Chapter 4

Managing Data

The Database Window

When opening Horos, the main window which displays the database of images is known as the ***database window*** (Fig 4.1). It is also referred to as the browser window. Here you will find the content of the local database which is used by Horos to store image files and related data. Whilst Horos is open, it is possible to switch between different stored databases, whether located on the local disk or in remote locations. See Chapter 3 for more information.

The database window is divided into three main sections, study list, series list and preview area. An history section is displayed, visible in the top right quadrant. A toolbar and side panel also form component parts of the window.

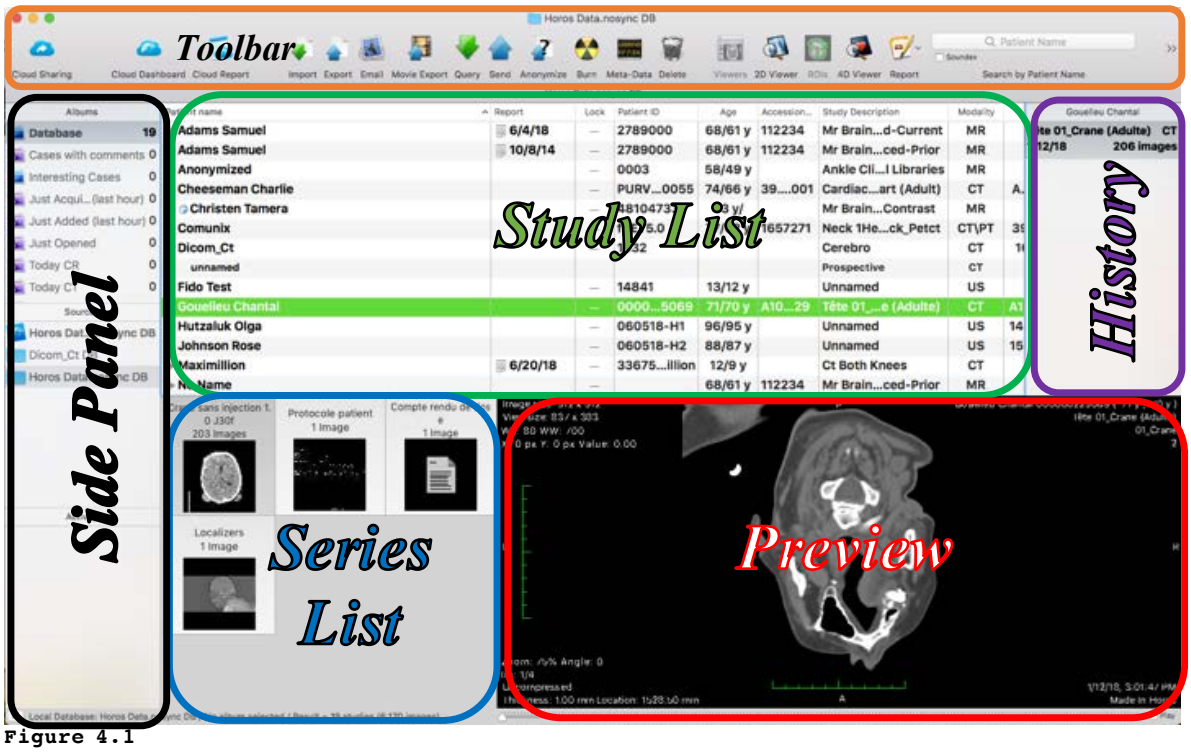


Figure 4.1

The database window displays the study list (upper left quadrant), history (upper right quadrant), series list (bottom left quadrant) and preview area (bottom right quadrant). A toolbar with graphical icons runs along the top of the window, with a side panel displaying albums, sources and activities running down the left hand side.

Using the 'File' menu all operation, such as importing, deleting, archiving and sending of images, are performed through the database window (Fig 4.2)

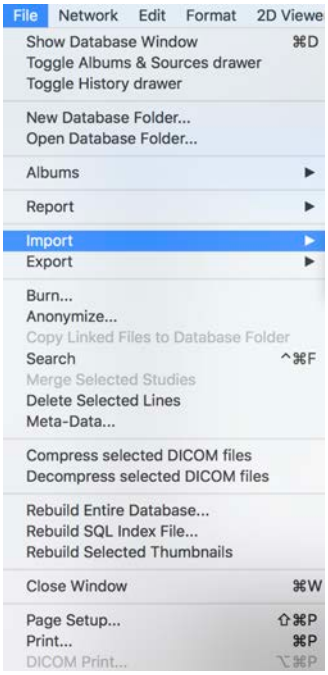


Figure 4.2 The contextual file menu where key functions can be selected

Toolbar

The toolbar is located at the top of the window and displays graphical icons of the key tools which can be selected (Fig 4.3). The toolbar is described in greater detail later in this chapter.

