Tactiq
&
GE Healthcare

GENIE Acquisition User Interface
The Benefits of
User Task Analysis

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Benefits of the GENIE Acquisition User Interface

GENIE Acquisition is the operator's console for GE Healthcare's Nuclear Medicine diagnostic imaging product range. Its' user interface was designed to provide a competitive advantage by setting new standards for ease-of-use.

- User interface designed using User Task Analysis
- Integrated with Clinical Information Systems for efficient workflow
- Increased patient throughput
- Shorter operator training time
- Easy to use yet powerful interface
- Reduction in the number of operator errors
- Reduction in the number of support calls
- Designed allowing for future enhancements
- Same user interface software supports:
    - Multiple user interface themes
    - Varying number of gamma cameras
    - Multiple gantry, gamma camera and table types
    - Optional features (auto body contouring, attenuation correction)

GENIE Acquisition: Image Acquisition Card

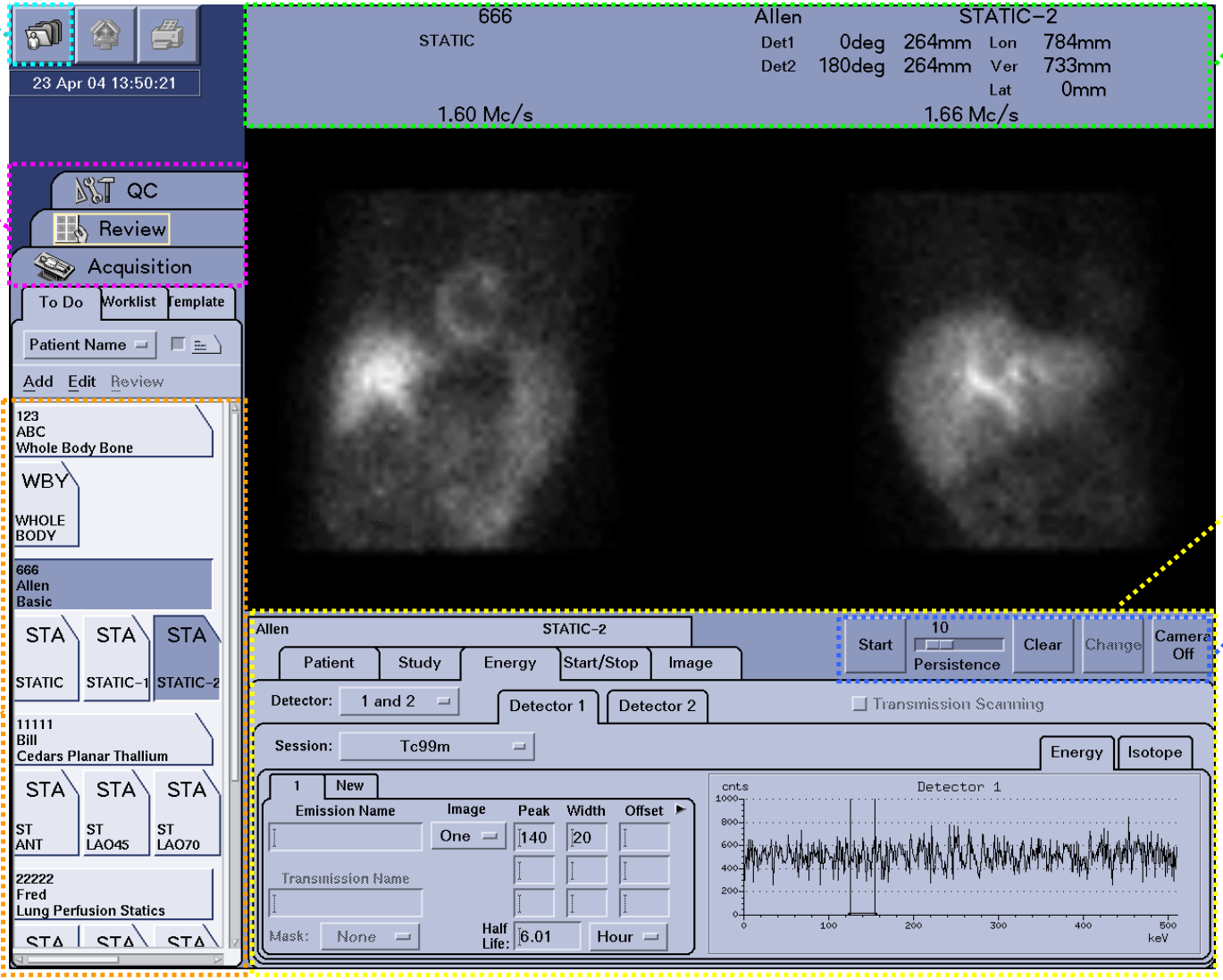
The Image Acquisition card presents all of the functions required for the operator to define, execute and monitor the progress of each patient scan.

