



Northern Cluster Business Partner Meeting

9th – 11th September 2014 Tromp
Medical, Netherlands

DRX Advanced Imaging Products

Martin Stewart

Content

Carestream SW strategy

SW V5.7 Summary – Base & Options

New Image Processing Enhancements

Two new companion views

New Evolution Automatic Motor Assist Overview

New Revolution capability to be used only if required

Peak into the near future

Competition activities – debate

Would you like a free detector?

Carestream's Worldwide SW Strategy

2 different tiers

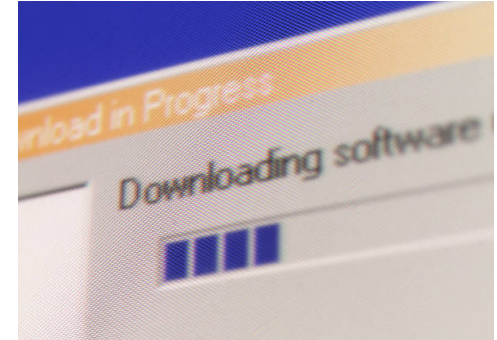
- **Image Suite** Software for **Value** systems and users
 - CR Vita Family Products (CR Vita LE, CR Vita, CR Vita XE)
 - Wireless & Tethered Detector Retrofit room
 - No X-factor feature
- **DirectView** Software for **Premium** systems and users
 - CR (Classic, Elite, Max)
 - DRX Family Products (Evolution, Revolution, Ascend, Wireless & Tethered Detector Retrofit room, Retrofit Mobile, Transportable)
 - X-factor feature



SW Development Strategy

One new major SW release “annually”

- Annually mean within running cycle of 12 – 18 months
 - Cycle include development, testing, validation, documentation, trade trials -> release
- Include improved base features and optional new functions
- Customers can choose to purchase upgrades and/or new functions



Between each release – updates

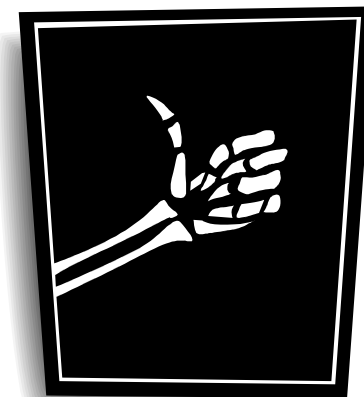
- Any security related corrections – instantly fixing
 - Still need development, testing, validation, documentation -> release
- Any non-security related corrections – gathered and released in Maintenance Releases (MR's), normally 2 times / year
 - MR1 and MR2
 - Also need development, testing, validation, documentation -> release
- MR's may also include some minor feature enhancements



And in 2014 we have had.....

V5.7 Base & New functions

- Enhanced base features
- New optional functions (Bone Suppression & Dose Reporting)
- Was released in March 2014



V5.7B – New feature release

- OTC motor assistance for DRX Evolution Automatic Systems
- DRX Revolution functionality enhancement
 - Manual stitching
- Disable of asymmetric collimation
- General software corrections
- Released July 2014



Directview V5.7

-
- Bone Suppression
 - Detector Enable/Disable Speed Improvements
 - Support for 4 Enabled Detectors
 - DAP and Generator Interface
 - Dose Reporting
 - Fine Rotation
 - Full Screen Viewing
 - Multi Modality Acquisition
 - High Detail Visualization
 - Pediatric Trauma
 - Pediatric Tutor Images
 - New IP Looks/Naming
 - Custom Multi-format Page Layouts
 - Fast Layout Switching
 - Rejected Images Available to Technologist
 - List selection for Filter Type and Anode Material
 - Time Display on all screens
 - Markers in Overlay Plane
 - RAS Software Improvements
 - Notification of automatic Changes to Birthdate.
 - Resend All for Failed Image Delivery
 - Zoom to BSM for initial Image Viewer Display
 - Deliver All Workflow change
 - Gestures
 - Improved grid detection – suppression with DR images.
 - Support for Widescreen Multi-touch monitor.
 - Export Exposure Settings on Evolution and Revolution Systems.
 - Windows 7
 - IPv6

V5.7 Base Software – “USER”

Image Processing Enhancements

- Added a new Look called Premium Image Processing 8
- Added the option to annotate images sent from the Preference Editor
- Look Names have changed to be less specific
- Added default patient information that can be used on images sent from the Preference Editor or Monitor Configuration menus

Image Processing Enhancement –

Premium Image Processing 8

- **The new Eclipse Algorithm is called Premium Image Processing 8**
 - This Look offers sharper edges than could be produced previously
 - The Look arose from a desire to ease the transition to Carestream Products for customers who like very sharp edges.

Image Processing Enhancement –

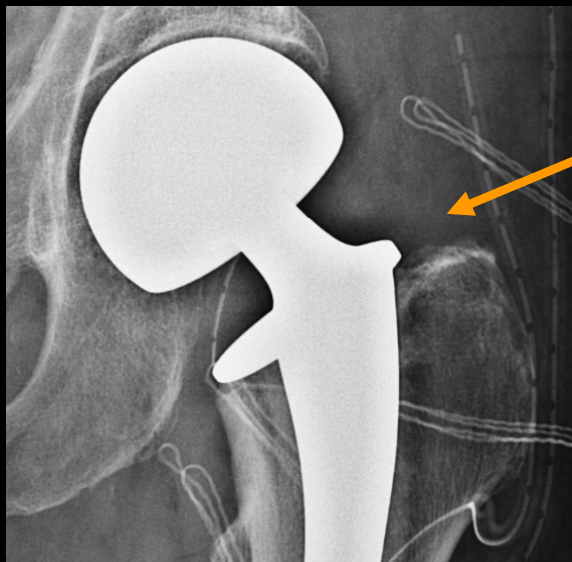
Premium Image Processing 8

- Premium Image Processing 8 implements EFP for Gen Rad (EFP2a) which analyzes & processes the image in more frequency levels than previous Looks could
 - This helps to further minimize ringing artifacts along the edge of the heart, diaphragm & elsewhere
 - Since it's a Look, it can easily be applied to any view
 - Detail Contrast & Sharpness are the parameters that are primarily affected
 - Sliders in the Preference Editor are still used in the same way

Image Processing Enhancement – Review

Original EVP+ Image Processing

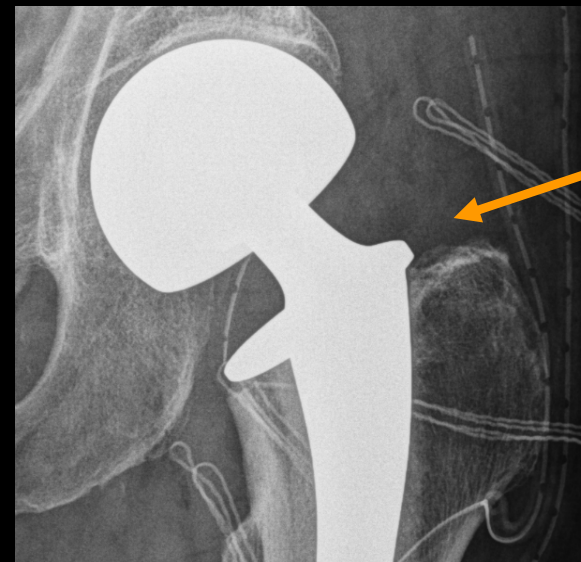
- Displays ringing artifact around the prosthesis



Edge
Ringing

If processed as a “Prosthetic View” ringing is minimized → EFP is applied

- The ringing artifact is minimized but not completely eliminated

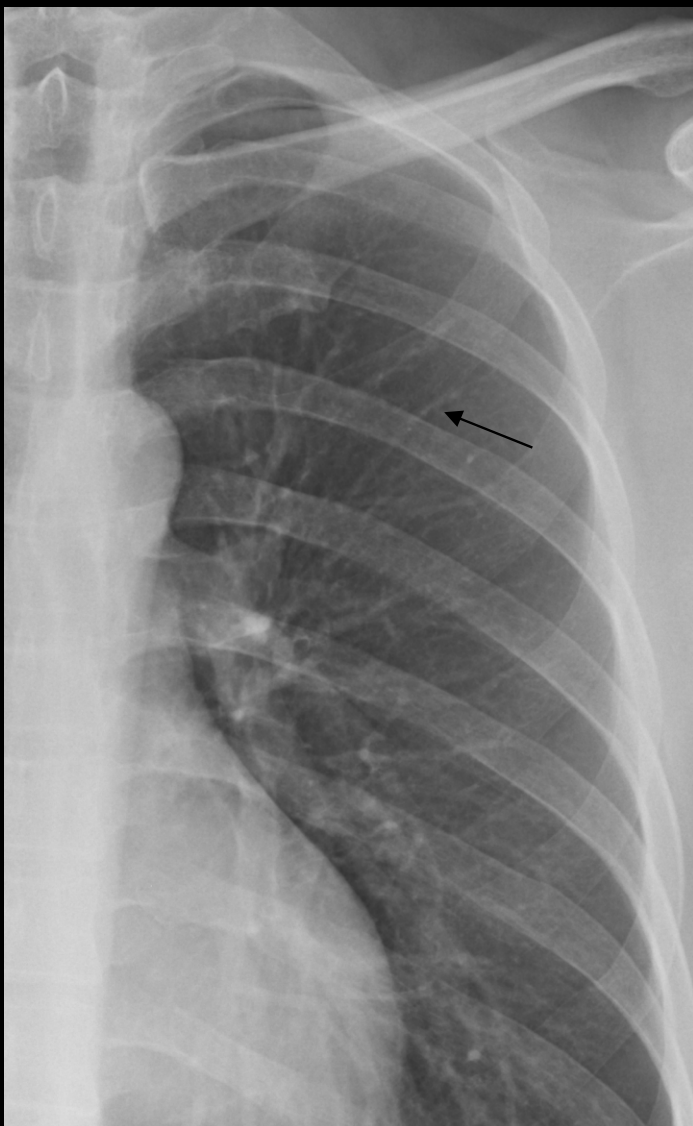


Improved
Edge

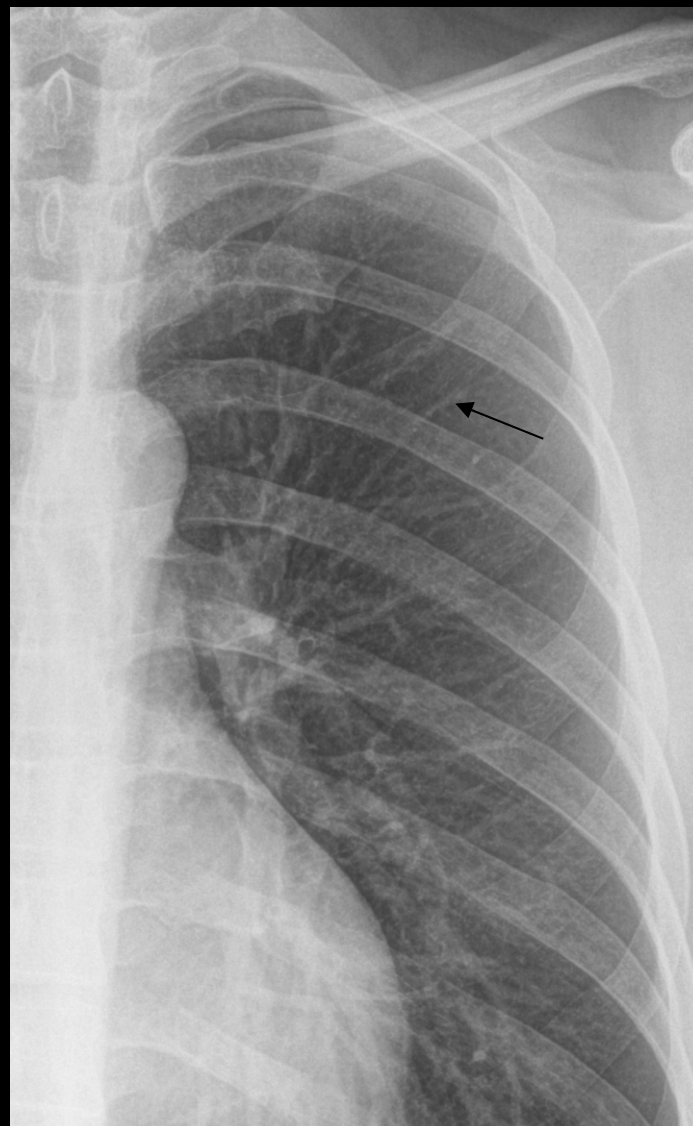
- EVP+ Image Processing was an improvement on P-Tone image Processing.
- EVP+ did not eliminate ringing artifacts around prosthetics, however.
 - In response, a set of Prosthetic views was added.
 - These views used EFP to minimize the artifact
- Further improvement was desired & is now available with EFP2a which is in the look called Premium Image Processing 8

Image Processing Enhancement – Premium Image Processing 8

EVP+ with
Defaults
V 5.6



EVP+ with
EFP2a in
Prem
Image
Process 8
V 5.7



Compare the visibility of the lung markings. Detail & Contrast improve the visibility in the image on the right.

Image Processing Enhancement –

V5.6

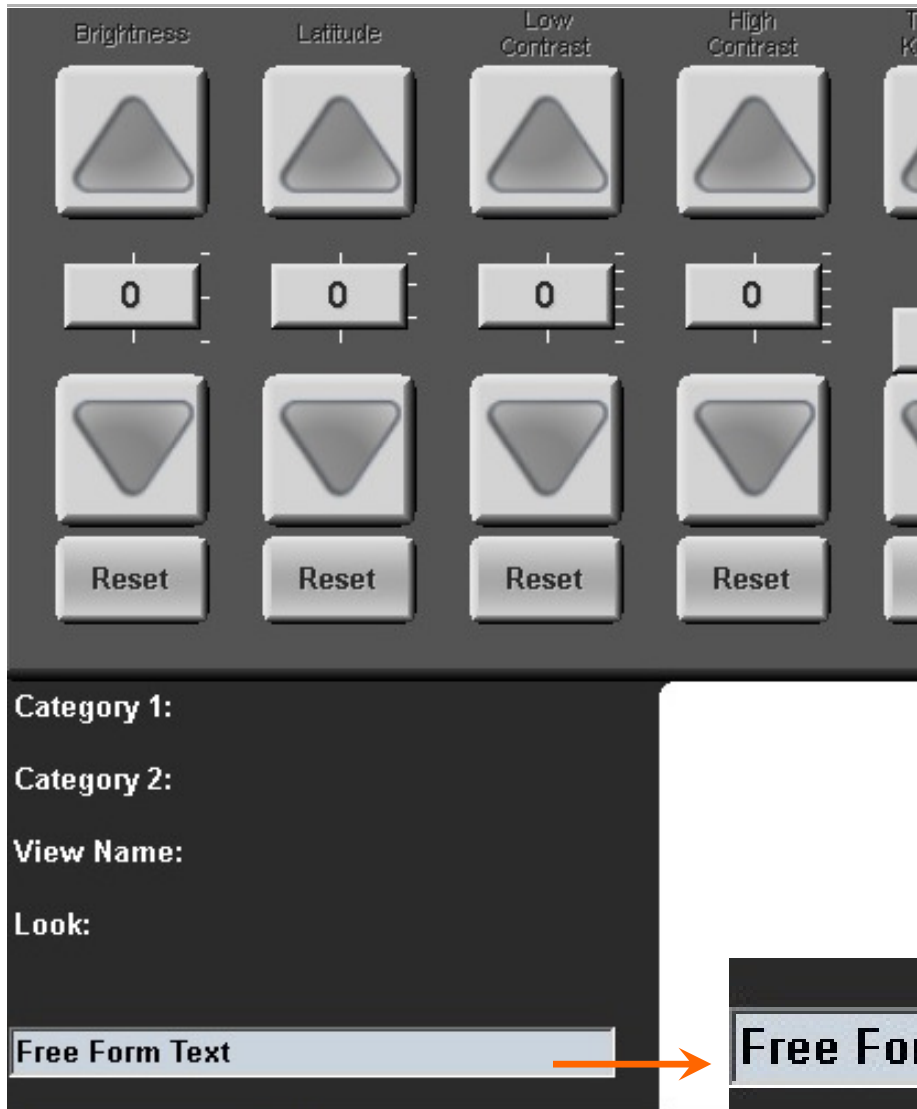


V5.7-Premium Image Processing 8



Improved Detail & Contrast increase the visibility of the trabeculae in the Premium Image Processing 8 image on the right.

