evorad

Connecting Imaging, Insight and Care

Evorad Suite Web Viewer User Manual

CE 2803



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1 Document Version History

Version	Date	Prepared by	Change History
1.0	10/03/2026	E. Tzampazidou	Initial version
2.0	21/07/2026	E. Tzampazidou	Added chapters "1. Document Version History" and "3. Regulatory Information"

2 Introduction

2.1 About the Web Viewer

Web Viewer is a high-performance medical imaging viewer designed to streamline radiology workflows. It supports advanced visualization, diagnostic interpretation, AI-assisted segmentation, and multi-site collaboration, fully integrated within evoRIS and evoPACS environments. Compliant with international imaging standards, Web Viewer enables radiologists to efficiently review, analyze, and report examinations across different medical specialties.

Designed as a zero-footprint medical imaging viewer and exclusively for diagnostic review and clinical interpretation, Web Viewer is entirely web-based and operates using modern HTML5 and JavaScript technologies, ensuring compatibility across a wide range of devices, including workstations and laptops, without requiring any local installation.

Supporting the loading and display of medical imaging studies in DICOM format, - the global industry standard for imaging modalities such as MRI, CT, X-ray, Ultrasound, Mammography, and Nuclear Medicine – the data via Web Viewer can be accessed and viewed securely from both local and remote locations to support multisite clinical workflows.

By design, it includes a comprehensive set of diagnostic tools such as window/level adjustment, zoom, pan, measurements, and navigation controls, enabling radiologists to easily review and analyze imaging data and the following sections describe the core functionalities, from how to access the platform and navigate the interface to how to utilize its primary visualization and interaction tools.

To access Web Viewer, the user must first open a supported web browser (Google Chrome, Mozilla Firefox, Safari) and type the production application link.

3 Main Interface

3.1 Exam Worklist

Upon successful login, the user is directed to the Exam Worklist page (Figure 1), where in a centralized dashboard radiologists and authorized medical staff can search, review, and manage imaging examinations.

The upper panel contains multiple filters that allow efficient exam retrieval based on some default criteria as shown below:

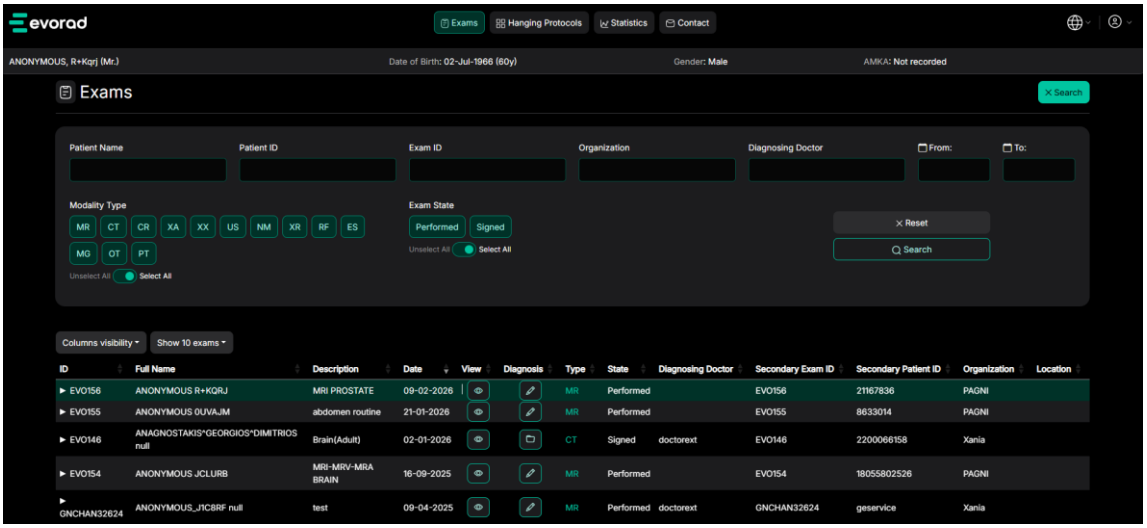


Figure 1: Exam Worklist

Patient Information:

- *Patient Name – Search by full or partial name*
- *Patient ID – Hospital or national patient identifier*
- *Exam ID – Unique identifier of the imaging study*

Date Range: From / To – Locate exams within a specific timeframe
Modality Type: Available options include MR (Magnetic Resonance), CT (Computed Tomography), CR, XA, US, NM, XR, RF, ES, MG, OT, etc. A quick toggle enables Select All / Unselect All modalities.
Organization: Search by a dropdown list the name of the organization where the study belongs.
Diagnosing Doctor: Search by the selected doctor is registered as the diagnosing doctor.
Exam State: Search by Performed/ Signed examination.

Once the desired filters are applied, user can click Search to display criteria-matching results or can click Reset to clear all selections and restart the search.

The page also shows a dynamically updated table, subject to the selected filters, with exam results, including:

Column	Description
ID	Unique exam record identifier
Full Name	Patient's full name

Date	Exam acquisition date
Description	Exam clinical description
View	Opens the study directly in the viewer
Diagnosis	Opens the diagnosis/report editor (if authorized)
Type	Imaging modality type
Secondary Exam ID	Linked study identifiers
State	Exam workflow progression
Secondary Patient ID	Linked identifiers from external systems
Organization	Originating medical facility
Location	Department or modality room
Time	Time of acquisition
Machine	Identifies the scanner used
Comments	Operational or patient-related notes
Department	Source of the exam order

In the table, users can of course adjust which columns to display ("Column visibility") and how many ("Show X exams").

When a user clicks on the small arrow icon (▶) next to an exam entry in the Worklist table, the row expands to reveal additional exam-related information. This allows the radiology staff to quickly review key operational details without opening the full exam record.

Under the Worklist table, pagination options allow navigation through large numbers of exams. This helps users quickly access historical exams without excessive scrolling.

Button	Function
First	Navigates to the first page of the exam list
Previous	Moves to the previous page
1,2,3…	Jumps directly to the selected page
Next	Moves to the next page
Last	Navigates to the final page of the list

3.2 Hanging Protocols Management

The **Hanging Protocols** module allows users to configure how imaging series are displayed automatically when a study is opened in the viewer. This ensures a consistent and optimized workflow aligned with reading preferences and clinical needs. Users can access through the Main/Top Navigation Menu by clicking the Hanging Protocols.

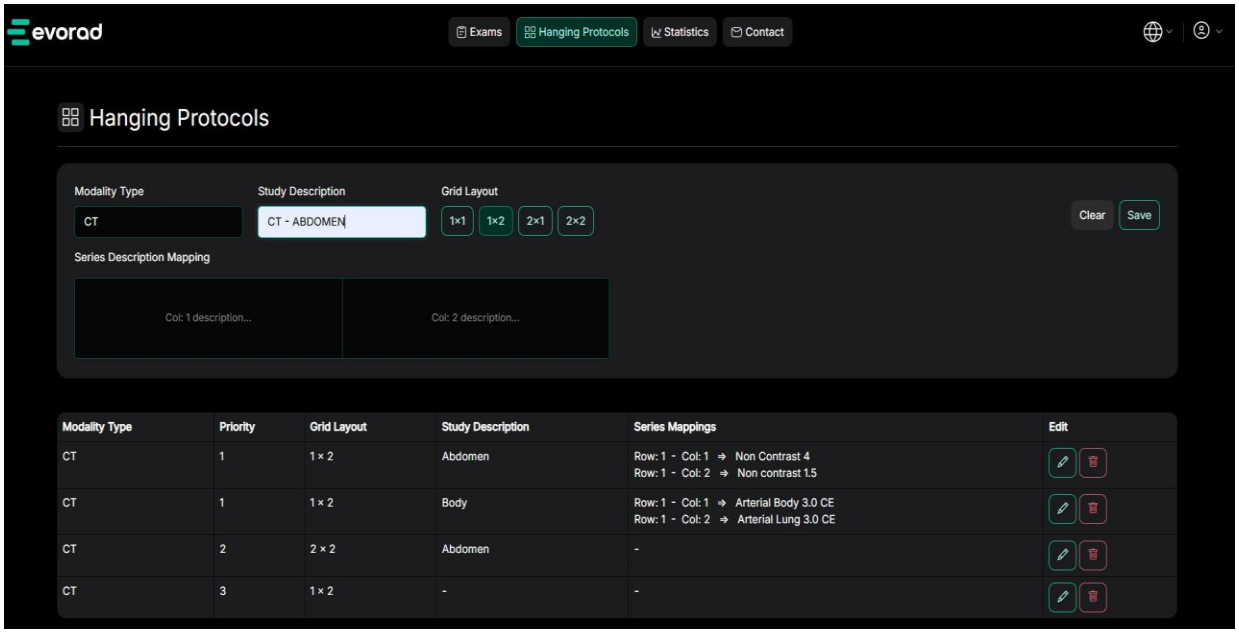


Figure 2: Hanging Protocols

At the top of the page, the configuration panel allows users to define a new protocol using the following fields:

Field	Description
Modality Type	Select the imaging modality, such as CT, MR, CR, etc.
Study Description	Specify the study type (e.g., Abdomen, Body, CT Head).
Grid Layout	Choose how many viewports should be displayed and their arrangement (e.g., 1×1, 1×2, 2×1, 2×2).
Series Description Mapping	Define which image series will appear in each viewport. When a study is opened in the viewer (e.g. Non-Contrast 4 and Non Contrast 1.5).

➞ Clicking Clear resets the fields and user can start over.

➞Clicking the pencil icon opens the protocol for modification.

➞ Clicking the trash icon deletes the protocol permanently (confirmation required).

Once a layout is selected, users can map specific imaging series to display positions in the grid (e.g., Row 1 — Column 1 → Non-Contrast 4). This ensures that preferred series automatically appear in the correct viewport during interpretation. If more than one protocol matches the same study, the highest priority value (lowest number) is applied first to ensure correct layout selection.

Hanging Protocols dramatically reduces interpretation time and creates a standardized display across all workstations, especially useful for:

- On-call radiologists
- Multi-location enterprise imaging
- Subspecialty reading rooms (e.g., Neuro, MSK, Oncology).

3.3 Statistic Module Overview

By selecting the Statistics button from the top navigation menu, users access the statistical analysis interface, where they can see key performance analytics. The system displays a collection of interactive dashboards that present statistical data related to performed examinations.

