



Vision Tools

Workspace VNA

User Manual

Doc Ver : 1.12

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Application User Guide. 

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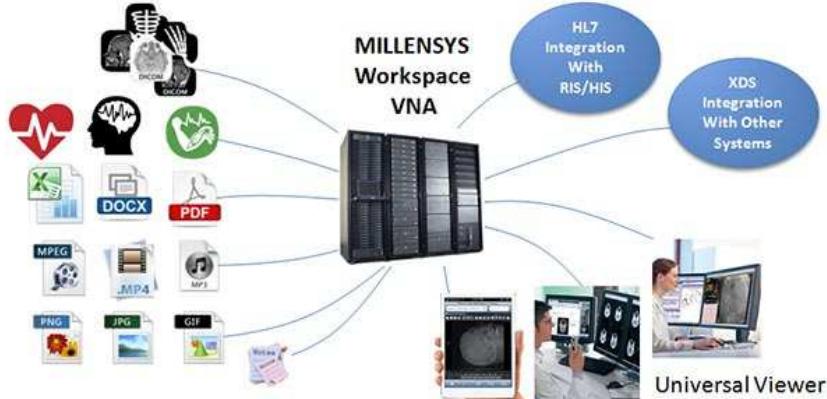
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1 Introduction



Vision Tools Workspace VNA is a powerful web based vendor neutral archive solution " VNA ", including built in PACS and reporting capabilities at the same time , the VNA can work in cloud, web, on-premises and enterprise environment using a state of the art ,truly web based, zero footprint universal viewer developed with the latest HTML5 and streaming technology to speed up images, videos and data transmission over low bandwidth lines. The solution includes complete packages for archiving, data manipulation, image diagnosis, printing, reporting, study sharing and image / report distribution between users inside or outside the hospital.

Vision Tools Workspace VNA is considered as an ideal single GUI Application for all operators, radiologists, cardiologists, technicians, clinicians, nurses, home viewing, teleradiology and telemedicine operators.



Vision Tools Workspace VNA is working as independent of INTERNET browsers (i.e. working with INTERNET explorer, Firefox, Google Chrome, Apple Safari, Opera Browser) or operating systems (i.e. Apple IPAD, iPhone, android tablets and mobiles, windows, Mac and other operating systems).



With MILLENSYS Vision Tools Workspace VNA solution , you will rarely need to install any other application in the hospital to archive your data.

Built for Maximum Productivity

All the needed tools for better diagnosis and sharing studies under one umbrella.

Doctors Work-list Management	Zero footprint Universal Viewer	Advanced Viewer for Diagnosis	supports DICOM and Non DICOM Data	Reporting from anywhere
Supports ECG,EEG, EMG and other waveforms	supports DICOM and non-DICOM multimedia videos and audio file	supports PDF , other document files	View and Report from Tablets and mobiles	True support for XDS standard
Share Clinical Notes	Share Studies with Consultants	Patient Portal	Referring Physician Portal	Heart Beat Monitoring technology
Support Multiple Internet Browsers	Support (Windows, Mac, iOS, Android, ...etc. devices)	High Availability Archive	Web based administrator	Rule based archive, compression and routing

2 Login Screen

2.1 Main Screen and Navigation

The Main Screen of Workspace VNA is the screen which the program begins with and from which the user can reach any tool that can be used in the program like study image browsing, image manipulation & processing, uploading DICOM/Non-DICOM files & cine loops, printing films, writing/dictating reports and returns as well and many other tools that will be explained in details.



Figure 1.1 - Main Workspace VNA Screen

Workspace VNA is designed as a Pure Web based software to ease users access from anywhere, support in the enterprise environment and boost connectivity with any other systems like (HIS/EMR) Solution.

The multilingual core of Workspace VNA is very important to have a localized version of Workspace VNA to suite every country.

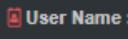
The Security concept of Workspace VNA is one of the security levels that can be provided to users and give them the confidentiality function regarding their own studies information.

2.2 Different Functionality



Figure 1.2 - Login Parameters

Each user will have a preconfigured account linked to a group of users with a specific rights related to their position/title in the facility.

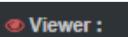
 **User Name :** Each user should type his user name in this field

 **User Password :** Then type his password in this field to login into VNA

2.2.1 Selection of Viewing Types

In Workspace VNA application users have the capabilities to select between two types of viewers related to his/her specialty and location In/Out the facility.

- A. Advanced Viewer (Small Foot Print) is the key for the radiologists to access their own studies and use advanced features which help them for better diagnoses.

 **Viewer :** Using the drop down menu above  to select between Advanced (Local) and Advanced (Teleradiology).

Users select **Advanced(Local)** choice when opening Workspace VNA from inside the facility to speed up image retrieval from server& to act as a diagnostic workstation.

Users select **Advanced(TeleRadiology)** choice when opening Workspace VNA from outside the facility to download studies using internet connection.

- B. Universal Viewer (Zero Foot Print) is using the latest HTML5 technology to view images and read/write reports for patients without installing anything on client side.

Users (Clinicians & Patients) select **Universal** choice when opening Workspace VNA from inside/outside the facility.

2.2.2 Selection of Viewing Quality

In Workspace VNA application, PACS support multi-compression technology to help users selecting between them related to his/her internet (WAN) or intranet (LAN) speed while diagnosing & reporting studies.

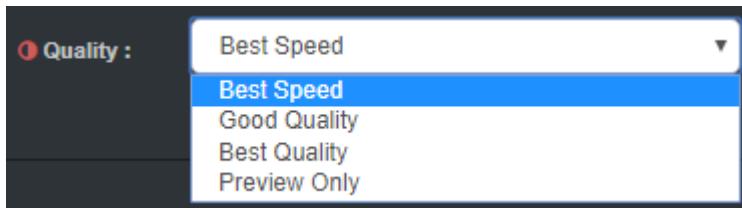


Figure 1.3 - Multi-Compression Selection

Users select **Best Speed** choice to get best speed with lowest diagnosing image quality (Still accepted diagnosable quality).

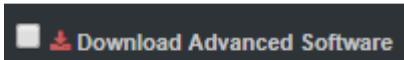
Users select **Good Quality** choice to grab the stick from the middle, by using moderate speed with moderate diagnosing image quality.

Users select **Best Quality** choice to get lowest speed with highest diagnosing image quality.

Users select **Preview Only** choice to view images in least resolution, it is only used for quick preview without the ability to manipulate, used for quick browsing or for limited bandwidth environments.

2.2.3 Download Thin Client

For all users that will use advanced processing tools (Advanced Viewer), they should download a client setup and install it on their PC's to be able using the advanced features in advanced viewer.



Mark **Download Advanced Software** then press log on to download client setup then install it.

Note:

- This will be done only once on the PC, if it was installed previously by other user on the same PC, no need to reinstall it.
- Logged in user might need windows administration privileges in order to install the setup client, please refer to your IT team in order to overcome any problem while installing

2.2.4 Managing Users Sessions

Workspace VNA is a pure web based application and its license model is based on either users concurrency\per seat, so each user logged on to the system will be counted on the main hosted server.

PACS admin can see how many users logged on to the system in the same time using Admin application.

3 Exam List (Worklist\Directory)

3.1 Main Screen and Navigation

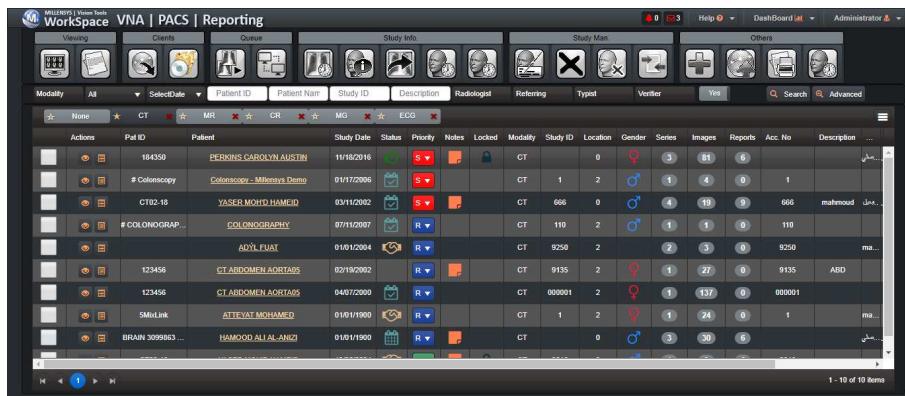


Figure 1.4 - Main Screen for Exam List

Default patient list grid is showing default\most commonly used columns including demographics and exam details

Users can customize their own grids, searching filters, customize icon features, opening patient history, burning CD's, importing studies and sending studies to other DICOM server from their user profile, this will be described later in the manual.

3.2 Quick Search Tool



Figure 1.5 - Inline Search

Quick search above the grid is a tool helps query studies using most common fields such as modality type, facility\branch, study\exam date...etc.

3.3 Advanced Search Function

By using advanced search button  **Advanced** will give you more search fields to search on studies.

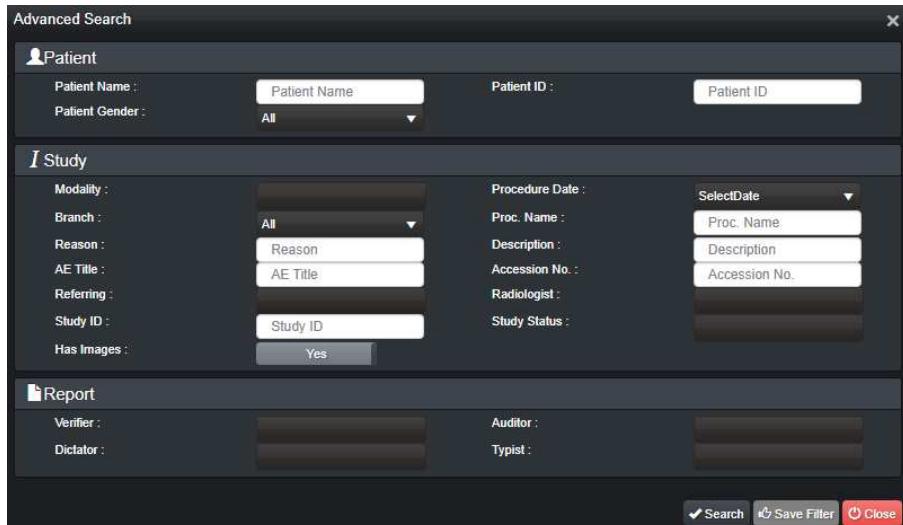


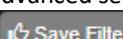
Figure 1.6 - Advanced Search

This tool is used to define more search criteria to get specific studies for diagnosing and reporting, after applying your search criteria

Select  **Search** button to get your result on main directory.

3.4 Create User Filters

All users can save their own search criteria to be as a search filters to be used faster later on.

From advanced search (Figure 1.6) - Users will define any search criteria then select  **Save Filter** to type a name for your own fast search filters (as shown in Figure 1.7).

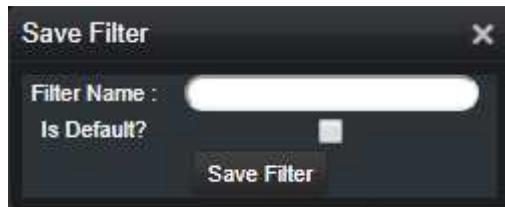


Figure 1.7 - Save Search Filter

To set this filter as default mark **Is Default?**,

This will make this filter as a default search used to retrieved the primary and default list, then press **Save Filter**.



Figure 1.8 - Saved Search Filters

All saved search filters will be saved automatically to each user's profiles and will be displayed as buttons above the grid as shown on Figure 1.8

In order to activate them just press on the button, this will trigger the search criteria defined

3.5 Main Functions

3.5.1 Viewing Images

VNA Workspace users have multiple ways to open study images from main study directory.

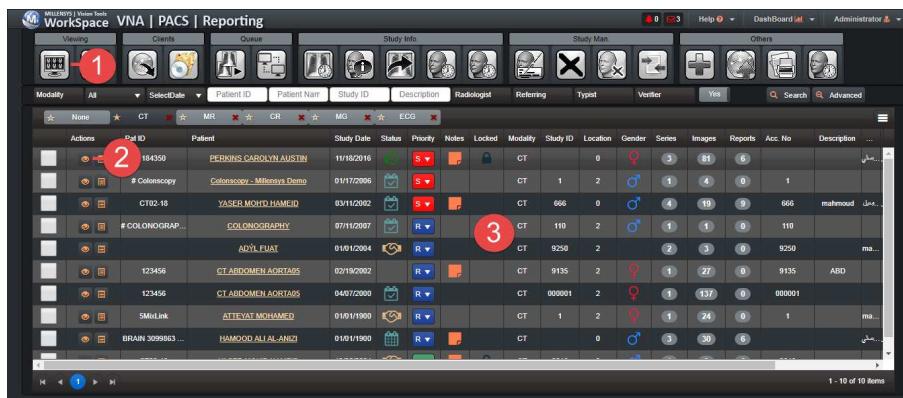


Figure - 2.9 Opening Study Images

- 1 By clicking on  button.
- 2 By clicking on  icon.
- 3 Double clicking on the row itself.

3.5.2 Viewing Reports

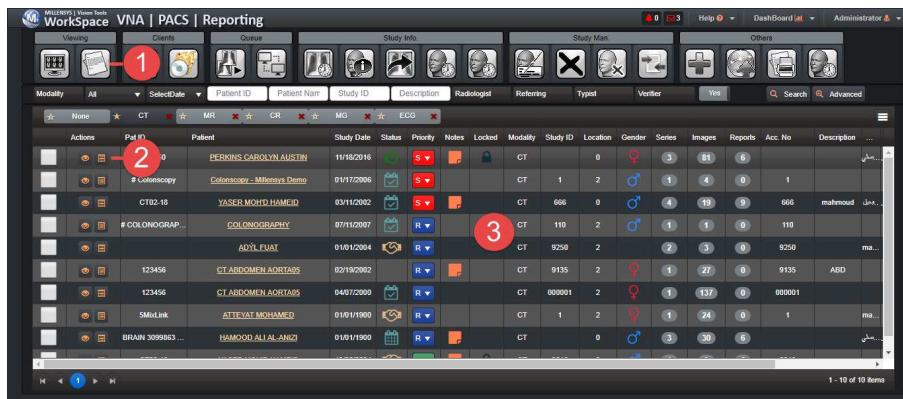


Figure - 3.0 Opening Study Report

- 1 By clicking on  button.
- 2 By clicking on  icon.
- 3 Double clicking on the row itself, this will launch the image viewer , if the viewer is universal viewer the report will be displayed beside images, or if it is advanced viewer you should click **on View Reports** in order to see reports

3.5.3 View Study Details

The screenshot shows the 'Study Info' tab selected in the top navigation bar. A specific patient row is highlighted, with three red circles numbered 1, 2, and 3 pointing to the Patient Name link, the Study Info icon, and the Description icon respectively.

Figure - 3.1 Study Details

- 1 By clicking on Patient Name Link, study info. Dialog box will appear with patients demographic and study info. As shown below in Figure 3.1

The screenshot shows the 'View Information' dialog box. It displays patient demographic information (Patient Name: Colonoscopy - Millensys Demo, Patient Code: #Colonoscopy, Gender: M, DOB: 17-01-1947) and study details (Study ID: 80179, Modality: CT, Proc. Name: WIRE LOCALIZATION, etc.). Below this, a detailed table provides further patient and study metadata.

Patient	Study
ID: 974283	Accession: 80179
Code: #Colonoscopy	Modality: CT
DOB: 17-01-1947	Proc. Name: WIRE LOCALIZATION
Gender: M	Machine:
Height: 0	Proc. Start: 17-01-2006 12:00:00
Weight: 0	Proc. End: -
	Referring:
	Branch:
	Priority: S
	Location: MiVna
	Status: Completed
	Images: 4
	Cines: 0
	Reports: 0
	Voices: 0
	Series: 1
	Documents: 0
	Notes: 0
	UID: 1.3.12.2.1107.5.1.4.51699_30000006011708372860900000028
	Description:
	Directory: E:\MillenSys\Patients_VNA\# Colonoscopy\S1_3_12_2_1107_5_1_4_51699_30000006011708372860...

Figure - 3.1 Demographic & Study Info.

2

By clicking on study history  button, you will get a dialog box with study status tracking history as shown below in Figure 3.2

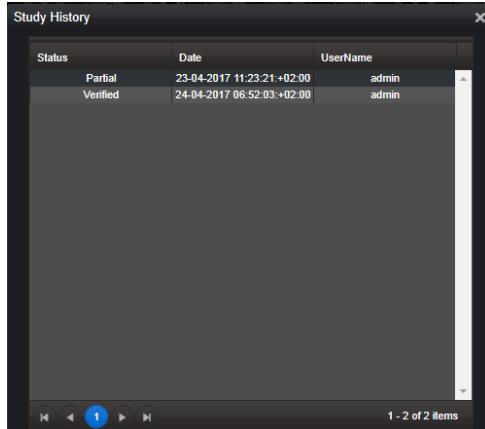


Figure - 3.2 Report History

3

And by clicking on study notes  button, you will get a dialog box with all study complain, clinical notes & others info. in several written language capabilities as shown below in Figure 3.3

Each note is displaying User Full Name , who entered the note, Time of entering

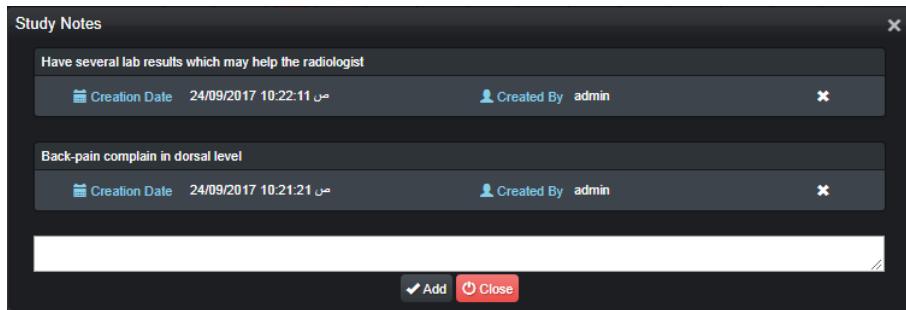


Figure - 3.3 Study Notes

In order to add new note, Write notes in the fee text area in white, then press **Add** button

In order to delete existing note, press X button with the note, in order to delete it, system will ask to confirm delete action

3.5.4 Edit\Modify Study Details

In case of unhandled situation like emergency cases, VNA Workspace supporting users with a modifying module to help them editing any demographic/study data on images/files and database or on database only depending on users rights.



Figure - 3.4 Edit Study Button

- 1 By clicking on **Edit Study** button, a new dialog box will be opened to start editing all data required then press **Save** and **Close** after editing as shown above & below in Figure 3.4 - 3.5

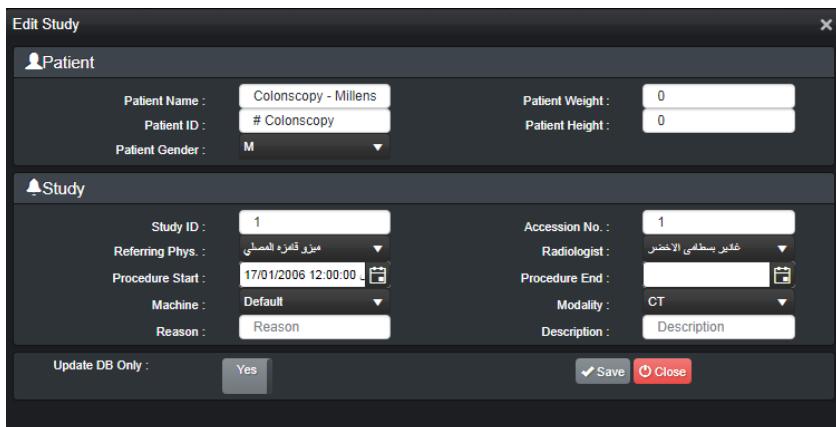


Figure - 3.5 Edit Study Dialog Box

3.5.5 Study Status

Three columns describe status of each study: "Status", "Priority" and "Locked" columns.

"Status" like Completed, Cancelled, Verified, Delivered Films,...etc. This status changes automatically based on actions users do on the study.

"Priority" like "S" for STAT (Urgent), "M" for Medicare,...etc. Priority statuses list could be configured per customer. Users can change priority status from the dropdown list

"Locked" study means that this study is opened by another user.

User will be able to know study status from icons under each column. Also a description of each icon will appear once the user move the mouse pointer to this icon.



This is a list of main statuses:

- Statuses before imaging will not appear unless user uses advanced search.

These statuses include:

- Scheduled
- Confirmed\Cancelled
- Arrived (Means that patient just came to the center to do the procedure)
- Pending (Patient is waiting his\her turn to enter the procedure room)
- In Progress (Patient is inside the procedure room)
- Completed (Imaging done and images were sent to MiVNA PACS server)
- Dictated (User recorded a voice for reporting)
- Partial (Report was written and saved initially)
- Waiting for Verify
- Verified
- Handled (Films only, Reports only or both)

3.5.6 Access Patient Jacket



Figure - 3.6 Accessing Patient Jacket

VNA users can full history on patient level feature called **Patient Jacket**  which help users to see all studies data like such as Study Timeline, Study Series, Medical Reports, DICOM/Non-DICOM files, Clinical Notes, and Scanned Documents.... etc. as shown below in Figure 3.7

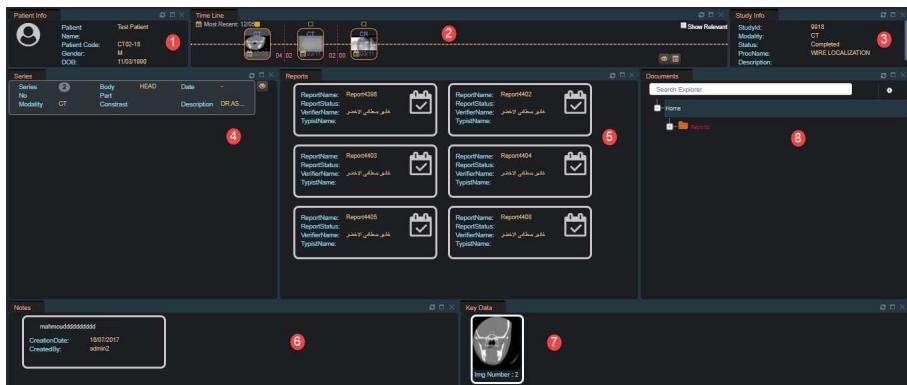
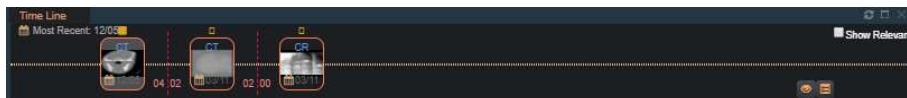


Figure - 3.7 Patient Jacket

Patient Jacket tool, consists of different preview panels,

- 1 **Patient Info**, Display current patient summarized demographics.
- 2 **Time line**, Show list of studies\exams done for the patient, its shows a thumbnail preview for the study in case study is images you will see one image from the study



Time line, showing a dotted line to separate patient studies by years , displaying from new to old years

Pressing the **Show Relevant** this will show matched studies from the history that is identical to my selected study by Body Part or Modality Type

By Clicking on each displayed thumbnail, this will select the study, will display in other panels details for this single study, such as Series\Reports\Clinical Notes\Key Data

3

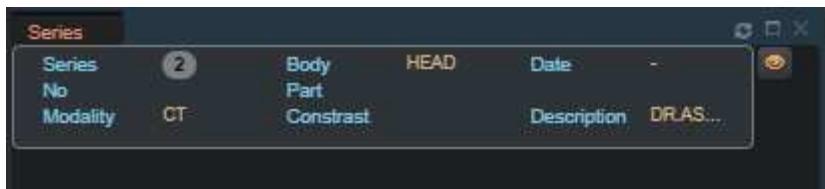
Study Details, In this panel system display the current select study briefing study as Study Number, First Modality Type, Status, Procedure Name...



4

Series Section, this display list all the series inside the select study, some details is written per each series, like series number ,modality type, date, body part, description

In order to select view specific series, user can click on  button to launch the viewer

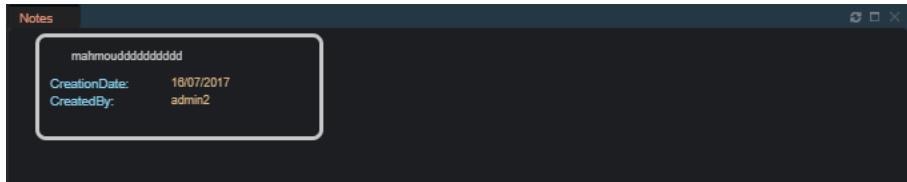


5

Reports Section, this display list all reports written to the select study, some details are written per report

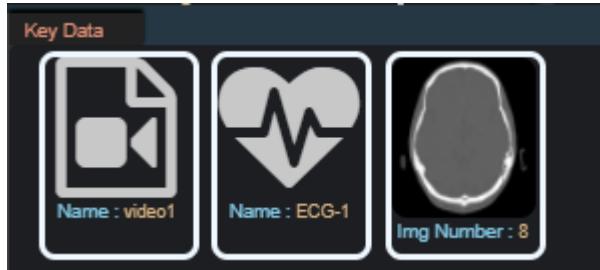
6

Notes, this display an icon for each clinical notes, with prefix details on the note

**7**

Key Data, this display an icon for each key image\Key Document attached in the VNA per this single study

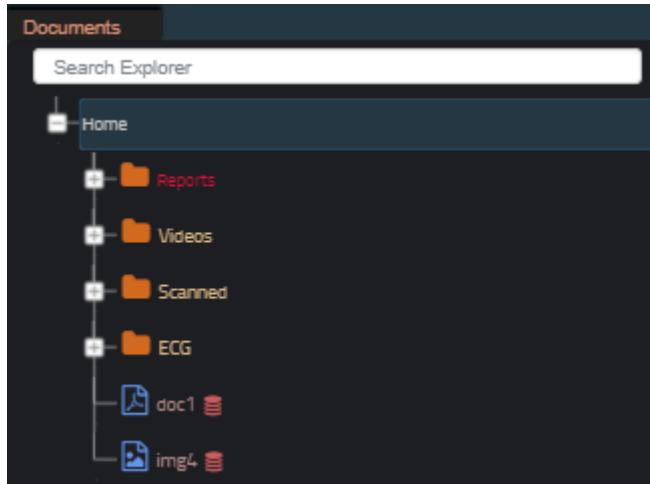
Displayed icon will show either the key file is images\ECG Wave Form\Video....etc



When you click on the Icon this will launch viewer to view it

8

Documents, this display tree of documents attached to the selected study for this patient



Each folder will represent certain category of patient documents, when we expand this folder, sub folders\files will be displayed

3.5.7 Access Documents Manager

In VNA Workspace, MillenSys add a new feature called document manager to help user adding DICOM/Non-DICOM files and documents under specific sections to facilitate reaching them with one click.



Figure - 3.8 Accessing Document Manager



User can access Document Manager  Button as shown above in Figure 3.8,

Then a new tab will be opened with document manager feature to give user a document timeline, sections created, and preview for any document in preview area as shown below in Figure 3.9



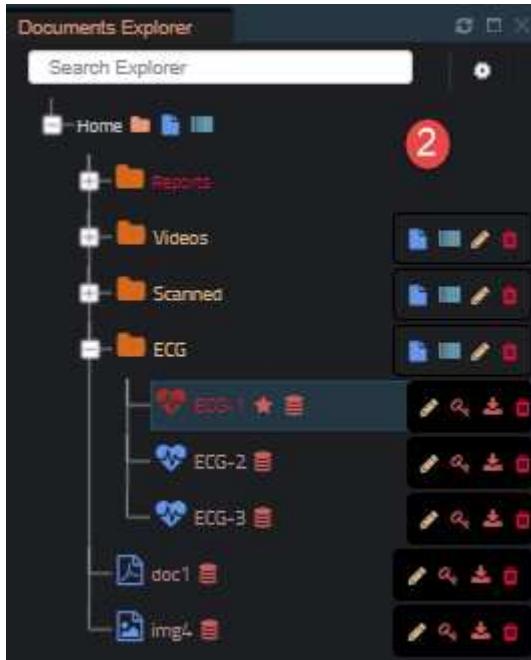
Figure - 3.9 Document Manager

Document Manager tool, consists of different preview panels,

- ① **Time line**, Show list of different folders with their exam dates, its shows a thumbnail preview for the , depending on the type of file you will see different icon displayed

2

Documents Explorer, this display tree of documents attached to the selected study for this patient



Each folder will represent certain category of patient documents, when we expand this folder, sub folders\files will be displayed

User can upload new file by pressing new button 

In order to edit existing file press the 

3

Detailed Info, Once click on single document is selected from document explorer list of basic information is displayed in this panel, showing file ID, Creation Date, Size, Title...etc.

Basic Info			
Id	g	Title	ECG-2
Patient	CT02-18	Study	70090
Creation	18-08-2016 03:25:49		
Start	-	End	-
Size	1586	Hash	FF28AEB5FC02ADE...
Language		Mime	dicom/ecg
Comments			
Key	x	Local	▼

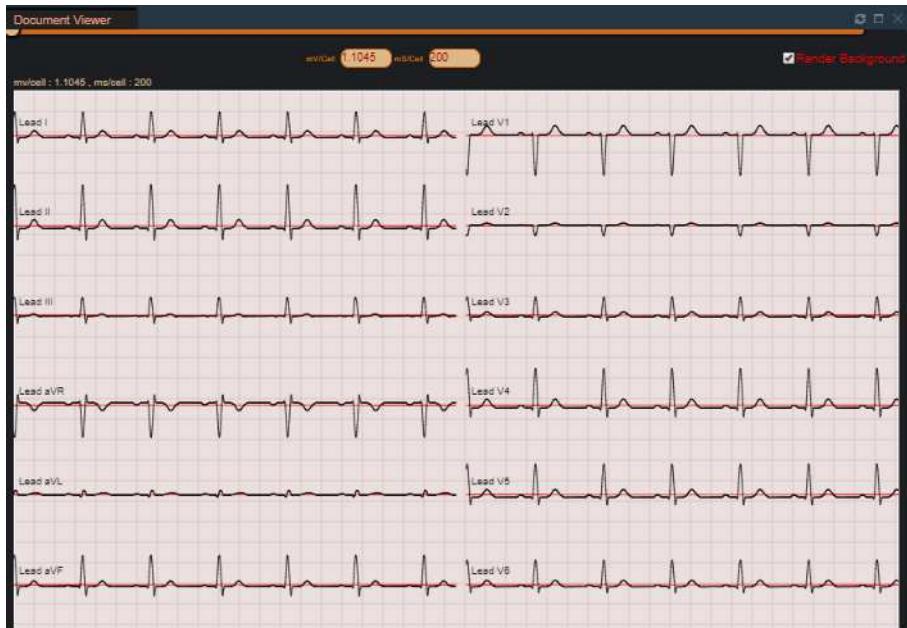
4

Volume Info, Once click on single document is selected from document explorer list of file's volume status is displayed in this panel such as Storage location , Volume Name....etc.

Basic Info			
Id	1		
Name	LOCAL	Type	
Storage Path	E:\MillenSys\Patients		
Account Name		Account Pass	
Max Size	500	Warning Size	400
Default	x	Https	x
Active	✓		

5

Preview Panel, Once click on single document is selected from document explorer list of preview for this file will be shown in this panel, depending on the type of file the appropriate viewer will show its content.



4 Universal Viewing

Universal Viewer is a Zero Foot Print Viewer nothing to be installed on your device, just login and work directly from the server.

Using a state of the art of HTML5 technology image viewer to view and diagnose images from anywhere and from any device (e.g. Windows PCs, Mac PCs , Linux PCs, Apple IPAD/IPhone, Android Tablets and phones, ...etc.).

Viewer includes all tools needed for viewing and diagnosis of all types of studies either images or documents.

It can do some post processing functions such as, Pan/Zoom, Window and color adjustments on the fly, measure , process, hanging protocols, ...etc. and Read/Write reports from the web using the built in web reporting tool.

4.1 Main screen and navigation

The below Figure shows the main screen of Universal Viewer,

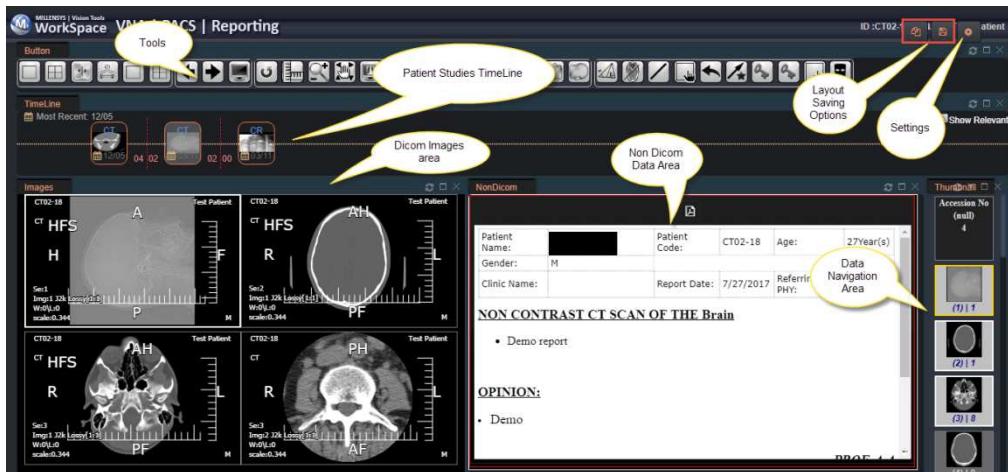


Figure 2.1 – Universal Viewer

- **Button or tools Window:**



Display one image or 4 images (One image is the default).

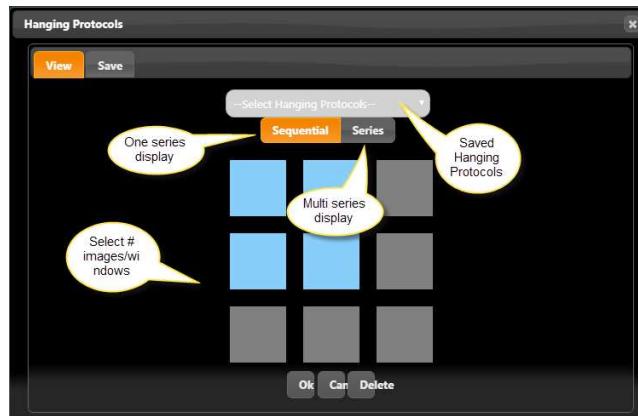
Click on the button to apply.



Hanging Protocols: To select, create and save more hanging protocols

This function we can change displaying image windows, by changing the selected windows in the below tool, viewer will be display images as you requested

You can specify either to display images sequentially or series mode that display one image from each series and will keep one series in each window for series comparing functionality



To display one or multi documents/reports of study in non Dicom data area.

Just once mouse click to apply.

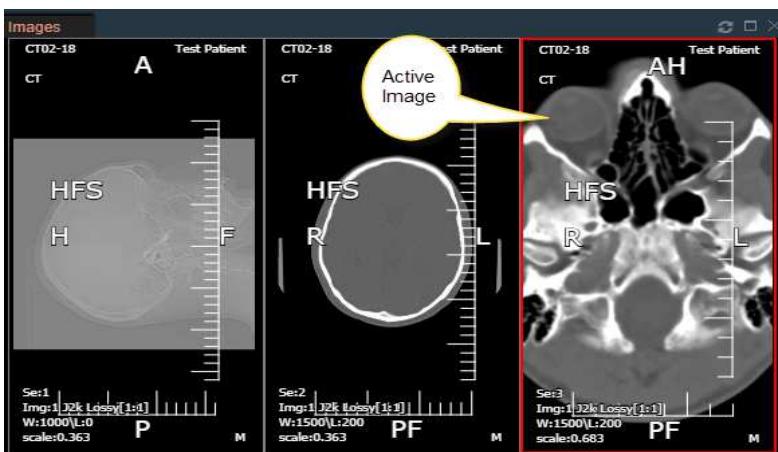


Images navigation buttons: Next and Previous image.