Image Processing Enhancements

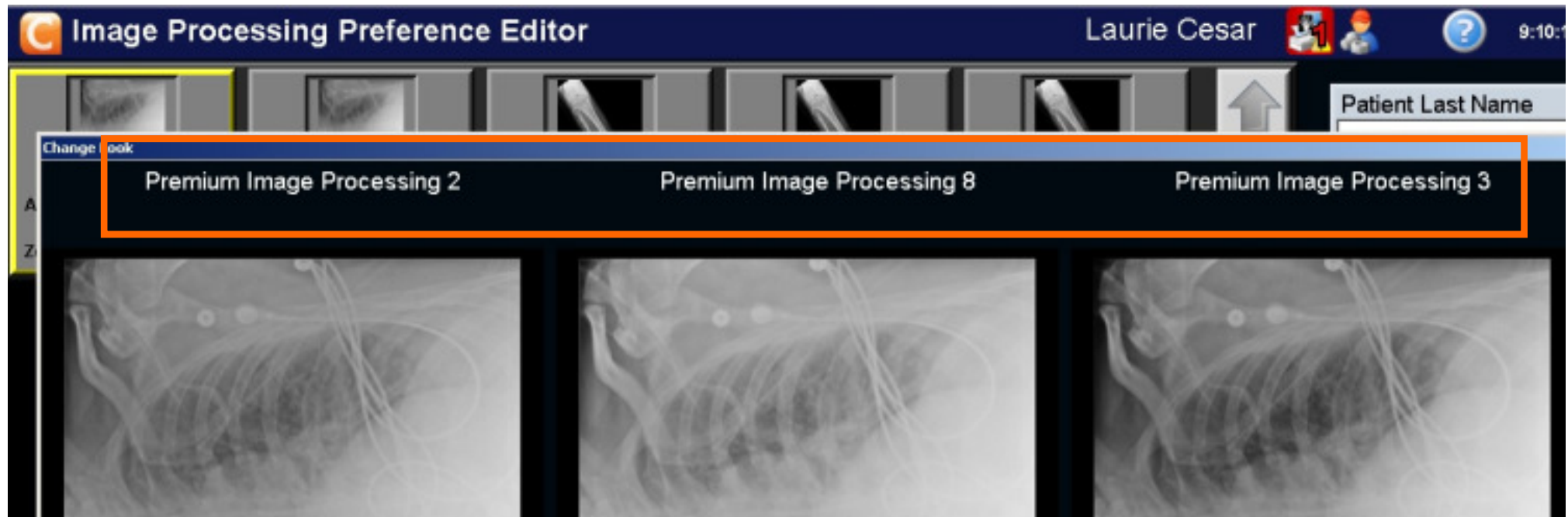


- **Added the option to annotate images sent from the Preference Editor**
 - When sending multiple images from the Preference Editor it can be difficult to keep track of which image has what changes made to it.
 - The free text annotation field brings up a keyboard to allow you to more easily identify your images on PACS

Image Processing Enhancements

Look Names have been made less specific

- European Mammography had several different applications depending on what views were used. The name needed to be more generic
 - European Mammography is now named Premium Image Processing 6
 - Premium Processing 2 is now named Premium Image Processing 7




New Image Processing Look Names

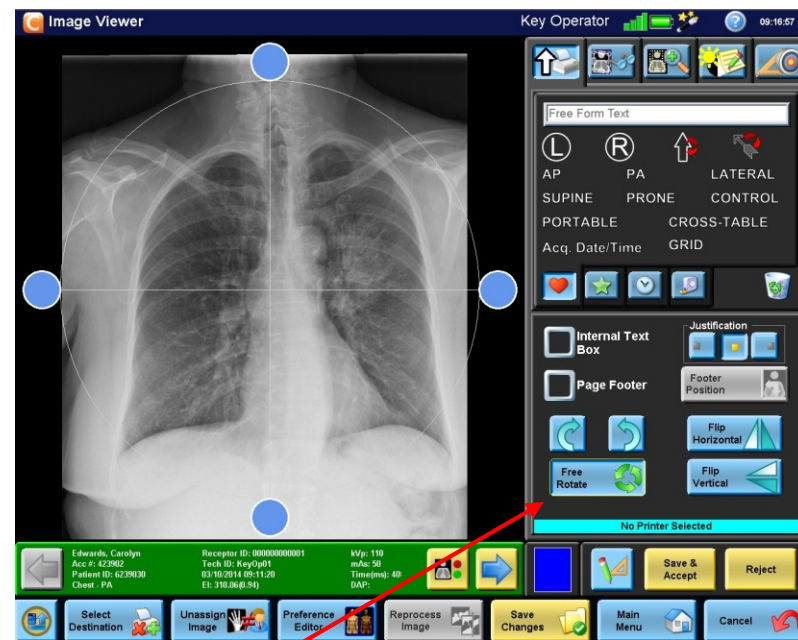
V5.7 New Name	Current Name
Baseline Image Processing	Baseline Image Processing
Fixed Image Processing	Fixed Processing with medium contrast, detail, and sharpness
Premium Image Processing 1	Premium Processing with noise suppression
Premium Image Processing 2	Premium Processing with brighter processing, more detail and sharpness
Premium Image Processing 3	Premium Processing with high contrast and detail
Premium Image Processing 4	Premium Processing with more latitude
Premium Image Processing 5	Premium Processing with medium latitude
Premium Image Processing 6	European Mammography
Premium Image Processing 7	Premium 2 Processing with noise suppression
Premium Image Processing 8	**New in V5.7 **

Image Processing Enhancements

- **Added Service-configurable default patient information that can be used on images sent from the Preference Editor or Monitor Configuration menus**
 - In earlier releases of version 5 an image sent from the Preference Editor was given De-Identified names, De-Identified Patient IDs, etc usually making it difficult to find the images on PACS
 - In 5.7, default patient information is assigned to images sent from the Monitor Configuration or Image Processing Preferences screen
 - Name: CarestreamHealth
 - Accession Number: 113564
 - Date of Birth: 20001231
 - If the default patient information doesn't fit the needs of a site, Service level access can edit the information as needed. This is done from the Bin folder
 - EKCaptureTools CCConfigEdit - Capture/Services/Settings/Test Delivery

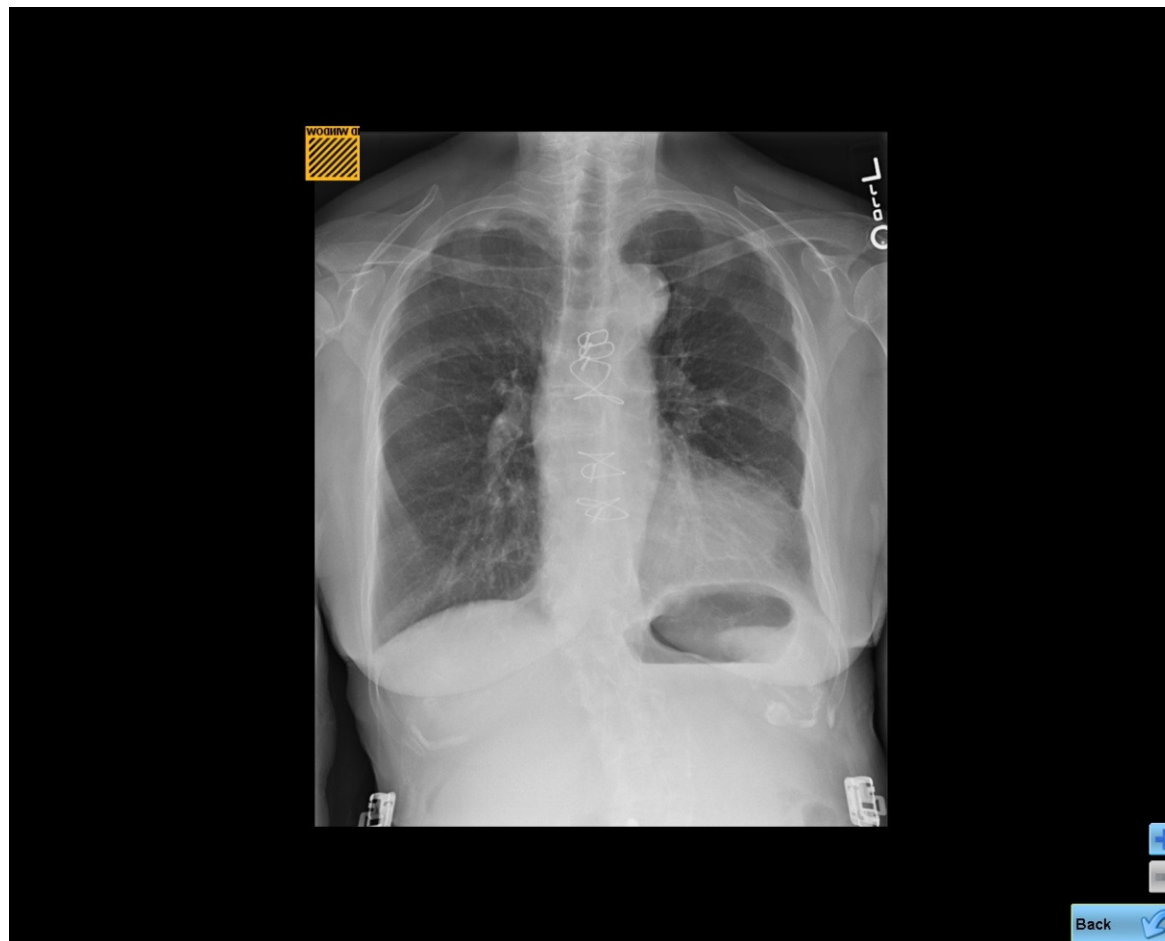
Workflow

Feature	Benefit
<p data-bbox="73 516 430 576">Free Rotation</p> 	<p data-bbox="682 516 1207 787">Allows users the ability to slightly rotate an image that isn't straight</p> <p data-bbox="682 1003 1165 1242">To rotate an image, grab one of the blue anchors with a finger or mouse</p> <p data-bbox="682 1323 1186 1437">Turn the image until it is oriented properly</p>



Workflow

Feature	Benefit
Full Screen Viewing	Maximizes visibility of the image by allowing full screen viewing



Use the “+/-” buttons to zoom the image by 10% up to 200%. The image can be panned while zoomed.

Use the Back button to return to the tool pallet

Image Review - Display Options

The console SW can be configured by the KeyOp to display **Fit to Screen** or **Fit to BSM** by default:

- **Fit to Screen** – The entire detector area
- **Fit to BSM** – Using only the image within the Surround Mask. This will zoom the image to fit the Image Viewer area

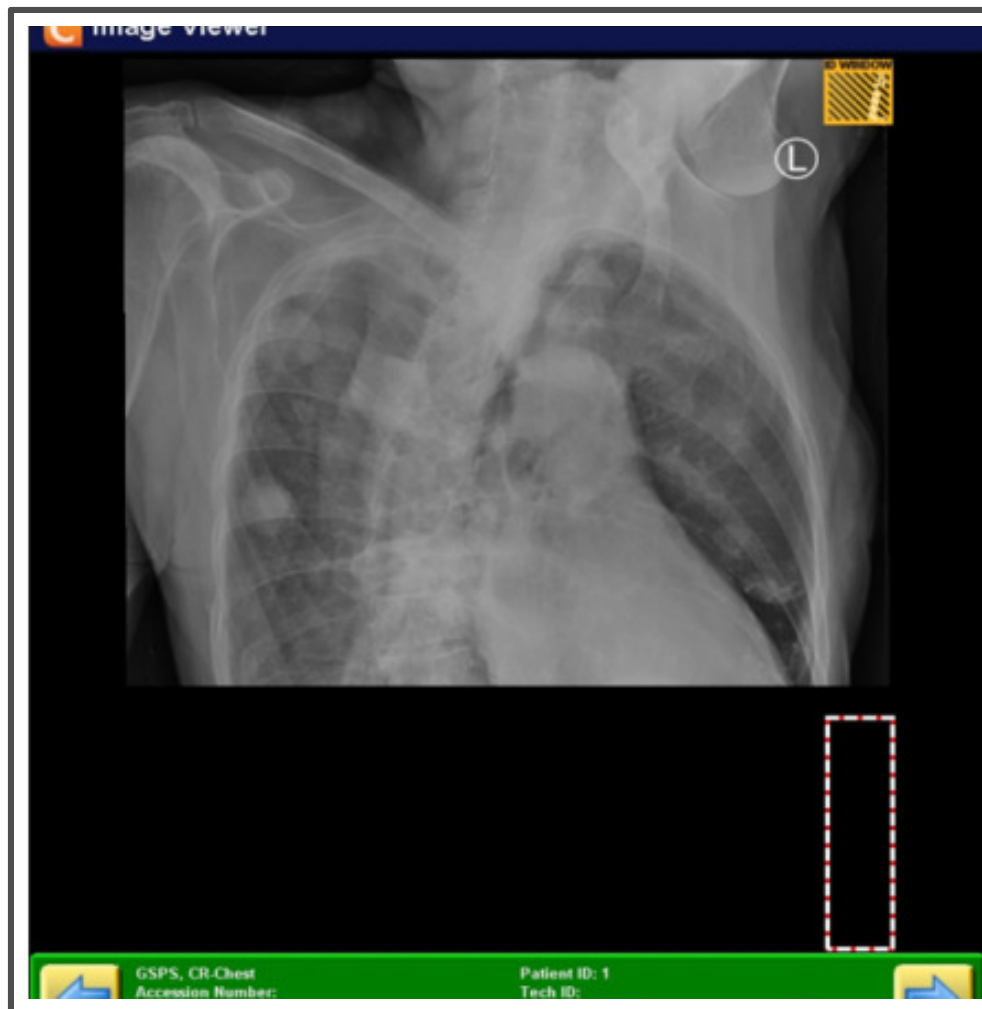
Full Screen viewing is also available if manually chosen

