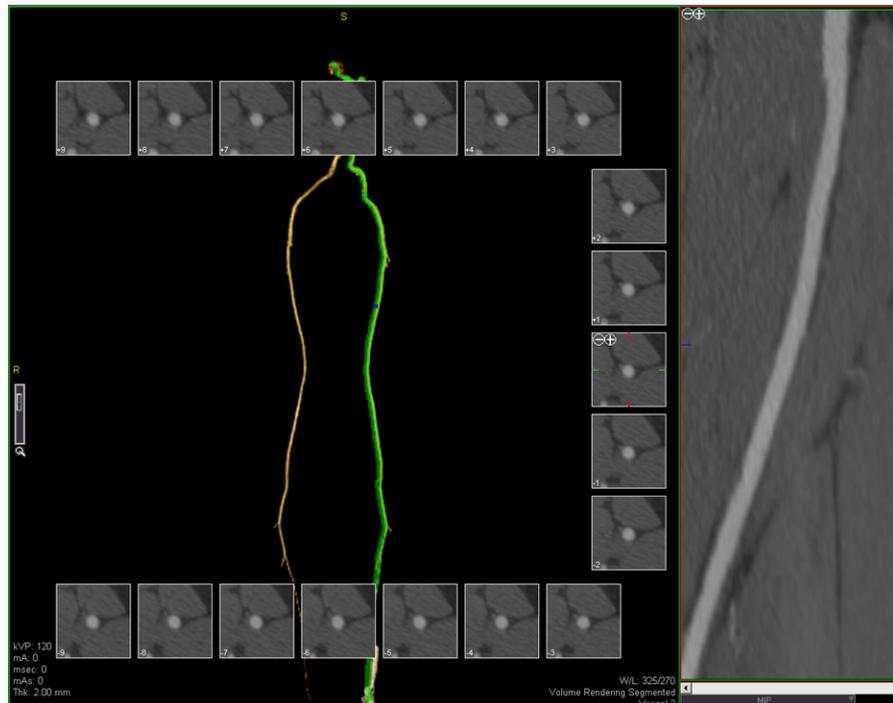
- a. View the data value (HU for CT) at a point by dragging on the image using the **Crshair** tool.
 - b. Jump to a desired point-of-interest on the centerline by clicking on the CPR view using the vessel probe tool.
 - c. Make region of interest measurements on the CPR views using the ROI-Freehand tool.
 - d. Rotate the curved reformatted views about the axis of the vessel.
 - e. Zoom in and out of the CPR and cross-sectional views.

The cross-section corresponding to the point-of-interest will also contain:

- Horizontal and vertical markers indicating the orientation of the left and right curved views.

When you probe a vessel, the software plots the centerline of the vessel and displays one (or more) cross-sectional views and two CPR vessel views.

In 1-up format (click the  button to access) multiple cross-sectional views display (see the Figure below).

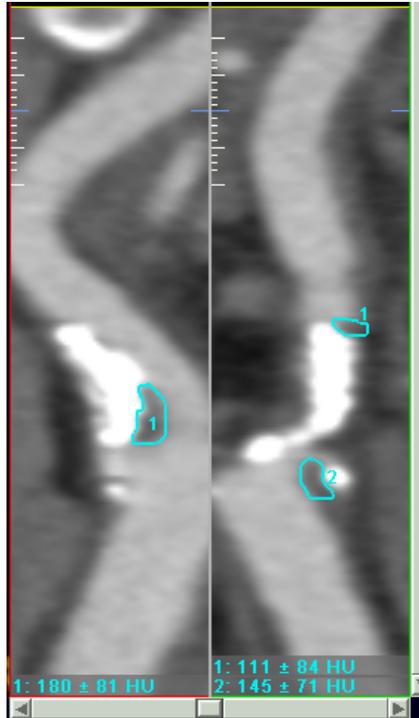


Region of Interest Measurements

To perform region of interest measurements on the vessel, click the ROI-

Freehand tool  in either of the CPR or inset views.

Each ROI displays the Hounsfield Average Value as well as the Standard Deviation of the region.



NOTE: The ROIs on CPR views are deleted automatically if you rotate the view or navigate along the vessel.

Work with Crosshair Position Indicators

After you probe a vessel in 3D or an MPR, the intersection of the crosshairs in the MPR views is indicated in the following ways, depending on the view use:

- In the 3D view, a blue dot along the vessel indicator line represents the crosshair position.
- The CPR views center on the crosshair position. The current crosshair position in the MPR and 3D views is indicated by a blue line in the middle of the ruler in the CPR views.
- In multiple-viewer Viewer window formats, with two CPR views and only one cross-sectional view displayed, the cross-sectional view corresponds to the current crosshair position.
- In 1-up Viewer window format, with two CPR views and multiple cross-sectional views displayed, the current crosshair position is located at 0 mm, and is highlighted with a white border. The

surrounding cross-sectional cuts are +1, +2, +3, -1, -2, -3, and so on.

NOTE: The cross-sectional views are always .5 mm apart, regardless of the image acquisition thickness.

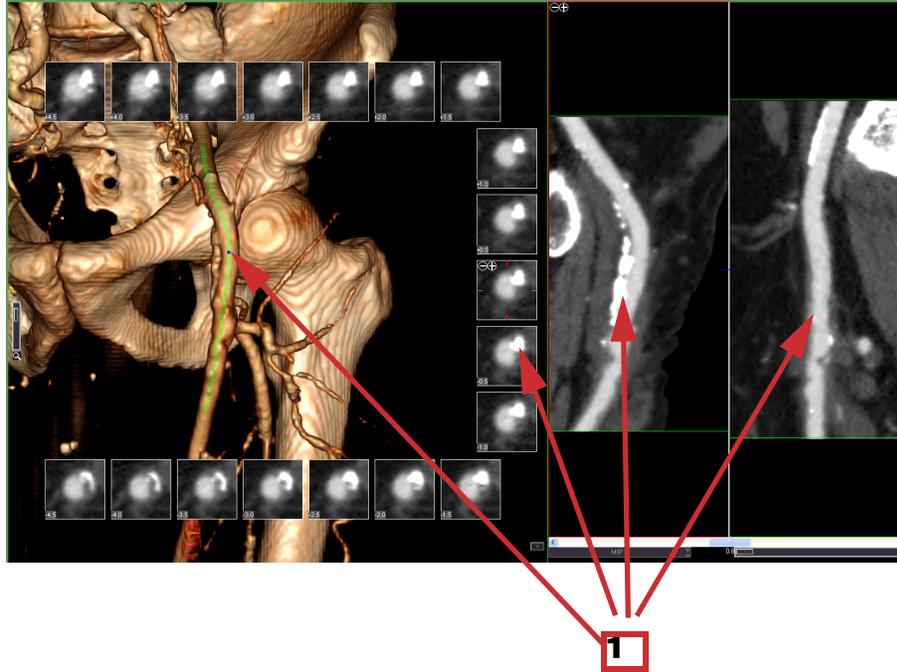


TABLE 2. 1-up View and Crosshair Position Indicators

Callout Number	Description
1	Current crosshair position To move the crosshair position: Slide the scrollbar, click in the vessel, roll the mouse wheel.

Manual Sculpt

1. Click  .
2. Click  in the lower left corner of the Viewer window to 1-up the axial MPR.
3. Scroll to one end of the anatomy.
4. Draw contour lines around the anatomy you would like to include.

TIP: Scroll and draw a contour any time the anatomy changes size, shape, or location.

5. After you draw contours, select **Keep** or **Remove**.



TIP: When the Show Preview box is selected, it shows a preview in the 3D image.

6. Click  in the lower left corner of the Viewer window to return to the previous window.

Sculpt 3D Objects

1. Click .

The cursor changes shape to indicate Sculpt mode.

2. In the viewport, click and hold, and drag to draw a freehand border.

3. After you create the contour line, Keep and Remove buttons display



. Perform one of the following:

- To eliminate the anatomy inside the border you drew, click **Remove**.
 - To eliminate the anatomy outside the border you drew (and isolate the Anatomy inside the border), click **Keep**. The sculpted 3D object displays in the original 3D viewport.
4. To display the results of the sculpted-region in an MPR view, select the Show Segmentation check box in the Visual tab.



Oblique MPR Mode

In Oblique MPR mode, change orientation of the MPR views by rotating the crosshairs in one or two of the MPR views.

1. Right-click in the view, then click  .

2. In one of the MPR views, position the cursor over one of the crosshairs  .

TIP: This view remains in Orthogonal mode, and the other two views display images at oblique angles.

3. Drag the crosshair in the view while watching the other views.

TIP: As you drag, the crosshairs rotate around their intersection point, staying perpendicular to each other.

TIP: Rotate crosshairs in more than one view.

TIP: To move the crosshair intersection point, click the spot where you want the crosshair to intersect.

4. To “walk” a vessel,  click and drag in the view.

TIP: The center of the crosshairs act as a fulcrum point.

Automatic MIP

MIP (100 mm max thickness) - A shading setting that displays data using only the highest data values for each voxel of the image. MIP is a good setting to use when competing features composed of voxels with similar or higher values might be obscuring the feature of interest.

With the separate MPR MIP option, view a volume rendering side by-side with MPR MIP images.

