



ATHENA
DICOM EXPERT

Quick Guide ATHENA DICOM Expert



A product of





Quick Guide

Athena DICOM Expert

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Presentation


Athena DICOM is a breakthrough medical image software, an evolution of DICOM Viewers, that allows the medical community a higher productivity, through a combination of numerous and effective resources, shortcuts and tools to provide better diagnostics with a swift response.

Access patients with one click, connect to your PACS anywhere and anytime with the maximum convenience and flexibility in your day-to-day.

In addition to all these handy features, Athena DICOM is also certified by ANVISA (National Health Surveillance Agency) and registered under the registration number 81738459001. ANVISA is the Brazilian organ responsible for all regulation, fiscalization and authorization of services related to health and sanitation, acting in a similar way to the American organ FDA (Food and Drug Administration).



1. Importing Patient

You can **import local** DICOM images by clicking on the  button in the sidebar menu. Just select a folder, and Athena will **automatically import all DICOM files inside**. The platform supports **CD, DVD, USB drive, HDD/SSD and Cloud drives** (if available locally).

Your patients will be shown at the **Patients** screen (image 1):

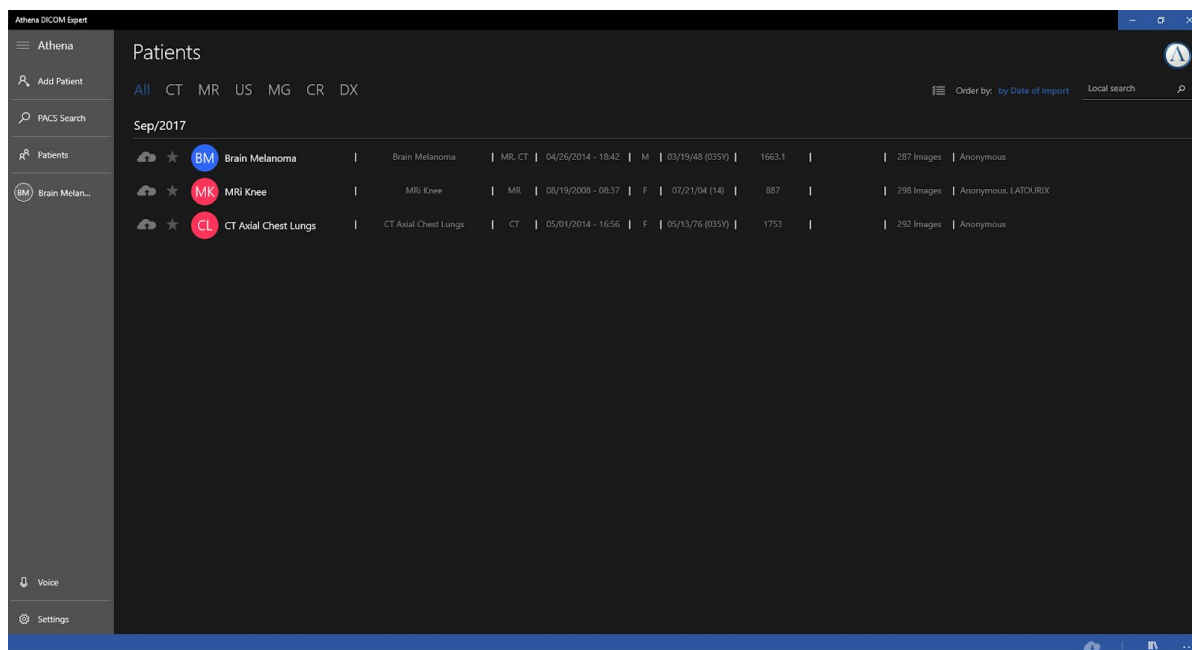



Image 1 - Patients screen

2. Importing Patient from PACS

To import a patient from PACS, you first have to search for them using the , that enables the user to search with a combinations of many parameters such as: **Patient name, date, id, access number, study and modalities**.

Athena also provides a combination of the most used dates such as **AM, PM, Today, Yesterday, Last 2 Days, Last 7 Days and Last Month** in order to optimize the search.

You must select the desired PACS from the combobox and the wanted parameters of search, as you can see in image 2. You can also look for information in the “Locals”, or from the “Medical Harbor Knowledge Base”, a database with a diversity of studies.