Once mouse click to apply.



Single Mode: To activate one image only so that user can do manipulation like zooming on it without affecting on other images\windows.
One click on the button then the active image frame will be in red color.



Reset images: One click to reset images to its default view.



Display actual size of images.
This will images in their true size



Zoom or Pan (Left click functionality).
User can use left click (Long press) to zoom or pan images.
One click on the button will activate the function.



Fit Image: To fit images with the screen display.
One click to apply.



Another function of the left click (long press) to do WW/BC (Window width /Brightness Contrast).

Also could be done by right click.



Create, select and save new presets for WW/WL.

Check section 6.3.3 for more details.



Invert filter:

One click to apply invert filter on images.



Flip Horizontal and Flip Vertical buttons:

One click on the button to apply.



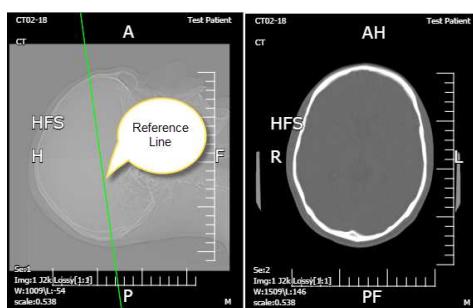
Rotate Left and Rotate Right buttons:

One click on the button to apply.



Reference Line Activation/Deactivation:

One click to show and one click to hide.



One click on the image will show its reference line on the other images.



Draw line/Distance Measurement For more details check section 7.11 (Measurements Tools).



Drag the drawn lines, measurements and annotations.



Undo last action

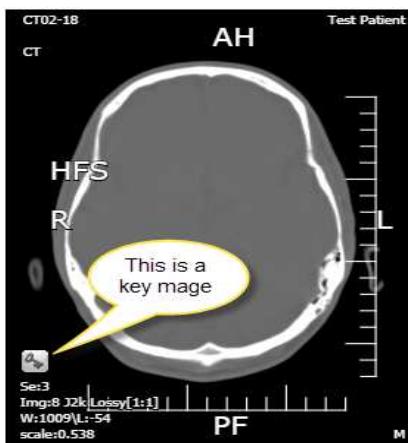


Measurements: Rectangles, angle, distances and others. For more details check section 7.11 (Measurements Tools).



Show/Hide key images & Set/Unset key images.

One click to show/hide key images (First button) and one click to set/unset key images (Second button).



- **TimeLine:** Shows thumbnails for all study data, Series, Reports, Cines and non Dicom files.
For more details check section 6.2.

- **Dicom Data Area:** Display Dicom images/cines.
- **Non Dicom Data Area:** Display study reports, scanned documents, attachments and all non Dicom files.

4.2 Time Line, Comparing patient priors

In TimeLine window user can find all patient's studies, compare studies and show/hide relevant studies based on modality type or body part (According to user profile settings).

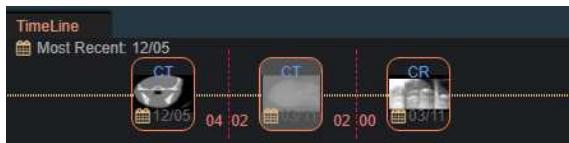


Figure 2.2 – TimeLine

The figure 2.2 shows that patient has 3 studies. To know any study's details just move the mouse pointer above it.

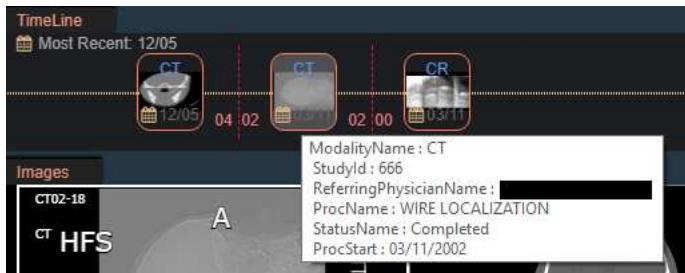


Figure 2.3 – TimeLine – Study details

The "Show Relevant" option in below figure show same studies using modality type or body part



Figure 2.4 – TimeLine – "Show Relevant"

4.3 Main Functions

4.3.1 Browsing of Images\Files

User can drag & drop series from "Thumbnails" window to "Images" and browse images by mouse scroll or use "Next" and "Previous" buttons.

4.3.2 Dicom Image Measurements

From "Buttons" window select and



the measurement screen will open

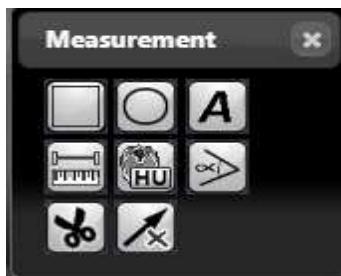


Figure 2.5 – Measurements Window

	Measures rectangular area		Measures Hounsfield Unit
	Measures circular area		Measures area
	Writes text note		Deletes selected measurements
	Calibrate tool		Clear all measurements

4.3.3 Changing window width\Window Level

By default user can change WW/WL by right click (Long press with movements).

The same function could be done by left click by this button



To open nonlinear WW/WL click



Figure 2.6 – Nonlinear WW/WL

To create, select and save new presets for WW/WL click

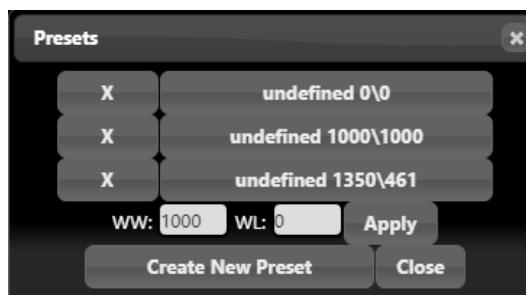


Figure 2.7 – WW/WL Presets

4.3.4 None Dicom File Viewing

To view non Dicom files like scanned documents, Cines and reports just select it from "Thumbnails" window and it will be displayed on "Non Dicom" Window.

In below figure "Video1" is selected

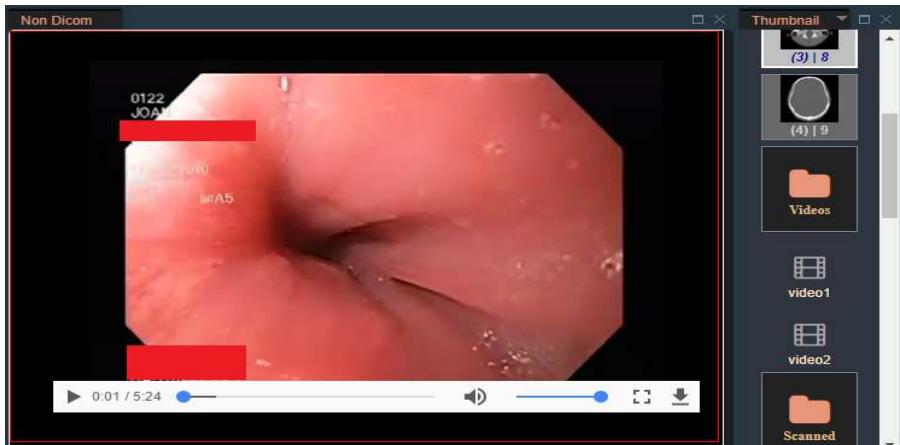
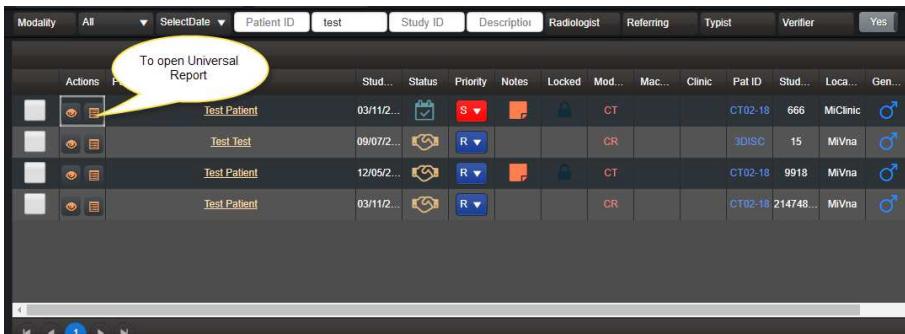


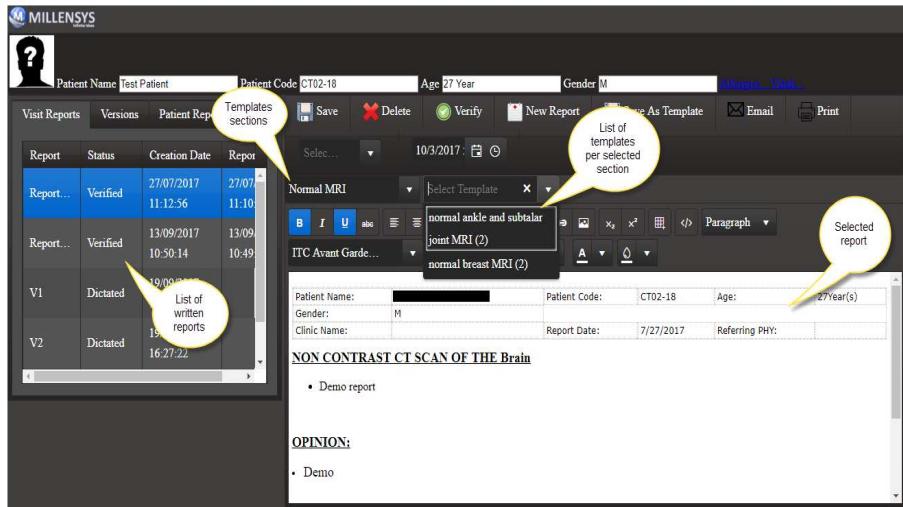
Figure 2.8 – Non Dicom File Viewing

- **Universal Report:**



The screenshot shows the 'Universal Report' search interface. At the top, there are search filters for Modality (All), SelectDate, Patient ID, Study ID, Description, Radiologist, Referring, Typist, Verifier, and a Yes/No checkbox. Below the filters is a table with columns: Actions, Patient ID, Study ID, Status, Priority, Notes, Locked, Mod..., Mac..., Clinic, Pat ID, Stud..., Loca..., Gen... . A tooltip 'To open Universal Report' points to the 'Actions' column for the first row. The table contains four rows of test data. At the bottom is a navigation bar with arrows and a page number indicator.

Actions	Patient ID	Study ID	Status	Priority	Notes	Locked	Mod...	Mac...	Clinic	Pat ID	Stud...	Loca...	Gen...
	Test Patient	03/11/2...		S ▼			CT			CT02-18	666	MiClinic	
	Test Test	09/07/2...		R ▼			CR			3DISC	15	MiVna	
	Test Patient	12/05/2...		R ▼			CT			CT02-18	9918	MiVna	
	Test Patient	03/11/2...		R ▼			CR			CT02-18	214748...	MiVna	



4.3.5 ECG Waveform Viewing

Universal Viewer is also characterized by ECG waveform files viewer in which user can navigate the form using mouse scroll or the top orange bar. User can set the "mV/Cell" and "mS/Cell" and also can select the render background option.

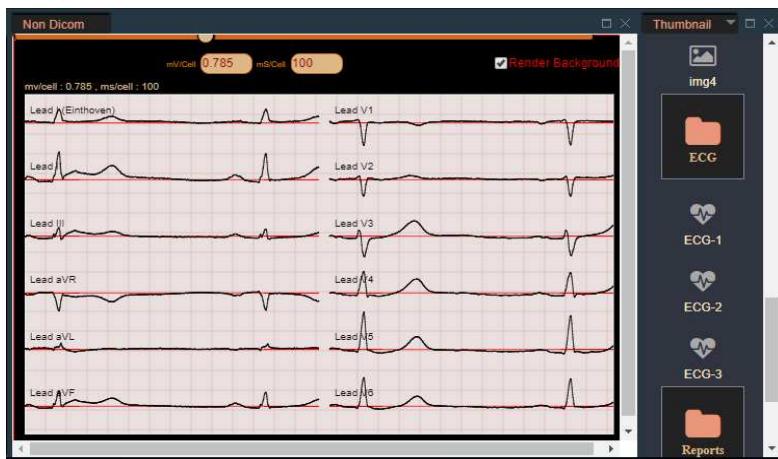


Figure 2.9 – ECG Waveform Viewing

4.3.6 PDF File Viewing

Like cines files and ECG waveforms files, PDF files could be selected and displayed on the "Non Dicom" window.

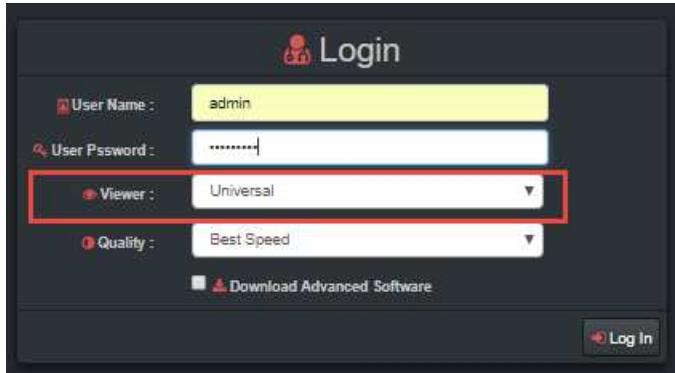
These PDF files could be attached files, scanned files or uploaded files.



5 Universal Report

Universal Report is like the Universal Viewer, a Zero Foot Print tool that works through any operating system as well as any browser.

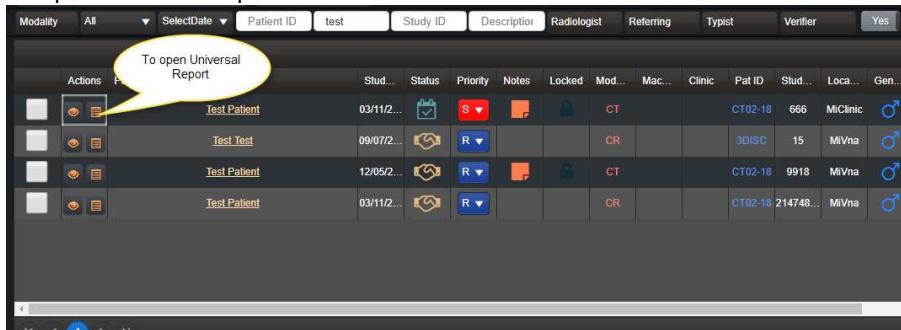
To open Universal Report make sure first you select “Universal Viewer” In login screen.



And in case of user selected Advanced Viewer, no need to log out to select Universal Viewer but change viewer as below:

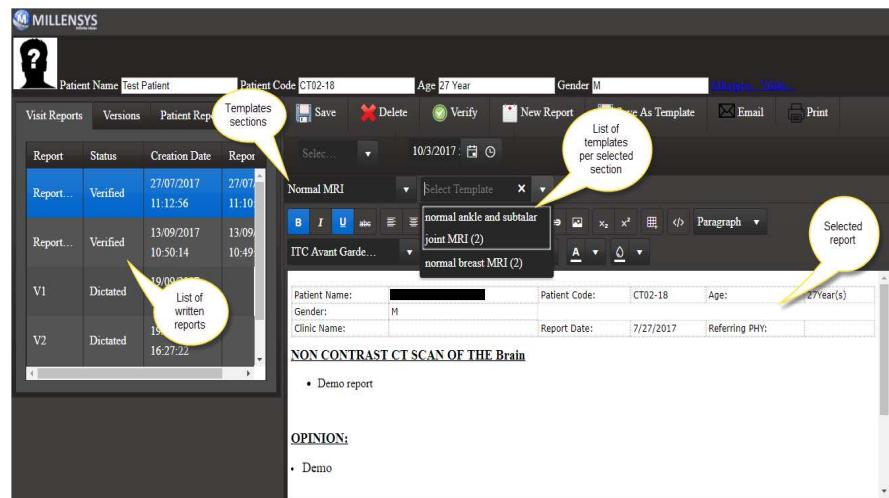


To open Universal Report



The screenshot shows a grid of report entries. The columns include Modality, All, SelectDate, Patient ID, test, Study ID, Description, Radiologist, Referring, Typist, Verifier, and Yes. The 'Actions' column contains icons for each row. A yellow callout with the text "To open Universal Report" points to the icon in the first row's 'Actions' column.

A new browser tab will open to display the report



The screenshot shows a detailed report editing screen. At the top, there are buttons for Visit Reports, Versions, Patient Rep., Templates sections, Save, Delete, Verify, New Report, Email, and Print. A yellow callout with the text "List of written reports" points to the "Templates sections" button. In the center, there is a "Select Template" dropdown menu with options like "Normal MRI" and "ITC Avant Garde...". A yellow callout with the text "List of templates per selected section" points to the dropdown. Below the template selection, there is a rich text editor and a preview window showing "NON CONTRAST CT SCAN OF THE Brain" with sections for "OPINION" and "Demo". A yellow callout with the text "Selected report" points to the preview window.

In previous screen user can do the following:

- 1- Write a new report: Navigate sections\templates and select the template. Once template is selected its contents will be loaded to the report page.

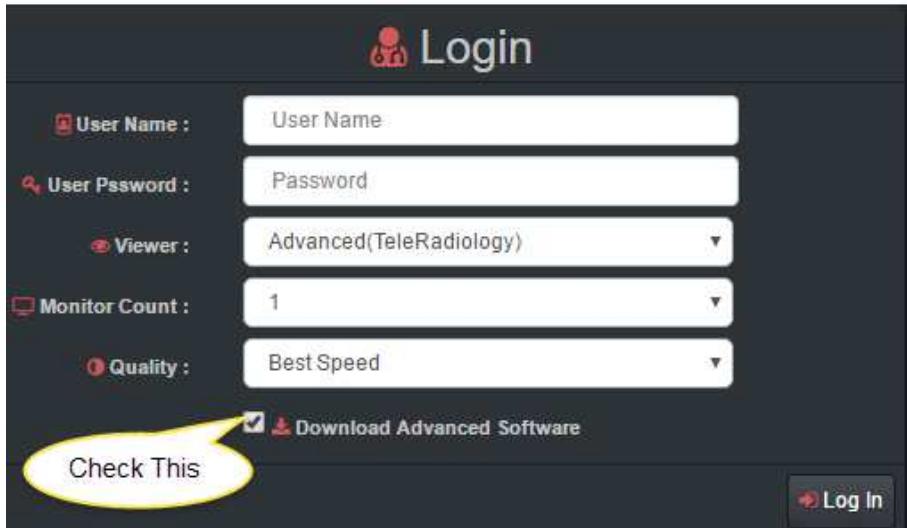
Click “Save” to save the report after modifying. A new record will be added under the “Visit Reports” list.

- 2- With each “Save” click, a new record will be added under the “Versions” list. So if user needs to view versions of a specific report, select the report from the “Visit Reports” list and then go to the “Versions” list.

-
- 3- Verify the report. Once user verifies the report its status changes in "Visit Reports" list.
 - 4- Display saved\verified reports and versions of each report: just select the saved report from the list to be displayed.

6 Advanced Image Viewer

User must select Advanced Viewer and download it before login.



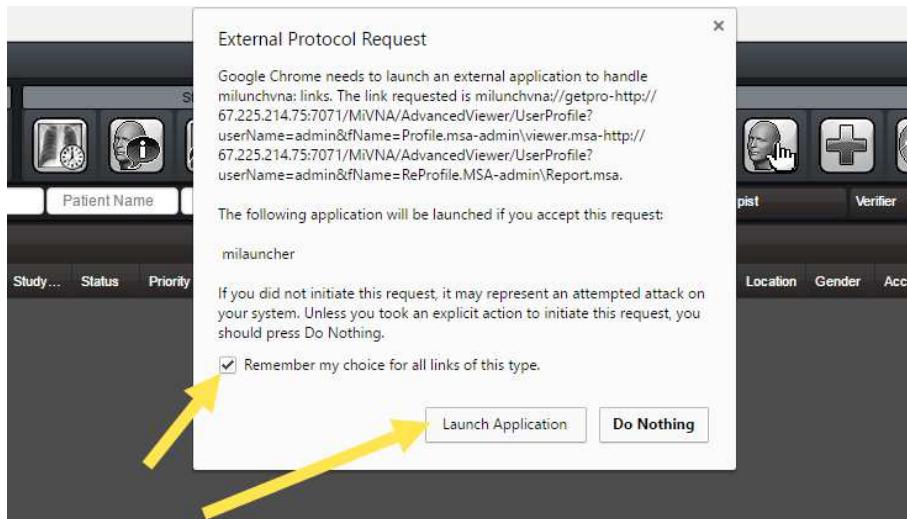
To open advanced Viewer click “Open Viewer” button under action column or select study and click “View Image” button in directory buttons.



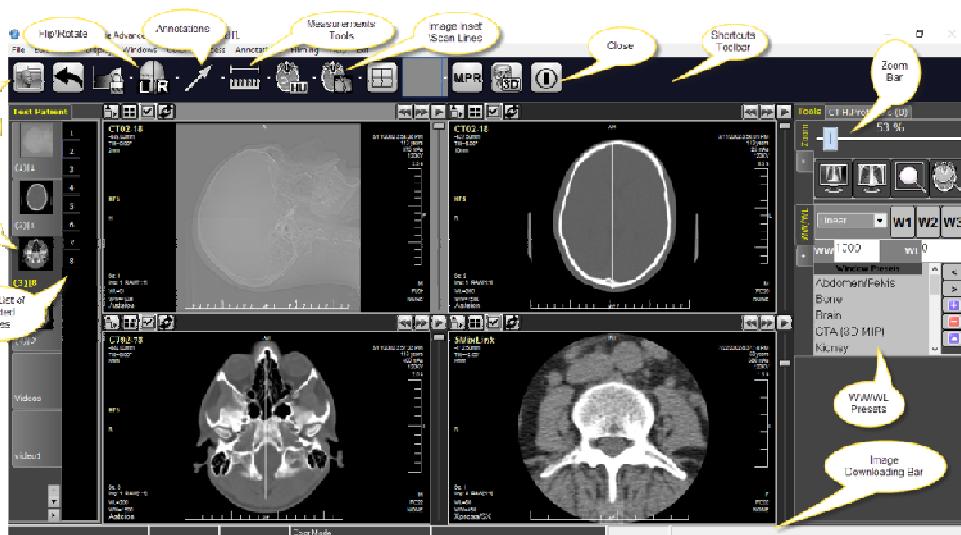
In case of opening Advanced Viewer for the first time, below screen will appear.

This message depends on the internet browser used, it is different from browser to another

Once you are asked by the browser to accept, please accept , remember to check the remember my choice to avoid asking every time.



6.1 Main screen and navigation



The Image Tool will open on the assigned monitors (According to default settings or default hanging Protocol)

The user can choose to view more than one image in the main screen by choosing the Windows menu then specifying the number of images to appear in the main screen.

Default Mouse Actions *

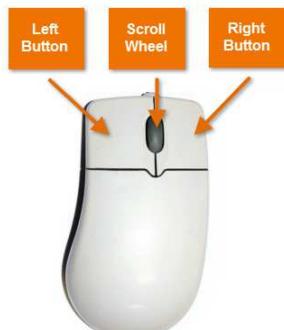
Left Button Click: Pan selected image(s) by clicking and holding the left click button and moving the mouse.

Right Button Click: Change WW\WL or (B\C) of selected image(s) by clicking and holding the right click button and moving the mouse.

Center Button Click: Zooming selected image(s) by clicking the center click button and moving mouse forward (zoom in) and back (zoom out).

Center button scroll: this will change browsing of images down scroll will browse next image and up will bring previous image

* User can change the mouse actions as desired.



6.2 View Time Line\Study priors comparing

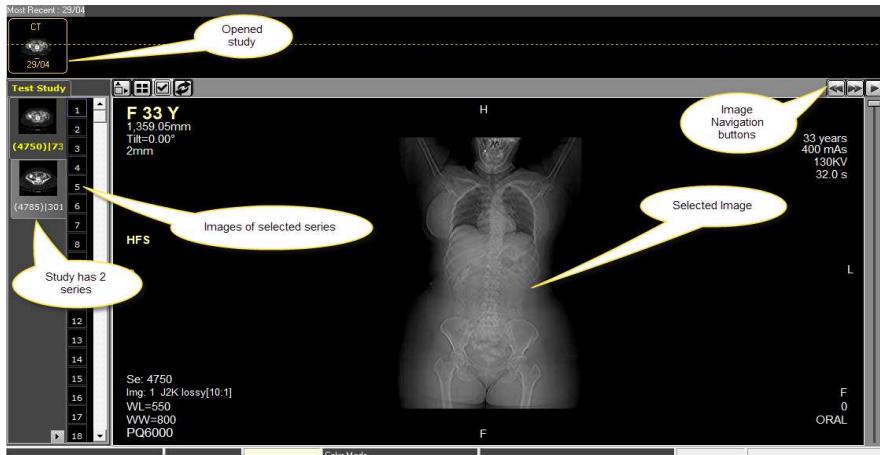
TimeLine Window shows all studies of the patient where user can compare the current study with its priors.



The Timeline above shows prior studies separated by dotted red line based on study year.

To open one of these priors just double click on it.

6.3 Study\Series\Image Navigation

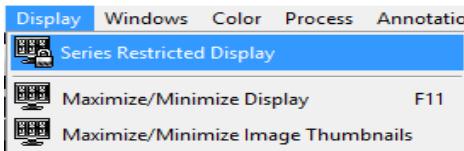


- **Study Navigation:**

- In case of more than one study found in TimeLine: Viewer will display first the study that user already selected from patients list\worklist.
- Other studies could be opened as mentioned in section 7.2

- **Series Navigation:**

- To view any series just “Drag & Drop” by left click.
- “Series Restricted Display”: If enabled, series will be displayed only on the Window to which user dragged and dropped the series not to all windows.
- Also user will not be able to browse the next series in the same window.



- **Series Description:**

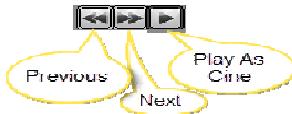
Under each series there is a description written in the form “(XX)|YY” where “XX” represents the series number and “YY” represents number of images of the series.

Example: (4750)|73 means that series number is 4750 and this series has 73 images.

- **Image Navigation:**

To navigate images: By mouse scroll, Image Navigation Buttons or keyboard shortcuts. Keyboard shortcuts could be configured in profile settings.

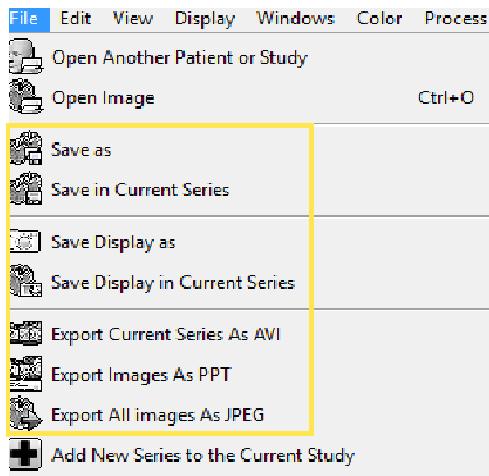
- Image Navigation Buttons:



- Images list could be displayed as numbers or thumbnails according to user profile settings.

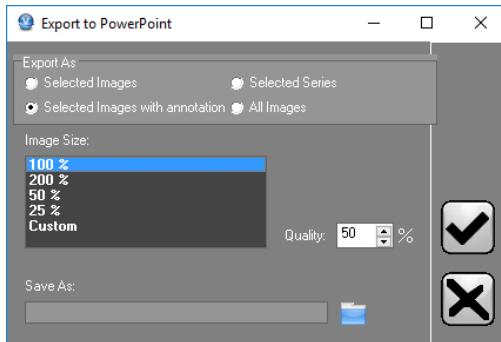
6.4 Save\Export Images

There are some image saving and exporting options in “File” menu



- **Save as:** Save selected image to directory without annotations and modifications like zooming and without image information.
- **Save in Current Series:** Save modified image (with annotations, zooming & WW/WL) to current selected series.

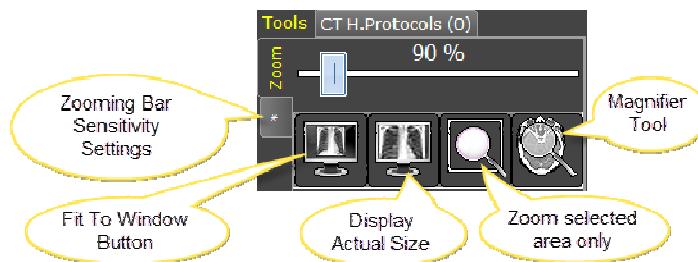
- **Save Display as:** Save image to directory with annotations and modifications like zooming and with image information.
- **Save Display in Current Series:** Save modified image (with annotations, zooming & WW/WL) to current selected series.
- **Export Current Series As AVI:** To save series list as a cine.
- **Export Images As PPT:** this function will export image to Microsoft PowerPoint, Note: Microsoft PowerPoint should be installed on the PC



- **Export All Images As JPEG:** Export all study images to directory.

6.5 Image Manipulation

- **Zooming:**
 - By mouse as mentioned in section 7.1
 - By “Zoom bar”/“Zooming Options Buttons”



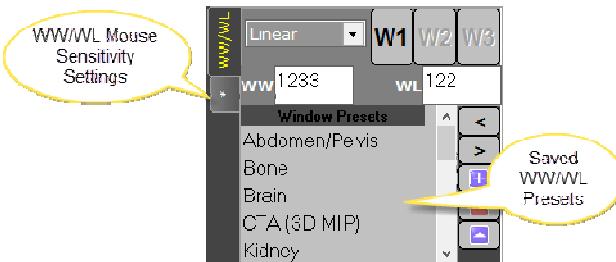
- **Maximize/Minimize:**

Double click to maximize and double click to minimize. Also from

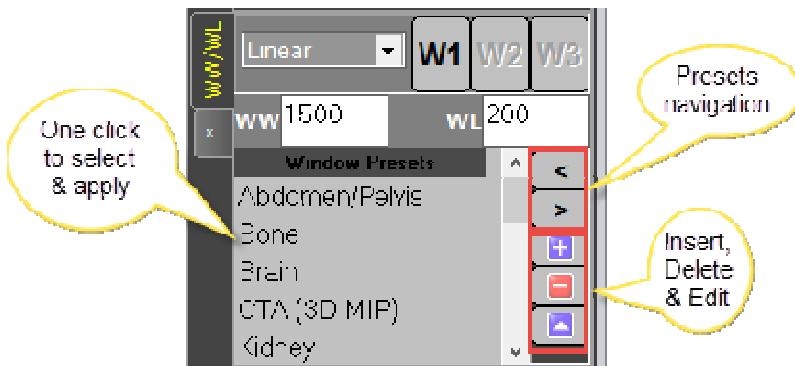
maximize\minimize button  in the top left corner of each window\image.

- **WW/WL:**

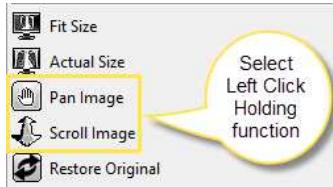
- By mouse: Change WW\WL or (B\C) of selected image(s) by clicking and holding the right click button.
- WW/WL Presets:



- In addition to using mouse in changing WW/WL, user can select window from "Window Presets" menu. User also can edit, delete and create new ones.
- In case of image have 2 or 3 ww\wl sent in the DICOM images and created by the modality, user will be able to switch between these windows through "W1", "W2" and "W3" buttons.



- Pan Image: By clicking and holding the left click button.
- Navigate/Scroll Images: By mouse scroll. Also user can do it by left click (hold) button (must set it first from right click menu options)

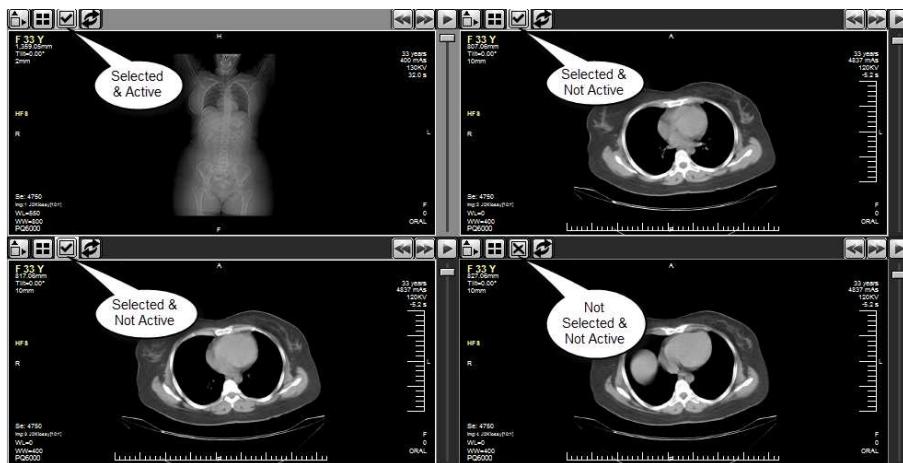


- **Image Restore:**

To restore original image, select “Restore Original” from right click menu.

6.6 Window\Image Selection

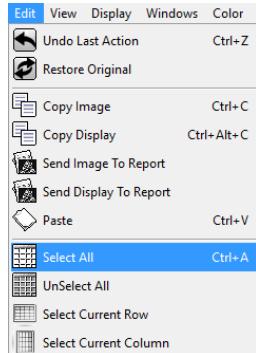
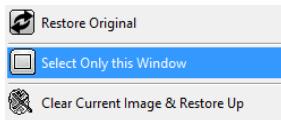
- By default all windows\images are selected but only one is active. Active window\image is highlighted by Gray color borders.



- One click on any window\image will set it to be active window\image.
- User can select\deselect one or more windows\images from the top left selection mark.

- For fast selection:

One window\image selection: use the option “Select Only This Window’ from the right click menu.

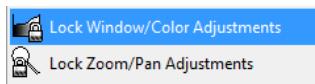


Select/Unselect All, Select Current Row or Select Current Column: From “Edit” menu

6.7 Image Locking Functions

LOCK WINDOW WIDTH\LEVEL

Lock WW\WL feature is used to fix WW\WL adjustment while user browsing of images. To enable\disable it go to Menu->Edit menu->Select Lock Window/Color Adjustments or Press Button Lock WW\WL on the Toolbar 



LOCK ZOOM

Lock Zoom feature is used to fix zooming adjustment while user browses images. To enable\disable it go to Menu->Edit menu->Select Lock Zoom/Pan Adjustments or Press Button Lock Zoom/Pan on the Toolbar 



6.8 Image Annotation

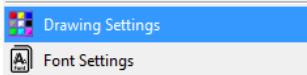
There are many annotations that user can put on images like Arrow, Texted Arrow, Text, Line, body marks and others.

ANNOTATION SETTINGS

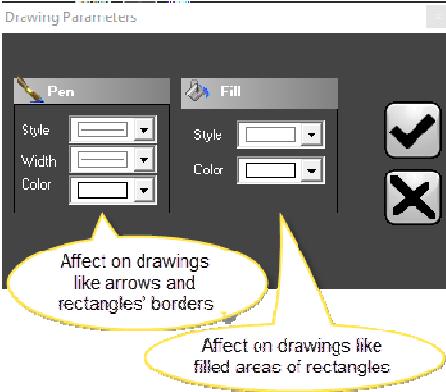
In Order to change font and drawing settings From to Menu->Edit menu->Drawing Settings and Menu->Edit menu->Font Settings.

Drawing Settings for the drawings like arrows and rectangles.

Font settings used to change settings of the text font of annotation.