This setting is particularly useful when performing these operations:

- Differentiating between contrast and calcium in vessels
- Viewing thick slab MPRs with many tiny, loose body bone fragments
- Viewing carotids, the Circle of Willis, renals, runoffs, or any vessel

Perform Automatic Curved Reformats

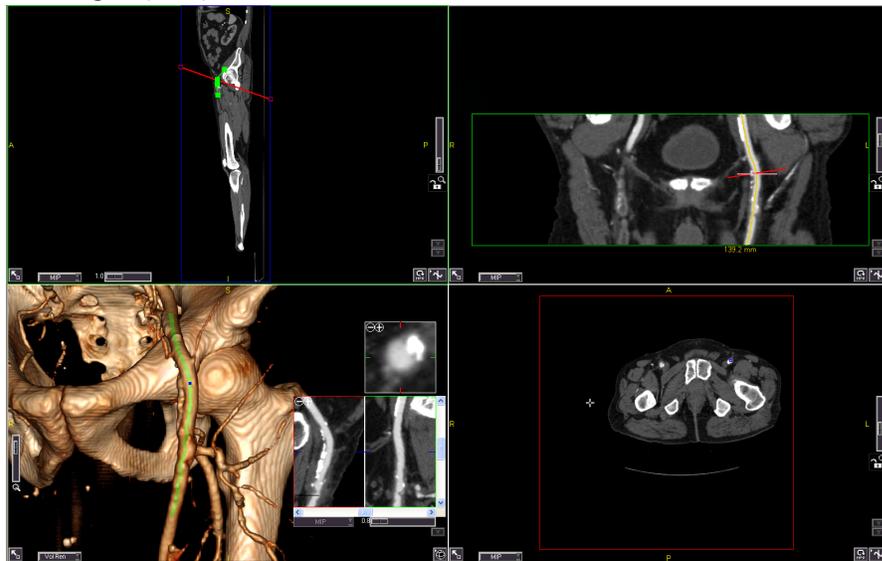
In performing curved reformats, choose one view, called the Reference view, to define the curve. By selecting the Reference view, change one of the crosshairs to follow along the curve of the vessel.

Using the Vessel Probe tools to perform an automatic curved reformat, probe the vessel, then select the Reference view. Vitrea automatically makes all of the same adjustments as in the manual curved reformat, and plots the centerline for you.

1. To perform an automatic curved reformat:
 - a. Probe the vessel in a 3D or MPR view.
 - b. Choose a Reference MPR view by switching it from Orthogonal MPR to **Curved Reference** mode. 

NOTE: The view you choose for the Reference view should be roughly along the length of the vessel, or parallel to it.

In the Curved MPR view, Vitrea plots the **Centerline** and displays its length (mm).



- If necessary, adjust the centerline. In the Reference or Transverse MPR views, click and drag to move any of the automatically-plotted points to more closely trace the centerline.
- Use any of the methods described in Work with Crosshair Position Indicators to reposition the crosshairs.

- As you move the crosshair position indicator, the system updates the intersection of the Transverse line and Centerline in the Curved MPR view.



- To examine the Curved MPR view more closely, click .
- To change from 1-up format back to the original viewer format, click .

Clear Vessel Probe Indicators and Rulers

Delete one or all rulers you have placed. Also, clear one or multiple or all previously probed vessels, as well as all other views or measurements associated with them.

1. To delete rulers from a CPR view, select the ruler and click Delete or press DELETE.

NOTE: Scrolling or changing the magnification does not delete rulers from the cross-sectional views. Rulers drawn in the cross-sectional views remain in the CPR views. Rulers drawn on CPR views delete automatically if you rotate the CPR views, modify the vessel boundaries, navigate along the vessel, or change magnification.

2. To delete vessel indicators (green line) and measurements for a specific vessel:

- a. Verify the vessel you want to delete is the active vessel.

NOTE: The active vessel displays in the current CPR and cross-sectional views, is denoted by the vessel indicator (green) line in

the 3D view, and is selected (highlighted) in the Object Management list on the Analysis tab.

Optional If the vessel you want to delete is not the active vessel, click the vessel name in the Object Management list to make it active.

b. Press DELETE.

3. Click  to clear all vessels.

NOTE: Other items not associated with the Vessel Probe option remain, including arrows, annotations, and rulers drawn directly on 3D and MPR images.

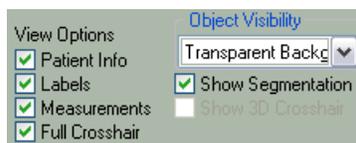
Show Segmentation in MPR Views

Use the Show Segmentation box on the Visual tab to make the MPR views reflect the results of segmentation done in the 3D view. Also, check the Show Segmentation box if you want the Object Visibility to apply to the MPR views. Visibility options on the Analysis tab of the Viewer window enable you to control how images display region segmentation.

When the Show Segmentation box is selected, MPR views also show the results of any segmentation done in the 3D view. If the Show Segmentation box is cleared, the MPR views continue to display whole MPR images, even if parts of the volume have been segmented.

1. To show segmentation in MPR views:

- On the Visual tab, select the **Show Segmentation** box.



- If you select Show Segmentation, and you have excluded a region in the volume view, that region is not displayed in the MPR views.

Carotid

Contents

- I Select Study
- II Choose Protocol and Preset
- III Perform Analysis
 - Probe the Carotids
 - Perform Stenosis Measurement
 - Use the POI Box
- IV Distribute Findings

Carotid Overview

Evaluate contrast filled carotid arteries by probing the left and right internal and external carotid arteries. Calculate arterial stenosis and analyze the following issues:

- Plaque
- Stenosis
- Patency
- Aneurysm

Carotid Lesson

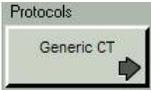
I. Select Study

Follow the instructions in the Select Study Chapter to load a carotid study.

II. Choose Protocol and Preset

VitreaCore skips this step. No action is required.

1. If the Vascular: Carotid CT protocol is not selected, click the Protocols

dropdown menu  on the Visual tab.

2. Select the **Vascular:** Carotid CT protocol.

III. Perform Analysis

Probe the Carotids

1. Select the  tab.

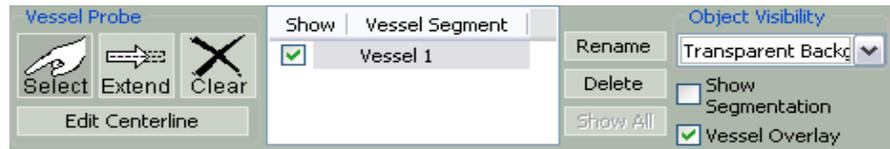
2. Click .

3. Probe the carotid arteries:

- a. Locate the internal and external carotid arteries and click the vessel to probe, or scroll through any of the MPRs and click the vessel to probe.

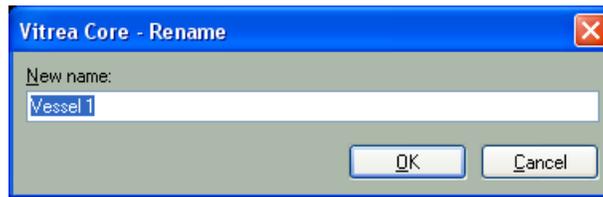
Optional Click  and click a point farther along the probed vessel.

The Show and Vessel Segment table within the Analysis area populate with data.



- b. Rename the vessel by clicking the **Rename** button.

The Rename screen displays.



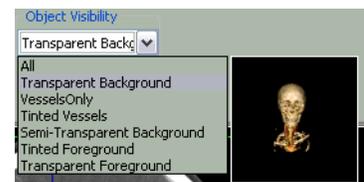
- c. In the New name field, enter the name of the vessel.
d. Click OK.



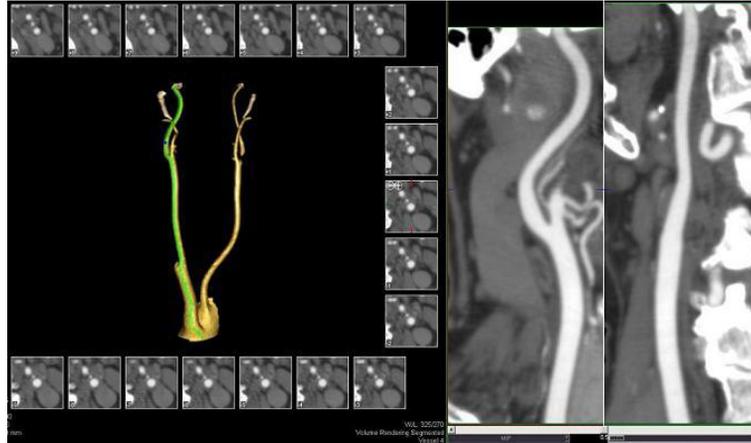
See the Use the Object Management List within the Additional Procedures section of this document for further information.

- e. After you select a vessel using Vessel Probe, VitreaCore segments the anatomy and creates a Curved Planar Reformation (CPR). These images are located in the 3D image frame in the two vertical boxes.
f. Change Object Visibility to the desired setting.

- Select one of these options from the Object Visibility dropdown menu:
 - **All** – Displays the entire image.
 - **Transparent Background** – Displays the image in a transparent background.



- **Vessels Only** – Remove everything except the probed vessel(s) from view.



- **Tinted Vessels** – Displays the probed vessels shaded in red.
- **Semi-Transparent Background** – Render the background partially opaque.
- **Tinted Foreground** – Displays the foreground in red.
- **Transparent Foreground** – Displays the vessels only.

g. Click  to take a snapshot of the 3D image.

 See the Additional Procedures section for further information about Vessel Probe.

TIP: VitreaCore creates a 1mm cross-section orthogonal to the center line running through the CPR. This is the image located at the top of the CPR.

TIP: On the bottom of the CPR views are two slider bars. The top one allows you to rotate the CPR by dragging it left or right. The lower bar allows you to add thickness to the CPR.

Perform Stenosis Measurement

1. Probe the vessel.
2. Click Maximize  to switch to 1-up Viewer window format.
3. Scroll in the CPR views to display a point before the stenosis.