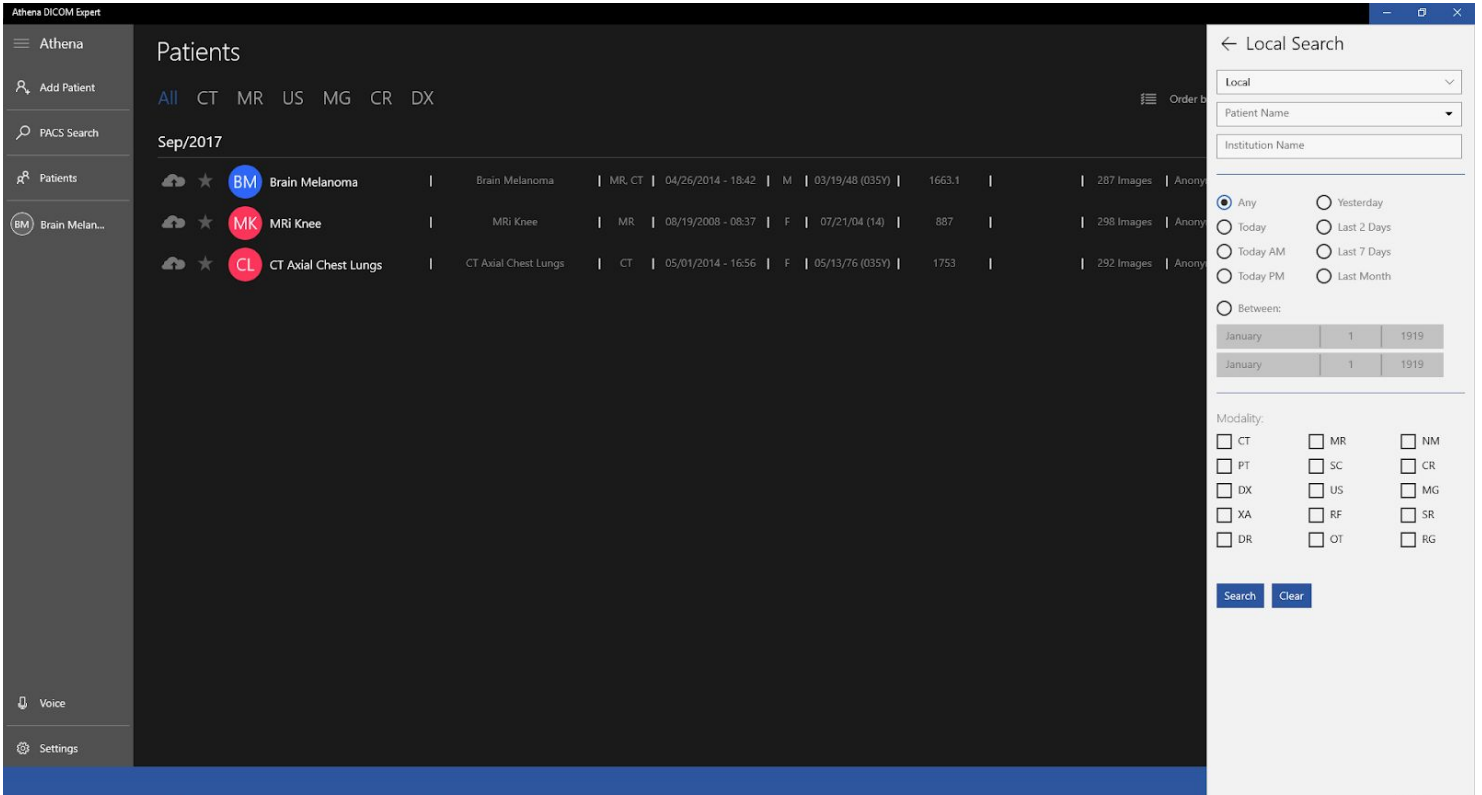


Image 2 - Search box

After the search is complete, you just need to **click over the patient** in order to download the **latest study exam** of the select patient (image 3):

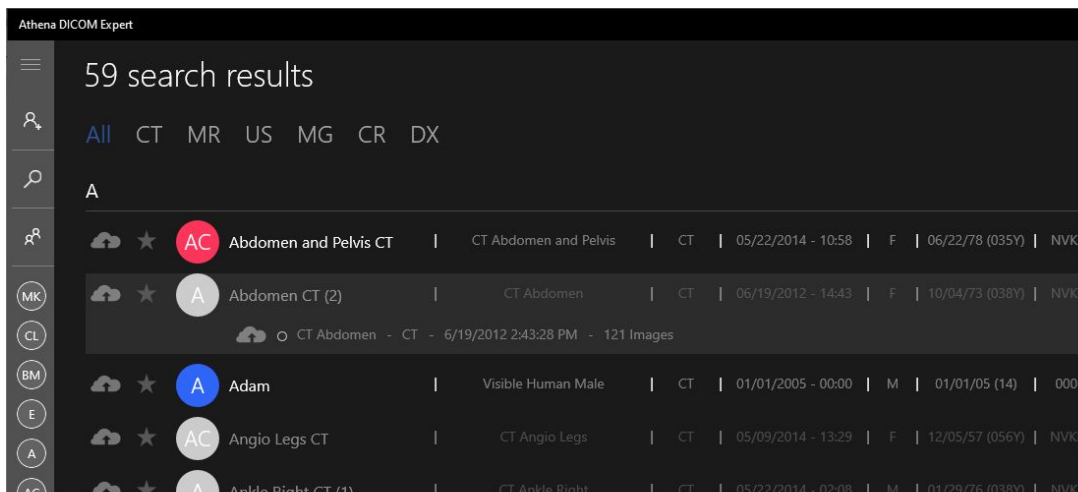



Image 3 - Download the latest study exam



3. Configuring PACS

Athena supports multiple PACS servers configurations. They can be added, edited and removed through the **PACS** tab at the  **Settings** screen (image 4).