Drawing Settings



Font Settings

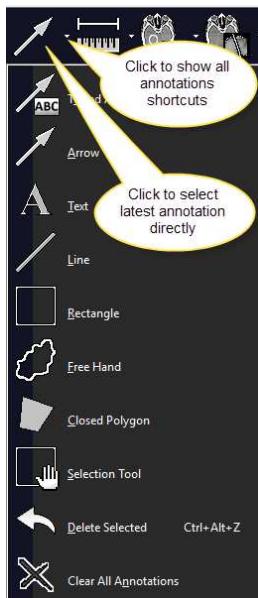


ANNOTATION DRAWING

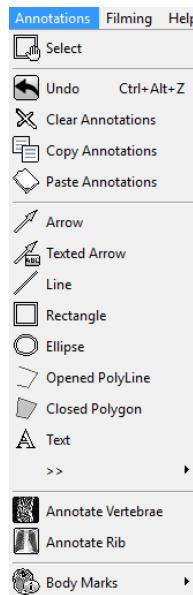
Select the annotation from “Annotations” menu or annotations shortcut in the toolbar then start draw it directly on image using mouse left button click.

Note: Shortcuts could be configured from profile settings.

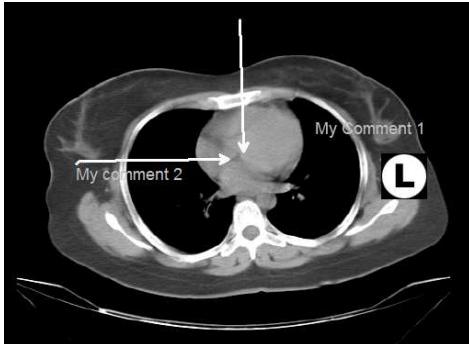
Toolbar Shortcuts



Menu



Annotations drawing example: (Arrow, Text Arrow, Text & Body Mark)



ANNOTATION COPY\PASTE\SAVING

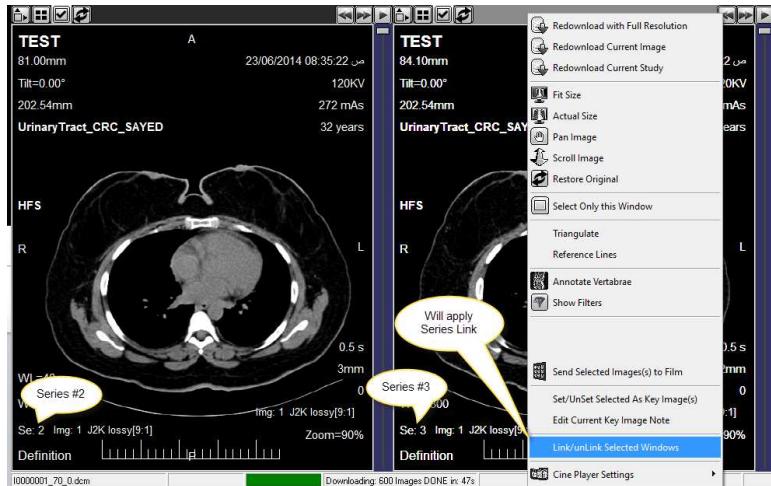
- **To copy\paste specific drawn annotation:**
 - Select “Selection Tool” from Annotations toolbar icons to select the drawn annotation.
 - Right click on any annotation and select “Copy”.
 - Go to target image if the copied annotation will be pasted to another image.
 - Select “Selection Tool” again.
 - Left click and select “Paste”.

- **To copy\paste all drawn annotations:**
 - Select “Copy Annotations” from Annotations menu.
 - Go to target image if the copied annotations will be pasted to another image.
 - Select “Paste Annotations” from Annotations menu.
 - To save images with annotations review section 7.4



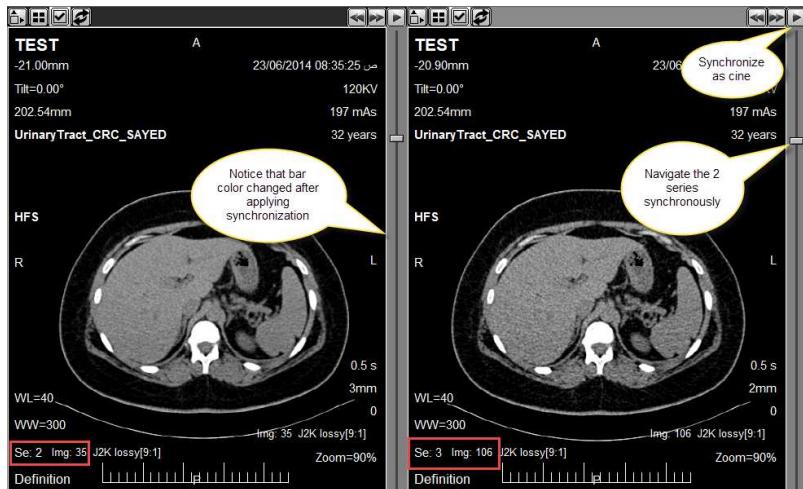
6.9 Series Synchronization

In right click menu select “Link/unlink selected windows” to apply/disable synchronized viewing.



After applying:

After applying linking you will notice change in highlighted image border, for synchronized windows



Note: In order to link series, the windows should be Series Restricted Mode, means each window would be configured to load certain series

6.10 Hanging Protocols

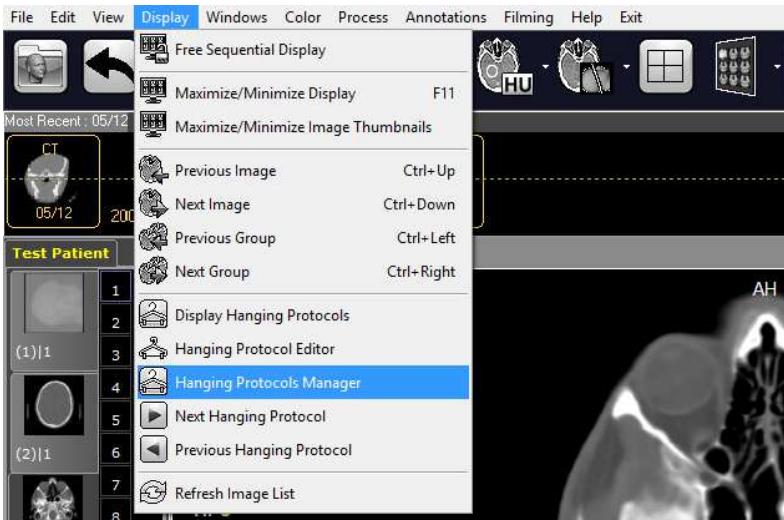
Compare studies – Create new hanging protocol:

Ex: will create a hanging protocol to compare current study with first prior study.

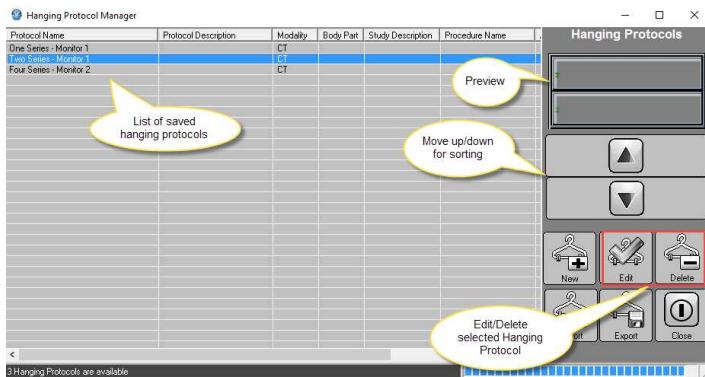
Screen 1 – current study - one series – one image

Screen 2 – first prior study - one series – four images

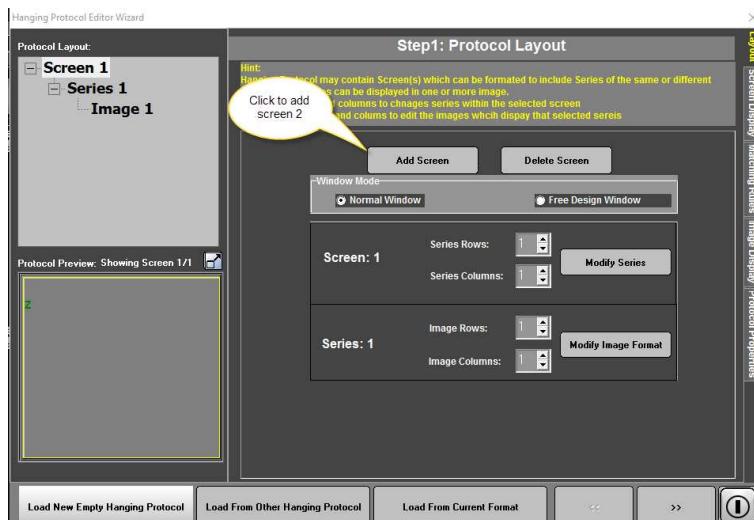
Step 1: Open “Hanging Protocols Manager”



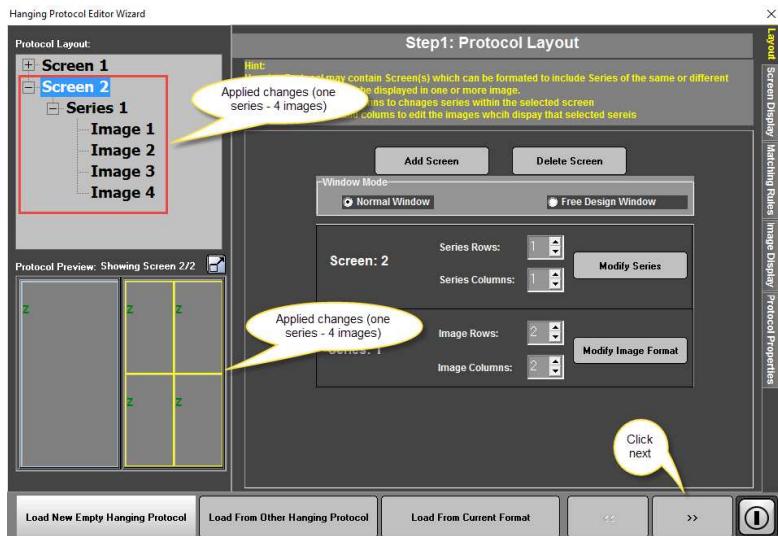
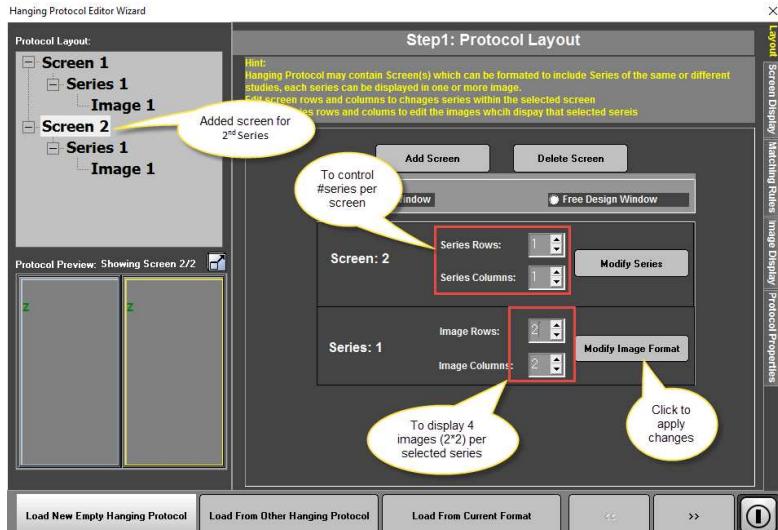
Step 2: Click “New” to add new hanging protocol



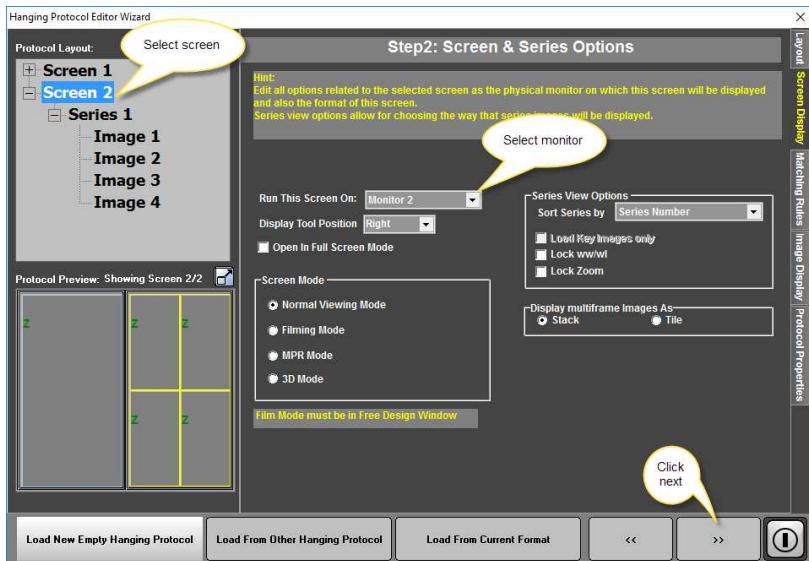
Step 3: Add screen in order to display this protocol on multiple screen , default it will be displayed in only one screen



Step 4: modify screen, this function is used to define no of windows in each screen, select screen from the tree view on left , then modify no of rows and columns to specify horizontal and vertical windows.

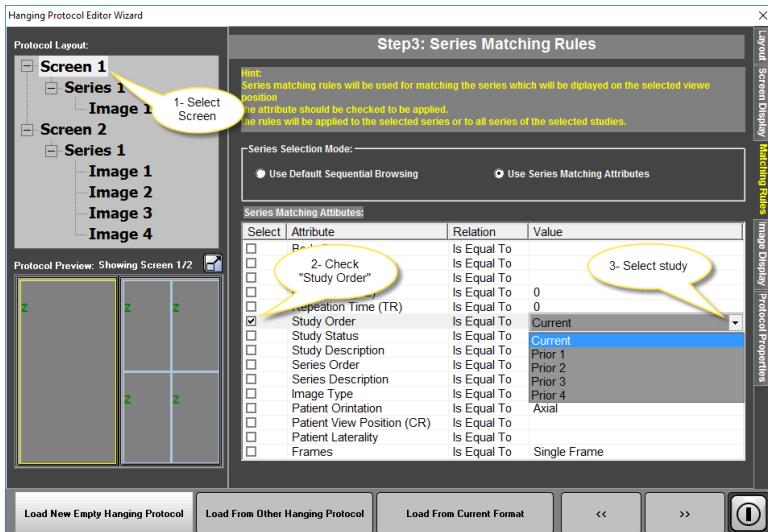


Step5: select monitors, select each screen will be displayed on which physical computer monitor, select screen from left tree, the press Screen Display, select from Run This Screen On to select the monitor



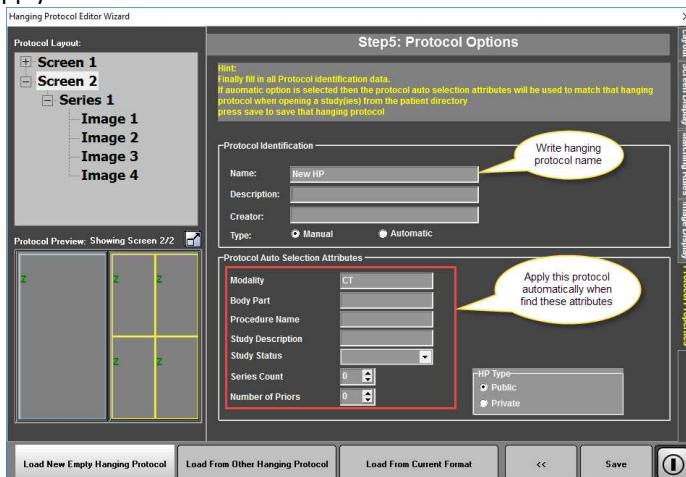
Step 6: in order to specify special selection of image to be displayed at which window,

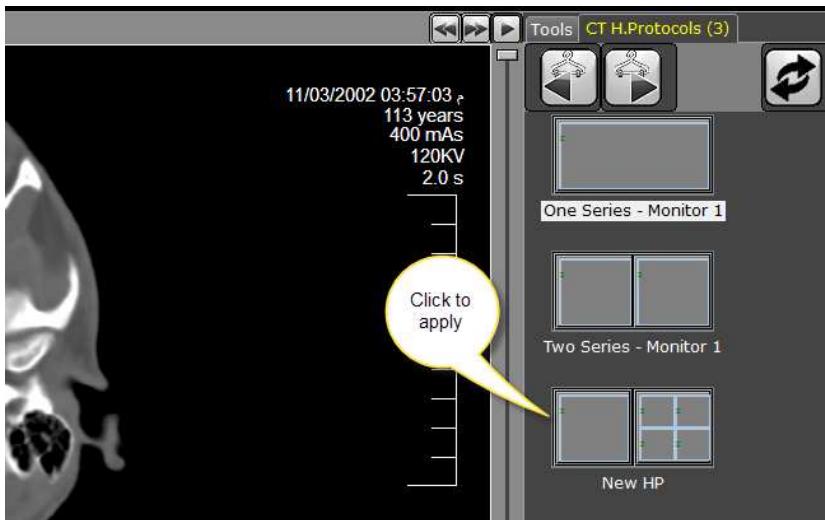
Assign screen to current\prior study (User could compare current study with up to 4 prior studies).



Step7: Click “Next” 2 times then write hanging protocol name and save.

This new hanging protocol will appear in “H.Protocols” menu where user can select and apply





- To set this hanging protocol to be default one: Set it as automatic (Step6) and after saving move it up to be in the top of the menu.
- Edit hanging protocol: either from “Hanging Protocols Manager” or “Hanging Protocol Editor” which will open directly the displayed hanging protocol to be edited.



6.11 Viewing Settings

CHANGING DISPLAYING WINDOWS

User can change displaying windows and displaying images per each window.

CHANGING DISPLAYING WINDOWS:

Select the window from “Windows” menu. User can also add shortcuts for specific windows to the shortcuts toolbar.



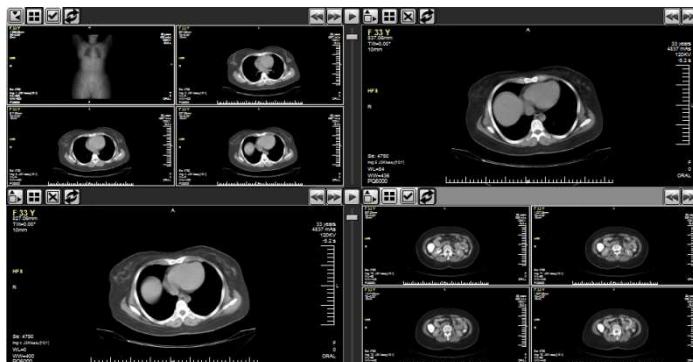
To select other design not found in the menu, select “Other Layouts” from the menu then “Insert_Rows_Col”.

CHANGING DISPLAYING IMAGES PER WINDOW:

Also from “Windows” menu then “Divide selected Windows To” or from the shortcut button.



This is how windows will appear after applying “For Images” from the “Windows” menu.



VIEW MPR\3D

MPR\3D modules could be viewed from “Windows” menu as well as shortcuts toolbar.

Note: this will require to have license to open MPR\3D modules, please system administrator is giving the logged in user to open these modules from system administration tool

“Windows” menu



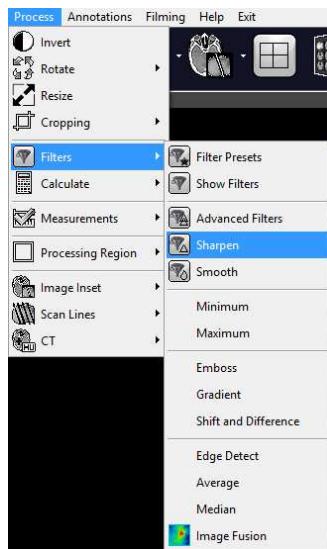
Shortcuts



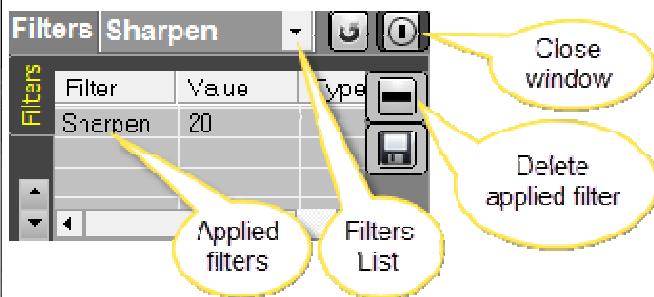
6.12 Image Processing

6.12.1 Applying Filters

From “Process” menu select and apply filters on the selected images.
 And once user selects any option in the menu,
 “Filters” window will open, in the tools panel
 Either to apply predefined filters, from dropdown menu, and also used can select
 filter save it as preset filter to be used in the future.

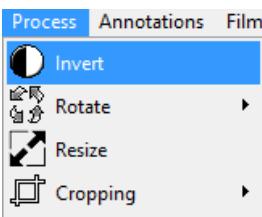


“Filters” window

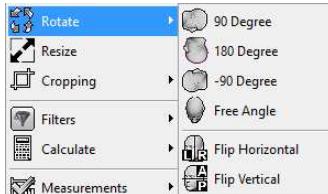


6.12.2 Image Invert\Rotate\Resize\Cropping

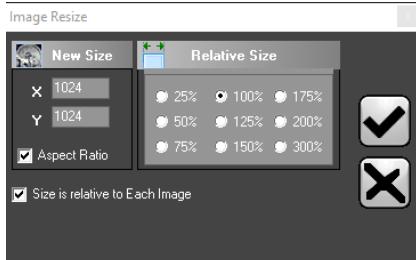
Image Invert, Rotate, Resize and cropping tools are found in “Process” menu and could be added to shortcuts toolbar.



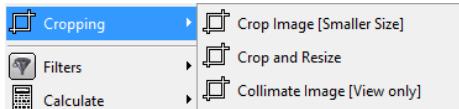
Rotate tools:



Resize Window:

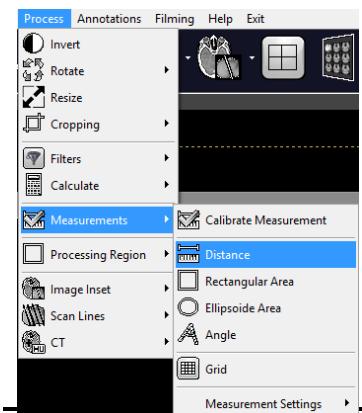


Cropping tools



6.13 Measurement Tools

“Measurements Tools” are found in “Process” menu and also are added by default to shortcuts toolbar.



- **Distance** 
 - Select Distance from the list.
 - Move the mouse to the start point.
 - Left click with holding.
 - Move the mouse to the end point.
 - Stop left click holding and measured distance will be written by the end of the line.

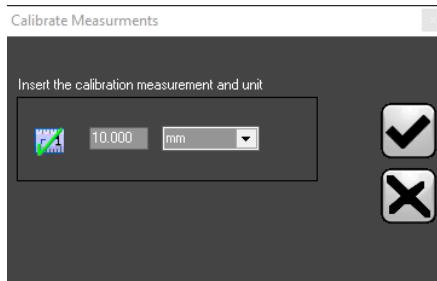
- **Angle** 
 - Select Angle from the list.
 - 3 left clicks: first one at the angle head point, second one at the end of the first line and the third one at the end of second line.

- **Rectangular Area & Ellipsoid Area**
 - Select the tool from the list.
 - Left click with holding at the first point.
 - Move the mouse to the end point.
 - Stop left click holding and measured area will be written.

- **Calibration tool**

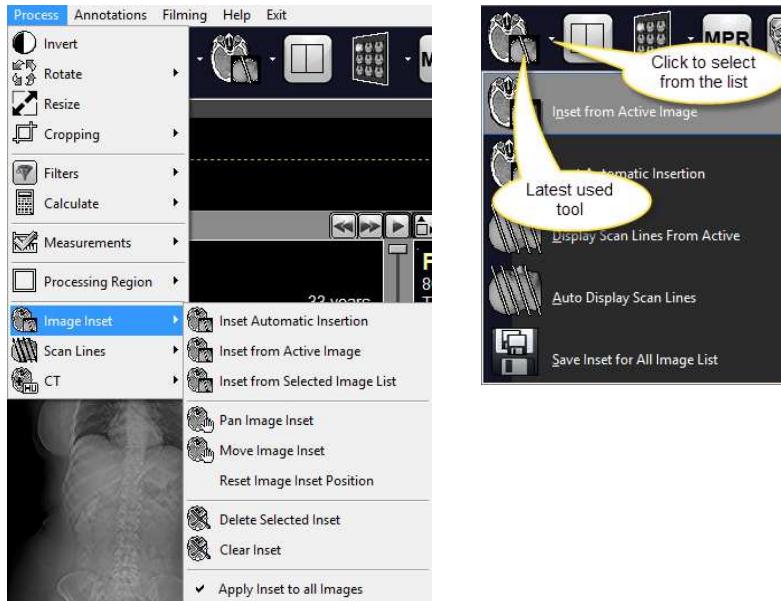
If image is not calibrated, measurements couldn't be taken until user calibrates the image.

 - Select calibration tool from the list (Or user will be prompted to open it when trying do measurements on non-calibrated image).
 - Draw distance line on the image and write the distance
 - After that you can use the measurement tools



6.14 Display Image Inset\Scan Lines

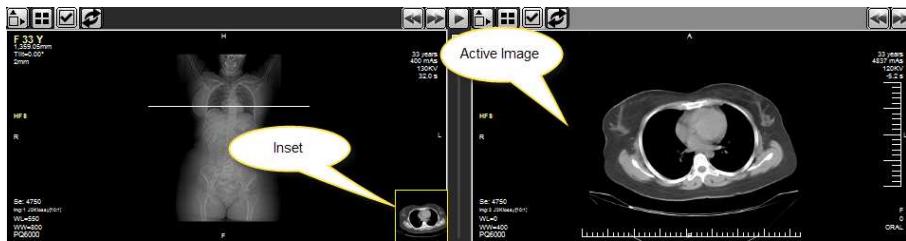
“Image Inset & Scan Lines” are found in “Process” menu and also are added by default to shortcuts toolbar.





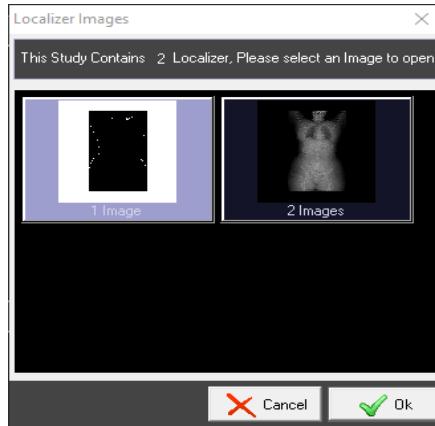
- **Inset from active image**

This option will take the active image, and will use it as an inset image in all selected images



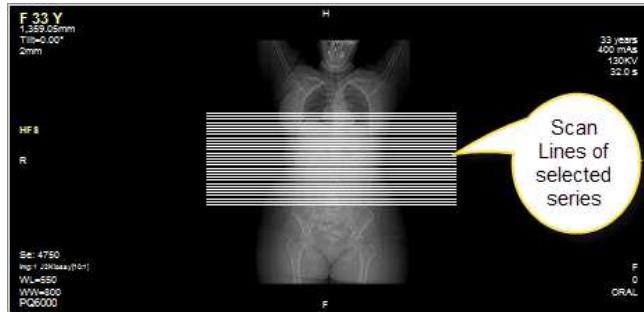
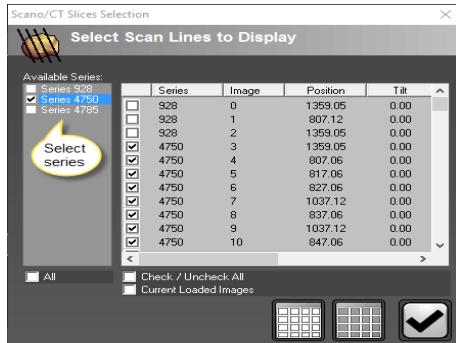
- **Inset automatic insertion:**

Will automatically detect localizers of the study, if study have multiple localizers system will display images to select one of them to apply inset on selected images .



- **Display scan lines from active**

This option will take the active image, and will it apply scan lines to it



- **Auto Display scan lines**

Will automatically detect localizers of the study, if study have multiple localizers system will display them to select one of them to display scan lines of selected images on it.

- **Image Inset\Scan Lines could be panned, moved, reset in position and deleted (Select needed action from the menu).**

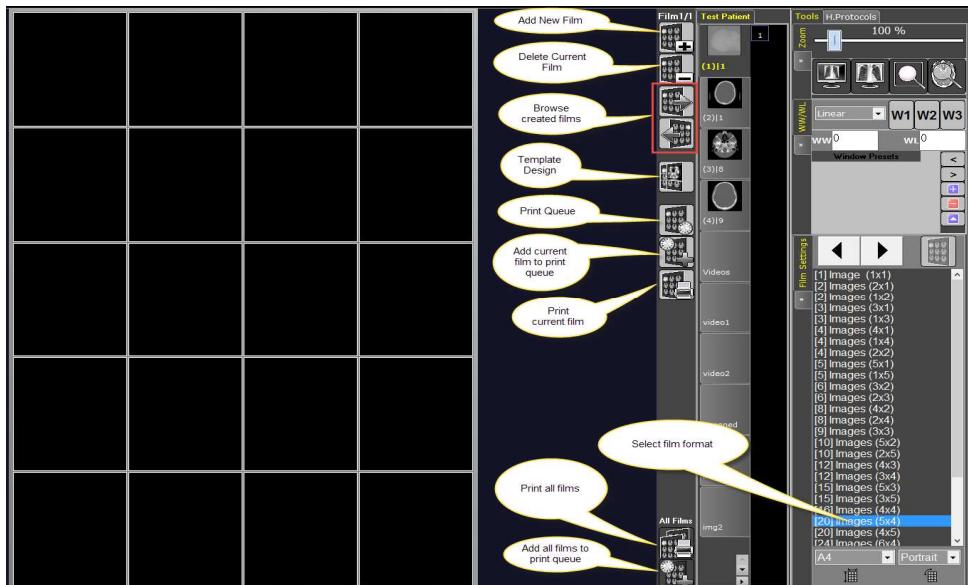
6.15 Filming

6.15.1.1 Create new film

To create new: Click “Filming Menu” and select “Film Designer” or click “Film Designer” directly.

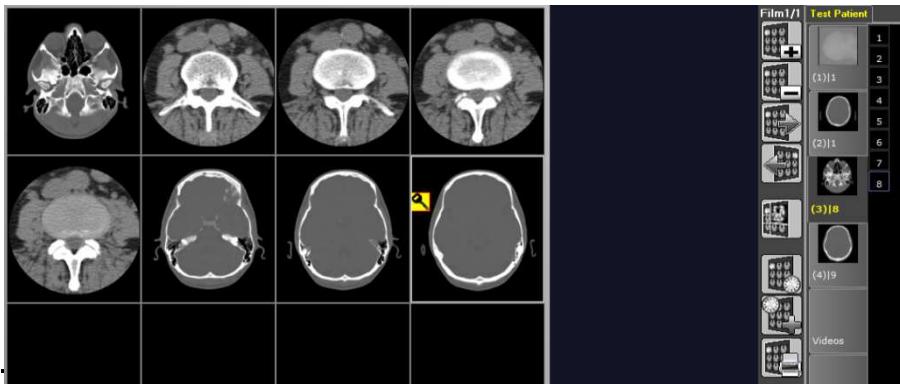
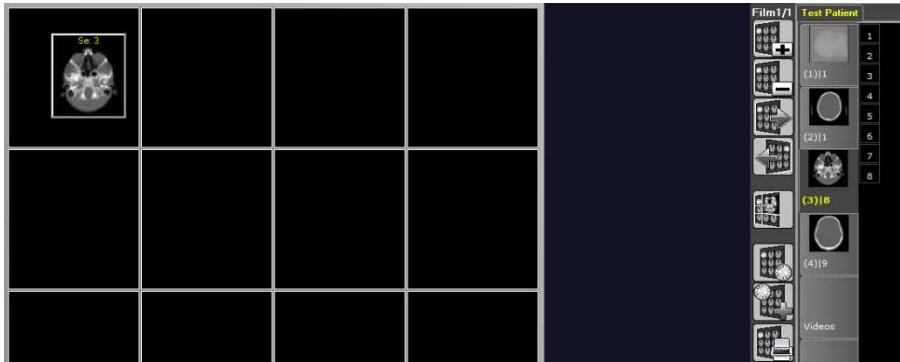
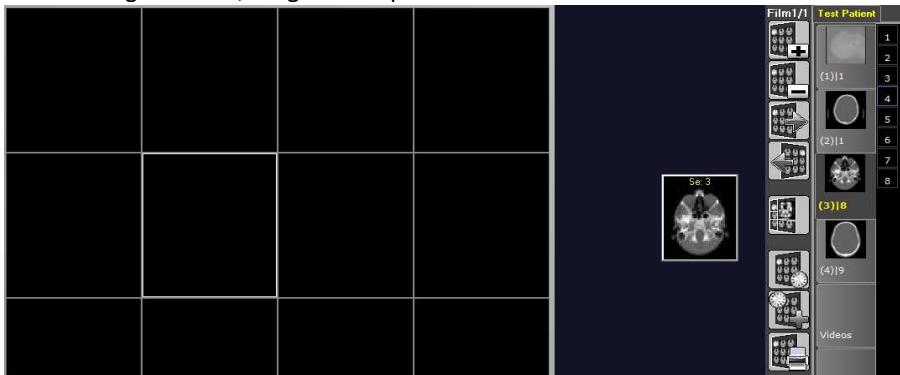


A new film design page will open



6.15.2 Add image to film

To add images to film, drag and drop series to the film



To add a specific image to specific cell: Just 2 mouse clicks in order, the first one on the film cell and the second one on the image number or image thumbnail (Images could be listed as numbers or thumbnails according to user profile settings).

6.15.3 Film Printing

- To print the current film only click the “Print Film” button
- User can create more than one film and print all of them by one click on the “Print All Films” button.

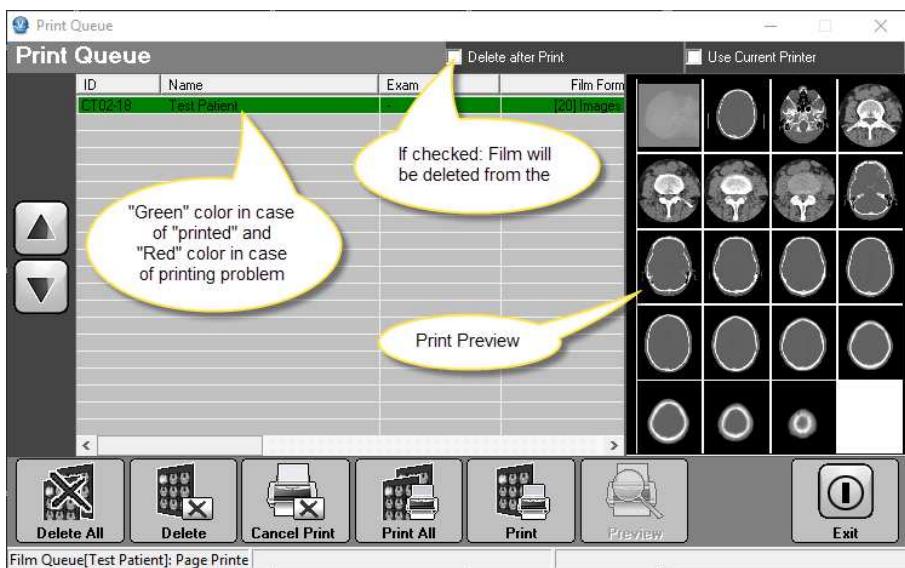


6.15.4 Film Printing Queue

User can add films to print queue to print them later by the “Queue Current Film” button or “Queue All Films” button.

