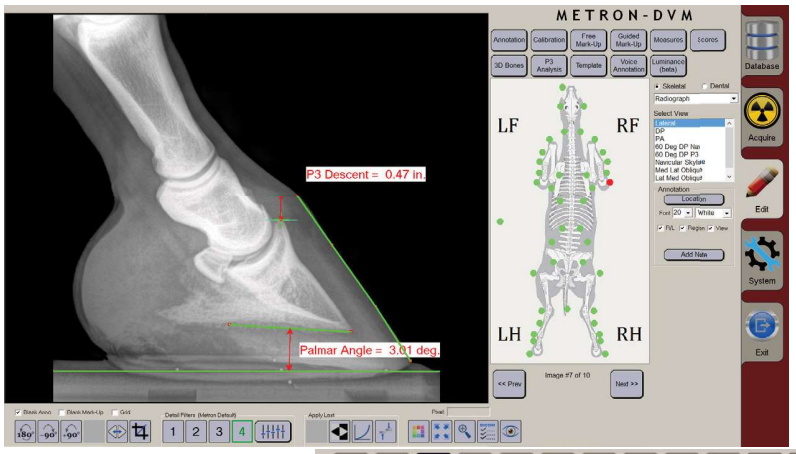
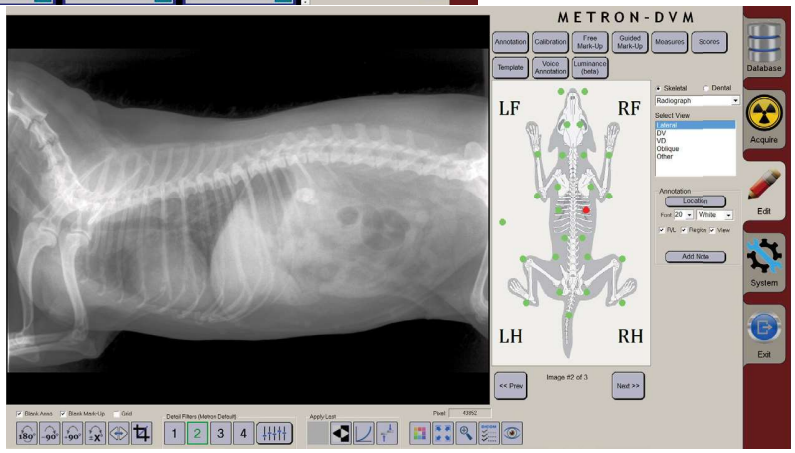
3592 Sacramento Ste 110. San Luis Obispo, CA 93401
800-458-8890 info@veteldiagnostics.com veteldiagnostics.com







Getting started with

METRON 8

Metron Image Acquisition Software and PACS

This guide will help familiarize you with all the components of your image acquisition software, walk you through the proper set-up to acquire radiographs and show some of the features you will use with your radiographic exams.

Each of these steps are important to the proper operation and performance of your new Metron software so please take the time to read them carefully.

This PDF is interactive on your PC. Click on the Vetel Logo anywhere in the document to return to this page. In the Table of Contents, click on the coloured section to go directly to the first page.

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Metron Introduction

Metron image acquisition software and PACS.



Metron Tabs -Right

A. Database
B. Acquire
C. EponaCam or Dental
D. Edit
E. System
F. Exit



Metron Tabs -Top

A. Past Study Dates
B. New Study
C. Image Collection



Metron Introduction continued:

1. Database Tab

- Review radiographic images
- Create new radiographic studies
- Cut / Copy / Paste / Delete
- Upload to web viewer
- Export and print
- Image Stitching
- Change databases



2. Acquire Tab

- Image acquisition
- Annotation adjustment
- Add note
- Positioning guide
- Technique advisor
- Sequence menus
- Intelect™ module (if purchased)



3. EponaCam or Dental Tab

- Dental Image acquisition
- Annotation adjustment
- Dental Positioning Guide (Companion Animal)



- EponaCam
- Sequence menus
- Intelect™ module (if purchased)



Metron Introduction continued:

4. Edit Tab

- Rotate
- Mirror
- Mask / Crop
- Adjust image processing filters
- Adjust window levels / contrast
- View DICOM tags
- Zoom
- Color palette options / emboss



5. System Tab

- Preferences
- Report cover set up
- Annotation set up
- Create acquisition sequences
- Assign monitored folders
- Database tools
- Technical support
- Software version information



6. Exit Tab

- Close and exit Metron



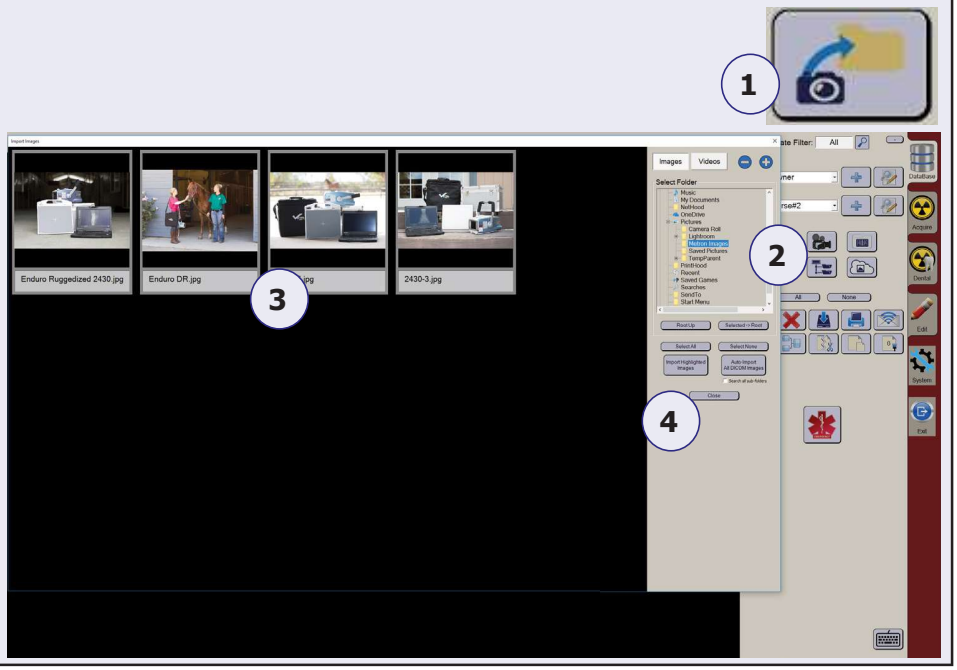
Metron Introduction continued:

The database browser has powerful tools for easy import, export and image capture.



Import image or video

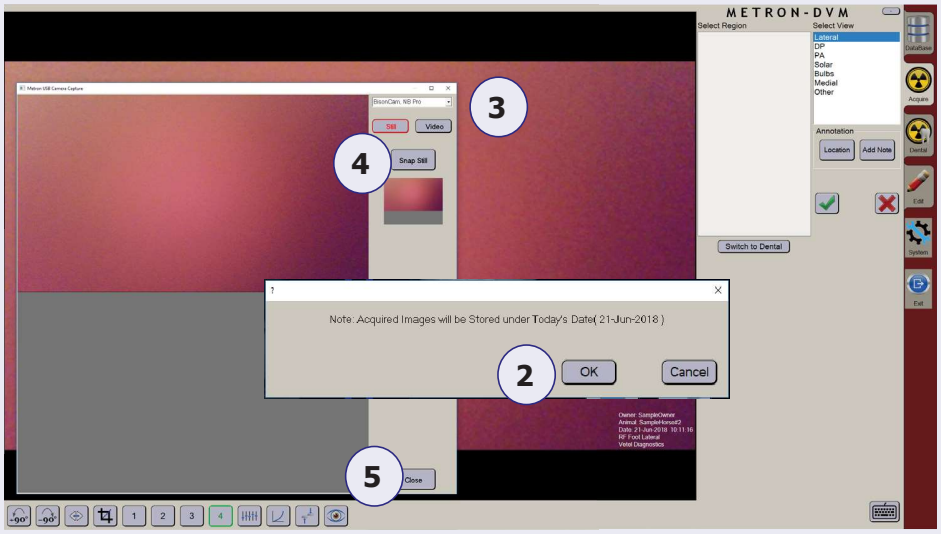
1. Open a study date for the owner and patient in which you wish to import images or videos
2. Click Import icon
3. Browse your computer directory for images you wish to import
4. Click each image to highlight, or highlight all
5. Click Import highlighted images



Capture image or video from alternate source - ultrasound, endoscope, thermal camera, etc

1. Open a study date for the Owner and Patient in which you wish to capture images or videos.
2. Click Camera icon
3. Select the date or click okay to today's date pop up
4. Select the input source from the drop down menu
5. Click still or video to capture images
6. Click Close when all images or videos have been captured.



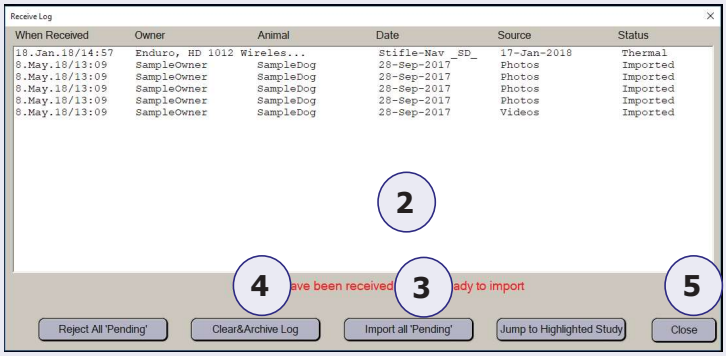


Metron Introduction continued:

Receive images - the Receive Images tab will be blinking if you have received DICOM images, or if your monitored folders have new images in them. This panel also shows all images you have received and where they are located.



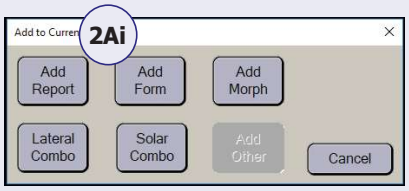
1. Click Receive Images icon
2. Browse the Receive log for pending images
3. Click individual images to import or Import all pending.
4. When the Receive Images log gets too large, click Clear & Archive tab to remove all images from the list.
5. Click Close to exit



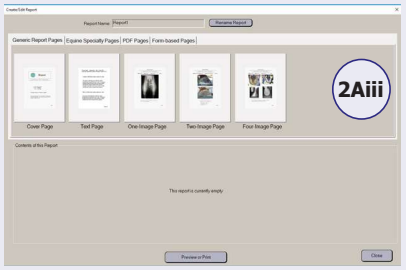
Add special items - reports, forms, morphs, lateral and solar combos.

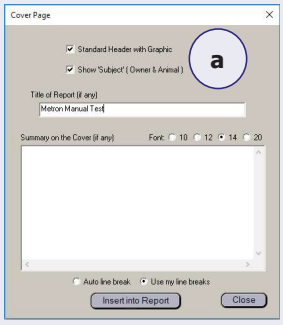
1. Click Add Special Items icon
2. Select the item to add
   - A. Report
     - i. Click Add Report
     - ii. Name your report
     - iii. Complete the report pages you want to include
       - a. Cover page
       - b. Text Page
       - c. Single image page with notes
       - d. Double image page with captions
       - e. Four image page with captions
     - iv. Click insert into report on each page you choose
     - v. Click OK to add the report to the database
   - 2. Select the

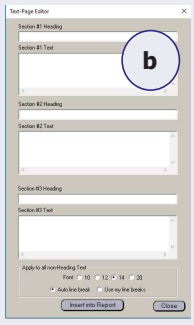


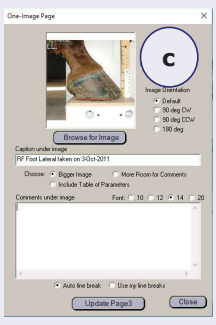


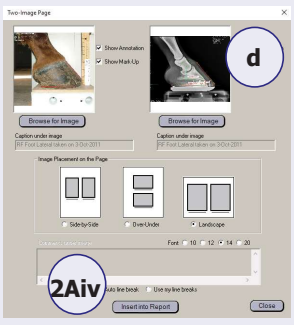


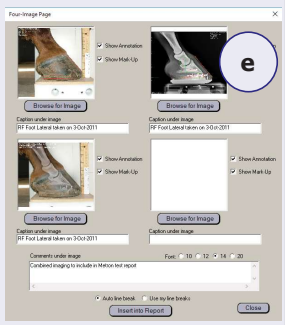












Metron Introduction continued:

item to add - continued

B. Form

i. Click Add Form

ii. Choose the format or select Form Wizard

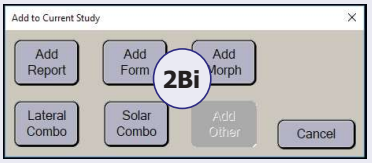
iii. Choose a format from the drop down menu in the Form Wizard

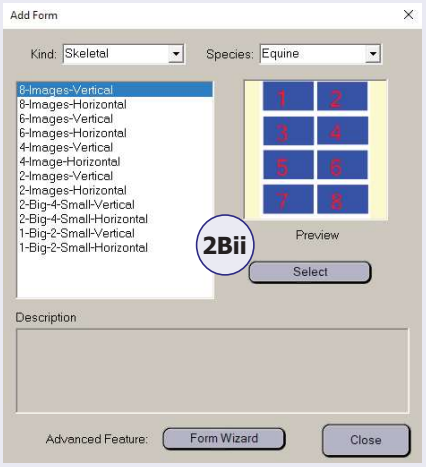
iv. Highlight one of the blank boxes on the form

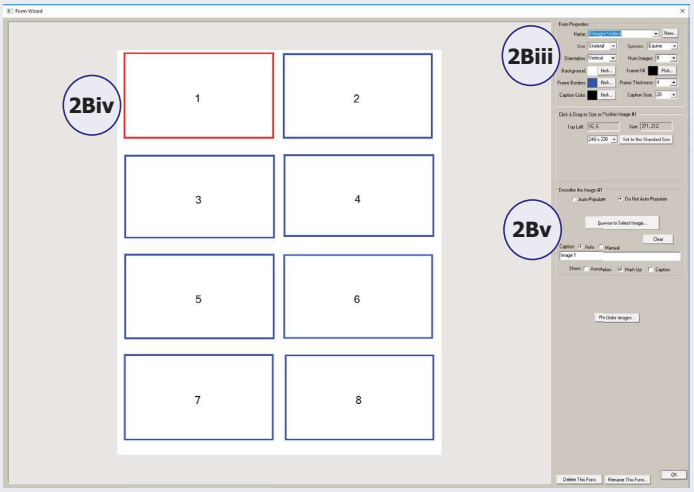
v. Click Browse to Select Image

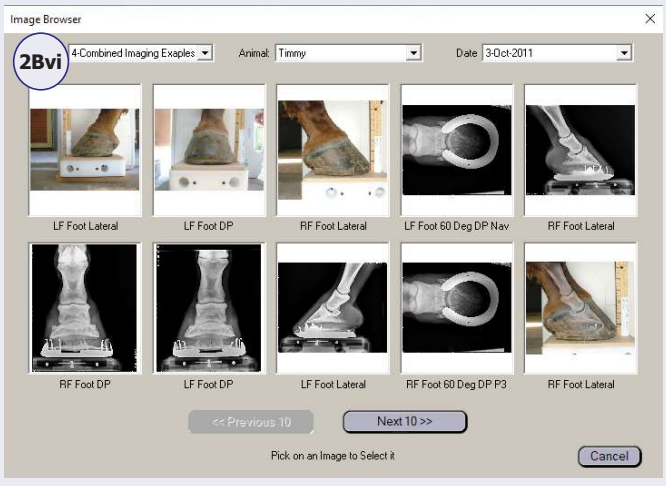
vi. Using the drop down menus, find the client and patient study with the necessary images - Repeat until all blank cells are populated

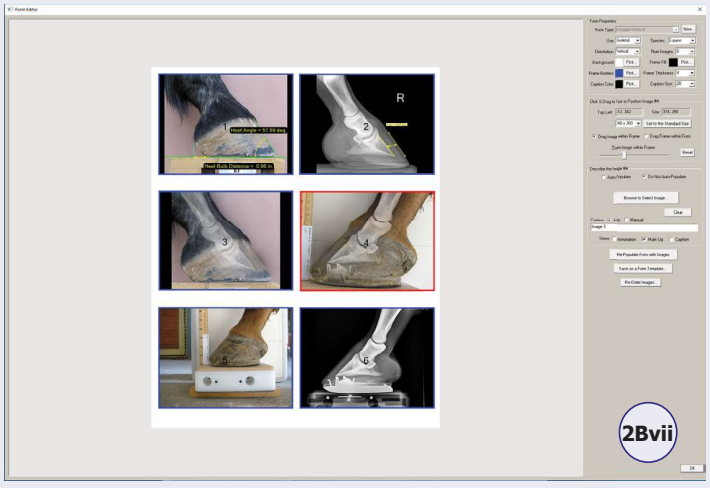
vii. Click OK







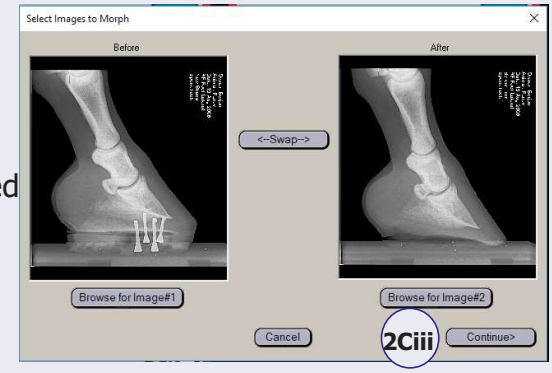


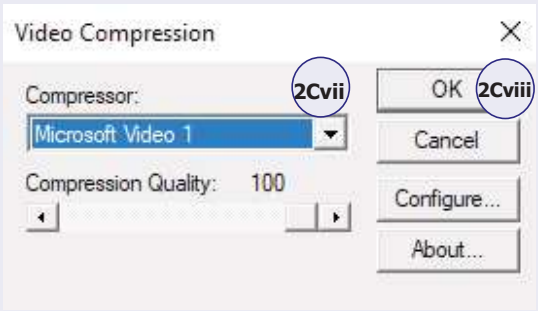


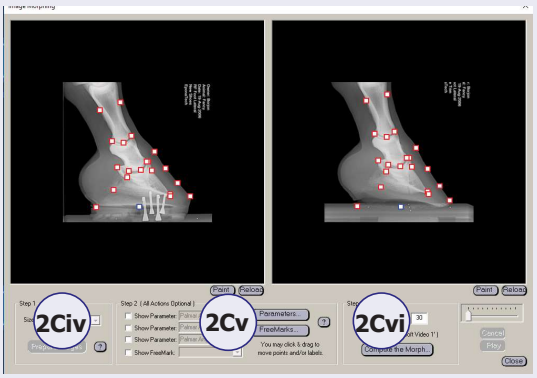
Metron Introduction continued:

2. Select the item to add - continued
    C. Morph
        i. Select 2 images from the database to be morphed together
        ii. Click Add Morph
        iii. Click Continue
        iv. Click Prepare Images
        v. Select any parameters you want displayed
        vi. Click Compute Morph
        vii. Select Video compression - Microsoft video 1 - recommended
        viii. Click OK



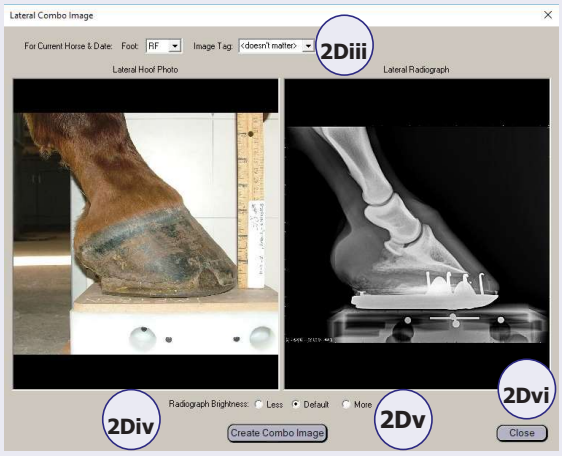






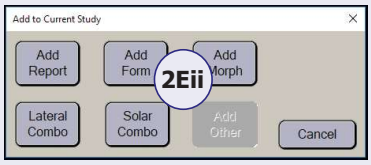
D. Lateral Combo
    i. Select the lateral radiograph and lateral photograph to be combined
    ii. Click Lateral Combo
    iii. Verify current horse and date information and image tag
    iv. Click Create Combo Image
    v. Adjust brightness if necessary
    vi. Click Close - the combined image will be added to the current patient's database.





Metron Introduction continued:

E. Solar Combo



i. Select a solar photograph and and a 60 degree DP radiographic view to be combined. You must also have a lateral, marked up, radiograph of the same foot.

ii. Click Solar Combo

iii. Verify current horse and date information and image tag

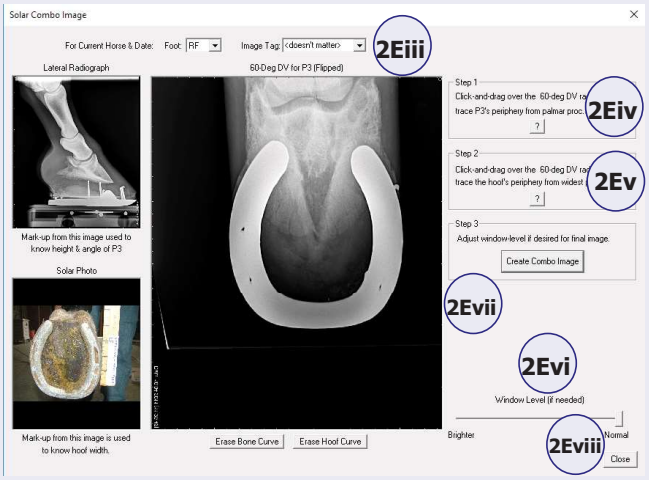
iv. Trace the periphery of the P3 from palmar process forward

v. Trace the periphery of the widest point of the P3 forward

vi. Adjust image level if necessary

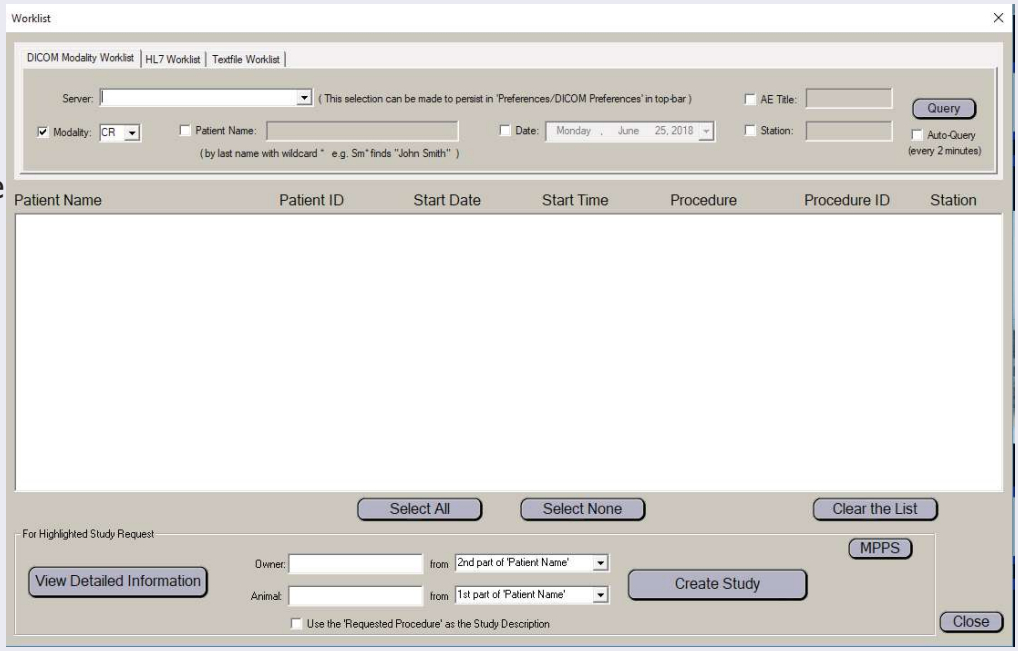
vii. Click Create Combo Image

viii. Click Close - the combined image will be saved to the current patient's database



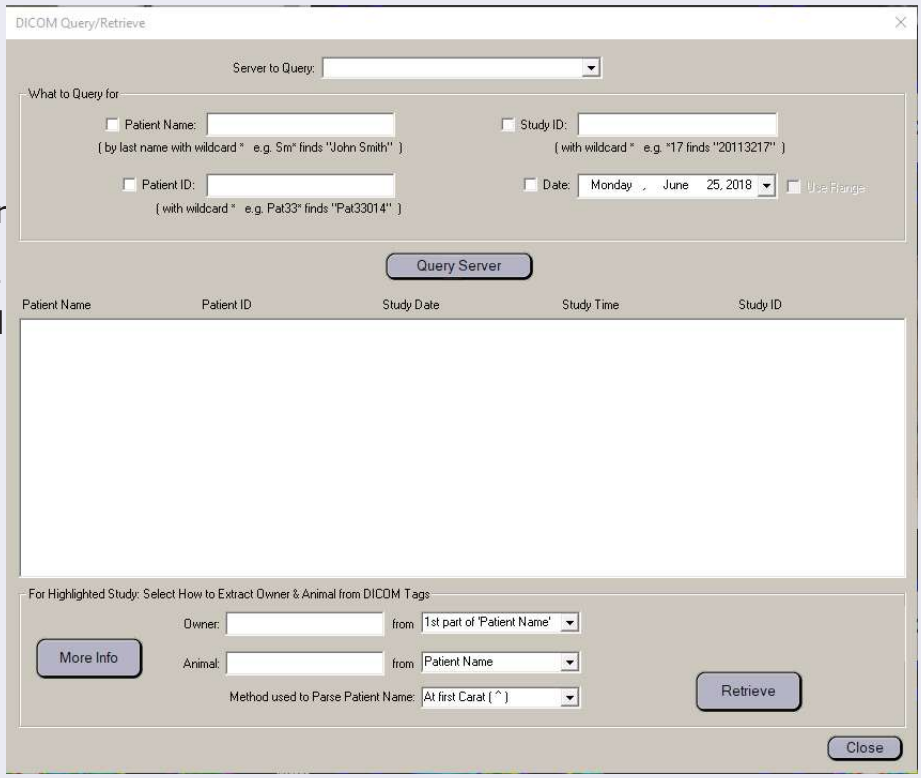


Create Study and Receive Work lists -Refer to the DICOM section of this manual for detailed information on work lists.



Metron Introduction continued:

DICOM Query / Retrieve - Metron supports the client side (or "SCU") of the DICOM Query/Retrieve capability. By this means, Metron can pull images from a DICOM PACs system back to Metron.



The following steps must be taken to prepare before using Query/Retrieve:

1. Under "DICOM Preferences" (under the System tab) create a server with the information given to you by the administrator of the PACs that you intend to retrieve images from.
2. Under "DICOM Preferences" you can choose which (of possibly several) servers you intend to use as your principle Q/R server. This simply will make it the default setting later when you enter the Q/R panel.
3. The administrator of the remote server that you intend to query and retrieve from must be told the IP address, Port, and AE Title of your copy of Metron. The default values for the latter two are 4002 and METRON_AE. These can be altered, if need be, under "DICOM Preferences" under the "DICOM Receive" tab. If the remote server has not be configured to 'know' of your Metron, you may find that you can query, but not retrieve.

Using Query/Retrieve

1. Since the use of Q/R results in adding images to your system, it is located in the center section of the main Metron Database Browser panel.
2. The top portion of the panel lets you select the server you wish to pull images from, and to describe the query you will use to hunt for images on that server.
3. The top portion of the panel lets you select the server you wish to pull images from, and to describe the query you will use to hunt for images on that server.
4. It is recommended to use the "*" character as a wild-card unless you know the exact value used on the remote system for patient name, or other criteria. You can query on one or more of:
    A. Patient Name

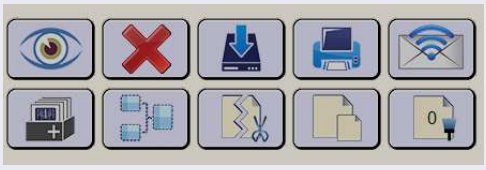
Metron Introduction continued:

   B. Patient ID
   C. Study ID
   D. Date of the Study

5. After setting up your criteria, click on "Query Server".
   A. After a short delay a list of all studies on the remote system matching your criteria will be displayed.
   B. If you don't see what you are seeking, just alter your query keys, and click "Query Server"' again.
6. To retrieve one of the displayed studies back to your local Metron, click on that study to highlight its line in the list.
   A. At the bottom of the panel, you will see how Metron will extract the owner and animal name from the DICOM tags.
   B. You can alter the source of these tags with the three associated pull-down menus to try to extract the owner and animal as you would like to see it in Metron.
7. Click the Retrieve button to commence the retrieval of the study images.
8. As soon as the retrieval has commenced, you are free to leave this panel and do other activities in Metron while the images are received. You can even exit Metron and the retrieval process will continue. Note - The computer must stay on and connected to the internet.

Metron's Q/R feature is "study based" – When you search for a study to receive, you cannot retrieve a subset of images in the study. The full study is retrieved.