4. Click  .

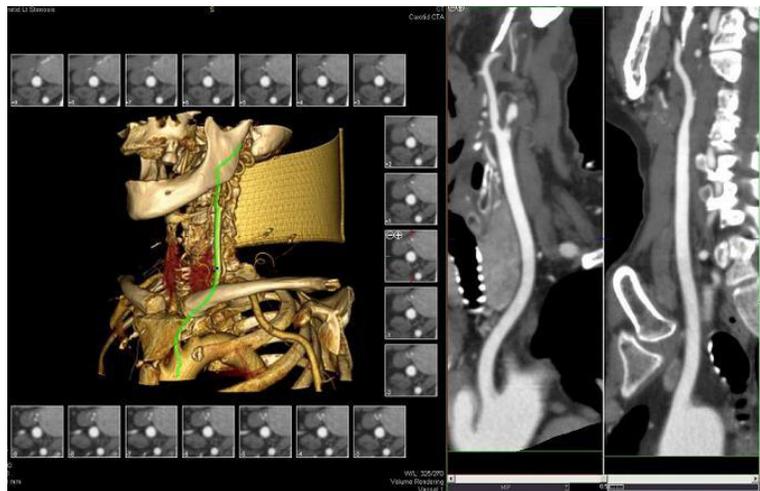
5. Click and drag across the width of the lumen, then release to end the ruler.

The ruler and the measurement (in millimeters) display in the cross-sectional and CPR views.

NOTE: Draw rulers and measure in any cross-sectional view. Place only one ruler per cross section.

Optional To delete a ruler from a CPR view, select the ruler and click Delete or press DELETE.

- Scrolling or changing the magnification does not delete rulers from the cross-sectional views. Rulers drawn in the cross-sectional views remain in the CPR views. Rulers drawn on CPR views delete automatically if you rotate the CPR views, modify the vessel boundaries, navigate along the vessel, or change magnification.



6. Adjust the crosshair position to display a point inside the stenosis.

7. Repeat step 4.

Vitreacore displays the current maximum and minimum diameter measurements in green and red, respectively, in the curved reformat views. Any other measurements display in cyan (light blue).

VitreCore calculates the percentage of stenosis by comparing the maximum (normal) and minimum (stenosed) measurements. The percentage and the formula used to calculate it display at the bottom of the right CPR view.

8. Repeat this procedure to draw as many rulers as you want.

The maximum diameter, minimum diameter, and percentage stenosis update with each ruler you draw.

9. Click  to take a snapshot of the 3D image.

Use the POI Box

The Point of Interest box allows you to quickly evaluate a region of interest without using advanced workflows. This tool is available in any protocol by clicking the 3D box in the bottom right of a 3D image.

1. Click an area of interest in the 2D image and the POI box corresponds to the intersection of the crosshairs.
 - a. Roll mouse wheel in the POI box to increase/decrease the volume of the cube.
 - b. Click in the POI box to rotate.
2. To discontinue the POI evaluation, click the box in the bottom right of 3D 1-up image.
3. Click  to take a snapshot of the 3D image.

IV. Distribute Findings

The snapshots you save in the Viewer window are saved to the Report window.

1. Click  at the bottom of the window.

2. Follow the instructions in the Distribute Findings chapter to distribute your findings.

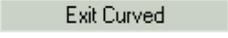
Additional Procedures

Edit the Vessel Centerline

If you used Vessel Probe to probe a vessel, manually fine-tune the centerline if needed.

1. From the Analysis tab, click the  button.

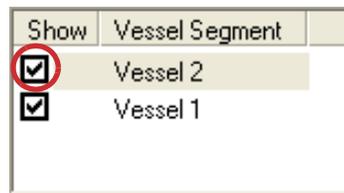
The MPR views switch to Curved Reference  mode and display the probed vessel centerline.

2. Edit the centerline as needed:
 - a. In the Reference view, click and drag the desired centerline to the desired position. Grab the desired boxes or create a new one by clicking and dragging the centerline.
 - b. In the Curved view, use the Oblique Rotate  tool to rotate around the centerline. Adjust the yellow centerline as needed. Also, perform distance measurements by dragging the Measure line.
 - c. In the Transverse view, a cross-section of the vessel displays, and the centerline is marked as a blue box. Drag and adjust the box as needed.
 - d. Scroll through the MPRs to gain contrast and follow the vessel.
 - e. One-up  any of the MPRs for a closer view.
3. When finished editing, click the  button.

Use the Object Management List

As you probe vessels, each new vessel segment is added as a line in the Object Management list. VitreaCore automatically assigns each vessel segment a sequential number.

- a. In the Object Management list, switch active vessels, rename vessels, and delete vessels.
- b. Use the **Show** boxes to determine which probed vessels are visible.



1. To switch active vessels:
 - a. Click a vessel name in the Object Management list (select a vessel that is not grayed out).

The views update to display the new active vessel.

OR

- b. With a Vessel Probe tool selected, press SPACEBAR to scroll through the vessels in the Object Management list.

2. To rename a vessel:

- a. With the vessel you want to name selected, click **Rename**.

The rename dialog box displays.

NOTE: Rename a vessel by clicking the vessel name a second time, after a pause. The name changes to an editable field.

- b. In the **New name** field, enter the name for the vessel.

EXAMPLE Left Carotid, Right Carotid

- c. Click **OK**.

NOTE: Vessels cannot have duplicate names.

3. To delete a vessel from the Object Management list:

- a. Select the vessel in the Vessel Segment column.

- b. Click **Delete**.

Work with Cross-sectional and CPR Vessel Views

Perform the following operations on the reformatted views:

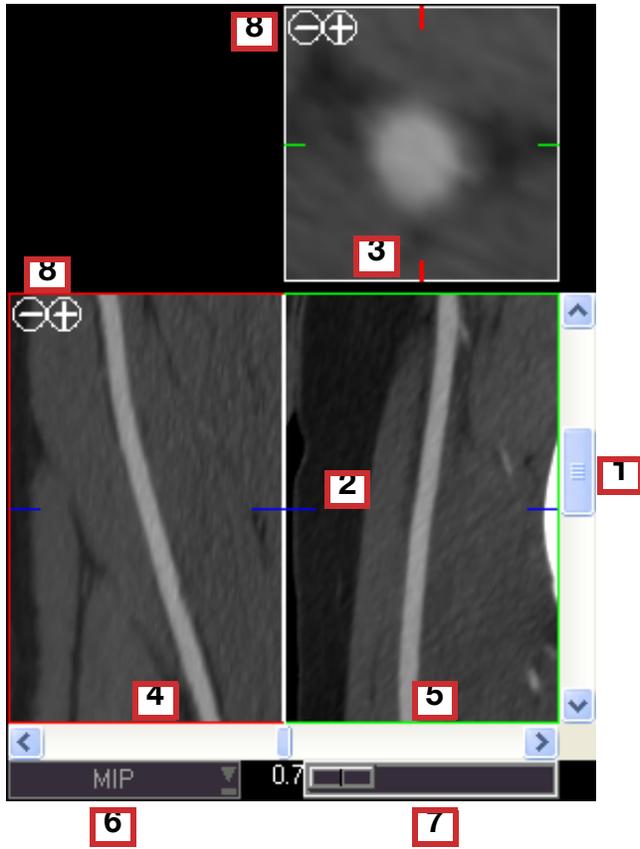
- a. View the data value (HU for CT) at a point by dragging on the image using the **Crshair** tool.
- b. Jump to a desired point-of-interest on the centerline by clicking on the curved view using the vessel probe tool.
- c. Click . The icon shows a ruler with a scale from 0 to 10 and the word "Ruler" below it.
- d. Make measurements on the inset views.
- e. Rotate the curved reformatted views about the axis of the vessel.
- f. Zoom in and out of the CPR and cross-sectional views.

The cross-section corresponding to the point-of-interest also contains:

- Horizontal and vertical markers indicating the orientation of the left and right curved views.

When you probe a vessel, the VitreaCore software plots the centerline of the vessel and displays one (or more) cross-sectional views and two CPR vessel views.

In 1-up format, multiple cross-sectional views display (see Figure 6).



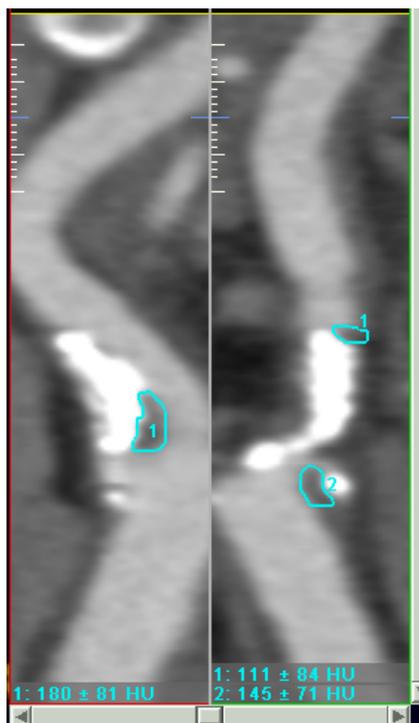
#	Description
1	To move along the vessel: Slide the scrollbar, click in the vessel.
2	The blue lines indicate the crosshair position, which also corresponds to the active cross-sectional view.
3	Cross-sectional view
4	CPR view 1: If you rotate the 3D volume until the vessel showed the least curvature in the 3D field of view. Also displayed are horizontal and vertical markers indicating the orientation of the left and right curved views.
5	CPR view 2: 90 degrees from the first CPR view.
6	CPR Rendering Option: Click on the control and select an option from the dropdown menu. The option is applied to all CPR views.
7	CPR Thickness Slider: Drag the CPR Thickness slider right to increase or left to decrease slice thickness in the CPR views only.
8	Zoom In/Out: <ul style="list-style-type: none"> Click  to zoom in Click  to zoom out

Region of Interest Measurements

To perform region of interest measurements on the vessel, click the ROI-

Freehand tool  in either of the CPR or inset views.

Each ROI displays the Hounsfield Average Value as well as the Standard Deviation of the region.



NOTE: The ROIs on CPR views are deleted automatically if you rotate the view or navigate along the vessel.