Database and Network Management Screen Button

Main Tab Cards Navigation for 3 major User Task domains:

- QC (Quality Control)
- Image Review
- Image Acquisition

Scan "To Do" List

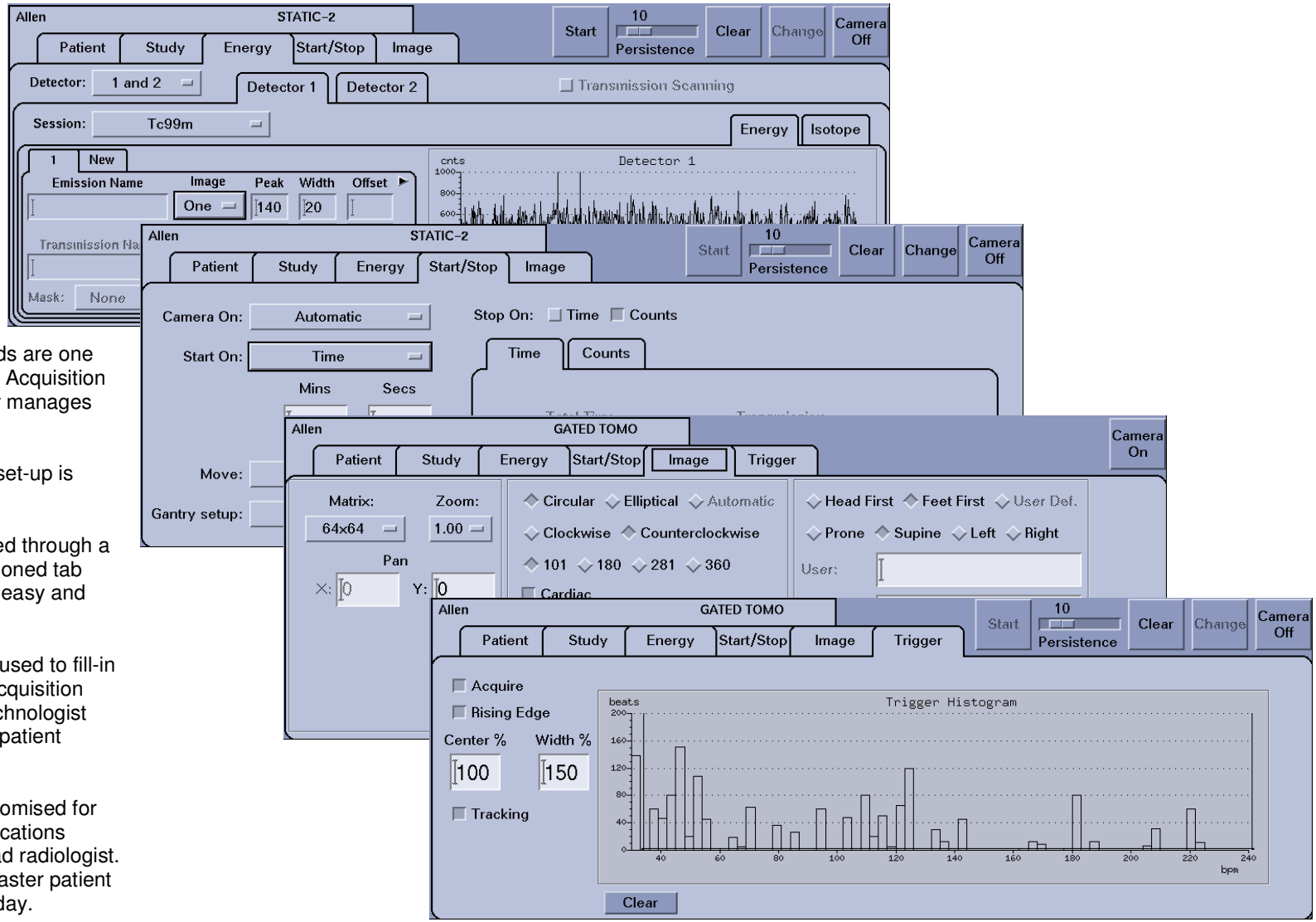


Acquisition Status Area

Scan Set-up Tab Cards

Acquisition Controls

GENIE Acquisition: Scan Set-Up Tab Cards (Energy, Start/Stop, Image and Trigger)



The scan set-up tab cards are one way in which the GENIE Acquisition user interface effectively manages complexity.