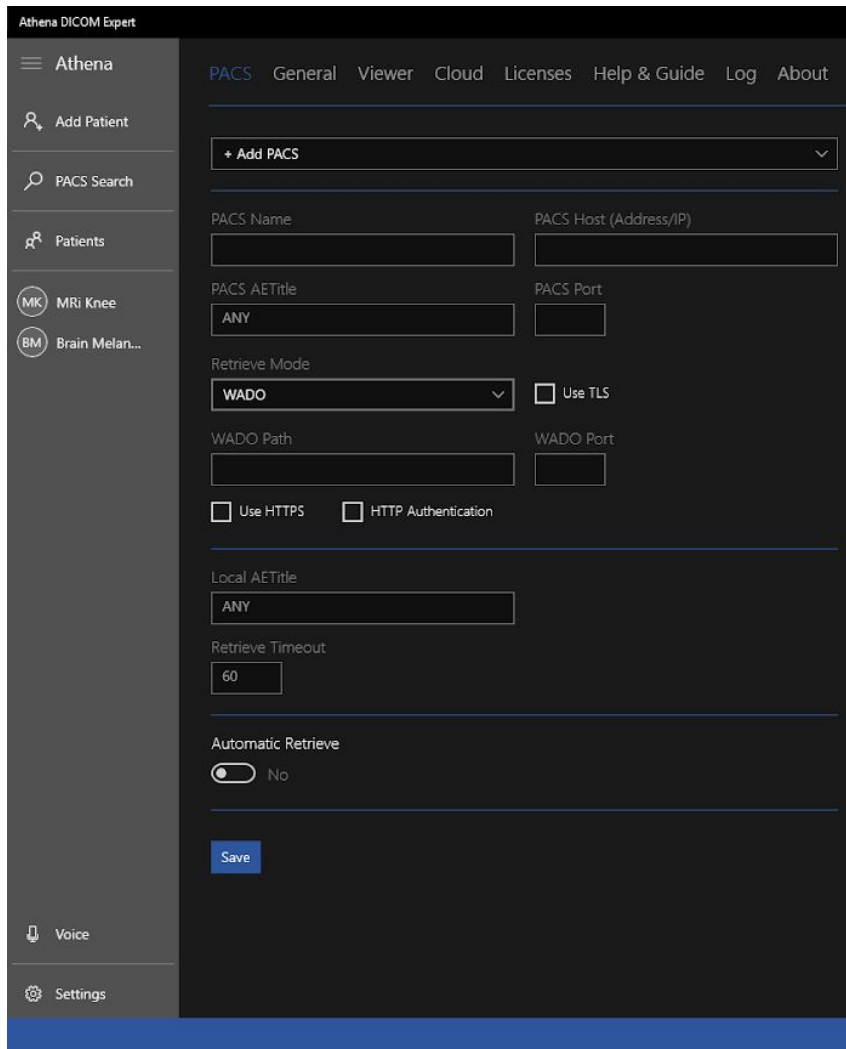



Image 4 - PACS tab and its configurations


To add a PACS, select **+Add PACS** at the tab, and input the PACS settings. Athena supports **C-MOVE**, **WADO** and **TLS/SSL** encryption.

After PACS configuration is done, you will be able to **search and import** exams from these PACS using the  **PACS Search** .

4. Opening Exams

4.1. Original Mode

It is the standard viewer mode in Athena, and can be easily opened with a **Click** or a **Tap** (when using touch) over the desired **series**. You can also access it using the context-menu, shown when clicking with the **right-button** over the series and selecting **+ Original**, as you can see in image 5.

If you want to open all series from a selected patient, you can click on the  button at the **bottom-right** of the screen when there is none opened (image 5).

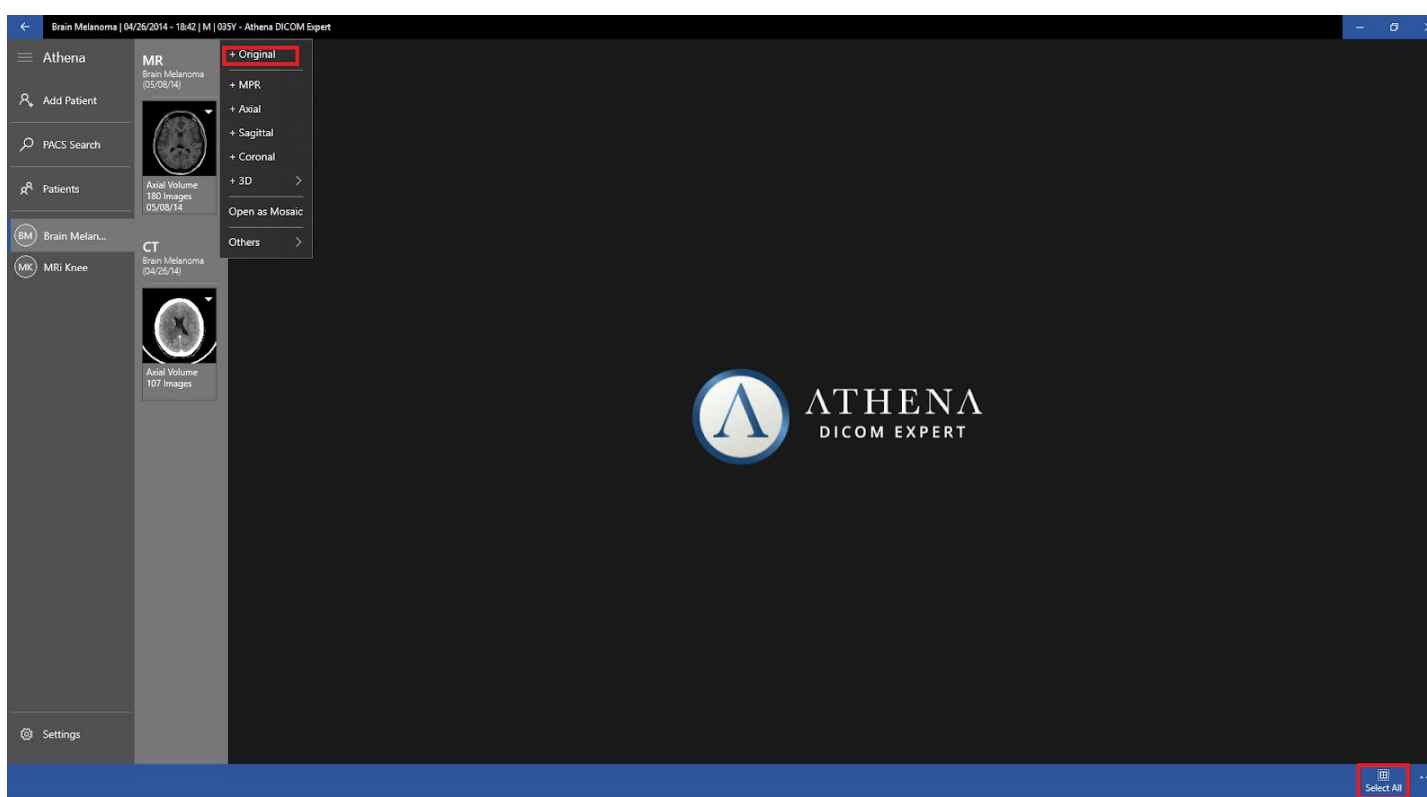


Image 5 - Location of visualization buttons and select all tool.