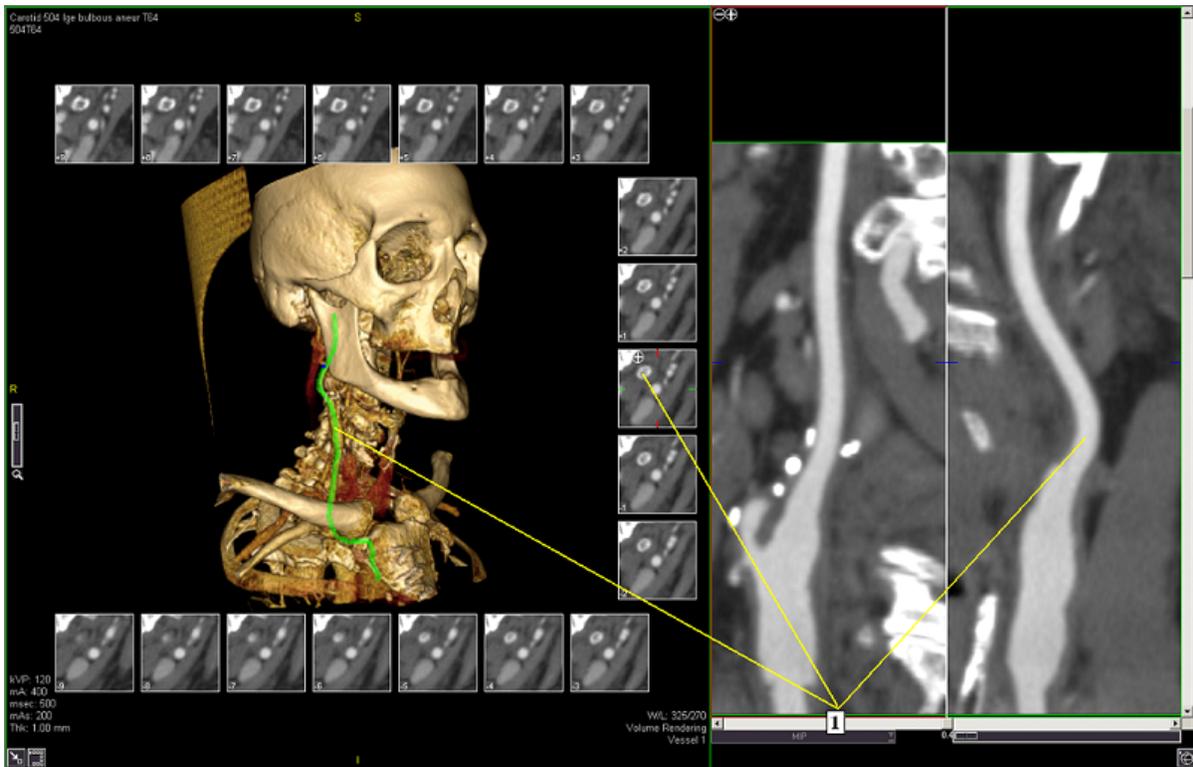
Work with Cross-Sectional Position Indicators

After you probe a vessel in 3D or MPR, the intersection of the cross section in the MPR views is indicated in the following ways, depending on the view you use:

- In the 3D view, a blue dot along the vessel indicator line represents the cross-sectional position.
- The CPR views are centered on the cross-sectional position. The current cross-sectional position in the MPR and 3D views is indicated by a blue line in the middle of the ruler in the CPR views.
- In the screen format that has the presents the MPRs and 3D views, with two CPR views and only one cross-sectional view displayed, the cross-sectional view corresponds to the where the reference line is located in the CPR views.

- In 1-up Viewer window format, with two CPR views and multiple cross-sectional views displayed, the current crosshair position is located at 0 mm, and is highlighted with a blue border. The surrounding cross sections are +1, +2, +3, -1, -2, -3, and so on.

NOTE: The cross-sectional views are always .5 mm apart, regardless of the image acquisition thickness.



#	Description
1	Current cross-sectional position To move the cross-sectional position: Slide the scrollbar, click in the vessel, roll the mouse wheel.

Manual Sculpt

1. Click  .
2. Click  in the lower left corner of the Viewer window to 1-up the axial MPR.

3. Scroll to the ostium of the common carotid.
4. Draw contour lines around the anatomy you would like to include.

TIP: Scroll and draw a contour any time the anatomy changes size, shape, or location.

5. When you finish drawing contours, select **Keep** or **Remove**.



TIP: When the Show Preview box is selected, it shows a preview in the 3D image.

6. Click  in the lower left corner of the Viewer window to return to the previous window.

Sculpt 3D Objects

1. Click .

The cursor changes shape to indicate Sculpt mode.

2. In the viewport, click and hold, and drag to draw a freehand border.
3. When you are done creating the contour line, Keep and Remove

buttons display . Perform one of the following:

- To eliminate the anatomy inside the border you drew, click **Remove**.
 - To eliminate the anatomy outside the border you drew (and isolate the Anatomy inside the border), click **Keep**. The sculpted 3D object displays in the original 3D viewport.
4. To display the results of the sculpting in an MPR view, select the Show Segmentation check box in the Visual tab.

Oblique MPR Mode

In Oblique MPR mode, change orientation of the MPR views by rotating the crosshairs in one or two of the MPR views.

1. Right-click in the view, then click  .
2. In one of the MPR views, position the cursor over one of the crosshairs  .

TIP: This view remains in Orthogonal mode, and the other two views display images at oblique angles.

3. Drag the crosshair in the view while watching the other views.

TIP: As you drag, the crosshairs rotate around their intersection point, staying perpendicular to each other.

TIP: Rotate crosshairs in more than one view.

TIP: To move the crosshair intersection point, click the spot where you want the crosshair to intersect.

4. To “walk” a vessel,  click and drag in the view.

TIP: The center of the crosshairs act as a fulcrum point.

Automatic MIP

MIP (100 mm max thickness) is a shading setting that displays data using only the highest data values for each voxel of the image. MIP is a good setting to use when competing features composed of voxels with similar or higher values might be obscuring the feature of interest.

With the separate MPR MIP option, view a volume rendering side by-side with MPR MIP images.

This setting is particularly useful when performing these operations:

- Differentiating between contrast and calcium in vessels
- Viewing thick slab MPRs with many tiny, loose body bone fragments

- Viewing carotids, the Circle of Willis, or any vessel

Clear Vessel Probe Indicators and Rulers

Delete one or all rulers you have placed. Also, clear one, multiple or all previously probed vessels, as well as all other views or measurements associated with them.

1. To delete rulers from a CPR view, select the ruler and click Delete or press DELETE.

NOTES: Scrolling or changing the magnification does not delete rulers from the cross-sectional views. Rulers drawn in the cross-sectional views remain in the CPR views. Rulers drawn on CPR views delete automatically if you rotate the CPR views, modify the vessel boundaries, navigate along the vessel, or change magnification.

2. To delete vessel indicators (green line) and measurements for a specific vessel:

- a. Verify the vessel you want to delete is the active vessel.

NOTE: The active vessel displays in the current CPR and cross-sectional views, is denoted by the vessel indicator (green) line in the 3D view, and is selected (highlighted) in the Object Management list on the Analysis tab.

Optional If the vessel you want to delete is not the active vessel, click the vessel name in the Object Management list to make it active.

- b. Press DELETE.

3. To clear all vessels:

- Click **Clear**.

NOTE: Other items not associated with the Vessel Probe option remain.

Show Segmentation in MPR Views

Use the Show Segmentation box on the Visual tab to make the MPR views reflect the results of segmentation done in the 3D view. Also, select the **Show Segmentation** box if you want the Object Visibility to apply to the MPR views. Visibility options on the Analysis tab of the Viewer window enable you to control how images display region segmentation.

When the Show Segmentation box is selected, MPR views also show the results of any segmentation done in the 3D view. If the Show Segmentation box is cleared, the MPR views continue to display whole MPR images, even if parts of the volume have been segmented.

1. To show segmentation in MPR views:

- On the Visual tab, select the **Show Segmentation** box.



- If you select Show Segmentation, and you have excluded a region in the volume view, that region does not display in the MPR views.

Performing Automatic Oblique Reformats

Using Oblique MPR mode, display MPR views of a feature that lies in a plane other than the sagittal, coronal, or axial planes, as do many arteries.

In manual Oblique MPR mode, you change the orientation of the MPR views by rotating the crosshairs in one or more of the MPR views, or by using the oblique angle orientation tool.

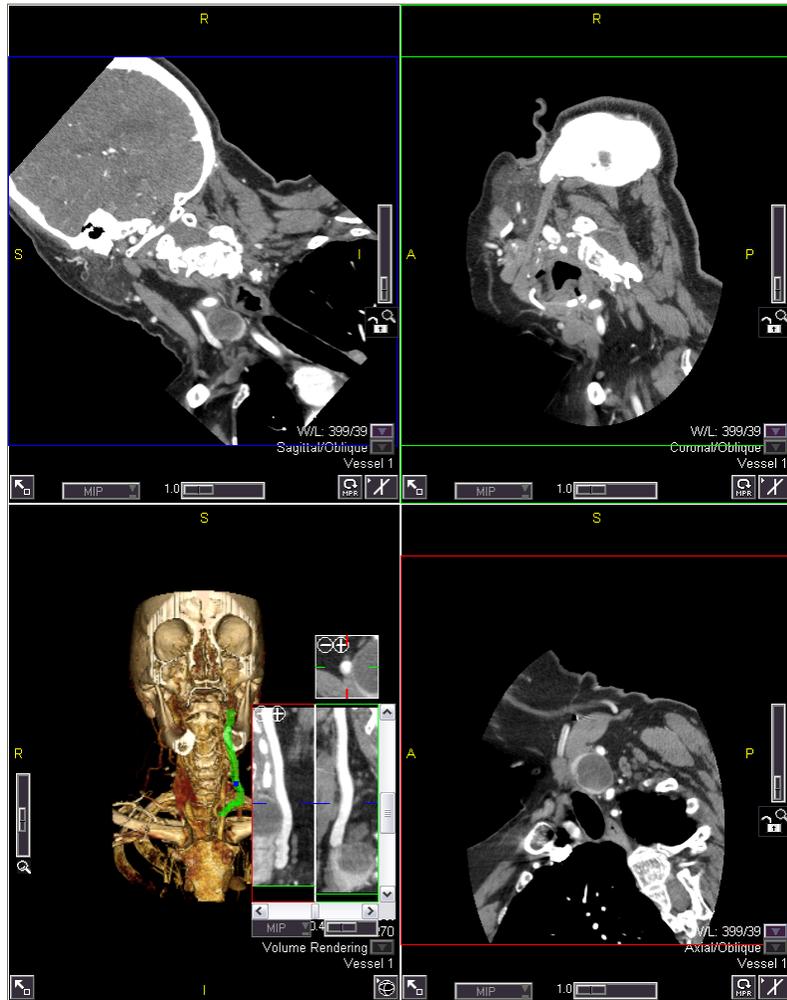
With the Vessel Probe tools, perform automatic oblique reformat. After you probe the vessel, the MPR views automatically update to display an oblique view of the vessel as you scroll along the vessel centerline in the CPR views.