Note: **Fit to Screen**, **Fit to BSM**, **Full Screen** are always available to the user, regardless of how the system is configured

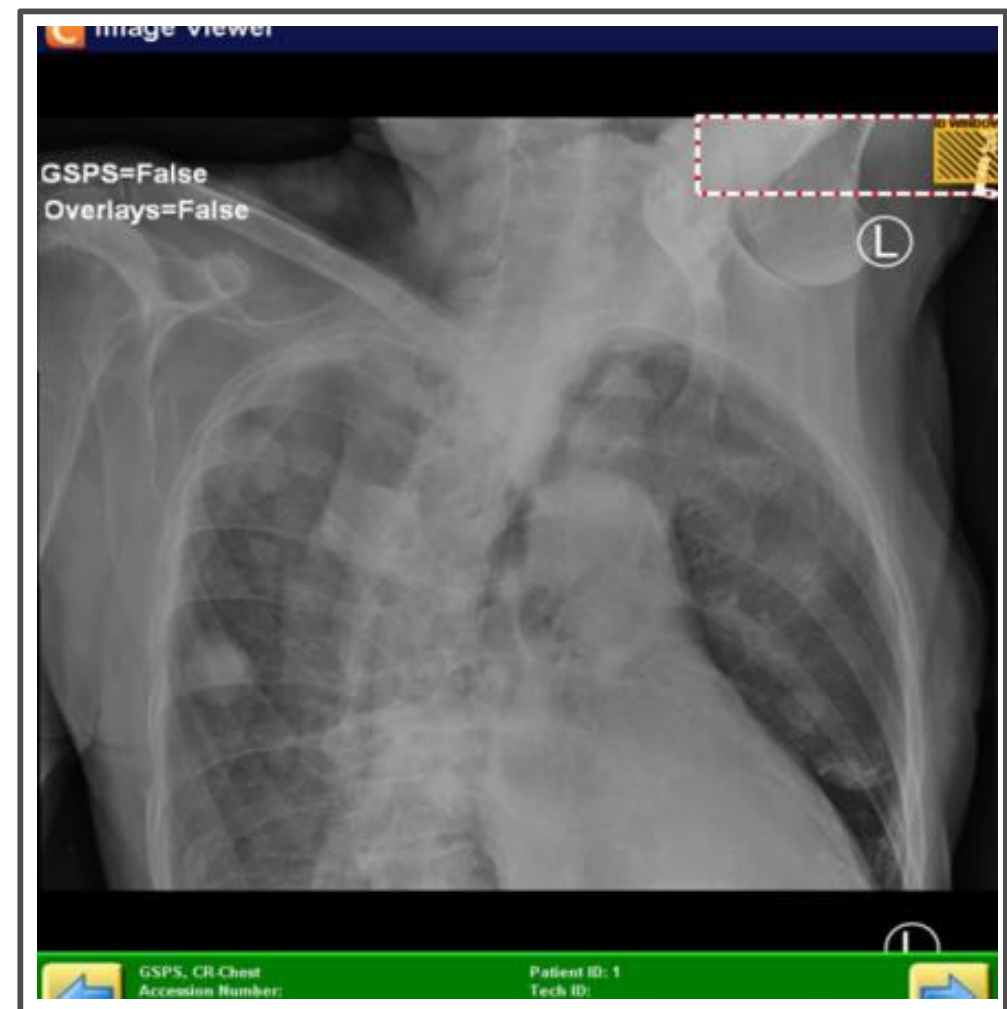


Image Review - Display Options

Fit to Screen



Fit to BSM



Detectors Enabled

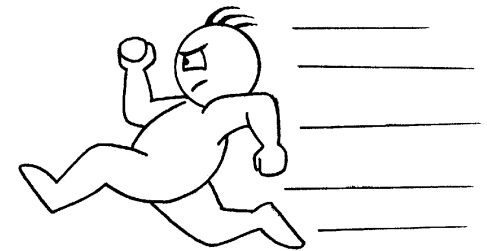
V5.7 will allow up to **4** Detectors to be enabled on a console at the same time (V5.3 – V5.6 software allows only 3)

- Includes 43 x 43 Fixed Detectors, DRX-1/1C Detectors, DRX 2530C Detectors



Faster Enable / Disable Times

	V5.6 (sec)	V5.7 (sec)
Enable	223	17
Disable	34	12



Improves the workflow

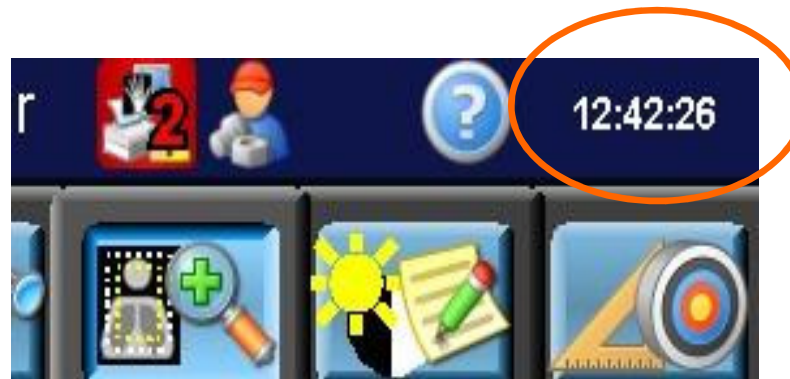
- Faster & easier to move detectors between rooms and mobile units
- Improves the “sleep mode” function
 - Longer use of battery -> less need to exchange detector batteries
 - Settings from 10 – 120 minutes inactivity before falling to sleep
 - Detector wakes up within 17 seconds



Time Display

Time is displayed on all screens

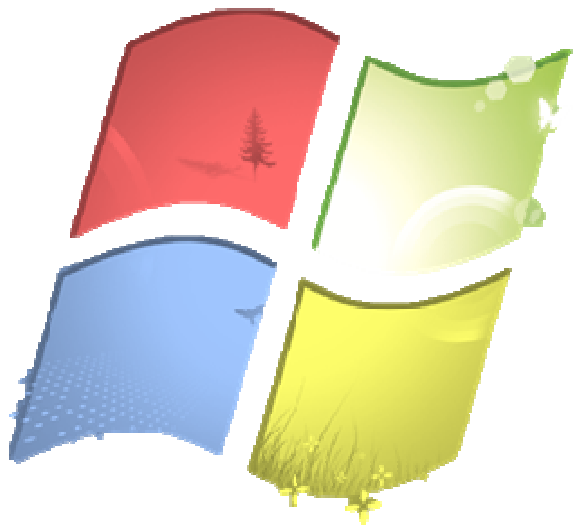
- Thanks to customer demand, the current time is displayed in the top right corner of every screen.



Operating System

V5.7 software is now utilizing Windows 7 Embedded operating system

RAS Software will support Windows 7 & 8 and double-byte operating systems



Windows[®] 7
for Embedded Systems

DirectView V5.x XP Statement

Microsoft's End of Support in April 2014 applies to the Client OS, not the Embedded OS used in DirectView products

Windows Embedded OS is a special version of XP designed for fixed function systems.

Support End Dates by DirectView Version:

DirectView Version	OS	Microsoft Support End Date
5.0-5.5	Windows XP Embedded	1/12/2016
5.6	Windows Embedded Standard 2009	1/8/2019
5.7	Windows Embedded Standard 7	10/13/2020

Improved Grid Detection

The algorithm used to discover grid lines has been further optimized for DR

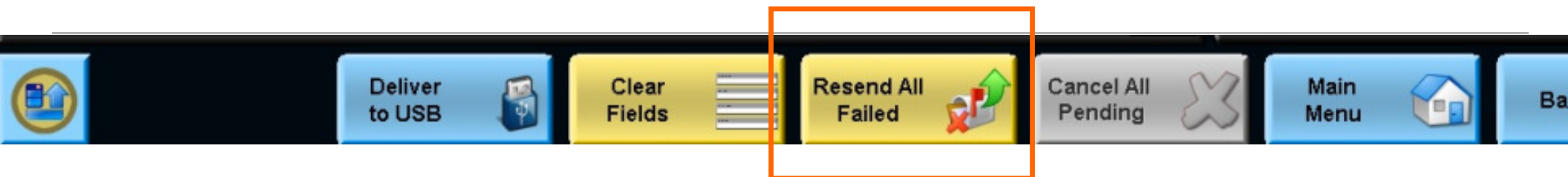
- The grid detection algorithm looks for an area of uniform exposure that is 1024x1024 pixels in which to identify signs of a grid
 - For CR that area is a high exposure area
 - For DR a high exposure area can be oversaturated, hiding the grid
 - The Grid Detection/Artifact Suppression algorithm was written for CR which saturates at a much higher dose than DR, especially CsI
- When that happens, the grid detection/suppression fails
 - In 5.7 the algorithm was adjusted to look in an area that is as large as 2048x2048
 - This will better serve DR stationary, lower line rate grids.

Deliver All Workflow Change

When a user selects **Deliver All images**, any acquired images in the study will be delivered.





- In previous software versions, any newly acquired images were automatically approved and delivered.
- In V5.7, if additional images are acquired later, those newly acquired images will need to be approved for delivery.

Resend All Failed



Resend All for Failed Image Delivery Is available in the Image Review menu

- If there is a network problem, multiple patient's images fail to get to their destinations
 - In the past each image had to be redelivered individually
 - Button will only be available if there are failed deliveries.
- When **Resend All Failed** is used, the Failed statuses are changed to Cancelled & another attempt is entered.

Destination List	
#1 ->Failed	 Medweb TeleMedical Cancelled (0) 14/08/2013 14:55:36
#2 ->Resend	 Medweb TeleMedical Pending (1) 15/08/2013 12:29:36
	 Medweb TeleMedical Cancelled (1) 15/08/2013 12:29:20
	

Additional Fields in Patient Input – More Information

There are more fields available to enter patient information

- **More Information**
 - Allergies
 - Pregnancy Status
- **More Image Data**
 - Grid

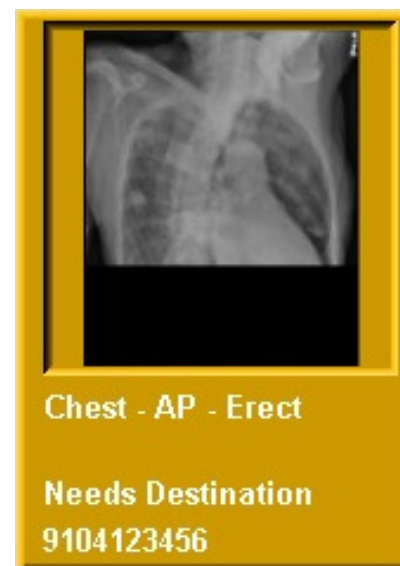
This screenshot shows a patient input form for Laurie Cesar. The form includes fields for 'Allergies' and 'Pregnancy Status', which are circled in orange. To the right of these fields are buttons for 'Exam Information', 'More Information' (highlighted with an orange rectangle), and 'More Image Data'. Other visible fields include 'Requested Procedure Reason' and 'Procedure ID'.

This screenshot shows a close-up of the 'Grid' field, which is circled in orange. To the right of the field are buttons for 'Exam Information', 'More Information', and 'More Image Data' (highlighted with an orange rectangle). Other visible fields include 'Laterality' and 'Source To Patient (cm)'.

Image Review – Needs Destination

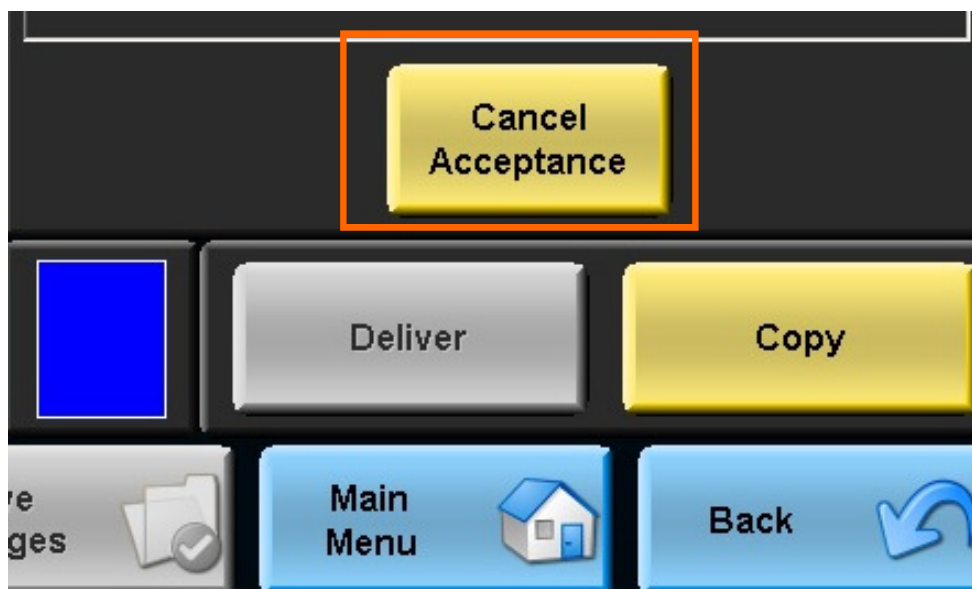
A **Needs Destination** status displays a Gold thumbnail frame. This happens when:

- An image is Accepted when there is no destination selected *or*
- The Cancel Pending Deliveries button is used