4.2. MPR Mode

You can view Axial, Sagittal, Coronal or custom non-orthogonal angles. To access it, just **click** with the **right button** on the series and select **+ MPR**. You can also add views individually clicking in **+ Axial**, **+ Sagittal**, or **+ Coronal**. The icons with a “+” signal, will include the series in the visualization (image 6). If you want to **Open as MPR mode automatically**, press **CTRL+Click** over the series.

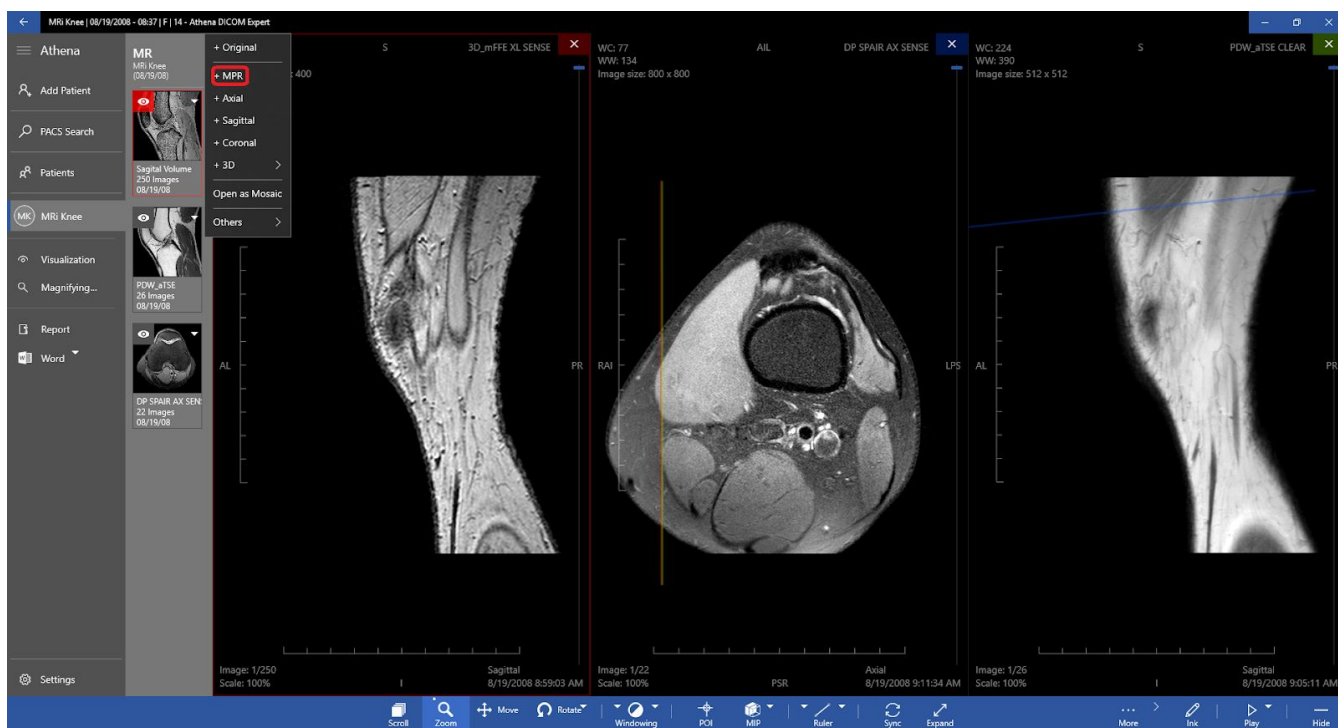


Image 6 - Location of visualization buttons

4.3. 3D Mode

Athena can reconstruct some series in 3D and display the 3D reconstruction in 4 modes. To access it, just **click with the right button** over the series, select **+ 3D** and choose the desired 3D mode: **Volume (default)**, **MIP (Maximum intensity Projection)**, **X-Ray** and **Isosurfaces** (image 7). You can also press **Alt+Click** over the series, and it will open **“Volume”** mode automatically.

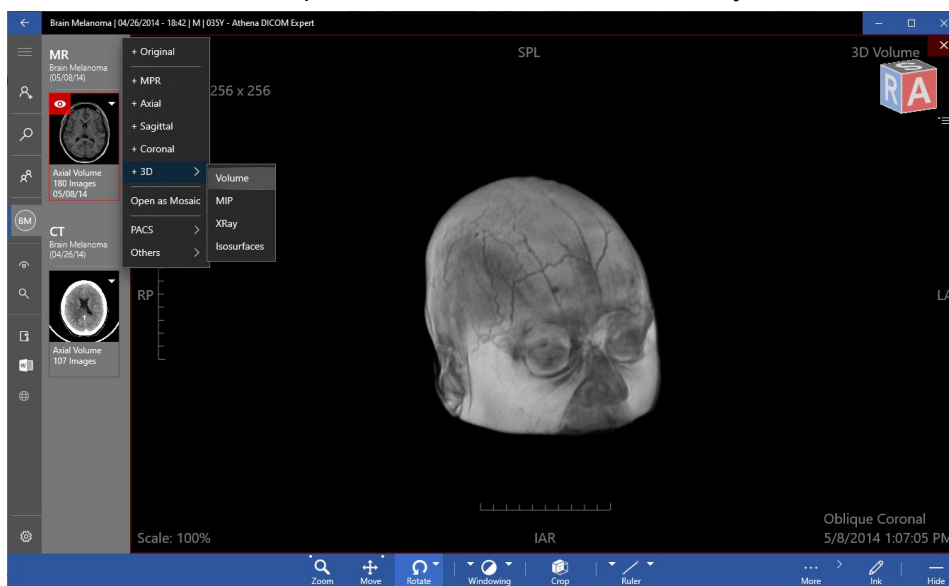


Image 7 - 3D modes

4.4. Mosaic Mode

Mosaic mode allows you to have a visualization of **multiple slices** of a selected series in a custom layout. To select it, **click with the right-button** on the series and select **Open as Mosaic**.