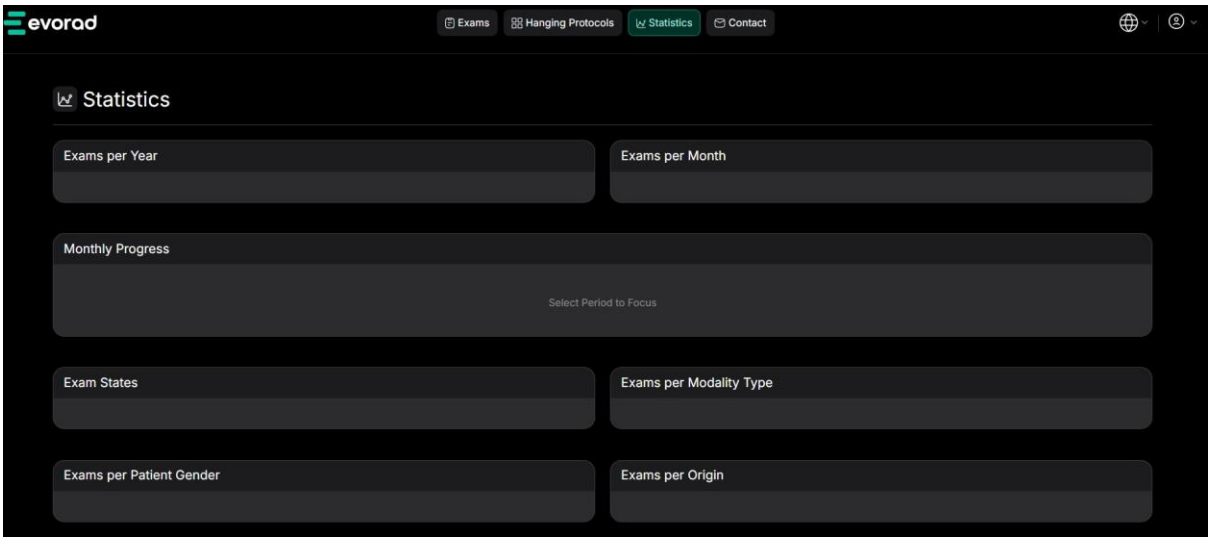


Figure 3: Statistics Module

These dashboards allow real-time filtering and dynamic visualization of data. Users can refine the displayed information by selecting specific criteria such as:

- Year / Month
- Modality Type
- Workflow Status
- Patient Gender
- Origin

When a filter is applied, the selected value is highlighted, while all other options remain in grey, enabling the user to easily track active selections. Multiple filters may be combined, for example, displaying only MRI examinations for a particular year, to provide deeper analytical insight.

If needed, the user can restore the default view at any time by selecting Undo, which clears all applied filters and returns the dashboards to the full dataset.

These comprehensive dashboards support monitoring of workload, operational performance, and modality utilization across the department.

3.4 Contact

The Contact button, located in the top menu bar, provides users with a direct channel to communicate with the system's support team or the organization responsible for assistance.

4 Regulatory Information

4.1 Product and Manufacturer Identity

Product name: Evorad Suite – Web Viewer

Manufacturer: IKNOWHEALTH S.A.

Address: Vlachernon 10, 15124 Marousi, Greece — tel +30 210 6100621 — info@iknowhealth.com

Marking: CE 2803 (Notified Body: G.F.I. Health Technology Certification Ltd)

CE certificate: No. 2009C04200401 — original expiry 26/05/2024; extended validity to 31/12/2028 (Regulation (EU) 2023/607)

Class: IIα — Directive 93/42/EOK

EMDN / GMDN: EMDN Z11069092 / GMDN 40943

Basic UDI-DI: not applicable (legacy product under Directive 93/42/EEC)

Software version: Version 5.0 (per the CE certificate)

Document version / Date: 2.0, 21/07/2026

This is a medical device (software) bearing CE marking in accordance with Directive 93/42/EEC.

4.2 Intended Purpose

Evorad Suite - Web Viewer (the evorad platform) is intended to be used by qualified healthcare professionals for the visualisation, review, diagnostic evaluation and quantitative assessment of medical imaging data, to support diagnostic interpretation, clinical evaluation and the monitoring of disease-related findings.

The software operates on medical images produced by compatible third-party imaging systems (e.g. MRI, CT, PET, PET/CT, X-ray, ultrasound) and stored in Picture Archiving and Communication Systems (PACS). The software does not acquire/produce images and does not control the operation of imaging equipment.

It provides clinical decision-support information (processed data, quantitative measurements, visualisations and analytical results).

Final diagnostic and treatment decisions remain the sole responsibility of the qualified healthcare professional.

4.2.1 Indications for use

The software is indicated for use by qualified healthcare professionals to support the visualisation, review, diagnostic interpretation and quantitative assessment of imaging examinations, within the context of standard clinical practice, in particular for:

- interpretation of medical imaging findings,
- assessment of anatomical structures and pathological features,
- assessment of disease-related findings as observed in imaging data,
- quantitative analysis of features and regions of interest (ROI),
- comparison of examinations over time for monitoring/follow-up.

It is used with imaging modalities such as MRI, CT, PET/CT, X-ray and ultrasound, provided the data has been acquired using clinically accepted protocols and compatible systems.

4.2.2 Intended users

Trained and qualified healthcare professionals involved in medical imaging and clinical evaluation, including but not limited to:

- radiologists,
- nuclear medicine physicians,
- hybrid imaging specialists (PET/CT or PET/MR),
- clinicians with appropriate training in image interpretation,
- other authorised healthcare professionals experienced in interpreting imaging data.

Health IT personnel may install/configure/support the system but are not an intended user for diagnostic interpretation or clinical decision-making. No special training is required beyond ordinary professional qualification; product-specific guidance is provided through the instructions for use.

4.2.3 Intended environment / patient population

Environment of use: professional healthcare settings (hospitals, radiology/nuclear medicine departments, diagnostic centres and other clinical facilities). Deployment either on on-premise infrastructure or on secure/compliant cloud infrastructure. Use on non-medical-grade displays or in non-clinical environments is not recommended for diagnostic interpretation.

Patient population: imaging examinations of adult and paediatric patients, with no restriction as to age, sex or ethnicity. The software does not impose any inherent patient restrictions; any clinical limitations arise from the underlying examination and clinical context.

4.3 Contraindications

There are no absolute medical contraindications to use of the software when used in accordance with its intended purpose and the instructions for use. However, the software is not intended for use in the following:

- autonomous or fully automated diagnosis,
- autonomous clinical decision-making or treatment planning,
- primary diagnosis without review by a qualified healthcare professional,
- real-time monitoring of vital physiological parameters,
- emergency, life-critical or time-critical clinical decision-making.

4.4 Warnings and precautions

- The software must not be used as the sole basis for diagnosis or treatment decisions.
- All results must be reviewed and interpreted by a qualified healthcare professional.
- Diagnostic accuracy may be affected by: image acquisition quality, the characteristics of the imaging modality, acquisition protocols, parameters selected by the user, and the inherent limitations of image-based analysis.
- The software does not acquire images and relies on data from third-party systems; the correctness/suitability of input data is outside its control.
- Use on non-medical-grade displays or in non-clinical environments may degrade diagnostic interpretation and is not recommended.

4.5 Residual risks & incident reporting

Residual risks have been assessed and addressed within the manufacturer's risk management file; any residual risks are communicated through this instructions for use and the associated labelling.

Any serious incident related to the product must be reported to the manufacturer and to the competent authority (EOF - the Greek National Organisation for Medicines).

Vigilance contact details: support@evorad.com

4.6 Minimum system and display requirements

- Supported browsers: the application is compatible with all browsers supporting HTML 5.0.
- Minimum hardware/network requirements:

Evorad Suite - Web Viewer can run on hardware from any manufacturer that meets the following minimum requirements:

Central server

- Operating system: Windows Server or Linux/Unix
- 16 GB RAM
- At least a quad-core processor
- Hot-swap hard disks - RAID 5 or 6 compatible

- Network card with a transmission speed of at least 1000 Mbps

To make use of the computing capabilities of Evorad Suite - Web Viewer, the computing system must provide, at minimum, the resources listed above.

Communication between the workstation and the central server takes place via the HTTP or HTTPS (SSL, encryption) protocol, minimizing configuration requirements on the existing network infrastructure (e.g. firewalls).

The storage capacity required to store data is a function of the number of images produced and managed by Evorad Suite - Web Viewer. Medical images are stored without any loss of resolution on the storage media made available. The data compression applied, which reduces the storage space required, achieves a saving of approximately fifty percent (50%) of the necessary data storage space.

Evorad Suite - Web Viewer works with any of the commercially available SQL (Structured Query Language) databases, such as Microsoft SQL Server, Oracle and IBM DB2, as well as with open-source databases such as MySQL.

For managing user passwords, the Evorad Suite - Web Viewer system works with any user management system / Directory Server implementing the LDAP v3 protocol, such as, for example, Microsoft Active Directory Server.

- The software is intended for use on hardware, displays and network infrastructure suitable for clinical imaging workflows.
- Diagnostic display requirements
- Diagnostic workstation
    - Operating system: Windows, Mac OS X or Linux
    - 8 GB RAM
    - 4-core processor
    - 1000 Mbps network card
    - Fast graphics card
    - Medical-grade display:
    - 2MP for viewing MRI or CT scans
    - 3MP for viewing conventional radiography
    - 5MP for viewing mammography
    - For the web viewer, a web browser supporting HTML5.0 is required. The browser version must include the <canvas> element in order to render the computed graphical representations. Browsers that satisfy the requirements include, indicatively, Firefox version 5.0 and Chrome version 42, as well as any other browser compatible with the above.

- Use on non-medical-grade displays is not recommended for diagnostic interpretation.

4.7 Actions in the event of malfunction/error

In the event of an error or malfunction (e.g. images failing to load correctly, an error message, unexpected behaviour): discontinue use of the software for diagnostic purposes, do not base a

clinical decision on the displayed data, and contact the support team. Use an alternative approved workflow until the issue is resolved.

4.8 Support and contact

Evorad Support Team— info@evorad.com — τηλ. 210 6100621.

Manufacturer: IKNOWHEALTH S.A., Vlachernon 10, 15124 Marousi, Greece - tel. +30 210 6100621 - info@iknowhealth.com.

4.9 Explanation of symbols

Internationally recognised symbols (ISO 15223-1, ISO 20417) are used in digital form. Where graphical display is not feasible, equivalent text and access to the digital symbol glossary are provided:

- CE 2803 - conformity marking with Notified Body number.
- "Manufacturer" symbol (ISO 15223-1).
- "Consult instructions for use / electronic instructions for use (eIFU)" symbol.
- MD - Medical Device.
- UDI - Unique Device Identifier.