In v 5.7 a new button allows the user to **Cancel Acceptance**

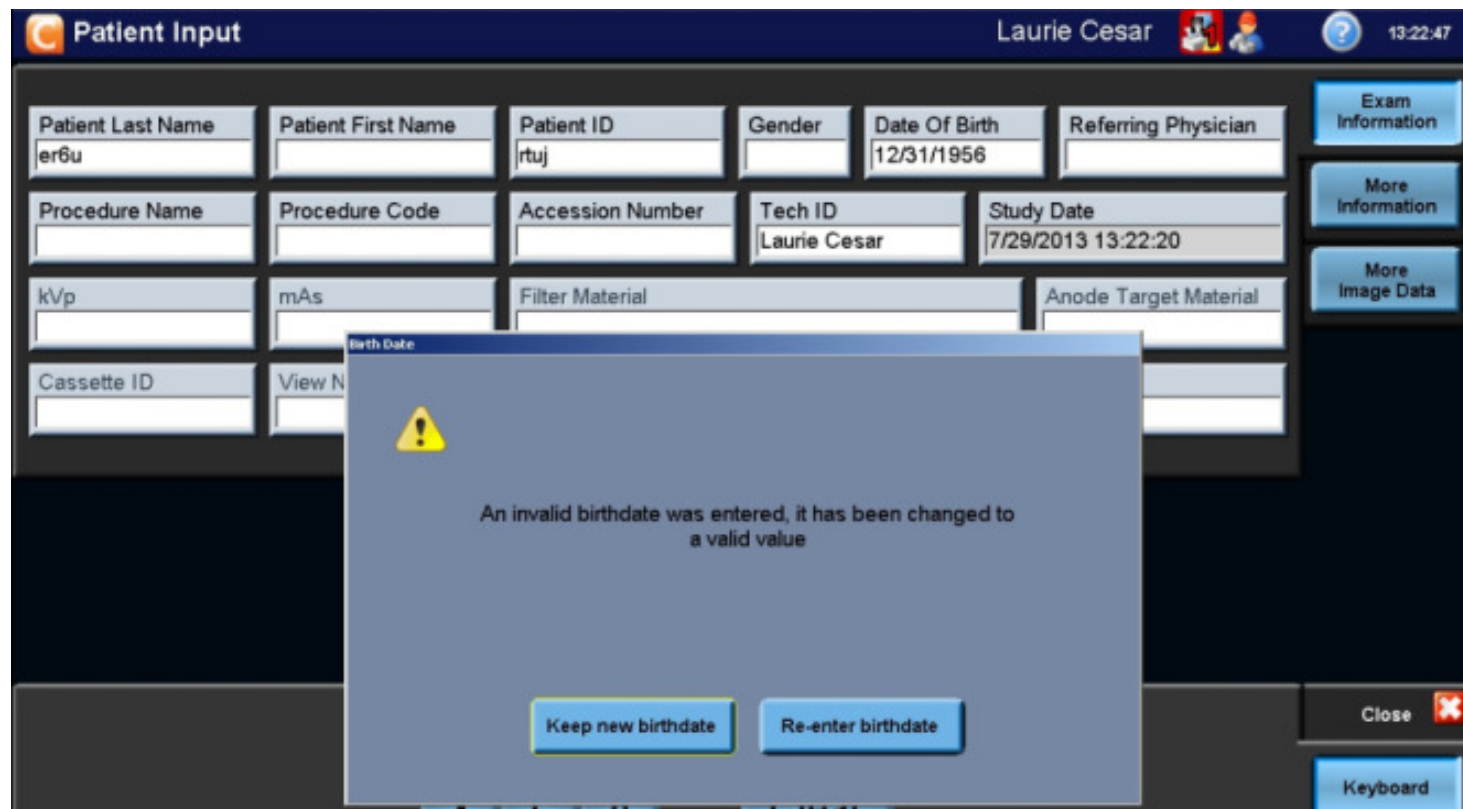
- Using that button changes the image status back to Needs Approval.
- This status provides the user with all the tools normally found in the Image Viewer



Auto Notification of Birth Date Change

In previous software versions if an invalid date of birth was entered, 123456 for example, the software would automatically change it

Now when it does that it will provide a pop-up to alert the user that the date of birth was changed & give the option to keep the change or re-enter the birth date



V5.7 Base Software — “KeyOp”

Workflow

Feature	Benefit
A variety of KeyOp and user features have been added to V5.7 and described in the next several pages	Increased user control and flexibility for improved workflow efficiency

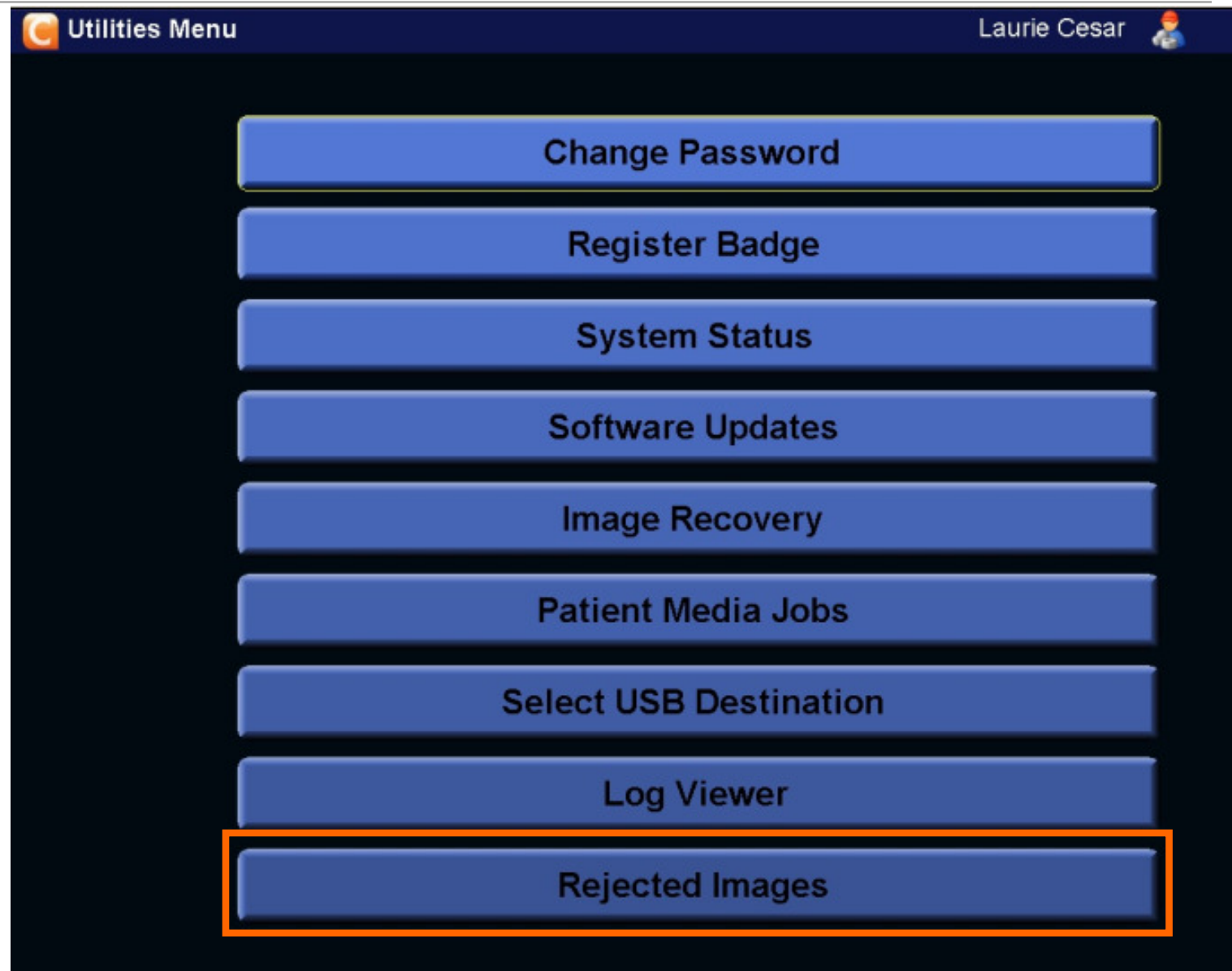
User access to Rejected Images

In 5.7 the user can have access to the Rejected Images list.

- The Key Operator must configure the system to make it available to the Basic User
- Once that's done, the Basic User can go to **Utilities > Rejected Images**
- From there they can use the **Unreject Selected Images** button to restore an image to a study.
- The reject status and counts for the image will be reset. There will be no record that the image was ever rejected.

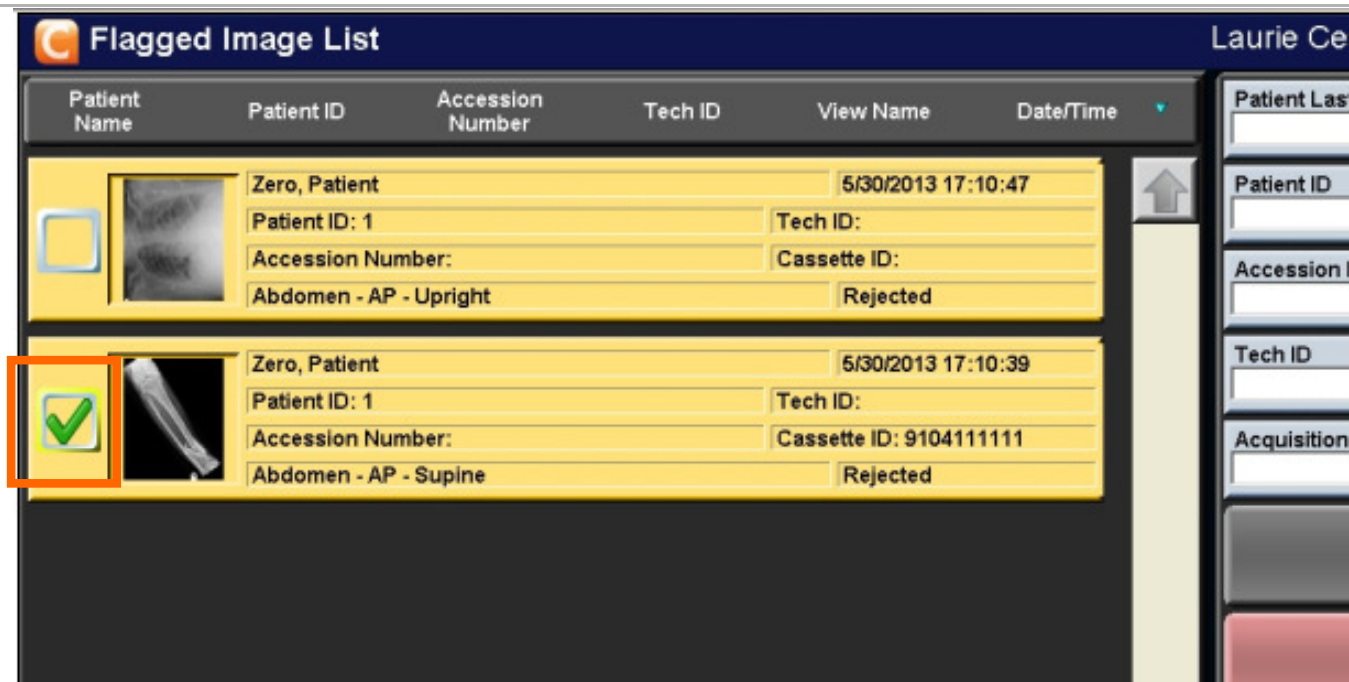
Tech access to Rejected Images – How User Accesses Rejects

- The User can go to **Utilities > Rejected Images**
- This will take them to the Flagged Images list, where there is access to Rejected images



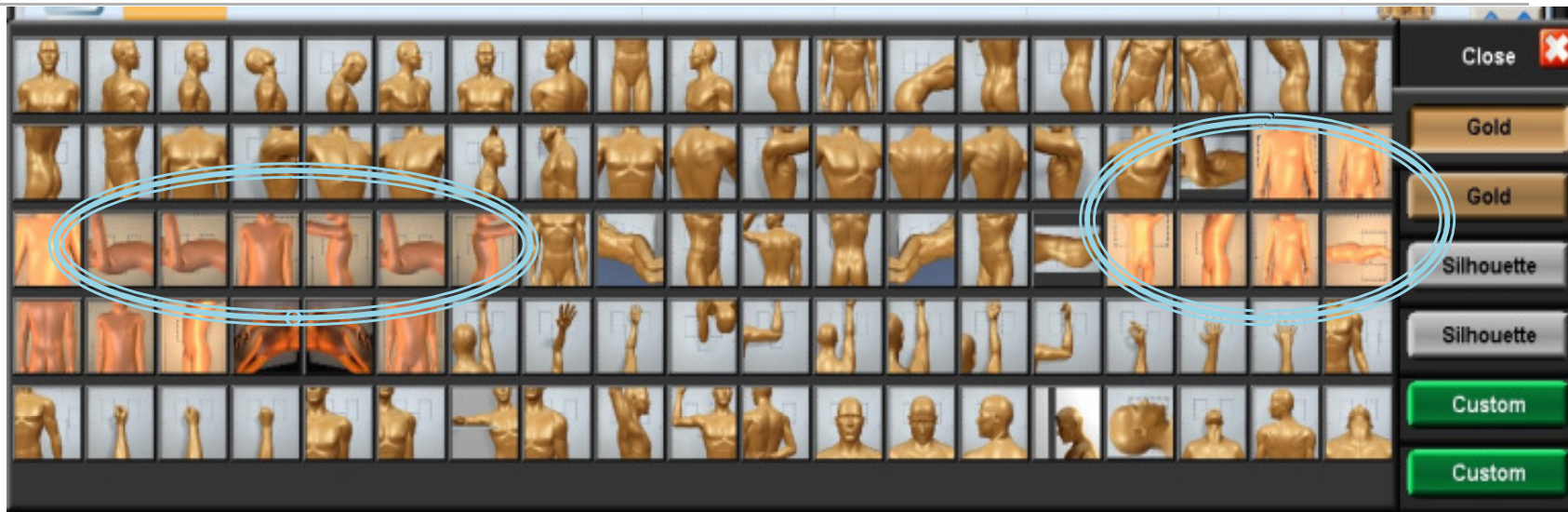
Tech access to Rejected Images – How User Accesses Rejects

- The User checks the box to the left of the image they want to unreject then uses the **Unreject Selected Images** button
- The image will be found in the original study

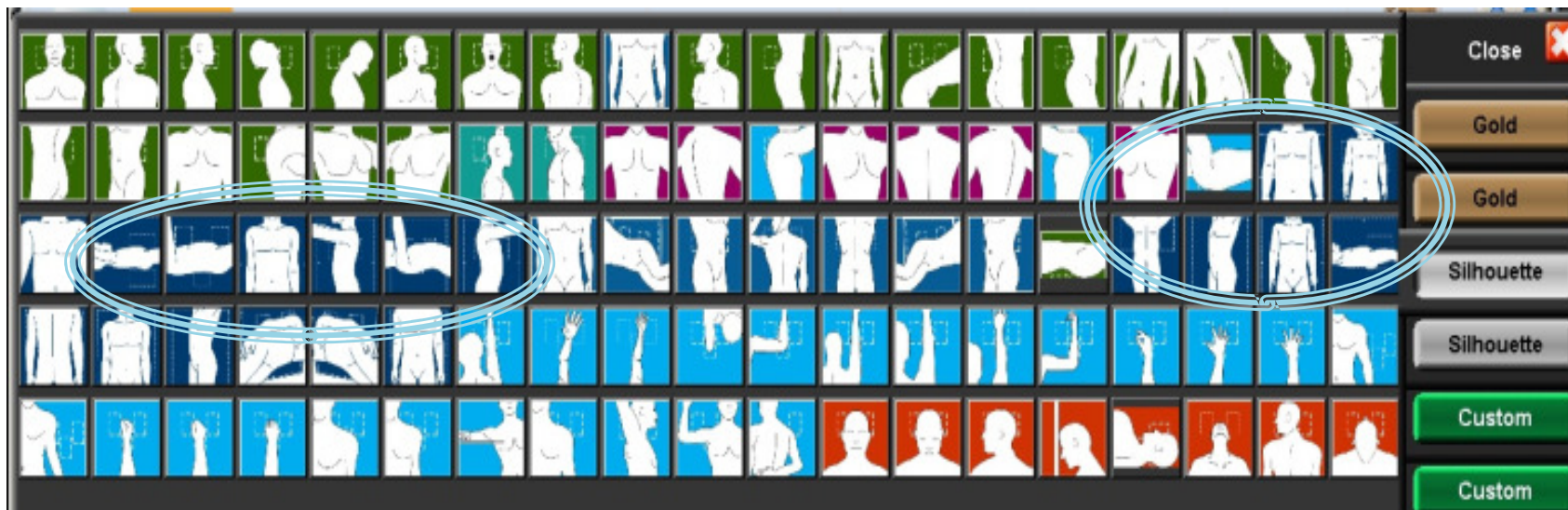


Added Pediatric Tutor Images

Pediatric Tutor images have been added to better differentiate pediatric views from adult views.