Just choose the desired image slices, and the matrix you want to view at the screen (rows x columns) (image 8). You can select each image you want by checking the boxes, typing the number of the image, or the desired range you want (1 to 5 and so on). After that, you'll be shown this screen (image 9).

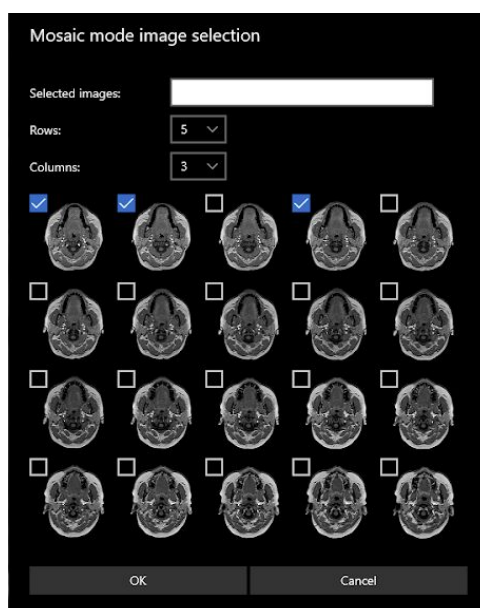


Image 8 - Mosaic mode image selection

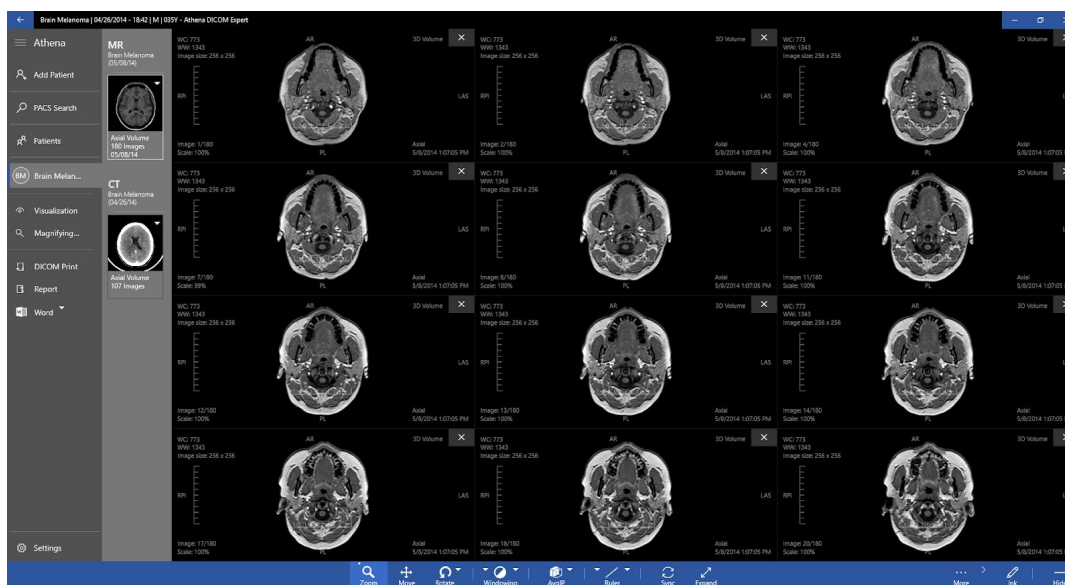


Image 9 - Mosaic mode after selection



5. Viewer Tools

5.1. Basic Tools

Basic tools includes **scroll, zoom, move, rotate and windowing** and can be accessed through the bottom bar at the viewer (image 10). You can use the left, middle or right buttons of the mouse to apply the select tool, always in a simple and useful manner.




Image 10 - Basic Tools


5.2. Advanced Tools

5.2.1. Sync


Sync is a feature that applies zoom, scroll, move, rotate, windowing and palettes to all open views. It can be very useful if you want to replicate the procedure to all views.

It can be easily activated or deactivated selecting  icon or using “S” the shortcut.

5.2.2. POI (Point of Interest)

POI is a quick tool to reach an area or point of interest. It offers synchronization between views and automatically syncs other views to your selected POI. With a few clicks you will have all views synced to your POI. In order to use it, you must have more than one view open (Original or MPR). Just select , **click and drag** to reach the target point.

5.2.3. Crop (3D Crop)

During 3D manipulation  (Volume, MIP, XRay or Isosurface) you may want to see inside the volume. To do so, you must use the crop tool. This tool allows you to cut from top, bottom, left or right of any 3D view, allowing the analysis from outside and inside at same time. To use it, just select the button, **click and drag** the control handles in the desired direction (image 11).