5 Access/ Login

To access the Web Viewer, the referring physician user must first open a supported web browser, such as Google Chrome, Mozilla Firefox or MS Edge.

Within the context of the oncology record workflow, the user must already be logged in to the Oncology Record using their e-prescription credentials, and must have access to the patient's file. The Web Viewer opens for the selected examination for the already logged-in user.

6 Web Viewer Image Viewing Interface

Once the user selects an exam from the Worklist and clicks on the Viewer button, the Web Viewer interface opens, displaying the medical images for clinical review. This environment provides a full diagnostic toolset, offering seamless navigation, visualization, and image manipulation features that support radiologist workflows.

6.1 Viewer Layout Overview

The viewer screen is divided into three functional zones:

Area	Description
Left Sidebar	Series list — thumbnails representing each available series and acquisition stage
Central Workspace	Primary display area where the selected images are shown for review
Top Toolbar	Controls for navigation, viewing modes, diagnostic tools, and advanced features

6.2 Selecting an Image Series

The left side of the screen contains thumbnail previews of all available series (e.g. Non-Contrast, Arterial Phase, Topogram).

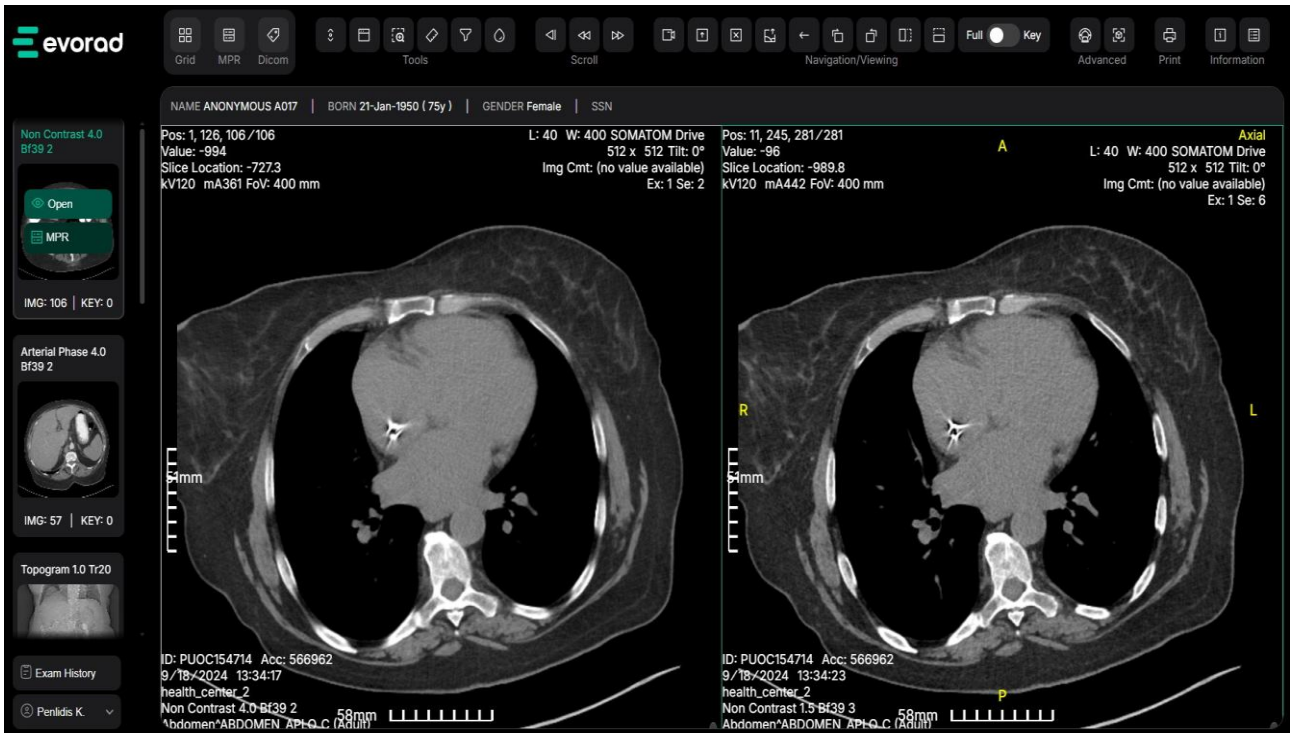


Figure 4: Web Viewer examination image

✓ To load a series → Click the "Open" button on the thumbnail, or press and hold the series with the mouse and drag it directly into the active viewport.

Each thumbnail includes ***IMG =*** *Number of images contained in the series* ***& KEY =*** *Indicates key images if flagged by radiologists*

6.3 Image Display Panels

In the central display area, multiple images can be shown simultaneously such as:

- Two (or more) axial views for comparison
- Prior vs. current studies
- Different acquisition phases (e.g., non-contrast vs contrast).

Viewers can synchronize scroll positions across panels by clicking simultaneously the “Alt” button from the keyboard and left click  from the mouse.

7 Top Toolbar Menu

7.1 Grid layout

The Grid Layout tool allows users to customize how medical images are arranged within the viewing workspace. This feature is essential for comparative analysis, such as reviewing multiple acquisition phases, cross-sectional planes, or historical prior studies simultaneously. Users can access the grid layout options from the top toolbar, where several predefined layouts are available.

Available Layout Options

Layout	Display Structure	Recommended Use Case
1 × 1	Single panel view	Detailed assessment of one series
1 × 2	One row — two images side-by-side	Comparison of two phases (e.g., contrast vs. non-contrast)
2 × 1	Two rows — one image per row	Review of different anatomical regions vertically
2 × 2	Four equally split panels	Multi-plane or multi-series examination
Custom layouts (up to 4 x 4)	User-adjusted tiling	Advanced diagnostic workflows

7.2 MPR (Multi-Planar Reconstruction) mode

The **MPR (Multi-Planar Reconstruction)** mode allows users to visualize volumetric datasets (such as CT or MR) simultaneously in multiple anatomical planes. Typically, three synchronized views are displayed: Axial, Sagittal and Coronal.

This mode enables precise anatomical localization, cross-referencing between planes, and advanced volumetric review, significantly enhancing diagnostic confidence and workflow efficiency, as shown in Figure 5.

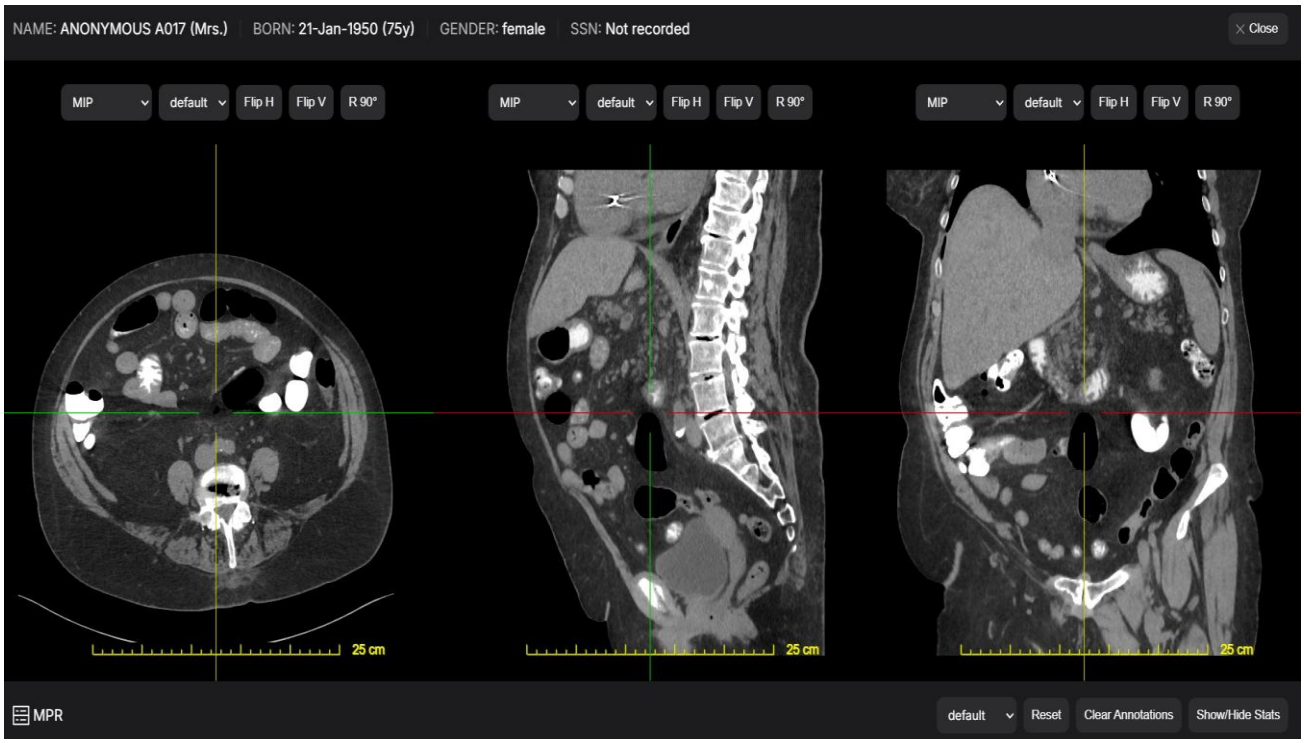


Figure 5: MPR view

Each plane is linked through a shared crosshair, allowing synchronized navigation across all views. To activate MPR, click the MPR button in the top toolbar or directly in exam series. The viewer automatically reconstructs and displays the dataset in three orthogonal planes.

7.2.1 Navigation in MPR

Crosshair Navigation

Drag the crosshair in any view to update the corresponding slice positions in the other planes. This allows instant correlation of anatomy across Axial, Sagittal, and Coronal views.

Scrolling

Use the mouse wheel or the Scroll controls to move through slices in the active plane. All planes update synchronously based on the crosshair position.

Maximising a Specific Plane

By double clicking on each of the three MPR planes, the respective plane (axial, coronal, saggital) maximises and centers accross the screen layout for maximum use of the screen real estate.

Double clicking again returns in the three planes view.

Projection modes

Each MPR window supports advanced projection methods that combine multiple slices into a single image for enhanced visualization. These are selected from the projection dropdown above each viewport.