To perform an automatic oblique reformat:

1. Orient the 3D image to display the desired view of the vessel.
2. Probe the vessel.

3. Switch any of the MPR views to **Oblique** mode. 

Vitreacore displays oblique images in all three MPR viewers. The MPR view that is normally the Axial view is in the oblique plane that best displays the vessel.



4. Click and drag the **Thickness** slider in any MPR view to be sure you see as much of the vessel as possible.

NOTE: For best results, set the thickness slider to the vessel diameter.

5. Select **MIP** from any MPR view.
6. In the CPR views, move along the vessel.

The crosshair position automatically adjusts, and the oblique views rotate so the view that is normally the Axial view is in the oblique plane that gives the best view of the vessel.

NOTE: The axial orthogonal MPR view changes to display an oblique view that best shows the length of the vessel.

Coronary

Contents

- I Select Study
- II Choose Protocol and Preset
- III Perform Analysis
 - Review the Study
 - Adjust the Window/Level
 - Probe a Vessel
 - Perform Stenosis Measurement
 - Use the 3D and Curved Planar Reformatted views
 - Explore the Lumen
 - Apply Object Visibility
 - Take Snapshots
- IV Distribute Findings

Coronary Overview

Complete the procedures within this module to probe the coronaries, perform stenosis measurements, and explore the lumen.

Coronary Lesson

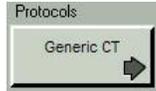
I. Select Study

Follow the instructions in the Select Study Chapter to load a coronary study.

II. Choose Protocol and Preset

VitreaCore skips this step. No action is required.

1. If the Cardiac: Arteries CT protocol is not selected, click the Protocols

dropdown menu  on the Visual tab.

2. Select the **Cardiac: Arteries** CT protocol.

III. Perform Analysis

The Coronary workflow features the following:

- Automatic heart segmentation
- 4D beating heart using multiple phase cine
- Selection of any coronary artery for viewing with the Vessel Probe tool with easy centerline review and editing



CAUTION: Accuracy in measurements of lengths and angles, and of 2D and 3D regions of interest, depends on a number of factors. The accuracy of these measurements depends on the accuracy of the scale factors that describe the image resolution and the spacing between source images. The

recommended method for performing linear measurements is through the placement of the ruler(s) in 2D images.

Review the Study

Function	Procedure
Review anatomy, analyze quality of study in the axial, coronal, and sagittal views	Use the MPR views to review.
Display the different planes	<ul style="list-style-type: none"> Orthogonal  – This view displays in sagittal, coronal, and axial planes. Oblique  – This view displays in an oblique plane. Curved Reference  – This view sets crosshairs for you to define a curve.
Display image in 1-up view	Click Maximize  to switch to 1-up Viewer window format
Rotate MPR views	 Click Rotate MPRs to change the arrangement of sagittal, coronal, and axial images.
Review the Heart Mode Images	<p>In the bottom right corner of the oblique MPR view, select .</p> <p>When the heart mode is active, the Heart changes to a black heart .</p> <p>Two and four chamber long axis and short axis views of the Left Ventricle are present in the display option.</p>

Adjust the Window/Level

- Click .
- Click and drag in the viewport.
 - Drag left to decrease window width, which increases the contrast.
 - Drag right to increase window width, which decreases the contrast.

- Drag down to increase window level. Drag up to decrease window level.
- Drag diagonally to adjust window width and level at the same time.

To change the window/level for CT 2D or MPR images by selecting a window/level preset:

1. Right-click in the viewport, then select W/L Presets.
2. Select from the following options:
 - Abdomen (400/40)
 - Lung (1500/-700)
 - Head (100/45)
 - Mediastinum (350/50)
 - Vertebrae (2000/300)
3. To change the predefined window/level presets, contact your System Administrator.

Probe a Vessel

Complete the following procedure for the three main coronary vessels (LAD, CX, RCA) and any branches.

After setting up the Viewer window to best visualize the vessel you want to probe, use the Select button to probe the vessel.

1. Locate the vessel you want to probe in the MPR or 3D view.
2. On the Analysis tab, click  .

The cursor changes to a pointing finger.

3. Click the vessel in the MPR or 3D view.

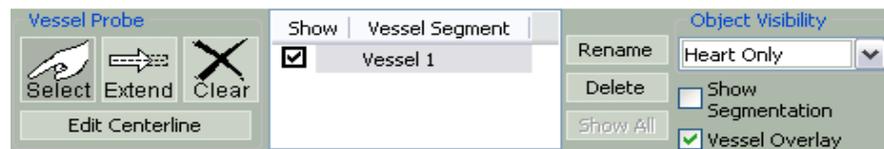
TIP: For best results, select a point midway along the length of the vessel.

Two CPR views and one cross-sectional view (or multiple cross-sectional views in 1-up format) display.

NOTE: Multiple cross-sectional views display only if you switch to the 1-up Viewer Window format.

- a. If you do not receive the expected result or would like to start over, click  to try again, then repeat step 3.
- b. To probe another vessel, repeat this procedure.
- c. To extend the probed vessel, click  and click a point farther along the vessel.

The Show and Vessel Segment table within the Analysis area populate with data.



- d. Click the  button to rename the vessel.
The VitreaCore - Rename dialog displays.
- e. In the New name field, enter the name of the vessel.
- f. Click OK.
- g. Change Object Visibility to the desired setting.

- Select one of these options from the Object Visibility dropdown menu:



- To remove everything except the probed vessel(s) from view, select Vessels Only.
- To render the background partially opaque, select Semi-Transparent Heart.
- To display the probed vessels shaded in red, select Tinted Vessels.
- To display the heart only, select **Heart Only**.

NOTE: Transparent Background, Semi-Transparent Background, Tinted Foreground, Transparent Foreground are also included in the dropdown menu.

After you select a vessel using Vessel Probe, VitreaCore segments the anatomy and creates a Curved Planar Reformation (CPR). These images populate in the 3D image frame in the two vertical boxes.

- h. Click  to take a snapshot of the 3D image.

 See the Additional Procedures section for further information about Vessel Probe.

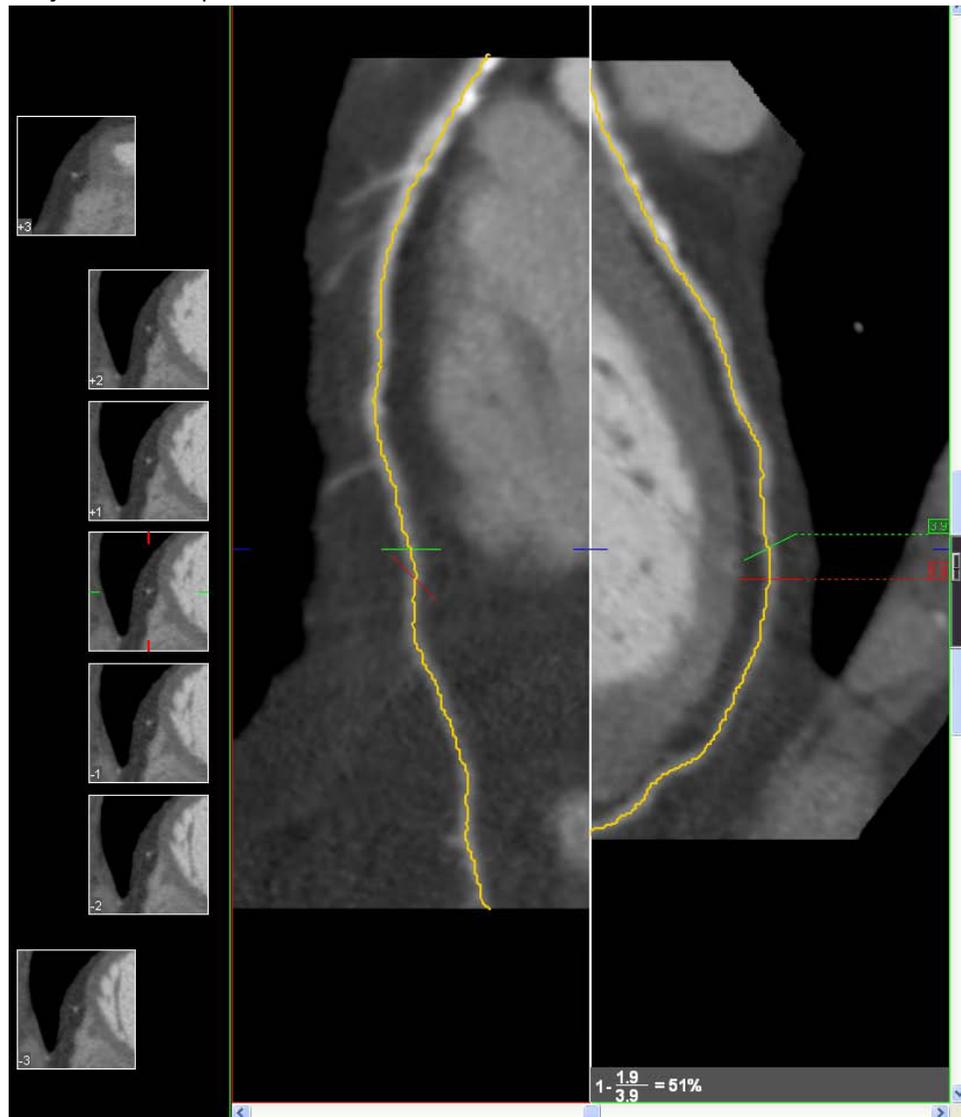
TIP: VitreaCore creates a 1mm cross-section orthogonal to the center line running through the CPR. This is the image located at the top of the CPR, in the blue box.