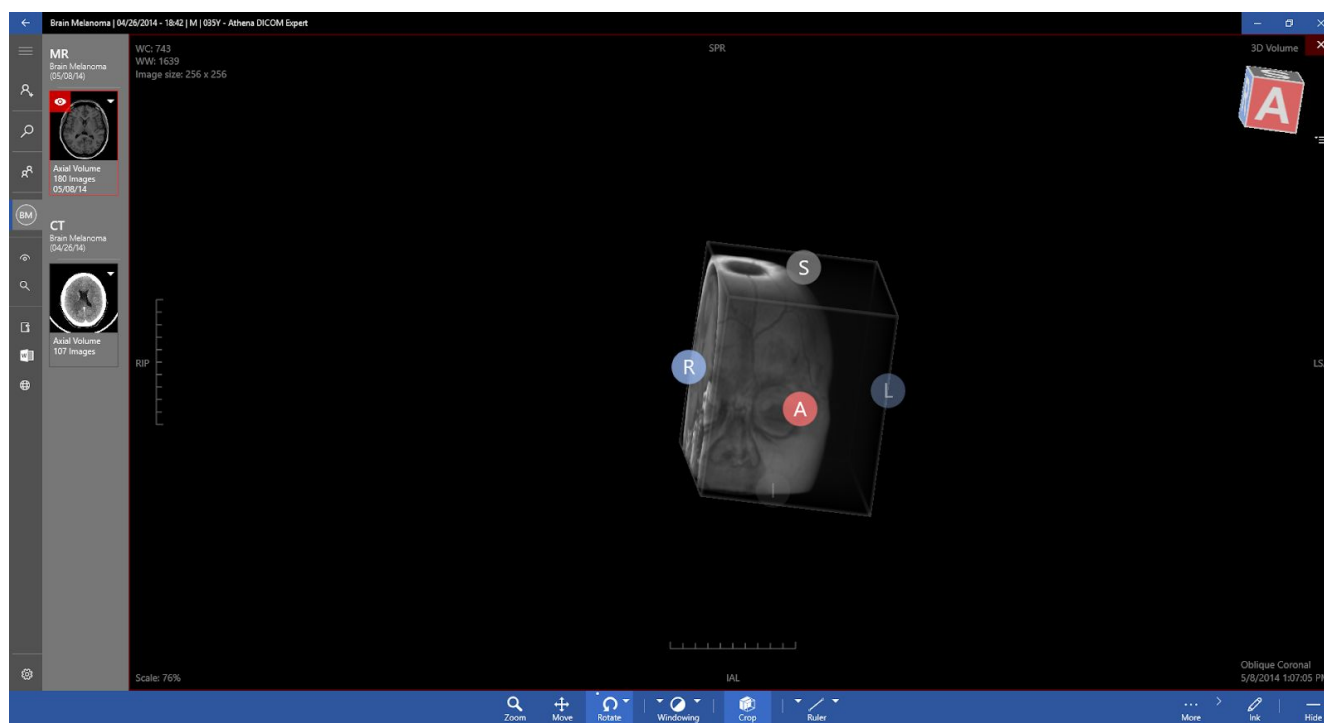



Image 11 - Crop button in action.


5.2.4. Rotate MPR (Non-Orthogonal MPR)

Non-orthogonal MPR is a tool that enables you to navigate in 2D over 3D, so that you can change a series angulation to any arbitrary angle or position. To use it, just enter in the MPR mode and select the  button, **click and drag** on the view you wish to change, in the direction you wish to rotate. You can use the reference lines to locate yourself.

5.2.5. MIP (Maximum Intensity Projection)

With MIP, is possible to find all the hyperdense structures in a volume, from a range of your choice. You can also project the voxel with the higher attenuation level in all your views and volumes in a 2D image.

This method tends to display bones and preferentially contrasted material-filled structures, it also hides lower-attenuation structures.

The primary clinical application of MIP is to  improve the detection of pulmonary nodules and evaluate their profusion. MIP also helps to distinguish the distribution of small nodules. In addition, MIP is excellent for determine the size and location of vessels, including the pulmonary arteries and veins. In order to use MIP, you just need to select , **click and drag** to

select the desired range, which can be checked at “MIP Thickness” value and using the **reference lines**. (image 12)

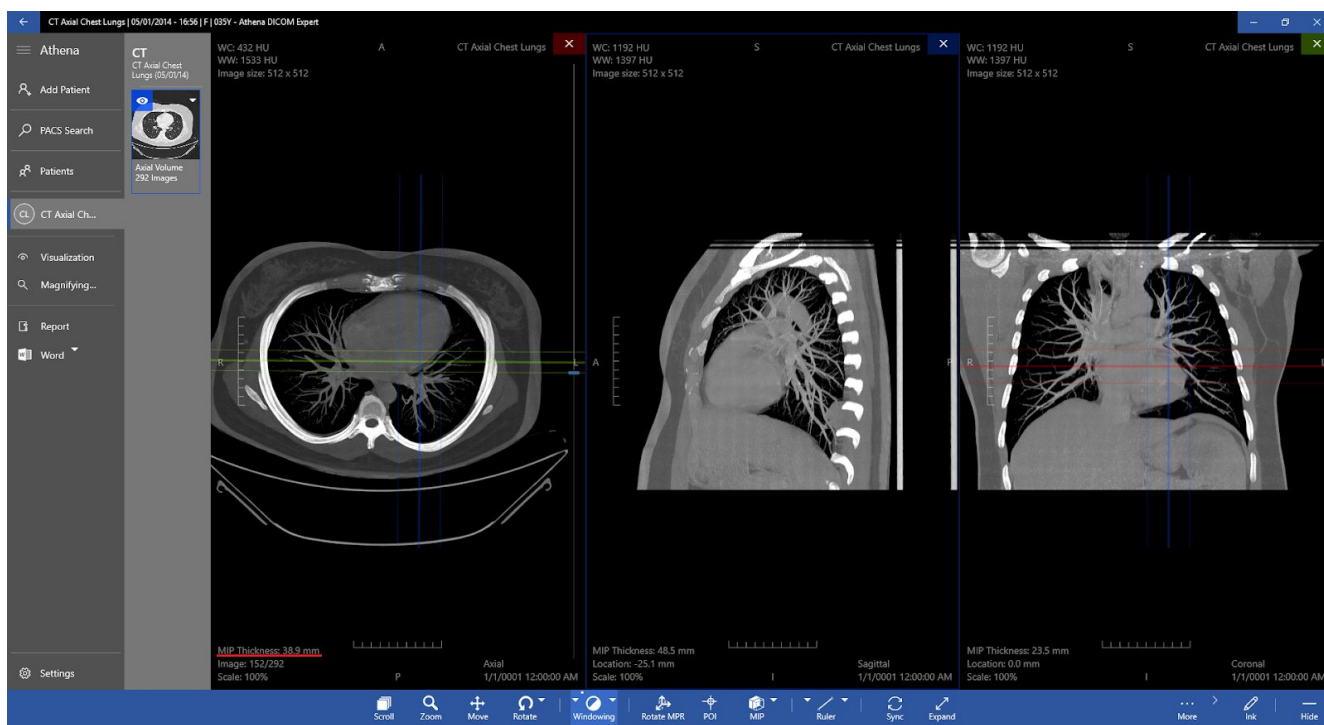


Image 12 - MIP tool applied

5.2.6. MinIP (Minimum Intensity Projection)

MinIP is very similar do MIP but instead of showing voxels with the highest attenuation, it shows the ones of the lowest attenuation. With MiniIP, only the most hypodense structures of the volume are represented, so, it is the optimal tool for the detection, localization, and quantification of ground-glass and linear attenuation patterns on chest scans.