Additional database browser tools for importing, exporting, copying, pasting, stitching, and searching



View highlighted images side by side



1. Select 2 or more images from the patient database browser to compare
2. Click the Eyeball icon - For Touchscreen PCs and Tablets this view supports screen touch tools such as PAN, Pinch To Zoom, and Window/Level
3. Review images as needed

Metron Introduction continued:

Delete highlighted images

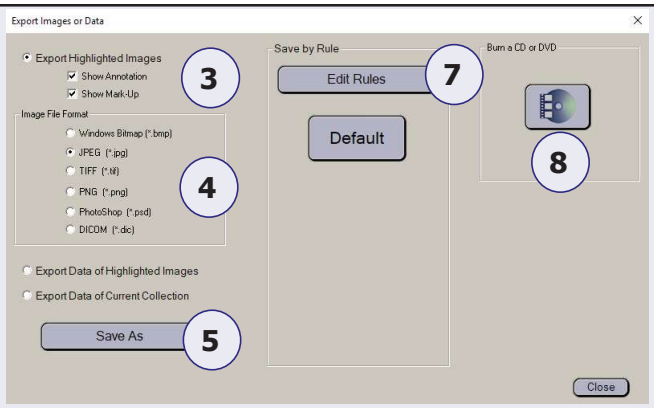
1. Select 1 or more images from the patient database browser to delete from the patient study
2. Click the red X

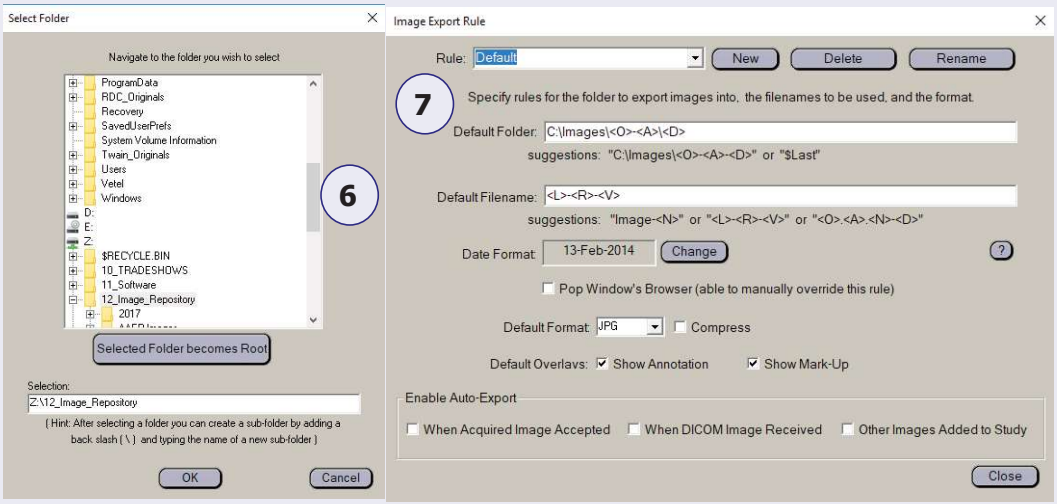


Export highlighted images



1. Select 1 or more images from the patient database browser to export
2. Click the Export icon
3. Specify if the annotation and/or mark up is to be included on the exported images.
4. Select the Image file format
5. Click Save As
6. Choose the location to save the images
7. Edit Rules to establish default save location.



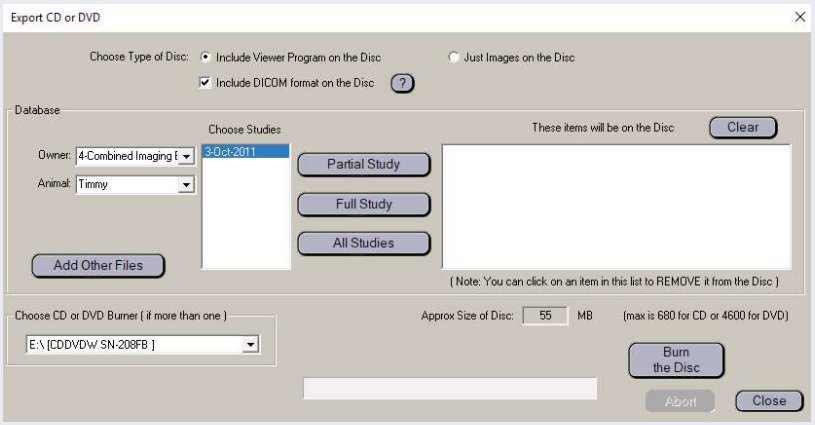


Metron Introduction continued:

Export images - continued

8. Export to CD/DVD

Note: Your must have IMAPI2 software installed and a CD/DVD recorder must be properly associated with the PC.

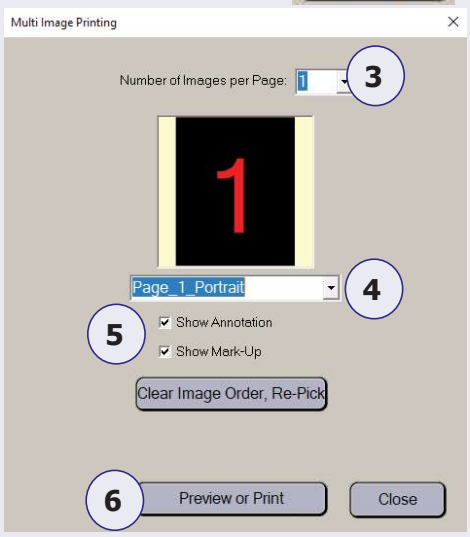


Print highlighted images

1. Select 1 or more images from the patient database browser to print
2. Click the Print icon
3. Specify the number of images per page
4. Specify portrait or landscape orientation
5. Specify if the annotation and/or mark-up is to be included on the printed images
6. Click Preview or Print

Note: It is recommended you only use color laser printers with photo stock bright white paper.



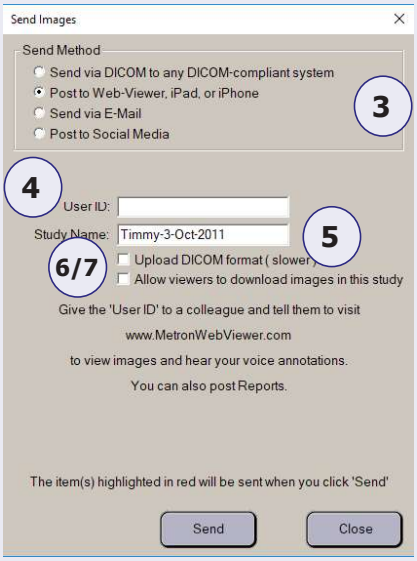


Metron Introduction continued:

Upload to web, smart phone/tablet, DICOM server, or email



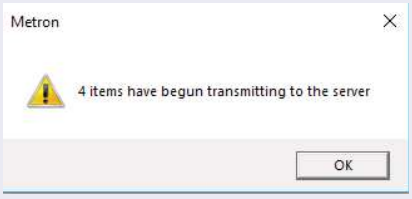
1. Select 1 or more images from the patient database browser to export
2. Click the Send to Web Viewer icon
3. Specify send method: DICOM, Web Viewer, Email, or Social Media.
4. For the Web Viewer, specify User ID, no password needed - note that the User ID is case sensitive
5. Verify the Study Name
6. Specify upload format if you wish to upload DICOM format -default upload will be jpg
7. Specify to Allow viewers to download images in this study
8. Click Send



There will be a notification pop up to indicate the number of images selected and are transmitting via the send method specified. Then a notification pop up to confirm that all images were successfully sent.

Note that using DICOM format will cause the data transmission to be much slower. The default send is JPG and will transmit much faster.



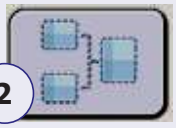


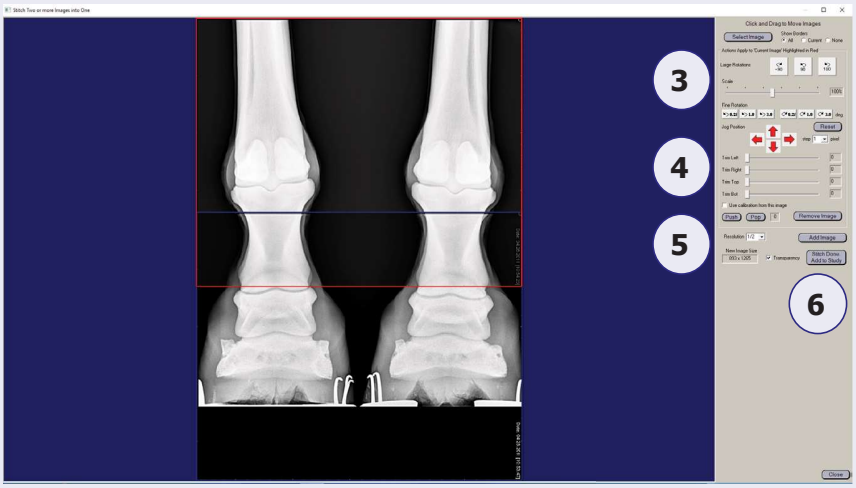
Add highlighted items to the current collection



Metron Introduction continued:

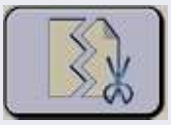
Image stitch - This feature offers automatic image stitching on images with a suitable overlap and focal film distance. Manual image stitching is available.





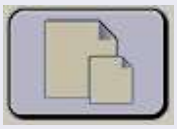
1. Select the images in the patient database browser to stitch together -note- when selecting images, choose those of the same limb
2. Click the Image Stitch icon
3. Align the images in the stitch window with the mouse or the directional arrows and fine rotation for finer movement.
4. Add additional images if necessary
5. Remove images if necessary
6. Once completed, Click the "Stitch Done" tab Add to Study

Cut images from a patient database



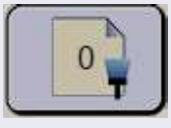
1. Select the images in the patient database browser to cut
2. Click the Cut icon
3. The highlighted images will be removed from the current patient database and pasted into the clipboard

Copy images from a patient study



1. Select the images in the patient database browser to copy
2. Click the Copy icon
3. The highlighted images will be copied from the current patient database and pasted into the clipboard

Paste images from one patient database to another patient database



1. Navigate to the owner / patient / date study in which you wish to paste the images that have been copied or cut
2. Click the Paste icon

NOTES

Metron Compatible Accessories

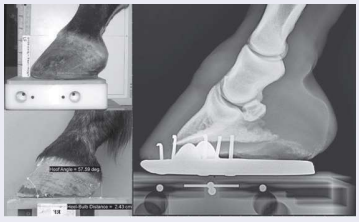
Vetel offers additional equipment designed for your digital radiography system. Please refer to your invoice or enclosed packing list and identify any of the following accessories included with your purchase.





Hoof Tunnel - A durable pressure resistant sleeve designed to protect your detector panel during weight-bearing radiographs





Epona Block - A weight-bearing calibration tool with built in metal markers that ensure hoof radiographs and photographs of the hoof can be accurately measured using Metron Software.







Epona Auto-Scaler - A lightweight, hand-held calibration tool that can be attached directly to the subject adjacent to the plane of interest. The auto-scaler contains the same metal markers as the Epona Block, but provides flexibility in positioning providing a scaled reference from multiple views.

Image Capture Kit- USB and HDMI Connections for acquisition of stills and videos from additional imaging modalities.



Calibration Kit -
Includes:

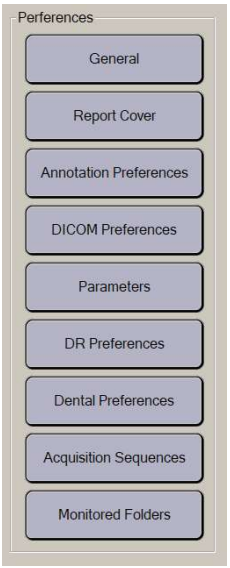
- 1 set Epona Hoof Blocks
- 1 Metron Auto Scaler
- 1 EponaCam cradle
- 1 EponaCam background



Metron Preferences

Set Metron preferences in the Preferences Menu found at the System Tab



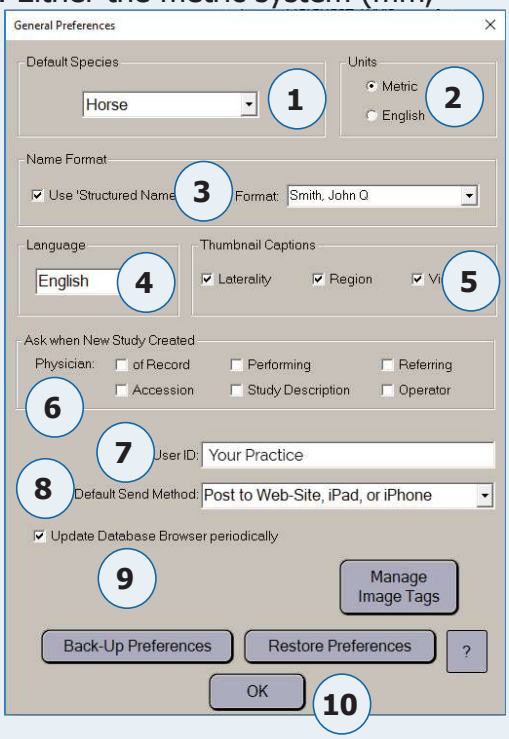


- General preferences
- Report cover
- Annotation preferences
- DICOM preferences
- Parameters
- DR preferences
- EponaCAM / Dental preferences
- Acquisition sequences
- Monitored folders

General Preferences

The general preferences section needs to be filled out prior to taking radiographs to ensure the proper information is recorded onto each radiograph.

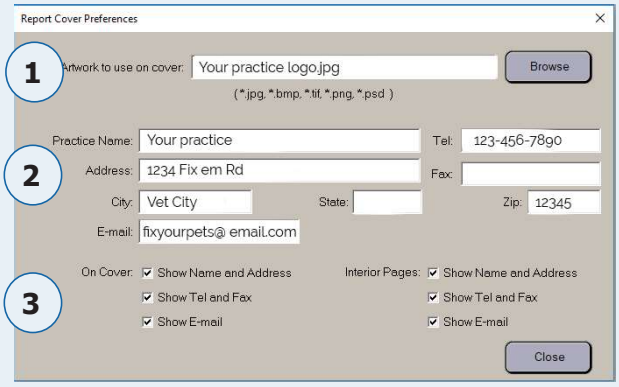
1. Select default species, you can adjust for mixed practices with each study.
2. Units. Choose how you prefer measurements to be made. Either the metric system (mm, cm, etc) or English measurements. (inches, feet, etc)
3. Choose the name format. Structured Name is recommended.
4. Choose preferred language. - You will need to restart Metron to change languages.
5. Thumbnail options. Recommended to have all 3 boxes checked so each thumbnail has the information displayed without the need to open each image.
6. New study created. Not commonly used. If preferred, select the appropriate box of the information you wish displayed with each image.
7. User ID - Change the number to name of the practice name.
8. Default send method, Most common is Via Web-Viewer when exporting images from Metron. You can also choose send method on a case by case basis
9. Check the box to update database browser periodically.
10. Once you have completed these steps, click OK to exit.



Report Cover

This is the information that will appear on the reports that come from your copy of Metron. This information will also be placed on the annotation of each image.

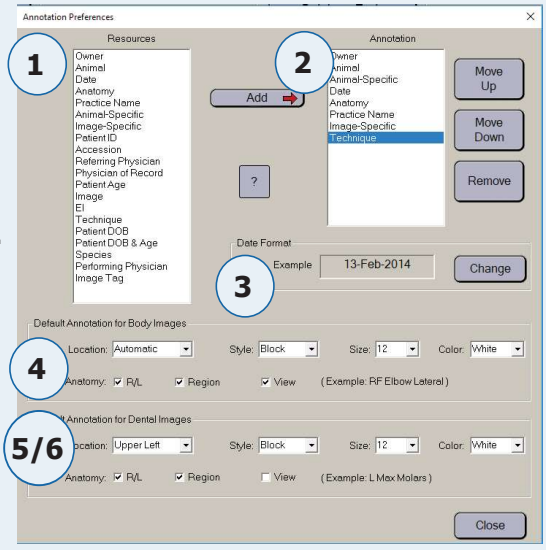
1. Select your practice logo image file from the location on your computer. This will appear on all reports generated from Metron.
2. Enter in all the information for your practice in the remaining boxes.
3. You can choose to suppress any of the information by selecting or de-selecting any of the boxes as needed.



Annotation Preferences

This is the information that will appear on each radiographic image in Metron.

1. Select the data points from the list on the left and click add to include it in the information for each image.
2. In the Annotation list, you can choose to move a data point up or down in the location of the annotation of each image. You can also remove a data point by selecting 'remove'.
3. Choose the date format to be displayed with each image. The default is the standard European format of day-month-year.
4. Choose the default annotation location for full body images.
5. Recommended to keep all boxes checked for the anatomy section to display right and left, region, and view.
6. You have the same options available for the default dental annotation location.



Note When choosing AUTOMATIC for the default annotation location, Metron will choose the darkest corner on a radiograph, and the lightest corner on a photograph to display the information.

Please see the Tutorial video "Metron Preferences 1-3" located here: Metron Preferences 1 -3

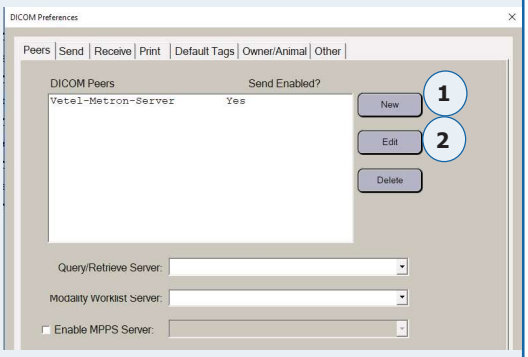
DICOM Preferences

DICOM stands for Digital Imaging Communication in Medicine. It is a computer language in which images are transferred from one computer system to another, how the images are printed, how they are matched to other patient databases, such as a hospital information system (HIS / RIS), and other features associated with the electronic medical record (EMR).

DICOM Preferences - Peers tab

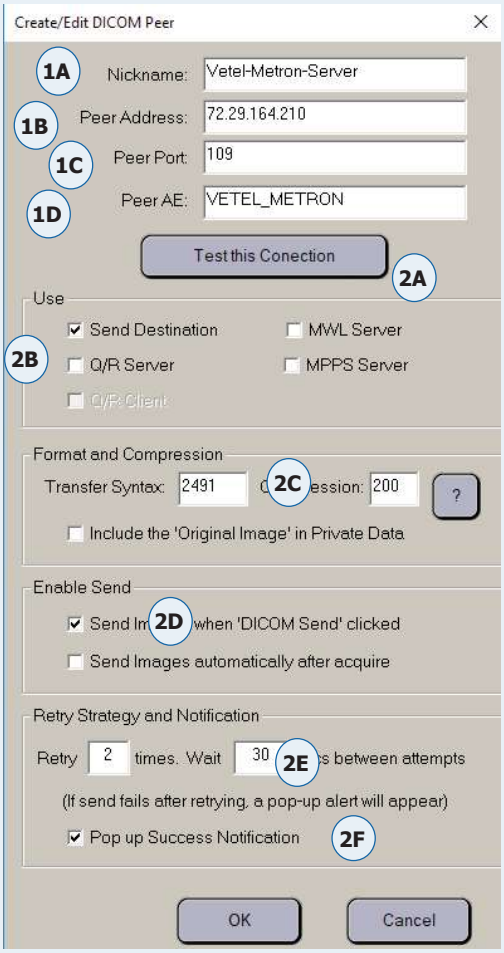
The DICOM preferences PEERS tab -
Locations where DICOM data is being sent from the Metron system to another Metron system or to another DICOM PACS (aka PEER).

1. Click New to add a new PEER or DICOM destination.
You need to fill this out to successfully send DICOM images from your Metron system to another location.



   A. You can give the Peer a unique nickname
   B. You will need the Peer address - this is the IP address
   C. You will need the port number
   D. AE Title for the particular PACS system that you will be sending DICOM images to.
   E. You will also need to select what that particular DICOM Peer will be used for. e.g. send destination, query retrieve server, a modality work list server or other.

2. You can inspect or edit the function of a DICOM peer that has already been established by clicking the Edit button.

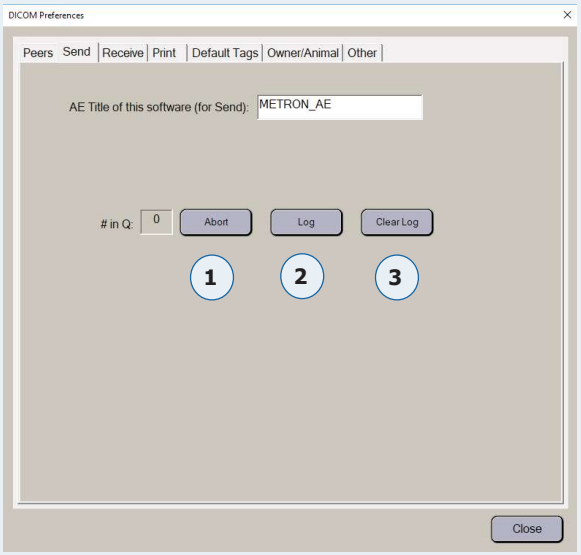


   A. Test this connection - if your Metron system is connected to the network or the Internet, you should be able to get a positive response
   B. Use - choose the function of this particular DICOM peer
   C. Format and Compression - click on the '?' to give you a variety of options for establishing your format and compression ratios for your DICOM traffic. If you are transmitting from one Metron system to another, it is useful to check the 'include original image in private data,'
   D. Enable send - Select your preference for when images are transferred
   E. Retry Strategy and Notification - You can choose how many attempts the Metron system will attempt to send a study and how much time it waits in between those attempts.
   F. Select the pop up notification box to get a notification when the images have successfully been transferred.

DICOM Preferences - Send tab

The DICOM preferences Send tab-

This is the DICOM name for your system and this is the information that will appear when you send DICOM images from your Metron system to a another system. You can change the name, however you will need to keep track of the name because other systems will need this information to be able to send DICOM data to your Metron PACS.



You can check to see if the images you selected to send have been sent. You may have a large number of images in a study to send and shut down the system before it is done. This number will show you how many have successfully been sent.

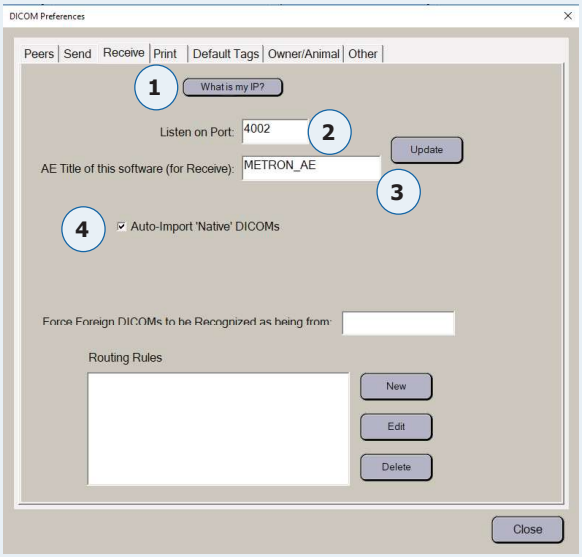
1. Abort - Click to stop the transfer of images
2. Log - To review the list of images successfully transferred
3. Clear Log - Click to clear the log of images

DICOM Preferences - Receive tab

The DICOM preferences Receive tab-

The Metron system is a fully functional PACS which can receive DICOM images sent from other locations.

1. Your IT administrator can provide the IP Address and Port to be used. *Note* The IP address must be "Static". If you wish to receive DICOM images from outside of your local network your Internet Service Provider (ISP) will need to give you an Internet static IP address.
2. Use the standard Metron port 4002
3. The standard AE title is METRON_AE. -Note- if you changed the AE Title, you would want to put that name here.
4. Recommended: check the auto import of all native DICOM - See the Metron DICOM section for an explanation on routing rules and how they are used.

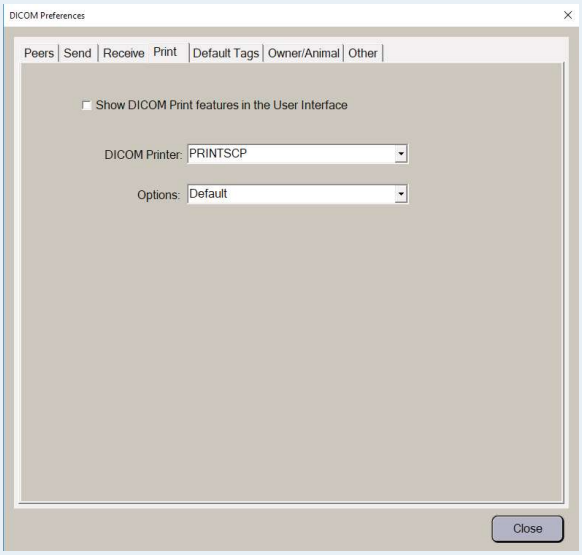


DICOM Preferences - Print tab

The DICOM preferences Print tab -

Allows you to using the DICOM send to send to a DICOM printer. Not commonly used, but some people still want to print to film to review on a light box.

You would have to select which DICOM printer you want to use, and what options you would like to have associated with that printer.



DICOM Preferences - Default Tags tab

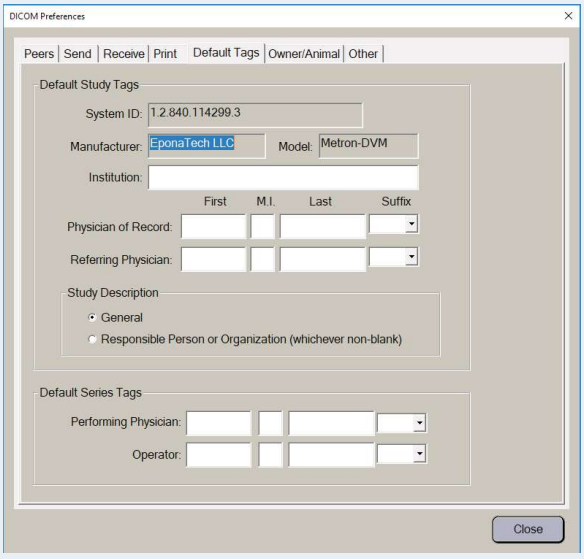
The DICOM preferences Default Tags tab -

Information that will be placed on each image that is sent from your Metron system to any other location. This is information you will want to fill out.

The information in terms of system ID, manufacturer, and model are all pre-configured.

The name of the practice, vet of record, referring vets if you want that to be included.

You can also add operator tags and / or performing physician.



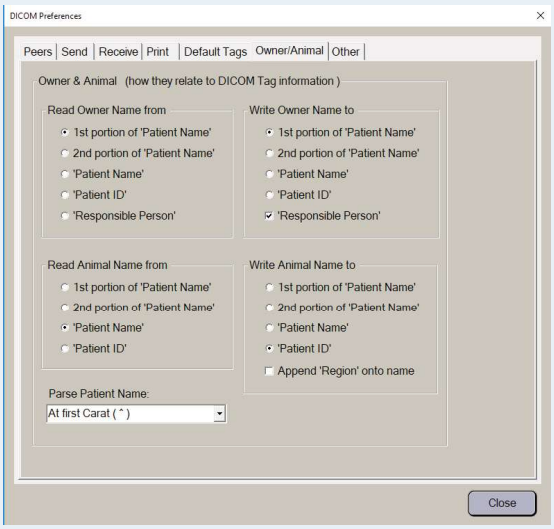
DICOM Preferences - Owner / Animal tab

The DICOM preferences Owner / Animal tab

By default, Metron is set up to meet the current DICOM standards utilizing the current standards for veterinary tags. Owner information is pulled from one location in the database and written to another location in the database.

If someone is having problems receiving DICOM images from you and the info is appearing in the wrong section of the receiving PACS system, this is where you can adjust where the information is being written so that it appears properly in the receiving PACS system.

You can also use different parsing tools that separate owner names from animal names. By default Metron uses a *.



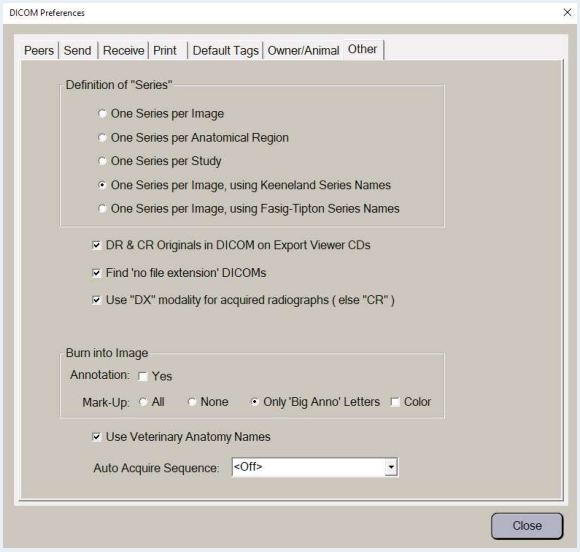
DICOM Preferences - Other tab

The DICOM preferences Other tab -

This defines what a series will be. By default the standard should be set as "one series per anatomic region"
There is a distinction between image vs series vs study

1. Image = individual image
2. Series = group of images that have the same anatomy i.e. carpus or stifle
3. Study = all of the images acquired at a particular time on a particular patient.

Some receiving systems, want the series and study separated a different way. Metron includes the two most common sales receiving entities such as Keeneland and Fasig-Tipton.



Burn into image defines what information is put onto each radiographic image.

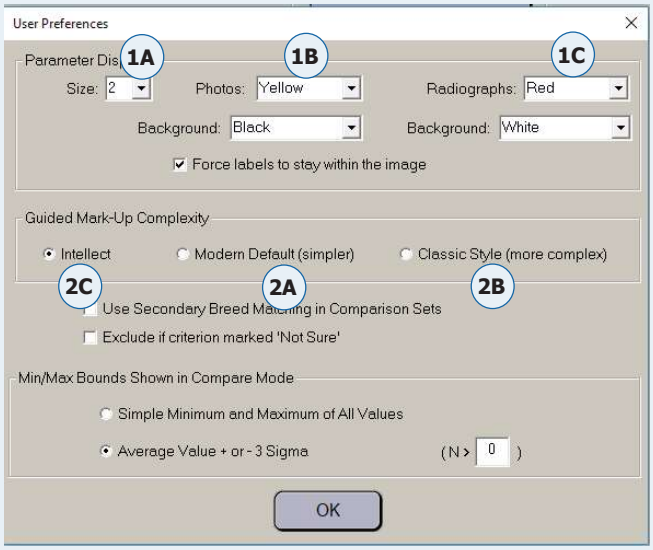
It is recommended to have all the remaining boxes checked by default.
The Auto Acquire sequence name of an Acquire Sequence can be pulled from one of 3 DICOM tags: 'Study Description', 'Requested Procedure Description', or 'Requested Procedure ID'. With one of those selected, information from MWL attached to the study can cause you to automatically start an Acquisition Sequence when you enter the Acquire Panel.

- For assistance with DICOM functionality. 800-458-8890 option 2 Tech support

Parameters

This is the title for all of the measurements that are made of a particular image.

For the most part the parameters section is associated with the measurements of a horse's hoof, however there are parameter measurements kept for Norberg hip angles in dogs and vertebral heart scores for cats and dogs.