 The bottom of the CPR contains two slider bars. The top one allows you to rotate the CPR by dragging it left or right. The lower bar allows you to add thickness to the CPR.

Perform Stenosis Measurement

1. **Switch to 1-up Viewer window format.** Click  to **Maximize**.
2. Select the probed or named vessel to investigate.
3. Scroll in the CPR views to display a point before the stenosis.
4. Click  .
5. Click and drag across the width of the lumen, then release the mouse button to end the ruler.
6. The ruler and the measurement (in millimeters) display in the cross-sectional and CPR views.

NOTE: Draw rulers and measure in any cross-sectional view. Place only one ruler per cross section.



7. Adjust the crosshair position to display a point inside the stenosis.

8. Repeat steps 3-7 to measure a narrowed area.

VitreaCore displays the current maximum and minimum diameter measurements in green and red, respectively, in the curved reformat views. Any other measurements display in cyan (light blue).

VitreaCore calculates the percentage of stenosis by comparing the maximum (normal) and minimum (stenosed) measurements. The percentage and the formula used to calculate it display at the bottom of the right CPR view.

9. Repeat this procedure to draw as many rulers as you want.

The maximum diameter, minimum diameter, and percentage stenosis update with each ruler you draw.

Use the 3D and Curved Planar Reformatted views

1. Click  located in the lower left corner of 3D volume image. Click the  icon twice to see different cross-section views.
2. Click and drag to rotate the 3D volume image.
3. In the CPR view, move the bottom arrows L-R on the horizontal slide bar to rotate the CPR views.
4. The vertical slide bar moves the CPR image proximal and distal to view the entire vessel length.
5. Blue dot on 3D, the cross-section of vessel in blue box and blue line in CPR track with movements.
6. Select the phase check boxes on the bottom to change phases and review.

Explore the Lumen

1. Click in the blue cross-section box and click the plus sign to magnify the cross-sectional vessel view.
2. Click the plus/minus sign above the CPR views to magnify/minify the image.
3. Select the crosshair and click and hold in lumen to evaluate plaque HU characteristics.

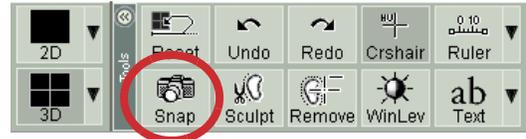
Apply Object Visibility

1. Clear the **Vessel Overlay** box to hide curved planar reformatted views to prevent someone from deleting the vessels.

2. From Object Visibility, select Semi transparent Background and Tinted Vessels.
3. Select Vessels only and rotate to display routine heart cath views.

Take Snapshots

1. Click  (or press S) to activate the camera.



2. Move cursor to image.
3. Click  to take pictures to save to the server.

Snapshots which include measurements, rulers, W/L, or segmentation options are restored from the Snapshots tab located in the Data Manager tab at the bottom of the screen.

4. To hide the patient information, clear the Patient Info check box in the View Options area on the Visual tab. Select the box to show the patient information.

IV. Distribute Findings

The snapshots you save in the Viewer window are saved to the Report window.

1. Click  at the bottom of the window.
2. Follow the instructions in the Distribute Findings chapter to distribute your findings.

Additional Procedures

Work with Cross-sectional and CPR Vessel Views

Perform the following operations on the reformatted views:

1. To determine the HU value at a point by dragging on the image using

the **Crshair** tool .

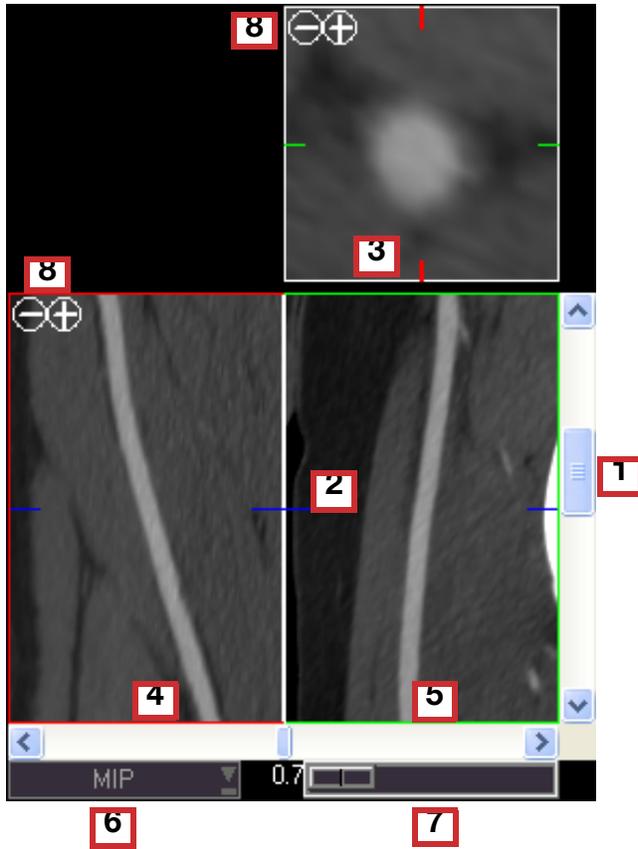
2. Move to a desired point-of-interest on the centerline by clicking on the curved view using the vessel probe tool.
3. Make measurements on the CPR views using the ROI-Freehand tool.
4. Rotate the curved reformatted views about the axis of the vessel.
5. Zoom in and out of the CPR and cross-sectional views.

The cross-section corresponding to the point-of-interest also contains:

- Horizontal and vertical markers indicating the orientation of the left and right curved views.

When you probe a vessel, the VitreaCore software plots the centerline of the vessel and displays one (or more) cross-sectional views and two CPR vessel views.

In 1-up format, multiple cross-sectional views display.



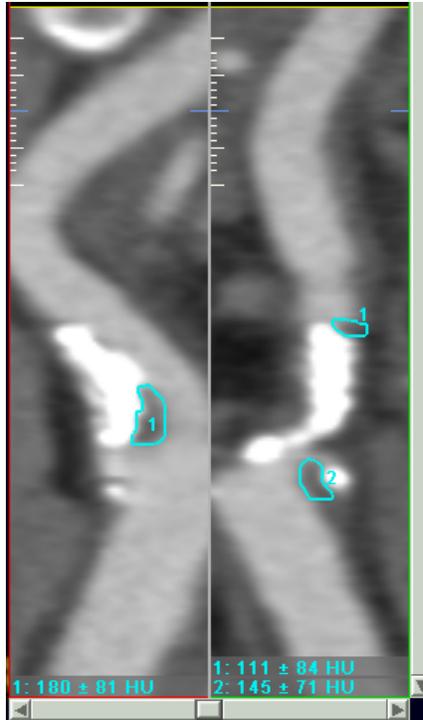
#	Description
1	To move along the vessel: Slide the scrollbar, click in the vessel.
2	The blue lines indicate the crosshair position, which also corresponds to the active cross-sectional view.
3	Cross-sectional view
4	CPR view 1: If you rotate the 3D volume until the vessel showed the least curvature in the 3D field of view. The Left and Right CPR views have colored borders that correspond to the red and green markers in the active Cross-sectional view.
5	CPR view 2: 90 degrees from the first CPR view.
6	CPR Rendering Option: Click on the control and select an option from the dropdown menu. The option is applied to all CPR views.
7	CPR Thickness Slider: Drag the CPR Thickness slider right to increase or left to decrease slice thickness in the CPR views only.
8	Zoom In/Out: <ul style="list-style-type: none"> Click  to zoom in Click  to zoom out

Region of Interest Measurements

To perform region of interest measurements on the vessel, click the ROI-

Freehand tool  in either of the CPR or inset views.

Each ROI displays the Hounsfield Average Value as well as the Standard Deviation of the region.



NOTE: The ROIs on CPR views are deleted automatically if you rotate the view or navigate along the vessel.

Work with Crosshair Position Indicators

After you probe a vessel in 3D or MPR, the intersection of the crosshairs in the MPR views is indicated in the following ways, depending on the view you use:

- In the 3D view, a blue dot along the vessel indicator line represents the crosshair position.
- The CPR views center on the crosshair position. The current crosshair position in the MPR and 3D views is indicated by a blue line in the middle of the ruler in the CPR views.
- In multiple-viewer Viewer window formats, with two CPR views and only one cross-sectional view displayed, the cross-sectional view corresponds to the current crosshair position.
- In 1-up Viewer window format, with two CPR views and multiple cross-sectional views displayed, the current crosshair position is located at 0 mm, and is highlighted with a blue border. The surrounding cross sections are +1, +2, +3, -1, -2, -3, and so on.

NOTE: The cross-sectional views are always .5 mm apart, regardless of the image acquisition thickness.