The MinIP is particularly useful for analyzing the bile tree and pancreatic duct, which are hypodense compared to the surrounding tissue, especially in the pancreatic and portal phase of contrast agent administration.

To use the tool, click in the upper right arrow in the “MIP” button, and select the MinIP option (image 13).

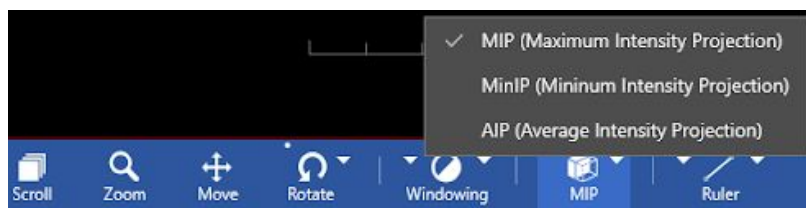


Image 13 - MinIP selection

5.2.7. Magnifying Glass

To increase diagnostic quality, you can use the magnifying glass to view a region with more detail. This specific magnifying glass has an interesting feature: you don't have to enable it in each view. You can drag from all views without locking it everytime. You can also customize many aspects of this tool, such as size, shape and zoom.

In order to activate the magnifying glass, just select the Magnifying Glass tab and the **Enabled** button (image 14). To change the Zoom of the magnifying glass, you can click on the **Zoom** button and choose between "100%", "200%", "400%" or "800%". You can also change the **zoom with the mouse wheel**.

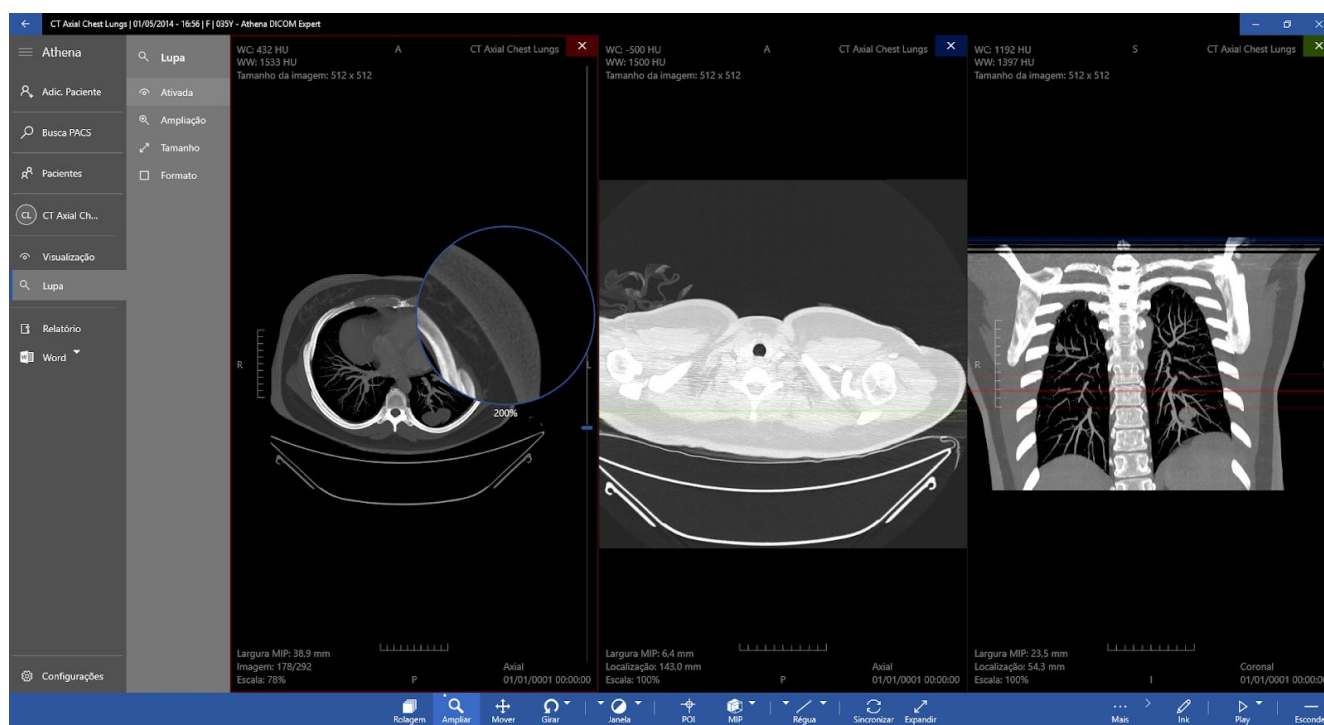


Image 14 - How to active the magnifying Glass

5.3. Annotations

Athena has a set of very useful Annotations tools, some of which contains measurements in millimeters, Hounsfield value, area, perimeter, min, max, average, standard deviation and even angles between consecutive or separated lines. You can add, edit or remove any annotation even in 3D mode. You just need to click on the icon located right of the MIP tool (image 15 and 16).