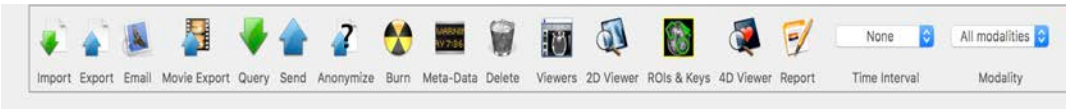
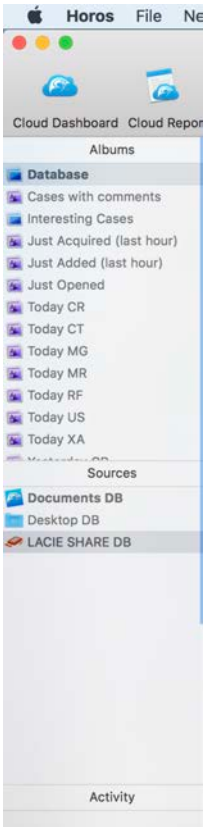


Figure 4.3 The default toolbar

Left hand panel



A panel on the left hand side, with subsections labelled 'Albums' and Sources', provides access to collections of studies known as 'image albums' (Fig 4.4). These are filtered to allow for ease of access and recognition. External sources of images are also accessed through this panel.

An activity bar is also visible in this panel which displays a list of processing threads running in the background. These processes could include database maintenance or sending threads for example. It is possible to cancel a 'thread' if a cross button is displayed to the right.

Fig 4.4 Left hand panel displaying 'Albums', 'Sources' and an 'Activity' panel

Toolbar

Located at the top of the database window, the toolbar displays graphical icons of the key tools which can be selected (Fig 4.5). Hovering the cursor over the icon will display a short description of each feature.

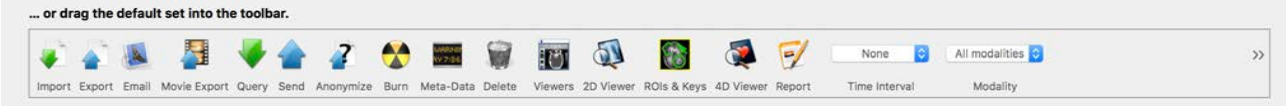


Figure 4.5 The default toolbar

A default set of toolbar icons will be displayed when Horos is first used. It is possible to restore the default toolbar at any time. To do this pull down the 'Format' menu tab and select 'customize toolbar' (Fig 4.6). A screen will appear which allows you to drag the default set of toolbar options onto your own toolbar.

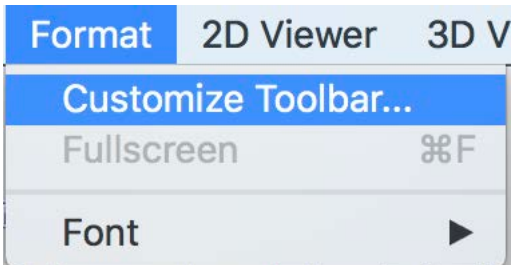


Figure 4.6 Format menu showing 'Customize Toolbar'

The toolbar is also customizable and the location of the icons can be designated by the user. To do this pull down the 'Format' menu tab and select 'customize toolbar'. A screen will appear which allows you to drag toolbar icons onto your toolbar at the top of the database window (Fig 4.7).

Figure 4.7 Screenshot of the icons available to customize the toolbar

In the proceeding sections you will find a complete description of the functionality of each tool, listed in alphabetical order.

2D viewer

The 2D viewer tool opens selected studies or series in the 2D viewer. This is described in more detail in Chapter 5.

When opening a study, the first series within the study will be displayed in the 2D viewer.