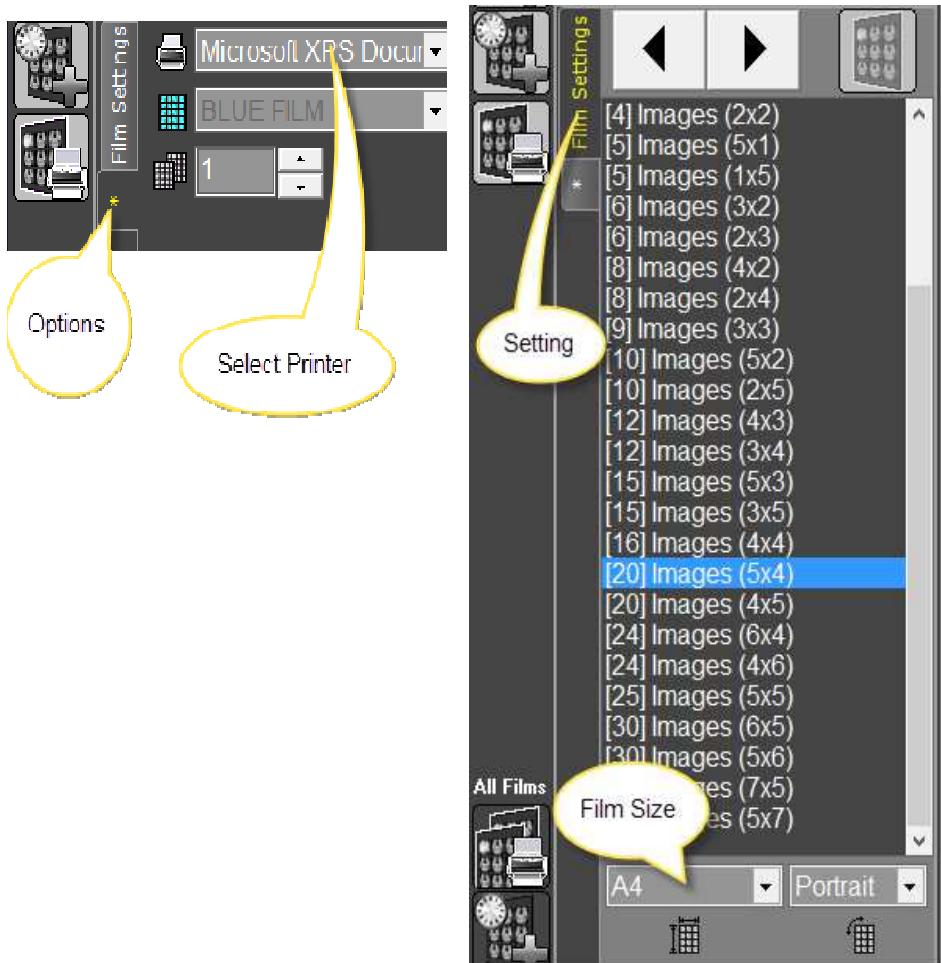


To check status of the print queue click the “Open Print Queue” button and the next screen will open



6.15.5 Change printing settings

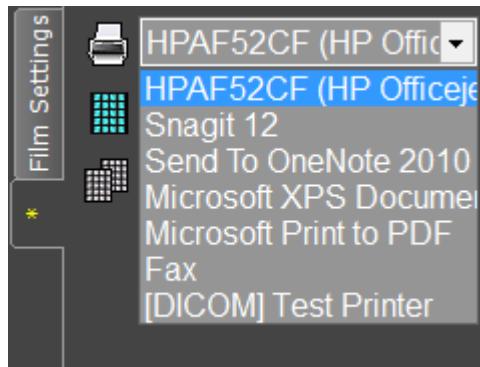
User can select the printer, change film format and change film size



6.15.6 Windows Printing

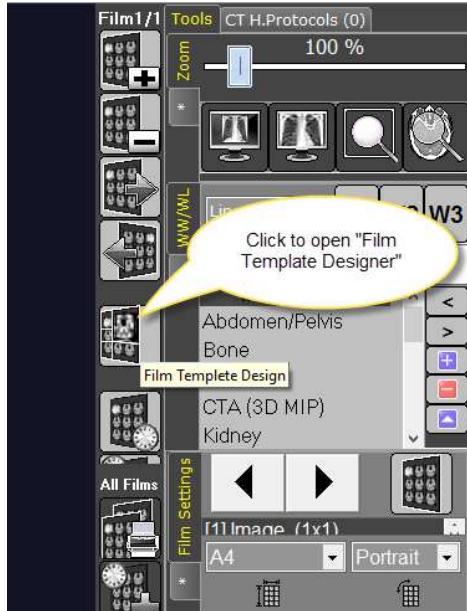
In addition to “Filming” user could print on windows\dicom printers. All windows printers defined will appear in printers list with DICOM printers.

DICOM Printers name will start with [DICOM] before printer name

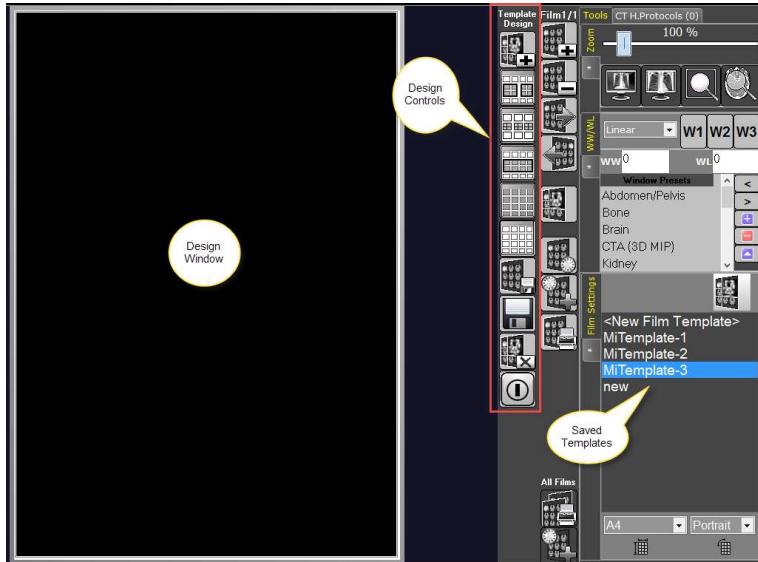


6.15.7 Customized template printing

User is able to create new templates through “Film Template Design” tool.
To open “Film Template Design” tool:



Once the user click on the button two windows will open, Design window & saved templates list.



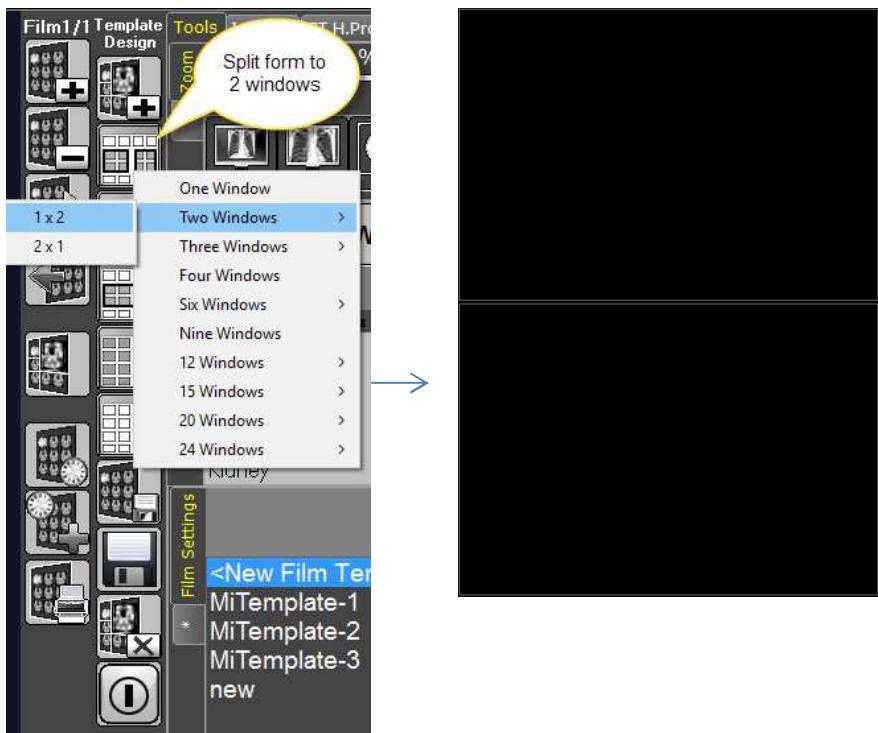
Design Controls:

Her how to create a template with 2 windows. The first window for the scout image and the second window for the axial series (2 * 2 images).

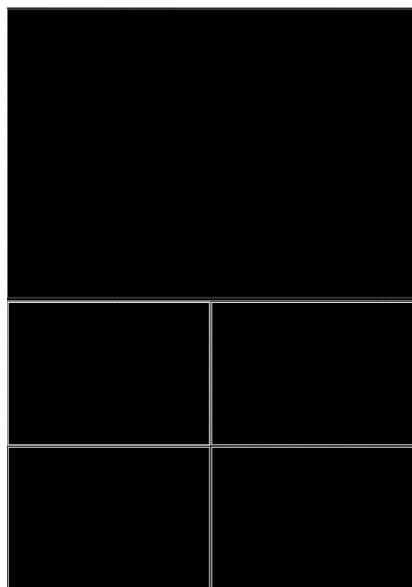
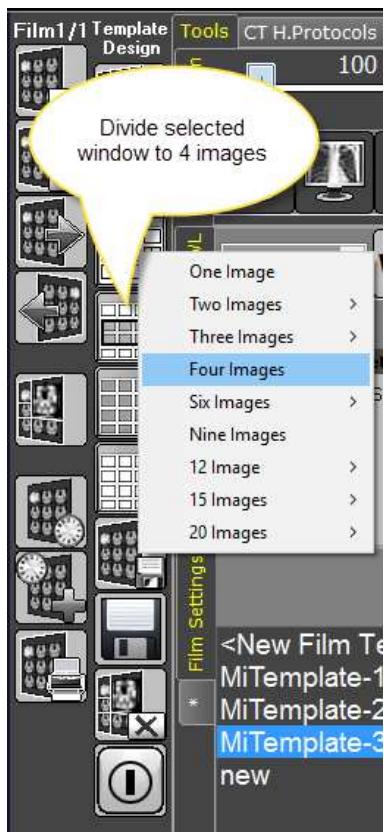


Click "New Template" button

Split the form

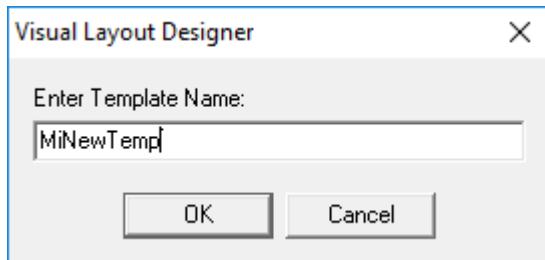


Select the second window and divide it to 4 images





Click “Save Template” button then write the template name and click “OK”



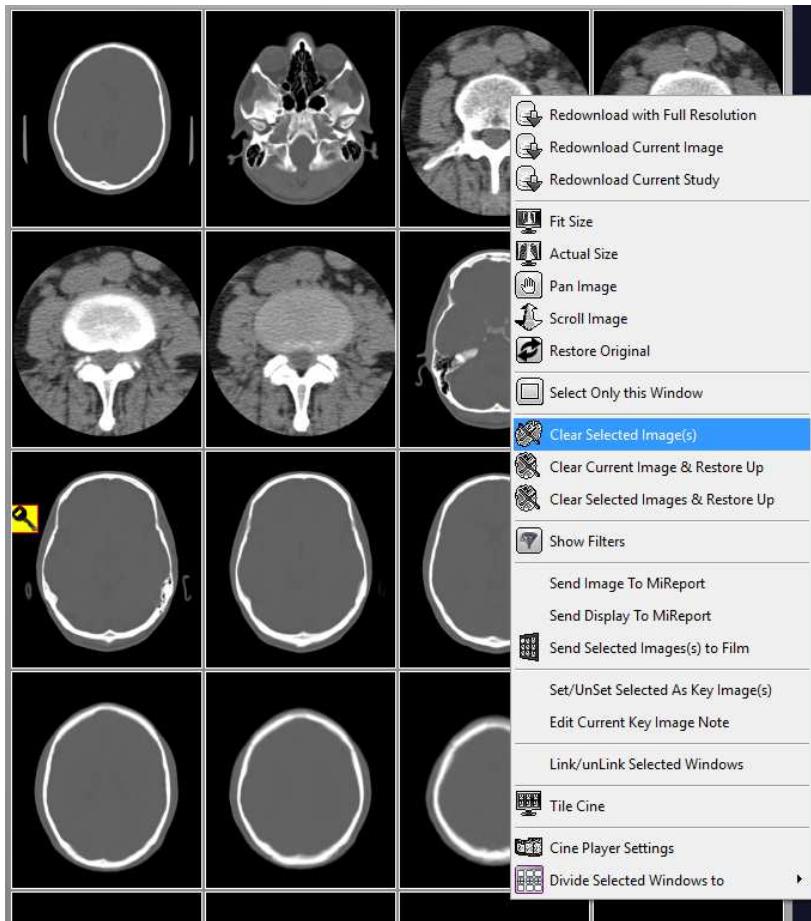
This new template will be added to the saved templates list so that user could select it later directly.

6.16 Film Designer

Mouse functions:

- **Action on images:** Like Windows mode.
- **Selection:** User can select specific sell, row or column by mouse.

Right click menu:



7 Advanced Post Processing Tools

7.1 MPR (Multi-Planar Reconstruction)

7.2 MIP (Maximum intensity projection)

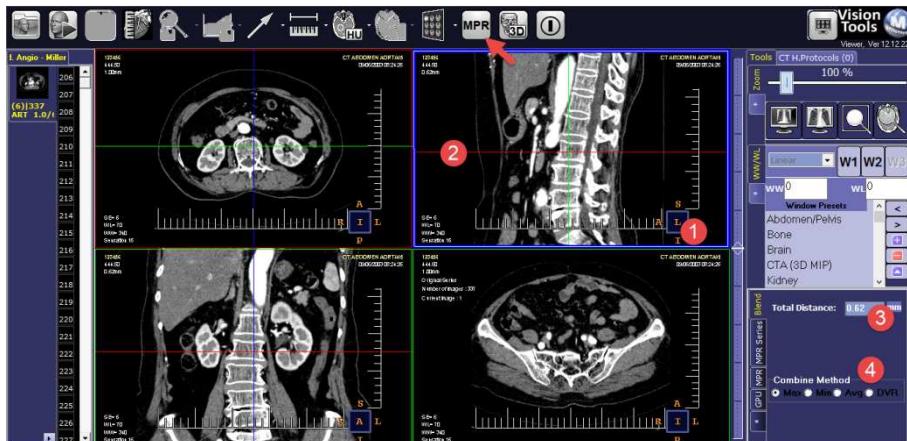
Multi Planar Reconstruction (MPR) allows images to be created from the original axial plane in either the coronal, sagittal, or oblique plane as well as special curved and rotating plans.

MPR offer additional advantages for radiologist towards easier approach for diagnosis as:

- View Lesions from different angles
- Better localization of lesions within the volume
- Measurement of lesions on different axis

MIP (Maximum intensity projection) on the other hand offers a very convincing way to visualize CT Angiography cases, as its idea based on showing the highest-attenuation voxels along lines projected through the volume data set, you can control the projection direction and slab thickness easily using the MPR cross lines.

To open the MPR Module you need to select the required series from the left series panel then Press the MPR button from the top toolbar



- 1- Orientation cube: showing the image ordination in 3D to give a precise information to the user.
- 2- Cross cut lines (color coded) each line will be represented on the view port of the same color
- 3- Slice thickness: that will be used in during the image reconstruction and rendering, this can be changed editing this number or manipulating the vertical slider on the right of the image box.
- 4- Blend Mode: this is the blending method used while blending pixels of the selected slice thickness
 - a. Max: The highest intensity pixels will be shown (contrast enhanced objects, calcium plaques...)
 - b. Min: The lowest intensity pixels will be shown (Air, Fat...)
 - c. Avg: The average of all pixel intensities will be shown which will give an overlapped image similar to the ordinary X-ray images.

As shown in the below CTAngio case MIP is offering a superior advantage in visualizing high intensity objects.



And this image showing average blending mode with X-ray like effect.



Millensys MPR Module offers re-construction in

Orthogonal planes (Axial, Sagittal, and Coronal)

Oblique and double oblique (Obliquity in multi plans)

Curved (to straighten and visualize curved objects like vessels)

All of these variations give great flexibility tools toward identifying and localizing lesions.

The screen shot bellow shows to apply the double oblique concept to visualize the vertebral column as whole in one slice.



And this shows the ability of curved MPR to straighten and visualize the Aorta in one slice



MPR Series Creation:

Like MPR real-time browsing, MPR module has the ability to generate new series from whatever projection and axis needed.

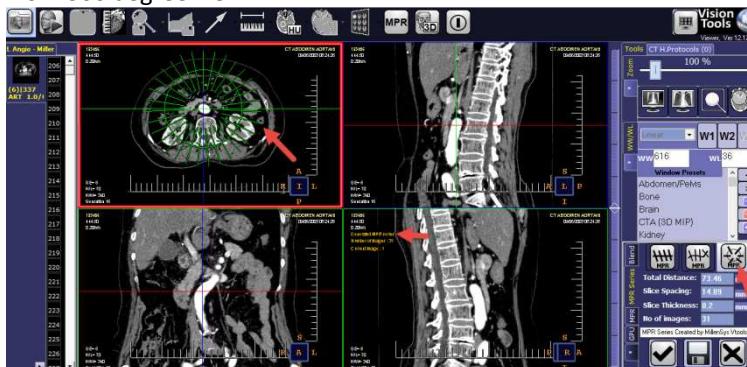
For Orthogonal series creation we can set the start and the end of the series and fine tune from other viewports to have the exact location needed, then adjust the slice thickness, spacing and the series label then click generate the application will automatically calculate the reset and generates the series images, from the forth viewport, user can review the series if it is ok, the pressing save will physically save this newly generated series to this patient study.



And in this screen shows how to create a new series from a curved plan for better capturing of curved objects centered throughout the series.

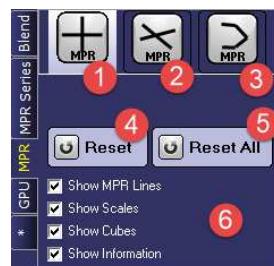


And here we used the Spiral to rotate around the Aorta and get all possible capture from 360 degree view



Tools panel guide:

- 1- Orthogonal MPR Mode
- 2- Oblique–double oblique MPR mode
- 3- Curved MPR mode
- 4- Reset all cut lines position
- 5- Reset all changes
- 6- Show hide options



- 1- Orthogonal MPR series mode
- 2- Curved MPR series mode
- 3- Spiral MPR series mode
- 4- Total distance in mm (series start-end)
- 5- Slice spacing
- 6- Slice thickness
- 7- No of images to be created
- 8- Series title
- 9- Generate series preview
- 10- Save series
- 11- Delete the generated series preview



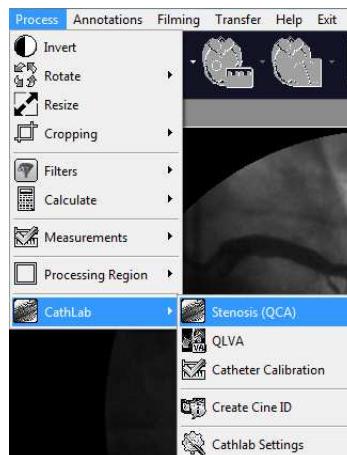
7.3 QCA (Quantitative Coronary Analysis)

For using QCA feature you should open an angiography case and do the following,

- Select any image from series or a frame from a cine loop (by pausing cine loop using double click mouse action) that you would like to apply QCA upon it,



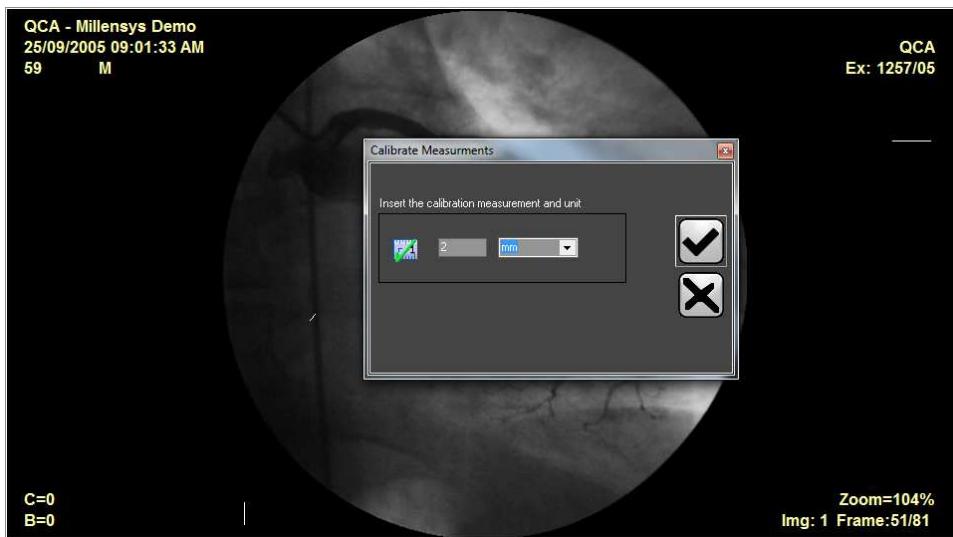
- Go to Process -> Cathlab then select Stenosis (QCA),



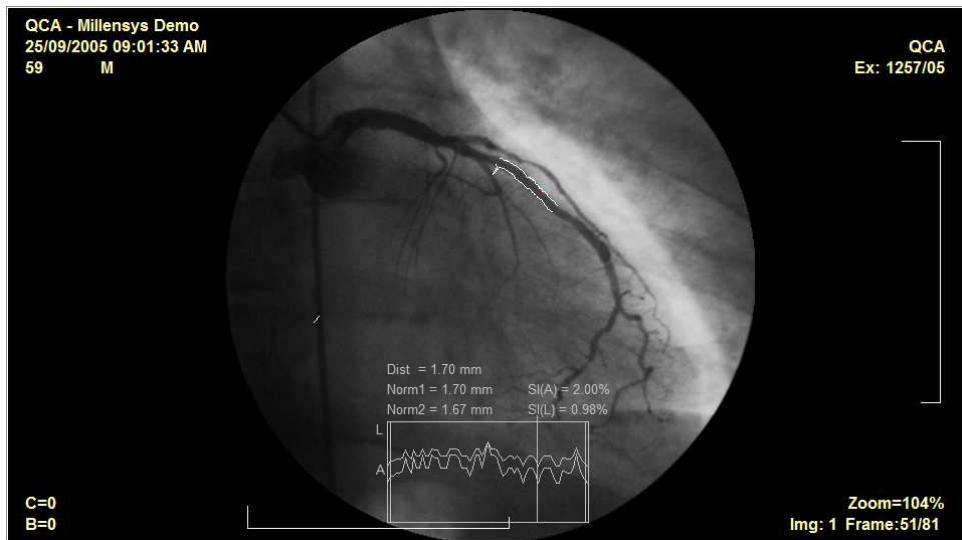
- c. In figure below, you should scroll to reach desired frame then press on QCA button.



- d. After that you will calibrate the image by using left click mouse on catheter area and type the number of catheter used during the operation.



- e. Finally you will draw the path that required to be analyzed from point of perspective.



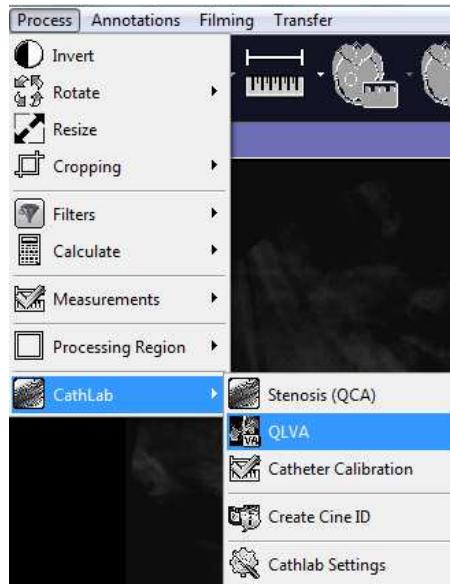
7.4 QLVA (Quantitative Left Ventricle Analysis)

For using QLVA feature you should open a cardiac case and do the following,

- First open the study and select required cine loop.



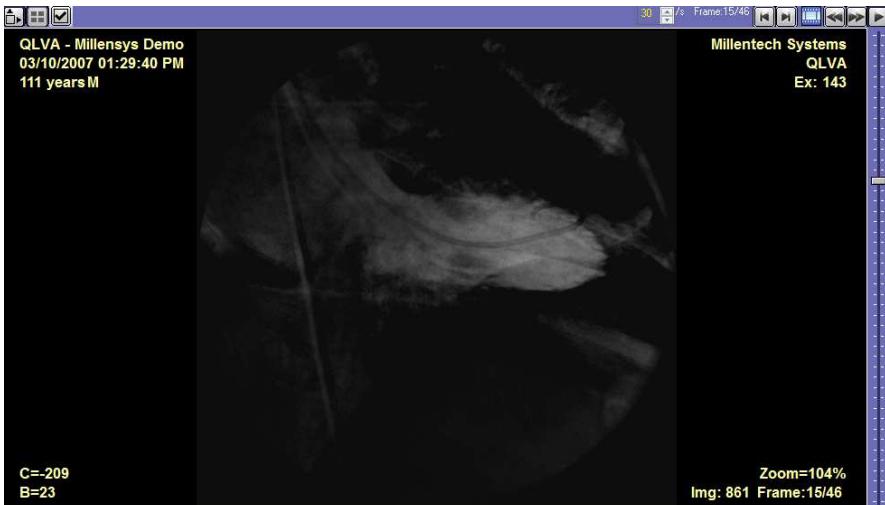
- b. To open QLVA go to Process -> Cathlab then select QLVA.



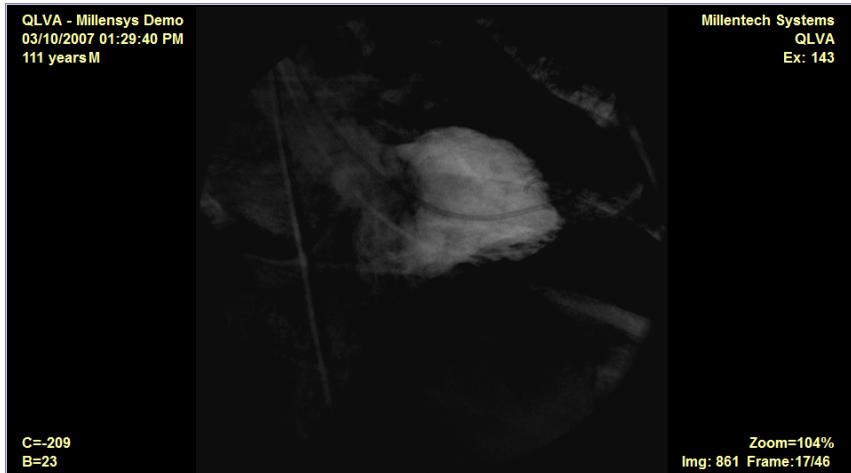
- c. In figure below, you will follow few steps to get QLVA analysis,



- d. First you should select ESV (End Systolic Volume) frame (by scrolling in cine loop) then press on ESV button,



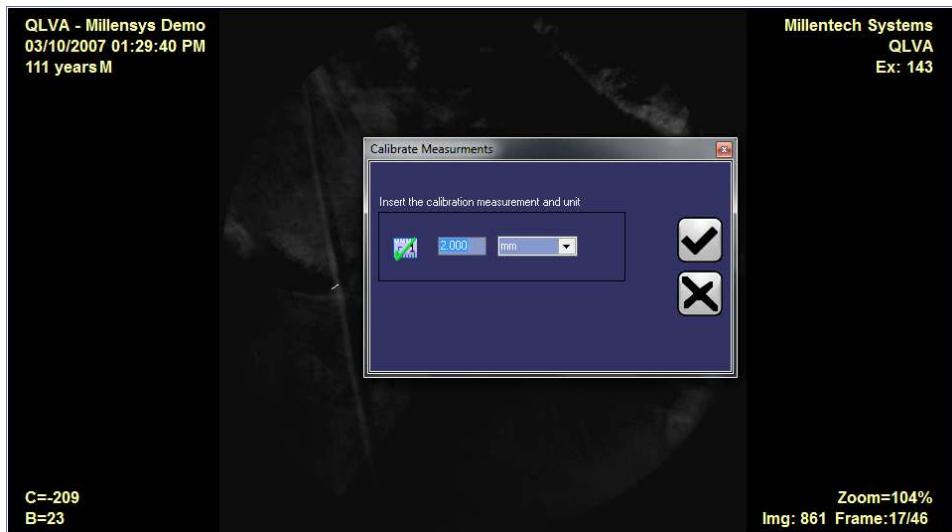
- e. Then you should scroll to get EDV (End Diastolic Volume) frame (by scrolling in cine loop) then press on EDV button



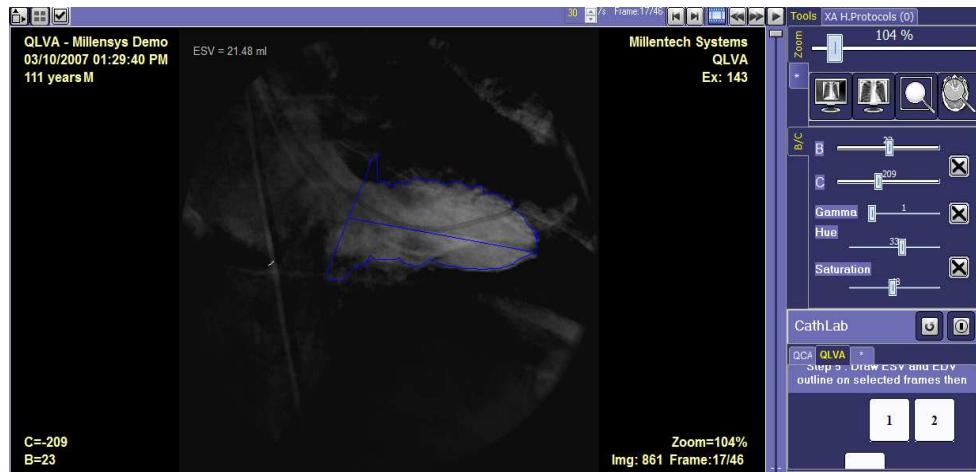
- f. Then press this button Calculate LVA to continue,



- g. Then you should draw line on catheter for calibration,



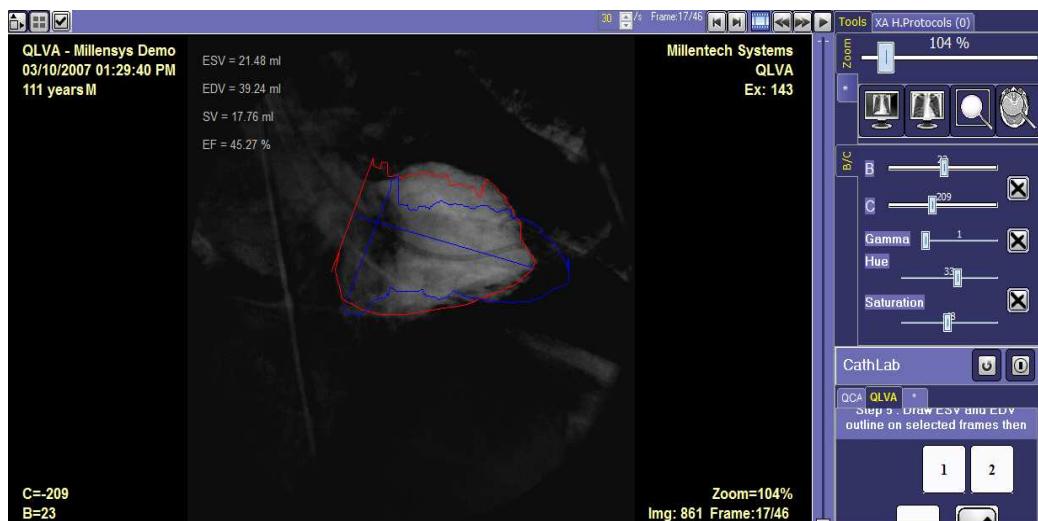
- h. After that you will need to draw ESV & EDV outline on selected frame as below, press on 1 button then draw outline for ESV.



- i. Then Press on 2 button to draw outline for EDV,



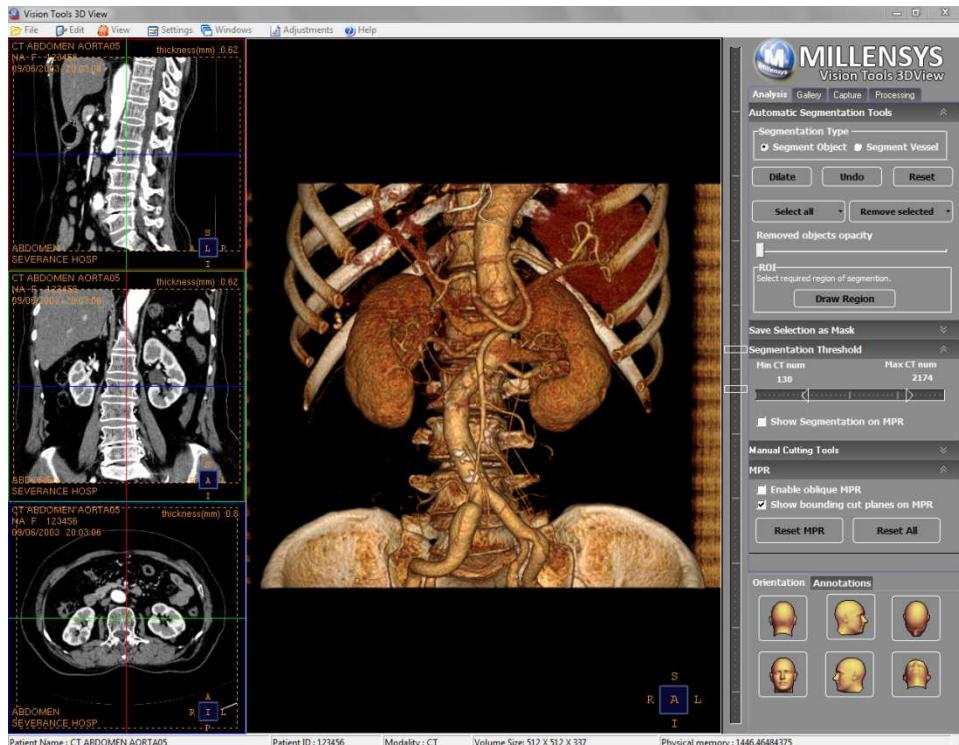
j. Then Press done button to get your required analysis,



7.5 Volume Rendering Technique (VRT)

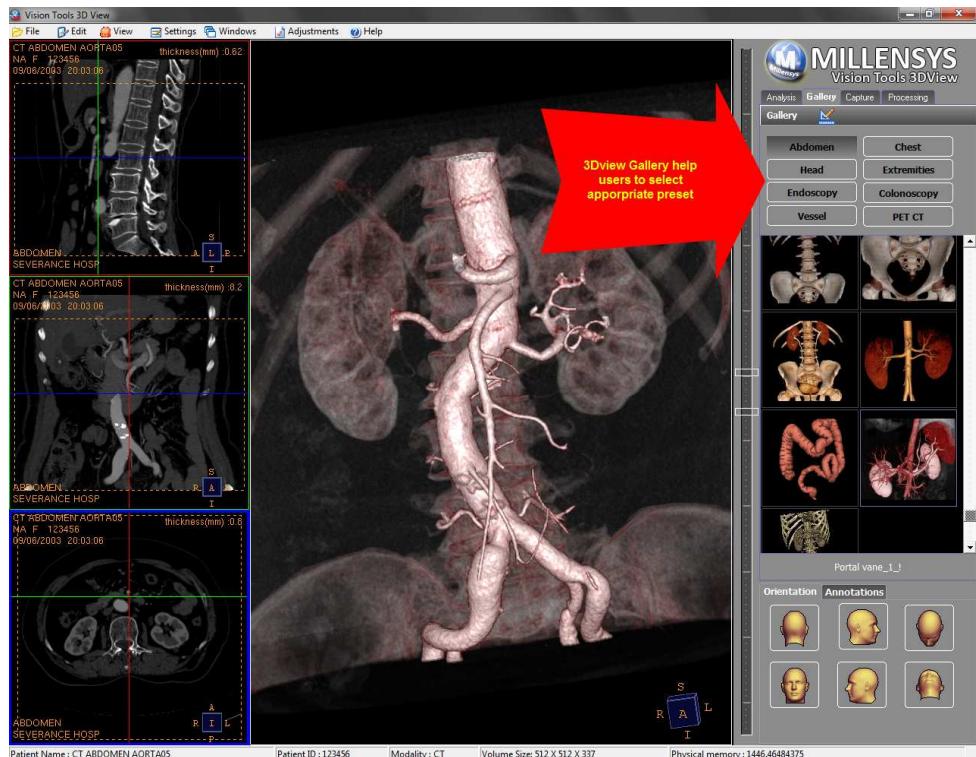
VRT module is one of MillenSys product, in scientific visualization and computer graphics, volume rendering is a set of techniques used to display a 2D projection of a 3D discretely sampled data set.