Both Goldmember & Silhouette tutors are available



Added Pediatric Trauma Views

Pediatric Trauma views have been added for the Pediatric Option

- These views will be available for all 7 Pediatric patient sizes
 - Skull – Trauma
 - Ribs – Trauma
 - Upper Extremity – Trauma
 - Lower Extremity – Trauma
- The image processing attached to these views (Premium Processing 6 Look) is intended to enhance detail & sharpness while minimizing the appearance of noise for the smaller patient sizes
- Factory default techniques for these views will be supplied for site specific optimization

Infant Skull - Trauma

Infant Ribs - Trauma

Infant Upper Extremity -
Trauma

Infant Lower Extremity -
Trauma

Technique Scaling

When a customer has a known “good” set of techniques & adds a new receptor of a different type it's very time consuming to modify techniques for the new detector.

To assist the customer with this, V5.7 has included a Technique Scaling tool in the Key Operator menu.

- The same tool will be supplied for both Evolution & Revolution so there is no need to access the Revolution's desktop as was necessary in 5.6b to do the same task

This tool can be used to create Csl, GOS or CR techniques from a customer's existing technique file

- For example, if an Evolution system is using a GOS detector & upgrade to 5.7, they can scale techniques for Csl &/or CR by using the GOS technique file.

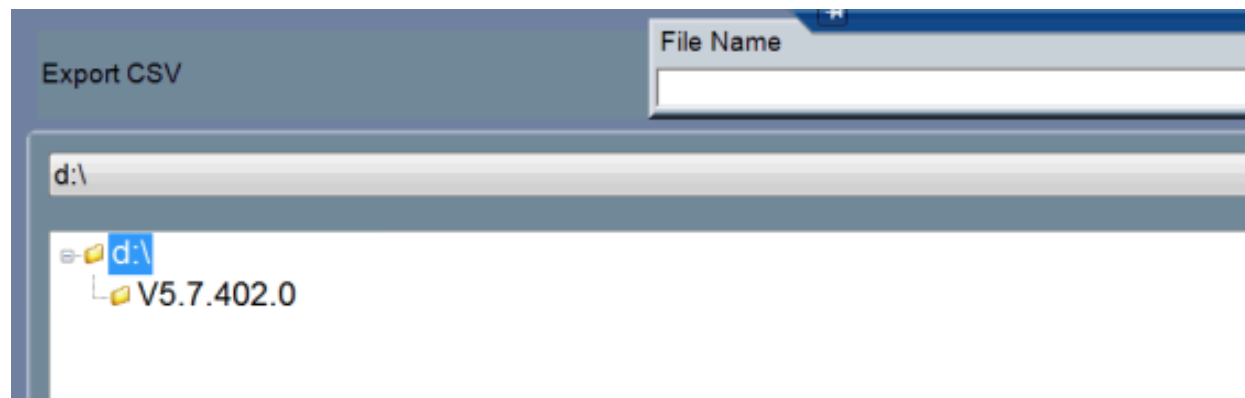
Export Techniques

In 5.7 it is possible for the Key Operator to export the Techniques configured in a Revolution or Evolution to a USB

- From the Technique Settings screen, the KeyOp can use the Export button at the bottom of the screen



- Like downloading statistics, a dialog box will come up to allow the KeyOp to choose where the file should be saved



DICOM Overlays

DICOM - Supports DICOM Overlays	True
---------------------------------	------

DICOM Overlays are used to send electronic markers/annotations & measurements so

- They can be *displayed* on an image at PACS

And

- They can be *removed* from an image on PACS
- If not configured to send Overlays, annotations will be burned in to the image

PACS must support this feature

- If the CR/DR console is configured to send Overlays but PACS doesn't support the feature, electronic markers or measurements will not be displayed on the image

Note: Default setting is to burn in the markers

DICOM Overlays

DICOM - Supports DICOM Overlays	True
---------------------------------	------

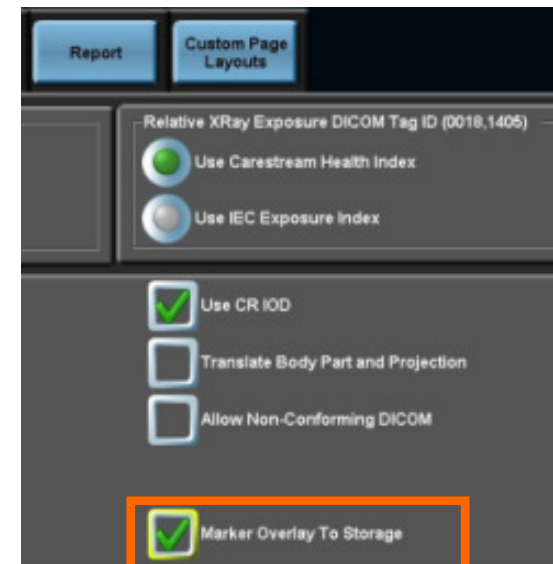
If Carestream knows that the destination supports DICOM overlays, that attribute will be set to True by default in Destination Configuration.

- That attribute will only need to be changed if the PACS vendor changes something
 - The setting in Destination Configuration indicates we **can** send overlays

If the customer wants to use DICOM overlays check the box found in **Delivery Preferences** on the **DICOM tab**

- The Delivery Preferences setting indicates we **want** to send overlays

If the box is not checked, markers/annotations & measurements will be burned in the image



V5.7 Optional Software

Image Quality – via 2 new companion views

Companion views are available as they were in earlier software versions,

- Companion views are a copy of the original, standard image
 - No additional patient exposure is needed to produce these images
 - Electronic markers, Free Text Annotations, Masking are copied between images
 - Companion views are intended to supplement, not replace the standard image
 - » If the original image is Rejected, the Companion View will automatically be deleted
 - » If either image is Accepted, both will be delivered to the destination

There are 2 Companion images added in 5.7

- **High Detail Visualization View (HDV)**
- **Bone Suppression View**

Companion View – HDV View

High Detail Visualization View

- Can be applied to any view that needs the increased detail or change in contrast available in this companion view
- The HDV view will be identified as **High Detail Visualization**
- The HDV view is included to satisfy needs like surgical cross-table lateral spines done to help determine the level of the spine the surgeon is approaching
- The HDV view is available with the purchase of Tube & PICC software

Companion View – High Detail Visualization



Companion View – Bone Suppression

Bone Suppression

- Is a purchasable option
- Can be applied to any Chest image
 - A successful clinical study was done with adult images
 - Pediatric images were included in the FDA submission
 - » Pediatrics is not a likely group to need this feature but we don't want to be prevented from using the algorithm for other pediatric applications in the future

Companion View – Bone Suppression

Bone Suppression

- Bone Suppression companion view is intended to help the radiologist better characterise various kinds of chest pathology by minimising anatomical distractions like the posterior ribs & other kinds of noise
- The algorithm attempts to minimise the posterior ribs & to a lesser degree, the clavicles
 - Posterior ribs will be suppressed, not removed
 - When the ribs are seen “less”, the viewer is better able to see other things
 - Clavicle visibility, where they overlap the lungs, will be included in the calculation & suppressed somewhat in that area
- The algorithm is designed not to alter other anatomy in the chest

Companion View – Bone Suppression

- Keys to successful Bone Suppression
 1. Lung segmentation is very important in this application
 - If the lung apices are not on the image it complicates the ability to identify the lung area in the data
 2. The image must be oriented with the “neck up”
 - If auto-orient fails, Bone Suppression will fail – there will be no difference between the normal image & the companion image
 - When this happens, delete the companion image, properly orient the standard image, then manually request a new Bone Suppression Companion view
 3. Patient positioning contributes variables that affect the accuracy of the algorithm
 - Patient rotation
 - Patient posture
 - Tube angle