1. The purpose is how the annotation and measurements are displayed on the image.
    A. Size determines size of the data point or measurement that is displayed on the image.
    B. Photos - displays on the images in yellow
    C. Radiograph parameters are displayed in red.

It is important to keep the box checked for "Force labels to stay within the image."

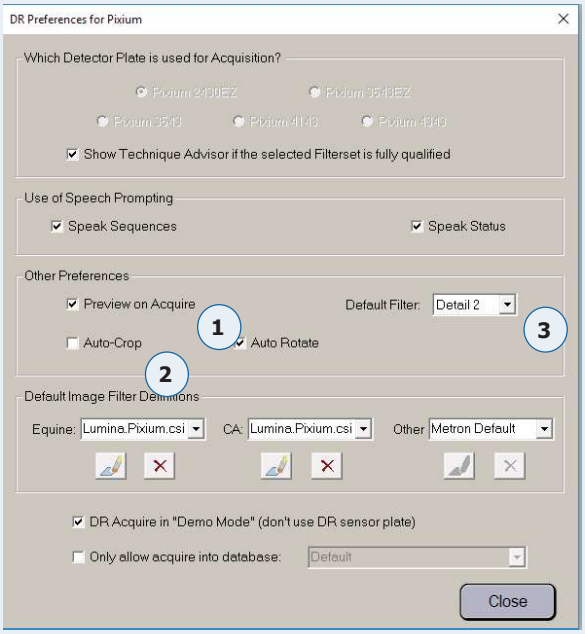
2. Mark up process - 3 main components
    A. Modern default - simplified process for hoof radiographs in horses, chest radiographs of cats and dogs for vertebral heart score, and pelvic images of dogs for Norberg hip angles.
    B. Classic - uses additional data points , increases the amount of time required to do the guided mark up of an image
    C. Intelect™ module - Metron reads and marks up the image automatically

You can choose to have your data parsed into secondary breed matching or comparison sets to compare a particular image with a certain data set. You can also choose to exclude data if the mark up had any points which were unsure.

Minimum / maximum bounds shown. Strongly recommended to keep the average value checked. Only change after consult with technical support.

Please see the Tutorial video "Metron Preferences 4" located here: Metron Preferences 4

DR Preferences



At the top section is the type and size of detector panel that came with your DR system.
If the technique advisor is checked, when you put your system into acquisition mode you will see the exposure technique suggested listed for each radiograph that you are about to acquire.

Speech prompting - check to have Metron use voice commands as it guides you through a sequence or image acquisition process. Also referred to as a hanging protocol.

It is recommended to keep the Speak Status option checked. This tells you when the system is ready to take radiographs.

Other preferences:

1. Check preview on acquire to see a raw version of the image in about 2 seconds to determine if positioning is correct or if there has been movement.
2. Auto Crop utility in Metron where it will analyze an image and apply cropping for you.
3. Default filter - 1 of 4 image display algorithms, default is #2 - High Dynamic Range
    A. Detail 1- Film - 600 speed
    B. Detail 2- High dynamic range
    C. Detail 3- Digital lossless processing
    D. Detail 4- HDR+ high dynamic range, plus additional edge detail

Default Image Filter Definitions - Series of filter presets
For Metron 8, the desired preset is Lumina + the name of your detector panel. You can find your panel on the toggle down list. i.e.. Lumina - Perkin, Lumina - Pixium, etc.
There is a default filter set for patients listed as Equine, Companion Animal, and Other. - Other is generally for birds and small reptiles.

Note as Lumina image processing evolves each generation will be designated with a number, i.e., Lumina, Lumina2, Lumina3, etc. Be sure you are using the latest version for maximum image quality.

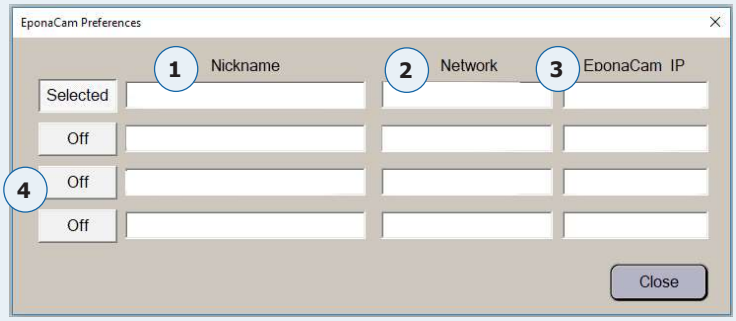
You can put your system into "demo" mode for training purposes to mimic taking radiographs without actually taking radiographs. It is recommended to leave this unchecked.

****IMPORTANT**** If you put your system into Demo mode, be sure to go back and de-select this option before attempting to take radiographs.

Please see the Tutorial video "Metron Preferences 5-6" located here: Metron DR Preferences

EponaCam Preferences

The EponaCam is a smart phone app available for both iPhone and Android. This allows a smart phone camera to acquire images which are automatically sent to your copy of Metron and entered into the patient's study which you currently have open. Metron software will support up to 4 individual smart phones with the EponaCam app at a given time, and those phones need to be identified in this preference section.



You will create and enter: the nickname, network, and EponaCam IP address.

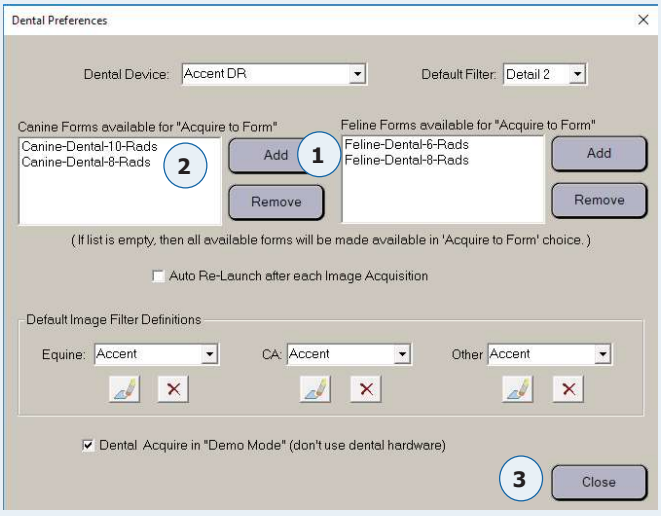
1. Phone name can be unique, i.e. Vetel iPhone, or Dr. Smith iPhone.
2. The phone needs to be on the same network as the DR - this frequently has a name;
    A. When the panel is the access point, the detector panel serial number will commonly be the network name.
    B. Other systems that utilize a hosted network, the hosted network name is the name needed.
3. IP address of the smart phone that has joined the network will be input into the EponaCam IP address.
4. Select or de-select whichever individual phone you would like to give the privilege of sending images to your copy of Metron.

Dental Preferences (if purchased)

Metron Dental has dental form capabilities to compile a full mouth series for small animals.
To set up the form:

1. Click Add next to the canine or feline form list
2. Select the form of your choice from the list of pre-established forms
3. Click OK

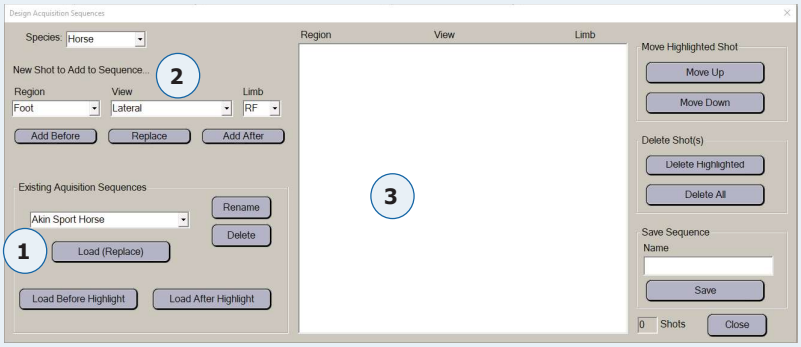
The dental device and sensor will be pre-configured when you have purchased a Dental Bundle.



Please see the Tutorial video "Metron Preferences 7-8" located here:
[Metron EponaCam and Sequences]

Acquisition Sequences

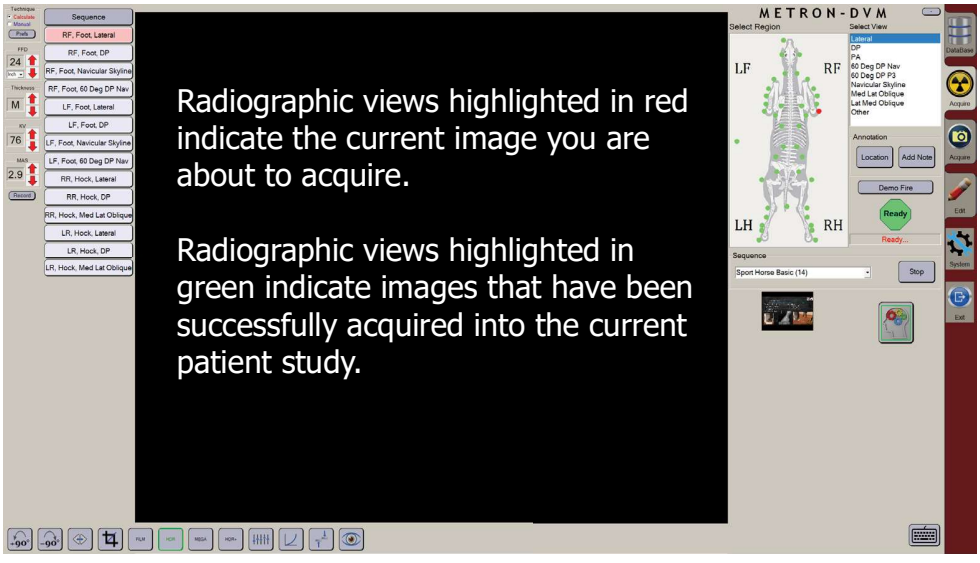
Acquisition Sequences are also known as hanging protocols.
This is the utility by which you can tell the Metron software to acquire radiographs in a certain order. Mostly associated with horses and images taken for sales and pre purchase examinations.

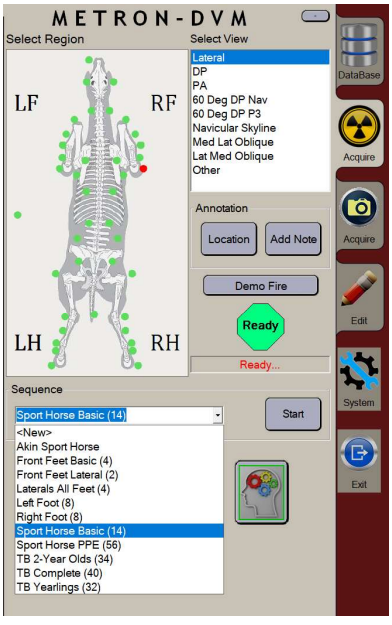


1. Metron comes with several pre-established acquisition sequences for you to choose from.
2. You can create your own using the New Shot to Add to Sequence area
   A. Select the Region
   B. Select the view
   C. Choose between left or right side
   D. Click add before to add to the shot list.
   E. Select another region, view, and left or right side
   F. Click add after to begin building the sequence.
   G. Establish a name for your new sequence
   H. Click save
3. You can also take an existing protocol and modify it to suit your needs.
   A. Load an existing acquisition sequence
   B. Go through the list and add or remove images as needed.
   C. Rename the sequence to build an additional sequence.

These acquisition sequences will be available for you to use when you enter Acquire mode in Metron.

Acquisition Sequence as shown from Acquire mode.

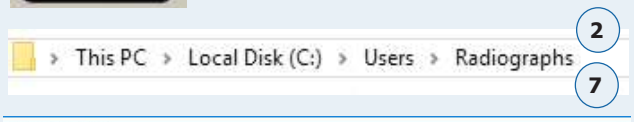


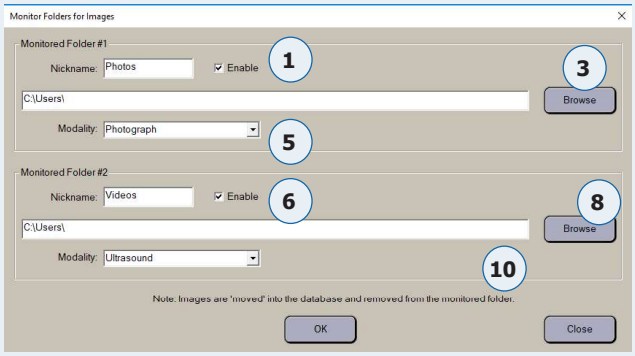


Monitored Folders

Metron allows you to identify 2 separate folders on your computer which Metron then monitors and any time new data is placed in either folder, Metron software will notify you by blinking the receive images tab.

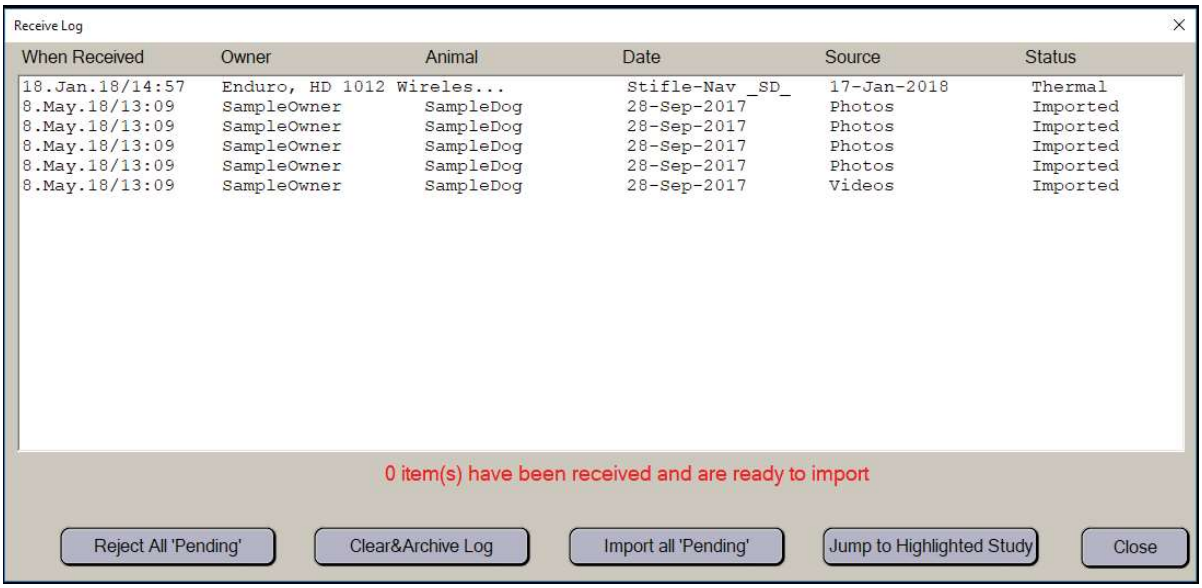






To set up the monitored folders:

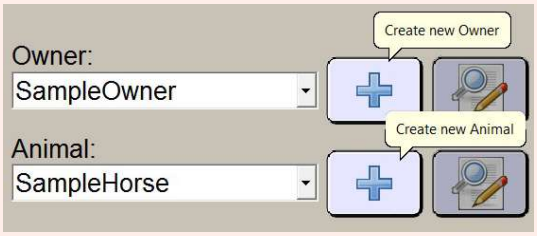
1. Create the folder you want Metron to monitor on your PC
2. Go to the System tab in Metron to monitored folders
3. Click Enable tab for the first folder
4. Find the folder you created for Metron to monitor
5. Select the desired folder on your computer
6. Click OK
7. Identify the modality - i.e. Radiograph, photograph, ultrasound, or guess
8. Click Enable to establish a second monitored folder
9. Give the folder a name (similar to Step 2)
10. Select the desired folder on your computer
11. Click OK
12. Identify the modality - i.e. Radiograph, photograph, ultrasound, or guess
13. When data is placed into one of the designated folders the received log folder will blink. Click on the folder to choose some or all of the images to import. These images will import into the study you have open.



Please see the Tutorial video "Monitored Folders" located here: Monitored Folders

Client / Patient set up

Using the control panel on the right of the database browser, prepare for your first study by doing one of the following:



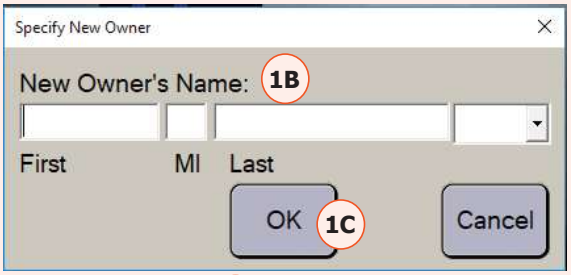
1. Set up a new owner, patient and study date using the **plus** icon or **edit / search** buttons to the right of the drop-down menus
2. Navigate to an existing patient using first the owner and then the patient and date drop-down menus.

Note: Metron drop down menus use a "Fuzzy Search" tool; type the first letter of the name you are looking for and Metron will automatically go to the first name with that letter.

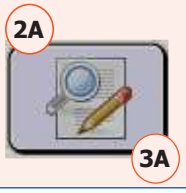
Client Set Up

1. To enter a new owner:
   A. Select the plus icon
   B. Enter the information according to each space.
   C. Click OK



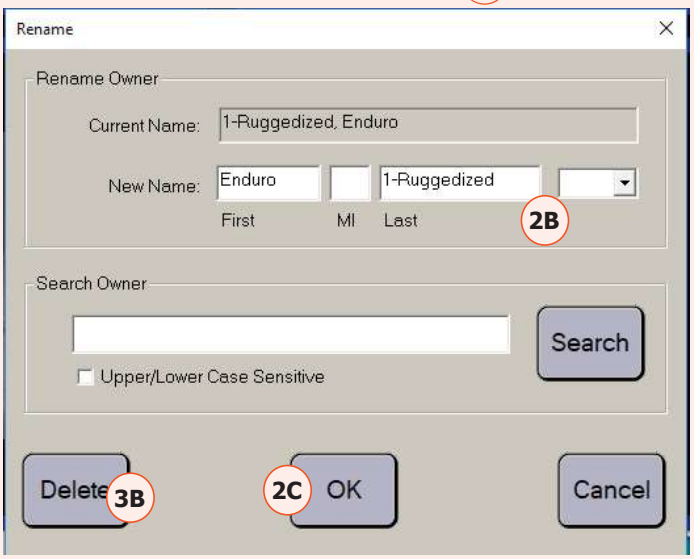


2. To edit an existing owner:
   A. Select the **edit / search** icon
   B. Enter the first and last name - middle initial and post-nominal designations if indicated.
   C. Click OK



3. To delete an existing owner:
   A. Select the edit icon
   B. Click Delete

Note - Deleting an owner will delete all associated patients and their data.

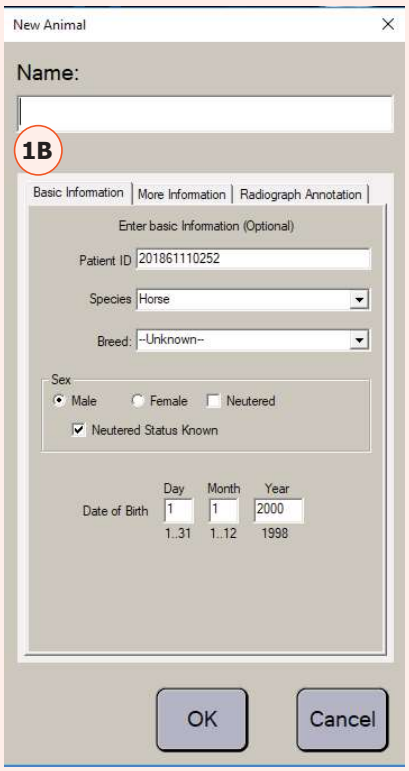


Patient set up

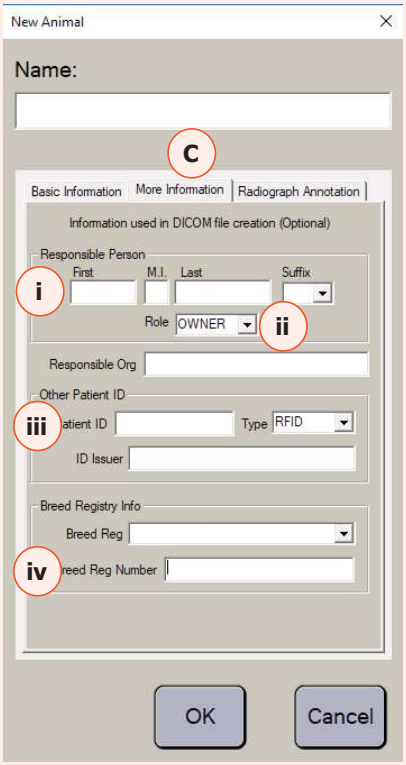
1. To enter a new patient:
    A. Select the plus icon:
    B. Select the Basic Information tab
        i. Enter the patient's name
        ii. Enter the patient's species
        iii. Enter the patient's breed - if known
        iv. Enter patient's gender
        v. Enter patient's date of birth - if known
        vi. Click OK

Note - the minimum information required is the Patient Name and Species



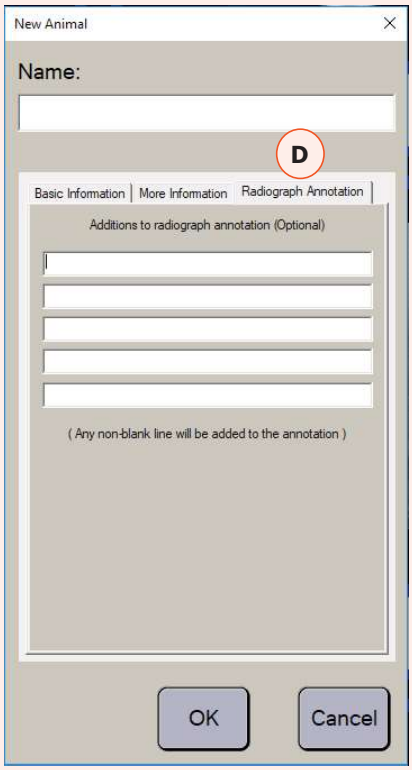


C. More information Tab: (optional information)
    i. Enter the name of the person or organization responsible
    ii. Indicate if owner or other
    iii. Enter other patient ID, such as microchip number
    iv. Enter Breed registry and number - if available



Patient set up - continued

D. Radiographic Annotation: (optional information)
   i. Enter additional information you would like to appear on each radiograph in the individual patient's study.
   ii. I.E. Pre-purchase exam, history of lameness, or body condition

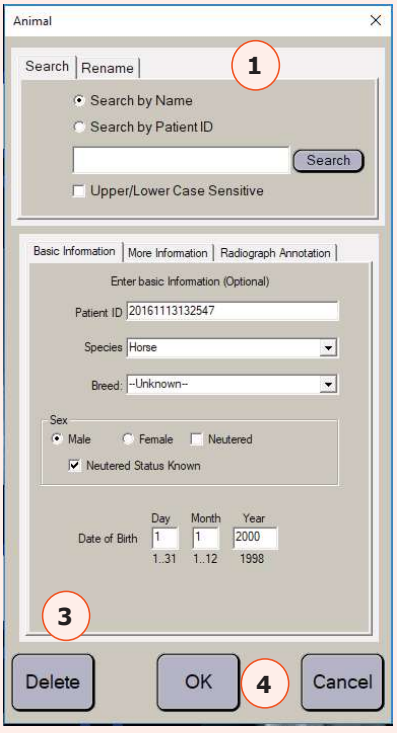


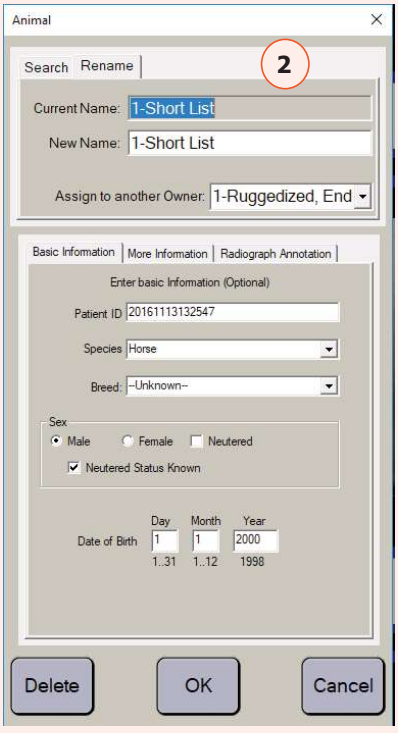
To edit or delete an existing patient:



Select the Edit / Search icon:

1. Search for an existing patient
2. Rename the patient currently selected to modify the necessary patient information
3. Click the Delete tab to remove the patient
4. Click Okay





Database Utilities





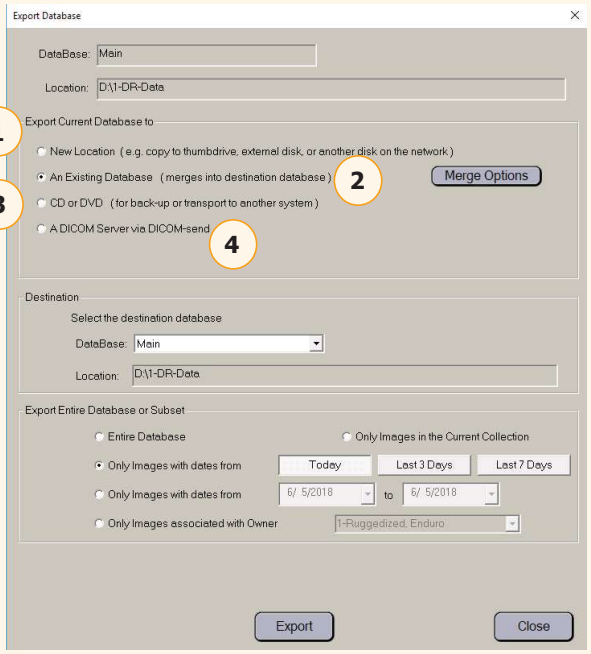
Metron is capable of being associated with multiple databases on the same computer or with databases located in different areas of an individual network.

To determine which database your Metron software is currently associated with, click the Database Tab on the right hand side of the Metron software screen. Choose from the current databases that are associated with your copy of Metron.

To access all of the database utilities, click on the System tab on the right side of the Metron screen.

Export Database

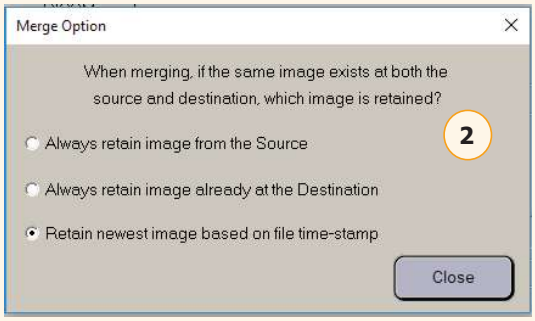
When using this utility the database that is being exported is the one that is active when you boot up your copy of Metron. The location of this database will be confirmed in the Location space at the top of the pop up screen.



Where to export to:

1. Pick a new location
   - A. Go to the browse button.
   - B. Search your computer for the desired location.
   - C. Select entire database, or specify parameters of images you wish to export.
   - D. Click Export

   Note If you exported to an external hard drive, a button will appear to Make Safe to Remove.
2. An existing Database - merges databases
   - A. Click Merge Options
   - B. Select from the 3 options to determine action when duplicate images in both databases.
   - C. Search your computer for the desired location
   - D. Select entire database, or specify parameters of images you wish to export.
   - E. Click Export

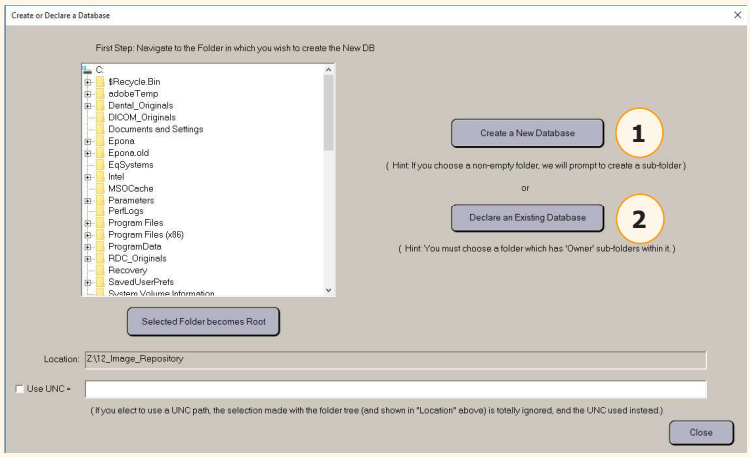


3. CD / DVD
   - A. If your computer is not set up to utilize CD or DVD writing capabilities, you will get an IMAP 12 error message. This is a service you need to install and turn on and the appropriate CD or DVD writing medium needs to be attached to your computer
4. DICOM server via DICOM send
   - A. Your computer will need to be attached to another server, a PACS server, then you can send the entire database via DICOM send to that location.

New Database

There are 2 options for establishing a new database;

1. Create a new Metron Database name - creates a blank database in Metron
   A. Click Create New Database
   B. Name the new database
2. Declare existing Database
   A. Browse your computer for a Metron database
   B. Search for a database with Proper structure:
      i. Name
      ii. Sub-folder owner
      iii. Sub-folder patient
      iv. Sub-folder with dates associated with that patient
   C. Click Declare existing database
   D. Enter a name for the new database
   E. Click OK.