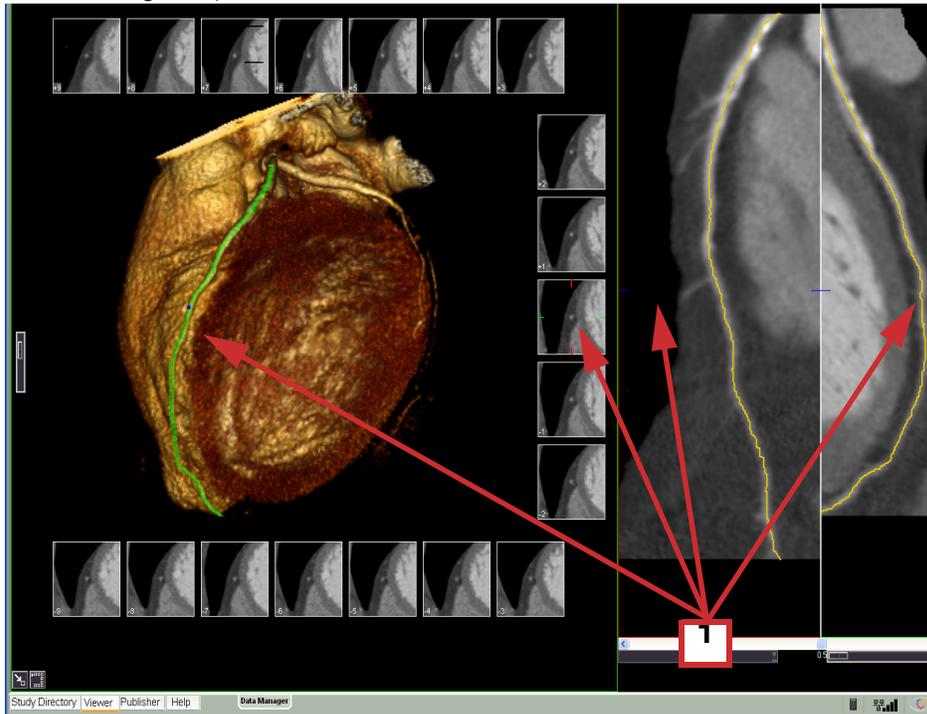


TABLE 2. 1-up View and Crosshair Position Indicators

Callout Number	Description
1	Current crosshair position To move the crosshair position: Slide the scrollbar, click in the vessel, roll the mouse wheel.

Manual Sculpt

1. Click  .
2. Click  in the lower left corner of the Viewer window to 1-up the axial MPR.
3. Scroll to one end of the anatomy.
4. Draw contour lines around the anatomy you would like to include.

TIP: Scroll and draw a contour everywhere the anatomy changes size, shape, or location.

5. After you draw contours, select **Keep** or **Remove**.



TIP: When the Show Preview box is selected, it shows a preview in the 3D image.

6. Click  in the lower left corner of the Viewer window to return to the previous window.

Sculpt 3D Objects

1. Click  .

The cursor changes shape to indicate Sculpt mode.

2. In the viewport, click and hold, and drag to draw a freehand border.
3. After you create the contour line, Keep and Remove buttons display



. Perform one of the following:

- To eliminate the anatomy inside the border you drew, click **Remove**.
 - To eliminate the anatomy outside the border you drew (and isolate the Anatomy inside the border), click **Keep**. The sculpted 3D object displays in the original 3D viewport.
4. To display the results of the sculpting in an MPR view, select the Show Segmentation check box in the Visual tab.

Oblique MPR Mode

In Oblique MPR mode, change orientation of the MPR views by rotating the crosshairs in one or two of the MPR views.

1. Right-click in the view, then click  .

2. In one of the MPR views, position the cursor over one of the crosshairs .

TIP: This view remains in Orthogonal mode, and the other two views display images at oblique angles.

3. Drag the crosshair in the view while watching the other views.

TIP: As you drag, the crosshairs rotate around their intersection point, staying perpendicular to each other.

TIP: Rotate crosshairs in more than one view.

TIP: To move the crosshair intersection point, click the spot where you want the crosshair to intersect.

4. To “walk” a vessel,  click and drag in the view.

TIP: The center of the crosshairs act as a fulcrum point.

Automatic MIP

MIP (100 mm max thickness) – A shading setting that displays data using only the highest data values for each voxel of the image. MIP is a good setting to use when competing features composed of voxels with similar or higher values might be obscuring the feature of interest.

With the separate MPR MIP option, view a volume rendering side-by-side with MPR MIP images.

This setting is particularly useful when performing these operations:

- Differentiating between contrast and calcium in vessels
- Viewing thick slab MPRs with many tiny, loose body bone fragments
- Viewing carotids, the Circle of Willis, renals, runoffs, or any vessel

Clear Vessel Probe Indicators and Rulers

Delete one or all rulers you have placed. Also, clear one or multiple or all previously probed vessels, as well as all other views or measurements associated with them.

1. To delete rulers from a CPR view, select the ruler and click Delete or press DELETE.

NOTE: Scrolling or changing the magnification does not delete rulers from the cross-sectional views. Rulers drawn in the cross-sectional views remain in the CPR views. Rulers drawn on CPR views delete automatically if you rotate the CPR views, modify the vessel boundaries, navigate along the vessel, or change magnification.

2. To delete vessel indicators (green line) and measurements for a specific vessel:

- a. Verify the vessel you want to delete is the active vessel.

NOTE: The active vessel displays in the current CPR and cross-sectional views, is denoted by the vessel indicator (green) line in the 3D view, and is selected (highlighted) in the Object Management list on the Analysis tab.

Optional If the vessel you want to delete is not the active vessel, click the vessel name in the Object Management list to make it active.

- b. Press DELETE.

3. To clear all vessels:



NOTE: Other items not associated with the Vessel Probe option remain, including arrows, annotations, and rulers drawn directly on 3D and MPR images.

Show Segmentation in MPR Views

Use the Show Segmentation box on the Visual tab to make the MPR views reflect the results of segmentation done in the 3D view. Also, select the Show Segmentation box if you want the Object Visibility to apply to

the MPR views. Visibility options on the Analysis tab of the Viewer window enable you to control how images display region segmentation.

When you select Show Segmentation box, MPR views also show the results of any segmentation done in the 3D view. If the Show Segmentation box is cleared, the MPR views continue to display whole MPR images, even if parts of the volume have been segmented.

1. To show segmentation in MPR views:
 - On the Visual tab, select the **Show Segmentation** check box.

FIGURE 1. **Show Segmentation Box**



If you select Show Segmentation, and you have excluded a region in the volume view, that region is not displayed in the MPR views.

Review a 4D Cardiac Study

When a study is composed of multiple phases, or time series, cine across the phases. One of the features of this application is observing the beating heart using time-series coronary studies.

To review a 4D cardiac study:

1. Select the 4D cardiac phases from the Data Manager.
- 2 To see all phases acquired, right-click, then select Cine Start.
- 3 To stop on a specific phase, do the following steps to slow the cine speed:
 - Right-click, then select Adjust Cine Setting.
The Cine Set up & Control dialog box displays.
 - Drag the cine speed slider bar all the way to the left (1).
 - Click Close.
- 4 While cineing at this slower speed, when you see the phase on which you want to stop, right-click, then select Cine Stop.
- 5 Scroll through each of the time phases.

All of the viewports update simultaneously. The Phase X/X label next to the slider bar updates as you scroll.

- 6** Rotate the 3D volume to position it for sculpting.
- 7** Sculpt the volume to isolate the heart.
- 8** Save any noteworthy images.
- 9** To watch the heart beat, right-click in the 3D viewport, and select Cine Start.
 - To save the cine as a movie, right-click, then select Save Cine to Movie File.

Circle of Willis

Contents

- I Select Study
- II Choose Protocol and Preset
- III Perform Analysis
 - View Circle of Willis in MPRs
 - Use 3D Trim
 - Manual Sculpt
 - Use Point of Interest
 - Use 3D MIP Option
 - Take Snapshots
- IV Distribute Findings

Circle of Willis Overview

Segment the Circle of Willis vessels from other head anatomy to review for the following issues:

- Plaque
- Stenosis
- Patency
- Aneurysm

Circle of Willis Lesson

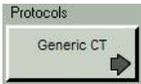
I. Select Study

Follow the instructions in the Select Study Chapter to load a Circle of Willis study.

II. Choose Protocol and Preset

Vitreacore skips this step. No action is required.

1. If the Vascular: COW CT protocol is not selected, click the Protocols

dropdown menu  on the Visual tab.

2. Select the **Vascular:** COW CT protocol.

III. Perform Analysis

View Circle of Willis in MPRs

1. Change MPRs to Oblique mode .
2. Verify the rendering option is set to MIP .
3. Line the Coronal (green) line with basilar artery in the Sagittal MPR.
4. Drag the in-viewer MPR Thickness slider  to the right to increase slice thickness to the desired level.
5. Scroll through coronal images to see Circle of Willis and other arterial structures in the head.

6. Make a batch of coronal images.

Use 3D Trim

Trim lines display as rectangular boxes in all three MPR viewports, and are color-coded to the respective view:

- Sagittal: Blue
- Coronal: Green
- Axial: Red

Resize the trimmed region in one or more of the MPR viewports by dragging the lines in any Tool mode (WinLev, Crosshair, Snap, Ruler, Label, Sculpt).

All data outside the trim box is excluded. The 3D viewport (MIP/Volume Rendering) displays the new 3D image, including only the anatomy within the box.

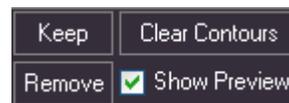
1. Float the cursor over the trim line in the axial, sagittal, or coronal plane (or multiple planes) until the cursor changes to dual arrows.
2. Click and drag the edge of the trim box to eliminate the anatomy you do not want to see in the 3D image.
3. Repeat this procedure as needed, in any of the orthogonal views, until you have isolated the desired anatomy.

Manual Sculpt

1. Click  .
2. Click  in the lower left corner of the Viewer window to 1-up the axial MPR.
3. Scroll to one end of the anatomy.
4. Draw contour lines around the anatomy you would like to include.

TIP: Scroll and draw a contour everywhere the anatomy changes size, shape, or location.

5. After you draw contours, select **Keep** or **Remove**.



TIP: When the Show Preview box is selected, it shows a preview in the 3D image.