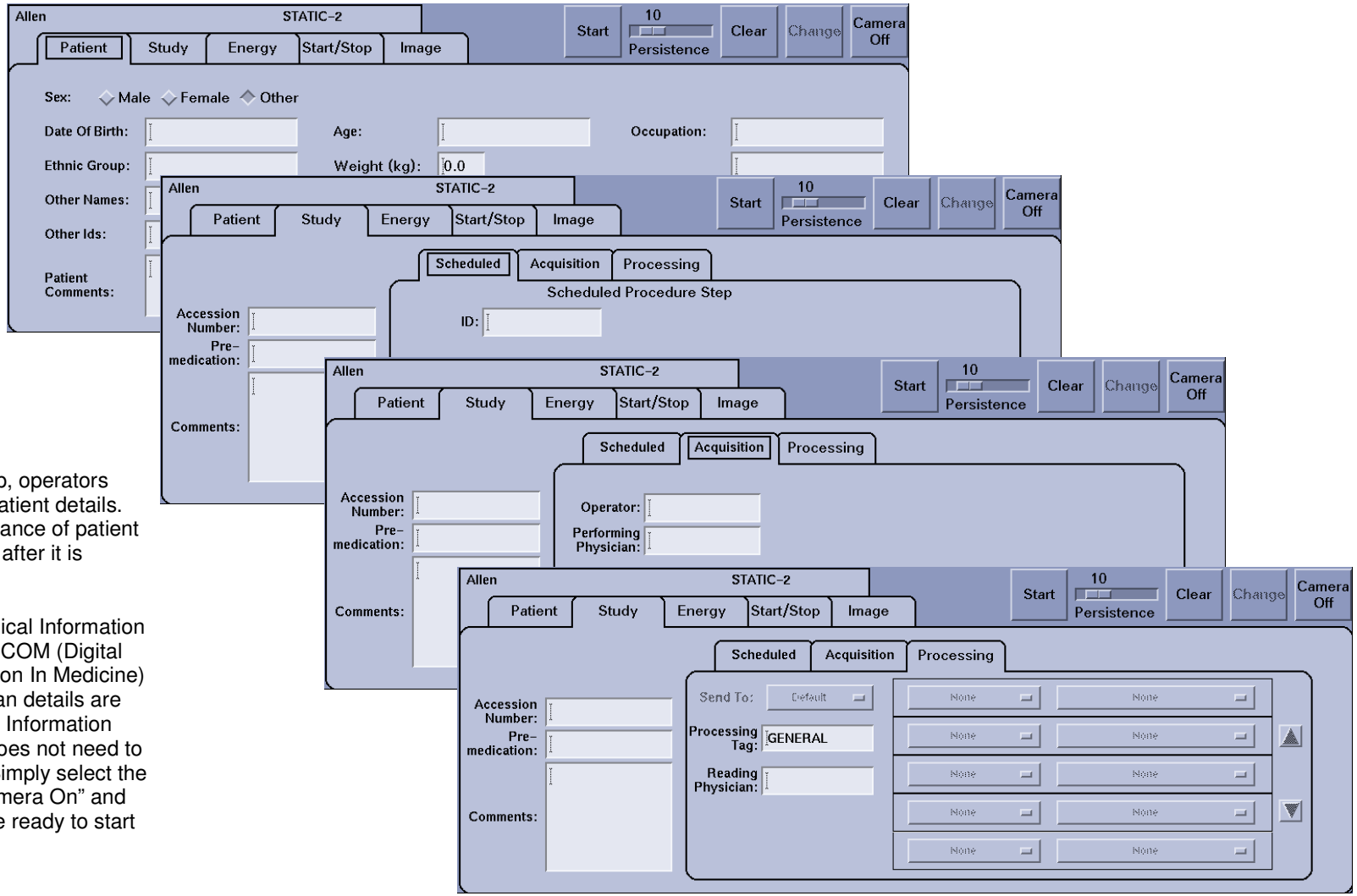
The complexity of scan set-up is mitigated in two ways:

1. All scan data is edited through a set of logically partitioned tab cards. Navigation is easy and well bounded.

2. Scan templates are used to fill-in the majority of the acquisition detail leaving the technologist less to do when the patient arrives.