MIP (Maximum Intensity Projection)

Displays the highest intensity value along the selected slab thickness (such as vessels and calcifications). Common use cases:

- Vascular structures
- Contrast-enhanced studies
- Bone visualization

MinIP (Minimum Intensity Projection)

Displays the lowest intensity values across the slab. For example, it can enhance visualization of air-filled or low-attenuation anatomy. Common use cases:

- Airways
- Lung parenchyma
- Low-density structures

AVG (Average)

Calculates the average voxel intensity across the selected slab. It produces smoother images and reduces image noise by averaging multiple slices. Common use cases:

- Noise reduction
- General anatomical overview

Composite

Combines information from all voxels within the slab using a composite algorithm. It can provide balanced visualization of both high and low-density structures. Common use cases:

- Mixed-tissue visualization
- Complex anatomy review

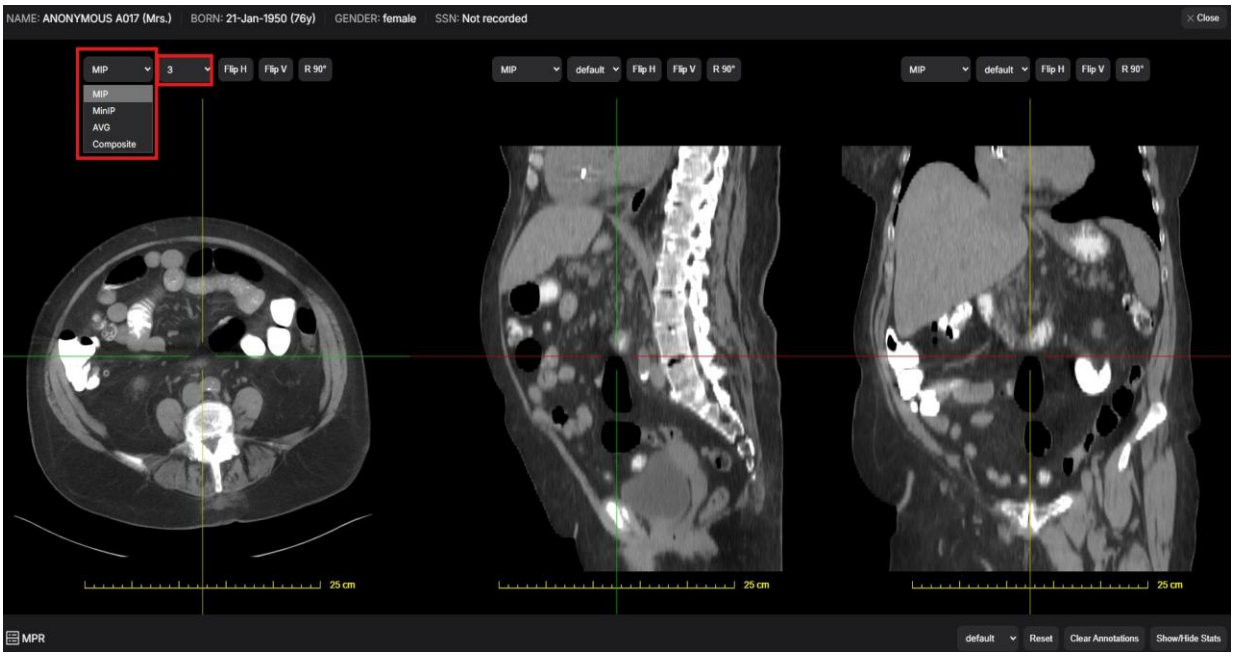


Figure 6: MPR view (MIP)

Slab Thickness Control

Next to each projection mode, a numeric value, for example 3 mm, defines the slab thickness

- Increasing the value includes more slices in the projection.
- Decreasing the value limits the projection to fewer slices.

This allows fine control over how much volume is included in each reconstructed image.

Orientation & Rotation Tools

Each MPR panel provides quick orientation controls:

- Flip H – Horizontally flips the selected plane.
- Flip V – Vertically flips the selected plane.
- R 90° – Rotates the view by 90 degrees.

These tools help adapt image orientation to user preference or clinical standards.

Layout & Presets

- Each MPR window supports preset configurations (e.g., default).
- Presets define projection behavior and display parameters.
- Users may reset to default settings at any time.

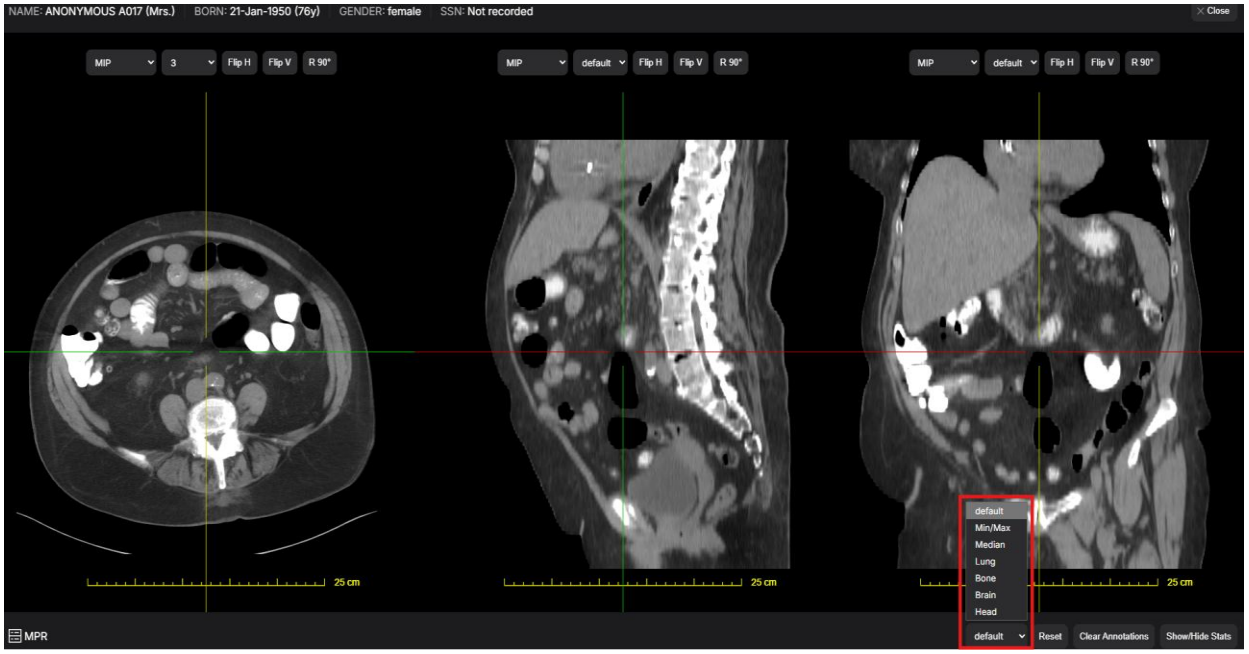


Figure 7: MPR, Default setting

Annotations & Reset

- Existing annotations can be cleared using Clear Annotations.
- Projection and visualization parameters can be restored using Reset.
- Show / Hide Stats – Toggles display of voxel statistics.

Display Presets

Each MPR window provides a Display Preset dropdown (highlighted in Figure 7), enabling rapid switching between predefined window/level configurations.

Available presets include:

- Default – Standard balanced visualization
- Min/Max – Maximizes contrast range
- Median – Noise-reduced median display
- Lung – Optimized for lung parenchyma
- Bone – Enhanced visualization of osseous structures

- Brain – Tuned for brain tissue contrast
- Head – Optimized for head CT examinations

These presets automatically adjust window width and level parameters, allowing fast adaptation to different anatomical regions without manual tuning.

Right-Click Diagnostic Tools Panel

In MPR and standard viewing modes, Web Viewer provides quick access to essential diagnostic and navigation tools via the right-click context menu. To open this panel, simply right-click anywhere inside an active viewport. This panel allows users to switch viewports, manage annotations, and select measurement or navigation tools without leaving the viewing area.

7.2.2 Diagnostic & Navigation Tools

The following tools can be selected directly from the panel:

Tool	Purpose	How to Use
Stack Scroll	Navigate through image slices in the active series.	Click + drag vertically or use mouse wheel to scroll.
Zoom	Magnify or reduce image for detailed inspection.	Click + drag to zoom in/out.
Pan	Reposition the image without altering magnification.	Click + drag to move the image.
Window/Level	Adjust image brightness (level) and contrast (window).	Click + drag to modify window width/level.
Length	Measure linear distance between two points.	Click to start → drag → release (shows mm).
Rectangle ROI	Create rectangular ROI + pixel statistics (Area, Min, Max, Mean, SD).	Click + drag to draw ROI.
Elliptical ROI	Create elliptical ROI with full statistical output.	Click + drag to shape ellipse.
Planar Free-Hand ROI	Outline irregular regions with full pixel statistics.	Draw freehand along the region.
Arrow Annotate	Mark findings or highlight areas of interest.	Click to place arrow.
Cobb Angle	Measure Cobb angle for scoliosis evaluation.	Select vertebral endplates.
Angle	Measure an angle using three points.	Click points 1 → 2 → 3.
Bidirectional	Measure perpendicular length + width simultaneously.	Click + drag to create axes.
Crosshairs	Synchronize navigation across all MPR planes.	Move crosshair to update views.

Eraser	Remove specific annotations or measurements.	Click object to delete.
No Tool	Disable all tools; return to neutral cursor.	Select to exit annotation mode.