A typical 3D data set is a group of 2D slice images acquired by a CT, MRI, or MicroCT scanner. Usually these are acquired in a regular pattern (e.g., one slice every millimeter) and usually have a regular number of image pixels in a regular pattern. This is an example of a regular volumetric grid, with each volume element, or voxel represented by a single value that is obtained by sampling the immediate area surrounding the voxel.

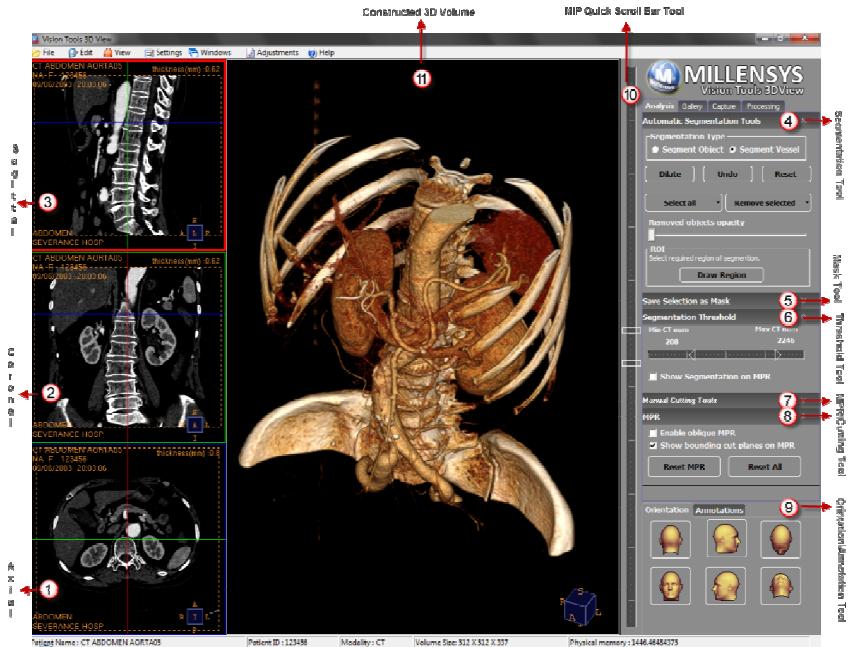


7.5.1 Gallery

3Dview application module comes with a wide variety of presets that store the settings used to create the 3D images. 3Dview has Real-time Preview of presets; when you browse a preset, the preview window will show the effect of applying that preset to your currently loaded volume dataset. You can create customized presets. Presets can store more than just window width and level; all imaging parameters can be saved in a preset allowing for highly customized capabilities.



7.5.2 Understanding GUI



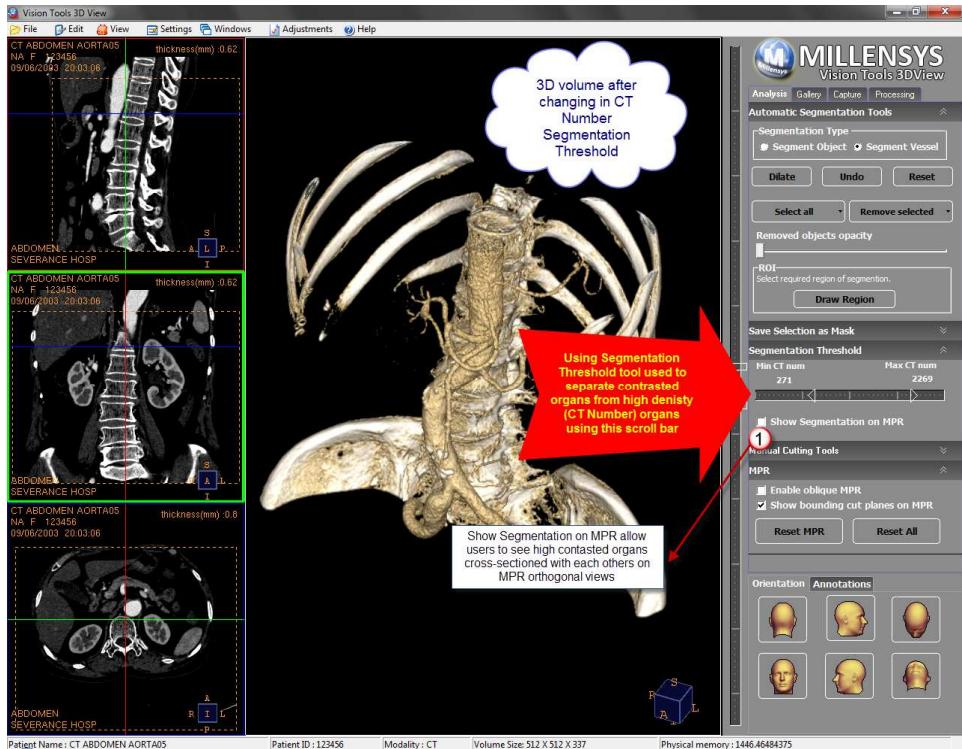
7.5.3 Segmentation

Segmentation refers to the process of partitioning a digital image into multiple segments. The goal of segmentation is to simplify and/or change the representation of an image into something that is more meaningful and easier to analyze. Image segmentation is typically used to locate objects and boundaries (lines, curves, etc.) in images. More precisely, image segmentation is the process of assigning a label to every pixel in an image such that pixels with the same label share certain visual characteristics.

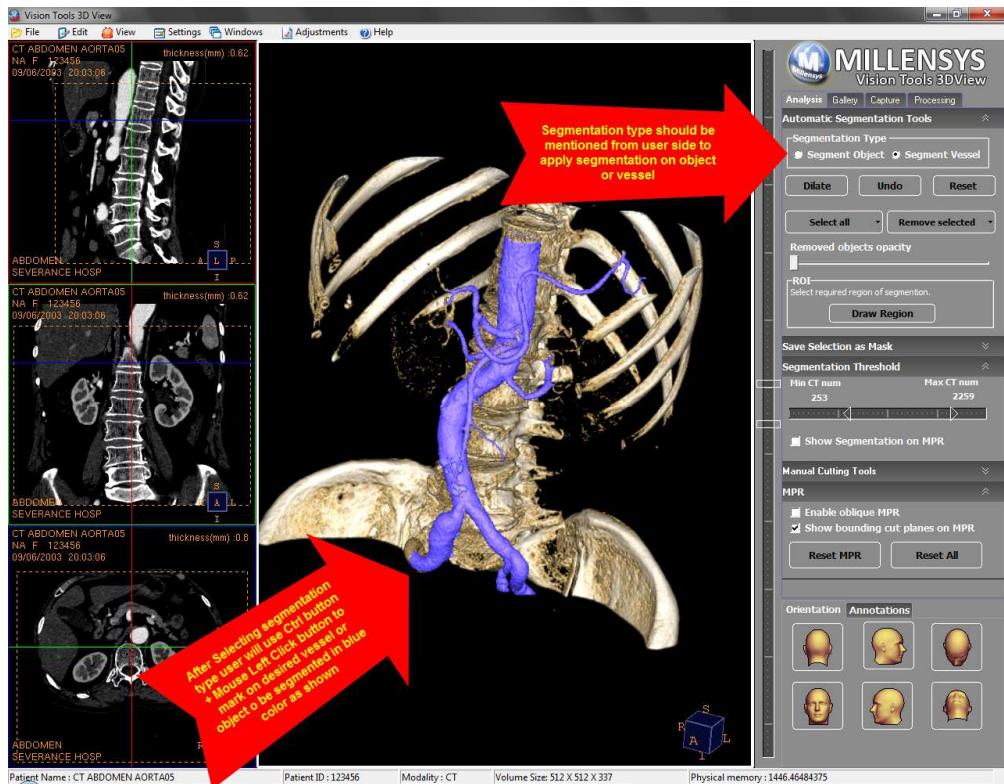
The result of image segmentation is a set of segments that collectively cover the entire image, or a set of contours extracted from the image. Each of the pixels in a region is similar with respect to some characteristic or computed property, such as color, intensity, or texture. Adjacent regions are significantly different with respect to the same characteristic(s). When applied to a stack of images, typical in Medical imaging, the resulting contours after image segmentation can be used to create 3D

reconstructions with the help of interpolation algorithms.

So we will start using our segmentation threshold tool, which know as one of the simplest method of image segmentation. This method is based on a clip-level (or a threshold value) to turn a gray-scale image into a binary image. The key of this method is to select the threshold value (or values when multiple-levels are selected).

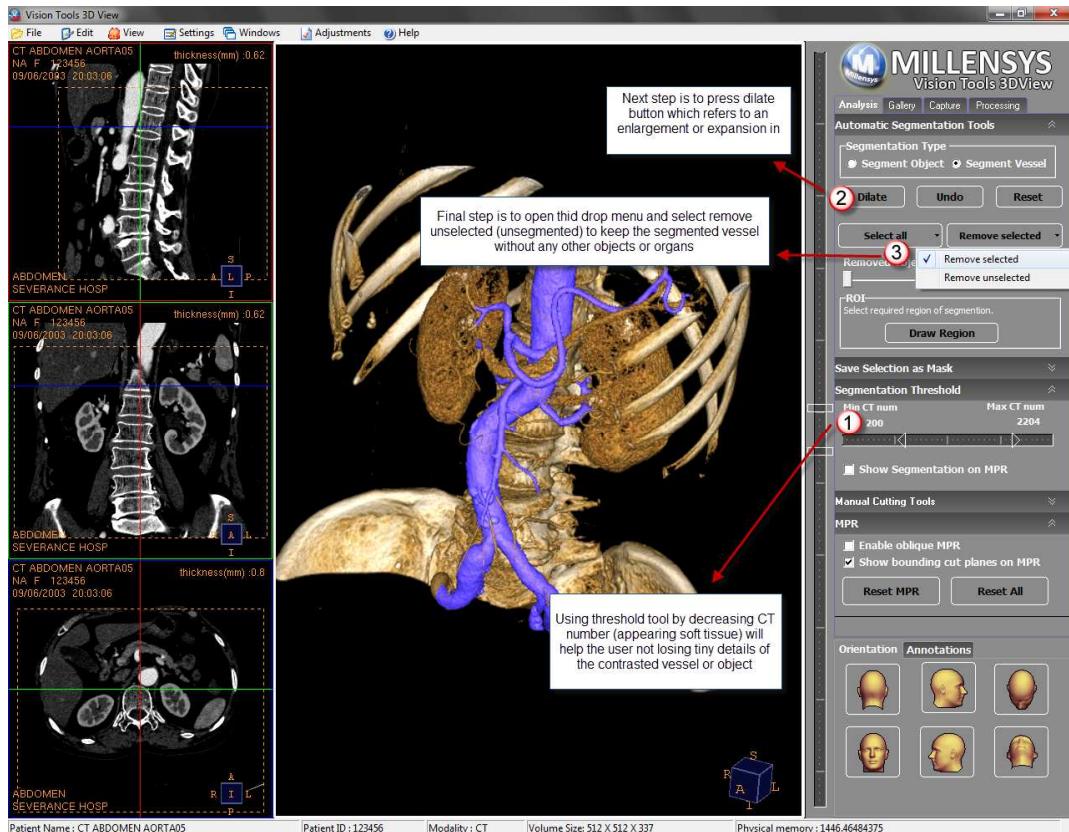


1- Adjust the Segmentation Threshold (CT Number):-

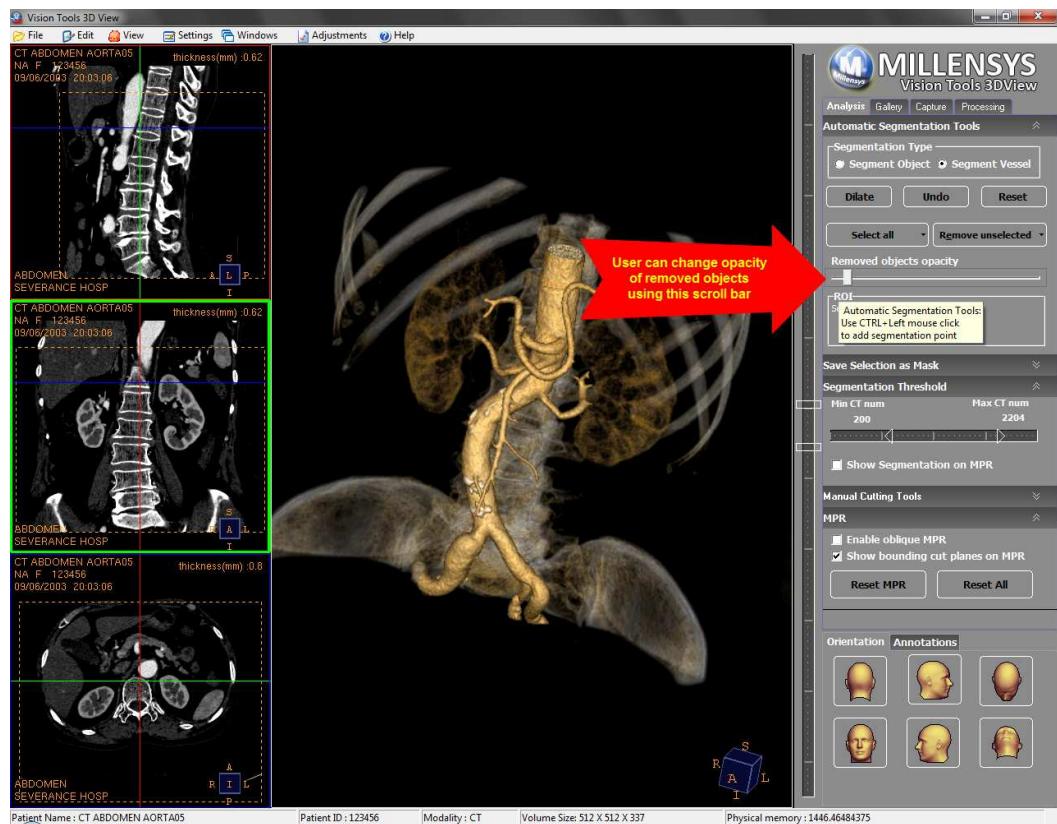


2- After Adjusting Threshold users will need to go to segmentation tool to select the desired object or object to be segmented :-

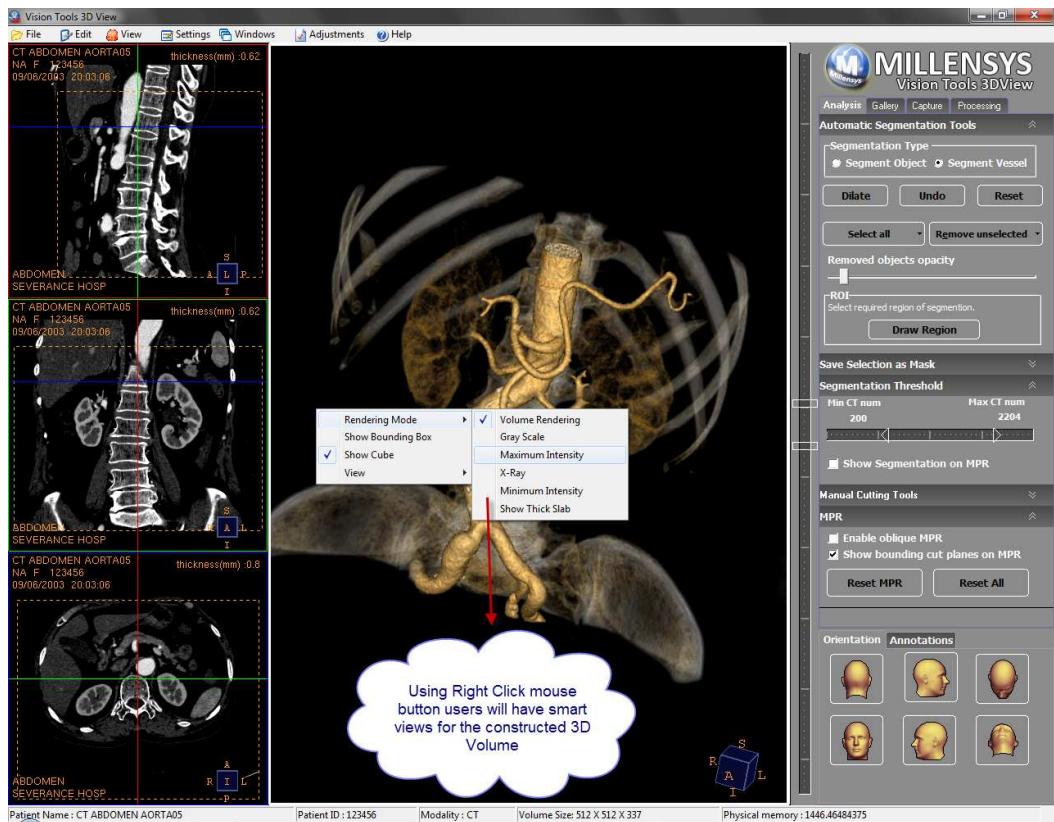
3- Next step is to modify CT number using threshold tool (for not loosing time details of the segmented object or vessel):-



4- In some cases user likes to see the removed object (with different opacity level):-

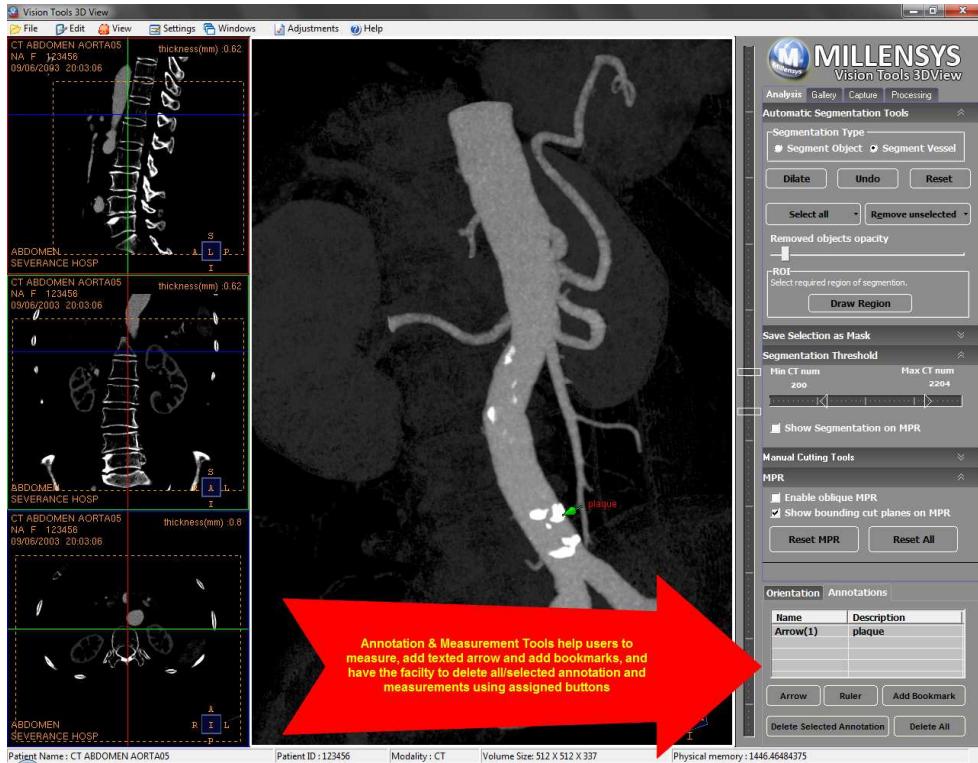


5- Finally user can construct different views from the constructed 3D volume:-



7.5.4 Annotations and Measurements

Annotation & Measurement tools allow users to add annotation, measure distance and adding bookmarks, which help users saving their work on safe environment.



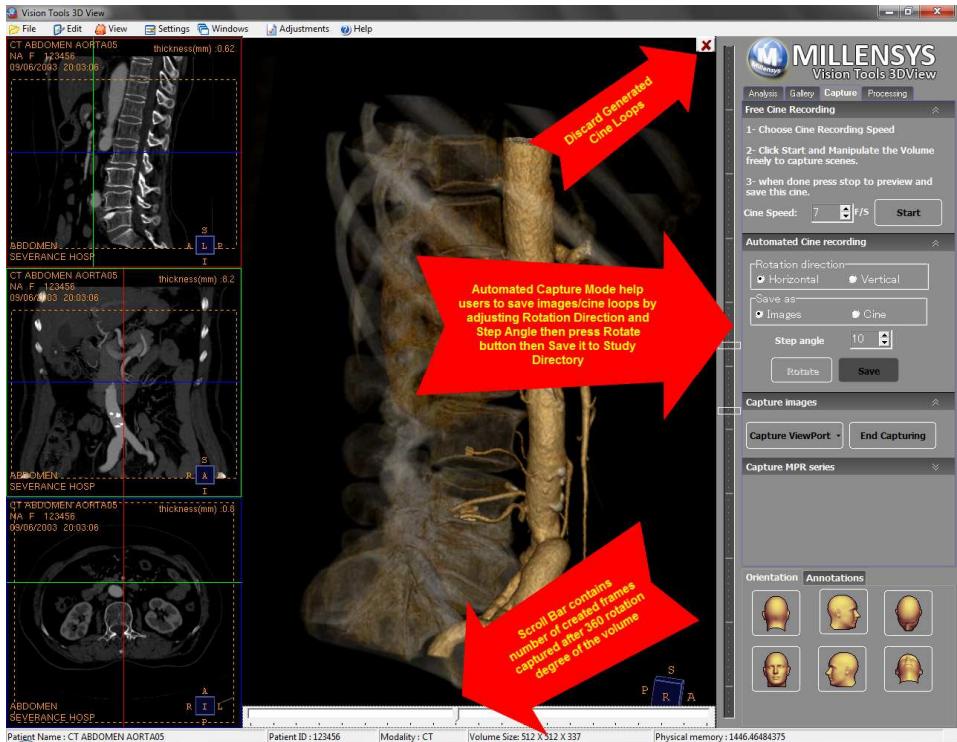
7.5.5 Capturing Reconstruction

VRT capturing feature used for capturing output of 3D reconstructed volume,
Capturing feature having three modes.

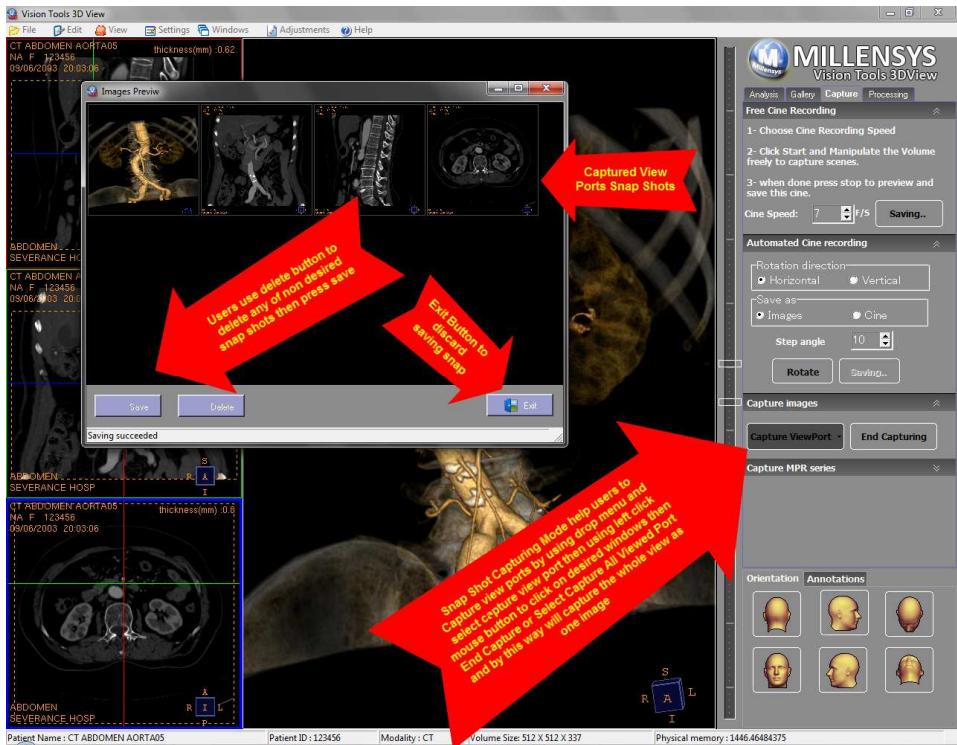
1- Manual Capturing Mode:-



2- Automated Capturing Mode:-



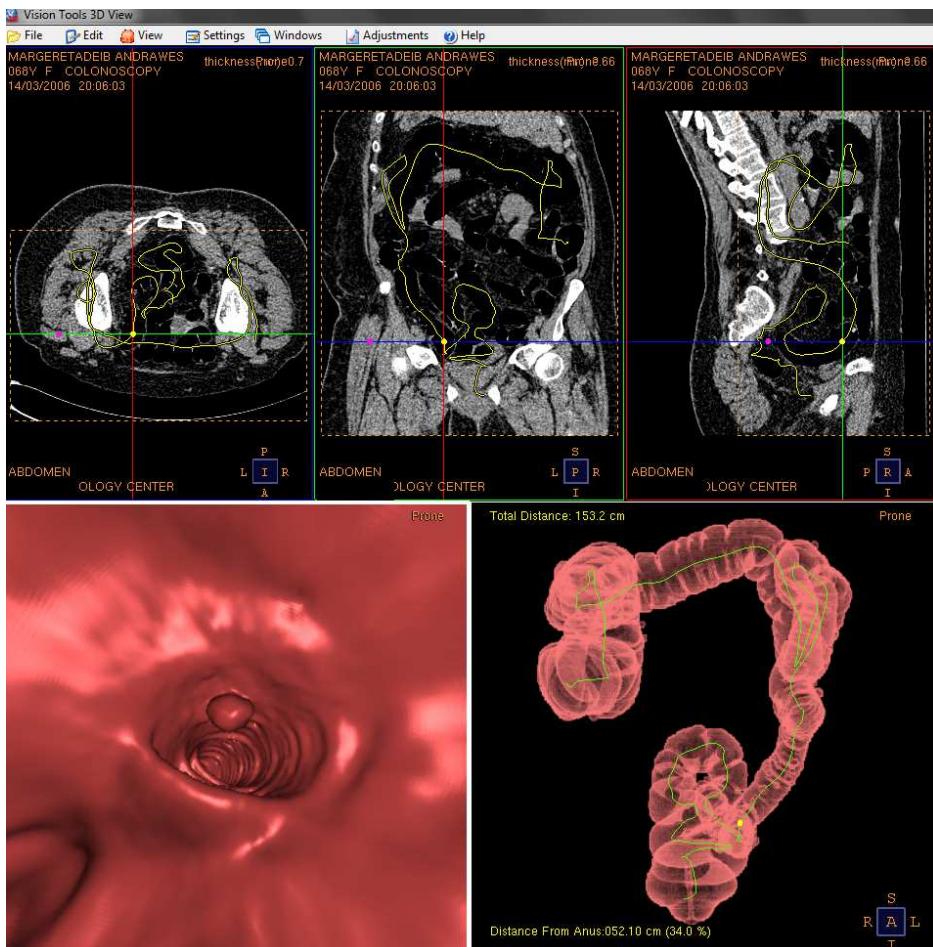
3- Snap Shot Capturing Mode:-



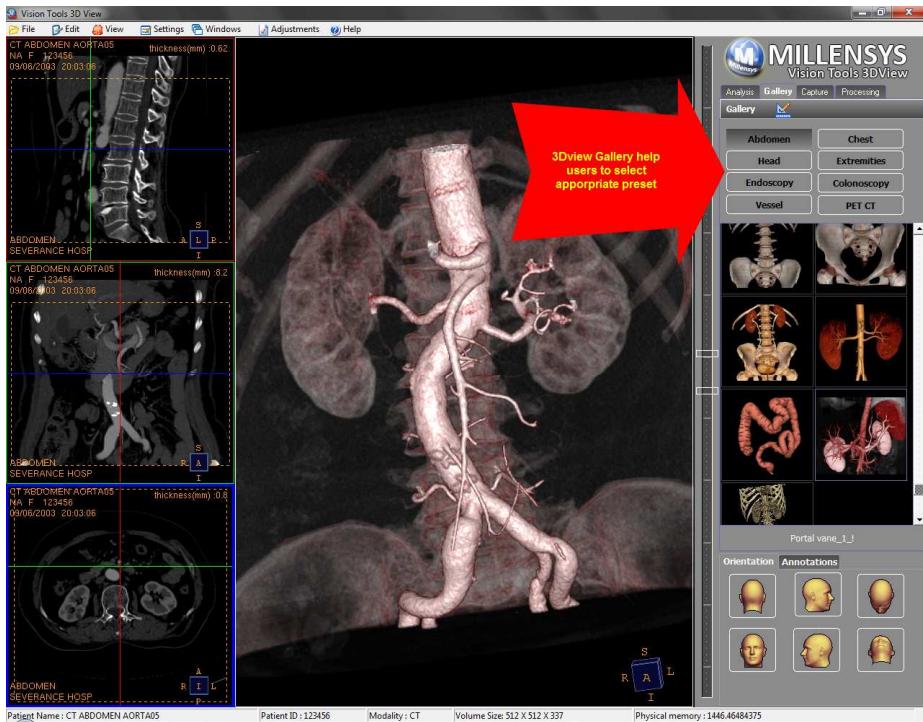
7.5.6 Virtual Colonoscopy

Virtual colonoscopy is one of MillenSys Product, which considered being a minimally invasive, safe and more comfortable procedure for colon screening. Recent studies have shown it to be comparable to conventional colonoscopy for finding polyps larger than one centimeter.

With virtual colonoscopy, 100% of the colon surface can be seen. It is estimated that physicians only see 70%-80% of the colon surface with conventional colonoscopy.

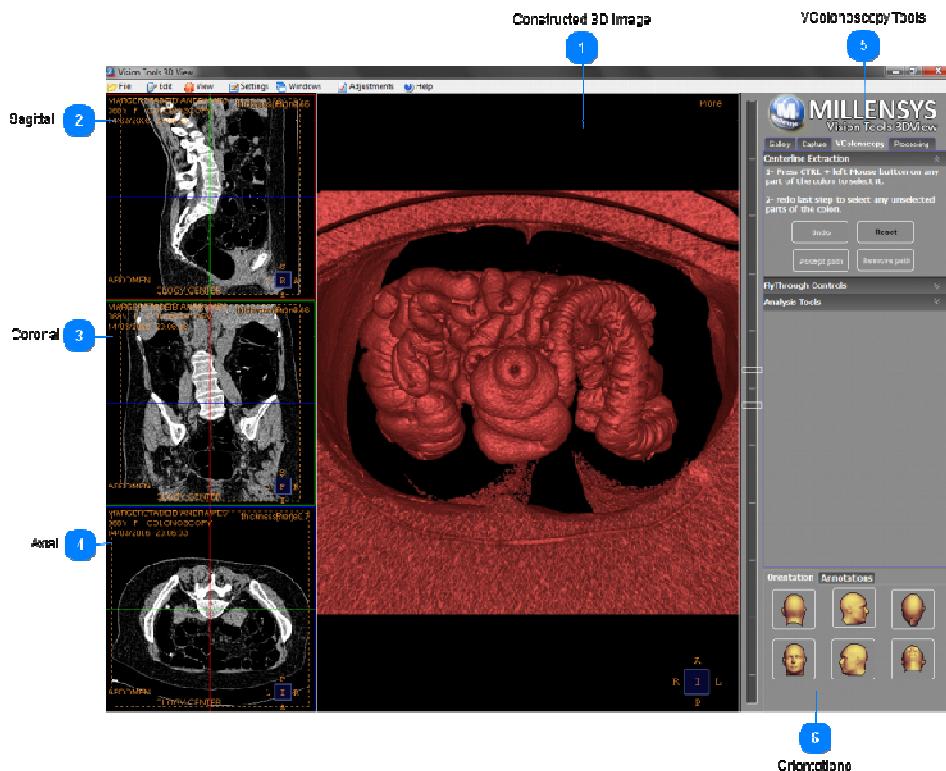


7.5.6.1 Gallery

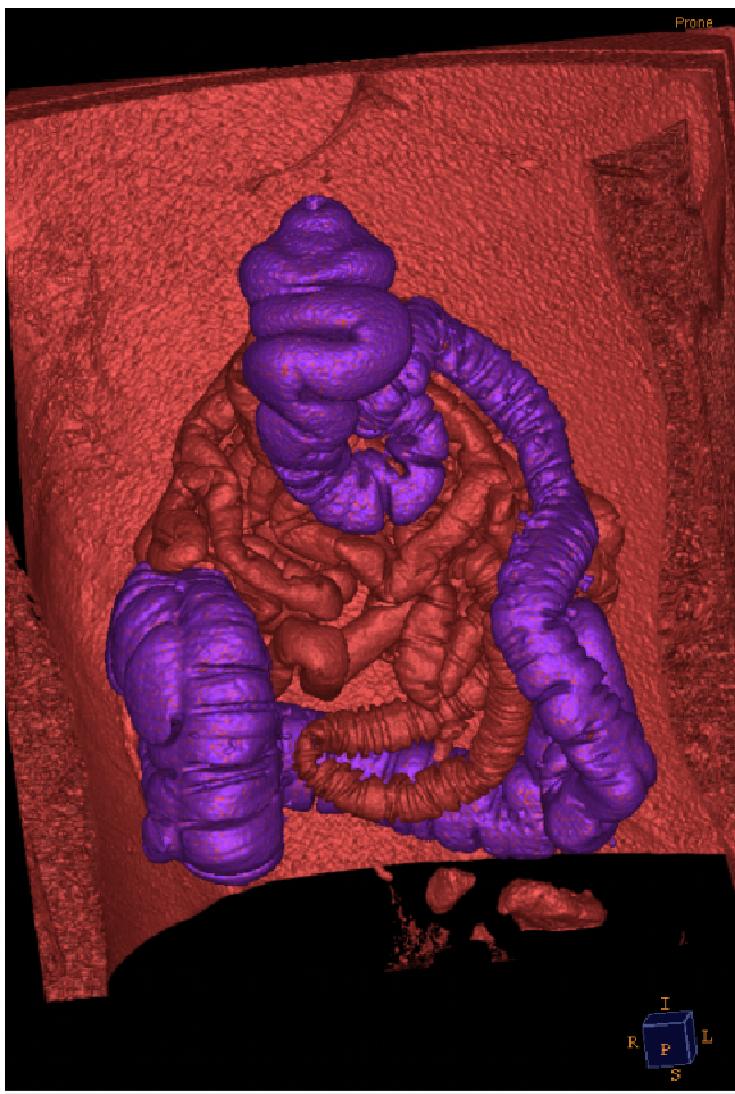


3Dview application module comes with a wide variety of presets that store the settings used to create the 3D images. 3Dview has Real-time Preview of presets; when you browse a preset, the preview window will show the effect of applying that preset to your currently loaded volume dataset. You can create customized presets. Presets can store more than just window width and level; all imaging parameters can be saved in a preset allowing for highly customized capabilities.