Scan templates are customised for each system by an applications specialist and/or the head radiologist. An operator is able to master patient scanning in less than a day.

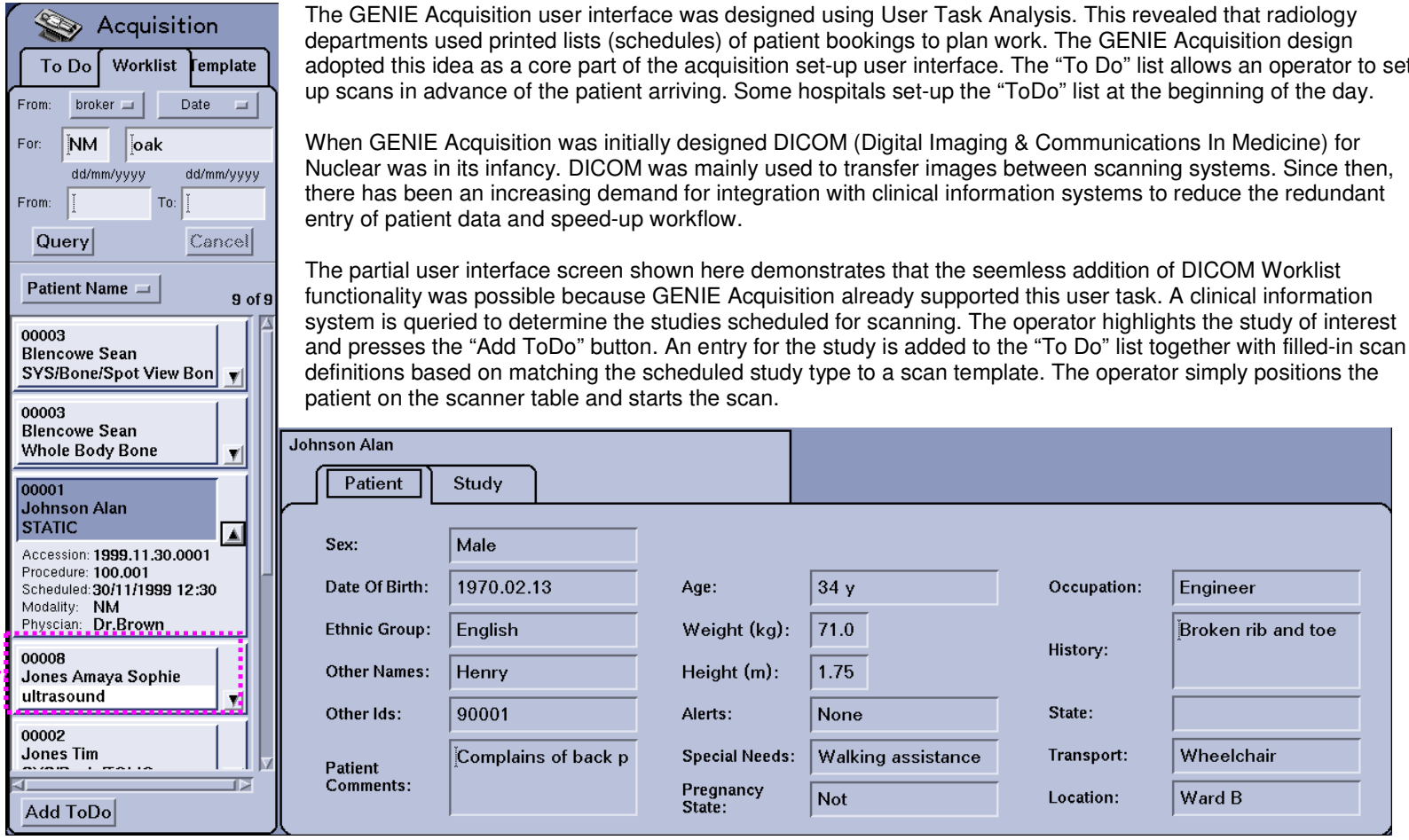
GENIE Acquisition: Scan Set-Up Tab Cards (Patient and Study)



To complete scan set-up, operators only need to enter the patient details. This can be done in advance of patient arrival, during a scan or after it is completed.