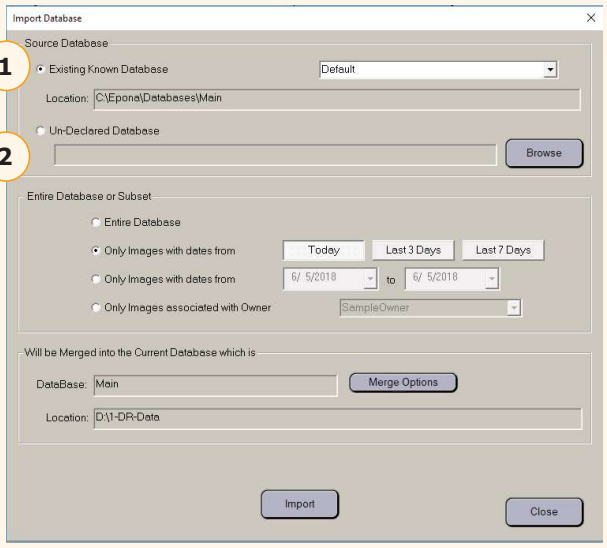


Import Database - Tool for importing an existing database into Metron

There are 2 options for source database;

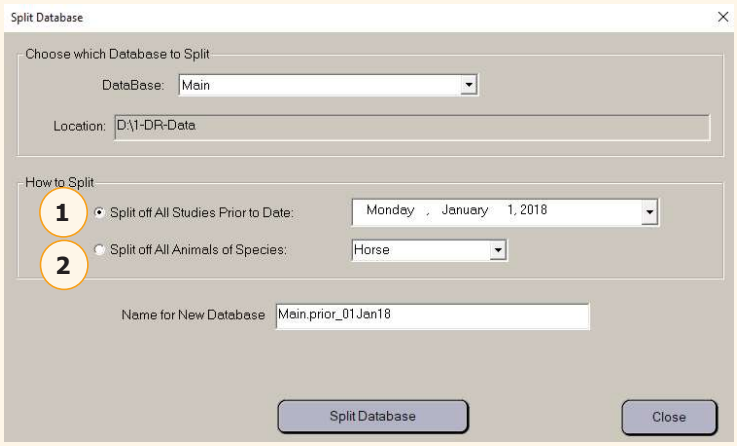
1. Existing Metron Database
   A. Choose which database from the drop down list.
2. Undeclared Database
   A. Browse your computer for un-declared Metron database
   B. Select entire database, or specify parameters of images you wish to export.
   C. Click Import

Note - even though your computer or network may have multiple Metron databases each database must be "Declared' in each copy of Metron on a particular PC in order for that copy of Metron to utilize any individual Metron database.



Split Database

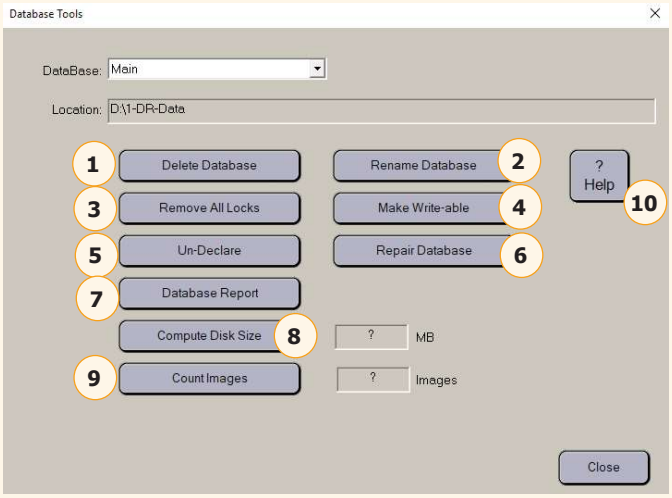
This utility is acting on the current database attached to your copy of Metron



1. Date range - more commonly used
    A. Mechanism to separate out studies that are older to free up space on the DR system computer
    B. Save older files to external storage location.
    C. Select a date range.
    D. Create a name for the new database.
    E. Click the Split Database button
    F. A progress bar will appear as the database split is processed.
2. Species
    A. Not commonly used
    B. Creates a database with the designated species

Database Tools

This tab will open a variety of options for you to work with the current database in use.
You can use the drop down menu to select a different database associated with your copy of Metron if necessary.



1. Delete Database
    A. This removes the database entirely from your system.
    B. This action cannot be undone.
2. Rename Database
    A. Select the database you wish to rename from the drop down menu
    B. Enter a new name for the database.
    C. Click Okay
3. Remove All Locks - Occurs when multiple computers are accessing the same database - sometimes this will lock an image or group of images as read only.
    A. Select the affected database
    B. Click Remove all Locks.
4. Make Database write-able - Lifts any restrictions that may have been placed on files in a database that may be preventing it from being written to a CD/DVD or some other external media.
    A. Click the affected database
    B. Click Make Write-able

Database Tools - continued

5. Undeclare - Your copy of Metron will no longer recognize the database. The database will remain in its location. It will simply no longer appear in the drop down list of databases.
    A. Choose the database you want to undeclare
    B. Click undeclare
    C. Click Okay
6. Repair Database - This utility is useful if you are having problems with inability to open particular studies or images. Occasionally, some image files become corrupt. This utility can help restore full function.
    A. Simply select the affected database
    B. Click Remove all Locks.
    C. It is a good precaution to back up the database in the event that the repair fails.
7. Database report - Utility for getting information about a particular database
    A. Search through the list of databases
    B. It is possible to pick a date range for the report utility
    C. Include assorted criteria for the report
        i. By default - general statistics, number of radiographs per animal, anything that was put in the trash, permanently deleted.
        ii. This utility helps comply with radiation safety regulations where monthly reports need to be submitted in terms of how many radiographs are being generated per digital radiography system.
        iii. You can further sub-define to count images that have certain tags from the various Metron mark up processes
        iv. Click generate report
        v. Find the report in the C:\Epona\DBReport.txt file
8. Compute the size of the database - Utility to determine size of database should you need to copy the database to an external source of a particular size.
    A. Click compute database
9. Count images - Utility to determine the number of images in a database should you need to copy to an external source of a particular size.
    A. Click count images
10. HELP - When you click the help button, a text document with a description of all the database tools functions will be added to the desktop of your computer.

Update Old Database

Utilized when you have to merge databases from an older version of Metron into your current version.

1. Metron 8 is compatible with Metron 6 and Metron 7 databases without requiring the Update process.
2. Metron 5 and older will need to be updated using this utility
    A. Click update database
    B. Select yes.

Read Old MU Database

There were some databases for a specific version of Metron made strictly for equine tendons and ultrasound studies.
Those can be brought forward to the modern format using this utility.

A. Click Read Old MU database
B. Select yes.

Importing DICOM Database

Importing a DICOM database uses the same process as importing a single image:



1. Go to the main database screen in Metron
2. Select the Import image button
3. Metron will open a panel with a root directory - this contains all of the folders on your computer and computer network
4. Navigate to the folder containing the DICOM database - this can take several minutes to populate depending on the size of the database
5. Once DICOM data is found, it will present thumbnails of the first DICOM study that it encounters
6. To import, check the Search All Sub-Folders tab
7. Click auto import all DICOM images - this will import all DICOM images into the current database open in your copy of Metron.
8. Click Yes to confirm
9. The import process will begin - this could take several hours depending on the size of the DICOM database
10. Go to the Receive images button



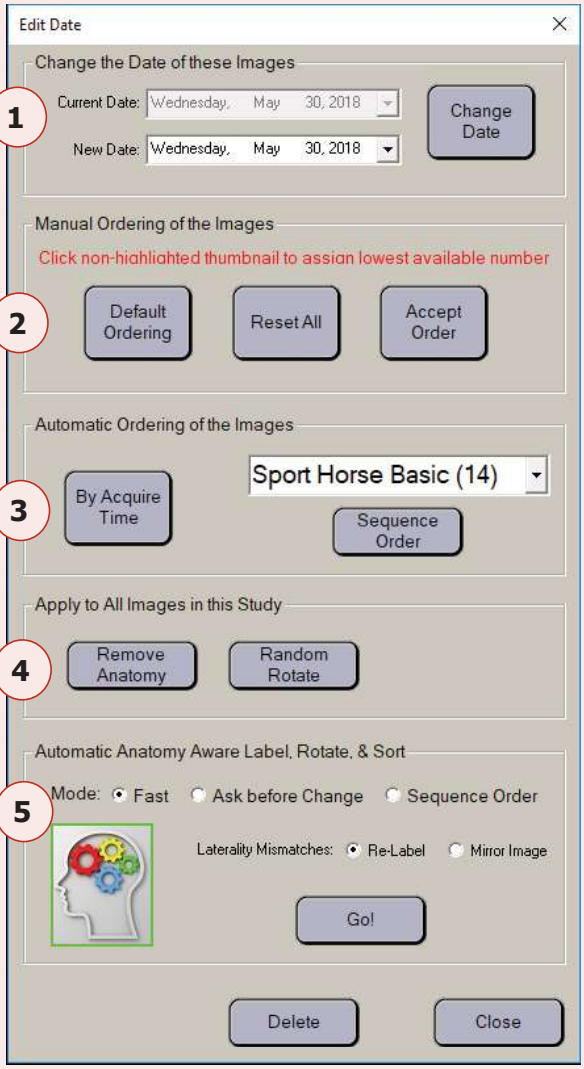
11. The pop up will show the history of all images imported
    A. Find recently imported images,
    B. Click on the study you wish to review
    C. Click Jump to Highlighted Study tab too review the study that has now been added to Metron.
    D. To see that all of the DICOM studies have been imported, go to the Study Log file.

Date Editor / Image Organizer



To enter the date editor and image organizer:
Double click on the date of interest

1. Change the date of the images
   A. Enter the new date desired
   B. Click change date
2. Reorder the images in the study
   A. Highlight each image in the order you wish them to be displayed
   B. Click Accept Order
   -OR-
   C. Reset all to organize the images by time of acquisition.
   -OR-
   D. Click default ordering if you wish to keep the order in which the images appear in the database browser
3. Automatic ordering of the images
   A. Click By Acquire time to organize the images in the study by their date and time acquired.
   -OR-
   B. Select an acquisition sequence
   C. Click sequence order to organize the images in the order of the chosen acquisition sequence.
4. Remove anatomy and random rotate
   A. Remove the anatomic description of all the images in the current date study
   B. Random rotate to alter the orientation of all the images in the current date study.



Date Editor / Image Organizer - continued

Note You may or may not have the Intelect™ Module. Additional instructions in the Intelect™ Module section found later in this manual.

5. Anatomy aware - If you have removed the anatomic description and or randomly rotated the images as indicated above:
    A. Select Fast to allow the Intelect™ Module to automatically label and rotate all of the images in the current date study.

    -OR-

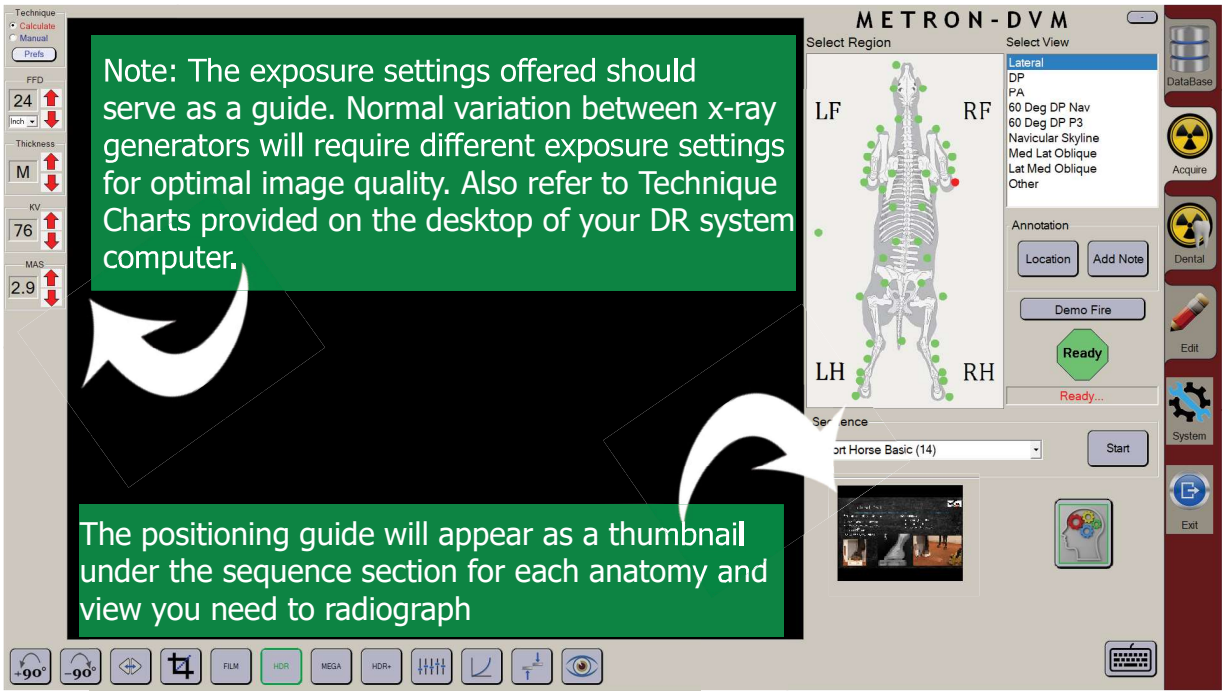
    B. Ask before change to confirm any changes the Intelect module makes to any image in the current date study.

    -OR-

    C. Sequence Order to automatically organize in the order of the acquisition sequence chosen.

Image Acquisition

Before attempting to enter acquire mode in Metron, make sure that you have followed the proper boot up sequence and that your detector panel is turned on and connected to your computer.



1. The fastest way to begin taking radiographs is to select the emergency button. Metron will then go directly to image acquisition mode. The owner and patient will default to the date and time that the images are being taken. You can go back and edit this once the urgent need for radiographs has passed.



   A. Select the anatomic location you intend to radiograph
   B. Select the radiographic projection
   C. Note the recommended exposure technique on the left hand side of the image acquisition screen for the particular anatomy and radiographic projection you intend to shoot. It is important to adjust the thickness of the anatomy you are imaging to ensure the accuracy of the recommended exposure technique.
      i. For equine patients, Small, Medium, Large and Extra Large
      ii. For companion animal patients, you can enter the measurement in inches or centimeters.
   D. Once the settings are ready, expose your detector panel to acquire your image. A preview will appear in approximately 2 seconds for positioning, and 6 - 12 seconds for a completely processed image.

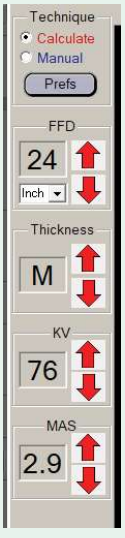


Image Acquisition - continued

Note: The exposure settings offered should serve as a guide. Normal variation between x-ray generators will require different exposure settings for optimal image quality. Also refer to Technique Charts provided on the desktop of your DR system computer.

E. Click the green check to accept the image into the database, or click the red X to reject the image and take the image again.
F. You can take your next image when the Ready stop sign is illuminated green and says Ready.





2. The most common method to enter image acquisition mode is to select the plus tab at the top of the database browser screen
   A. Enter the patient and animal information
   B. Click on the plus tab at the top of the database browser screen
   C. Enter current date
   D. Click ok
   E. Select the anatomic location you intend to radiograph
   F. Select the radiographic projection
   G. Note the recommended exposure technique on the left hand side of the image acquisition screen for the particular anatomy and radiographic projection you intend to shoot. It is important to adjust the thickness of the anatomy you are imaging to ensure the accuracy of the recommended exposure technique.
      i. For equine patients, Small, Medium, Large and Extra Large
      ii. For companion animal patients, you can enter the measurement in inches or centimeters.
   H. Once the settings are ready, expose your detector panel to acquire your image. A preview will appear in approximately 2 seconds for positioning, and 6 - 12 seconds for a completely processed image
   I. Click the green check to accept the image into the database, or click the red X to reject the image and take the image again.
   J. You can take your next image when the Ready stop sign is illuminated green and says Ready.

Image Acquisition - continued

3. The final method to enter image acquisition mode is to select the Acquire tab at the side of the database browser screen



   A. Enter the patient and animal information
   B. Click on the Acquire tab at the side of the database browser screen
   C. A pop up will appear indicating images will be saved with the current date
   D. Click ok
   E. Select the anatomic location you intend to radiograph
   F. Select the radiographic projection
   G. Note the recommended exposure technique on the left hand side of the image acquisition screen for the particular anatomy and radiographic projection you intend to shoot. It is important to adjust the thickness of the anatomy you are imaging to ensure the accuracy of the recommended exposure technique.
      i. For equine patients, Small, Medium, Large and Extra Large
      ii. For companion animal patients, you can enter the measurement in inches or centimeters.
   H. Once the settings are ready, expose your detector panel to acquire your image. A preview will appear in approximately 2 seconds for positioning, and 6 - 12 seconds for a completely processed image
   I. Click the green check to accept the image into the database, or click the red X to reject the image and take the image again.

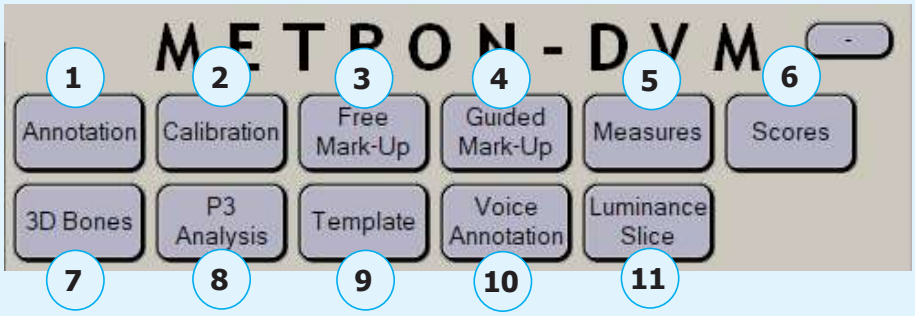
Note If you take a second exposure the current image will automatically be accepted in to the current study.

Metron Tools

Edit tools - In the Edit tab there are a number of image editing features to assist you

1. Annotation
2. Calibration
3. Free Mark-Up
4. Guided Mark-Up
5. Measures
6. Scores
7. 3D Bones
8. P3 Analysis
9. Template
10. Voice Annotation
11. Luminance Slice

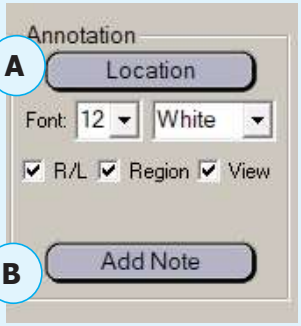


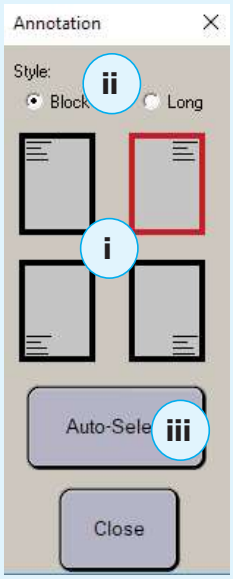


1. Annotation
   - A. Location
     - i. Change the location
     - ii. Change the format - block or long
     - iii. Auto-Select - This chooses the darkest area on radiographs, and the lightest area on photographs
   - B. Add Note
     - i. Additional Annotation line for information wanted on an individual radiograph, i.e., technique, lameness if indicated, etc.

Note - The Annotation tab is for turning the radiograph annotation back on in the event that it is clicked off.









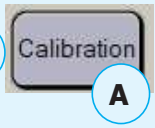
Metron Tools - continued

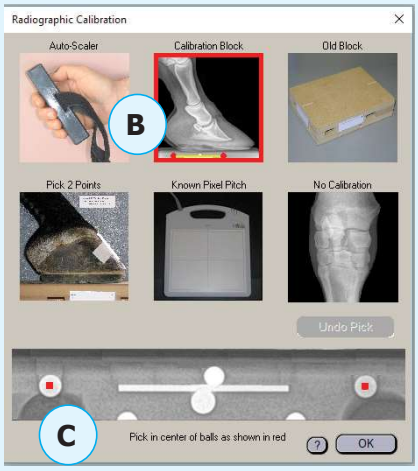
2. Calibration - This feature calibrates the radiograph to known measured points on an object such as a Metron Hoof Block, or Epona auto-scaler. You can also use your own object with a pre-measured distance to measure and calibrate the images for magnification correction.

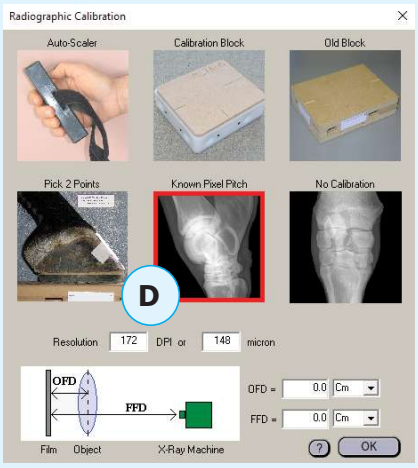
   Metron Hoof Block - Primarily used in equine hoof radiographs.

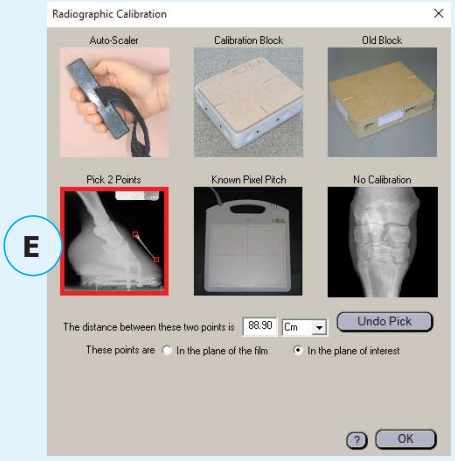
   Epona Auto-Scaler - Universal device for image calibration on large and small animals.

   A. Click on the Calibration tab
   B. Metron will find the hoof block and auto scaler and automaitically calibrate the image.
   C. In the event that Metron does not find the hoof block or auto scaler;
      i. Select two points on the calibration block as shown in red
      ii. Click OK to calibrate the image
   D. Pixel Pitch - You can use the pixel pitch, OFD - object to film distance, and FFD - Focal film distance to calibrate the image.
   E. Pick 2 Points - You can use this method if you have your own scaling device with known measurements.



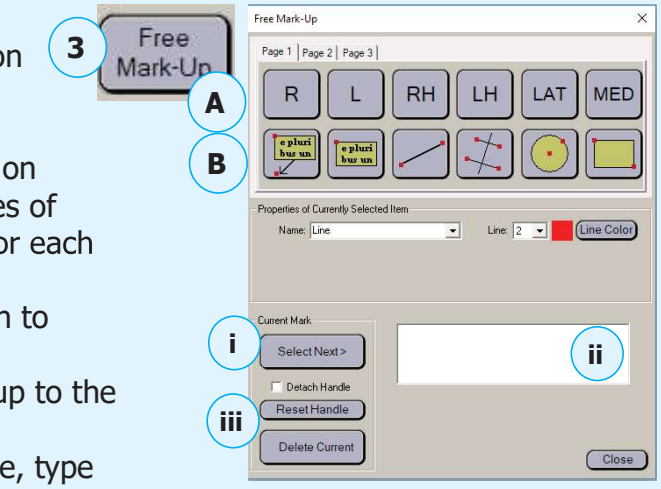






Metron Tools - continued

3. Free Mark-Up - This feature gives you the freedom to mark up and make notes directly on the image.
   A. Select the Free Mark-Up tab
   B. Choose the mark-ups you wish to label on the image. Note - There are a few pages of different mark up tools. Click the tab for each page.
   C. Click on the area on the image you wish to mark-up
      i. Click Next to add another mark-up to the image.
      ii. When adding a note to the image, type the desired text in the text box on the Free Mark-Up menu
      iii. You can delete or reset any lines or notes as needed by clicking the appropriate tab.

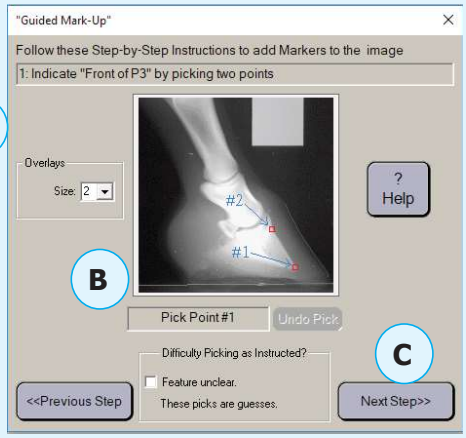


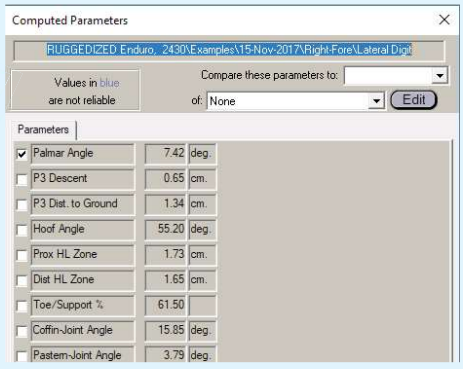


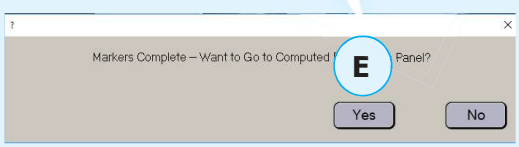
4. Guided Mark-Up - This feature guides you through the hoof mark up process.
   A. Select the Guided Mark-Up tab
   B. Follow the prompts for each step of the mark-up process
   C. Click Next Step once you have completed the point selection.
   D. Continue through the steps until done. A pop up will appear and ask if you wish to go to Computed Parameters
   E. Yes - opens Computed Parameters
   F. No - closes the Guided Mark-Up menu

If you need clarification for any step, click the Help tab for a more in depth description of what is needed.



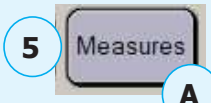


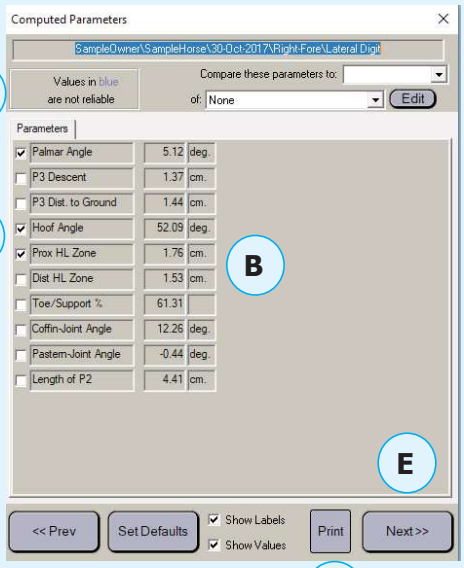


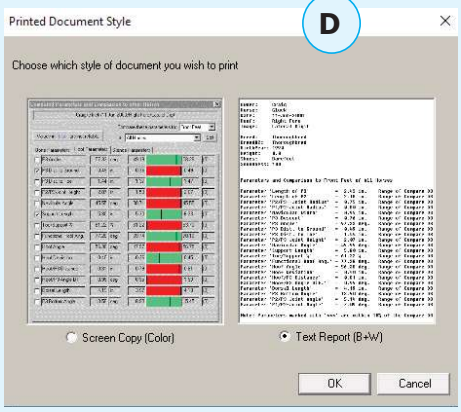


Metron Tools - continued

5. Measures - This feature opens the Computed Parameters menu with the measurements caluclated during the Guided Hoof Mark-Up (or Intelect™ module auto mark-up)
   A. Select the Measures tab
   B. Review the measurements listed
   C. Toggle the box next to the parameters you want displayed on the radiograph
   D. You can print the parameters and choose a screen copy or black and white text file
   E. Click Next to see how these measures compare to the average normal parameters (See Scores section below)



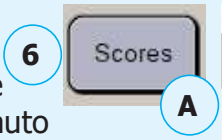


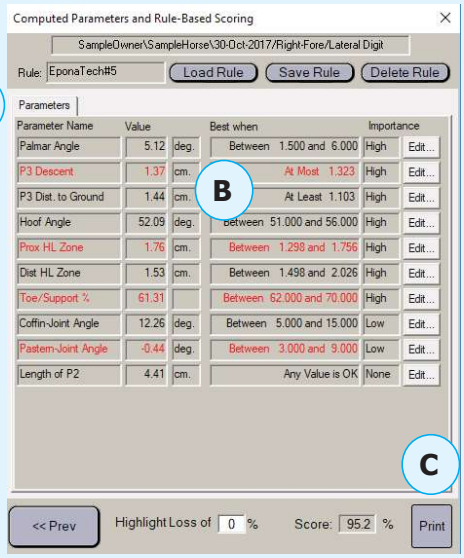




Note - If Measures and Scores are not available, you need to calibrate your image and utilize the Guided hoof mark-up utility to provide data for these images to function.