Bone Suppression: a good example

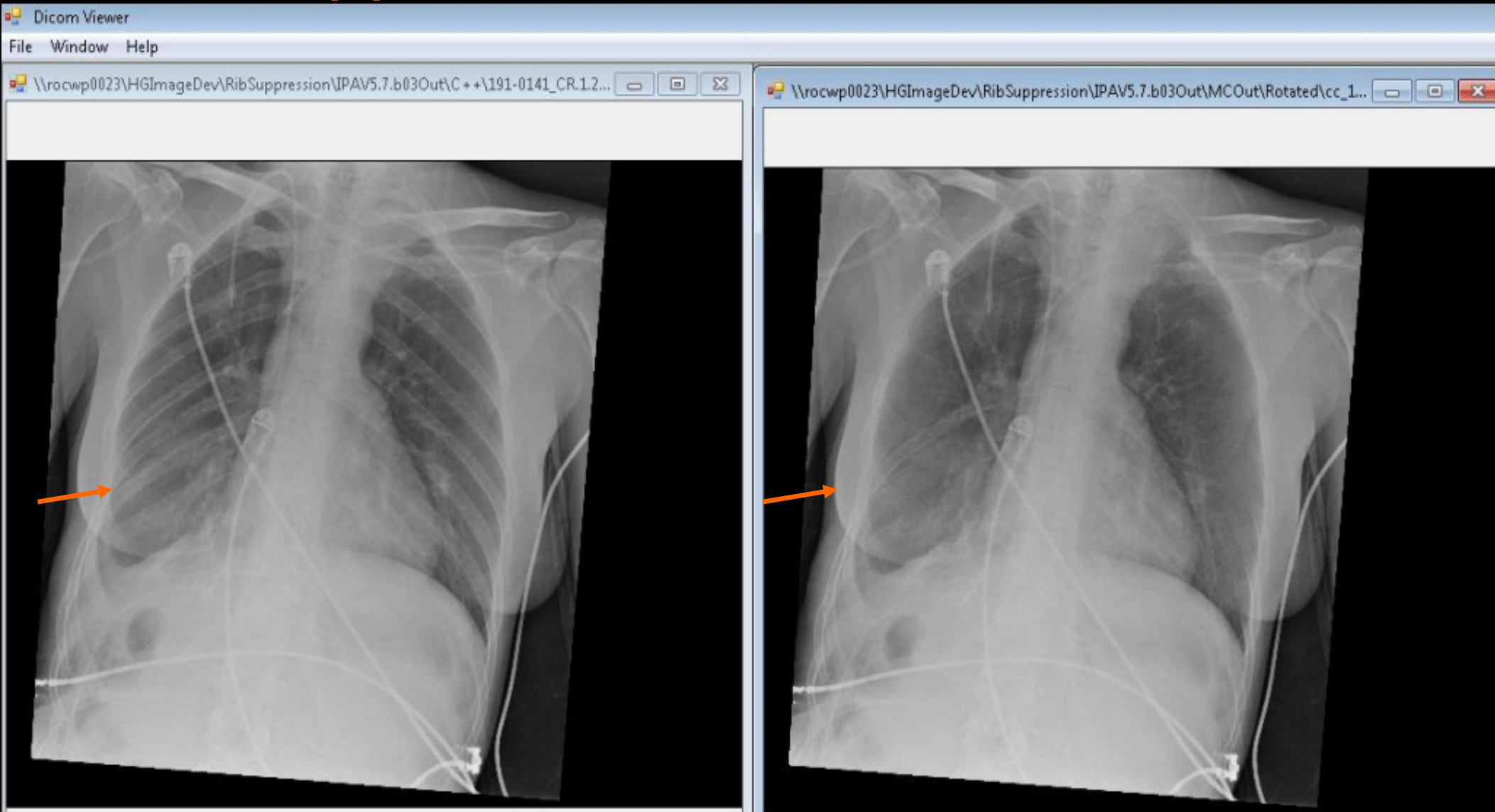


Original Image



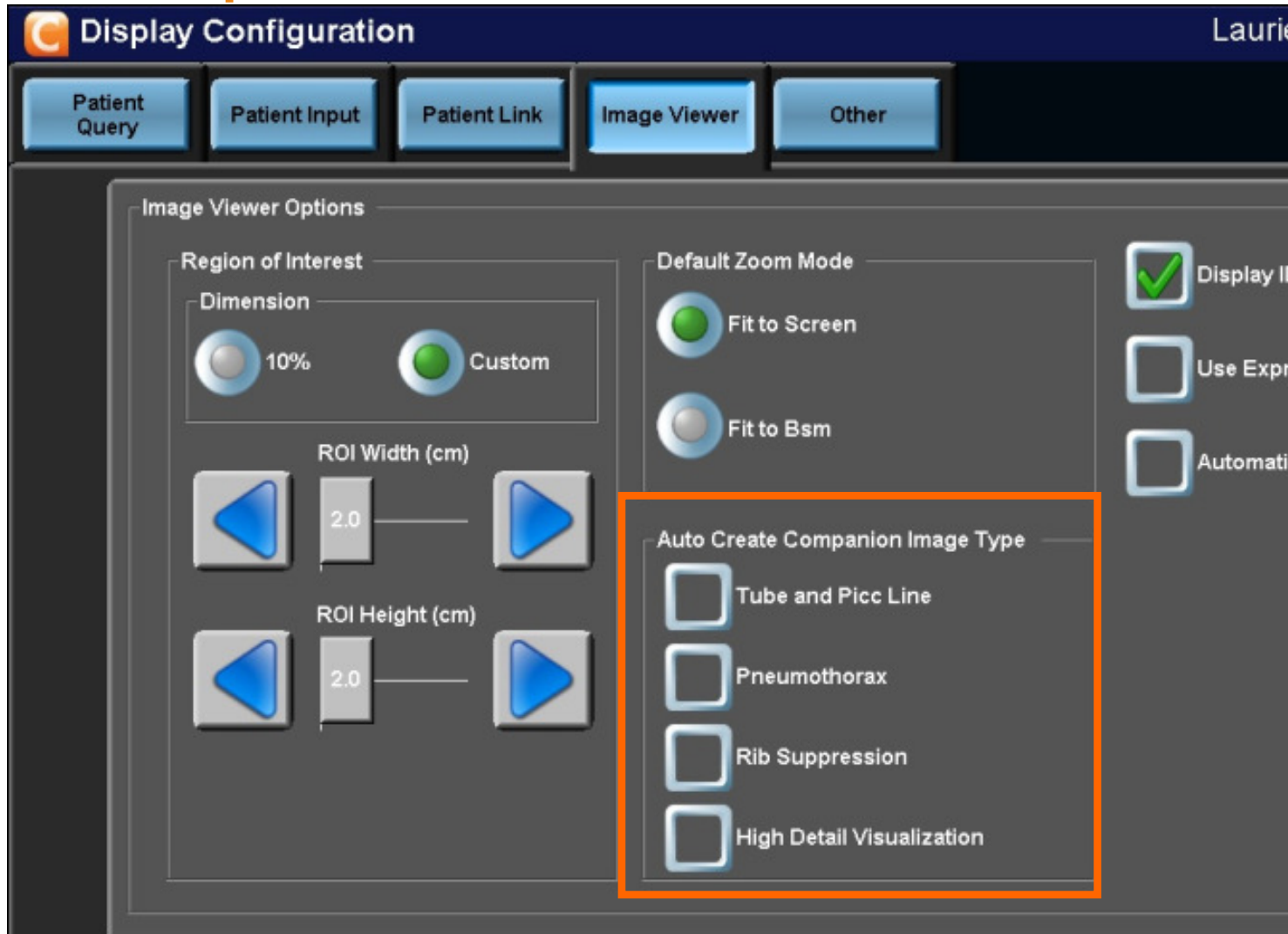
Companion Image

Bone suppression: effect of rotation



Bone Suppression Companion View

Companion View – KO Configuration



- Go to **System Configuration/Display Configuration** to change this setting

- There are 2 ways the Key Operator can configure the system to create a Companion image
- From this screen, the system can be configured so one or more Companion Image is created automatically whenever a given view is acquired. (Reprocessing or assigning an image will not cause a companion image to be automatically created.)

Companion View – KO Configuration

View Configuration Laurie Cesar 13:37:25

Select	View Name	Raw	Linked Views	Skin Line Detection	Surround Mask	Surround Mask Enlar
<input type="checkbox"/>	Chest - AP - Erect	<input type="checkbox"/>	Linked View(s) Present	<input type="checkbox"/>	Standard	0
<input type="checkbox"/>	Chest - AP - LLD	<input type="checkbox"/>	Linked View(s) Present	<input type="checkbox"/>	Standard	0
<input type="checkbox"/>	Chest - AP - RLD	<input type="checkbox"/>	Linked View(s) Present	<input type="checkbox"/>	Standard	0
<input type="checkbox"/>	Chest - AP - Supine	<input type="checkbox"/>	Linked View(s) Present	<input type="checkbox"/>	Standard	0
<input checked="" type="checkbox"/>	Chest - Apical Lordotic	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	Standard	0
<input type="checkbox"/>	Chest - LAO - Erect	<input type="checkbox"/>		<input type="checkbox"/>	Standard	0
<input type="checkbox"/>	Chest - LAO - Prone	<input type="checkbox"/>		<input type="checkbox"/>	Standard	0
<input type="checkbox"/>	Chest - Lateral - Erect	<input type="checkbox"/>		<input type="checkbox"/>	Standard	0
<input type="checkbox"/>	Chest - Lateral - Recumbent	<input type="checkbox"/>		<input type="checkbox"/>	Standard	0
<input type="checkbox"/>	Chest - Lateral - XTable	<input type="checkbox"/>		<input type="checkbox"/>	Standard	0

☐ All Categorized
 ☒ By Category
 ☐ Uncategorized
 ☐ Unassigned Default
 ☐ Global Edit Mode

Column Selection

☒ Color, Body Part, Projection, Position, Laterality, Tutor Image
 ☐ Rotation, Print Format, Tick Marks, Internal TextBox, Page Footer, Crop Type
 ☒ Raw, Linked Views, Skin Line Detection, Surround Mask, Surround Mask Enlargement

☐ Brightness, Latitude, Contrast, Sharpness, Target EI, Look
 ☐ Noise, Grid Suppression, Noise Suppression

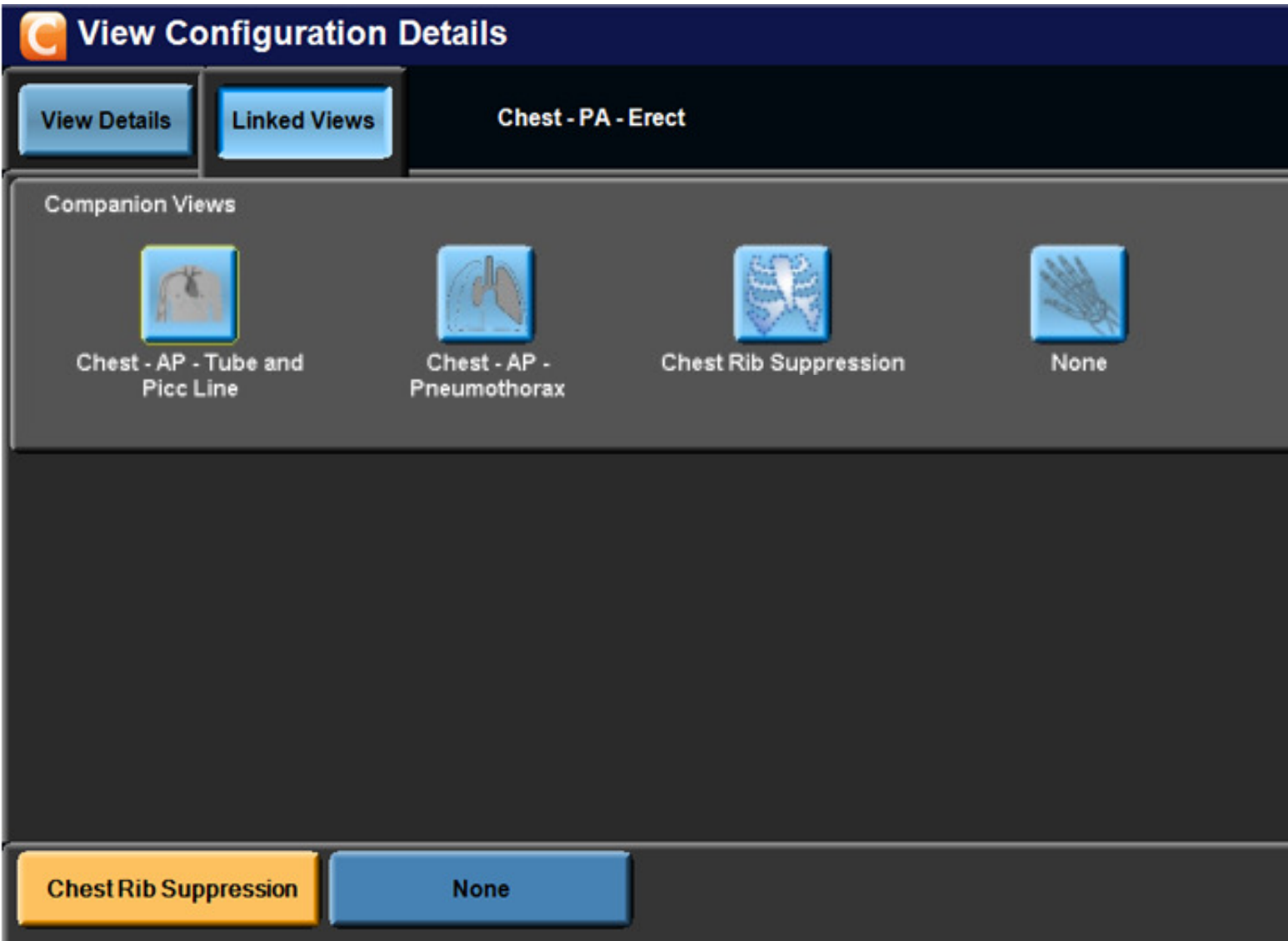
- From this screen the Key Operator chooses which views they want to Link to which Companion View.

- A Companion Image can be created on demand by the user once it is Linked from this screen.

- This is also how to select *which* companion is automatically generated.

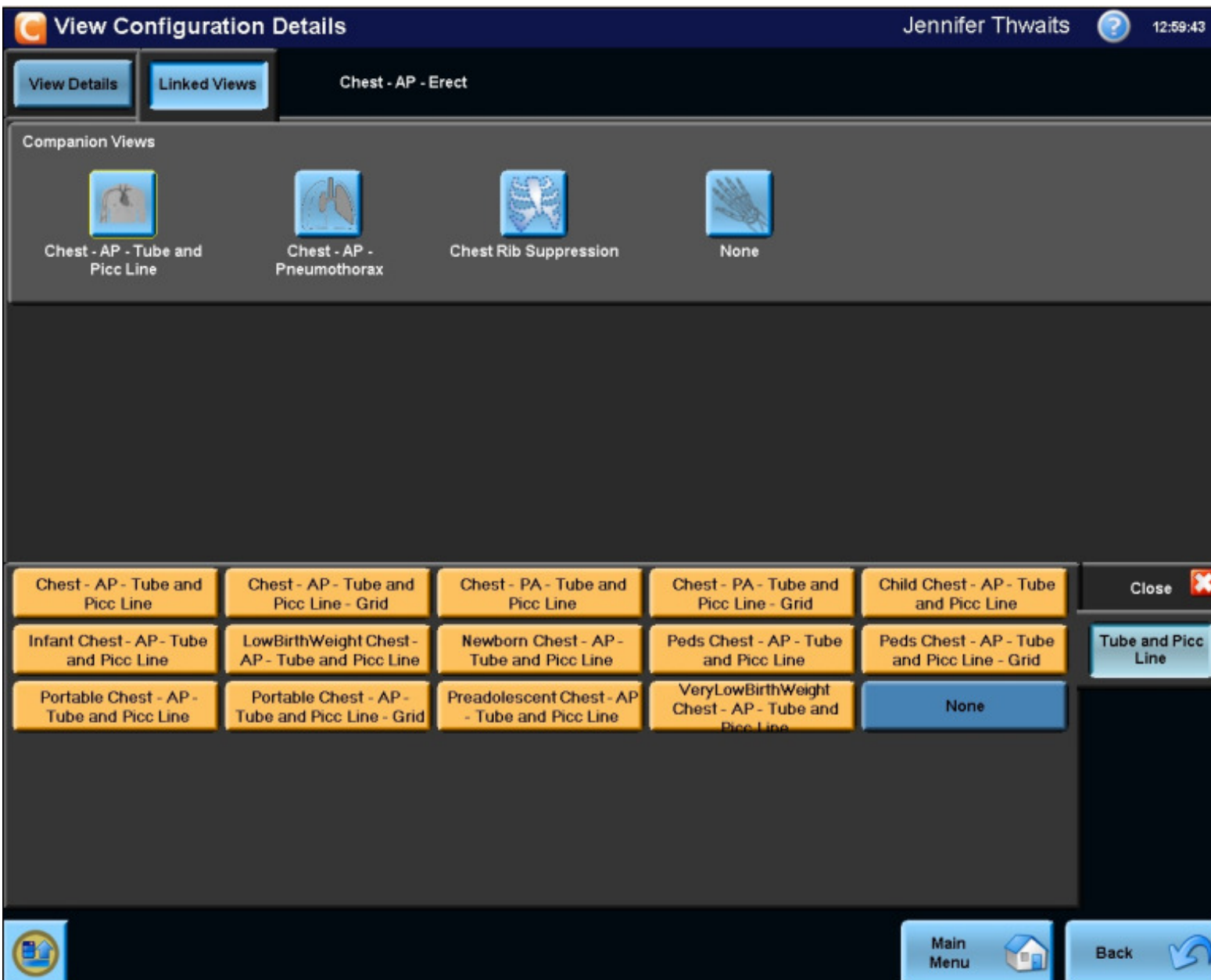
- Go to **System Configuration\View Configuration** to select the view

Companion View - KO Configuration



- Choose the **Linked Views** column on the previous screen to get to this screen
- From the 4 choices shown, choose which Companion View to Link to

Companion View - KO Configuration

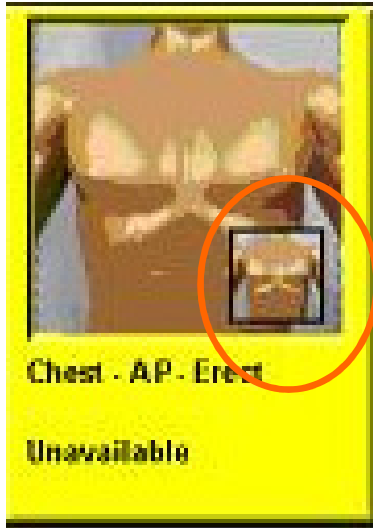


• Then the proper anatomic view can be selected

• The list of views has been optimized.