If the hospital has a Clinical Information System that supports DICOM (Digital Imaging & Communication In Medicine) Worklist, patient and scan details are provided by that Clinical Information System. The operator does not need to enter any set-up data. Simply select the patient entry; press “Camera On” and position the patient to be ready to start the acquisition.

GENIE Acquisition: Image Acquisition Card - DICOM Worklist



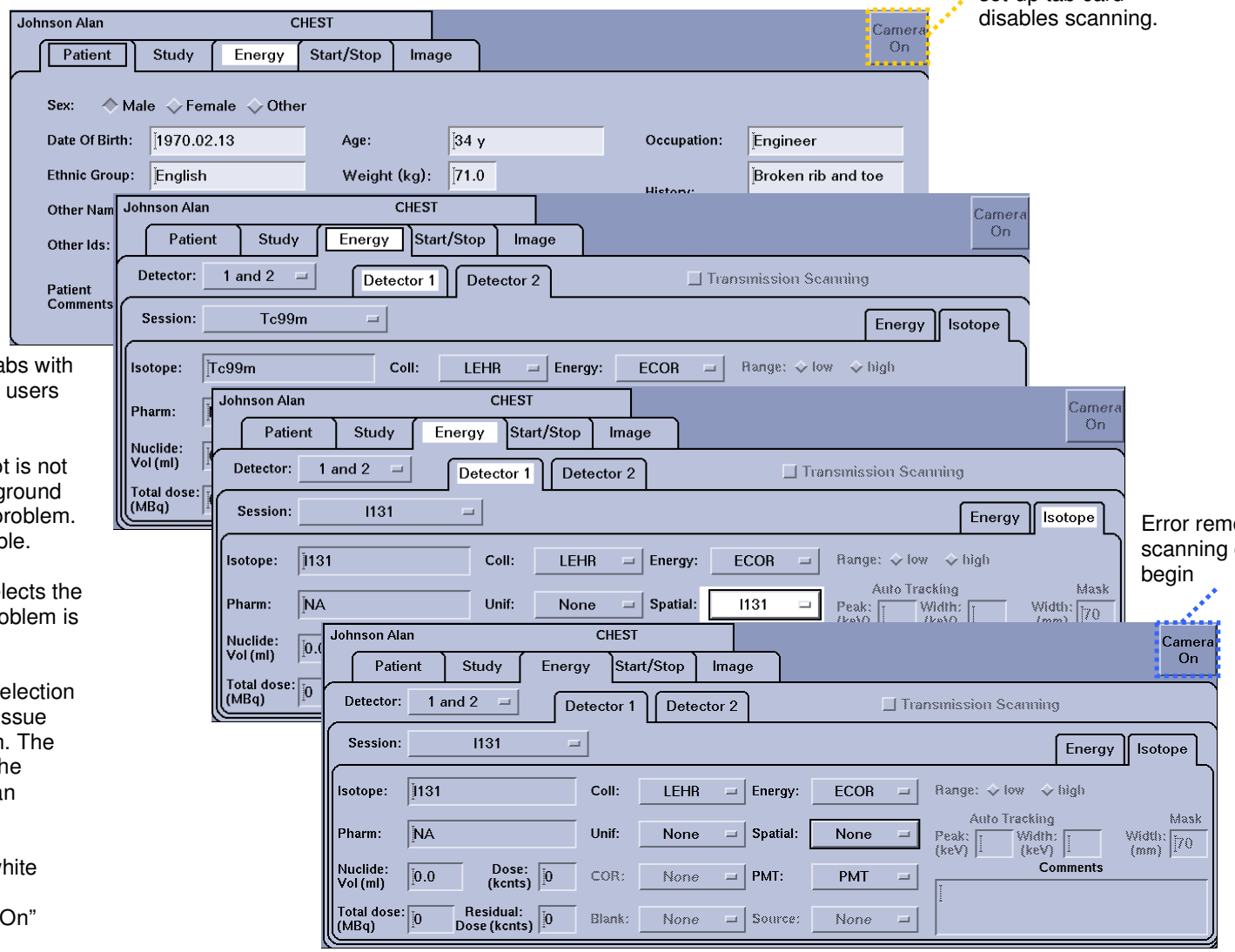
Scheduled Procedure. Description text is set on a white background indicating that a scan template has not been defined for this study type.

The GENIE Acquisition user interface was designed using User Task Analysis. This revealed that radiology departments used printed lists (schedules) of patient bookings to plan work. The GENIE Acquisition design adopted this idea as a core part of the acquisition set-up user interface. The “To Do” list allows an operator to set-up scans in advance of the patient arriving. Some hospitals set-up the “ToDo” list at the beginning of the day.