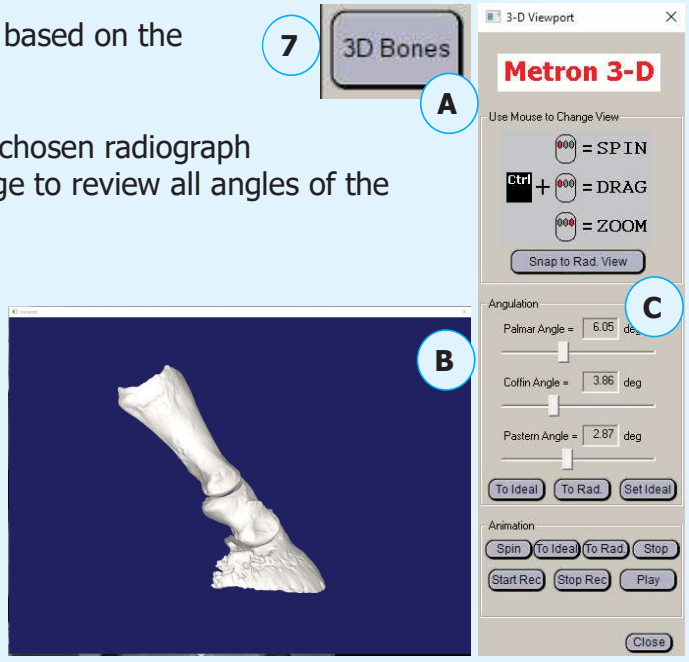
6. Scores - This feature opens the Computed Parameters and Rule-Based Scoring menu with the measurements caluclated during the Guided Hoof Mark-Up (or Intelect™ module auto mark-up)
   A. Select the Scores tab
   B. Review the parameter comparisons listed - Note the parameters in red are outside of the normal range
   C. You can print the parameters and choose a screen copy or black and white text file



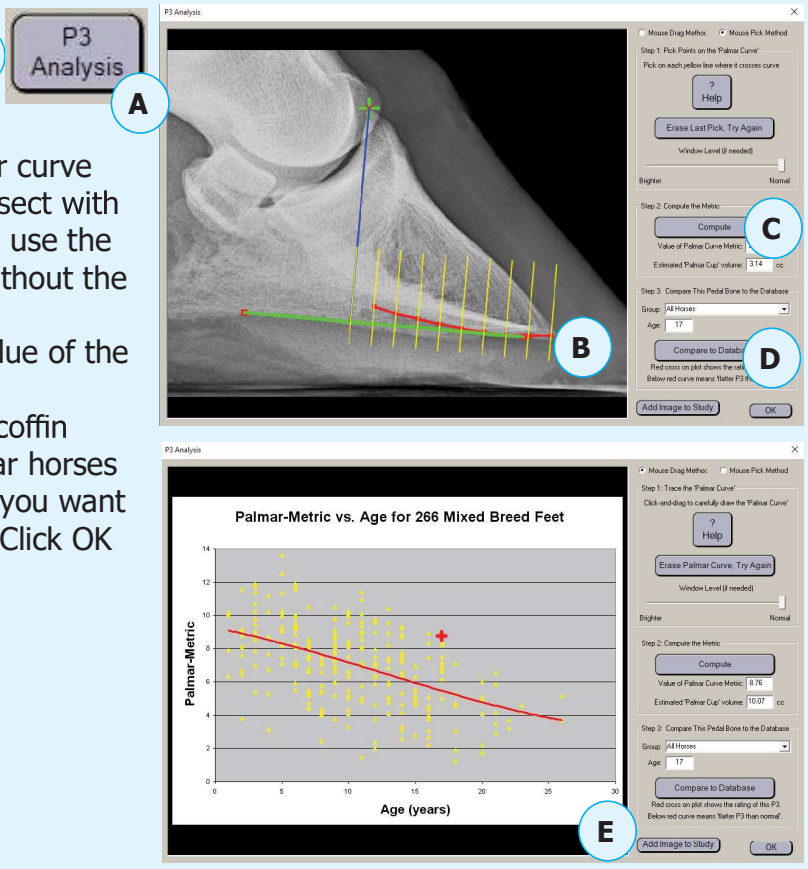


Metron Tools - continued

7. 3D Bones - This feature creates a 3D model based on the radiographic parameters
   A. Select the 3D Bones tab
   B. Metron will create a 3D model of the chosen radiograph
   C. You can move and rotate the 3D image to review all angles of the model



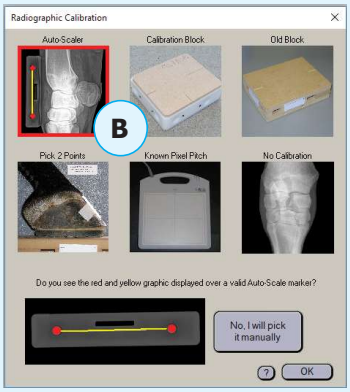
8. P3 Analysis - This feature allows you to analyze the coffin bone in equine patients
   A. Select the P3 Analysis tab
   B. Pick points along the palmar curve of the coffin bone that intersect with each yellow line, or you can use the mouse to draw the curve without the yellow markers
   C. Click compute to see the value of the palmar curve
   D. You can then compare this coffin bone to a database of similar horses
   E. Click add Image to Study if you want to save this comparison, or Click OK to exit the P3 Analysis



Metron Tools -continued

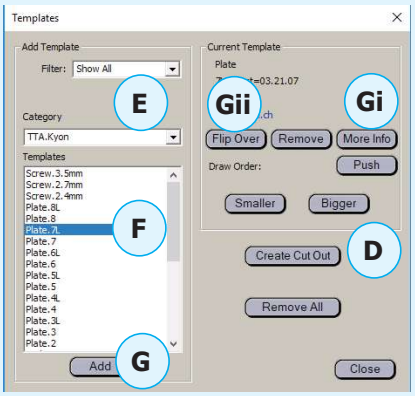
9. Template - This feature allows you to pre plan your orthopedic procedure and order necessary devices with greater accuracy



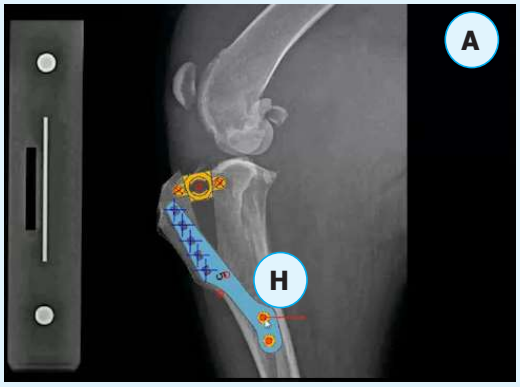


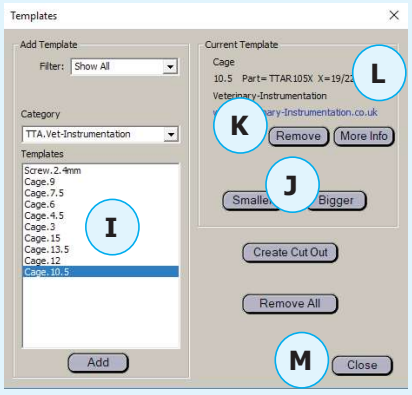
Note It is important to take a radiograph with a measurable calibration devise, such as the Metron Auto Scaler, to make a more accurate measurement in the template module.

A. Open the image to be used for the orthopedic template
B. Calibrate the image
C. Click on the Template tab
D. Click Create cut out
   i. Mark the area on the image to be cut out
   ii. Click close
   iii. Accept or Reject the cut out
E. Review the lists of orthopedic devices
F. Select orthopedic device needed for the procedure
G. Click Add
   i. Click More Info to open a PDF of the orthopedic device descriptions and manufacturer information
   ii. Click Flip Over if needed - this is not available for all orthopedic devices



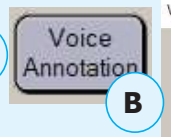
H. On the image, move the devise template to the correct area for the procedure, adjust and rotate as needed
I. Return to the devise menu and add any additional components, such as screws, brackets, and cages.
J. Use the Smaller and Bigger buttons to adjust the size of the devise currently selected in the image.
K. To remove a device on the image:
   i. Select the device to be removed
   ii. Click Remove
L. Click the hyper-link included to order your orthopedic devices
M. Click Close once you have completed your orthopedic plan

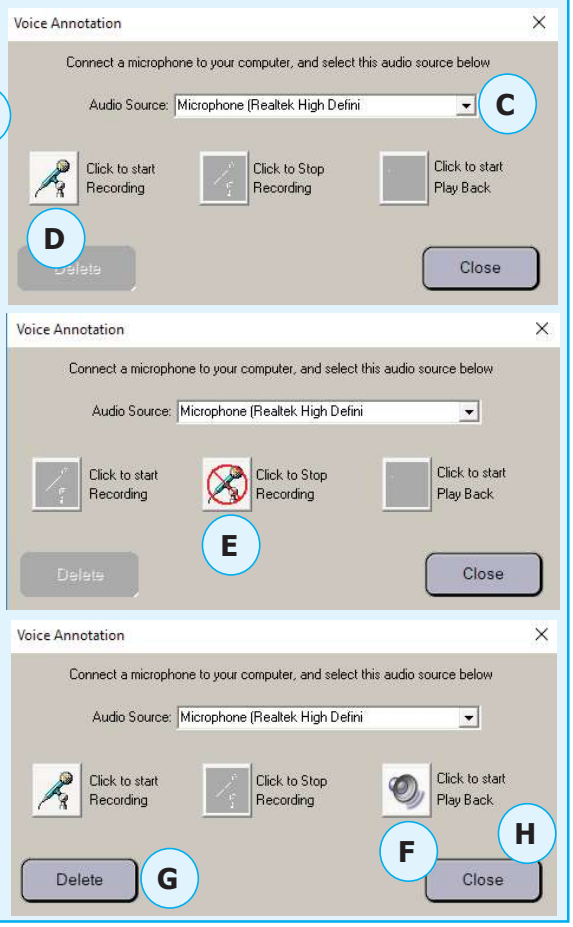




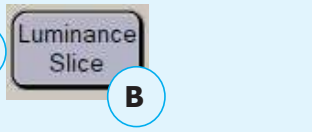
Metron Tools -continued

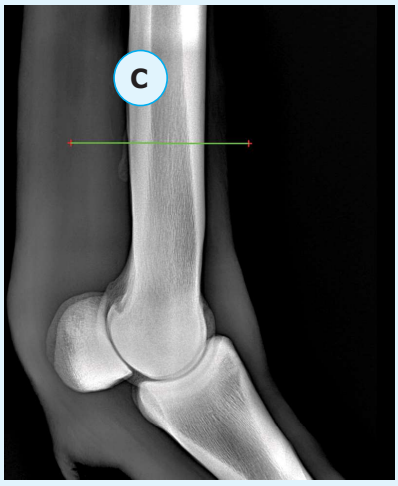
10. Voice Annotation - This feature allows you to add a voice annotation to individual images. This tool works on any image in Metron.
    - A. Select the radiograph you wish to add a voice annotation (not shown)
    - B. Click on the Voice Annotation tab
    - C. Choose your audio source from the drop down menu
    - D. Click the highlighted microphone to begin recording
    - E. Click the microphone with the red circle to stop recording
    - F. Click the speaker to play back your recoding
    - G. If you do not like the voice annotation, click delete to start a new voice recording
    - H. Click Close to add the voice annotation to the selected radiograph

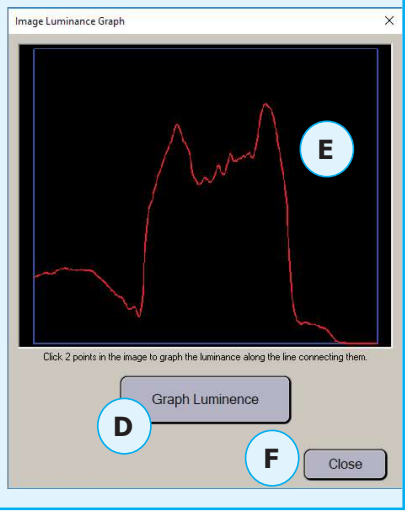




11. Luminance Slice - This feature allows you to assess relative bone density
    - A. Open the image to review (not shown)
    - B. Click Luminance Slice
    - C. Select 2 points over the area to be examined
    - D. Click Graph Luminance
    - E. Review the bone density graph
    - F. Click Close







Metron Tools -continued

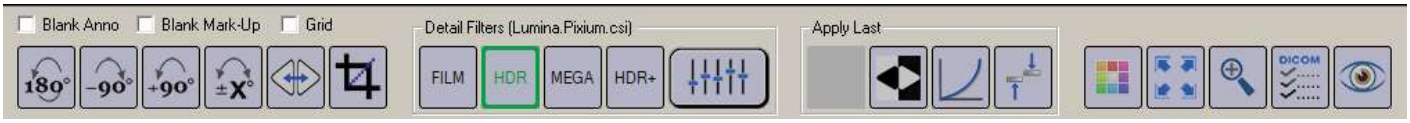


When you are in image acquisition mode, you have several tools available to change the image more to your liking. They are located at the bottom of the image acquisition screen.

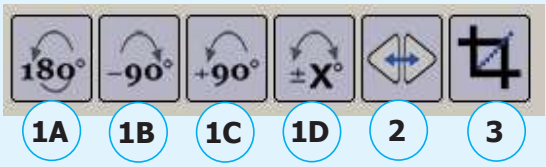
1. Rotate - used to rotate the image 90° right or 90° left
2. Mirror - used to mirror the image
3. Crop / Mask
    A. Crop - removes unnecessary area and magnifies the image
    B. Mask - removes unnecessary area without magnification
4. Image Processing
    A. Film - Makes image look like 600 speed film
    B. HDR - High Dynamic Range - default
    C. Mega - Digital Lossless provides sharp and crisp image without halos or artifacts
    D. HDR+ - High Dynamic Range with enhanced edge detail
    E. Tune - to fine tune or customize the appearance of the image.
5. Look up table -suppress certain gray scales or certain tissue densities or enhance others. Also known as a sigmoid curve
6. Window / Level - used to uniformly change the brightness and contrast of the image
7. Eyeball - image review only with limited tools to adjust the image.
    A. Window level - Drag the mouse cursor or finger on touch screen capable PCs in a diagonal movement across the image
    B. Pan image - Use the center wheel or button on the mouse, or two fingers on touch screen capable PCs to pan the image.
    C. Zoom - Use the right button on the mouse or expand and contract two fingers on touch screen capable PCs to zoom in and out.
    D. To reset the image
        i. Click Fit Image to return to the normal size image
        ii. Click Reset WL to reset the window / level

Metron Tools -continued

When you have completed your study and returned to the database browser screen, you can review and adjust images with additional Metron tools in the image edit panel.

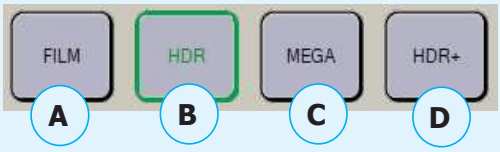


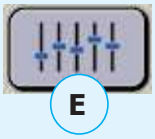
Double click on the image of interest, or highlight and click the Edit tab



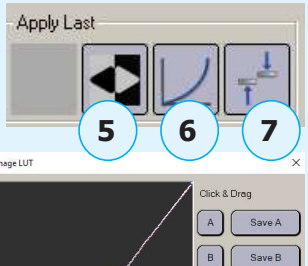
1. Rotate
    A. 180°
    B. 90° Right
    C. 90° Left
    D. Fine rotation - use to adjust images that are slightly off level
2. Mirror - used to mirror the image
3. Crop / Mask
    A. Crop
    B. Mask

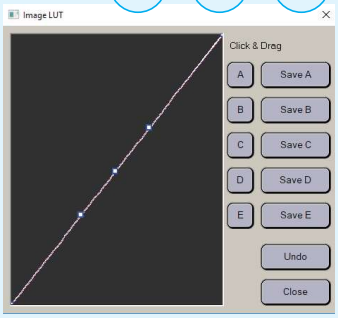
4. Image Processing
    A. Film - makes image look like 600 speed film
    B. HDR - High Dynamic Range - Metron default process
    C. Mega - Digital Lossless provides sharp and crisp image without edge halos or artifacts
    D. HDR+ - High Dynamic Range with enhanced edge detail
    E. Tune - to fine tune or customize the appearance of the image.





5. Invert - invert the gray scale
6. Look up table -suppress certain gray scales or certain tissue densities or enhance others. Also known as a sigmoid curve
7. Window / Level - used to uniformly change the brightness or contrast of the image

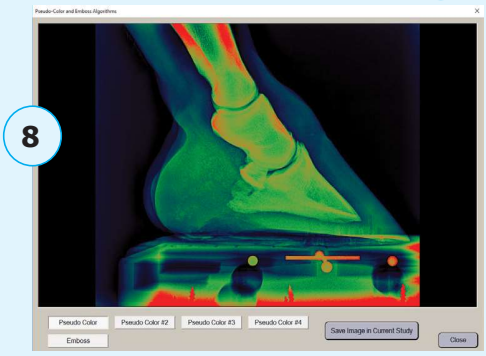




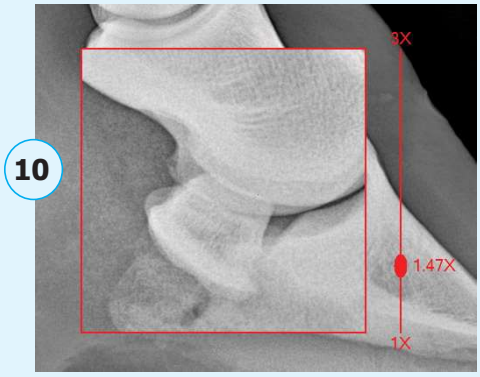
Metron Tools -continued

8. Color and Emboss - 4 color palettes plus emboss to allow for a different look to see different areas of an image
    A. Pseudo color
    B. Pseudo color #2
    C. Pseudo color #3
    D. Pseudo color #4
    E. Emboss
9. Toggle in and out of Zoom mode
10. Magnifier tool
    A. Click on the magnifying glass
    B. Use the mouse cursor or finger on touch screen capable PCs to move the red box to the area of interest on the image
    C. Slide the magnification up or down to zoom in or zoom out





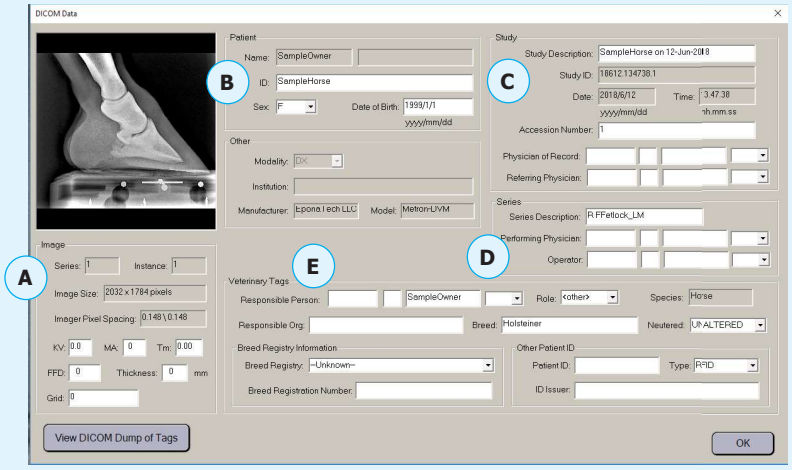




Metron Tools -continued

11. DICOM Tags
    - A. Image information
    - B. Patient information
    - C. Study
    - D. Series
    - E. Veterinary Tags





12. Eyeball - image review only with limited tools to adjust the image.
    - A. Window / Level - Drag the mouse cursor or finger on touch screen capable PCs in a diagonal movement across the image
    - B. Pan image - Use the center wheel, or button on the mouse or two fingers on touch screen capable PCs, to pan the image.
    - C. Zoom - Use the right button on the mouse, or expand and contract two fingers on touch screen capable PCs, to zoom in and out.
    - D. To reset the image
        - a. Click Fit Image to return to the normal size image
        - b. Click Reset WL to reset the window / level

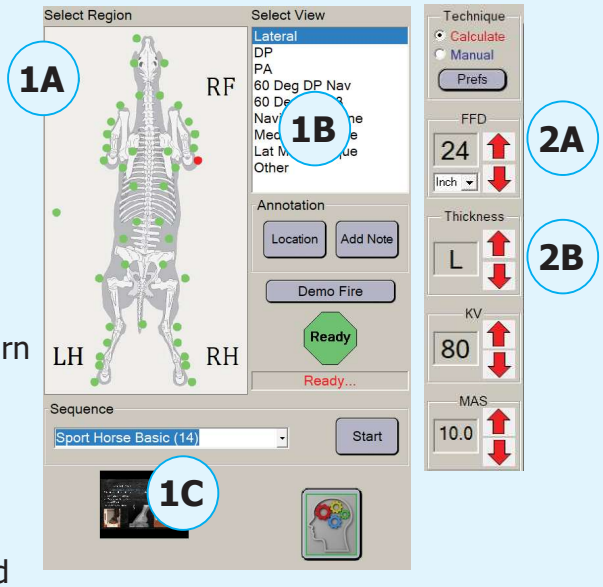




Metron Tools -continued

Metron Advisor™

1. Positioning Guide
   A. Select the anatomic location to be radiographed.
   B. Select the radiographic projection (view)
   C. Select on the thumbnail image below the sequence menu
   D. Review recommended position of the detector panel and generator
   E. Click on the positioning guide image to return it to the thumbnail.
2. Technique Advisor
   A. Adjust focal film distance
   B. Adjust thickness of anatomy to be radiographed
   C. Set your generator to recommended KV and MAS



Expose your detector panel to acquire your image. A preview will appear in approximately 2 seconds for positioning, and 6 - 12 seconds for a completely processed image



Note: The exposure settings offered should serve as a guide. Normal variation between x-ray generators will require different exposure settings for optimal image quality. Also refer to Technique Charts provided on the desktop of your DR system computer.

Metron Countdown™

1. Choose a study from the Sequence drop down menu, or click New to start your own
2. Click Start to begin the Acquisition sequence
   A. The view highlighted in green has been successfully added to the database for the study currently open.
   B. The view highlighted in red is the next image in the acquisition sequence.
   C. Once all of the views have been taken, the Acquisition sequence menu will close and you can return to the database browser to review the images in the study.

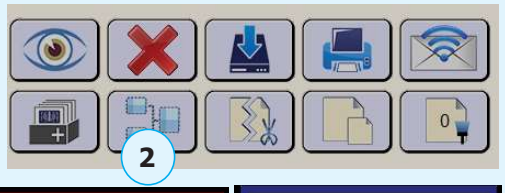


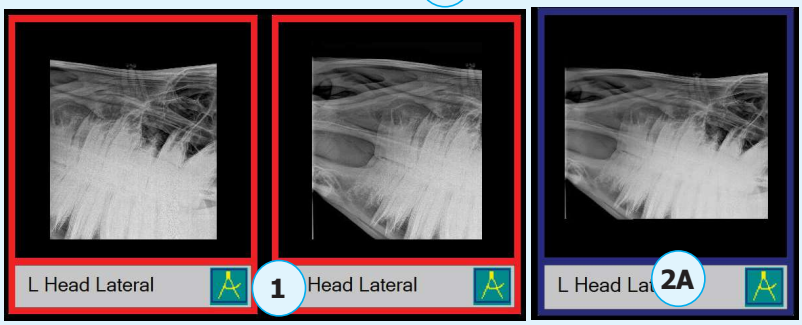


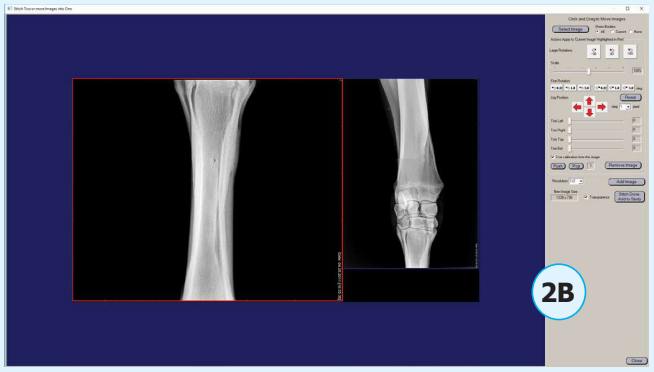
Metron Tools -continued

Metron Suture™ Image Stitching

1. Select 2 or more images to stitch into one image
2. Click the Image Stitch button
   A. If there is adequate overlap between the 2 images, Metron Suture™ will automatically complete the combined image.
   B. If there is not adequate overlap, you can manually stitch the images with the fine tune buttons in the image stitch utility.
3. Review the stitched image





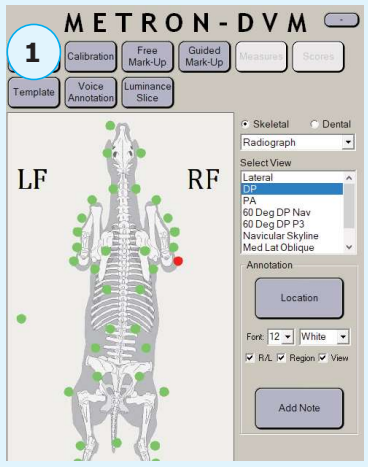


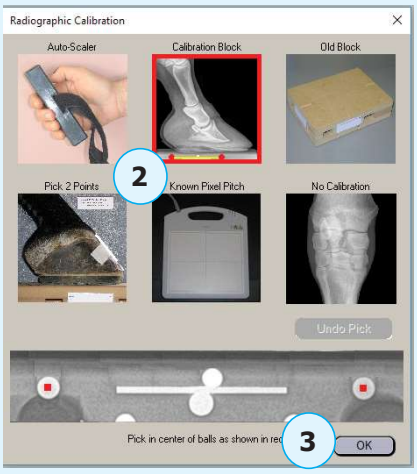
Metron Tools -continued

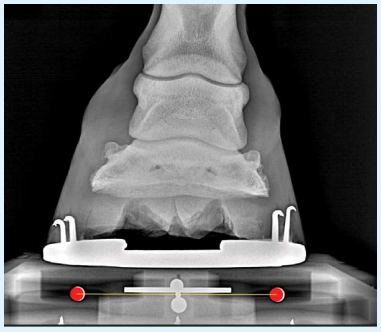
Metron Magnitude™
Auto Calibration requires use of the Epona Hoof Blocks and/or Metron Auto Scaler - this will calibrate each image and adjust magnification.

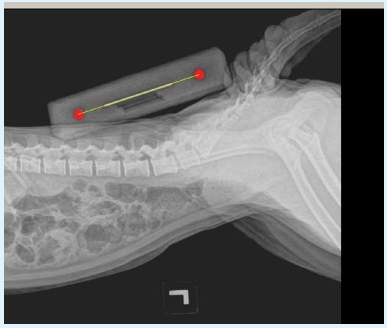
1. Click the Calibration button
2. Magnitude will find the points in the Epona Hoof Blocks or Metron Auto Scaler to calibrate the image*
3. Click OK

*In the event that Metron does not recognize the scaler, select 2 points within the scaler to calibrate and adjust image magnification.



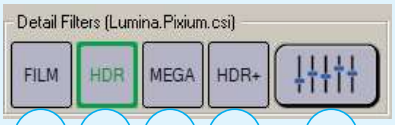


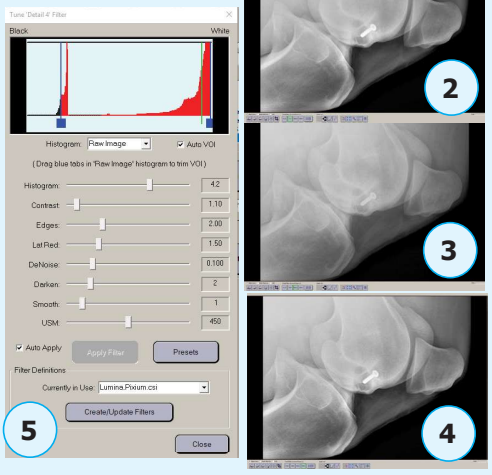




Metron Lumina™ Image processing
Multiple presets configured to offer images to suit different preferences.

1. Film - processes the image as standard 600 speed film
2. HDR - High Dynamic Range (default)
3. Mega - Digital lossless
4. HDR+ - High Dynamic Range with enhanced edge detail
5. Image composer - further tune and adjust images to your preference.





NOTES

Intelect Module -If purchased as a Metron upgrade

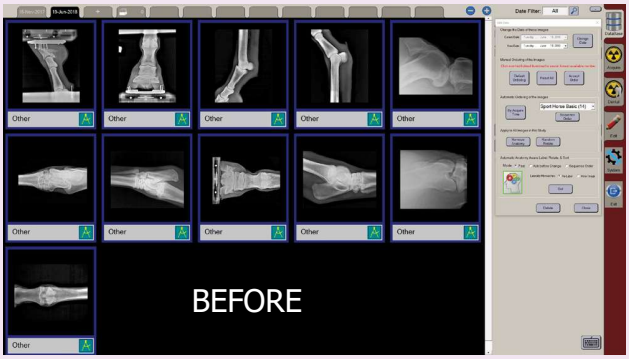
Metron Anatomy Aware™
In the event your images are not labeled, labeled incorrectly, or rotated incorrectly, Anatomy Aware™ can help.

Click on the Date tab of the study you wish to utilize Anatomy Aware™

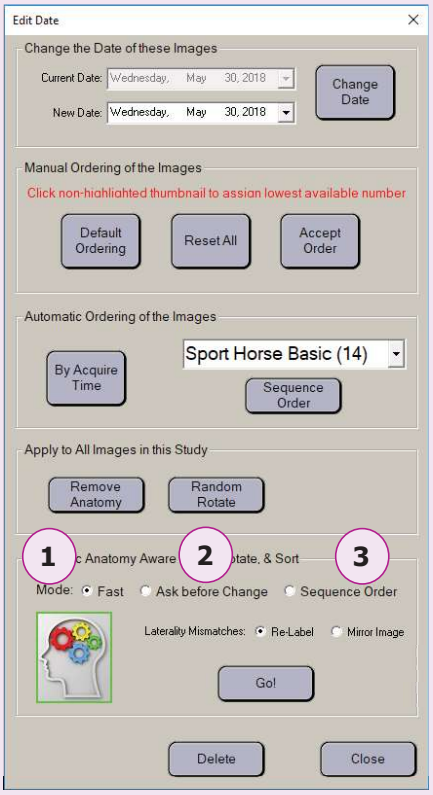


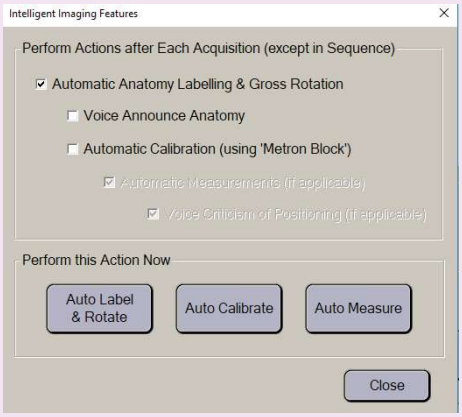
Under Automatic Anatomy Aware Label, Rotate & Sort

1. Automatically label and rotate images - Select the Fast option
2. To review before relabel and rotate - Select the Ask before Change option
3. To sort into the sequence images were taken, Select the Sequence Order option
4. Click "Go!" to begin the Anatomy Aware™ task.





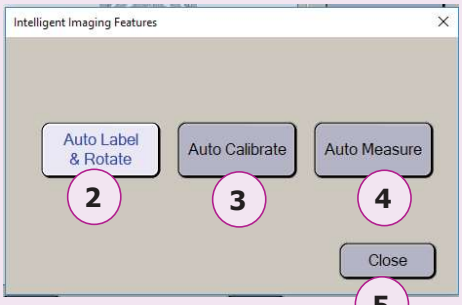




Anatomy Aware™ is available in both the Acquisition process, and also in study review. Make sure to clarify both utilities. It is recommended you test the various Anatomy Aware features in the image acquisition process to determine how this utility affects your work flow.