6. Click  in the lower left corner of the Viewer window to return to the previous window.

 See the Additional Procedures section for information on Sculpt in 3D.

Use Point of Interest

Isolate and display a specific section of the volume using POI, and further isolate the point of interest in the volume view.

1. Click the  button in the 3D viewer.

The button changes to the  volume view, and the POI at the MPR viewer crosshairs displays in the 3D view.

2. Refine the POI:
 - Drag and release the crosshairs in one of the MPR views to change the POI location displayed in the volume view.
 - Click and hold in the 3D view, then scroll with the mouse wheel to increase or decrease the POI area.

Use 3D MIP Option

This procedure allows you to assist in viewing calcifications.

1. Click on the 3D image.
2. Click  dropdown menu and select MIP.

3. To render the MPRs, select options from the **Average** dropdown menu and use the **1.00** slider bar to increase thickness to the desired level.
4. Review the MPRs.
5. Take a snapshot.

Take Snapshots

1. Click  to activate the camera.



2. Move cursor to image.
3. Click  to take pictures to save to the server.

Snapshots which include measurements, rulers, W/L, or segmentation options restore from the Snapshots tab located in the Data Manager tab at the bottom of the screen.

4. To hide the patient information, clear the Patient Info check box in the View Options area at the top of the screen. Select the box to show the patient information.

IV. Distribute Findings

The snapshots you save in the Viewer window are saved to the Report window.

1. Click **Report** at the bottom of the window.
2. Follow the instructions in the Distribute Findings chapter to distribute your findings.

Additional Procedures

Sculpt in 3D

1. Click  .
The cursor changes shape to indicate Sculpt mode.
2. Move the mouse into the 3D image.
3. Click and hold down the left mouse button to draw around the anatomy or object to sculpt.
4. After you create the contour line, Keep and Remove buttons display



. Perform one of the following:

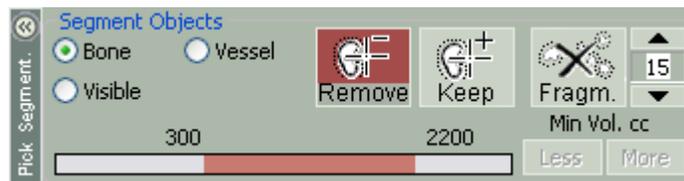
- To eliminate the anatomy inside the border you drew, click **Remove**.
- To eliminate the anatomy outside the border you drew (and isolate the Anatomy inside the border), click **Keep**.

The sculpted 3D object displays in the original 3D viewport.

Perform Point-and-Click Region Segmentation

Use point-and-click segmentation to keep or remove segments of bone or other visibly distinct segments such as soft tissue, stents or metal plates, or even the scanner table.

1. Select Bone from the Pick Segmentation area.



2. Select Keep or Remove.

TIP: Remove is automatically selected for you when Bone is selected.

3. Click on the image where you want to remove segments of the bone.

4. To edit the results, use the Less and More buttons.

5. Click  to window level.

6. Select .

Remove fragments removes all visibly distinct regions smaller than the number of cubic centimeters listed in the Segment Objects area.

Lung

Contents

- I** Select Study
- II** Choose Protocol and Preset
- III** Perform Analysis
 - Use MinIP
 - Adjust Slice Thickness in MPR Views
 - Adjust the Window/Level
 - Take Snapshots
- IV** Distribute Findings

Lung Overview

Complete the procedures within this module to visualize and analyze air or fluid within lung airways.

Lung Lesson

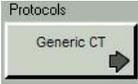
I. Select Study

Follow the instructions in the Select Study Chapter to load a lung study.

II. Choose Protocol and Preset

VitreaCore skips this step. No action is required.

1. If the Lung CT protocol is not selected, click the Protocols dropdown

menu  on the Visual tab.

2. Select the **Lung** CT protocol.

III. Perform Analysis

Use MinIP

This procedure enables you to modify MPR rendering options. MinIP is a shading setting that displays data using only the lowest data values for each voxel of the image. MinIP is a good setting to use when features composed of similar or higher voxel values might be obscuring a feature of interest composed of lower voxel values in a scanned image.

This setting is particularly useful when looking at air or fluid in mini-slabs. For example, lung airways or dilated pancreatic or bile ducts.

1. Click the MPR Options  button.
2. Select MinIP from the dropdown menu.

Adjust Slice Thickness in MPR Views

In the MPR viewports, the acquisition slice thickness displays in the lower left corner. The current thickness setting displays to the left of the in-viewer MPR Thickness slider  at the bottom of each viewer.

To change the slice thickness:

- Drag the in-viewer MPR Thickness slider right to increase or left to decrease slice thickness, or click on the number to put in the desired value.

Adjust the Window/Level

1. Click  .
2. Click and drag in the viewport.
 - a. Drag left to decrease window width, which increases the contrast. Drag right to increase window width, which decreases the contrast.
 - b. Drag down to decrease window level. Drag up to increase window level.
 - c. Drag diagonally to adjust window width and level at the same time.

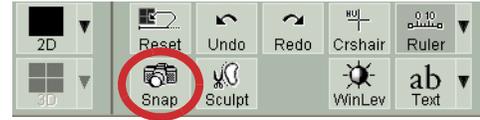
To change the window/level for CT 2D or MPR images by selecting a window/level preset:

NOTE: To change the predefined window/level presets, contact your System Administrator.

1. Right-click in the viewport, then select Window/Level Presets.
2. Select from the following options:
 - Abdomen (400/40)
 - Lung (1500/-700)
 - Head (100/45)
 - Mediastinum (350/50)
 - Vertebrae (2000/300)

Take Snapshots

1. Click  to activate the camera.



2. Move cursor to image.
3. Click  to take pictures to save to the server.

Snapshots which include measurements, rulers, W/L, or segmentation options restore from the Snapshots tab located in the Data Manager tab at the bottom of the screen.

4. To hide the patient information, clear the Patient Info check box in the View Options area at the top of the screen. Select the box to show the patient information.

IV. Distribute Findings

The snapshots you save in the Viewer window are saved to the Report window.

1. Click  at the bottom of the window.
2. Follow the instructions in the Distribute Findings chapter to distribute your findings.

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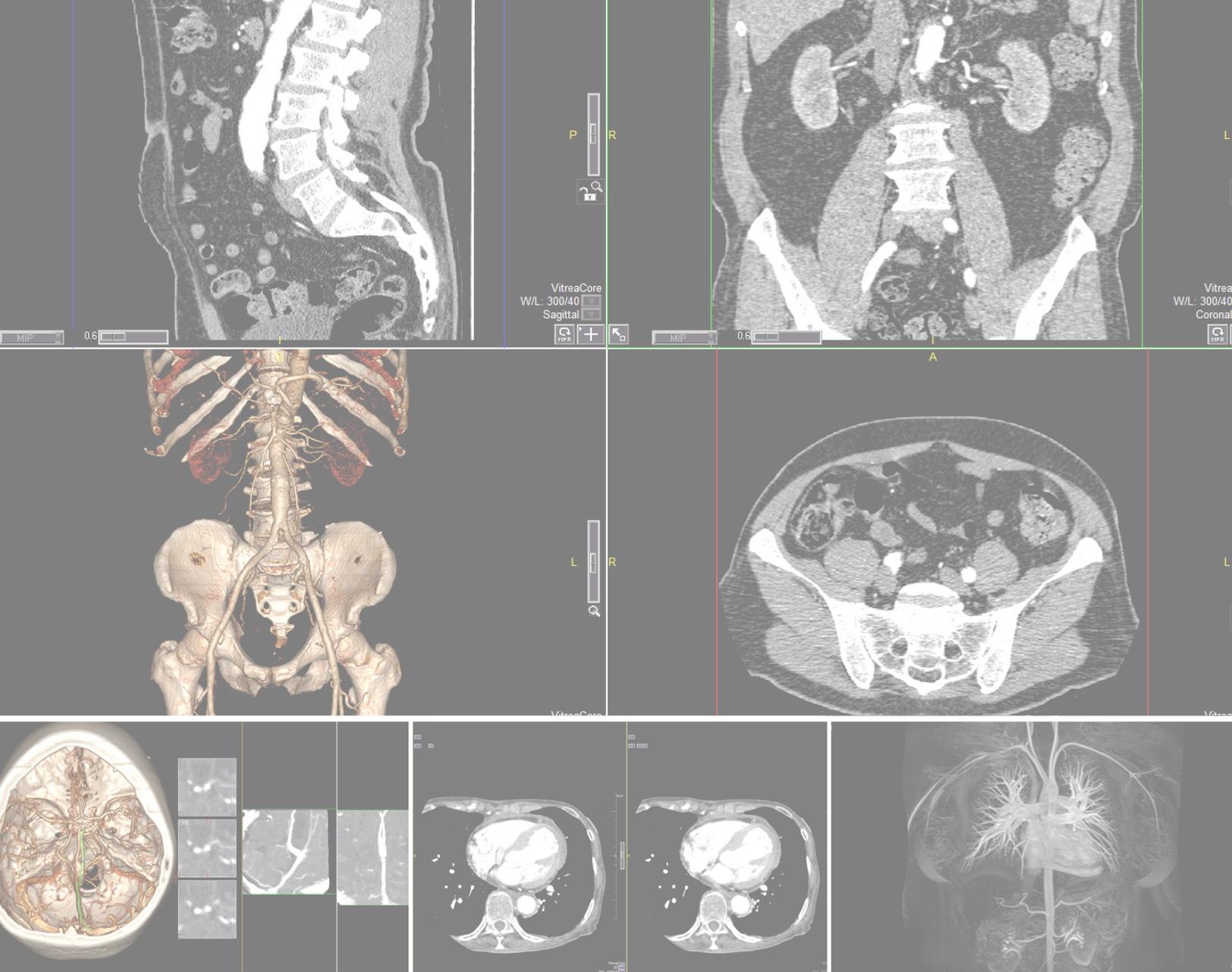
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