- Only chest views are listed for chests
- Only abdomen views are listed for abdomens

Companion View – User Interaction

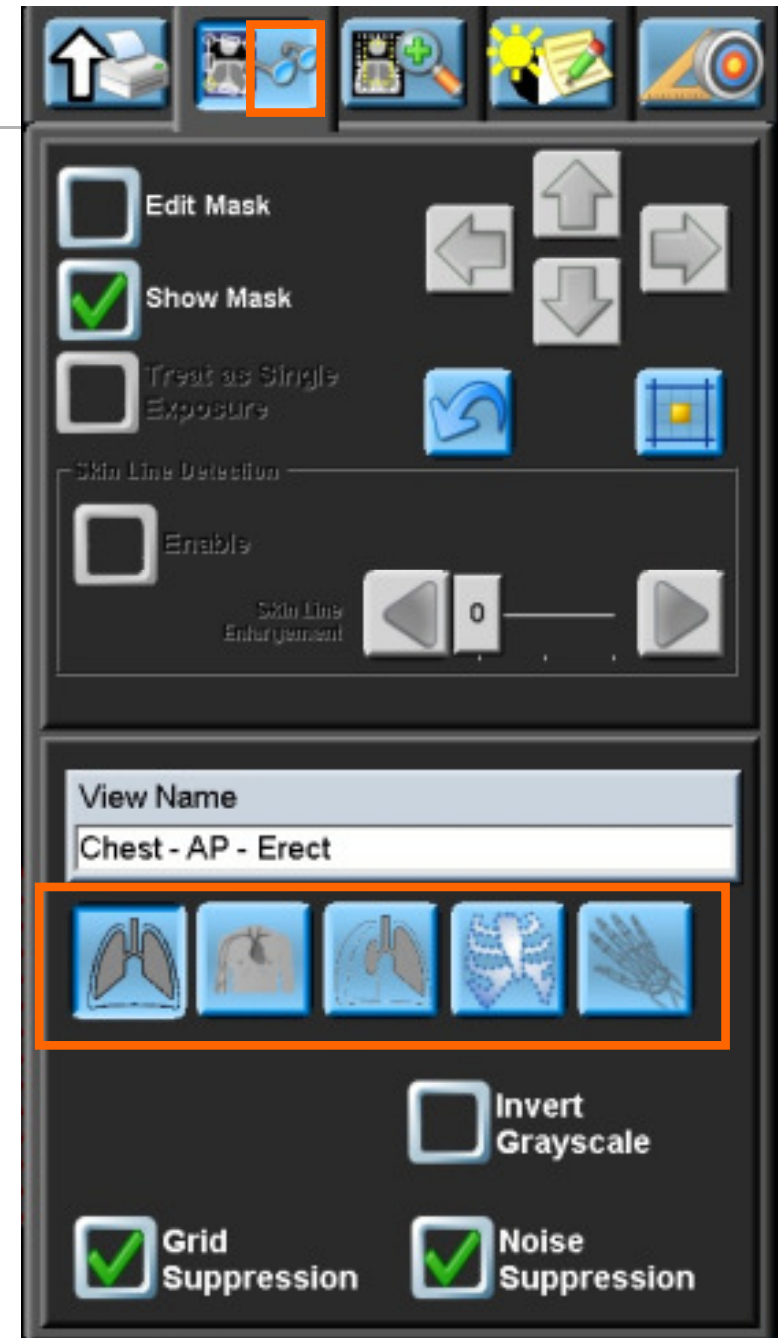


When a view is configured to make Companion views available, the tutor image will indicate that by including a “picture in a picture” icon – notice the smaller icon inside the larger one. This indicates the view is Linked to a companion view.

Companion View – User Interaction

When the system is configured to manually create a companion view, the user can create one as needed from the Image Viewer by choosing the correct icon.

- Normal image
- Tube & PICC image
- Pneumothorax image
- Bone Suppression image
- High Detail Visualization (HDV)



Companion Views – User Interaction



While a companion view is being generated:

- A pop up indicates the system is working.
- The Image Viewer screen is grayed out.

Companion View – User Interaction

- Once a Companion view is created, the thumbnails displayed on the Acquisition Screen will reflect the original image & whichever Companion Views have been created
- As in previous versions of software:
 - Accepting one of the images will send all the images to the selected destination
 - The Companion image can only be delivered with the original image – if the original image is deleted, all images will be deleted

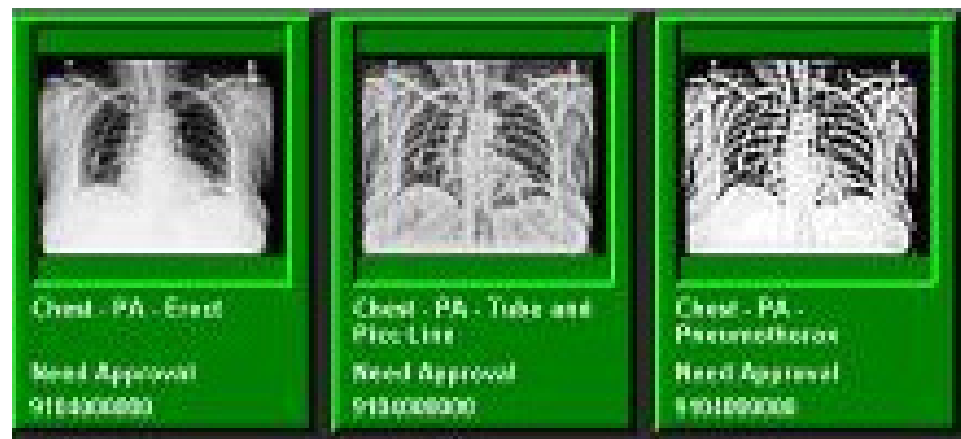


Image Quality

Feature	Benefit
<p>Bone Suppression Software*</p> <p><i>FDA Approved!</i></p>	<p>Creates a companion image to the original exposure (Chest PA or AP views) which suppresses the appearance of posterior ribs and clavicles and enhances the visualization of soft tissue.</p> <ul style="list-style-type: none">• Requires no additional exposure to the patient.• Clinical study confirm increased confidence of pathology assessment due to improved visibility.

Bone Suppression Benefits

For patients	Requires no additional dose or imaging time
For techs	Requires no additional setup or exposures – The additional rendering (companion image) is created automatically within ~10 seconds
For techs	Same GUI interaction as other companion image SW (Tube & Line Visualization / Pneumothorax Visualization)
For radiologists	Provides an automatic additional rendering designed to suppress the appearance of bone (posterior ribs and clavicles) and enhance the visualization of soft tissue
For radiologists	No radiologist adjustments needed; Easy for radiologist to rapidly toggle between the standard visualization and soft tissue for improved reading efficiency
For radiologists	Potential to increase the confidence of pathology assessment due to improved visibility
For radiologists	Both images can be viewed on PACs; no additional workstation needed
For radiologists	Available for all chest images taken with Floorstanding CR and DRX systems (requires V5.7), even portable exams

Image Quality

Feature	Benefit
High Detail Visualization View (included in Tube and Line Visualization Software*)	Creates a companion image from the original exposure with optimized processing for clearer, easier visualization of high detail structures

Some sites like to use the Tube & Line companion image with a lateral L-spine in surgery. In that application the surgeon places a needle or a similar object at the spinal level they want to work on. They do an image to confirm the surgeon is in the right place. These images aren't the sharpest or best contrast so they find the companion image very helpful. These customers don't like that the image is labeled as a chest, however, so this provides a descriptive view name.

*Chargeable Options/Packages

Quality Control

Feature	Benefit
IHE Dose Reporting Software *	Collects and distributes comprehensive dose information via a structured report to PACS including DAP value, techniques, and exposure indices. Conforms to the IHE Radiation Exposure Monitoring (REM) Profile

Dose continues to be a key issue with our customers. Here are some benefits of dose monitoring:

For facilities	Monitoring helps ensure their procedures and protocols are being followed
For physicians	Helps to determine how changes in technique impact dose and image quality; helps to enable dose to be as low as possible
For physicians	Can help make total dose estimated for individual patients ... such as pregnant patients
For physicists	Can help develop a more detailed understanding of the health impacts of radiation exposure and how it should be measured and managed
For regulatory agencies	A collection of exposure data can be used to set or review radiation dose guidelines

*Chargeable Options/Packages


Workflow

Feature	Benefit
Multi-touch Monitor*	23" Wide-screen 2MP Multi-Touch. Allows the use of touch screen gestures to manipulate the image such as pinch to zoom and rotate. Used in conjunction with new viewing options (full screen and fit to BSM) provides enhanced viewing and ease of use.

PREVIEW MONITOR	
Type/size	Liquid Crystal Display (LCD),(IPS), 58.4 cm (23 in.) viewable image size
Display resolution	1920 x 1080, 59-61 digital; 55 - 76 hz analog
Viewing angles	Typical 178° horizontal and vertical (89° up or vertical/89° down or horizontal)
Monitor Foot Print	56.0 cm Wide x 25.0 cm Deep (22 inch x 9.8 inch)
	Multitouch

*Chargeable Options/Packages

Workflow

Feature	Benefit
Multi-format Print Enhancements	<p>Custom page layouts with the ability to easily switch the layouts in the composer screen</p> <ul style="list-style-type: none"> • Up to 4 X 4 layouts • Ability for asymmetric layouts  <p>The screenshot shows a software interface titled 'Delivery Preferences'. It features a large grid on the left for designing page layouts. On the right, there are controls for adding elements like 'Blank Page', 'Text', 'Image', and 'Form', as well as 'Call Width' and 'Call Height' settings. At the bottom, there are buttons for 'Save', 'Cancel', and 'Apply'.</p>

*Chargeable Options/Packages

Workflow

Feature	Benefit
Multi-Modality Acquisition Software* <i>(Simple Capture Link will be discontinued)</i>	Connects 2 CR systems or 1 CR and 1 DR system with 1 console. ID cassettes, review patient demographics and review images from 1 console for both systems (Classic, Elite, DRX-1 System, DRX-Evolution, DRX-Ascend); CR-CR saves space and doubles throughput; CR-DR saves space and allows for CR backup. Also allows for CR LLI on DR system. These are direct connections between the systems so the systems must be located close to each other

CR-CR



CR-DR



*Chargeable Options/Packages

Carestream

DRX-Evolution
Motor Assist OTC

Agenda

What is Motor Assist?

In Scope / Out of Scope

Field Upgrades

How it Works



What is Motor Assist OTC?

- Provides the ability to the operator to select a mode where the X and Y axis motors will provide a ramped motored acceleration (or assist) in the direction as guided by the operator
- Reduces the effort required to move the OTC manually...reduces operator fatigue; Smooth acceleration and deceleration
- Level of assistance can be set by the key-op in both x and y direction as none (off), low, or high motor assist
- Once enabled requires the User to press the all brake release button and the detent skip button simultaneously
- The system will brake when the operator lets go of the 2 buttons on the OTC handle
- For fully automatic systems only



In Scope / Out of Scope

In - Scope

- Motor Assist shipping with all new Fully Automatic System orders as a *standard* feature (no additional cost)
- Field upgrades will be available to existing Fully Automatic Systems with V5.7B SW or later
 - Systems which are upgraded to Motor Assist must have the improved Brake Bracket modification (Mod # 45); Serial numbers 4000-5104 will require this Mod available through Service Parts Management

Out-of-scope

- Motor Assist in Z direction
- Integration into non motorized systems
- Field units with less than V5.7B SW

Field Upgrades


Customers who are on SW Versions **less than** V5.7 must purchase the upgrade to V5.7B

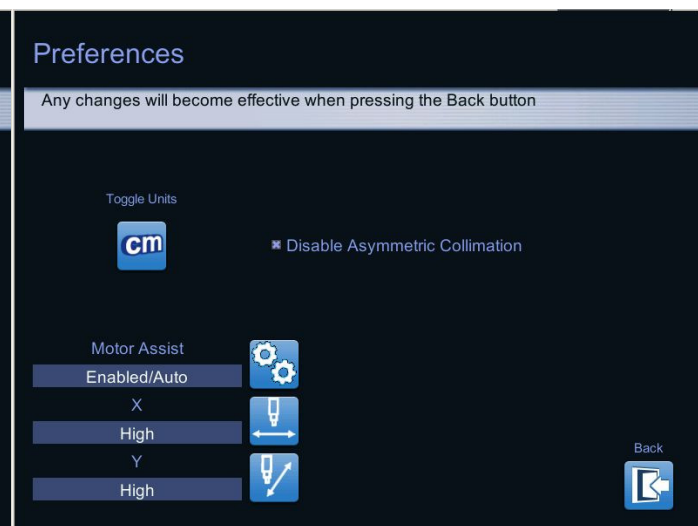
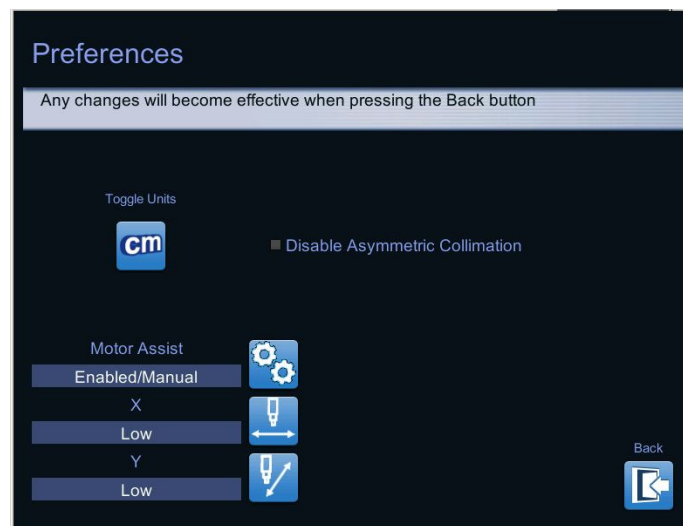
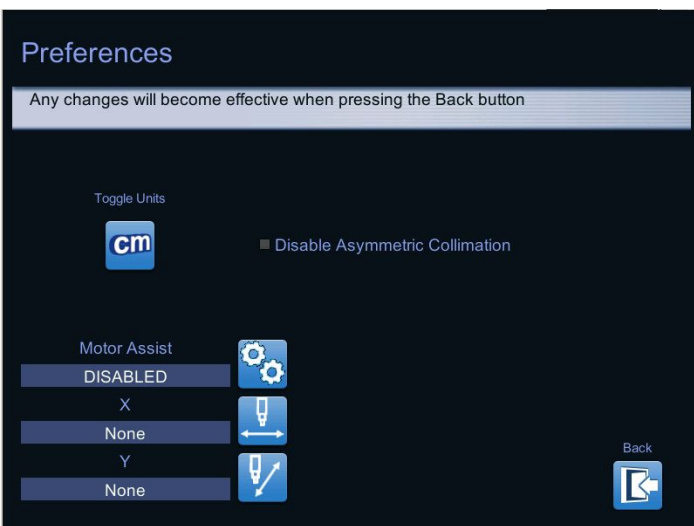
Customers who **are on** SW Version V5.7 will receive V5.7B free of charge if they would like the Motor Assist feature

Systems which are upgraded to Motor Assist (V5.7B) must have the improved Brake Bracket modification (Mod # 45) ;Serial numbers 4000-5104 will require this Mod available through Service Parts Management

How it Works

Key-Op or Service can configure as “Disabled” (assist not used at this site),
“Enabled-Manual”, Enabled-Auto”