Intelect Module - continued





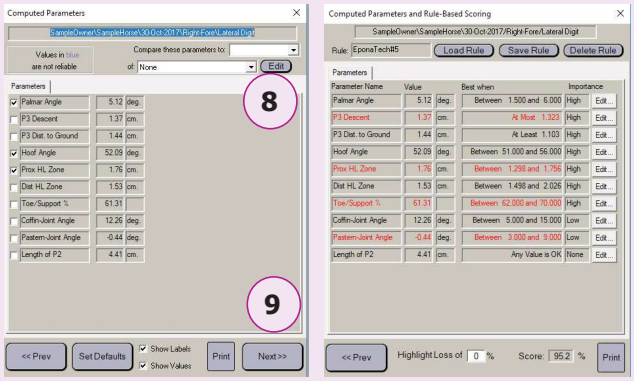


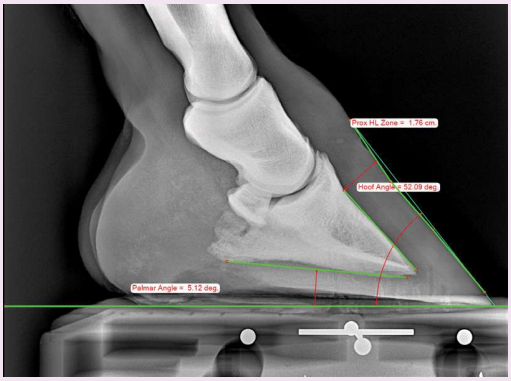


Metron Precision™

Open the image you wish to mark up

1. Click the Intelect Module brain icon
2. Click Auto Label & Rotate (if necessary)
3. Click Auto Calibrate
4. Click Auto Measure (if necessary for hoof mark up)
5. Click Close when all tasks have been completed
6. Go to the Edit tab
7. Click Measures to open Computer Parameters
8. Computer Parameters shows which measurements are visible on the radiograph
9. Click next to review the measurements as compared to normal parameters. -
    * You can also click the Scores tab to see the comparison measurements





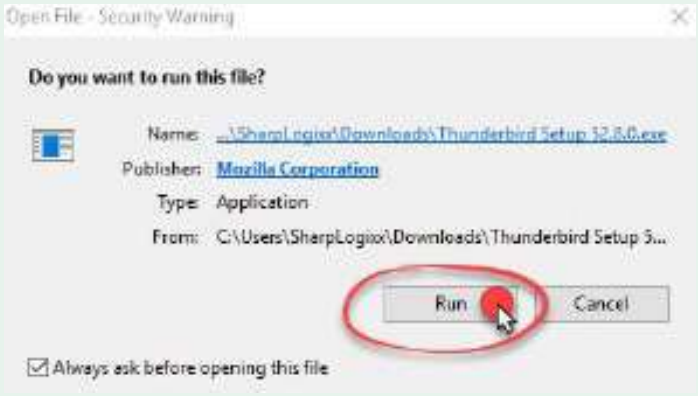
Note - Precision is available only certain anatomical regions which have Metron Guided Mark Ups. To ensure you have all of the latest Mark Up tools be sure your system has Metron with Intelect and also the latest IQ updates.

Metron - Email Set up

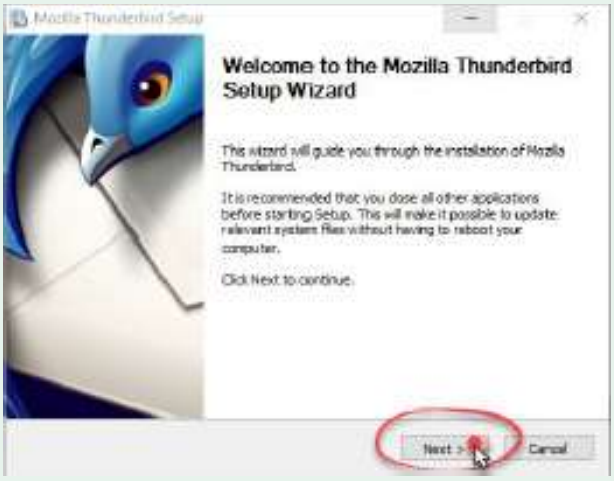
Installing Thunderbird

Metron relies on a third party email program to send email. We recommend using Mozilla Thunderbird. Mozilla Thunderbird can be downloaded using the following link:
https://www.thunderbird.net

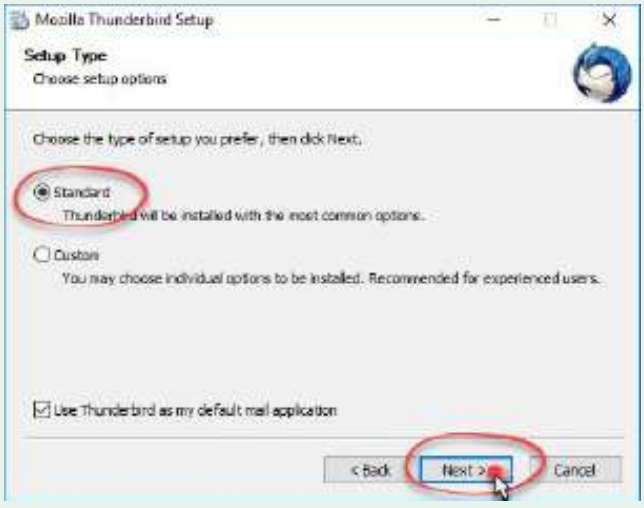
1. Click on "Free Download" Button located in the middle of the page.
2. Depending on your browser, it will start downloading the file for you automatically or it will ask you to run or save. Choose " Save".
3. Once the file is done downloading, Click "Run".



4. Click on the "Next"button

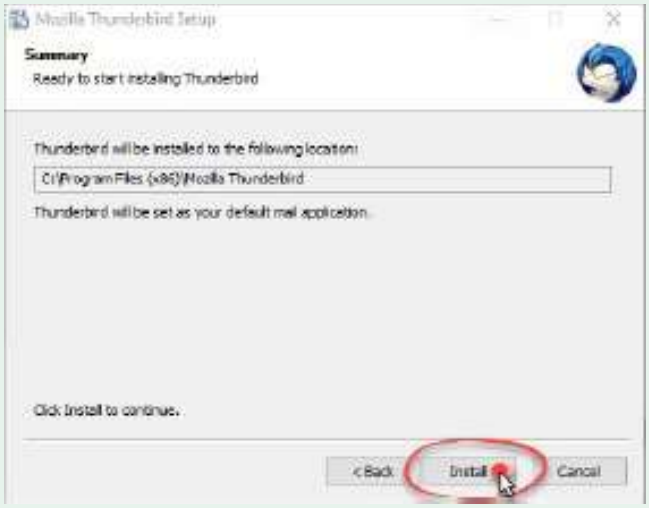


5. Verify Standard is selected and Click on the "Next" button.



Metron - Email Set up - continued

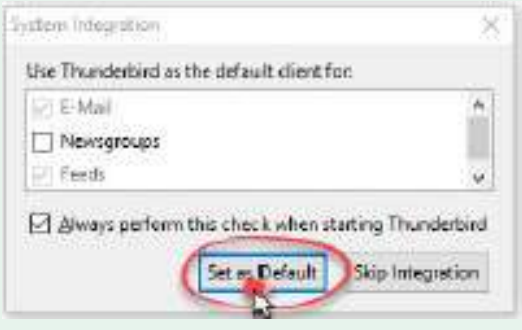
6. Click on the "Install" button.



7. Verify "Launch Mozilla Thunderbird now" is checked. Click the "Finish" button.

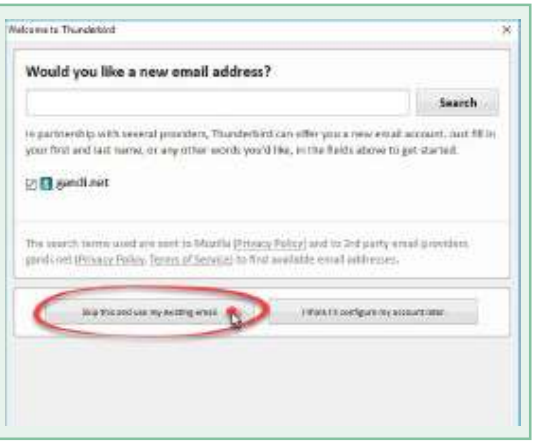


8. Click on "Set as Default" button.



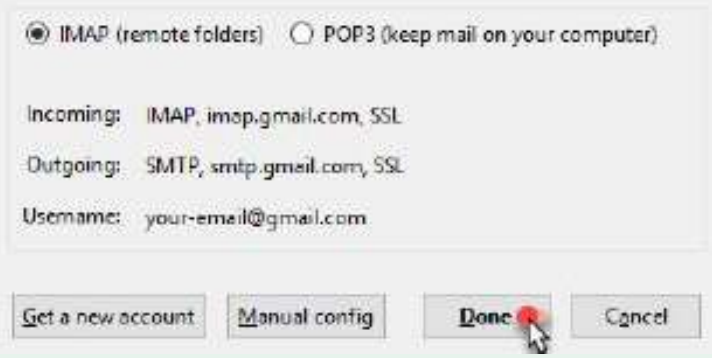
Metron - Email Set up - continued

9. Click on the "Skip this and use my existing mail" button.



10. Enter your email information (This should be an existing email address you already have. If you need a new email address we recommend creating a gmail.com email account. We have found gmail email accounts work well and are easy to setup in Thunderbird.)
    A. Type in your name, or the clinic name. (This is name that will appear for your outgoing emails.)
    B. Type in your existing email. (You are not creating an email address here)
    C. Type in the existing password for the email address you typed in above. (You are not creating a password here.)
    D. Click on the "Continue" button.
    E. Then click the "Done" button.



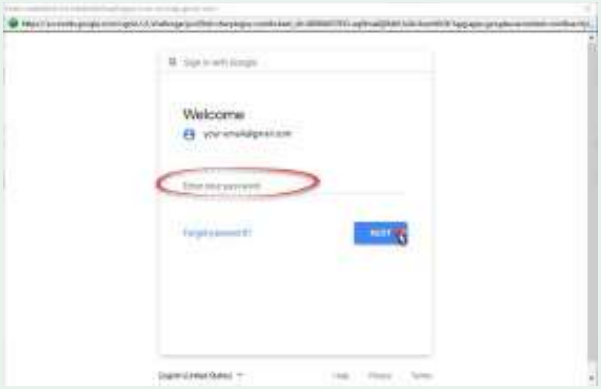


Metron - Email Set up - continued

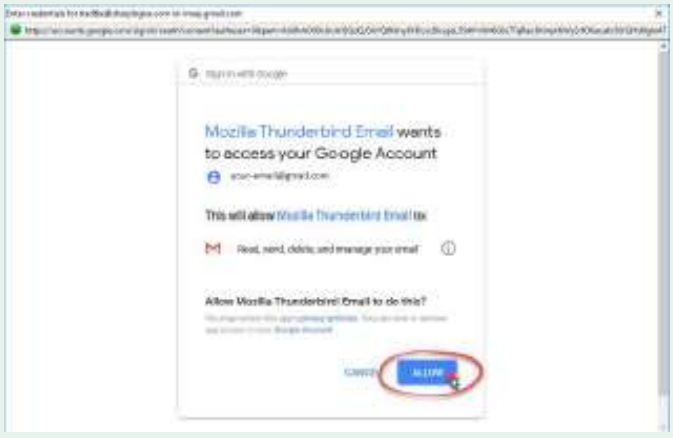
11. Optional: If you are using a gmail account, you will need to go a few additional some steps for security purposes. Verify your email address is correct. Click the "Next" button



12. Re-enter your password for your email account. Click the "Next" button.



13. Click on the "Allow" button. This will allow Mozilla Thunderbird to send email securely.



Metron - Email Set up - continued

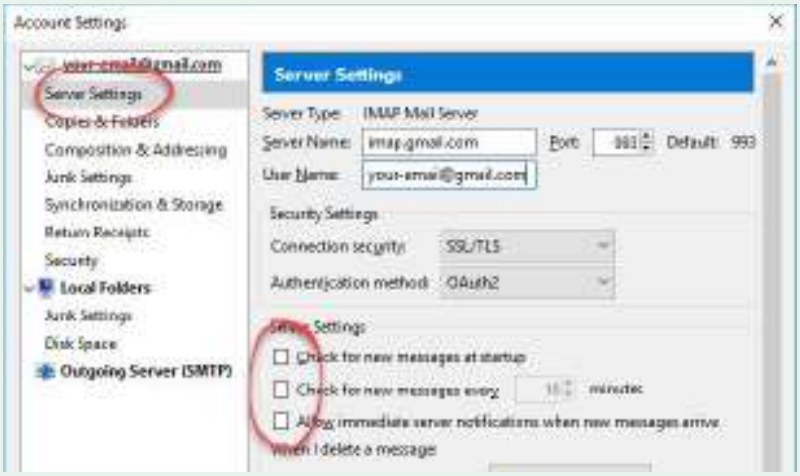
Configuring Thunderbird

The following steps will take you through setting up Thunderbird so that it does not automatically download your incoming emails. This process will also prioritize Metron to send emails first and minimize synchronization of all your emails in Thunderbird, freeing up your data usage and hard drive space.

1. Right click on your email address in the upper right hand corner.
2. Click on "Settings".
3. Click on Server Setting and Uncheck the following:

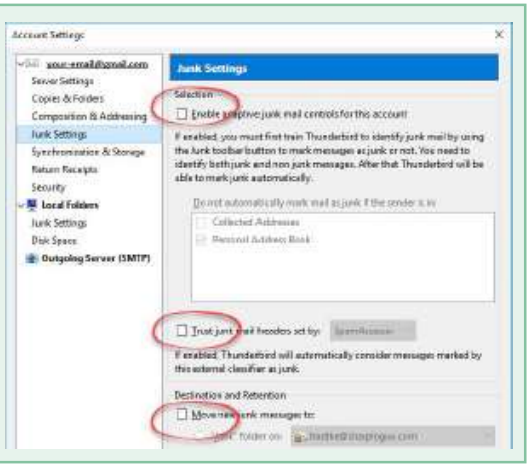


A. "Check for new messages at startup."
B. "Check for new message every 10 minutes"
C. "Allow immediate server notifications when new messages arrive."

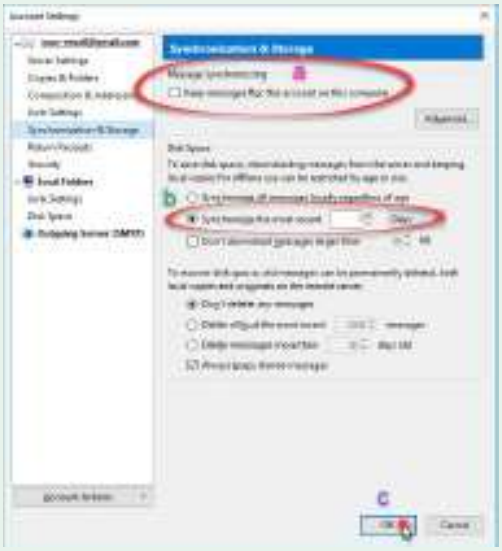


Metron - Email Set up - continued

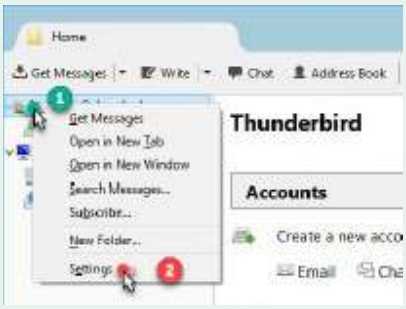
4. Click on Junk Setting. Make sure to uncheck the three boxes.



5. Click on Synchronization & Storage.
   A. Make sure to Uncheck " Keep messages for this account on this computer".
   B. Change "Synchronize the most recent" from 30 to 1 days.
   C. Click the "OK" button.



6. Close Thunderbird and open it up again. (The check for new messages at startup does not stay unchecked the first time. We will want to complete the following steps again.)
   A. Right click on your email address in the upper right-hand corner.
   B. Click on "Settings".
   C. Click on Server Setting and Uncheck "check for new messages at startup."
   D. Click the "OK" button.





Metron - Email Set up - continued

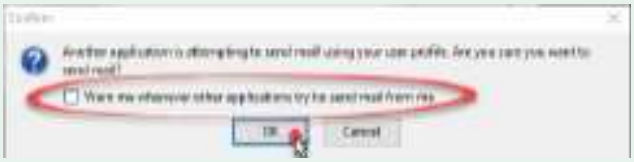
Allowing Metron to Send Email via Metron

1. Verify Thunderbird is closed and then launch Metron.
2. Click on an image once to highlight an image.
3. Click on the Send button.
4. Select "Send via Email" option.
5. Add the email you would like to send to by clicking on the "Addresses" button and then "Add New". Type in the email address and a nickname (optional).
6. Mark the checkbox next to the email address you wish to send to and then click on the "Send" button.
7. A "Server busy" message will appear; click on the "Switch to…" Button.
8. Uncheck "Warn me whenever other application tries to send mail from me" option and then click the "OK" button.





9. Click on the "Retry" button.
10. You will then get a message stating it was sent. Click the "OK" button.
11. To verify an email was sent, you may check your "Sent" items folder from the computer or device you normally check our email on.







Now that you have completed the setup of email with Metron, any future emails you wish to send from Metron can be sent by using the "Send" button.

Contact Metron Support Services if you have additional questions.
We can be reached at metron@metronsupportservices.com or 1-877-638-3868

NOTES

Email	Password

DICOM Support in METRONDVM

EponaTech

Version 7.05
February 2013

1. Introduction

Metron supports the DICOM standard. A "DICOM Conformance Statement" is available at http://www.metron-imaging.com.

2. DICOM File I/O

Metron can import and export a DICOM files in exactly the same way as it imports and exports files of types like jpeg, bitmap, or tiff. When you browse your disk looking for images from Metron, thumbnails appear for each folder that you select, and DICOM images will be displayed just like the other image types.

When importing image files into Metron, look for the button labeled "Auto-Import all DICOM Images" -- this will import all the DICOM images found in a selected folder, and will use the information in the DICOM tags to place them into the Metron database. At any time, click on the "Receive Images" button (in the Database Browser panel) to see a log showing where all imported DICOM images have been stored in Metron.

Likewise, anyplace in Metron where you are allowed to “Export” images or “Save As…” an image, you will find “DICOM” on the list of possible output formats.

The simple reading and writing of DICOM files is the most basic support for DICOM. But DICOM also specifies a communication protocol for sending and receiving images across a local network or the internet, and these topics are addressed in the next sections.

DICOM Manual

3. DICOM Send

Metron supports the "DICOM Send" functionality, allowing any image in Metron to be sent to any other DICOM-compliant product located anywhere on the internet.

To prepare to send via DICOM, you must first define a DICOM system that you will send to. This is done by going to "Preferences" in the top-bar, then choose "DICOM Preferences". On the "Servers" tab, you will see a list of all the DICOM systems that you have set up in Metron. *See Figure 1 below.*



Figure 1: This panel lists all the servers for which you have configured Metron. Additionally, you can indicate your favorite server to Query and Retrieve from, and your favorite server from which to fetch Worklists.

A new DICOM system can be added to the list by clicking the "New…" button just to the right of the list, and a server can be removed by highlighting one and then clicking the "Del…" button. The settings for each server can be reviewed and possibly edited by highlighting one and clicking the "Edit…" button. Doing this brings up the DICOM Peer panel shown below.

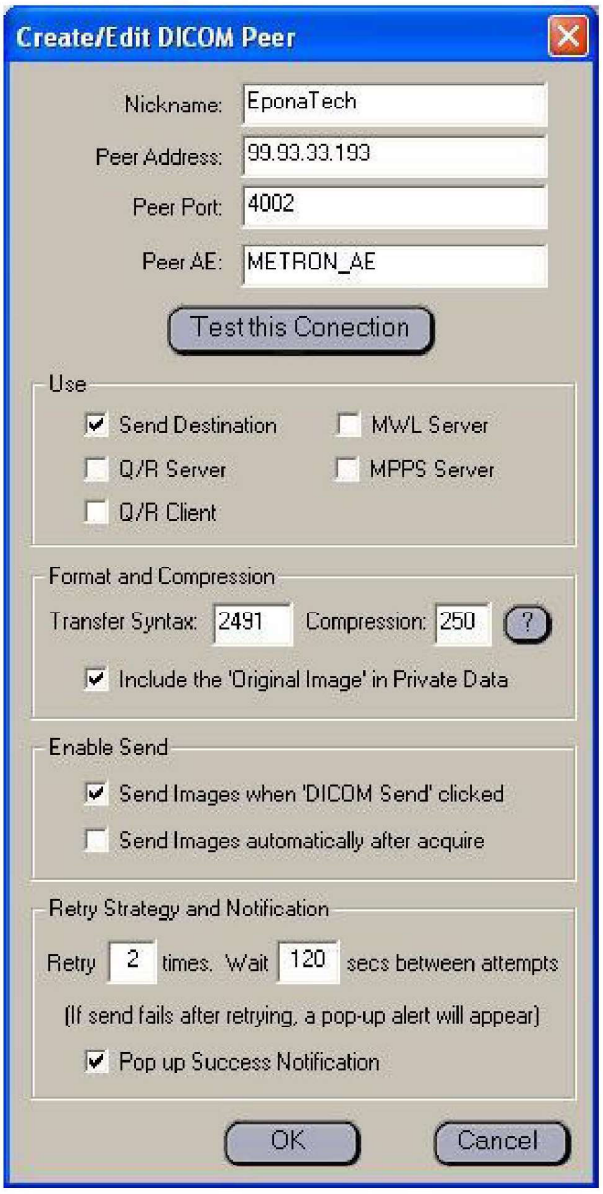


Figure 2: Use this panel to define a new DICOM system, or edit one that you previously set up.

The Peer Address, Peer Port, and Peer AE values must be given to you by whoever you wish to send a DICOM image to. *See Figure 2 above.* These three values specify a particular DICOM enabled product somewhere on your local network or out on the internet somewhere in the world. The "Nickname" is chosen by you as a handy way to remember what each of these DICOMs servers is. Once you have filled in the top portion of the panel, you can click the "Test This Connection" button to quickly check if the DICOM server can be found.

Next, check one or more boxes to indicate the ***use*** of this DICOM peer. For example, "Send Destination" is used to indicate that you plan to send DICOM images to this system.

The next items are for specifying "Transfer Syntax" and "Compression". If you are unsure of these settings, you can set both values to "2" in order to send full-sized uncompressed images which will be of the highest quality (but perhaps large and slow to send). Click on the button labeled "?" to see other possible settings. You probably should discuss this with the person in charge of the DICOM system you are sending to, as they may have a preference, or it may be the case that their DICOM system cannot accept all possible transfer syntaxes. Again, choosing "2" and "2" is a safe choice, and it is the default in Metron. Here is more information on the values that you can use for these two settings:

Use an integer code to select the desired transfer syntax:

2 = IMPLICIT_VR_LITTLE_ENDIAN = "1.2.840.10008.1.2"
21 = EXPLICIT_VR_LITTLE_ENDIAN = "1.2.840.10008.1.2.1"
22 = EXPLICIT_VR_BIG_ENDIAN = "1.2.840.10008.1.2.2"
25 = RLE_LOSSLESS = "1.2.840.10008.1.2.5"
2199 = DEFLATED_EXPLICIT_VR_LITTLE_ENDIAN = "1.2.840.10008.1.2.1.99"
2450 = JPEG_BASELINE_1 = "1.2.840.10008.1.2.4.50"
2451 = JPEG_EXTENDED_2_4 = "1.2.840.10008.1.2.4.51"
2452 = JPEG_EXTENDED_3_5 = "1.2.840.10008.1.2.4.52"
2453 = JPEG_SPECTRAL_NONHIER_6_8 = "1.2.840.10008.1.2.4.53"
2454 = JPEG_SPECTRAL_NONHIER_7_9 = "1.2.840.10008.1.2.4.54"
2455 = JPEG_FULL_NONHIER_10_12 = "1.2.840.10008.1.2.4.55"
2456 = JPEG_FULL_NONHIER_11_13 = "1.2.840.10008.1.2.4.56"
2457 = JPEG_LOSSLESS_NONHIER_14 = "1.2.840.10008.1.2.4.57"
2458 = JPEG_LOSSLESS_NONHIER_15 = "1.2.840.10008.1.2.4.58"
2459 = JPEG_EXTENDED_HIER_16_18 = "1.2.840.10008.1.2.4.59"
2460 = JPEG_EXTENDED_HIER_17_19 = "1.2.840.10008.1.2.4.60"
2461 = JPEG_SPECTRAL_HIER_20_22 = "1.2.840.10008.1.2.4.61"
2462 = JPEG_SPECTRAL_HIER_21_23 = "1.2.840.10008.1.2.4.62"
2463 = JPEG_FULL_HIER_24_26 = "1.2.840.10008.1.2.4.63"
2464 = JPEG_FULL_HIER_25_27 = "1.2.840.10008.1.2.4.64"
2465 = JPEG_LOSSLESS_HIER_PROCESS_28 = "1.2.840.10008.1.2.4.65"
2466 = JPEG_LOSSLESS_HIER_PROCESS_29 = "1.2.840.10008.1.2.4.66"
2470 = JPEG_LOSSLESS_NONHIER_14B = "1.2.840.10008.1.2.4.70"
2490 = JPEG2000_LOSSLESS_ONLY = "1.2.840.10008.1.2.4.90"
2491 = JPEG2000 = "1.2.840.10008.1.2.4.91"

For transfer syntaxes that use compression, you may specify how much compression to use by giving an integer on the range [2..255] where 2 specifies the least compression (highest quality) and 255 specifies the most compression. For transfer syntaxes which don't use compression this value is ignored.

One restriction concerning simultaneous transmissions to multiple recipients: all recipients must have the same "transfer syntax" and "quality factor" specified. If these values need to vary by recipient, then you'll need to perform a separate send for each one.

DICOM Manual

Next, we can configure Metron to send to this particular recipient when the Metron user manually clicks a "DICOM Send" button, or, automatically when a CR or DR image is taken with Metron (This only available if you have a DR or CR system which is based on Metron). If you choose the "Auto-Send" option, you have the further option of having the image sent immediately when acquired, or only when the user clicks the "Accept" button. Use of the later allows the user to possible rotate, crop, and filter the image before pressing "Accept" to save the image locally and send it out via DICOM communications.

The last two items in the panel allow you to configure the behavior of the DICOM send function should the transmission fail, or should it succeed. Note that in any case you will ***always*** get a pop-up telling you of a transmission failure. The pop up telling you of success is optional (only downside: the click required to clear it off the screen after you see it). In addition to the failure pop-up and the optional success pop-up is a log file which is always kept in which you can review all the details of the DICOM sending activity.

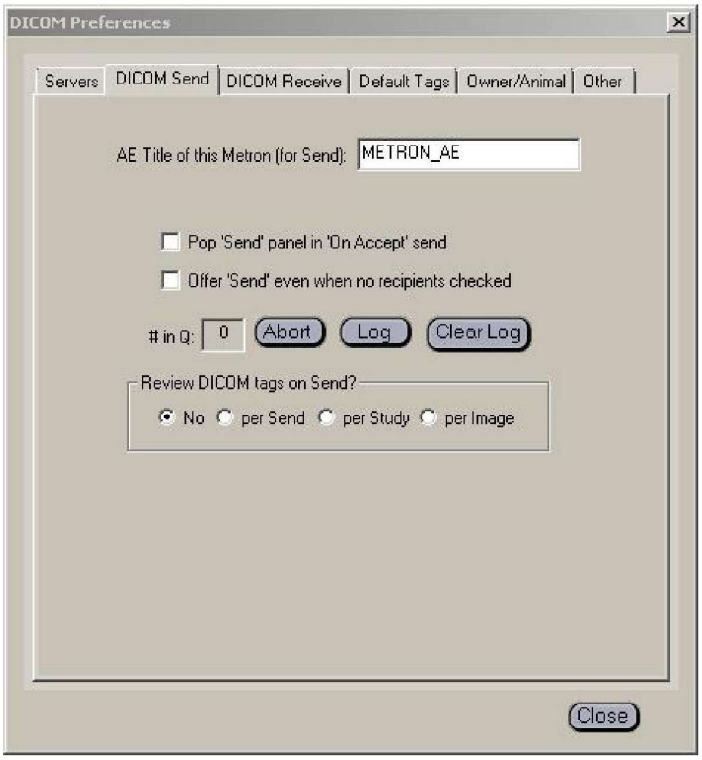


Figure 3: The DICOM Send tab provides some controls and supports a log of all sends.

In the panel shown above, Figure 3, you can see where you can pop up the log file, or clear it out. Also, the panel shows how many images are in the queue waiting to be sent, and there is an "Abort" button in the (unlikely) event that you decide you want to cancel the transmission of images awaiting being sent.

DICOM Manual

At the bottom of the panel, you see that you have a choice regarding viewing the "DICOM header tags" when you perform a DICOM send. Choosing "No" means the system won't show you these tags at the time of sending at all – this choice minimizes mouse clicks, as otherwise you will use one or more mouse clicks to take this panel off the screen when a send occurs. If you select "Once per Study" then a panel showing the DICOM tags will pop up when you have clicked "DICOM Send" once for each study being sent. This gives you a chance to review the tags – if you spot something wrong, there is a "Cancel Send" button so you could cancel the send, got fix the tags, and then send again. The panel shown below shows the DICOM header tags.

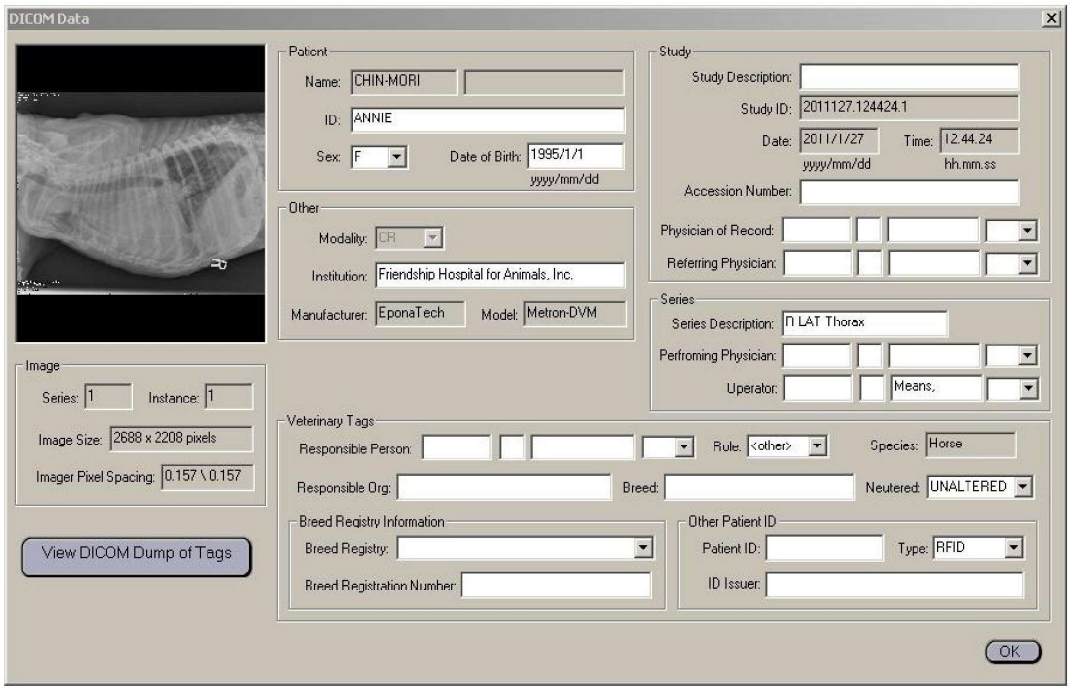


Figure 4: The DICOM Data panel.