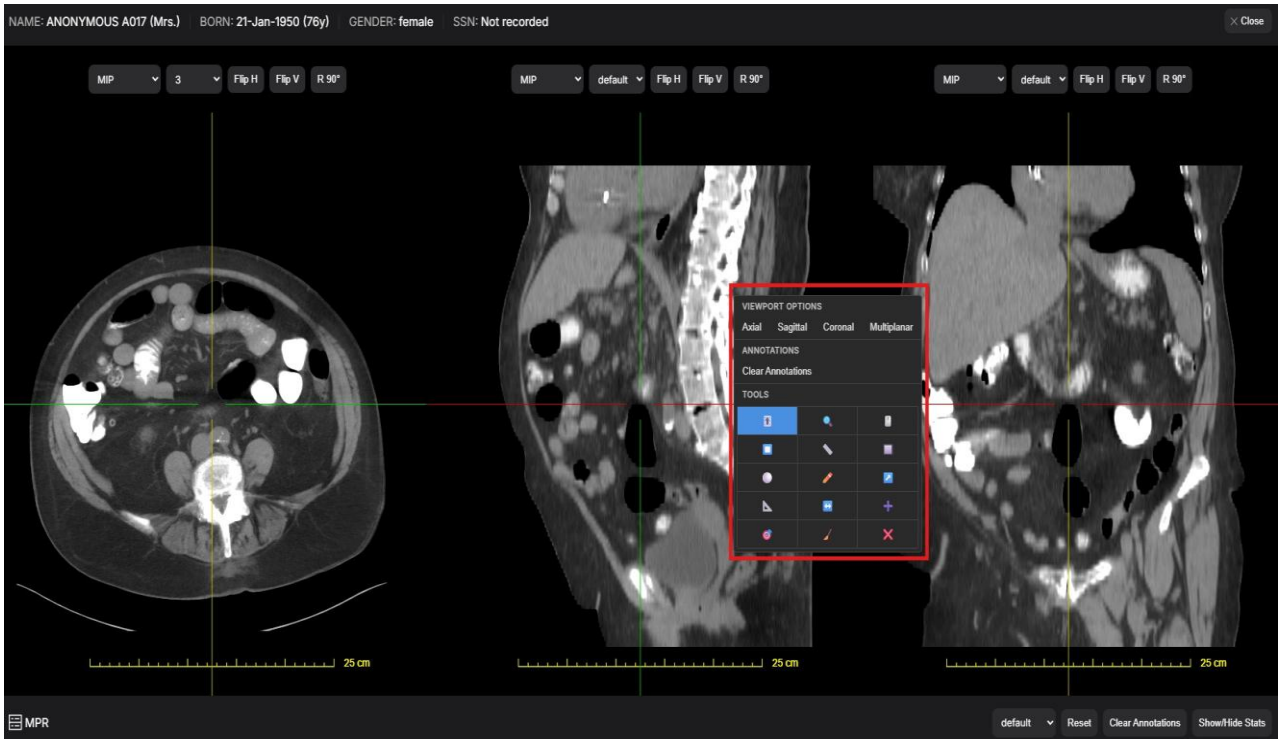
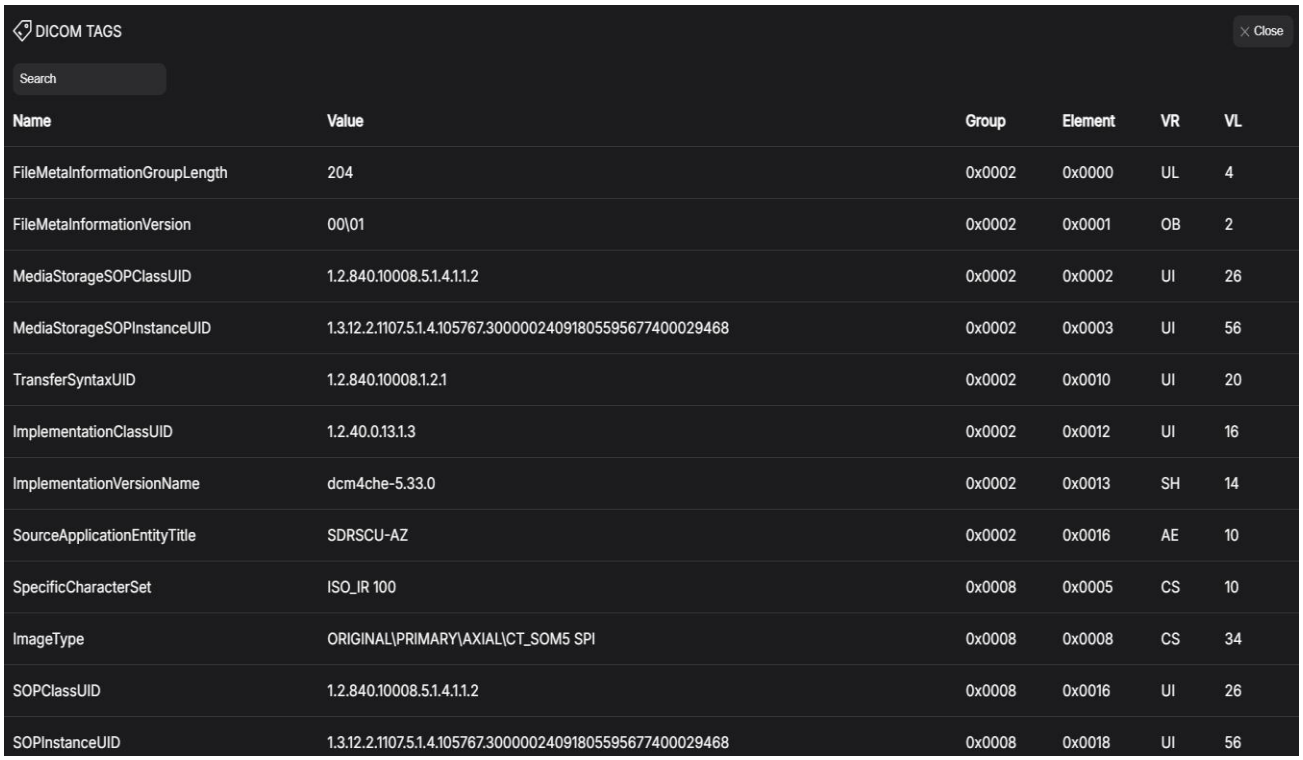


Figure 8: MPR Tools

7.3 DICOM Tags

DICOM tags store the metadata associated with every medical image. These data elements ensure that each image is properly identified, clinically relevant, and traceable within the healthcare workflow. The DICOM Tags feature in Web Viewer allows users to review the full metadata set embedded in any selected image or series.



Name	Value	Group	Element	VR	VL
FileMetaInformationGroupLength	204	0x0002	0x0000	UL	4
FileMetaInformationVersion	00\01	0x0002	0x0001	OB	2
MediaStorageSOPClassUID	1.2.840.10008.5.1.4.1.1.2	0x0002	0x0002	UI	26
MediaStorageSOPInstanceUID	1.3.12.2.1107.5.1.4.105767.30000024091805595677400029468	0x0002	0x0003	UI	56
TransferSyntaxUID	1.2.840.10008.1.2.1	0x0002	0x0010	UI	20
ImplementationClassUID	1.2.40.0.13.1.3	0x0002	0x0012	UI	16
ImplementationVersionName	dcm4che-5.33.0	0x0002	0x0013	SH	14
SourceApplicationEntityTitle	SDRSCU-AZ	0x0002	0x0016	AE	10
SpecificCharacterSet	ISO_IR 100	0x0008	0x0005	CS	10
ImageType	ORIGINAL\PRIMARY\AXIAL\CT_SOM5 SPI	0x0008	0x0008	CS	34
SOPClassUID	1.2.840.10008.5.1.4.1.1.2	0x0008	0x0016	UI	26
SOPInstanceUID	1.3.12.2.1107.5.1.4.105767.30000024091805595677400029468	0x0008	0x0018	UI	56

Figure 9: DICOM Tags

8 Tools

8.1 Scroll

The Scroll tool allows users to navigate through the different slices of a CT, MRI, PET, or any multi-slice medical imaging dataset. This function is essential for reviewing volumetric studies in detail and identifying anatomical structures and pathology across consecutive layers. There are multiple ways to scroll, depending on your preferred input device:

- Using Mouse: Place the cursor on the image viewport -> Rotate the mouse scroll wheel forward/backward
- Using Scroll button: Click the Scroll button from the upper toolbar -> Left-click, hold and move the mouse button inside the image series.

8.2 Window Level

Medical images often require different contrast adjustments or color representations to clearly visualize specific anatomical structures or abnormalities. Web Viewer provides quick access to Window/Level presets and Plain options through two dropdown menus:

Window/Level Presets

These presets adjust image contrast based on the expected Hounsfield Unit (HU) range of different tissues. They optimize the visibility of structures for faster and more accurate diagnosis.

Preset Name	Description & Use Case
Window 1/2	Default CT window presets (typically soft tissue variations)
Min / Max	Expands to full CT HU range, useful for quick global structure visibility
Mediastinum	Enhance soft tissue details in the chest (lymph nodes, vessels, heart)
Lung	Improves visualization of lung parenchyma and airways
Bone	Highlights cortical and trabecular bone, ideal for fractures, calcifications
Brain	Optimized for gray/white matter contrast in neuroimaging
Head	Mixed soft tissue + skull visualization for full cranial assessment

📌 Users can also manually adjust window/level using right-click drag.

Plain Options

Color maps enhance tissue differentiation by assigning color values to pixel intensities, particularly helpful in metabolic, functional, or advanced diagnostic contexts.

Option	Visual Effect	Typical Use
Plain	Standard grayscale medical imaging	General diagnostic review
InvPlain	Inverted grayscale	Highlights low density areas
Hot	Red-yellow high intensity emphasis	Tumors, active pathology
Rainbow	Full-spectrum gradient	Distinguishing intensity regions
Hot Iron	PET-style fiery look	Lesion metabolic uptake visualization
PET	Standard PET SUV heatmap	Nuclear medicine fusion mode
PET 20 steps	PET map with reduced color gradations	Clearer thresholding for hotspots
Hot Metal Blue	Blue-orange high contrast display	Edema vs. bone/tissue intensity separation

📌 Plain options do not alter the underlying medical data, only the visualization style.