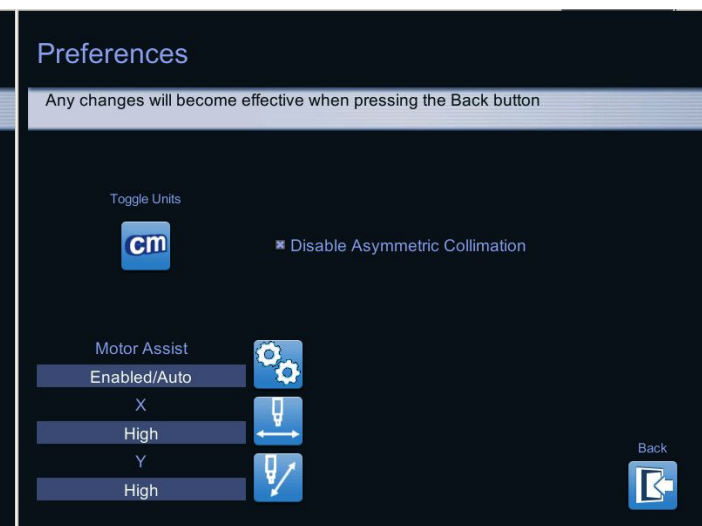
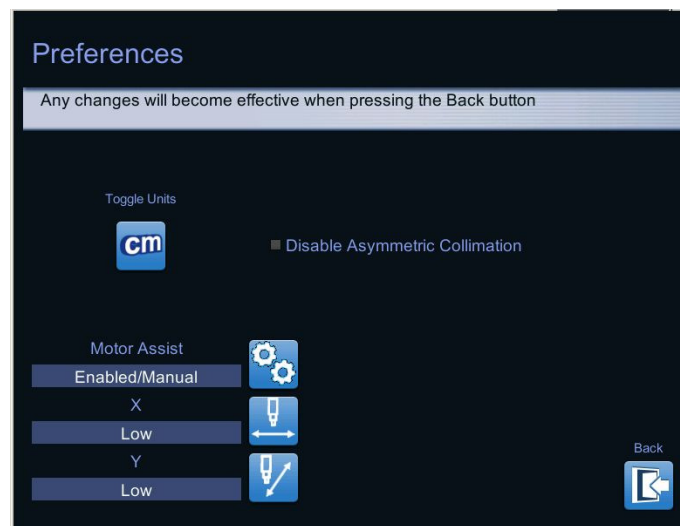
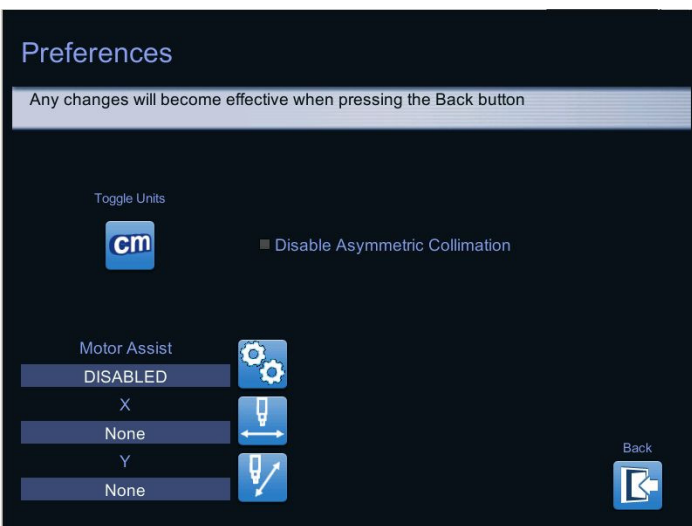
1. Log in to the console as a **Key Operator**
2. At the OTC, navigate to Utilities  > Preferences Screen



How it Works

If “Enabled”, the motor assist can be set to either “Low” or “High” indicating how much assist is given to the operator (how much torque/acceleration that occurs when motor assist is engaged). The maximum speed is the same in both settings

To decide what level of Assist is right for your system, configure both the longitudinal and transverse axes on High. Use the feature to move the OTC back and forth, making both long and short movements, and bring the system to a complete stop. If movement in either axes results in too much acceleration or proves difficult to stop, select Low



How it Works

Enabled – Manual

- Motor Assist is **Off** by default. The operator will press the button on the OTC screen to use it and it will turn off (deactivate) automatically after an exposure



Operator presses button on OTC to activate Motor Assist



After an exposure the Motor Assist turns off and the operator would need to press again to activate

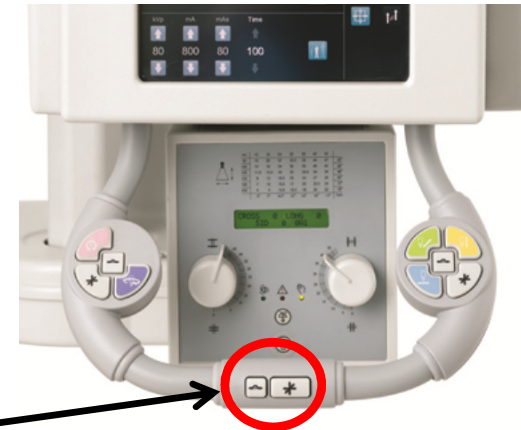
How it Works

Enabled – Auto

- Motor Assist is **On** by default. Motor assist will be kept on after an exposure. The operator would need to press the button on the OTC to turn it off.

Engaging Motor Assist

- The feature needs to be “Enabled” And
- The operator needs to press both the all brake release button and the detent skip button simultaneously
- When the buttons are released the motor assist stops; To activate again the user would enable motor assist (if using “Enabled-Manual”) and press both the all brake release button and the detent skip button simultaneously



How it Works

When Motor Assist is engaged and in-progress it will be indicated on the OTC screen here:



How it Works

When Motor Assist is activated and the OTC is approaching one of the end stops at a minimum of 100mm/sec, the OTC Motor Assist will deactivate

To reactivate, the user must release both the brake release and the detent skip buttons, then push them both again

Carestream

DRX-Revolution Stitching SW

Agenda

What is DRX-Revolution Stitching Software?

Product Positioning

Field Upgrades

How it Works

Schedule



DRX-Revolution Stitching Software

What is Stitching Software?

A purchasable option that will allow 2 or 3 images, acquired on a DRX-Revolution, to be combined to form a single image

Requirements:

- (1) V5.7B Software
- (2) Stitching Software Option for the DRX Revolution must be enabled

Cat. No.: 1065929 (DRX-Revolution Stitching SW)



Product Positioning

A limited number of facilities are using DR mobiles in the OR to acquire multiple images for stitching

This option should not be pro-actively offered to the customer; It should only be discussed in cases where the site is already using a DR mobile x-ray system to perform stitching and needs a replacement solution

- Very few sites require this feature
- Difficult to move the detector without rotation in the OR table tray

Field Upgrades – DRX-Revolution Stitching SW

Customers who are on SW Versions less than V5.7 must purchase (1) the upgrade to V5.7B and (2) the Stitching SW Option

Customers who are on SW Version V5.7 will receive V5.7B free of charge if they require DRX-Revolution Stitching SW but will need to purchase the Stitching SW Option

Stitching SW Workflow

1. Create a new patient and make sure that you select one of the designated “Stitching” Views:

- » Full Spine Stitch AP
- » Full Spine Stitch Lateral
- » Extremity Stitch AP
- » Extremity Stitch Lateral

2. Select the number of component images for the exam. You can choose two or three images. Click each component thumbnail to ensure that the techniques are appropriate, and then verify that the first component image is selected.

3. Position the detector under the patient.

NOTE: A grid is recommended when possible; grid lines should run parallel with the length of the patient.

Workflow (cont.)

4. Position the tube over the patient, centered to the area of interest. The detector should be positioned to the topmost portion of the area of interest. Carestream recommends a 183 cm (72 in.) SID, or the maximum SID you can achieve.

5. Using only the **rotational buttons on the tube**, **angle the tube until the central ray is pointing to the center of the detector**

6. Open the collimator blades to expose the full detector.

7. Complete the first exposure and reposition the detector for the second exposure.

8. Using the **rotational buttons**, **angle the tube until the central ray is pointing to the center of the detector.**

Make sure that the collimator blades are open to expose the full detector.



IMPORTANT:

The detector must be placed on a flat, rigid surface.

The detector overlap between exposures must be at least 7.6 cm (3 in)

Workflow (cont.)

9. Complete the second exposure.

If you are doing a two-image study, you are finished. If you are doing a three-image study, reposition the detector and the tube for the third image and complete the third exposure.

After all images are acquired, the stitching software will combine the images to form a single stitched image. Use the Manual Stitch Editor to adjust the image stitching in either the left and right or the up and down direction.

IMPORTANT: It is crucial that the detector is not rotated between exposures, because the stitching software

does not correct for any difference caused by rotation of the detector.

Carestream

A peak into the
near future

Tomosynthesis

Strategy/Vision: Meet market need for advanced imaging applications

Program Description

- Charged Option -Tomosynthesis on Premium Detector on DRX- Evolution Automatic Only. Provides replacement for some CT exams at lower cost

Key Program Features

- Allows setting of sweep angle
- Definition of number of slices rendered
- 1x1 (full resolution), 2x1, and 2x2 binning modes
- Sweep time in under 10 seconds (2x1 2x2 binned)
- Upright or supine
- Launched with Next Gen Premium

Competitors

GE, Shimadzu, Fuji

Competitive Advantages/Value Add:

- Low dose CT substitute with Fast capture of image series
- Performed on X-Factor Premium Panel

Out of scope:

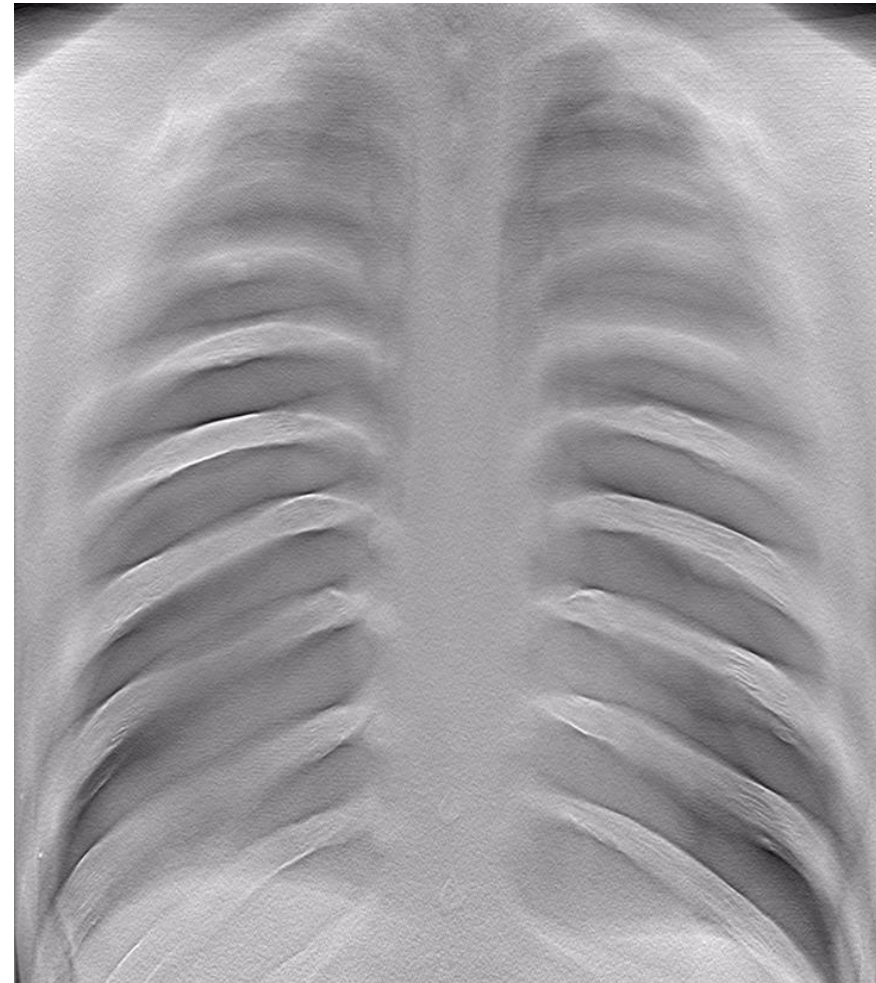
- Non Motorized Evolution
- Value detectors
- OEM Availability
- GOS detectors
- Wireless operation during Tomosynthesis

Target customer segment:

- Advanced users wanting advanced features
- CT low dose alternative

GTM Sales & Service: Direct, Dealer

Program schedule and duration: 2H 2015



Dual Energy

Strategy/Vision: Meet market need for advanced imaging applications

Program Description

- Charged Option –Dual Energy on Premium Detector on DRX- Evolution
- Provides Bone Subtraction both tissue Separate from Bone

Key Program Features

- Pulse Gated exposure
- Uses Advanced Evolution Generator
- Launched with Next Gen Premium

Competitive Advantages/Value Add:

- Fast capture of image via pulse Synch
- Clarity on cardiac area due to pulse synch
- Performed on X-Factor Premium Panel

Competitors

GE, Fuji

Out of scope:

- Non Motorized Evolution
- Value detectors
- OEM Availability
- GOS detectors

Target customer segment:

- Advanced users wanting image segmentation
Nodule detection

GTM Sales & Service: Direct, Dealer

Availability: 2H 2015



High kVp Exposure



Low kVp Exposure

Image
Processing



Tissue



Bone

Next Gen Software for Evolution

Description:

First release of Next Gen SW for Evolution with advanced applications

Key features:

- Refreshed UI with reduced screen transitions
- Tomosynthesis (Automatic Evolution Only)
- Dual Energy (Automatic Evolution Only)
- Active Directory Support
- Improved Installation and configuration
- Web Enabled Key Operator
- Selectable Auto Marker Placement

Target customer segment: Evolution Customers

GTM Sales & Service: Direct

Supported Products

✓ Evolution

Program schedule and duration: 2015

Next Gen V1.0

Description:

Next Gen Software Platform, supporting Premium and Value Tier versions.

Key features:

Refreshed UI with reduced screen transitions
 Active Directory Support
 Improved Installation and configuration
 Web Enabled KeyOperator
 Selectable Auto Marker Placement

Target customer segment: DirectView and Image Suite Customers

GTM Sales & Service: Direct & Indirect

Program schedule and duration: 2016

Supported Products		
✓ Evolution	✓ Revolution	✓ CR Max
✓ Ascend	✓ DRX Mobile	✓ CR Classic
✓ DRX In Room	✓ Transportable	✓ CR Elite
		✓ Vita/ Vita Flex

Carestream

Would you like
a free detector?

Special Promotion DR “Advanced Products”

For our Northern Cluster Business Partner Meeting Attendee's, September 2014,
We offer four Special promotions:

Revolution Product:

- Buy 1 DRX Revolution and add one small detector with 30% discount
- Buy 2 DRX Revolutions and add one small detector with 60% discount
- Buy 3 DRX Revolutions and get one small detector for free

Evolution Automatic:

- Buy an Evolution Automatic and get a free of charge room retrofit console kit (ex detector)

Easy terms and conditions:

poaui nasloia idnds fthrf fklj jhln f jghdrn875 jghdkiuhjgkcl. Hghskljpdrlj[dj jhghdklthnddjd jk-jdklqpp.dp.gkljkdki[dgkclj jghdkgvhdadurtyjlddki jhthgdkgghdkidkglyd jhtgudkdidis.skljd

Terms and conditions

September 2014						
M	T	W	T	F	S	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	1	2	3	4	5

October 2014						
M	T	W	T	F	S	S
29	30	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	1	2

November 2014						
M	T	W	T	F	S	S
27	28	29	30	31	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	

December 2014						
M	T	W	T	F	S	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	1	2	3	4



- Orders to be for a named site and in addition to committed units already identified in the sales funnels (tracking 7)
- Not applicable to bulk orders/NHSSC/N.I.
- Must be ordered, delivered and invoiced by December 19th 2014

Carestream