The most important tags are displayed in this panel-Figure 4. An item near the lower left portion of this panel lets you view all the tags supported by Metron. When you are viewing these tags during a "DICOM Send" operation, they are in read-only mode. If you see something you need to change, you'll have to click "Cancel Send", go edit the tag(s) and then again click "DICOM Send" to send the image(s). Editing of the tags is permitted when you see the "DICOM Data" button in Metron's "Single Image View" panel.

Since Metron, particularly when is used as acquisition software of a DR or CR system, is the source of DICOM images, we have the philosophy that the user is allowed to edit DICOM tags since the image is being created in Metron, and obviously the creator needs to be able to set the tags as needed. On the other hand, since Metron can import DICOM files that may have come from other DICOM sources, it is ***not*** recommended to edit the tags of those "foreign" DICOM files. While it is not strictly forbidden in Metron, the editing of tags of a foreign DICOM file in Metron causes a record to be kept in a special log file known as an Audit Trail. This would allow some responsible

person to make a review and learn that Metron was used to alter DICOM tags in a foreign DICOM file.

Metron encapsulates all the “Metron specific” data such as calibration, free mark-up, and guided mark-up, etc inside a “Private Tag” in the DICOM file. If you send a DICOM file from Metron to another Metron user, the recipient will be able to receive the image, and all of its mark-up and data into their copy of Metron.

A DICOM Send is initiated from the main Database Browser panel of Metron by highlighting one or more thumbnail images, and clicking the "Send Images" button as shown in Figure 5.



Figure 5: The Metron Database Browser panel.

There are 3 ways to send images: DICOM, post to http://www.metronwebviewer.com, or by e-mail. You can select your default or favorite method in the General Preferences panel, or simply choose the method each time you enter the Send Images panel. See Figure 6.

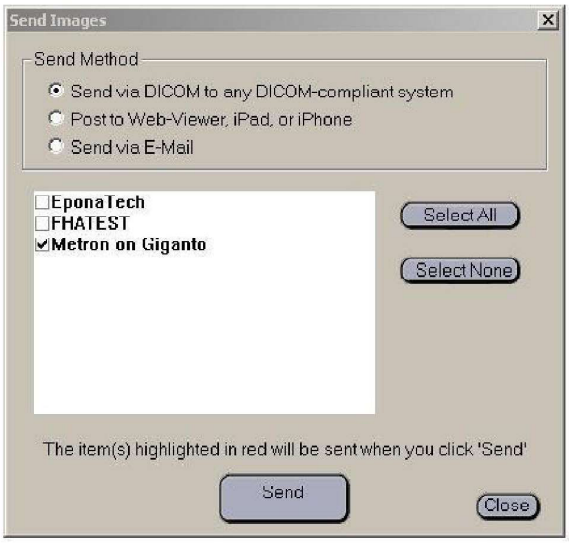


Figure 6: Mark the check box for one or more recipients and click 'Send'.

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DICOM Receive

If DICOM images are sent to Metron, the "Receive Images" button in the Database Browser panel will begin to blink within 7 seconds of the image(s) arriving. By clicking on the Receive Images button you can see a transcript showing where they will go in Metron when you click on the "Import" button there. We will also discuss "auto-import" below - in this scheme the button does not blink and arriving images are silently accepted into your Metron database.

To configure the system which will send DICOM images to Metron, you need to know three things: the IP address of the PC that Metron runs on; the Port that Metron listens on (default value is 4002); and the name, or "AE Title" of Metron (default value is METRON_AE). With those three bits of information the system which will send images to Metron can be configured. The Port and AE Title used by Metron can be changed on the DICOM Receive tab if need be.

If you do not know the IP address of your computer, you can find out by going to the site http://www.ipchicken.com which will display your IP address.

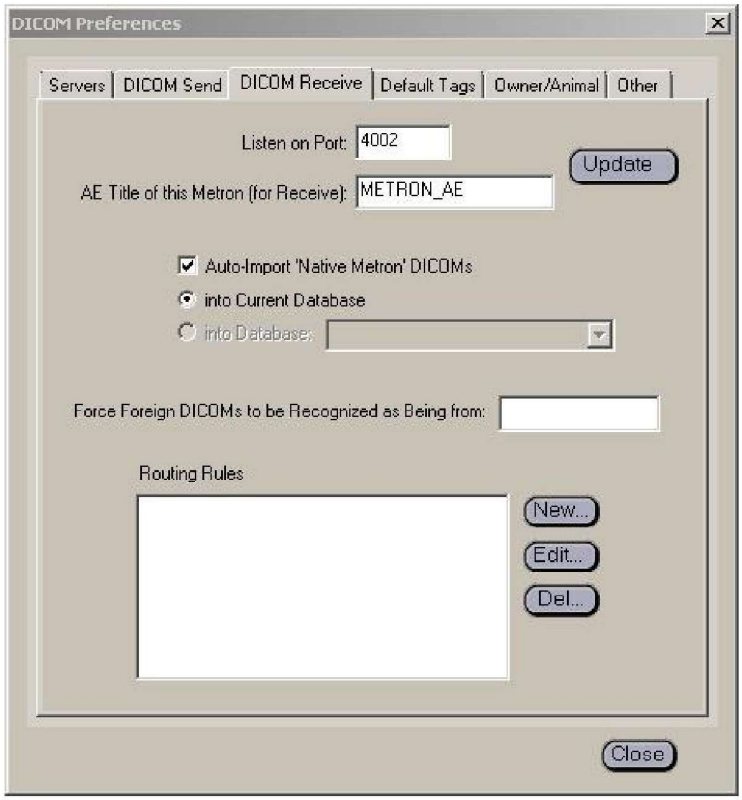


Figure 7: DICOM Receive tab: Configure auto-importing of native DICOMs and/or routing rules for recognized foreign DICOMs.

DICOM Manual

Receiving "Native DICOMs" and "Recognized Foreign DICOMs"

A "Native DICOM" is one which was created on a Metron system, and therefore it has the special 'private data tag' which holds all of the original Metron information (calibration, markup, measurements, etc). Generally it is a good idea to choose to auto-import them directly into the Metron database (this is the default setting). When Metron is configured to auto-import these DICOMs, their arrival will not cause the "Receive Images" button to blink red, rather, they will be silently and automatically inserted into the Metron database. A record of their auto-importation is kept in the Receive Images log, so you can always check the log and see that this has occurred.

A "Recognized Foreign DICOM" is one that did not originate from a Metron system, but it is from a system that Metron can recognize. For example, Metron knows how to tell that a DICOM file originated from an Eklin DR system. If Metron can recognize the source of the DICOM file, Metron can know where to look to find the species, the anatomical region, and other details. Some of these details are not always in standard locations (especially in veterinary use of DICOM.)

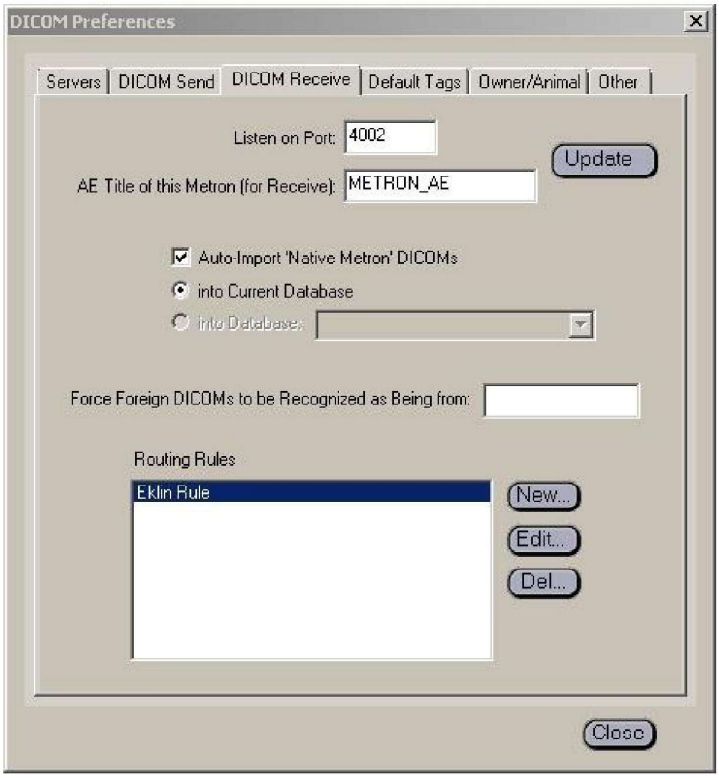


Figure 8: DICOM Receive tab with a Routing Rule specified.

In the panel shown above, a "routing rule" has been created called "Eklin Rule". You click on the "New..." button to create a new routing rule, or click on "Edit..." to view or modify an existing routing rule. The panel below shows the definition of the "Eklin Rule." (Figure 9)

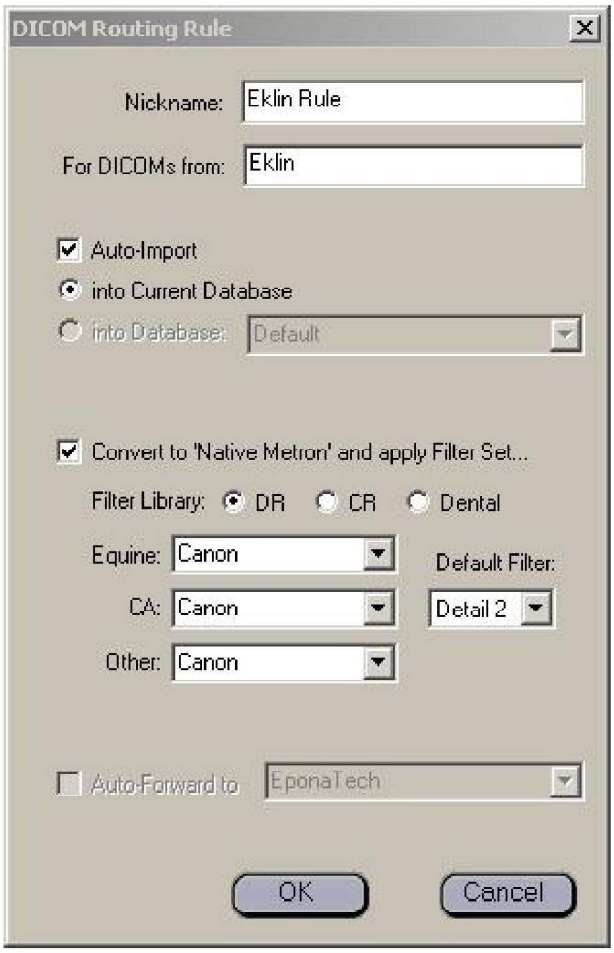


Figure 9: Example of a Routing Rule.

The "Nickname" can be chosen as you wish. The important keyword "Eklin" has been inserted in the "For DICOMs from:" field. Please ask EponaTech if Metron knows how to recognize DICOMs from a particular system of interest, and what the corresponding keyword is for that system.

This routing rule says that if a DICOM arrives that is recognized as being from an Eklin system, it will be auto-imported into the current Metron database, and will be converted to a native Metron image. Further, it will be automatically filtered with "Detail 2" from the filter-set called "Canon".

Note: The only way that a foreign DICOM can be auto-imported into Metron's database is by use of a routing rule. If not matching routing rule is found, they will arrive in "pending" mode, and the Receive Images button will blink red to alert you.

Special Requirement when Installing on Windows 7 or Windows 8

After installing Metron on a Windows 7 or Windows 8 computer, there are a few more steps which need to be done to enable it for DICOM receive. These things occur automatically on Windows XP, but for Windows 7 or 8, where there is a stricter security environment, these things must be done manually. This is a one-time operation, performed just once after installing Metron.

1) Look in folder C:/Epona/Diclis and you will see three files with "exe" extensions. They are called: launch_service.exe, metron_service.exe, and remove_service.exe. ***For each of these***, right-click on the file, and choose "Properties". In the properties panel that pops up, choose the "Compatibility" tab. As shown in Figure 10 below, check the box labeled "Run this program as an administrator".

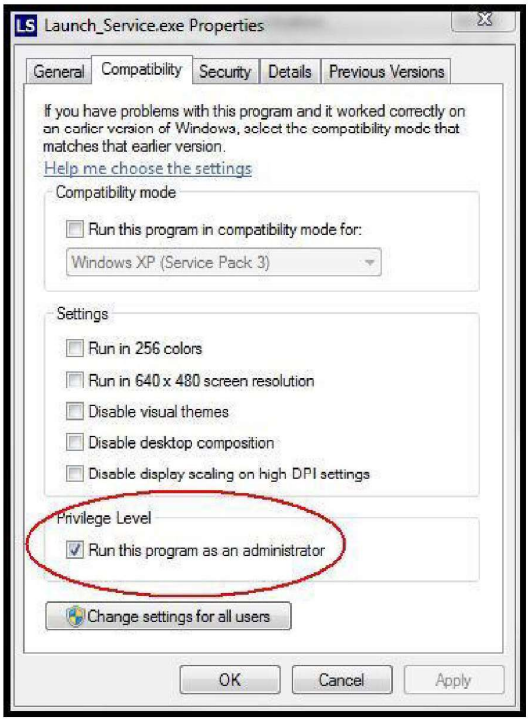


Figure 10: Set a program to "Run as Administrator".
Repeat this for 3 programs in the C:/Epona/Diclis folder.

Make sure to enable this setting for all 3 of the programs, and click the "OK" button at the bottom of the panel each time.

2) Now double-click the program called "Launch_Metron.exe". This should start a process on the computer called "Metron_Service".

3) Now check with the Task Manager to see that there is a process called "Metron_Service" running. To get the Task Manager, do a CTRL-ALT-Delete and then choose the Task Manager. Choose the tab labeled "Processes". To check if

"Metron_Service" is running, you may have to click on the choice to "show processes from all users". See Figure 11 below.

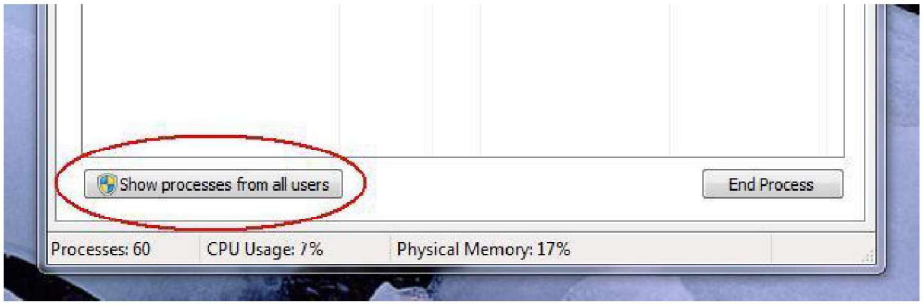


Figure 11: Click this button for a full listing of all running processes.

If you see "Metron-Service" is running, you are done, and Metron is ready to receive DICOM transmissions. If it is not running, something is wrong, so please check these instructions again.

If you shutdown the computer and re-boot, the "Metron_Service" process should be automatically started for you, so you should not have to perform any of these actions again.

The "Metron-Service" is the thing that "listens" for DICOM files that might be sent to Metron, so it needs to be running in order for DICOM Receive to function in Metron.

4. DICOM Modality Worklist

Modality Worklist allows Metron to query s remote DICOM server to fetch "worklists". That is, Metron can query a practice management system to ask "are there scheduled appointments requiring radiography?". This way, the patient information entered in the PM system can be transferred to Metron. In the "DICOM Preferences" Servers panel there is a setting where you indicate which server will be used to fetch worklists from. Then, on the Database Browser panel of Metron, a small button in the lower left labeled "W L" can be clicked to query that server.

Using the Worklist panel, the technician at Metron can see the schedule of upcoming exams. Any given exam can be used to create a new patient in Metron - thus avoiding re-entering of patient information in Metron.

5. DICOM Compliant CDs



Figure 12: Burn CD/DVD button

DICOM compliant CDs and DVDs can be written by Metron. This function is found in the Database Browser panel and is labeled "Burn CD/DVD" as shown in Figure 12. To send a partial study, highlight the thumbnails of the images you wish to include before going into the Burn CD/DVD function. Adding of full studies can be done from within that panel.

These CDs contain the images in DICOM format as well as a viewer program (which resembles Metron itself) so that the CD you create may be sent to a recipient and they can view the images directly off the CD without the need for any particular software on their PC.

Alternate DICOM viewers can also view the images on the CD because the CD, in addition to the images, contains the required DICOMDIR file which some systems require.

7. Query/Retrieve from a Remote Server

Introduction

Metron supports the client side (or "SCU") of the DICOM Query/Retrieve capability. By this means, Metron can pull images from a DICOM PACs system back to Metron.

Configuring Systems for Q/R

The following steps must be taken to prepare for using Query/Retrieve:

1. Under "DICOM Preferences" create a server with the information given to you by the administrator of the PACs that you intend to retrieve images from.

2. Under "DICOM Preferences" you can choose which (of possibly several) servers you intend to use as your principle Q/R server. This simply will make it the default setting later when you enter the Q/R panel. See Figure 13.



Figure 13: Choose your favorite Q/R server as the default.

3. The administrator of the remote server that you intend to query and retrieve from must be told the IP address, Port, and AE Title of your copy of Metron. The default values for the latter two are 4002 and METRON_AE. These can be altered, if need be, under "DICOM Preferences" under the "DICOM Receive" tab. If the remote server has not be configured to 'know' of your Metron, you may find that you can query, but not retrieve.

Using Query/Retrieve

Since the use of Q/R results in adding images to your system, it is located in the center section of the main Metron Database Browser panel as shown in Figure 14.

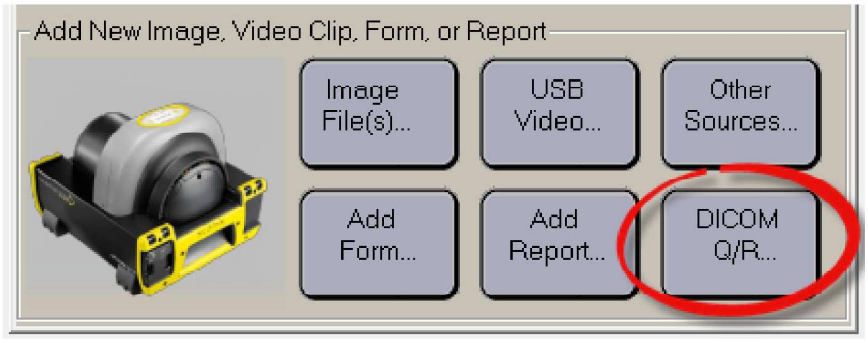


Figure 14: Click on the button labeled "Q/R…" (or in some layouts "DICOM Q/R…")

The top portion of the panel lets you select the server you wish to pull images from, and to describe the query you will use to hunt for images on that server. See Figure 15.

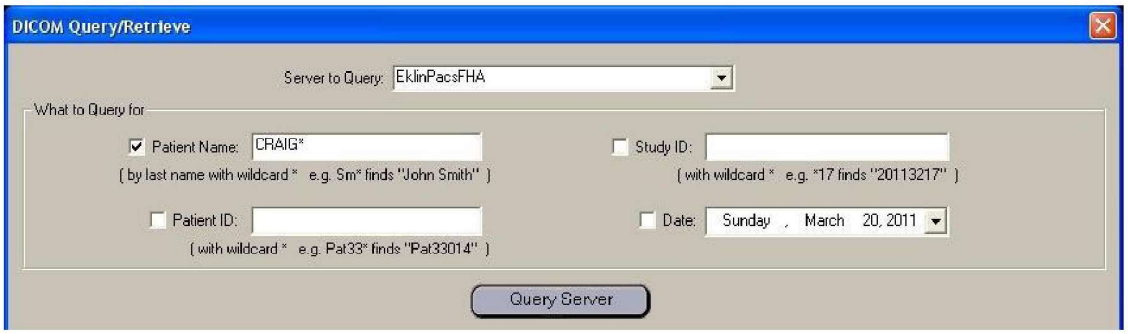


Figure 15: Check one or more of the query criteria and enter values (usually with "*" for wildcard.)

It is recommended to use the "*" character as a wild-card unless you know the exact value used on the remote system for patient name, or other criteria. You can query on one or more of:

1) Patient Name
2) Patient ID
3) Study ID
4) Date of the Study

After setting up your criteria, click on "Query Server". After a short delay a list of all studies on the remote system matching your criteria will be displayed. If you don't see what you are seeking, just alter your query keys, and click "Query Server"' again.

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To retrieve one of the displayed studies back to your local Metron, click on that study to highlight its line in the list. See Figure 16. At the bottom of the panel, you will see how Metron will extract the owner and animal name from the DICOM tags. You can alter the source of these tags with the three associated pull-down menus to try to extract the owner and animal as you would like to see it in Metron.

Click the "Retrieve" button to commence the retrieval of the study images.

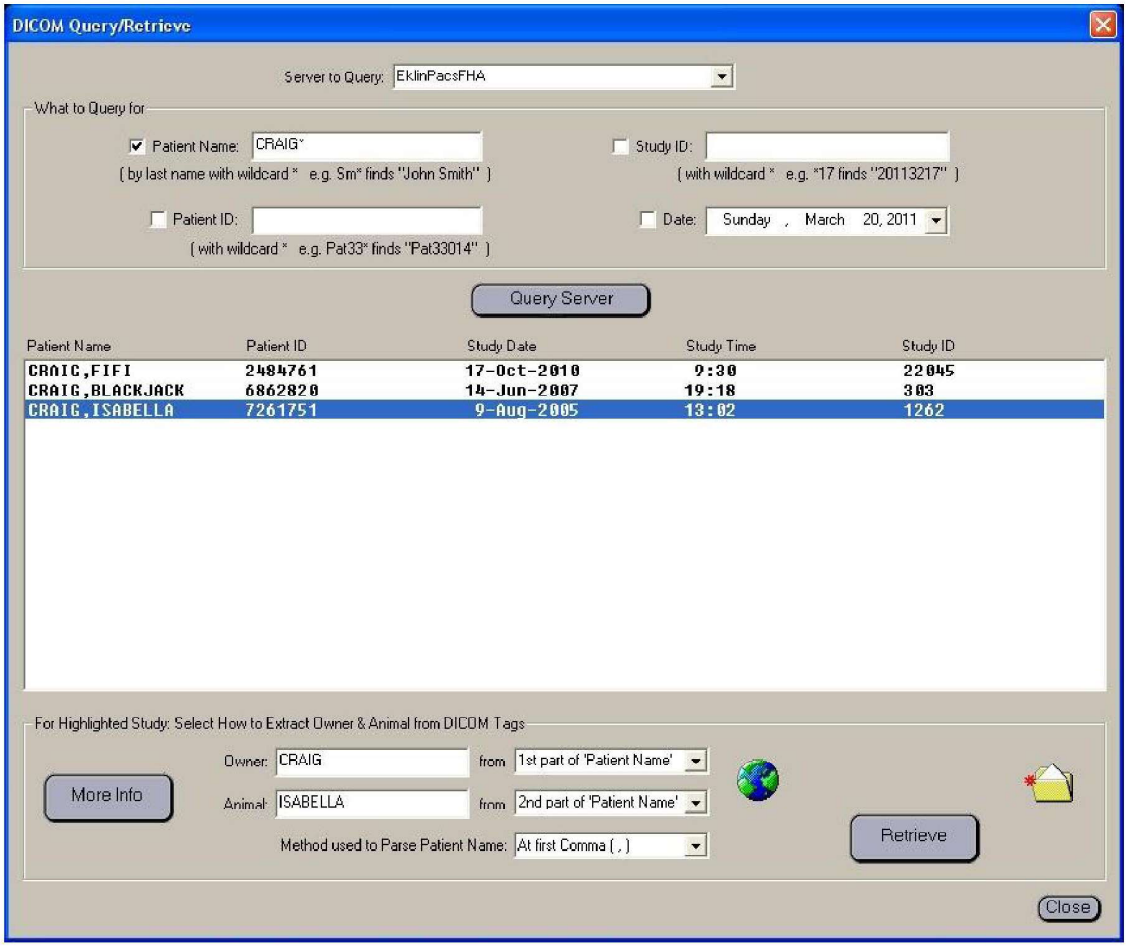


Figure 16: A study is selected, criteria for determining Owner and Animal selected, and retrieval is underway.

As soon as the retrieval has commenced, you are free to leave this panel and do other activities in Metron while the images are fetched. You can even exit Metron and they will still be fetched (of course, the computer must stay on and connected to the internet).

Metron's Q/R feature is "study based" – you query for a list of studies, and you may decide to retrieve a study. There is not a way to only retrieve a subset of the images in the study – it is always the full study that is retrieved.

At any time, you may click on the "Receive Images" button in Metron's main Database Browser panel to see the status of your retrieval operation.



Figure 17: The "Receive Images" panel shows a log of images that have come into Metron via DICOM, including those retrieved as part of a Q/R action.

If the retrieval animation is running, it means Metron is running the retrieval process in the background. New lines will appear in the log as images arrive at Metron. You can go look at them, and return to this panel later to again check progress. See Figure 17.

Depending on the kind of remote server you are retrieving from, and how you have your copy of Metron configured, the retrieved images might show up as "Pending" (causing the "Receive Images" button to blink), or they might be "Auto-Imported" directly into your local Metron database (which does not cause the "Receive Images" button to blink, but does leave a line in the log seen in the Receive Images panel).

In the "DICOM Preferences" panel under the "DICOM Receive" tab, it may be possible for you to set up an auto-import rule for DICOM images arriving from a Q/R transfer.

Troubleshooting Query/Retrieve

1. I can Query but Retrieve does not return any images

Most likely the remote server has not been set up to "know" about your Metron and so it is not allowing the unknown system to pull images from it. The administrator of the remote system has to set it up to "know" about your Metron. What they need is:

1) Your IP address (use www.ipchicken.com to get your IP address if you don't know it)
2) Your Port (Metron listens on port 4002 by default)
3) Your AE title (Metron is known as METRON_AE by default)

Note: if you don't have a "static IP address", your IP address may change from time to time without your knowledge. You can always check with www.ipchicken.com --- but of course it will be inconvenient to be continually having to ask the remote system's administrator to update your IP address in their server.

2. Retrieve gets stuck and never completes

You can stop an active retrieve operation in Metron by going back to the Q/R panel and clicking on the "Retrieve" button. It will tell you that a retrieve is underway, and will offer to let you stop it. See Figure 18.

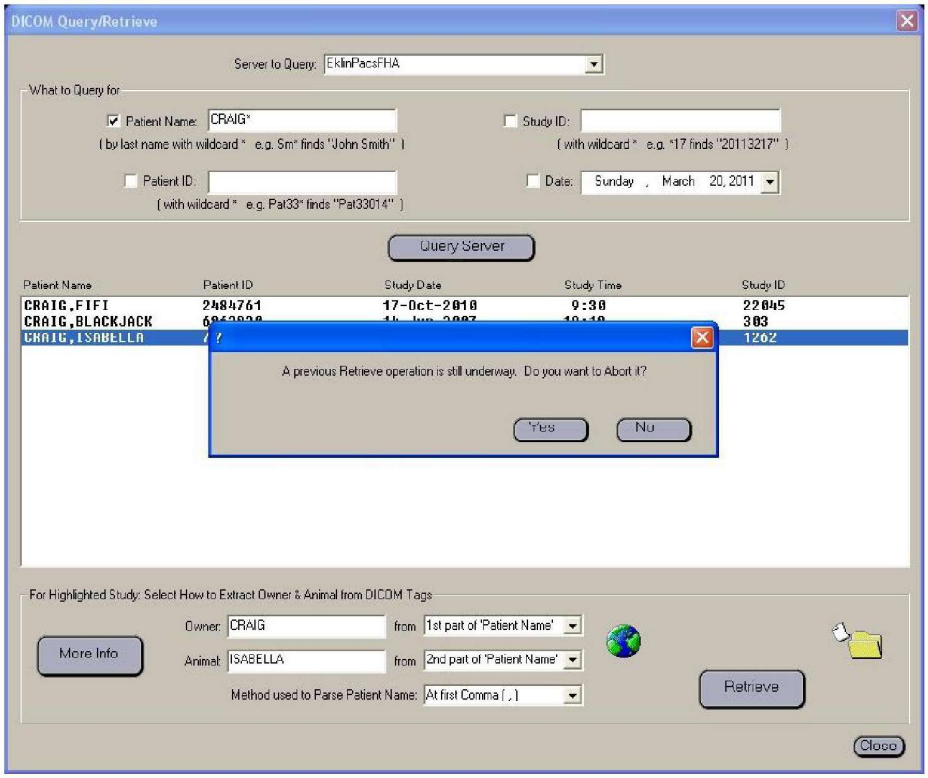


Figure 18: Click "Retrieve" while Metron is retrieving, and you can kill the retrieve.

8. Submitting to the Keeneland Respository

Metron can be used to create CDs or DVDs containing DICOM images in the format required by the Keeneland Respository as described in their document "***Keeneland Repository Digital Requirements for 2008 September Yearling Sale***".

This document describes how to configure Metron for this purpose.
Here are the step-by-step instructions:

1) Make sure you are using Metron **version 4.54** or later
2) **Animal name** in Metron should be all upper case, (e.g. "WINTERS EDGE 07")
3) Set up proper **Animal ID** as specified in the Keeneland guidelines document (e.g. "K0809-001") . This animal ID is given under the "More Information" tab in Metron when you specify a new animal, or when you click on the "edit" button to the right of the animal's name (see Figure below).
4) Put "**Consignor's Name**" into "**Responsible Person**" or "**Responsible Org**" (Consignor's name should be in all upper case) (see Figure below).
   Note: The "Consignor's Name" for the DICOM tag will be drawn from either the "Responsible Org" field or the "Responsible Person" field, whichever is not blank. If both filled in, the "Responsible Organization" will be used.
5) Note: Owner name in Metron not particularly important, you can use the owner's name, the farm name, or the consignor's name, as you please.