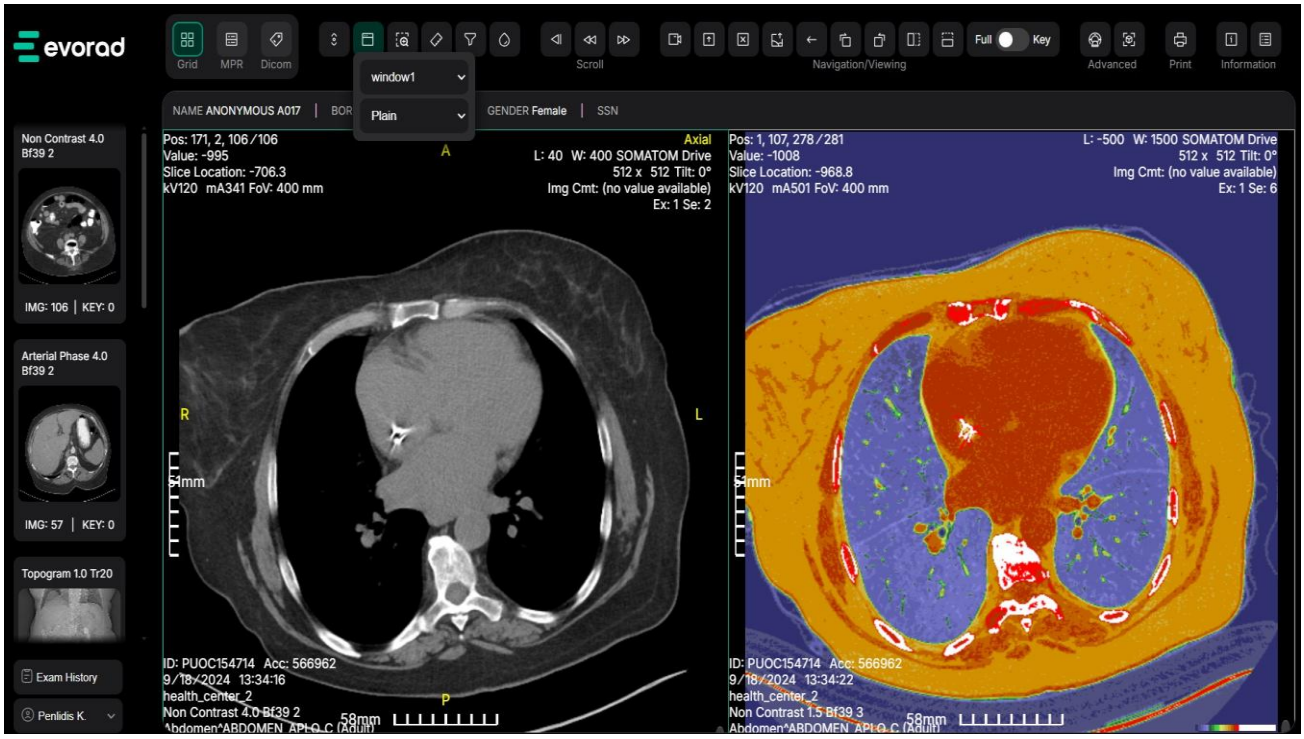


Figure 10: Window Level

8.3 Zoom and Pan

Efficient navigation through medical images is crucial in diagnostic review. Web Viewer includes powerful Zoom and Pan controls to view fine anatomical details without losing orientation.

The Zoom function allows users to magnify a specific region of the image, making small structures easier to evaluate such as lesions, microcalcifications, and vessel details.

How to Use:

- Click the **Zoom** icon from the toolbar
- Scrolling the mouse wheel also performs zooming, regardless of the active tool.

The Pan function allows the user to reposition the zoomed image within the viewport for better focus on areas of interest.

How to Use:

- Activate the **Pan (hand)** icon from the toolbar
- **Click and drag** the image to move it across the screen

Navigation Tips

Feature	Interaction
Right-click drag	Adjusts window/level (if not using Zoom as the active tool)
Fit to Screen	Automatically restores the image to full-viewport vie
Reset View	Reverts zoom and pan to default position for the current slice

8.4 Draw

Draw Tools (Annotations & Measurements)

Web Viewer provides a comprehensive set of annotation and measurement tools to assist radiologists in clinical evaluation and reporting. These tools are available under the Draw menu in the main toolbar.

Annotations can be placed on any image and remain tied to the slice where they were created.

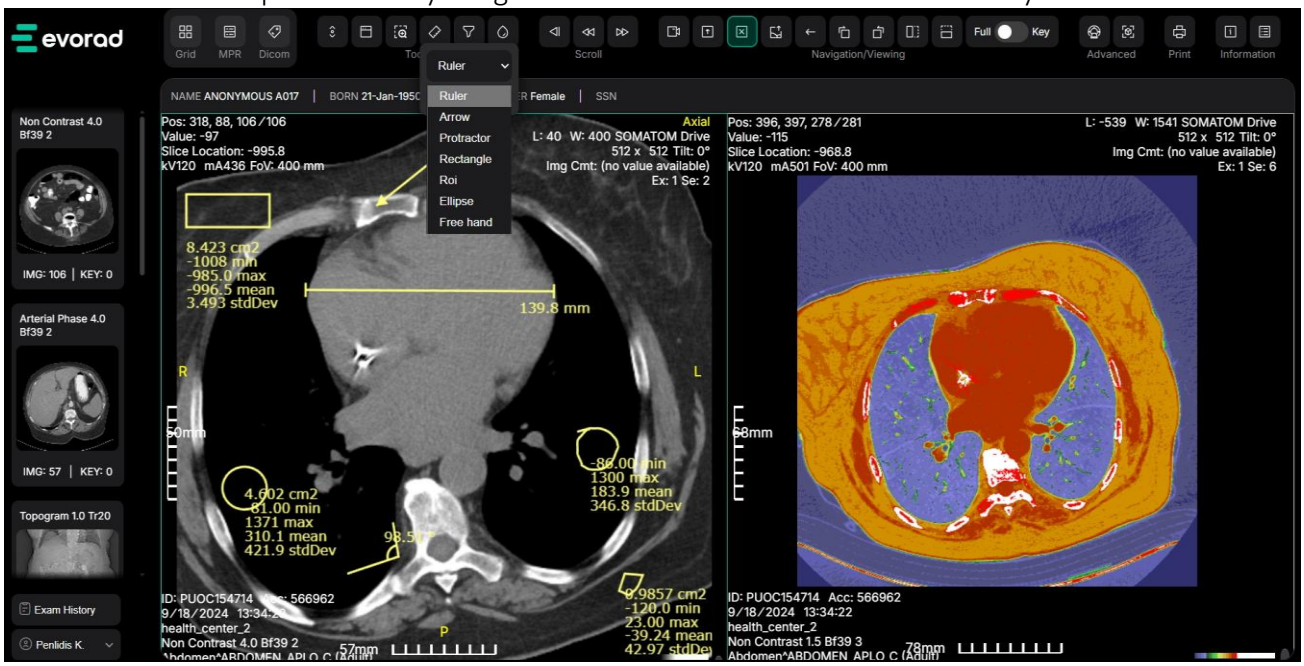


Figure 11: Measurement Tools

Ruler (Linear Measurement)

Tool	Purpose	How to Use
Ruler (Linear Measurement)	Measure distance between two anatomical points.	Select **Ruler** → Click start point → Drag → Click end point. Distance in mm appears next to the line.

Arrow	Mark points of interest or highlight findings.	Select **Arrow** → Click anywhere on the image to place the marker.
Protractor (Angle Measurement)	Measure angles between anatomical structures.	Select **Protractor** → Click 1) start point → 2) vertex → 3) end point. Angle appears in degrees.
Rectangle ROI	Create a rectangular ROI and display metrics (Area, Min/Max/Mean intensity, Std Dev).	Select **Rectangle ROI** → Click + drag to create the rectangle.
Ellipse ROI	Draw an elliptical or circular ROI for rounded structures (nodules, lymph nodes, lesions).	Select **Ellipse ROI** → Click + drag to shape the ellipse.
Free-Hand ROI	Draw custom-shaped ROI for irregular lesions; provides full statistical metrics.	Select **Free Hand ROI** → Draw freely around the structure.

8.5 Filters

Web Viewer provides a set of image enhancement filters designed to support more detailed visual assessment by improving anatomical edge visibility and isolating areas of clinical interest. These tools are located under the Filter menu in the main toolbar.

When a filter is selected, it is applied directly to the active viewport and can be reset at any time using the Reset functionality.

Threshold Filter

The Threshold tool helps isolate structures within a specific pixel intensity range. Regions outside the selected range become visually reduced or removed, making targeted tissue easier to evaluate.

Configuration Options:

- Minimum Threshold – Lower HU limit (exclude low-density regions)
- Maximum Threshold – Upper HU limit (exclude high-density regions)
- Adjustable sliders allow real-time refinement

Useful for:

- Highlighting bone vs. soft tissue

- Detecting lung consolidation/air pockets
- Enhancing lesion borders
- Especially in CT imaging where tissue density is expressed in Hounsfield Units (HU).

Sharpen Filter

The Sharpen filter increases edge definition to improve visibility of fine anatomical details. It enhances small structures such as vessel walls or bone trabeculae and Improves clarity in regions with soft tissue contrast

Useful for:

- Bone window interpretation
- Subtle pathology detection (e.g., lung nodules)
- Sharpen should be used cautiously; excessive enhancement may emphasize noise.

Sobel Filter (Edge Detection)

The Sobel filter detects and highlights image edges by analyzing changes in intensity between adjacent pixels.

Visualization Effect: Edges appear bright and highlighted / Non-edge regions become visually minimized

Useful for:

- Outlining organ boundaries
- Detecting structural discontinuity
- Pre-segmentation examination for radiomics or AI workflows

Sobel is ideal for planning or reviewing segmentation workflows where accurate detection of margins is essential.

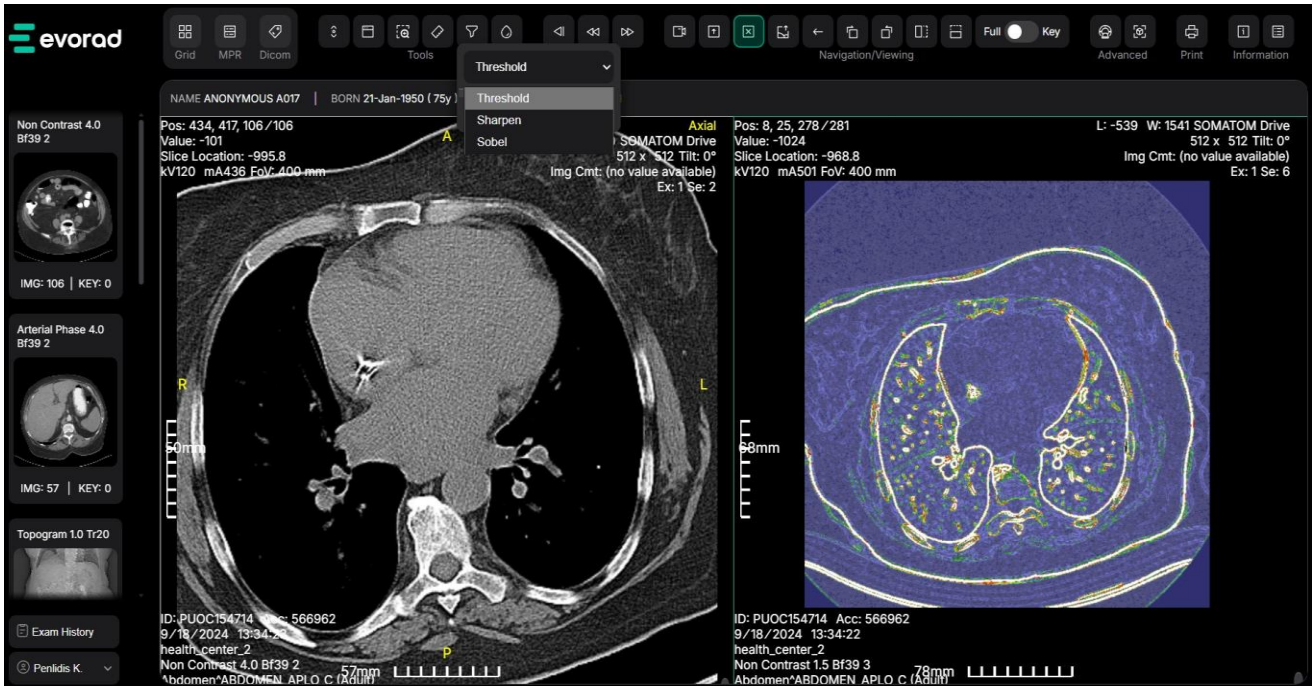


Figure 12: Sobel Filter

8.6 Floodfill

The Floodfill tool enables rapid segmentation of anatomical structures by automatically detecting and outlining areas with similar image values, such as voxel intensity in CT measured in Hounsfield Units (HU).