7.5.6.2 Understanding GUI



7.5.6.3 Selecting Colon



User should select the colon by clicking on any part of the colon with the left mouse click while holding the control button

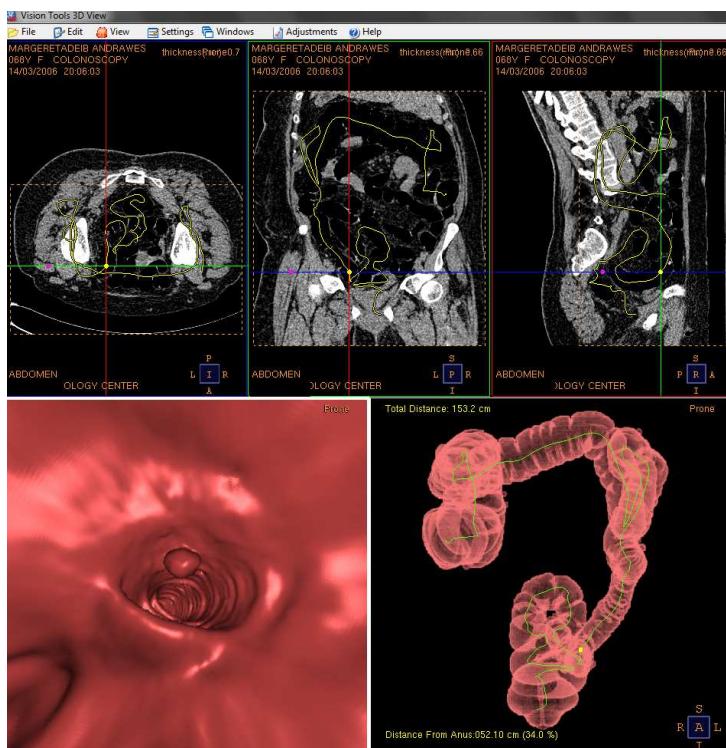
The colon then will be selected automatically as shown in the above image.

The user can repeat the same procedure to manually add unselected parts of the colon

When colon is completely selected the user should click Accept Path.

7.5.6.4 Fly-Through

This option allows the user to move through the bowel looking for abnormalities as if performing a normal colonoscopy.



User can start Fly-Through process by :

- 1- Defining the volume (Prone, Supine or Both)
- 2- Defining the Direction of the Fly-Through (Anus-Caecum or Caecum-Anus)
- 3- Defining the speed

Then click



7.5.6.5 Annotations and Measurements

User can add annotations to the generated Virtual Colonoscopy preview as well as using the ruler tool to measure needed measurements (Please refer to the below image).

User can delete specific annotation/measurement using Delete Selected Annotation or all of them using the Delete All button.



7.5.7 Capturing Reconstruction

Using Fly-Through capture the user can capture the resulted Virtual Colonoscopy in the form of cine or a series of images

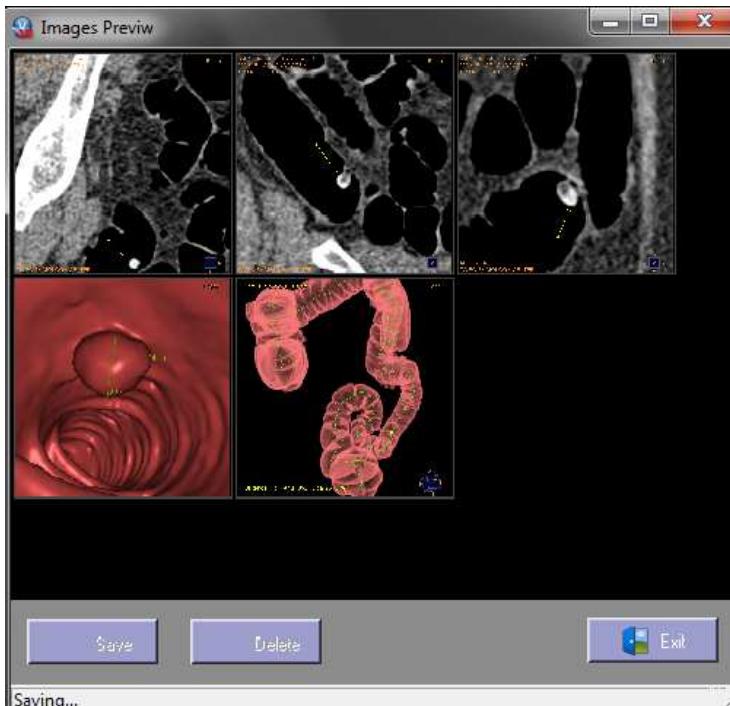
To start capturing the user should click the *Capture* tab in the tool box, then the user should select whether to save output as Images or Cine.

User can also define the frame rate of the output cine in frames per second.

To start capturing the user should click *Start*

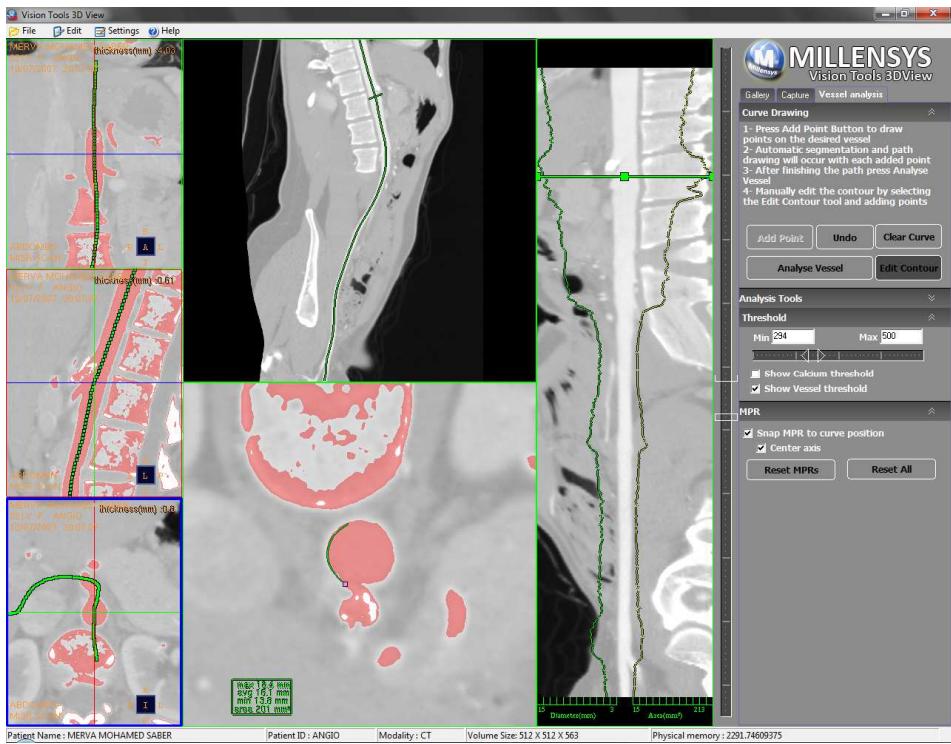


The user can also capture all the views presented on the monitor by checking in the *Capture All Views* Check box, the result will be similar to the below image.



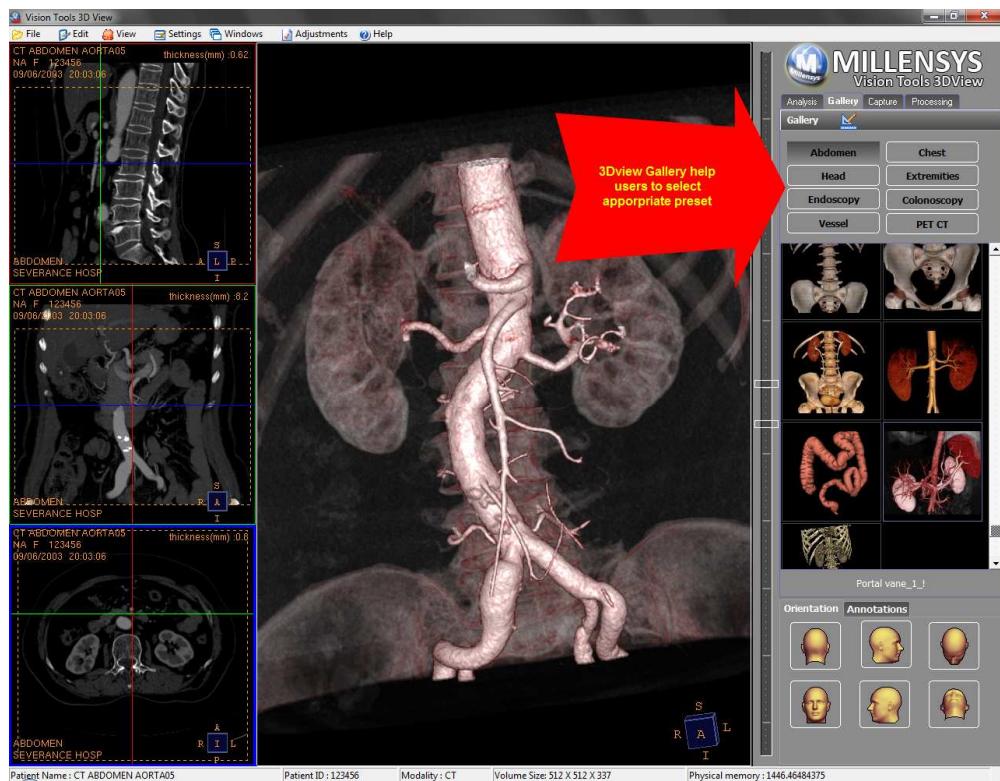
7.5.8 Vessel Analysis

Vessel Analysis Module is One of MillenSys Products, Vessel Analysis for CT comes with new analysis & follow-up tools (thrombus segmentation, pre/post abdominal stent analysis), and facilitates workflow with new tools like aorta & iliac auto tracking or one-click vessel analysis. Decrease your runoff processing time by 75 %.



7.5.8.1 Gallery

3Dview application module comes with a wide variety of presets that store the settings used to create the 3D images. 3Dview has Real-time Preview of presets; when you browse a preset, the preview window will show the effect of applying that preset to your currently loaded volume dataset. You can create customized presets. Presets can store more than just window width and level; all imaging parameters can be saved in a preset allowing for highly customized capabilities.



7.5.8.2 Vessel Analysis Objectives

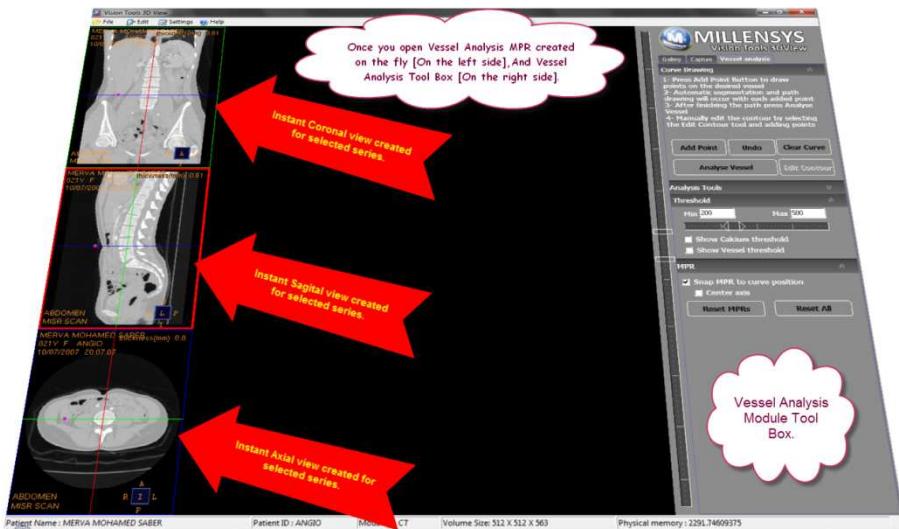
- [Measuring Vessel Length.](#)
- [Measuring Vessel Cross Sectional Area.](#)
- [Measuring Angle of Curved Vessel.](#)
- [Capturing Resultant Image Including Measurements.](#)

- **N.B.: In order to obtain best result for vessel analysis, follow these recommendations :-**

1. No. of images / slices must be sufficient for best interpolation (Modality Protocol).
2. The spacing (gap) between images /slices should be sufficient (Modality Protocol).
3. Vessel should be injected with high contrast media.
4. Choosing threshold to distinguish Vessel from Bone.

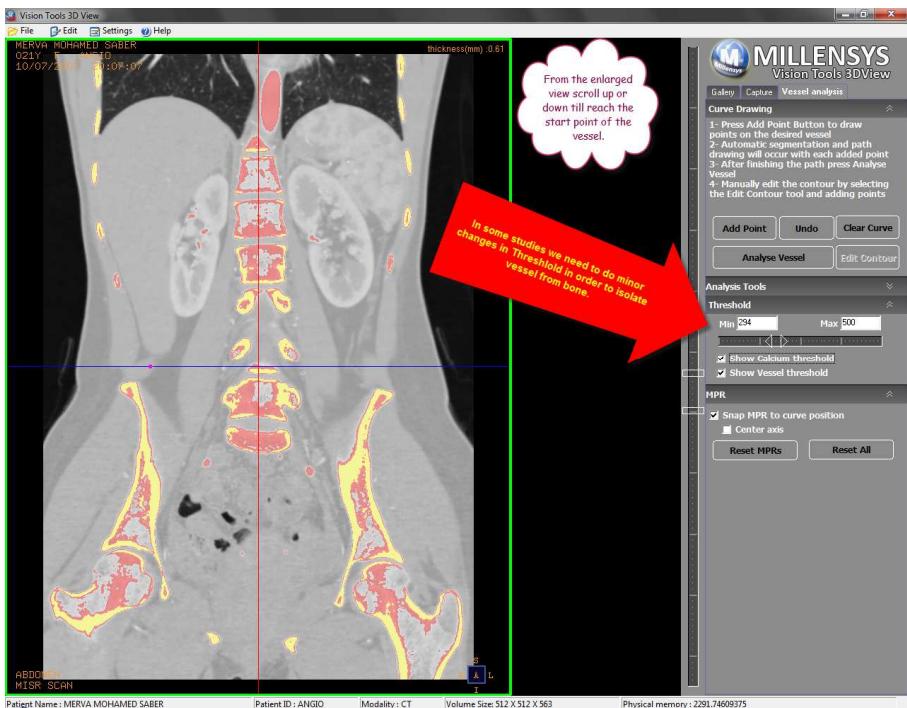
7.5.8.3 Segmentation

1. [Open Vessel Analysis Module \(Click Here\).](#)
2. Once you open Vessel Analysis MPR created on the fly [On the left side], And Vessel Analysis Tool Box [On the right side].



3. Choose any view from the left side and enlarge it (By double click on the view), as from this enlarged view we will choose our start point and End point of the vessel.

In our Example we will work on Coronal view. In some studies we need to do minor changes in Threshold in order to isolate vessel from bone.



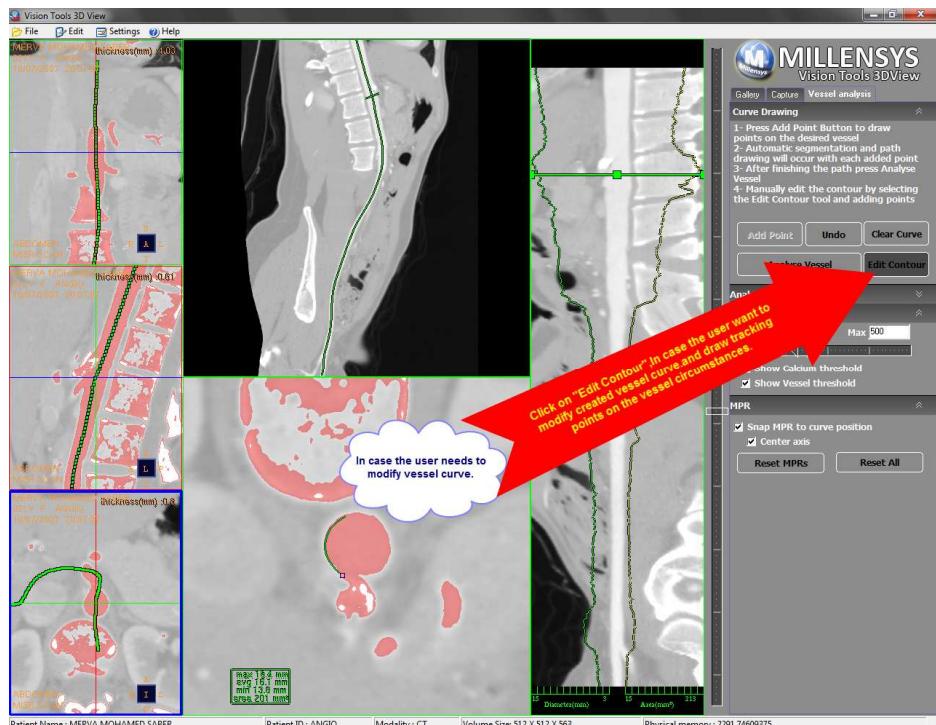
4. Click on Add Point to start selecting Vessel (start and End points), then do Mouse Left Click at the Start Point then scroll up or down and Mouse left click at the End point, Notice that when you are selecting tracking points on the vessel, there is a vertical view for the vessel is being created.





- 5- After determining tracking points on the vessel click "Analyze Vessel".
6- Due to conversion of Hounsfield (CT number) between Bone and Vessel injected with high contrast media, vessel cross section curve may need modification as the program might join part of bone with the vessel area (depend on vessel injection and threshold values). So user need to manually edit the wrong curve; Follow steps shown in image below.

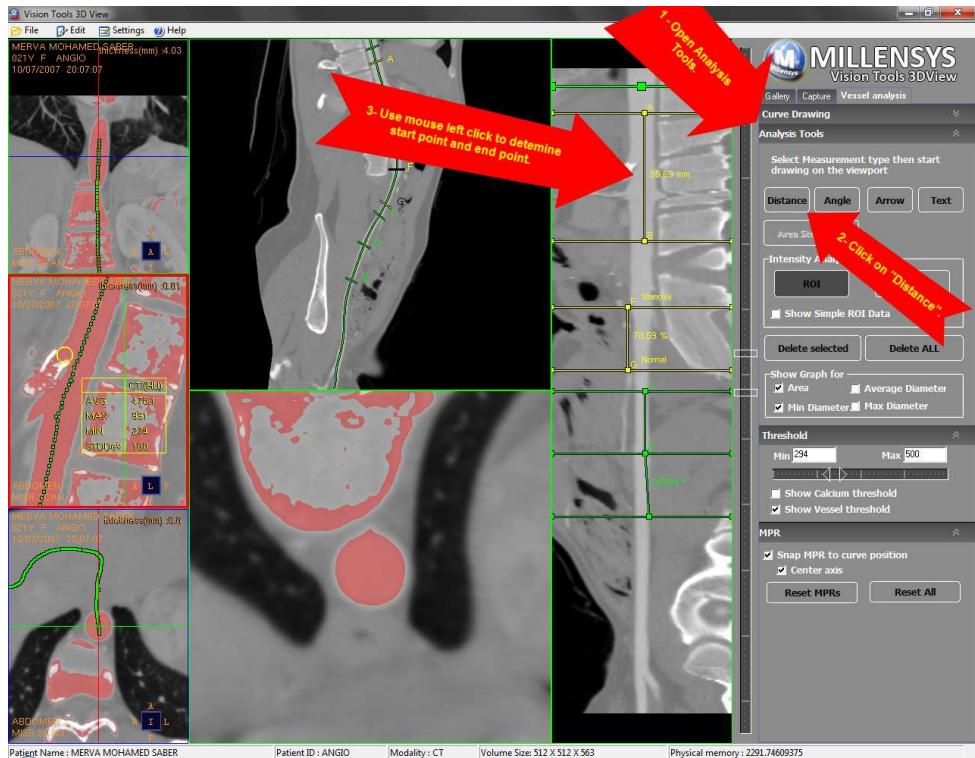
Click on "Edit Contour", in case the user wants to modify created vessel curve and draw tracking points on the vessel circumference.



7.5.8.4 Annotations and Measurements

Measuring a Vessel Length

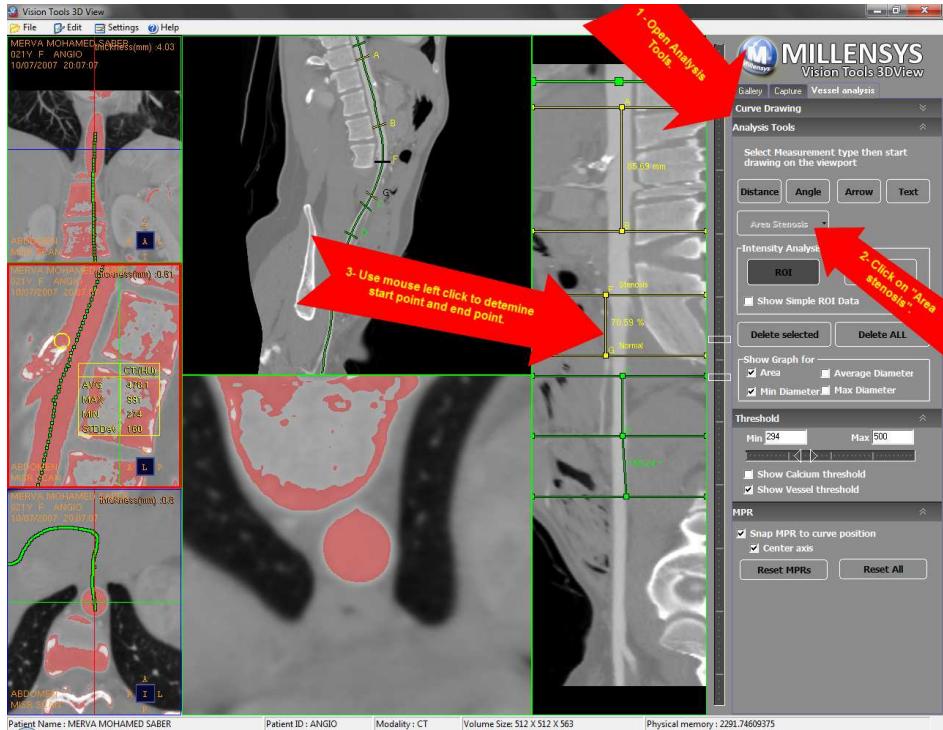
1. Determine desired Vessel.
2. Then follow steps as shown in image below.





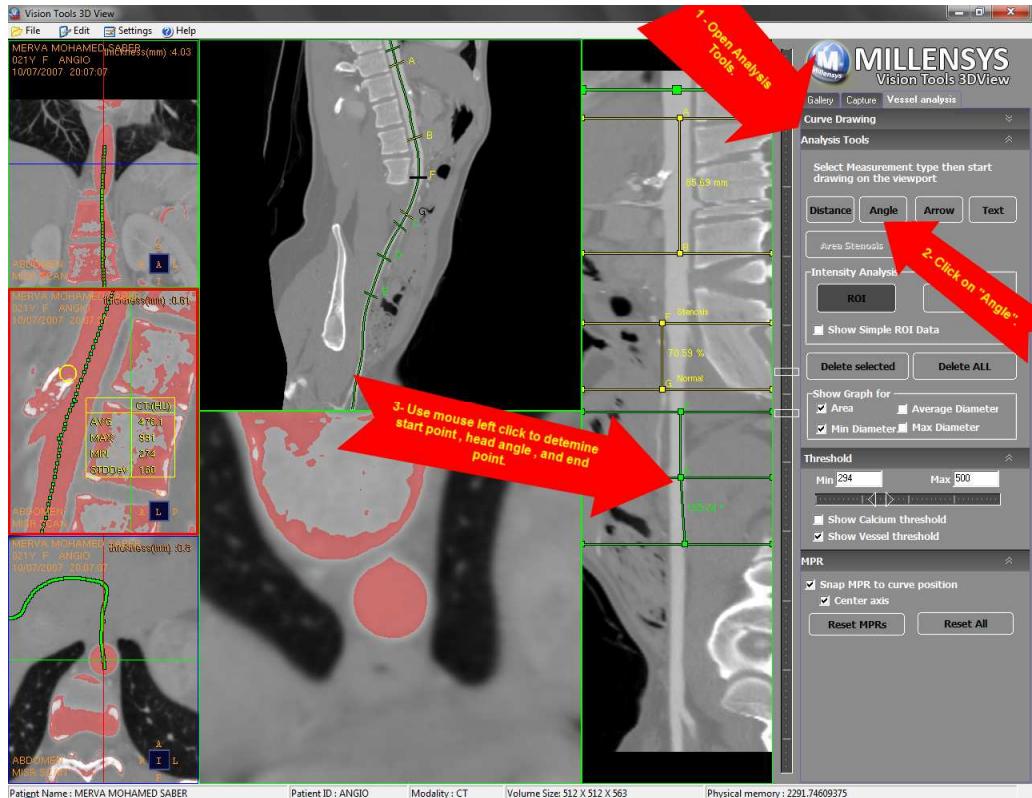
Measuring a Vessel Cross Sectional Area

1. Determine desired Vessel.
2. Then follow steps as shown in image below.



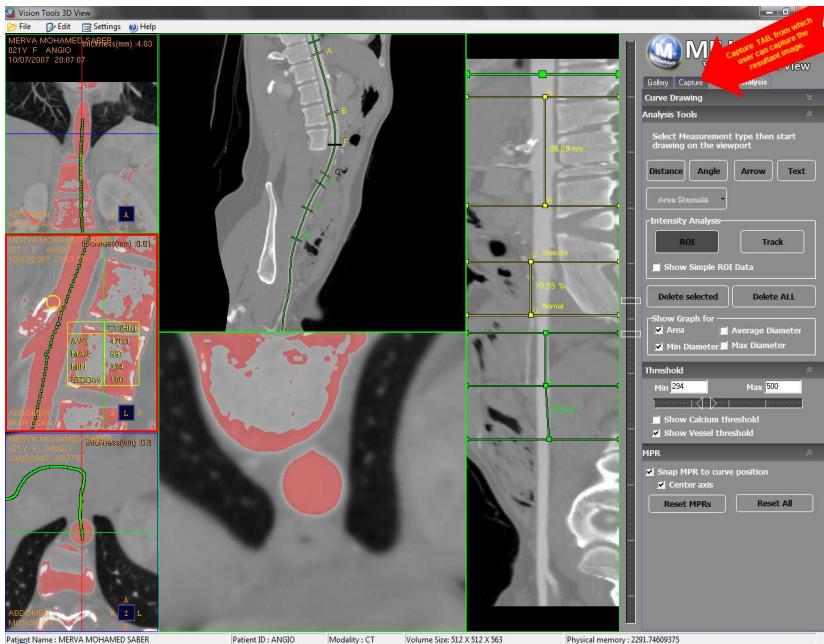
Measuring an Angle of Curved Vessel

1. Determine desired Vessel.
2. Then follow steps as shown in image below.



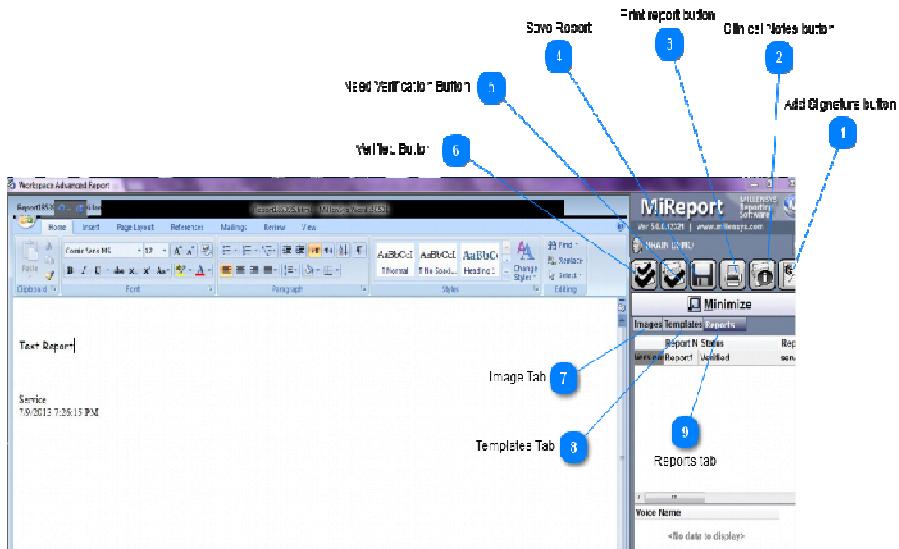
7.5.8.5 Capturing Reconstruction

After applying measurements on vessels, users can capture resultant image from Capture TAB (Check image below).



8 Advanced Reporting Tools

8.1 Main screen and navigation



1 Add Signature button

Click on this button to add the signature

2 Clinical Notes button

Click on this button to view the clinical notes of the study

3 Print report button

Click this button to print the report.

4 Save Report

Click this button to save the report partially (Report work flow)

5 Need Verification Button

Click this button to save the report after editing and waiting for verification (Report work flow)

6**Verified Button**

Click this button to verify the report (Report work flow).

7**Image Tab**

Click this tab to view a thumbnail of the images or key images to add it to the report.

8**Templates Tab**

Click on this tab view, add, edit or delete the templates of the report.

9**Reports tab**

Click this tab to view the status of the report for the study.

8.2 View existing reports

In order to open exiting written reports, click on **Reports tab**

You will see already written report; you can see also report last Status

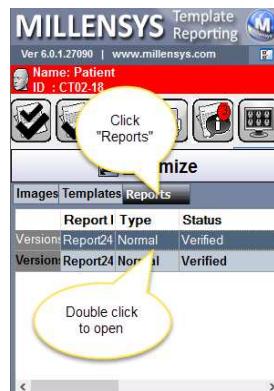
Partial: Just saved and not finished yet

Complete Not Verified: Completed but not verified yet

Verified: Report was verified by doctor

By default first report will be loaded in the Report Editor section

Double click on any other report to view the report



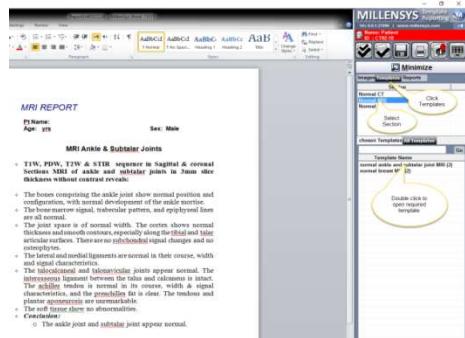
8.3 Write reports using existing template

In order to open write reports using existing template, click on **Templates** tab

You will see list of sections, this is the way to group the template

Under the Section Grid, once you select one of the sections

List of all associated templates will be displayed



Search for the template desired either by scrolling between them or by writing its name or part of its name and system will filter the list of templates

To use the template double click on it, to load in the word editor

In Order **Merge** template to the existing word editor content select the template you need to merge its content, then press right click then press **Merge Template to Current**

8.4 Template\Sections Management

In order to manage sections or template

Right click on section list press **Add>Edit Sections**

A new form will be displayed to enter sections or templates needed

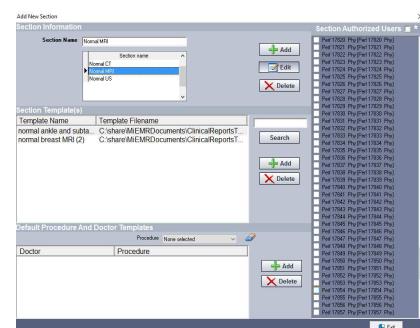
In order to add new section follows these steps

- Write section name
- In order you need another user Access the same section check his name from the right list
- Click the top **Add** button.



In order to add templates to exiting section

- Select section
- Click the template section **Add** button.
- Browse to select templates from local network or local PC.



In order to share with other

- Select section.
- Mark authorized users.
- Click **Edit** button.

8.5 Voice note recording

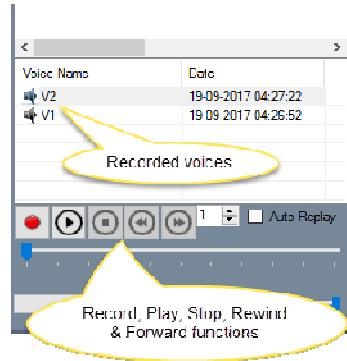
8.5.1 Voice Playback Functions

Voice recording window is found under **Reports** tab

Double click on the recorded voice note to start playing, or select and press **Play** button

System have ability to auto replay by enable **Auto Replay** check box

Use Play\Stop\Forward\Rewind for play back functions



Note: Voice recording module could be integrated with Phillips Mike and foot pedal.

For recording and transcript functions



8.5.2 Voice recording\Editing

In order to start recording either press on **Record** button, or keyboard shortcut can be assigned from the profile settings in order to start recording.

Once start recording, recording minutes counter will be displaying total time during your recording session

Once finished press **Stop** Button, system will then upload the voice note file to the server and refresh the list with new Voice Note line, with its time

Recorded voice could be edited after saving where user can play the recorded voice, stop at the point from which record needs to be edited, start recording over it.

8.6 Manage report versions

Once save report, system keep track for the report versions, so each save click system will save this report with single entry

In order to review if needed for the sake of review and comparison

Each saved version is saved by the name of the User who saved this version, time and the status of the report while saving this version

To view these versions check the reports grid, as the left there is **Versions** button

Images Templates Reports			
	Report I	Type	Status
Versions	Report7	Normal	Partial

Double Click on **Versions** the button to view the versions section

Report Versions(Report7)			
Version	User Name	Date Time	Status
Report7	GP.Doctor	18/10/2017 10:05	Partial
Report7	GP.Doctor	18/10/2017 10:05	Partial

8.7 Manage user profile settings

8.7.1 Manage user profile

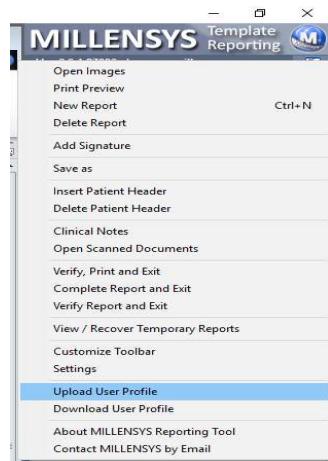
User profile contains header & footer settings, toolbar settings, page setup settings and shortcut settings.

In order to change user profile follow these steps

- Press options button on the right top corner
- A list of options will be displayed
- Select **Settings**

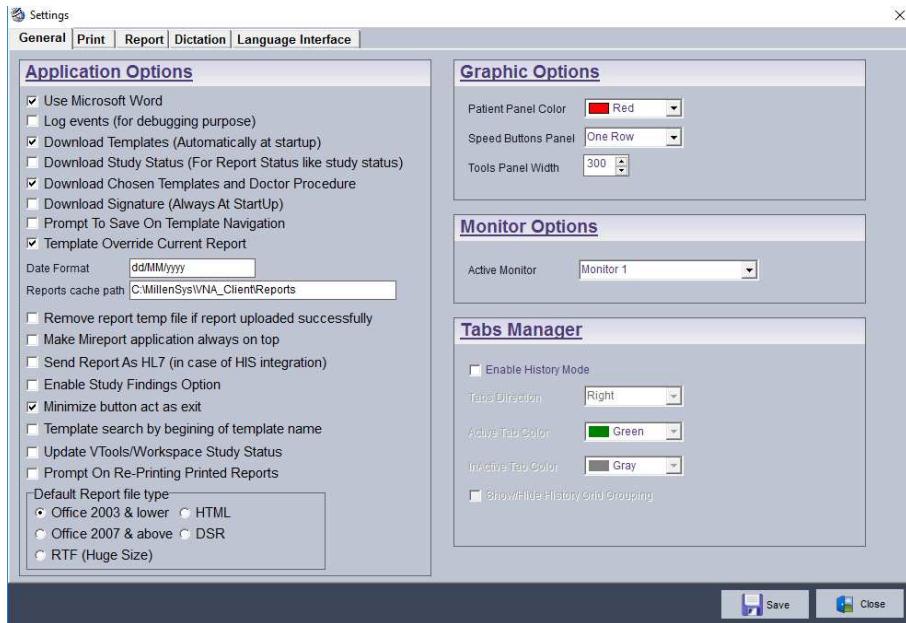


After changing profile settings it should be uploaded: Click "**Options**" button then select "Upload user profile".