Configure Settings in the "DICOM Preferences" panel found under "Preferences" in the Metron top-bar. Several of the settings in this panel must be altered from their default settings. These settings are described below and shown in the figure below.

1) Select 'write-Owner' to "Patient Name"
2) Turn off 'write-Owner' to "Responsible Person"
3) Select 'write-Animal' to "Patient Name"
4) Switch definition of Study to "Date, Keeneland Series"
5) Set "Study Descriptions" to "Responsible Person or Organization"
6) Verify that you are set to send "DR Originals in DICOM on Export Viewer CDs"

Please see the circled items in Figure 19 and Figure 20 in regards to these 6 points listed above.

Finally, make sure that the anatomical regions and views as selected in the Metron user interface match the settings in Table 1 (below). The specified Metron anatomical regions will lead to the proper and desired Keeneland tags being assigned to the images.

In most cases, this assignment is logical and straightforward, but note things such as the fact that for a front leg Fetlock, the Metron view "Flex Lateral" should be used, whereas for a hind fetlock the Metron view "Lateral" should be used.

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Metron Anatomical Description			Keeneland Image Label	
Region	**View**		**Left**	**Right**
Carpus	Lat Med Oblique		L Carpus_DLPMO	R Carpus_DLPMO
Carpus	Med Lat Oblique		L Carpus_DMPLO	R Carpus_DMPLO
Carpus	Flexed Lateral		L Carpus_FLM	R Carpus_FLM
Carpus	Skyline[1]		L Carpus_Sky_DRow	R Carpus_Sky_DRow
Fetlock[2]	F	DP	L FFetlock_DP	R FFetlock_DP
Fetlock	F	Med Lat Oblique	L FFetlock_DMPLO	R FFetlock_DMPLO
Fetlock	F	Lat Med Oblique	L FFetlock_DLPMO	R FFetlock_DLPMO
Fetlock	F	Flex Lateral	L FFetlock_FLM	R FFetlock_FLM
Fetlock	H	DP	L HFetlock_DP	R HFetlock_DP
Fetlock	H	Med Lat Oblique	L HFetlock_DMPLO	R HFetlock_DMPLO
Fetlock	H	Lat Med Oblique	L HFetlock_DLPMO	R HFetlock_DLPMO
Fetlock	H	Lateral	L HFetlock_LM	R HFetlock_LM
Hock	Med Lat Oblique		L Hock_DMPLO	R Hock_DMPLO
Hock	DP		L Hock_CrCa	R Hock_CrCa
Hock	Lateral		L Hock_LM	R Hock_LM
Stifle	Lateral		L Stifle_LM	R Stifle_LM
Stifle	Lat Med Oblique		L Stifle_CaLCrMO	R Stifle_CaLCrMO

Table 1: Correspondence between Metron anatomical names and Keeneland tags.

Notes:

1. Either of the Metron view names which start with "Skyline" may be used
2. For all of the Fetlock shots, you can alternatively use the region names in Metron of "Foot", "Pastern", or "Cannon" (unless such a region is lacking the view name required, e.g. "Flex Lateral").

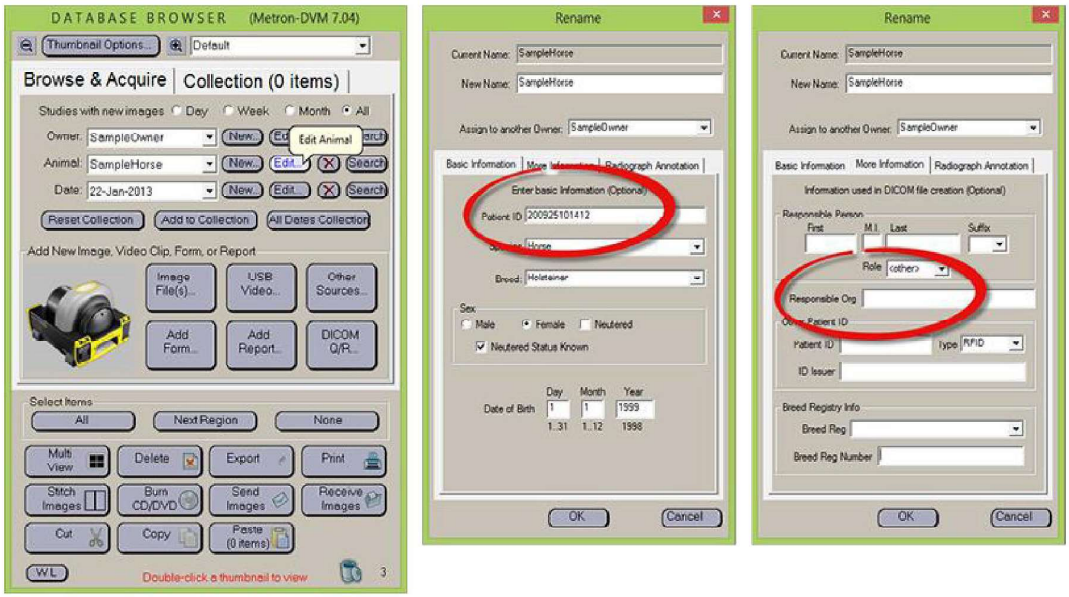


Figure 19: Edit Animal to add proper "Patient ID" and put "Consignor's Name" into the "Responsible Org" field, or alternately, if an individual's name, you can place it in the "Responsible Person" field.

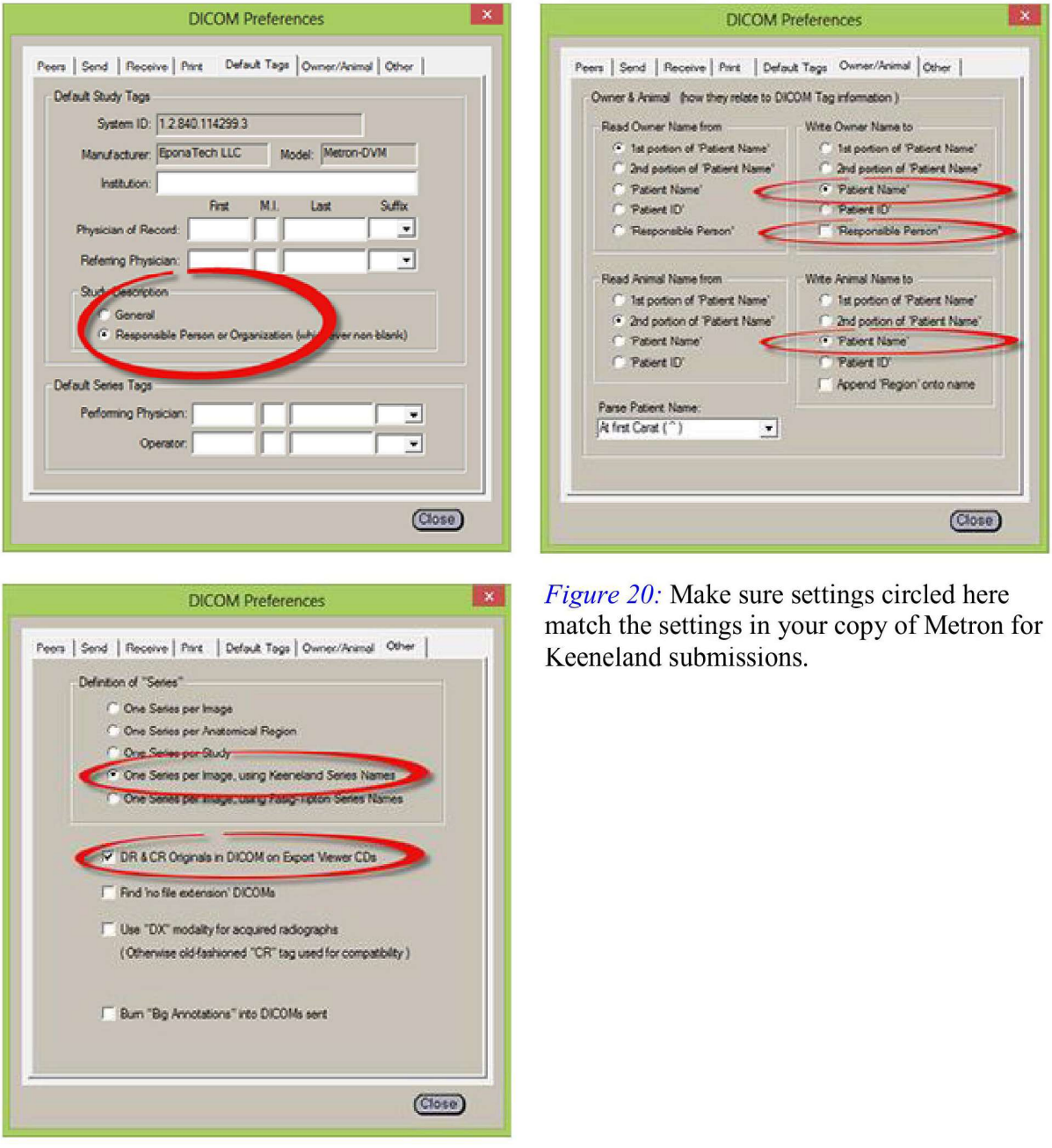
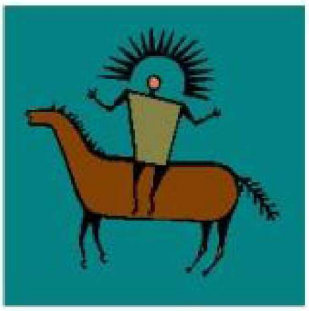


Figure 20: Make sure settings circled here match the settings in your copy of Metron for Keeneland submissions.



EponaTech Metron
DICOM Conformance Statement

Version 8.3

July 2018

DICOM Conformance Statement - continued

1. Introduction

This conformance statement specifies the compliance of EponaTech's Metron family of software products to the DICOM standard Version 3.0.

2. Implementation Model

EponaTech's Metron, may both send a receive images using C-STORE both as SCU and SCP. Metron may also Query and Retrieve from a DICOM server, using C-FIND and C-MOVE requests as an SCP. Metron may also create DICOM-compliant CDs or DVDs. Additionally, Metron can query a remote server for Worklist information using C-FIND as an SCU.

2.1 Application Data Flow Diagram

Figure 1 shows a Data Flow Diagram for Metron.

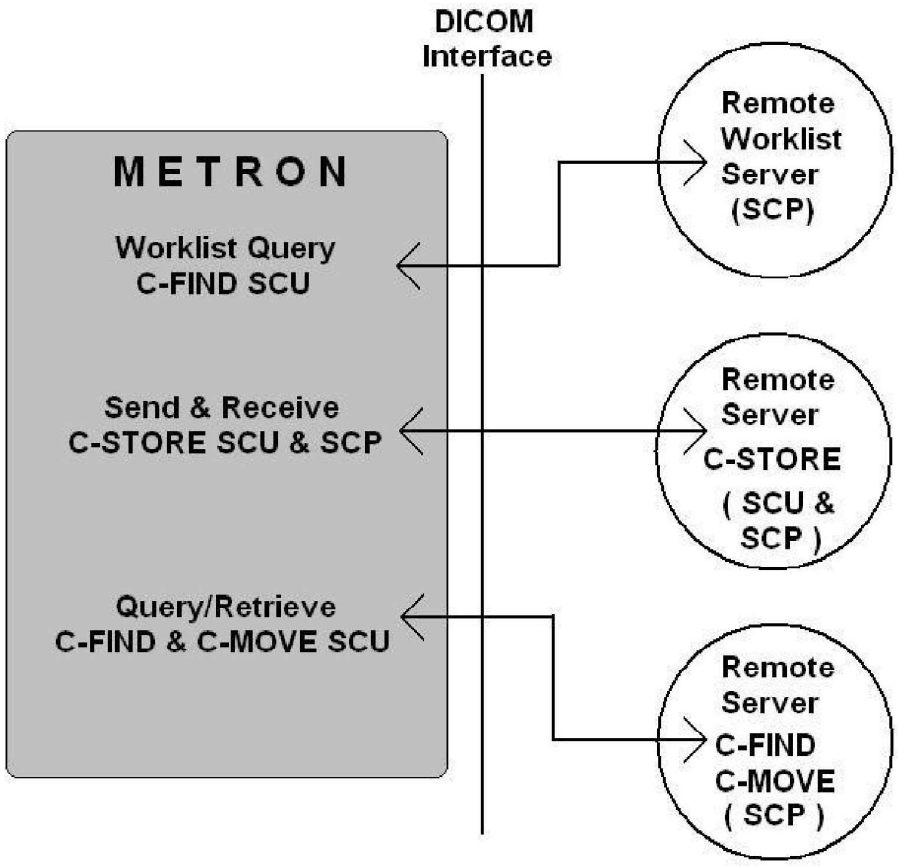


Figure 1: Data Flow Diagram

DICOM Conformance Statement - continued

2.2 Functional Definition of AE's

EponaTech's Metron may send or receive an image using DICOM Storage Service Class (C-STORE SCU/SCP). Metron can Query/Retrieve using C-FIND and C-MOVE as SCUs. Metron can also query (C-FIND SCU) a remote server for Modality Worklist exchanges.

2.3 Sequencing of Real-World Activities

Not Applicable.

3. AE Specifications

Metron generates a single association establishment requests and operates as an application entity.

3.1 AE Specifications

Metron is defined by the following SOP:

SOP Class as SCU	
UID Name	UID Value
Computed Radiography Image Storage	1.2.840.10008.5.1.4.1.1.1

Metron supports the following Transfer Syntaxes:

Transfer Syntax	
UID Name	UID Value
IMPLICIT_VR_LITTLE_ENDIAN	1.2.840.10008.1.2
EXPLICIT_VR_LITTLE_ENDIAN	1.2.840.10008.1.2.1
DEFLATED_EXPLICIT_VR_LITTLE_ENDIAN	1.2.840.10008.1.2.1.99
EXPLICIT_VR_BIG_ENDIAN	1.2.840.10008.1.2.2
JPEG_BASELINE_1	1.2.840.10008.1.2.4.50
JPEG_EXTENDED_2_4	1.2.840.10008.1.2.4.51
JPEG_EXTENDED_3_5	1.2.840.10008.1.2.4.52
JPEG_SPECTRAL_NONHIER_6_8	1.2.840.10008.1.2.4.53
JPEG_SPECTRAL_NONHIER_7_9	1.2.840.10008.1.2.4.54
JPEG_FULL_NONHIER_10_12	1.2.840.10008.1.2.4.55

DICOM Conformance Statement - continued

JPEG_FULL_NONHIER_11_13	1.2.840.10008.1.2.4.56
JPEG_LOSSLESS_NONHIER_14	1.2.840.10008.1.2.4.57
JPEG_LOSSLESS_NONHIER_15	1.2.840.10008.1.2.4.58
JPEG_EXTENDED_HIER_16_18	1.2.840.10008.1.2.4.59
JPEG_EXTENDED_HIER_17_19	1.2.840.10008.1.2.4.60
JPEG_SPECTRAL_HIER_20_22	1.2.840.10008.1.2.4.61
JPEG_SPECTRAL_HIER_21_23	1.2.840.10008.1.2.4.62
JPEG_FULL_HIER_24_26	1.2.840.10008.1.2.4.63
JPEG_FULL_HIER_25_27	1.2.840.10008.1.2.4.64
JPEG_LOSSLESS_HIER_PROCESS_28	1.2.840.10008.1.2.4.65
JPEG_LOSSLESS_HIER_PROCESS_29	1.2.840.10008.1.2.4.66
JPEG_LOSSLESS_NONHIER_14B	1.2.840.10008.1.2.4.70
JPEG2000_LOSSLESS_ONLY	1.2.840.10008.1.2.4.90
JPEG2000	1.2.840.10008.1.2.4.91
RLE_LOSSLESS	1.2.840.10008.1.2.5

3.1.1Association Establishment Policies

3.1.1.1 General

Metron generates association establishment requests for the server when the new image is accepted by the user (if in auto-send mode) or when the user manually directs the system to send the image(s). Maximum size of PDU which is used is 128K.

3.1.1.2 Number of Associations

Metron generates one association establishment request at a time.

3.1.1.3 Asynchronous Nature

Asynchronous mode is not supported.

3.1.1.4 Implementation Identifying Information

The Implementation Class UID for Metron is: 1.2.804.114299.3

The Implementation version name is “Metron”.

3.1.2 Association Acceptance Policy

Metron establishes an association by sending an establishment request to the server when image data is to be sent.

DICOM Conformance Statement - continued

3.1.2.1 Related Real-World Activity

If in "auto-send" mode, when the user of Metron clicks the "Accept" button after shooting a radiograph, Metron sends a C-STORE request to the server. Alternatively, after images have been acquired, the user may choose to send a partial study, a full study, or multiple studies to the server by clicking the "DICOM Send" button. Metron can also receive images from a remote DICOM server.

By clicking a button in the Metron user interface labelled "DICOM Q/R", Metron may query (using C-FIND) and retrieve (using C-MOVE) a remote server.

By clicking a button in the Metron user interface labeled "WL", Metron can query a remote server and fetch Modality Worklist messages from that server. Several filter selections are available to narrow the number of worklists returned and presented to the user of Metron.

4. Communication Profiles

4.1 Supported Communication Stack

Metron provides DICOM V3.0 TCP/IP network communication support as stated in the DICOM Standard Part 8.

4.2 TCP/IP Stack

Metron inherits the TCP/IP stack.

4.3 Physical Media Support

Metron supports all current commercially available options of Ethernet.

DICOM Conformance Statement - continued

5. Extension / Specialization / Privatization

Not applicable.

6. Configuration Parameters

Under "Preferences" in Metron's top-bar, one chooses "DICOM Preferences" to come to a user interface used to configure several parameters related to DICOM C-STORE activities. One or more servers can be indicated, and for each information is given such as IP Address, Port number, and AE Title. Each server can be enabled for auto-sending and/or for manual sending, and choices concerning error and success notification can also be made.

When Metron is to receive images from a remote DICOM server, the default AE Title used by Metron is "METRON_AE" and the default port used is "4002". Both of these values can be changed, if desired, using the Metron user interface.

There is a setting in "DICOM Preferences" where the remote Query/Retrieve server is specified if this feature is to be used.

There is a setting in "DICOM Preferences" where the remote worklist server is specified if the modality worklist feature is to be used.

7. Support of Extended Character Sets

Metron supports the default repertoire "ISO-IR 6" composed of 94 characters, code element G0, and character set ISO 646.

DICOM Conformance Statement - continued

8. Entity

8.1 Entity Modules

Metron-DVM uses the following IOD modules:

Information Entities	Module
SOP	SOP Common
Patient	Patient
	Patient Study
Study	General Study
Series	General Series
	CR/DX Series
Equipment	General Equipment
Image	General Image
	CR/DX Image Module
	Image Plane
	X-Ray Acquisition

VR (Value Representation) is as follows:

VR	Format	Data Length (Byte)
AS (Age String)	nnnY, nnnM, nnnW, nnnD	4
AE (Application Entity)		16 (max.)
CS (Code String)		16 (max.)
DA (Date)	YYYYMMDD	8
DS (Decimal String)	+xxx.xxxx, -xxx.xxxxx, etc	16 (max.)
DT (Date Time)	YYYYMMDDHHMMSS.FFFFFF	26 (max.)
FL (Floating Point Single)		4
FD (Floating Point Double)		8
IS (Integer String)		12 (max.)
LO (Long String)		64 (max.)
LT (Long Text)		10,240 (max.)
OB (Other Byte String)		Differs according to the transfer syntax.
OW (Other Word String)		Differs according to the transfer syntax.
PN (Person Name)		64 (max.) / component
SH (Short String)		16 (max.)
ST (Short Text)		1,024 (max.)
TM (Time)	HHMMSS.FFFFFF	16 (max.)
UI (Unique Identifier)		64 (max.)
UL (Unsigned Long)		4
US (Unsigned Short)		2

DICOM Conformance Statement - continued

8.2 Library

Elements are handled as the DICOM standard species regarding TYPE:

TYPE	Handling
1	Value is always sent with Tag.
1C	Value is sent with Tag under a certain condition.
2	Value is sent with Tag. I lowever, when Value is unknown, it will be sent as a text string of length 0.
2C	It will be handled in the same way as TYPE2 under a certain condition.
3	Value is sent with Tag. However, when Value is unknown, it will be sent as a text string of length 0, or the element itself will not be sent.

To be used when applicable, Metron supports the veterinary extension to DICOM.

SOP Common Module

Attribute Name	Tag	VR	Type	Value
SOP Class UID	(0008,0016)	UI	1	"1.2.840.10008.5.1.4.1.1.1.1"
SOP Instance UID	(0008,0018)	UI	1	"1.2.276.0.74.3" + Instance Specific

Patient Module

Attribute Name	Tag	VR	Type	Value
Patient's Name	(0010,0010)	PN	2	Patient's Name
Patient ID	(0010,0020)	LO	2	Patient's ID
Patient's DOB	(0010,0030)	DA	2	Birth date (yyyy/mm/dd)
Patient's Sex	(0010,0040)	CS	2	Male or Female
Other Patient IDs Sequence	(0010,1002)	SQ	3	Other Ids used to identify the patient
>Patient ID	(0010,0020)	LO	1	ID for patient
>Issuer of Pat. ID	(0010,0021)	LO	1	Institution issuing the Patient ID
>Type of Pat. ID	(0010,0022)	CS	1	TEXT, RFID, or BARCODE
Patient Species	(0010,2201)	LO	1C	Species of the Patient
Patient Species Code Sequence	(0010,2202)	SQ	1C	Code for species
Patient Breed	(0010,2292)	LO	2C	Breed of Patient
Patient Breed Code Sequence	(0010,2293)	SQ	2C	Code for breed

DICOM Conformance Statement - continued

Breed Registration Sequence	(0010,2294)	SQ	2C	Identifies an animal within a breed registry
>Breed registration Number	(0010,2295)	LO	1	Registration number within the breed registry
>Breed Registry Code Sequence	(0010,2296)	SQ	1	Identifies the Breed Registry Organization
Responsible Person	(0010,2297)	PN	2C	Name of person responsible for the animal
Responsible Person Role	(0010,2298)	CS	1C	OWNER (blank if 'other')
Responsible Organization	(0010,2299)	LO	2C	Name of organization responsible for the animal

Patient Study Module

Attribute Name	Tag	VR	Type	Value
Patient's Sex Neutered	(0010,2203)	CS	2C	ALTERED, UNALTERED, or blank

General Study Module

Attribute Name	Tag	VR	Type	Value
Study Instance UID	(0020,000D)	UI	1	1.2.276.0.74.3 .DateTime.Study#
Study Date	(0008,0020)	DA	2	Date of Study (YYYYMMDD)
Study Time	(0008,0030)	TM	2	Time of Study (HHMMSS)
Referring Physician	(0008,0090)	PN	2	Referring Physician
Study ID	(0020,0010)	SH	2	Internal study number
Study Description	(0008,1030)	LO	2	Description of the Study
Accession Number	(0008,0050)	SH	2	Institution-generated number
Physician of Record	(0008,1048)	PN	3	Physician in charge at time of study

General Series Module

Attribute Name	Tag	VR	Type	Value
Series Instance UID	(0020,000E)	UI	1	1.2.276.0.74.3 .DateTime.Study#.Series#
Series Date	(0008,0021)	DA	3	Date of Series (YYYYMMDD)
Series Time	(0008,0031)	TM	3	Time of Series (HHMMSS)
Operator's Name	(0008,1070)	PN	3	Technologist supporting the series
Series Number	(0020,0011)	IS	2	Series number
Series Description	(0008,103E)	LO	3	Description of the Study
Modality	(0008,0060)	CS	1	DX or CR
Body Part Examined	(0018,0015)	CS	3	Metron Region Name (Hock, etc)

DICOM Conformance Statement - continued

Performing Physician	(0008,1050)	PN	3	Performing Physician

CR/DX Series Module

Attribute Name	Tag	VR	Type	Value
View Position	(0018,5101)	CS	2	Metron View (Lateral, DP, etc)

General Equipment Module

Attribute Name	Tag	VR	Type	Value
Manufacturer	(0008,0070)	LO	2	EponaTech (or an OEM name)
Institution Name	(0008,0080)	LO	3	Where equipment is located
Man. Model Name	(0008,1090)	LO	3	Metron (or an OEM name)
Software Version	(0008,1020)	LO	3	4.26 or later

General Image Module

Attribute Name	Tag	VR	Type	Value
Pixel Data	(7FE0,0010)	OW	1	The image itself
Rows	(0028,0010)	US	1	Number of rows of pixels
Columns	(0028,0011)	US	1	Number of columns of pixels
Bits Allocated	(0028,0100)	US	1	16 (for native CR, DX images)
Bits Stored	(0028,0101)	US	1	16 (for native CR, DX images)
High Bit	(0028,0102)	US	1	15 (for native CR, DX images)
Pixel Representation	(0028,0103)	US	1	0
Acquisition Date	(0008,0022)	DA	2	Date image created
Acquisition Time	(0008,0031)	TM	2	Time image created

CR/DX Image Module

Attribute Name	Tag	VR	Type	Value
Image Type	(0008,0008)	CS	1C	ORIGINAL or DERIVED; PRIMARY or SECONDARY
Photometric Interpretation	(0028,0004)	CS	1	MONOCHROME2 (for native CR, DX images)
Samples per Pixel	(0028,0002)	US	1	1
Tag Burned in Image	(0028,0301)	CS	3	YES

DICOM Conformance Statement - continued

Image Plane Module

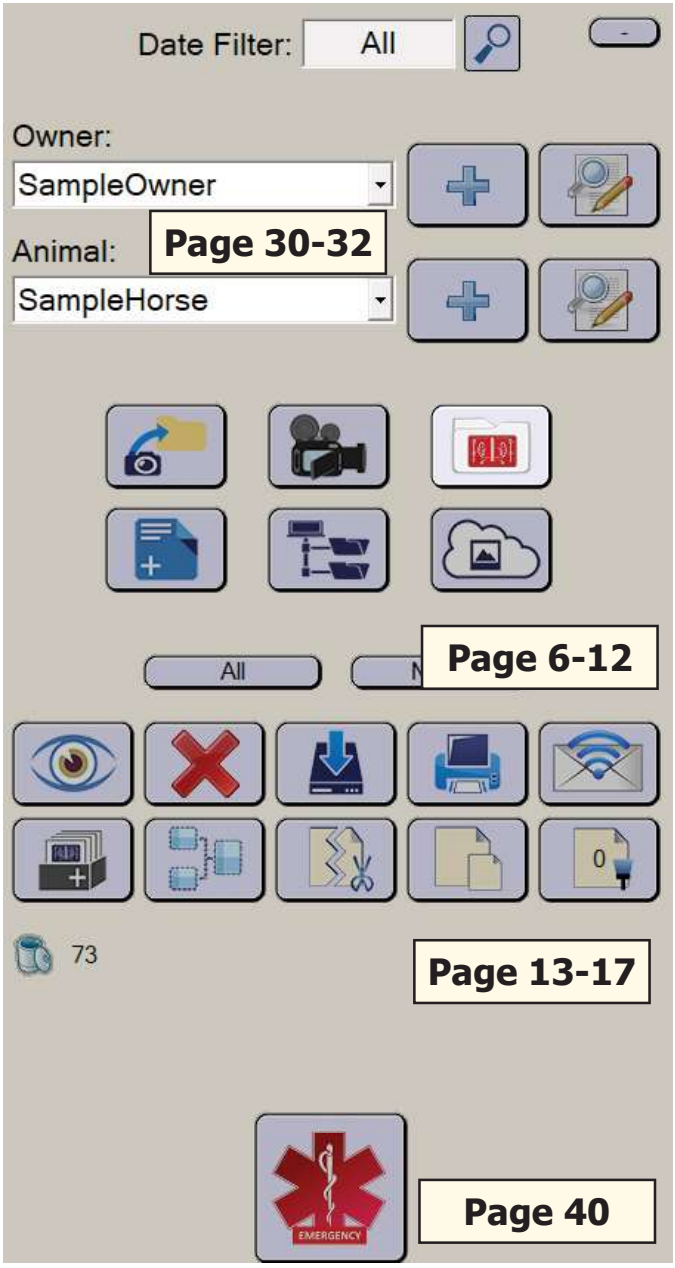
Attribute Name	Tag	VR	Type	Value
Pixel Spacing	(0028,0030)	DS	1C	Pixel pitch of sensor (calibrated)

X-Ray Acquisition Module

Attribute Name	Tag	VR	Type	Value
Imager Pixel Spacing	(0018,1164)	DS	3	Pixel pitch of sensor

NOTES

Metron Quick Points



Emergency image acquisition:
Click the emergency button to go into immediate image acqusition. The default owner and patient will be the date and time stamp at the time of the emergency acquisition. You can change the owner and patient information at a later time using the edit tabs next to the owner and animal.

Tabs in Metron:

1. Database - All images for review per owner and patient
2. Acquire - image acquistion
3. Dental -Metron dental if purchased
4. 2nd Acquire - other imaging modality image acquisition
5. Edit - Image review, manipulation, and mark up
6. System - Set up, preferences, system information
7. Exit



Metron Quick Points



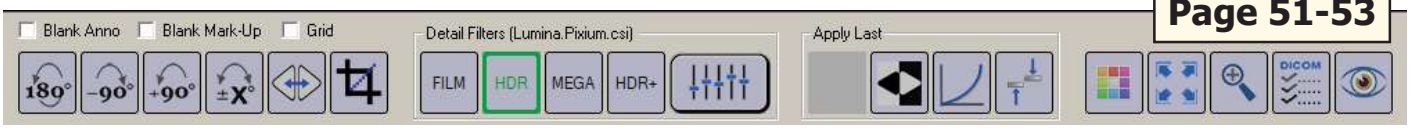
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Video reference section.

Metron training videos can be found on your PC desktop folder.

C:\Users\Vetel\Desktop\Metron Training Videos

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Metron Preferences 7-8 EpoanCAM and Sequences
Metron Preferences - 9 - Monitored Folders
Metron Date Editor - Image Organizer
Metron Database Utilities - Metron and DICOM databases
Image Import Utility
Image Acquisition in Metron
Foot Mark Up Default settings
Guided Markup
Metron P3 analysis - Turner Curve
Metron Luminance-Bone Density 12-29-17
EponaCam