This tool operates using a region-growing algorithm, meaning it extends the selected region to neighboring pixels that fall within an acceptable similarity threshold.

How It Works

1. Click the Floodfill icon in the toolbar (highlighted in the screenshot above)
2. Move the mouse pointer onto the area of interest
3. Left click → The software automatically expands and creates a boundary around connected regions with similar HU values
4. The segmentation is instantly displayed as a highlighted contour

After segmentation, quantitative values are automatically shown, including:

Metric	Description
Area (cm^2)	2D surface covered by segmentation
Min HU	Lowest intensity value in the region

Max HU	Highest intensity value in the region
Mean HU	Average tissue density
StdDev HU	Variation indicating heterogeneity

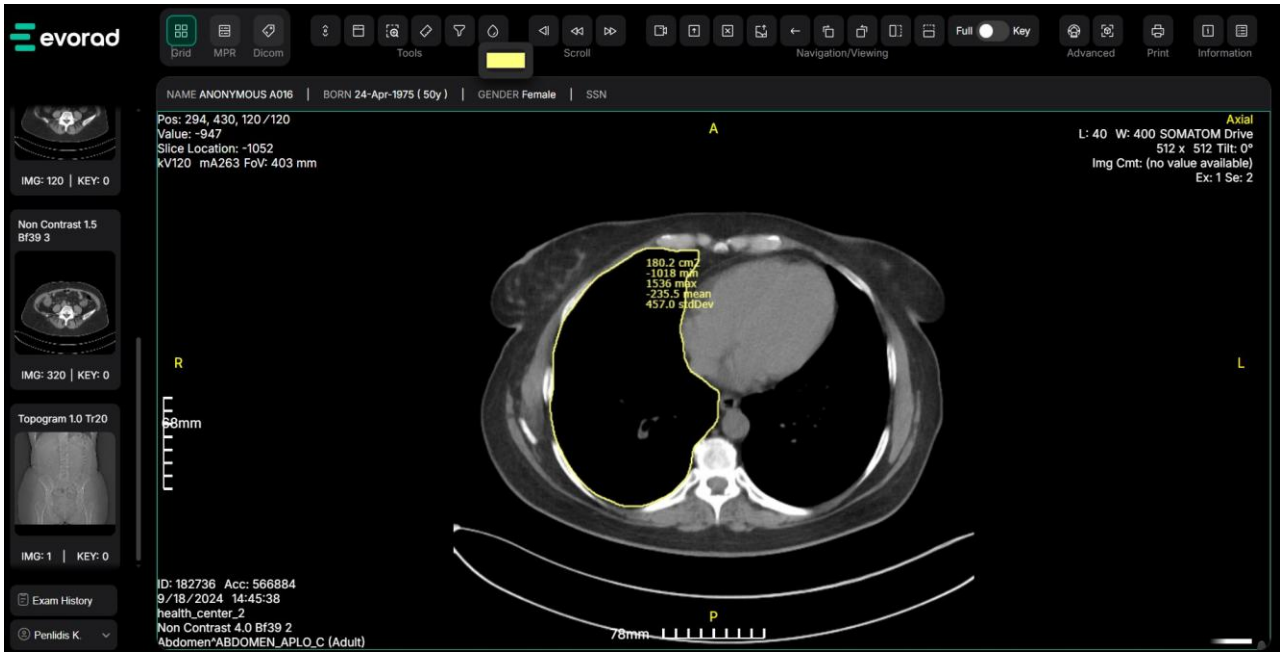


Figure 13: Displayed Measurements

These statistics assist clinicians in assessing tissue characteristics, useful in identifying fluid, fat, soft tissue, bone, or potential pathology.

Typical Clinical Use Cases

- Lung segmentation to isolate collapsed tissue or emphysema
- Fat analysis and body composition measurements
- Organ boundary detection in CT abdomen
- Fluid or air pocket detection in trauma imaging
- Quick evaluation before detailed radiomics extraction

8.7 Scroll navigation tools

Key images are slices that have been marked by radiologists or automatically system flagged as important for diagnosis (e.g., findings, measurements, annotations).

Instead of manually scrolling through all slices, these buttons bring the user directly to:

- *Annotated images*
- *Images with measurements*
- *Clinically relevant slices selected by the radiologist*

These buttons allow the user to quickly navigate through the image slices or key images of the examination. They are particularly useful for studies with many frames, such as CT, MRI, and PET-CT.

Icon	Function	Description
◄◄ (First Image)	Go to First Image	Instantly jumps to the very first slice of the selected series. Useful when the user wants to restart the review from the beginning of the dataset.
◄ (Previous Key Image)	Previous Key Image	Moves back through important/key-marked images rather than scrolling slice-by-slice. Ideal for workflow efficiency when reviewing highlighted points of interest.
► (Next Key Image)	Next Key Image	Moves forward through the key-marked images in the dataset. This allows for quick review of radiologist-flagged significant slices.

Tip:

These shortcuts greatly improve diagnostic workflow efficiency by minimizing mouse scrolling and ensuring that no critical image is overlooked.

8.8 Navigation/Viewing tools

8.8.1 Select frame rate

The Select Frame Rate option allows the user to control the playback speed when viewing multi-frame imaging data (such as dynamic MRI, CT perfusion, ultrasound cine loops, or PET sequences).

By adjusting the frame rate:

- Higher frame rates enable a smoother and faster display of frames, useful for quickly reviewing motion or dynamic changes.
- Lower frame rates provide slower playback, allowing more detailed examination of each frame.

The user may double-click within the selected series to activate it.

This feature is especially valuable when evaluating sequences that involve motion, such as cardiac or respiratory movement, ensuring efficient and careful diagnostic review.

8.8.2 Load all series

The Load All Series button allows the user to automatically display every imaging series associated with the selected exam in the viewer. When activated, all series are loaded into the available viewports, eliminating the need to open each one individually as shown in figure 16, below.



Figure 14: Load all series

8.8.3 Remove series

The Remove Series button allows the user to close and remove a specific image series from the active viewing layout. This is useful when the screen contains multiple series, and the radiologist wants to declutter the workspace or focus on a particular set of images.

How to use:

1. Select the viewport that contains the series you wish to remove
2. Click the **Remove Series** button
3. The selected series will be cleared from that viewport while the remaining views stay unchanged

This feature improves visualization efficiency by keeping only the clinically relevant series visible during interpretation.

8.8.4 Load all images of series

The Load All Images of Series button allows the user to fully load every image contained within the selected image series into the viewer.

In some cases, only a portion of the images (e.g., key images or preview frames) may initially be displayed to improve loading speed. By activating this option, the user can ensure that all slices, including those not cached or preloaded, become immediately available for review.

How to use:

1. Select the viewport containing the desired series.
2. Click the Load All Images of Series button.
3. The viewer will retrieve all slices from the server and load them into the active panel.

Clinical Benefits

- Ensures complete dataset access for accurate interpretation.
- Necessary when reviewing subtle or borderline findings.
- Recommended for high-slice examinations such as thin-cut CT scans or multi-sequence MRI studies.

8.8.5 Back to view

The Back to View button allows the user to return to the standard image viewing mode after performing other actions, such as loading studies, adjusting filters, or entering measurement and annotation tools.

By selecting this option, the viewer interface resets to the main interaction mode, ensuring that scrolling, zooming, panning, and window/level adjustments can be performed without any active tool interfering.

How to Use: Click the Back to View button at any time to exit the currently selected tool and restore default navigation controls.

8.8.6 Rotate right

The Rotate Right tool rotates the currently active image or viewport 90 degrees clockwise.

This function is useful when images are displayed in an orientation that does not match the user's preferred viewing position or when alignment adjustments are needed for better anatomical interpretation.

8.8.7 Rotate left

The Rotate Left tool rotates the currently active image or viewport 90 degrees counterclockwise. This function is used to adjust image orientation when the displayed anatomy does not align with the user's preferred viewing position, enabling clearer visualization and interpretatio



Figure 15: Rotate Left & Right

8.8.8 Flip horizontally

The Flip Horizontally tool mirrors the displayed image from left to right along the vertical axis. This function is useful when users need to adjust image orientation for comparison, presentation, or personal viewing preference. When activated, the entire image (or selected viewport) is flipped horizontally while preserving all measurements, annotations, and overlays.