8.7.2 Customize default settings

After pressing **Settings** button a popup of settings will be displayed
Consisting of tabs for the different settings options



After changing the settings press save button

Note: some settings need the restart of the Reporting tool in order to apply the settings

General Tab, Application Options

Use Microsoft Word, **checked** to use Microsoft Word Editor as our word processor if not checked system will use built in word processor

Download Templates (Automatic at startup), this option will cache list of templates assigned to the login user at the startup of the application, if not enabled the template section will be empty list

Download Study Status (For Report Status like study status), this will download the translated names of the Partial\Complete Not Verified\Verified

Download Chosen Templates and Doctor Procedure, this will cache predefined templates linked to certain procedure codes, this option is not used unless we did the configuration and link certain procedures to load certain templates

Download Signature, when this option is enabled, at the startup of the application system will download user's signature, the signature is used in the Verify Process

Prompt to save while template navigation, this option will save the current written report incase user start loading another template to avoid losses of written report.

Template Override Current Report, using this option if template is loaded it will replace current written report

Remove report temp file if the report uploaded successfully, option to save local computer storage area, once report was uploaded successfully system will delete the local cached report Default Location for local cache is
C:\Millensys\MiWebView\Reports

Make Mireport Application always on top, this will make the application to be on the top of all other application on the user desktop.

Send Report as HL7(in case of HIS Integration), option in case user need to send the verified report to another third party application such as HIS or PACS system

Template search by beginning of template name, if enabled the search on template name in the template name search tool, will be always **start with** written word not **contains text**

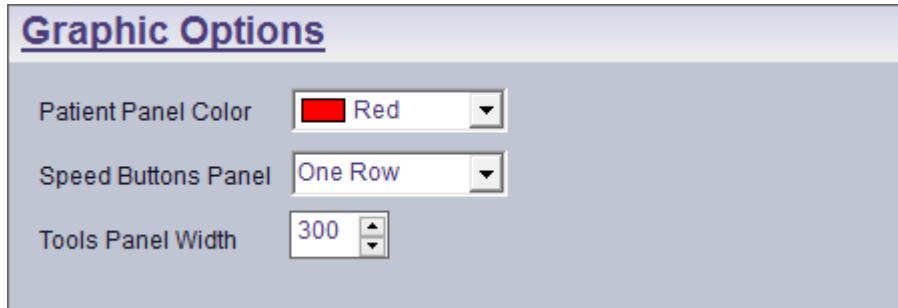
Update Vtools/Workspace Study Status, incase of launching reporting tool from C:\MillenSys\MiWebView\Reports Vtools, once report status is changes this will notify opening application to change status instead of pressing refresh button to update

Prompt on Re-Printing Printed Reports, this option is enabled it will notify user when printing already printed report, that the report was already printed

Default Report file type, This defines the Microsoft Word File type used incase we have MS Word 2003 and Less, Only valid format is .doc, starting from 2007 version we can use .docx version, please take in consideration that if you have only one PC

in your network uses old version like 2003 or less you will need to make the settings .doc to fit all PCs, or upgrade the PCs to newer version

General Tab, Graphics Option



Patient Panel Color, This is the background color under the patient name in the main report interface



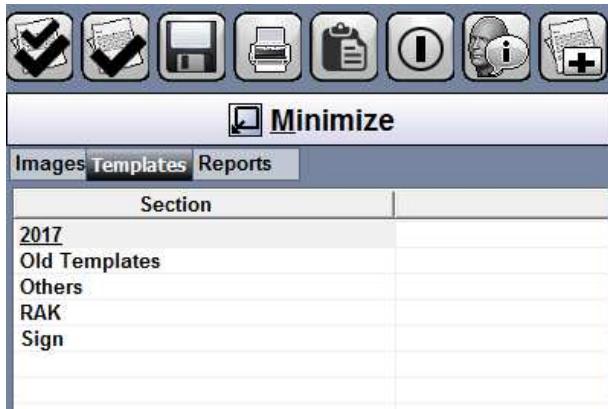
Speed buttons Panel, This number of rows for the toolbar tools on the main report interface, One Row is the default option, it can be increased



It can be increase by two\three rows

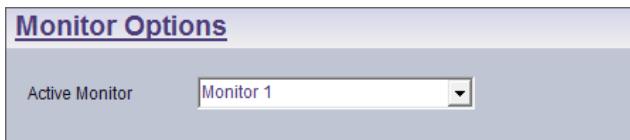


Speed Panel Width, This is the width in pixels for the toolbox window, default is 300 , it increased by 100 you can see the toolbox width is enlarged ex:



General Tab, Monitor Options

Active Monitor, This is the default monitor user needs the report to start on, specially designed incase local computer having multiple monitors attached to it

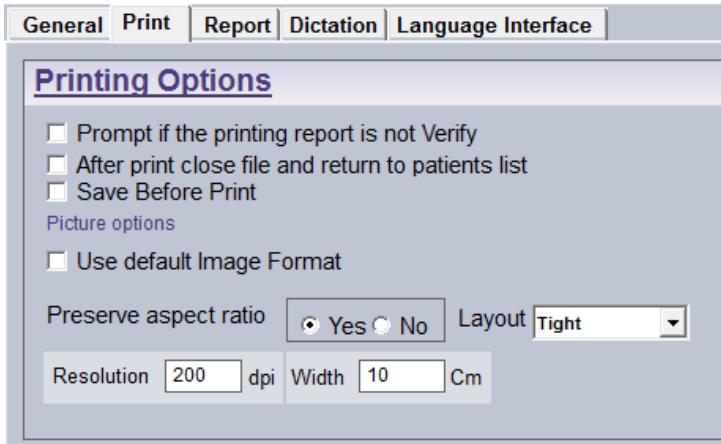


General Tab, Tabs Manager

Enable History Mode, This option will enable the prior reports tab, once enabled a new tab will be displayed after next startup of the application, showing the patient old written reports



Print Tab, Printing Options



Prompt if the printing report is not verify, this option will notify user if he try to print a report which is not saved yet

After print close file and return to patients list, this option is enabled once print report tool will be minimized and give user ability to return again to launching system with website or another application

Save before print, this option will trigger the save option before printing to avoid printing unsaved reports

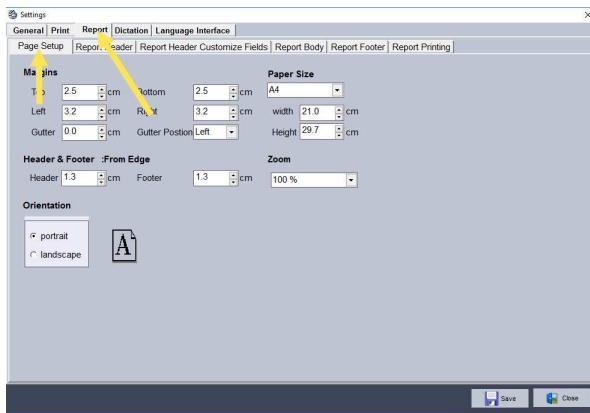
Print Tab, Picture Options

Use default Image Format, if enabled inserted image from clipboard will be inserted in its default width\height this option is not recommended since sometimes the pasted images are big

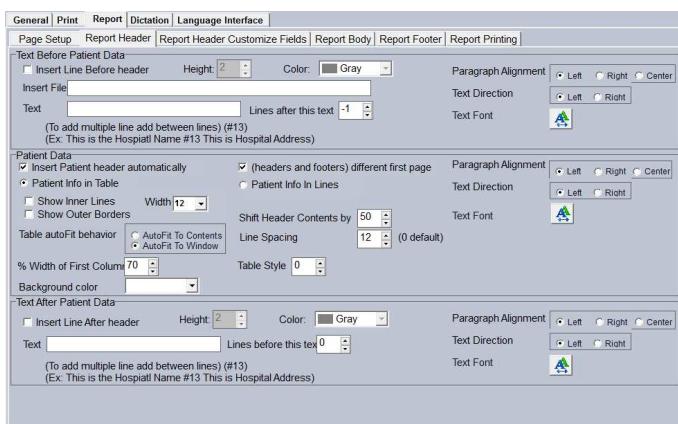
If this option is No, so the image will be resized before adding to the report
Layout, define the image style in the word
Width, define max width for the image, system will calculates the height
Resolution, this is the inserted image resolution in dot per inch (DPI)

Report Tab, Page Setup

In this setup page user can define the Word Page, Custom Setup
Define default header and footer distances from edges
Define either page is Landscape or Portrait (Default portrait)



Report Tab, Report Header



In this setup screen user can define the Patient Header, header displayed at the top of the report

The settings are divided into three sections

- Text before Patient Data
- Patient Data
- Text after Patient Data

Report Header, Text before patient data

Text Before Patient Data			
<input type="checkbox"/> Insert Line Before header	Height: <input type="button" value="2"/>	Color: <input type="color" value="gray"/>	Paragraph Alignment <input checked="" type="radio"/> Left <input type="radio"/> Right <input type="radio"/> Center
Insert File: <input type="text"/>		Text Direction <input checked="" type="radio"/> Left <input type="radio"/> Right	
Text: <input type="text"/> Lines after this text <input type="button" value="-1"/>		Text Font 	
(To add multiple line add between lines) (#13) (Ex: This is the Hospital Name #13 This is Hospital Address)			

Insert Line before header, if this option is enabled a line will be drawn using the Height settings, and color settings

<input type="checkbox"/> Insert Line Before header	Height: <input type="button" value="2"/>	Color: <input type="color" value="gray"/>
--	--	---

Insert File, this setting is used to put logo or preceding text at the top of the header, what is written in the textbox is the location where the file of the header should be located at the local computer, make sure that the file is always located in this location on all PCs is used by this user

Text, in this text box user can but instead of file some text to be added at the top of the header in order to have enter some text and you need new line please put #13 it will be replaced by New Line in the header

Ex:

If we need to make report text as follows

Radiology Department
Patient Report

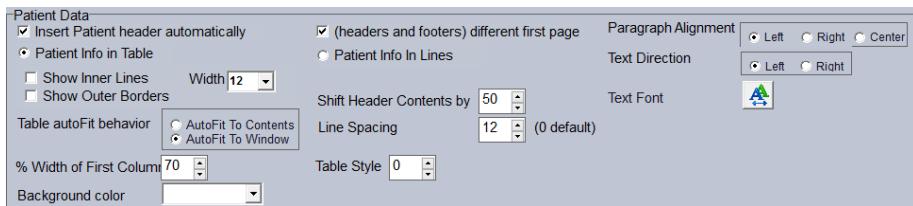
Patient Name: Pat Name	

I will put in the Text Field,
Radiology Department#13Patient Report

I will put lines after text 1

So this will put text and add line after the text before the header

Report Header, Patient Data



Insert Patient header automatically, if this option is enabled the system will insert header at the top of the report, if not enabled nothing will be inserted at the top

Headers and footers different first page, if enabled first report page header will have the header and other pages will not contain the report header (this is not recommended)

Patient Info in table\Patient Info In Lines, select which is desired either to display patient data in the header in a table view or just write data in lines and no outer table desired

In case Patient Info in table is enabled some settings can be then defined

Show Inner Lines, Either displays Inner border for the table

Show Outer Borders, either display table outer border or not

Table auto Fit behavior, either fit content to the table or fit table to the window

% Width of the first column, this is the percentage of the first column, this is used if the information displayed in the first column is larger in width to the data displayed in the second one

Background color, is the color of the table background

Table Style, these settings is to apply table styles in Microsoft word, when style 1 is the first table template style in Microsoft word

In case of Patient Info in Lines is enabled some settings can be then defined
Shift Header Content by, this is no of pixels to shift header with while displayed in lines this is used to center the header at the middle of the page
Line Spacing, this define the spacing between patient header lines

Report Header, Text before patient data

Text After Patient Data		Paragraph Alignment	
<input type="checkbox"/> Insert Line After header	Height: <input type="text" value="2"/>	Color: <input type="color" value="gray"/>	<input checked="" type="radio"/> Left <input type="radio"/> Right <input type="radio"/> Center
Text <input type="text"/>	Lines before this text <input type="text" value="0"/>	Text Direction	<input checked="" type="radio"/> Left <input type="radio"/> Right
(To add multiple line add between lines) (#13) (Ex: This is the Hospital Name #13 This is Hospital Address)			

Insert Line after header, if this option is enabled a line will be drawn using the Height settings, and color settings

<input type="checkbox"/> Insert Line After header	Height: <input type="text" value="2"/>	Color: <input type="color" value="gray"/>
---	--	---

Text, in this text box user can add after the header and you need new line please put #13 it will be replaced by New Line in the header

Ex:

If we need to make report text as follows

Patient Name: Pat Name	

Radiology Department

Patient Report

I will put in the Text Field,

Radiology Department#13Patient Report

I will put lines before the text 0

So this will leave no lines and put text after that

Report Tab, Report Header Customized Fields

General Print Report Dictation Language Interface																																																															
Page Setup Report Header Report Header Customize Fields Report Body Report Footer Report Printing																																																															
<table border="1"> <thead> <tr> <th>Display Name</th> <th>Field Name</th> </tr> </thead> <tbody> <tr><td>Pat.Name</td><td>Pat.Name</td></tr> <tr><td>Pat.Age</td><td>Pat.Age</td></tr> <tr><td>Pat.Sex</td><td>Pat.Sex</td></tr> <tr><td>Pat.Address</td><td>Pat.Address</td></tr> <tr><td>Pat.SSN</td><td>Pat.SSN</td></tr> <tr><td>First Visit</td><td>First Visit</td></tr> <tr><td>Marital Status</td><td>Marital Status</td></tr> <tr><td>Modality Name</td><td>Modality Name</td></tr> <tr><td>Pat.city</td><td>Pat.city</td></tr> <tr><td>Pat.Email</td><td>Pat.Email</td></tr> <tr><td>Pat.height</td><td>Pat.height</td></tr> <tr><td>Pat.Nationality</td><td>Pat.Nationality</td></tr> <tr><td>Pat.Religion</td><td>Pat.Religion</td></tr> <tr><td>Pat.Weight</td><td>Pat.Weight</td></tr> <tr><td>Insurance Company</td><td>Insurance Compa...</td></tr> <tr><td>Pat.Business Phone</td><td>Pat.Business Pho...</td></tr> <tr><td>Pat.Home Phone</td><td>Pat.Home Phone</td></tr> <tr><td>Procedure Name</td><td>Procedure Name</td></tr> <tr><td>Report Name</td><td>Report Name</td></tr> <tr><td>Room Name</td><td>Room Name</td></tr> <tr><td>Pat.DOB</td><td>Pat.DOB</td></tr> <tr><td>Report Date</td><td>Report Date</td></tr> <tr><td>Study ID</td><td>Study ID</td></tr> <tr><td>Dictator</td><td>Dictator</td></tr> <tr><td>Study Reason</td><td>Study Reason</td></tr> </tbody> </table> <div style="margin-top: 10px; text-align: center;"> > >> << < Default </div>	Display Name	Field Name	Pat.Name	Pat.Name	Pat.Age	Pat.Age	Pat.Sex	Pat.Sex	Pat.Address	Pat.Address	Pat.SSN	Pat.SSN	First Visit	First Visit	Marital Status	Marital Status	Modality Name	Modality Name	Pat.city	Pat.city	Pat.Email	Pat.Email	Pat.height	Pat.height	Pat.Nationality	Pat.Nationality	Pat.Religion	Pat.Religion	Pat.Weight	Pat.Weight	Insurance Company	Insurance Compa...	Pat.Business Phone	Pat.Business Pho...	Pat.Home Phone	Pat.Home Phone	Procedure Name	Procedure Name	Report Name	Report Name	Room Name	Room Name	Pat.DOB	Pat.DOB	Report Date	Report Date	Study ID	Study ID	Dictator	Dictator	Study Reason	Study Reason	<table border="1"> <thead> <tr> <th>Display Name</th> <th>Field Name</th> </tr> </thead> <tbody> <tr><td>Name:</td><td>Pat.English Name</td></tr> <tr><td>ID:</td><td>Pat.ID</td></tr> <tr><td>Referred by Prof.</td><td>Ref.Phy.</td></tr> <tr><td>Date:</td><td>Study Date</td></tr> </tbody> </table> <div style="margin-top: 10px; text-align: center;"> Study Date <input type="radio"/> Date With Time <input checked="" type="radio"/> Date Without Time Patient Prefix <input checked="" type="radio"/> Do Not Insert Prefix <input type="radio"/> Insert Patient Prefix <input checked="" type="radio"/> Insert MR. MRS. CH </div> <div style="margin-top: 10px;"> Patient Name <input type="radio"/> Original Patient Name <input type="radio"/> All Header in Lower I <input checked="" type="radio"/> All Header in Capital Letters <input type="radio"/> First Letters are Cap </div> <div style="margin-top: 10px;"> <input type="checkbox"/> Hide Ref. Phy.Field if no data in it <input checked="" type="checkbox"/> Show Warning Message For Empty Header Content <input type="checkbox"/> Translate Ref. Phy. </div>	Display Name	Field Name	Name:	Pat.English Name	ID:	Pat.ID	Referred by Prof.	Ref.Phy.	Date:	Study Date
Display Name	Field Name																																																														
Pat.Name	Pat.Name																																																														
Pat.Age	Pat.Age																																																														
Pat.Sex	Pat.Sex																																																														
Pat.Address	Pat.Address																																																														
Pat.SSN	Pat.SSN																																																														
First Visit	First Visit																																																														
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Modality Name	Modality Name																																																														
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Pat.Business Phone	Pat.Business Pho...																																																														
Pat.Home Phone	Pat.Home Phone																																																														
Procedure Name	Procedure Name																																																														
Report Name	Report Name																																																														
Room Name	Room Name																																																														
Pat.DOB	Pat.DOB																																																														
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Referred by Prof.	Ref.Phy.																																																														
Date:	Study Date																																																														

Select Fields from left column and add it to right column

Columns on the right are the columns that will be displayed in the report header

To modify Prefix of the word like, changing Pat . Name to Name:

- 1- Select the **Pat.Name** from the left panel
- 2- Click one click on the **Pat.Name**, it will be changed to edit mode inside the grid, write **Name:** then click again to exit edit mode
- 3- Select the **Name:** from left grid and press > arrow to add to right side

In order to modify the order of fields in the patient header

- 1- Press << to move fields from right to left and reset the order
- 2- Select each field and press > to add them to the right grid
- 3- Make sure you are putting them in the order desired
- 4- Put in consideration normally the Patient Header Normally display two data fields per line, so first two fields will be inserted to the first line of the header and so on.

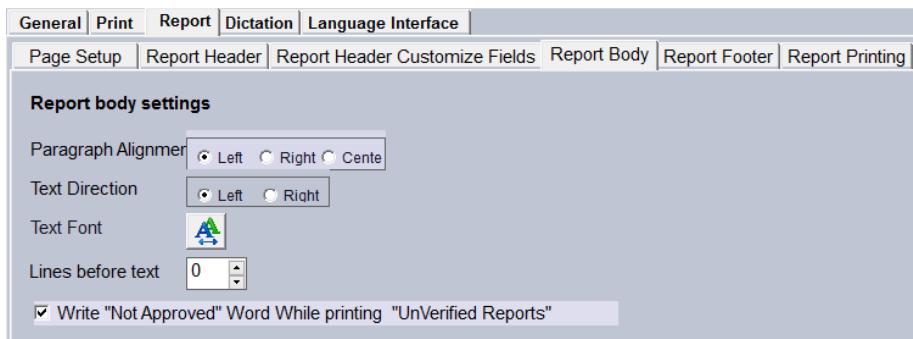
Study Date, This option define the way to display study date, either display day and time or just the Day Only

Patient Name, the way of displaying the patient name, settings to make name all in capital or first character is only capital or all small or leave as it is

Hide ref. phy. Field if no data in it, this option when enabled, if the report data does not include referring physician name, so the filled will be displayed in the grid as empty filed, or it can show the Ref.Phy. Prefix with no data after that

Show warning Message for Empty Header Content, this option will give warning message to the user when creates new report for the patient, incase settings of the header is enabled but no field was defined to be inserted automatically

Report Tab, Report Body



Defined report font settings such as , Paragraph Alignment, Text Direction, Text Font

Lines before text, no of lines added at the top of the body before the text

Write “Not Approved” word while printing “Unverified Report” , this will write the word not approved at the end of the report, just before printing and it will be removed after wards

Report Tab, Report Footer

General | Print | Report | **Dictation** | Language Interface |

Page Setup | Report Header | Report Header Customize Fields | Report Body | **Report Footer** | Report Printing |

Report footer settings

Insert File:

Display Name	Field Name
Pat.Name	Pat.Name
Pat.English Name	Pat.English Name
Pat.ID	Pat.ID
Pat.Age	Pat.Age
Pat.Sex	Pat.Sex
Pat.Address	Pat.Address
Pat.SSN	Pat.SSN
First.visit	First.visit
Marital.Status	Marital.Status
Modality.Name	Modality.Name
Pat.city	Pat.city
Pat.Email	Pat.Email
Pat.height	Pat.height
Pat.Nationality	Pat.Nationality
Pat.Religion	Pat.Religion
Pat.Weight	Pat.Weight
Insurance.Company	Insurance.Compa
Pat.Business.Phone	Pat.Business.Pho
Pat.Home.Phone	Pat.Home.Phone
Procedure.Name	Procedure.Name
Ref.Phys.	Ref.Ph.
Report.Name	Report.Name
Room.Name	Room.Name
Study.Date	Study.Date

Buttons: > >> << < Default

Checkboxes:

- Insert Page Number
- Insert Signature

Signature Options:

- Verify
- Complete
- Partial

Same as report header, you can define fields that can be displayed in the Footer Section, define what should be added in the Footer Section

Insert Page Number, this will automatically insert page number in footer section

Insert Signature, if enabled system is asking when to add signature, you can define either by Verify Action or with Complete Not Verified and with Partial Save

Report Tab, Report Printing

Page Setup | Report Header | Report Header Customize Fields | Report Body | Report Footer | Report Printing |

Default Report Printing Settings

Page Range

- All Pages
- Current Page
- Custom Selection

In these settings, will pressing print, does system automatically print all report pages or just select the current page or custom selection by the mouse

Dictation Tab, Dictation Options



Save temporary voice notes in voice dictation tool, if enabled system will just save voice notes and it will not be saved on the server, I will be just saved in the location defined

F/R Step, this is the playback speed factor, 1 is default without slowness or speediness

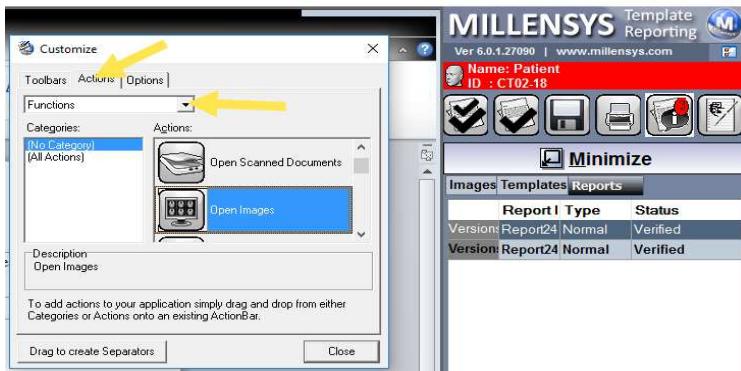
8.7.3 Dictation Tab, Dictation Shortcuts

Enable shortcuts, this will enable the Play\Record\Stop shortcuts
To define the shortcuts define the shortcuts in the text box

Manage Toolbars

To manage toolbar click **Options** and select **Customize Toolbar**

Just drag and drop required function from “Actions” menu to the toolbar



9 Patient Jacket

9.1 Main screen and navigation



Figure - 3.6 Accessing Patient Jacket

VNA users can full history on patient level feature called **Patient Jacket**  which help users to see all studies data like such as Study Timeline, Study Series, Medical Reports, DICOM/Non-DICOM files, Clinical Notes, and Scanned Documents.... etc. as shown below in Figure 3.7



Figure - 3.7 Patient Jacket

Patient Jacket tool, consists of different preview panels,

- ① **Patient Info**, Display current patient summarized demographics.
- ② **Time line**, Show list of studies\exams done for the patient, its shows a thumbnail preview for the study in case study is images you will see one image from the study



Time line, showing a dotted line to separate patient studies by years , displaying from new to old years

Pressing the **Show Relevant** this will show matched studies from the history that is identical to my selected study by Body Part or Modality Type

By Clicking on each displayed thumbnail, this will select the study, will display in other panels details for this single study, such as Series\Reports\Clinical Notes\Key Data

③

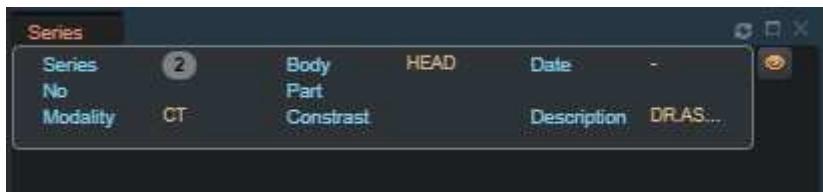
Study Details, In this panel system display the current select study briefing study as Study Number, First Modality Type, Status, Procedure Name...



④

Series Section, this display list all the series inside the select study, some details is written per each series, like series number ,modality type, date, body part, description

In order to select view specific series, user can click on  button to launch the viewer

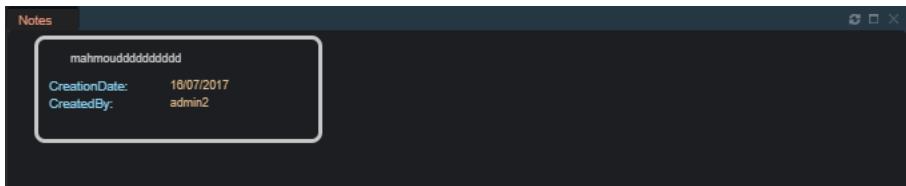


⑤

Reports Section, this display list all reports written to the select study, some details are written per report

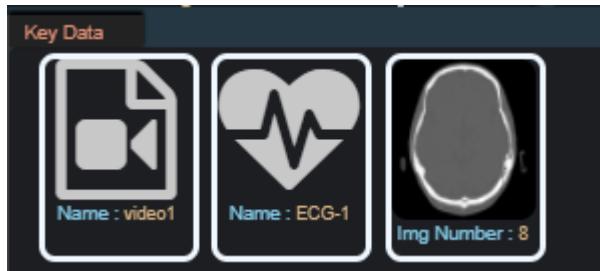
6

Notes, this display an icon for each clinical notes, with prefix details on the note

**7**

Key Data, this display an icon for each key image\Key Document attached in the VNA per this single study

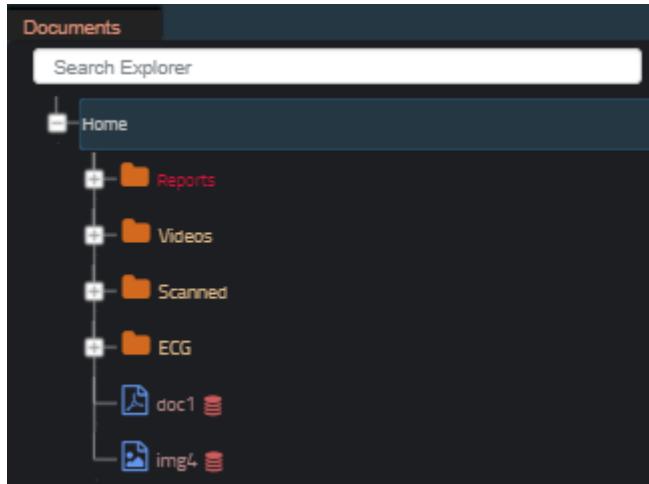
Displayed icon will show either the key file is images\ECG Wave Form\Video....etc



When you click on the Icon this will launch viewer to view it

8

Documents, this display tree of documents attached to the selected study for this patient



Each folder will represent certain category of patient documents, when we expand this folder, sub folders\files will be displayed

9.2 Manage Layout

All VNA users have the accessibility to customize his own layout in patient jacket page by some ways as in figures below.

By dragging any widget from its edge tab using left mouse click and move the whole widget to its favorable area as in Figure 3.8 as below.



Figure - 3.8 Drag/Drop Widget

Also you can maximize/minimize each widget window by using icon as below in Figure 3.9, and you can hide/remove widget using icon as below in Figure 3.9



Figure - 3.9 Max./Min. Widget

And you can increase/decrease widget area by using left mouse click at the boundaries of each widget as below in Figure 4.0

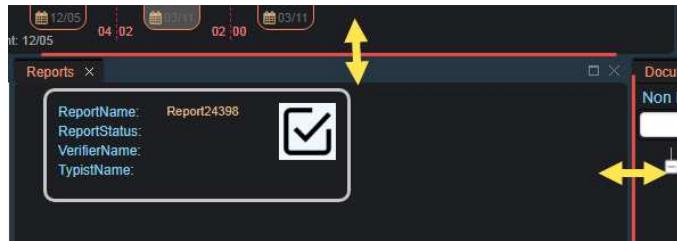


Figure - 4.0 Inc./Dec. Widget Area

9.3 View Time line

In study time line users get a brief history on radiology scans done to the patient with all medical details once they click on each study using left mouse click.



Figure - 4.1 Study Time Line

1

From this info you got recent study date done for the patient.

2

Studies done for the patient will be displayed in descending orders and you can select each study by using left mouse click.

3

Show user study year.

4

Show relevant check box help user to show same studies with same body part.

9.4 View main functionality

Users can have some useful functions in Patient Jacket that can be used to open other modules like,

Opening study images

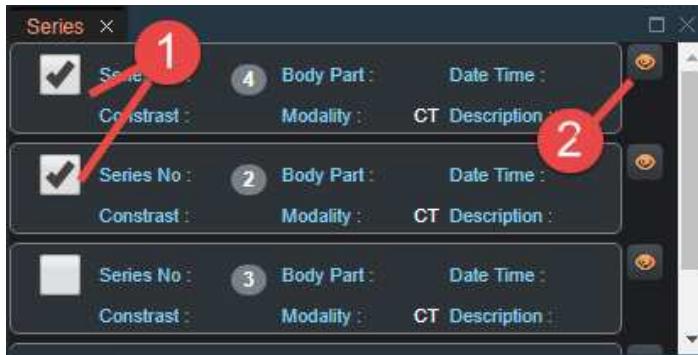


Figure - 4.2 Opening Selected Series

- 1 First you should select single or multi series.
- 2 Then use this  icon to open the study imaged.

Navigate different study for the same patients



Figure - 4.3 Study Navigation in Timeline

- 3 Using left mouse click .. users can show patient studies details in one page.

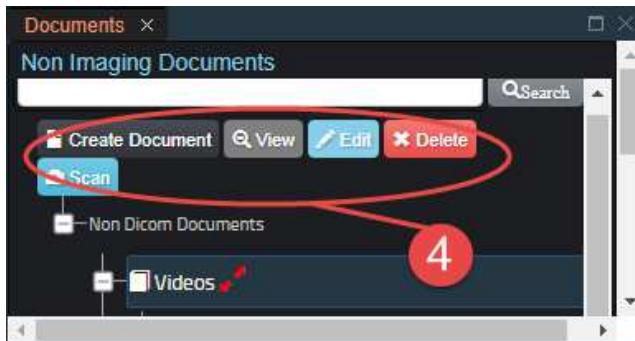
Navigate study documents (Non-DICOM files)

Figure - 4.4 Documents Navigation

4

Users have the capabilities to create, view, edit, delete and also he can scan directly from here any documents required to be on the same study file to help others getting all information from one place.

10 Document Manager

10.1 Main screen and navigation

In document manager we will give you full details on how to use it to be able completing your patient file.

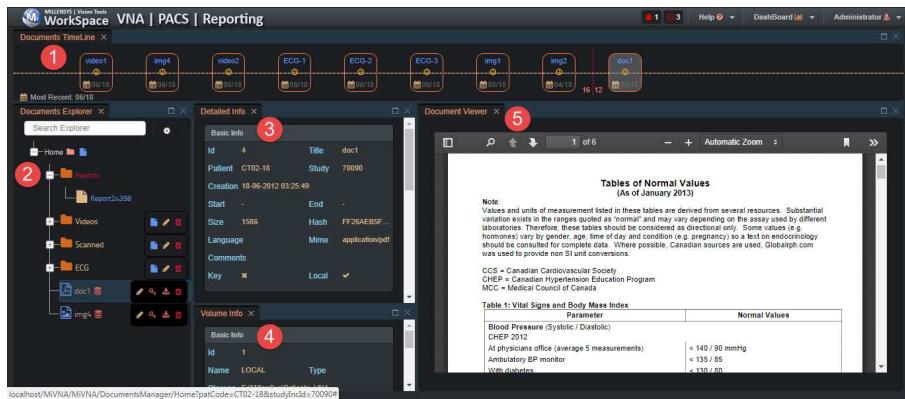


Figure - 4.5 Document Manager

- 1 Document Time line showing users document upload date.
- 2 Documents upload area which helps users to navigate uploaded documents and help them to upload or import others.
- 3 Detailed information for the document uploaded once you selected from the document upload/import area.
- 4 Volume information which give you extra details about its storage path, volume and size.
- 5 Document viewer area help users to view all Non-DICOM files uploaded on current study at this area.

10.2 Manage Layout

All VNA users have the accessibility to customize his own layout in document manager page by some ways as in figures below.

By dragging any widget from its edge tab using left mouse click and move the whole widget to its favorable area as in Figure 4.6 as below.