Consecutive cases can be selected by highlighting the first case, then holding down the 'Shift' button on your computer or laptop and highlighting the remaining cases by scrolling the cursor. Holding down the 'Command" button whilst moving the cursor, to select the required cases, can highlight non-consecutive cases.

To select only a subset of images, click on the 4D viewer icon whilst simultaneously holding down the option key. A dialogue box will open allowing you to select either:

A set of images taken at a given time point
A succession of the same image taken at different time points

4D viewer

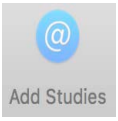
The 4D viewer tool is designed to display image series which contain multiple dimensions. For a series to be considered 4D it must contain multiple series with the same number of images, each with the same matrix size (dimensions). This could be, for example, an abdominal CT exam with 20 phases: 20 x 512x 512 images. Other examples would include, MR perfusion series or CT cardiac gated series.

When selecting this icon, Horos scans the selected series before opening a 2D viewer window with four dimensions.

To select only a subset of images, click on the 4D viewer icon whilst simultaneously holding down the option key. A dialogue box will open allowing you to select either:

A set of images taken at a given time point
A succession of the same image taken at different time points

Add Studies



This tool is only available if the web server is activated and must be authorized by the administrator. It allows you to share selected studies or series with a specific user, through the web server. Add Studies is equivalent to the 'Share' button, which is displayed at the end of the study html, which is available when browsing on the web server. More information on activating the webserver is available in Chapter 9)

Albums and Sources

This displays or hides the 'Album and Sources' panel, visible on the left hand side of the database window. This panel is described in further detail later in this chapter.

Anonymize

Where it is necessary to remove all demographic information (patient's name, ID, age etc.) from the DICOM headers of all images in a series, this can be performed using this tool.

A pop-up dialogue box allows you replace some fields with a specific value (Fig 4.8). Once you have selected the fields you wish to anonymize you can choose to either replace the original ones or export the anonymized files, onto a CD/DVD for example, without adding them to your database.

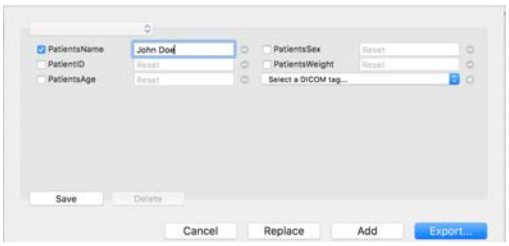


Figure 4.8 The Anonymize dialog box. Specific header fields can be replaced with default values to replace and anonymize patient demographic data

Burn

The Burn tool allows the user to save a hard copy of a selected study or series by writing them to a CD or DVD. This may be useful, for example, if the patient is being referred to another hospital.

When this tool is utilized it is possible to select from a number of options (Fig 4.9), for example:

-Anonymization
-Image compression
-Including Weasis as the software viewer

-Adding a HTML mini-website which includes a Quicktime versions of the images contained within study

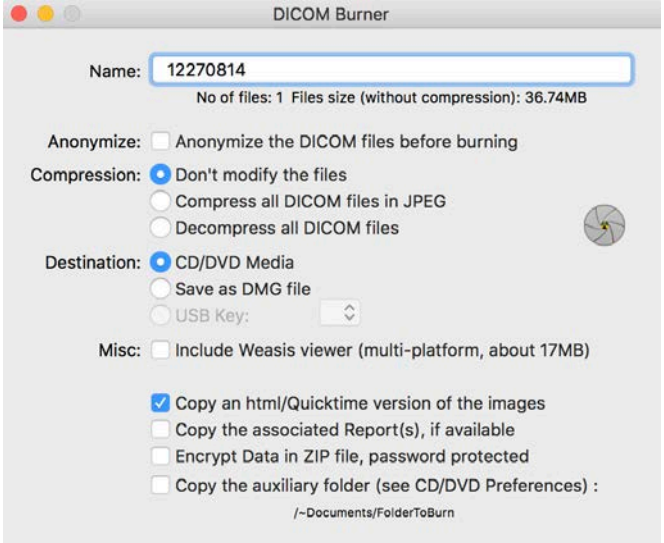
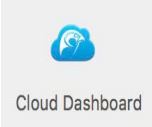


Fig 4.9 Dialogue box for the BURN icon, displaying the options for Anonymization, Image compression, Destination and other add-ons

Cloud Dashboard



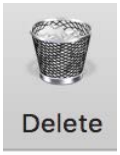
This provides access to Horos Cloud. Horos Cloud is a specialized plug-in that provides a set of additional functionality for Horos. This feature is available on a subscription basis

Cloud Reporting

This enables you to generate reports that are stored in the Horos Cloud. This is a plug-in that is available on a subscription basis.