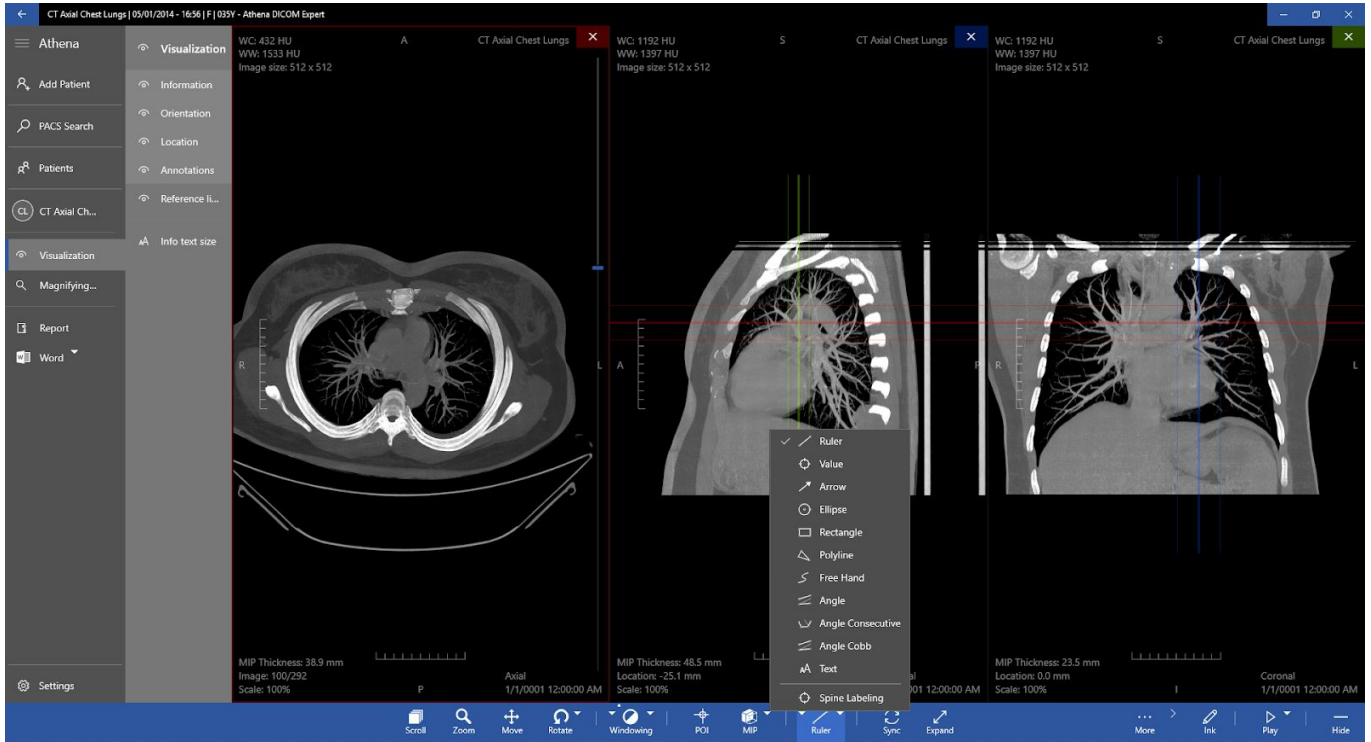


Image 15 - Annotations tools and its localization

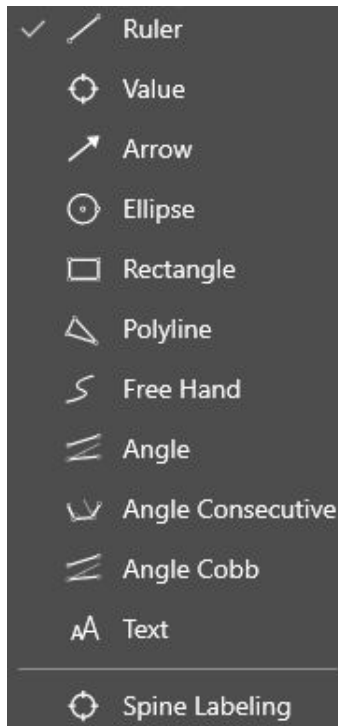


Image 16 - Annotations tools

5.4. Shortcuts

To increase productivity, Athena provides you with a list of key shortcuts to quickly access the most used tools:

Key Up/ Right	Scroll Up
Key Down / Left	Scroll Down
Key 1	Select Scroll
Key 2	Select Zoom
Key 3	Select Move
Key 4	Select Windowing
Key S	Sync
Key V	Select Annotation Value
Key A	Select Annotation Arrow
Key L	Select Annotation Line
Key R	Select Annotation Rectangle
Key E	Select Annotation Ellipse
Key P	Select Annotation Path
Key F	Select Annotation Consecutive
Key G	Select Annotation Angle Separate
Key T	Select Annotation Text
Key D / Delete	Delete Annotation
Key H	Hide Annotations
CTRL + Z:	Redo
CTRL + Y:	Undo
CTRL + Tab:	Next view
Backspace / Esc:	Exit
CTRL + R:	Report
Add (+)	Add to Report
F2 a F12:	Color palettes

6. Report

During an evaluation, you can add annotations, use the magnifying glass at any point, zoom, scroll images, among other stuff, during the process, you may wish to record some key images and some annotations. Athena allows you to add to a Report everything you do at the screen. You can add multiples views, 3D, views using magnifying glass, and so on to your report. Athena is flexible to add anything you want to a Report.

The report has 2 main modes: Full Report and Only Images. Full report is composed of an editable header, all added images and two editable fields for general observations and a conclusion, while the Only Images mode, you are display with a wider vision of the chosen images.

To **add images** to your report, simply click on the **Add to Report** button at the left panel. You can add as many images as you want to your report. To **open a report**, just click at the **Report** button (image 17).



Image 17 - Report screen