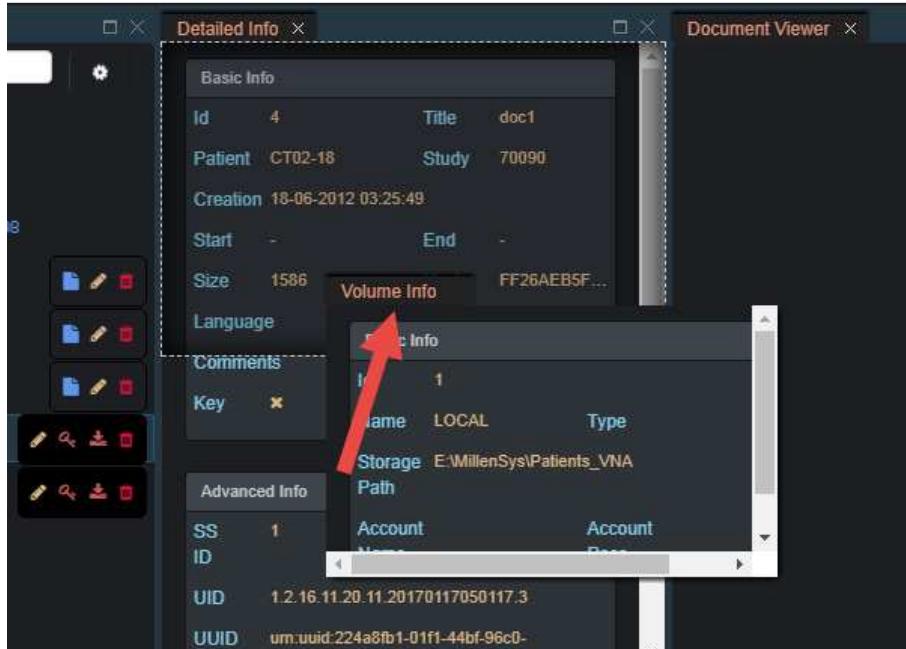


Figure - 4.6 Drag/Drop Widget

Also you can maximize/minimize each widget window by using  icon as below in Figure 4.7, and you can hide/remove widget using  icon as below in Figure 4.7

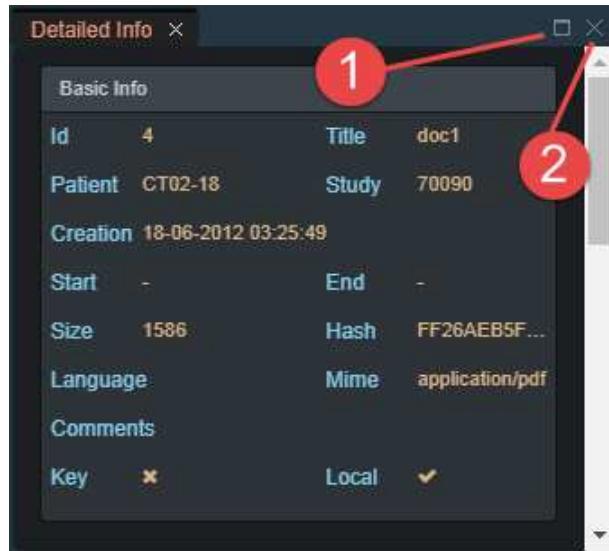


Figure - 4.7 Max./Min. Widget

And you can increase/decrease widget area by using left mouse click at the boundaries of each widget as below in Figure 4.8



Figure - 4.8 Inc./Dec. Widget Area

10.3 View existing Documents

All what you need to do to view your uploaded documents and files, You just need to use left mouse click on your desired document from document explorer widget area as shown in figure 4.9



Figure - 4.9 Document Explorer Widget

After user click automatically document will be displayed on document viewer widget area as shown in figure 5.0

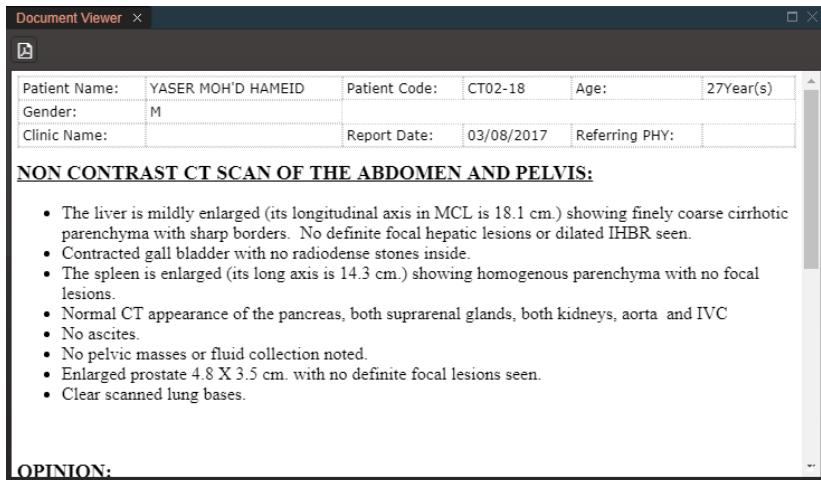


Figure - 5.0 Document Viewer Widget

10.4 Create\Import Documents

In this part we will show VNA users how to deal with Document Explorer widget to do multiple tasks for creating/importing documents into study file.

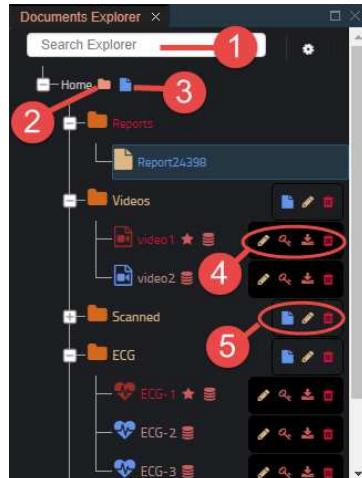


Figure - 5.1 Document Explorer Navigation

- 1** Quick Search to help users getting file faster.
- 2** You can create folder using this  icon to be act as a section for multi documents from the generic.
- 3** You can import documents or files using this  icon.
- 4** You can edit, set/unset docs as key documents, download and delete required documents or file using this  icons.
- 5** Also you can import, edit and delete created section using this  icons.

11 Internal Messaging Module

In workspace VNA software we have a built-in messaging module to be used for announcing internal requests/updates data to facilitate information broadcasting between users.

All messages popped-up to users while using VNA application and by one click users will open message and got facility notification update.

11.1 Main screen and navigation

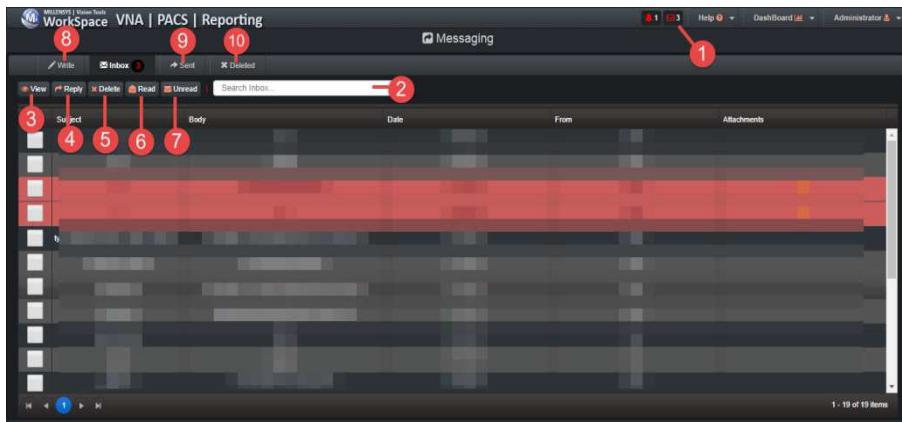
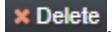
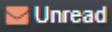


Figure - 5.2 Internal Messaging Module

- 1 Users will be notified about new message received from this icon  and by using left mouse click internal messaging module will be opened.
- 2 Quick Search to help users getting mail faster.
- 3 Users can view mails using this icon .
- 4 Users reply on mails using this icon .

- 5 Users can delete mails using this icon 
- 6 Users can make mails as read without viewing mail using this icon 
- 7 Users can make mails as unread using this icon 
- 8 Users can write mails to others using this icon 
- 9 Users can see sent mails using this icon 
- 10 Users can see deleted mails using this icon 

11.2 Send\Receive message

To send mails users can press on write mail using left mouse click and writing new mails page will be displayed as below in figure 5.3

While receiving mail will be shown automatically on main internal messaging module page by using left mouse click on Inbox icon as shown in figure 5.2

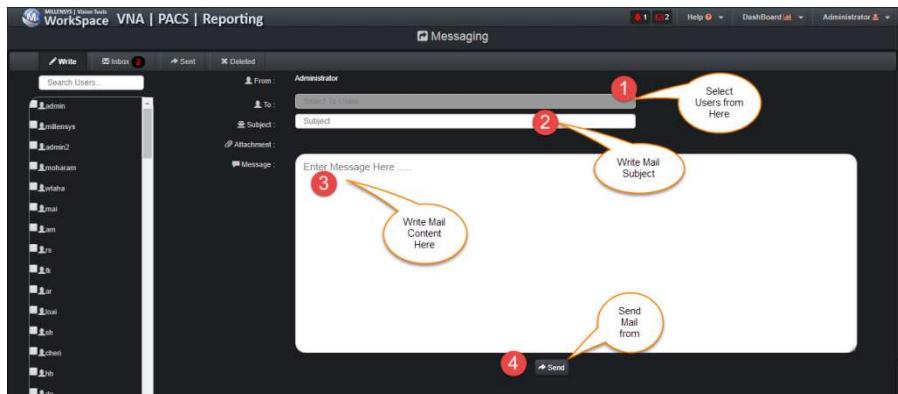


Figure - 5.3 Sending Mail

11.2 Reply messages

Users reply on their own mails by checking on mail that he/her needs to reply on using this icon  as shown below in figure 5.4

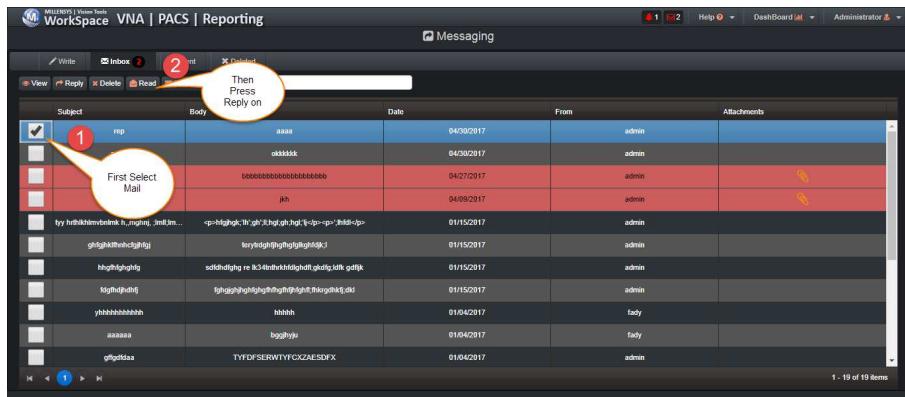


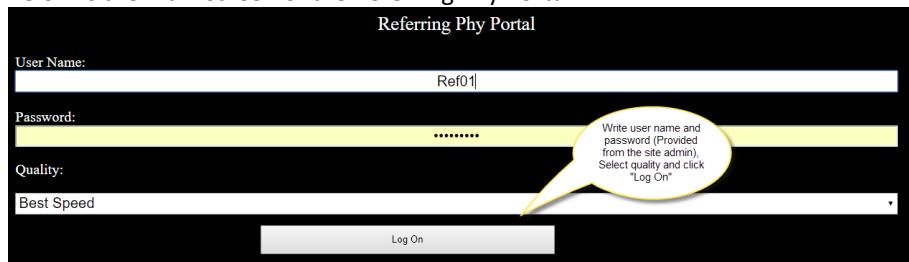
Figure - 5.5 Reply on Mail

12 Referring Phy Portal

Each study could be assigned to referring doctor. Referring doctors then will be able to access their studies (Everyone can access his studies only).

To open Referring Phy Portal user should ask the site admin for the website URL.

Below is the main screen of the Referring Phy Portal



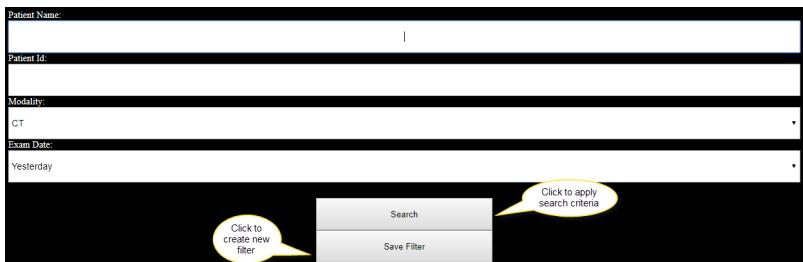
Referring Phy Portal	
User Name:	Ref01
Password:
Quality:	Best Speed
<input type="button" value="Log On"/>	

After login:

			Patient's Studies	Logout
Welcome Dr. Doctor X			Only Last 15 Days Studies Can Be Displayed	Custom Search
Viewer	Report	More	Test-Patient-1 ID: COLONOSCOPY [CT] 10/26/2017 12:00:00 AM Description:Abdomen^CTColonography (Adult)	
Viewer		More	Test-Patient-3 ID: 1145428 [CR] 10/26/2017 12:00:00 AM Description:Knee	
Viewer		More	Test-Patient-4 ID: 1869115 [US] 10/24/2017 12:00:00 AM Description:Full Field Digital Mammography With Tomosynthesis- Both side	

In previous screen, Referring physician will be able to:

- 1- “Custom Search” **Custom Search** to search for studies as well as creating searching filters.



Patient Name: _____

Patient Id: _____

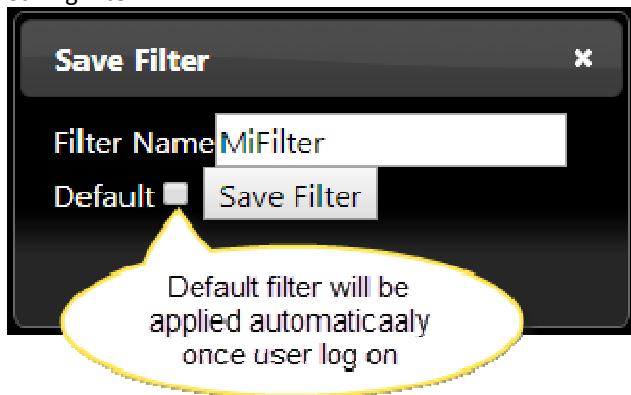
Modality: CT

Exam Date: Yesterday

Click to apply search criteria

Click to create new filter

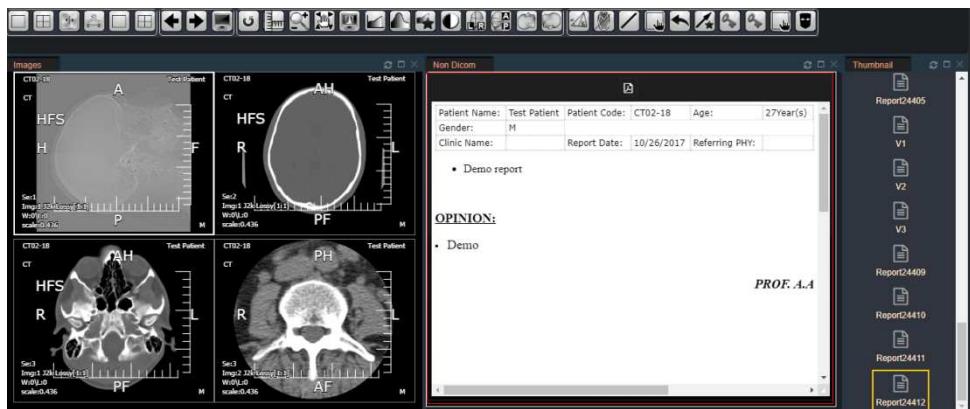
Saving filter:



- 2- More options: Click "More" to review "Study Notes", review "History" and share study to other users.



- 3- View images: Click "Viewer". Universal viewer will open (Review section 6).
- 4- View reports: Click "Report". Universal Report will open (Review section 6.3.4).



13 Patient Portal

Patients are able to access their studies through “Patient Portal”.

To provide a patient with the accesslink, username and password select



the study in directory page and click the “Print Link” button

The below page will open.

Patient Portal Link:

[Access Link](#)

User Name: xxxx

Password: yyyy

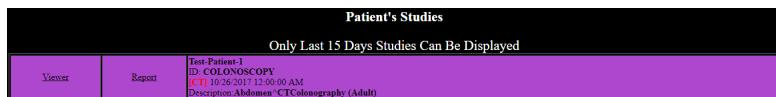


A screenshot of a web-based login interface titled "Patient Portal". It features two input fields: "User Name:" containing "xxxx" and "Password:" containing "yyyy". Below the fields is a "Log On" button.

Patient

will use the provided data to access and below is the login screen of
“Patient Portal”

After login:



A screenshot of a "Patient's Studies" interface. At the top, it says "Patient's Studies" and "Only Last 15 Days Studies Can Be Displayed". Below this, there are two buttons: "Viewer" and "Report". To the right, there is a table with the following data:

Test-Patient: 1
ID: COLONOSCOPY
CT 10/26/2017 12:00:00 AM
Description:Abdomen CTColonography (Adult)

9- View images: Click “Viewer”. Universal viewer will open (Review section 6).

10- View reports: Click “Report”. Universal Report will open (Review section 6.3.4).

11-



14 Other Topics

14.1 Notifications

Emergency Study Notification

When emergency studies comes the radiologists get notification with Sound Alarm Every configured no of Minutes



Internal Message Notification

when user get Unread mail the notification will be increase by unread number of mails



14.2 Create DICOM CD

Users can create DICOM CD/DVD or DICOM USB flash drive using simple steps by selecting single or multiple studies from main study directory then press on burn CD/DVD icon

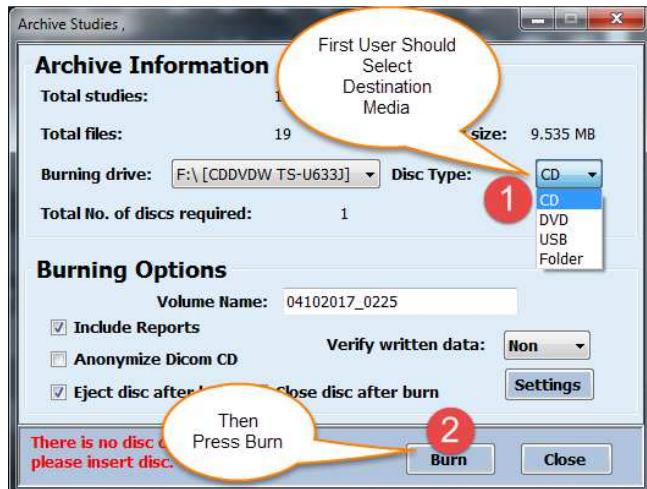


Figure - 5.6 Burning Study

14.3 Send Dicom File to another Dicom Workstation

In Workspace VNA users can send studies to other DICOM node by selecting single or multiple studies from main study directory then press on this icon . Sending study module will be opened as below in figure 5.7



Figure - 5.7 Sending Study Module

14.4 Import Files

In Workspace VNA users can import/upload external studies through any type of



media having DICOM files by pressing on this icon. Importing module will be opened as below in figure 5.8.

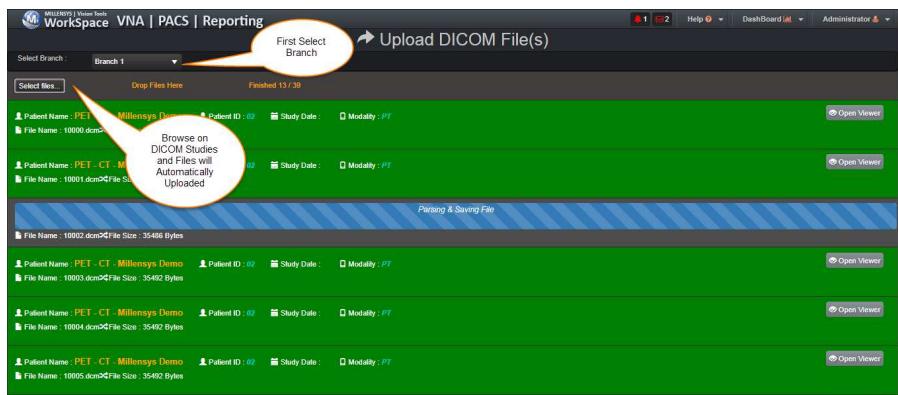


Figure - 5.8 Importing DICOM Studies Module

14.5 Change current viewer type after login

Users can swap between viewers on the fly without logging out and logging again using left mouse click as shown in figure 5.9

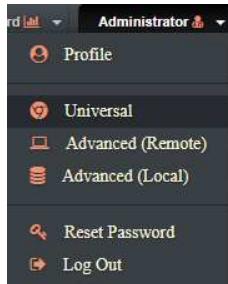


Figure - 5.9 Selecting Viewer

15 User Profile Settings

User profile is roaming profile, means it will be applied from anywhere once user will logged in

User profile is divided to profile settings for the main applications, other profiles for Advanced Viewers\Advanced Report tools

In order to modify user profile for Main Screen\Advanced Viewer from Main Login Screen press on Logged in User Full Name, first option is **Profile** as shown in the figure 6.0

User can adjust his own profile (in case he has the right to do this assigned by system administrator) by clicking user full name at the top menu, then press on **Profile**.

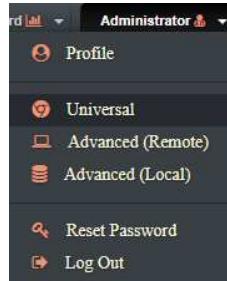


Figure 6.0 - Profile Settings

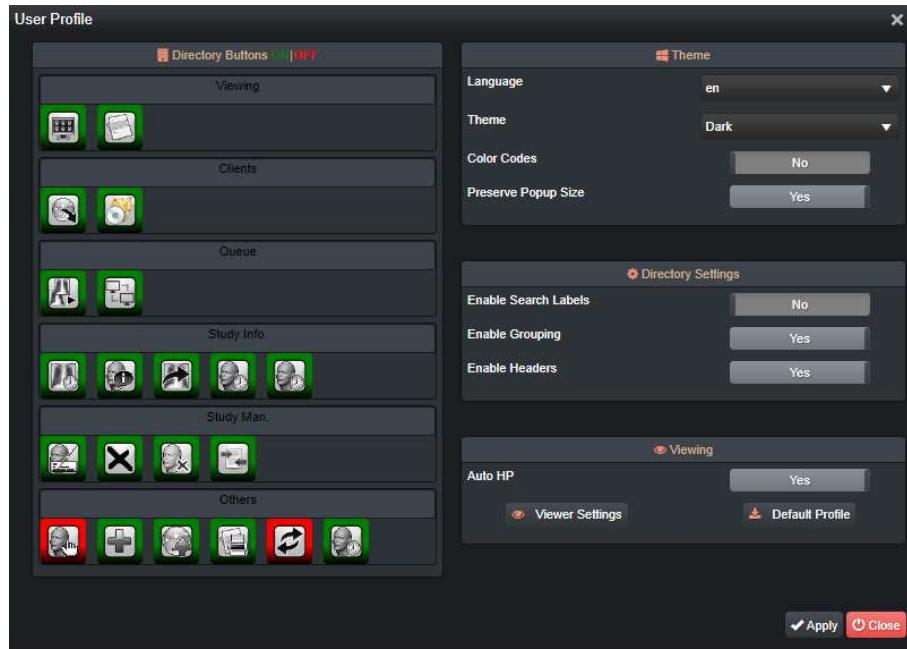


Figure 6.1 - User Profile Settings

From above Figure 6.1 user will be able to change your own GUI interface to be customized as you like to be looking.

Directory Buttons,



Figure – 6.2 Directory Buttons Settings

To hide/show any buttons from directory toolbar buttons in your main directory screen, you should select or unselect buttons by pressing on the button this will toggle the hide/show as in Figure 6.2

i.e.: (Highlighted in Green means Show & Red means Hide).

Then you should press **Apply**  to apply your required modifications, and your main directory toolbar buttons will be updated as below in Figure 6.3



Figure – 6.3 Directory Toolbar Buttons

To arrange their sequence you should follow the previous steps, by opening user profile and in directory buttons settings, start drag and drop the group header to arrange them by using left click of mouse click as shown in Figure 6.4



Figure – 6.4 Group Sequence Modifications

Themes settings,

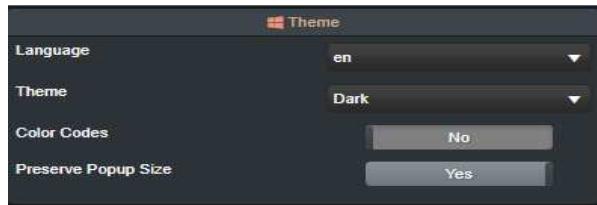


Figure – 6.5 Themes Setting

Users can change their default Language interface by using drop down menu which above **Language** word as in Figure 6.5

To change your own theme, you should use the drop down menu above **Theme** word as in Figure 6.5

Also user have the ability to toggle the color coding function to highlight studies with different status with different colors , in order to enable it from **Color Codes** **Color Codes** select Yes word as in Figure 6.5

To apply themes updates press **Apply** **Apply** to apply your required modifications.

Directory settings,

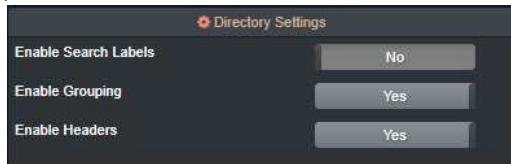


Figure – 6.6 Directory Settings

Enable Search Labels, if enabled this will show label at the top of the quick search fields , else labels will be hidden to give more space for the grid.

Enable Grouping **Enable Grouping** option to enable/disable grouping of directory toolbar buttons

Enable Headers **Enable Headers** option to enable/disable group label displayed for the groups of toolbar buttons

To apply themes directory settings user should press **✓ Apply** to apply your required modifications.

Viewing settings,

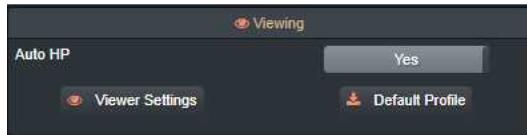


Figure – 6.7 Viewing Settings

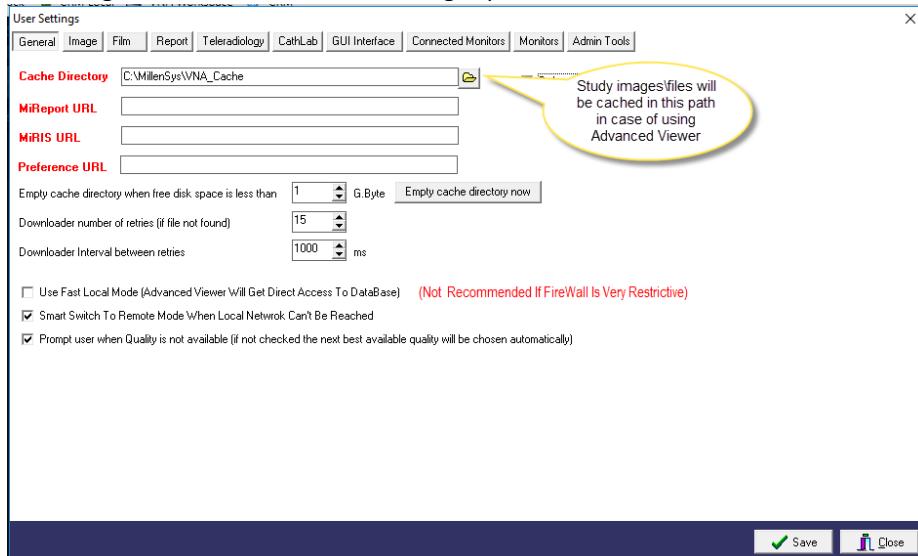
Default Profile,  **Default Profile** (used for advanced viewer\advanced reporting tool) user can download default preconfigured user profile.

Used in case of profile was corruption or if user couldn't retrieve his current profile pressing **Default Profile** will download the default profile as in Figure 6.7

Auto HP,  **Auto HP** (used for advanced viewer\advanced reporting tool) user can decide whether using Automatic Hanging Protocol option or not using it when opening then study viewer, to enable it select Yes as shown in above Figure 6.7

Viewer Settings,  **Viewer Settings** button user can adjust multiple configurations in advanced viewer like attached monitors, GUI interface colors, image & film settings as below in Figure

After pressing **viewer Settings** button a popup of settings will be displayed Consisting of tabs for the different settings options



General Tab,

Cache directory; This Path for cache Studies on local PC used when open the case in advanced viewer

Preference URL; in case of decentralized architecture system, images is saved in two copied, one copy is on my local\near server the other will be sent to the Datacenter, this URL is pointing to near server check is it might contain requested study before asking the datacenter or remote server to download it

Empty cache directory when free disk space is less than (1) GB; to clear the Cache Files Automatically when the space less than Number in box (1) GB

Empty cache directory now; press this button to trigger the Clear the Cache directory immediately

Use Fast Local Mode; this option to retrieve images using shared network access it is faster mode of accessing the file, it is enabled by default, it is only active if you are using Advanced Viewer(Local) Mode in the user login

Smart switch to Remote Mode When local Network Can't Reached, this option is used to dedicate if you left your location inside the local network, so system will start getting files using normal http communication protocol.

Prompt user when Quality is not available;

User will login he select certain image quality to start downloading the image using this quality if this quality does not exists on the selected study, if this option is enabled system will notify user that compression type requested is not available on the server, please select another quality type, if disabled he will not be notified every time, but system will automatically detect the next available quality to download with.

Image Tab

General

Resize image before load; this enable the resizing of images by either enlarging or decreasing image size based on the modality\image setup, this is recommended only in case of printing images and the quality of printed images on film is not good.

Load Thumbnails with Image Tool; this will load thumbnails for the series when open new study for viewing.

Show Slider (Track bar) on each Image windows; this option will enable the trackbar slider with every windows inside the image tool, this bar is used in browsing of images and also used in case of cine loops to control the preview and scroll in the cine loop.

Cache Image in memory; if this mode is enabled, images after loading them in the viewer they will be cached in the PC memory, in order to be accessed quickly if I will browse them continuously in this session, It enabled whenever the image will be request again it will be recalled from local cache directory

Lock WW/WL; if enabled it will make default settings for WW\WL is locked, user can change this settings from the viewer after opening the studies.

Center WW_WL if LUT values exists; This will auto adjust the ww\wl once open an image if it was not provided in DICOM file.

Lock Zoom; if enabled it will make default settings for Zoom\Pan Option is locked, user can change this settings from the viewer after opening the studies.

Reverse Series Sort; normally series are displayed sorted by series numbers from small number to large number, if enabled this will reverse the order
Automatically Split Multiphase series (CT only), this will automatically split CT cases for Multiphase cases.

Load to selected windows; if enabled images will be loaded to the selected image windows only if not enabled image will be loaded sequentially on all the image windows.

Auto Detect MPR Module; if enabled system will check PC graphics card , if it have good capabilities to launch our MPR module it will be launched automatically, otherwise system will load basic MPR module which does not require specific graphics card but with lower capabilities

Use enhancement MPR Module; this option will force usage of enhanced MPR module instead of using basic MPR module

Person Name Encoding; using this module to change the way of displaying the patient name either display it First Middle Last, or Leave it at it is in Dicom Files

Auto Fit on Load; if enabled image will be displayed fitted not zoomed or panned

Smart Mammo Image Fit on Load; if enabled mammo cases (Modality Type MG), related to special modalities to remove and trim spaces on the outer side spaces

Auto Load Image When Change Windows; load image when Increase or Decrease Number of Windows

Show Image Compression; Show image compression type and compression ratio on image information

Display Image Overlay; show Dicom displayed diagram (Dicom LUT) if exists in the Dicom Image

Show Image Number; to display the number of image beside Thumbnails

Load to selected Images only; this will load image on the selected images only not on all the displayed images

Hide Image Borders; this will hide gray frame outside the images which contains the sidebar and some buttons

Select All windows after open; select all window of image tool, to be used directly with mouse actions once the image tool was loaded

Keep WW/WL; Zoom and flip when series change ,if make change on images (WW/WL,Zoom and flip) and scroll in new series last configure ww\wl and zoom\pan configuration still not change on displayed images

Use PT Specific WW/WL for PT Image; when open PT Image load with Specific Width and window level

Image Tab->Image Information ,

General | **Image** | Film | Report | Teleradiology | CathLab | GUI Interface | Conn

General | Image Information | Measurements | Colors | Body Marks | Image Calculation

Patient Information

Show patient information on image

Info Back Color  

Info. Transparent

Font Type # 1	  
Font Type # 2	  
Font Type # 3	  

Show patient information on image; Enable/Disable Showing Information of patient\study\series in Images

Info. Transparent; if enabled image will be displayed on the image will not have a background color, else it will hide the image details and I will have background color

Info Back Color; this will select the default background color of image information, incase it is requested to be not transparent

Font Types; normal the image information, is displayed in three levels of fonts, from this settings user can define the setup of each of them

Image Tab->Measurements

Measurement Text; this option to change text Font, background and Color

Link style; Draw Link Line in the center of textbox or nearest corner of the textbox

Automatic Font size; Adjust font size automatically relational to the image size

Image Scale option; Select either we need to display the scale ruler on which side of image , also we define line width; Line shift percentage from the border lines of the image

Image Tab->Body Marks

General	Image	Film	Report	Teleradiology	CathLab	GUI Interface	Conn
General	Image Information	Measurements	Colors	Body Marks	Image Calculation		
Body Marks							
Icon Width	50						
Icon Height	50						
Home Directory	C:\MILLENSYS\Workspace_Client\Library\bmarks\genera						

Icon Width; control of width size of Icon body mark

Icon Height; control of Height size of Icon body mark

Home Directory; This Path For folder include Body Mark Icons

Image Tab->Scan Image

General	Image Information	Measurements	Colors	Body Marks	Image Calculation	Scan Image
Image Output Format	DICOM					
Image Output Bits Per Pixel	12					

Image Output Format; specify default output image format if we scan an image.

Image Output Bits Per Pixel; Define the resolution of the scanned image bits per pixel, normally it is not more than 12 bits per pixel

Image->Inset Image Settings

Scanscope Line Width	<input type="text" value="1"/>	Inset Line Width	<input type="text" value="1"/>
Scanscope Font Size (size 0 means no text)	<input type="text" value="0"/>	Inset Line Color	<input type="color"/>
		Inset Line Style	<input type="button" value="More"/>
		Inset Border Width	<input type="text" value="1"/>
		Inset Image Border Color	<input type="color"/>
		Inset Image Position	<input type="button" value="Bottom Right"/>

Scanscope Line Width; define width when draw scanscope lines

Scanscope Font Size; this define font size grade from 0-10

Inset Line Width; define default width of the inset lines drawn on images

Inset Line Color; define color of inset

Inset Line Style; define line style either doted, solid line...etc

Inset border width; define border width of inset

Inset Image Position; define default location of the inset

Image->Image Render

Settings used for exported images during save display as\ Image Printing

<input type="checkbox"/> Enable Frame Around Annotation	Select Background Color	<input type="color"/>
<input checked="" type="checkbox"/> Enable Inset On Top		

Rendering Image Information

Enable Frame Around Information

Enable Text Shadow

Shift in X Direction:

Select Text Color



Shift in Y Direction:

Render Display Method (for copy/save display and filming)

Auto (

Enable frame around Annotation; incase annotation while printing is not visible this will make a border around it to show the content “this will be slow operation” Select background color; incase background frame enabled , select its color from this settings

Enable Inset On Top; this will always make inset to be displayed over the image incase we exported image including inset displayed to it.

Enable frame around Information; incase image information while printing is not visible this will make a border around it to show the content “this will be slow operation”

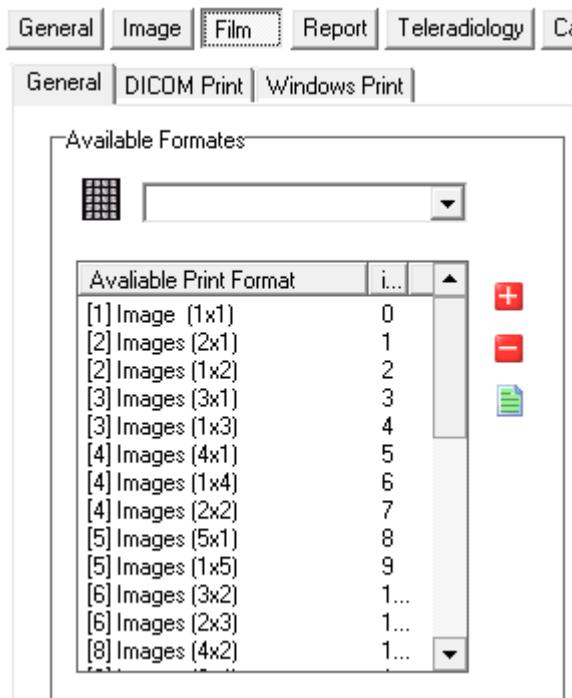
Enable Text Shadow; Instead of make surrounding frame over the image, this will just draw the same information shifted by defined pixels it is better to make its color different than default image information

Film->General

User from this setup can delete film printing formats that is no longer needed by the user

Select the format , press delete

Inorder to add format, select the format from combobox, and press add button to add it to the current selection



Connected Monitors

In this view user can enable the monitors that will be used by the program to view images

To enable monitor enable the monitor, If the monitor not connected to PC , so the monitor will be enabled and if the screen is GrayScale enable the check box GrayScale, this will enhance preview and refresh rate over the Gray Scale Screens

General | Image | Film | Report | Teleradiology | CathLab | GUI Interface | **Connected Monitors** | Monitors | Admin Tools |