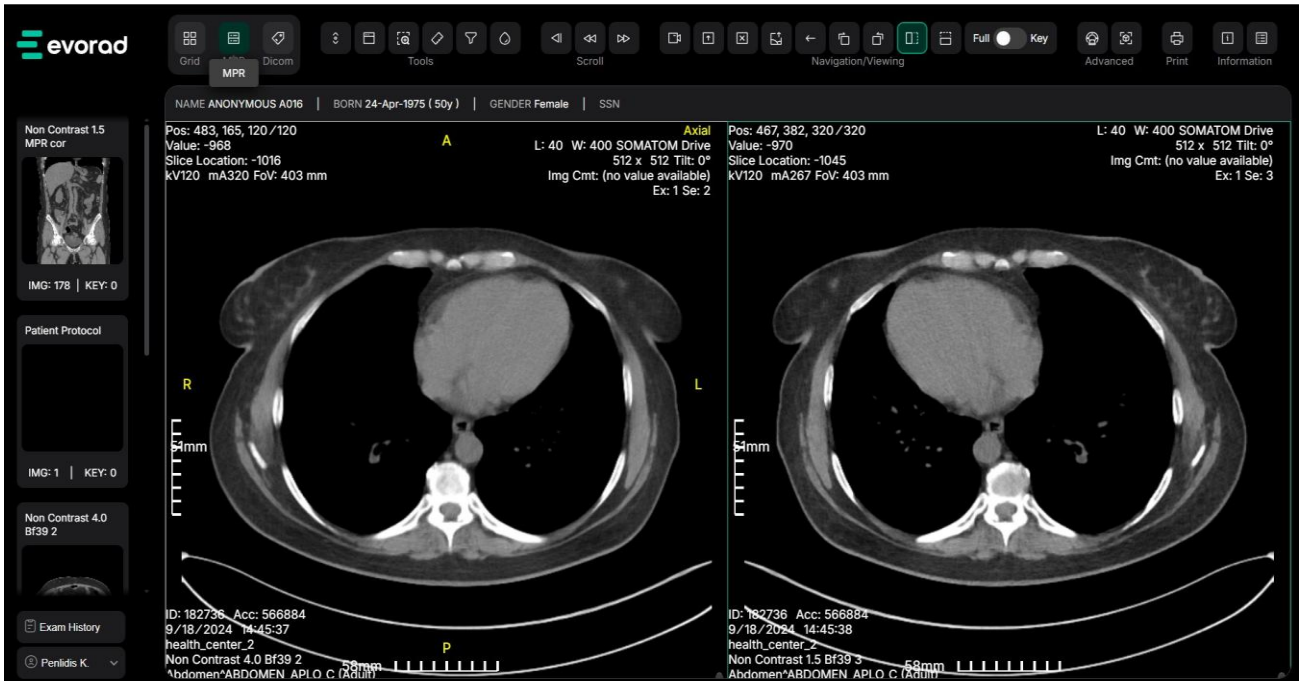


Figure 16: Flip Horizontally

8.8.9 Flip vertically

The Flip vertically mirrors the displayed image from top to bottom along the horizontal axis. This function allows users to adjust the image orientation for easier anatomical interpretation, comparison between series, or presentation purposes. When activated, the entire image (or selected viewport) is flipped vertically while maintaining all existing measurements, annotations, and overlays.



Figure 17: Flip vertically

8.8.10 Full/Key images

The Full / Key Images toggle allows users to switch between viewing all images in a series and displaying only key images.

- **Full mode** displays the complete image set for the selected series, enabling comprehensive review of every slice.
- **Key mode** shows only the images that have been marked as key images (important or representative slices selected by the user or system).

This feature helps streamline workflow by allowing radiologists to quickly focus on clinically significant images without scrolling through the entire dataset.

How to Use:

1. Click the Full / Key toggle in the toolbar.
2. Select Full to view all images in the series.
3. Select Key to display only key images.

8.8.11 Print image

The Print button allows users to print the currently displayed images directly from Web Viewer.

By selecting **Print,** the system opens the standard print dialog, allowing users to configure all necessary printing options before sending the image to the printer. From this window, users can choose the desired **printer**, specify the **number of copies**, and set the **page orientation** to Portrait or Landscape. They can also define the **page range** to be printed and adjust the **color mode** (e.g. black & white or color), depending on the capabilities of the selected printer.

Any active annotations, measurements, or ROIs visible on the images are included in the print output, ensuring that clinical findings and markings are preserved.

This feature enables fast production of hard copies for reporting, consultations, or clinical documentation.

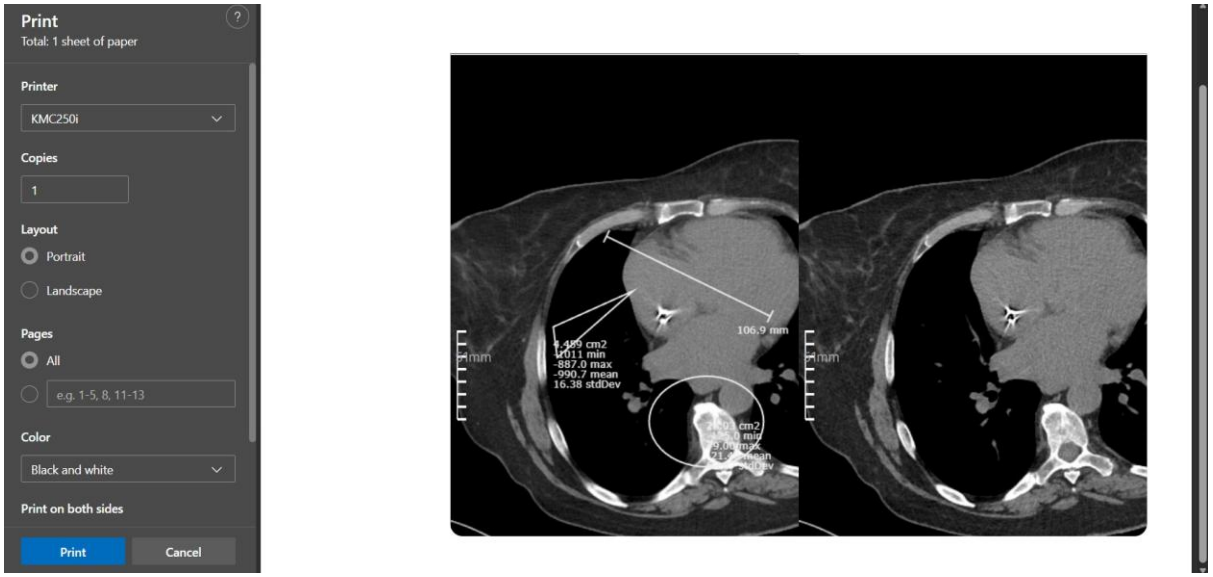


Figure 18: Print image

8.9 Information

8.9.1 Image Info

The Image Info button allows users to toggle the display of technical image information directly on the viewer.

When enabled, key metadata is overlaid directly on the image, giving radiologists immediate access to essential information while reviewing a study. Patient and study details are displayed alongside the slice position and orientation, helping to maintain clinical and anatomical context. Technical parameters such as window level and width, image resolution, and acquisition settings are shown, together with modality-specific information (e.g., kV, mA, FOV, slice location). This integrated view of image content and metadata supports more informed evaluation, consistency in interpretation, and efficient quality control.

Clicking the Image Info button again hides this overlay, providing a clean viewing area for focused image interpretation. This feature is especially useful for switching between detailed technical reviews and distraction-free diagnostic visualization. Clicking Image Info to show image metadata, while clicking again hides the information and returns to an uncluttered view.

8.9.2 Annotations

Annotations allow users to add visual markers and notes directly on medical images to highlight findings, support measurements, and facilitate clinical communication.

Using the annotation tools, radiologists can precisely document and communicate their findings directly on the image. They can place arrows to highlight areas of interest or suspected pathology, add lines and angles to measure distances and evaluate anatomical alignment, and draw ROIs (Regions of Interest) with rectangular, elliptical, or freehand shapes to focus on specific tissues. Text labels or symbols can be inserted to provide additional clinical context, while quantitative results—such as lengths, areas, angles, and intensity statistics—are displayed directly on the image, supporting more objective and reproducible reporting. All annotations remain linked to the corresponding image and slice, ensuring consistency during navigation and review.

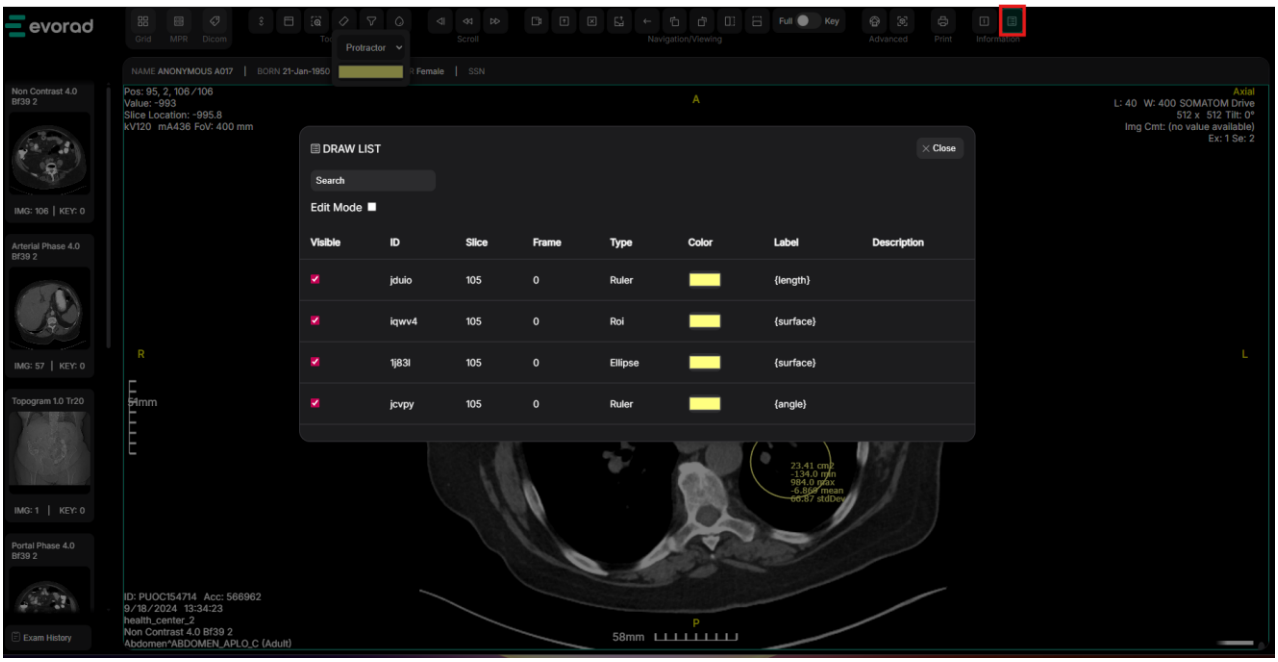


Figure 19: Draw list of selected tools

9 Conclusion

The Web Viewer is designed to provide clinicians with a powerful yet intuitive environment for reviewing medical images. By combining advanced visualization capabilities, comprehensive measurement and annotation tools, MPR functionality, and flexible viewing options, Web Viewer supports accurate diagnosis while streamlining daily clinical workflows.

Throughout this guide, we have covered the core features of Web Viewer, from basic navigation and image manipulation to advanced tools such as MPR, ROI analysis, filtering, and annotations. Each function is carefully integrated to ensure ease of use, consistency, and efficiency, allowing radiologists and medical professionals to focus on what matters most: patient care.

We encourage users to explore the available tools and customize their workflow according to their clinical needs. For additional assistance, configuration support, or advanced training, please do not hesitate to contact the evorad support team.

Thank you for your trust in evorad!

Should you have any enquiries concerning this manual, please contact us.