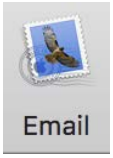
Delete

NOTE: Once a study or series has been deleted it will no longer be available for viewing and cannot be recovered



To delete, first select the desired image, study or series. Consecutive cases can be selected by highlighting the first case, then holding down the 'Shift' button on your computer or laptop and highlighting the remaining cases by scrolling the cursor. Holding down the 'Command" button whilst moving the cursor, to select the required cases, can highlight non-consecutive cases. Select the 'Delete' icon. Once deleted the study information and associated DICOM files are permanently removed from the database index.

Email



It is possible to send studies via email. It is essential for data protection purposes that any files sent electronically are encrypted. To this end once the 'Email' icon is selected, you will be prompted for security reasons to enter a password. You will need to provide the email recipient with the chosen password in a separate email. By selecting the 'Mail' icon, the mail application is launched (Fig 4.10). You can add text to the email and a zip file is added. You must remember to select 'SEND'.

Figure 4.10 Launch of mail application to email selected studies

Export

By selecting this icon, images can be exported in DICOM format to a nominated local directory or external storage device. It is possible to export either single or multiple studies or series. Where it is the later, hierarchical folders or a single directory can be used.

Consecutive cases can be selected by highlighting the first case, then holding down the 'Shift' button on your computer or laptop and highlighting the remaining cases by scrolling

the cursor. Holding down the ‘Command” button whilst moving the cursor, to select the required cases, can highlight non-consecutive cases.

Note, files which have previously been compressed into JPEG will still be exported as a DICOM file.

Import

Images can be manually imported from DICOM files, by selecting this icon. These may be files within a local directory, an external storage device or a remote web based or networked source.

To import images first click on the ‘Import’ icon. When the pop-up window appears, select the location of the images you wish to import from the menu on the left of the window. Use the cursor to select the desired study/studies or series.

Consecutive cases can be selected by highlighting the first case, then holding down the ‘Shift’ button on your computer or laptop and highlighting the remaining cases by scrolling the cursor. Holding down the ‘Command” button whilst moving the cursor, to select the required cases, can highlight non-consecutive cases.

Meta-Data

Meta-Data describes the associated data which is stored with the DICOM image, study or series. This includes image acquisition time, physician name and study center, for example, as well as other data around image quality. A screen shot example is displayed below (Fig 4.11). Further information on Meta-Data is described later in the chapter.

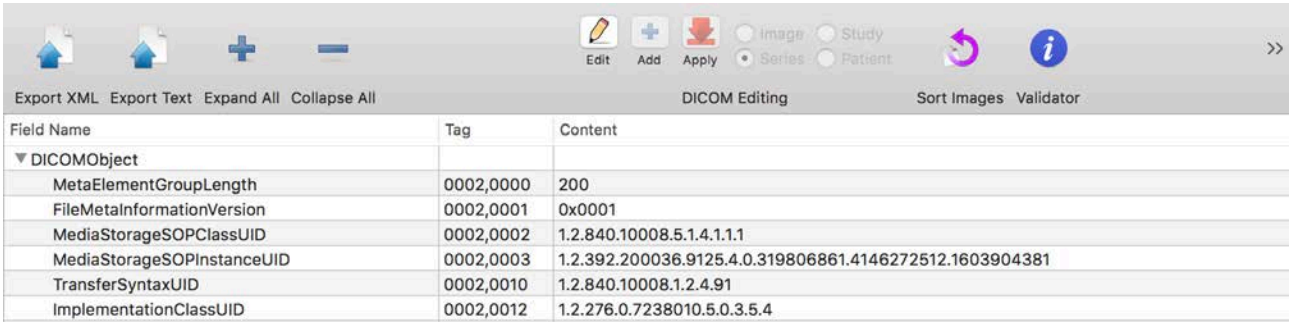


Figure 4.11 Snapshot example of Meta-Data associated with a DICOM file