When GENIE Acquisition was initially designed DICOM (Digital Imaging & Communications In Medicine) for Nuclear was in its infancy. DICOM was mainly used to transfer images between scanning systems. Since then, there has been an increasing demand for integration with clinical information systems to reduce the redundant entry of patient data and speed-up workflow.

The partial user interface screen shown here demonstrates that the seemless addition of DICOM Worklist functionality was possible because GENIE Acquisition already supported this user task. A clinical information system is queried to determine the studies scheduled for scanning. The operator highlights the study of interest and presses the “Add ToDo” button. An entry for the study is added to the “To Do” list together with filled-in scan definitions based on matching the scheduled study type to a scan template. The operator simply positions the patient on the scanner table and starts the scan.

GENIE Acquisition: Guided Interactions - Error Marking



GENIE Acquisition marks fields and tabs with a background colour of white to guide users through problem resolution.

The energy card in the first screenshot is not selected, but its tab has a white background which draws the users attention to a problem. The “Camera On” button is not available.

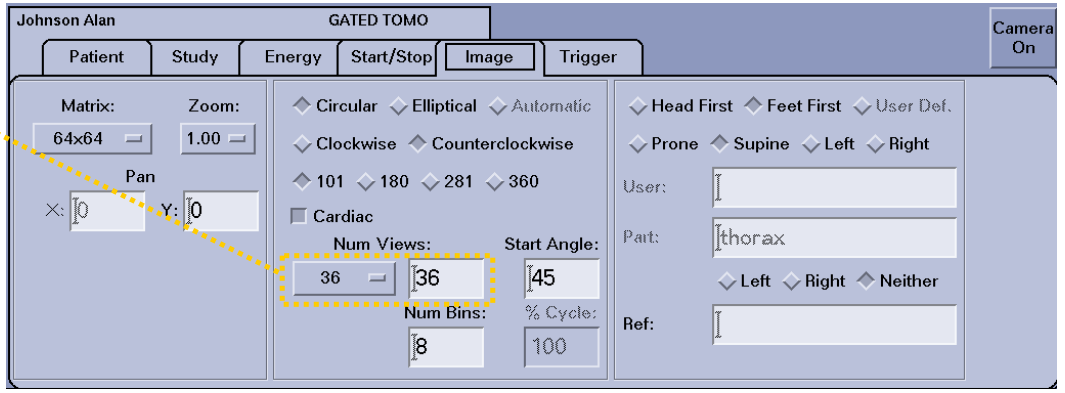
In the second screenshot, the user selects the energy card and discovers that the problem is specific to Detector 1.

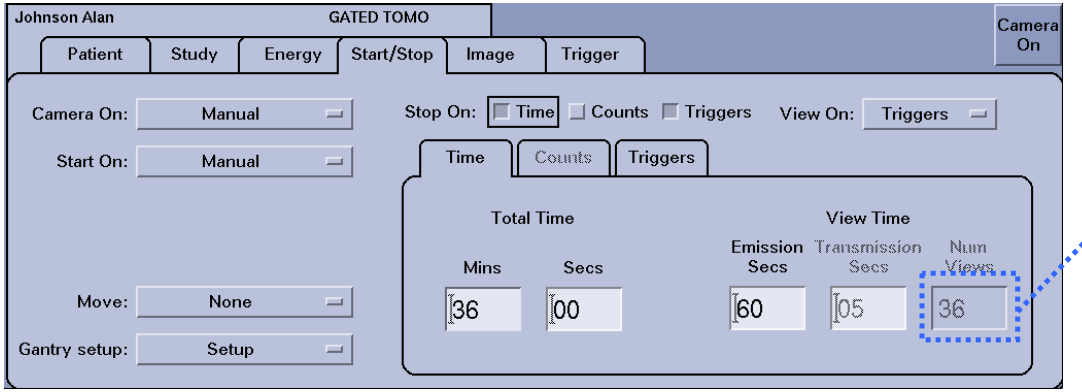
The third screenshot shows that the selection of the Detector 1 tab card reveals an issue with using the “I131” spatial correction. The correction specified is not present in the database and it must be acquired or an alternative correction selected.

The final screenshot shows that the white marking disappears when the spatial correction is turned off. The “Camera On” button becomes available.

GENIE Acquisition: Guided Interactions - Supporting Information

Number of views to be scanned is entered on the image set-up tab card.



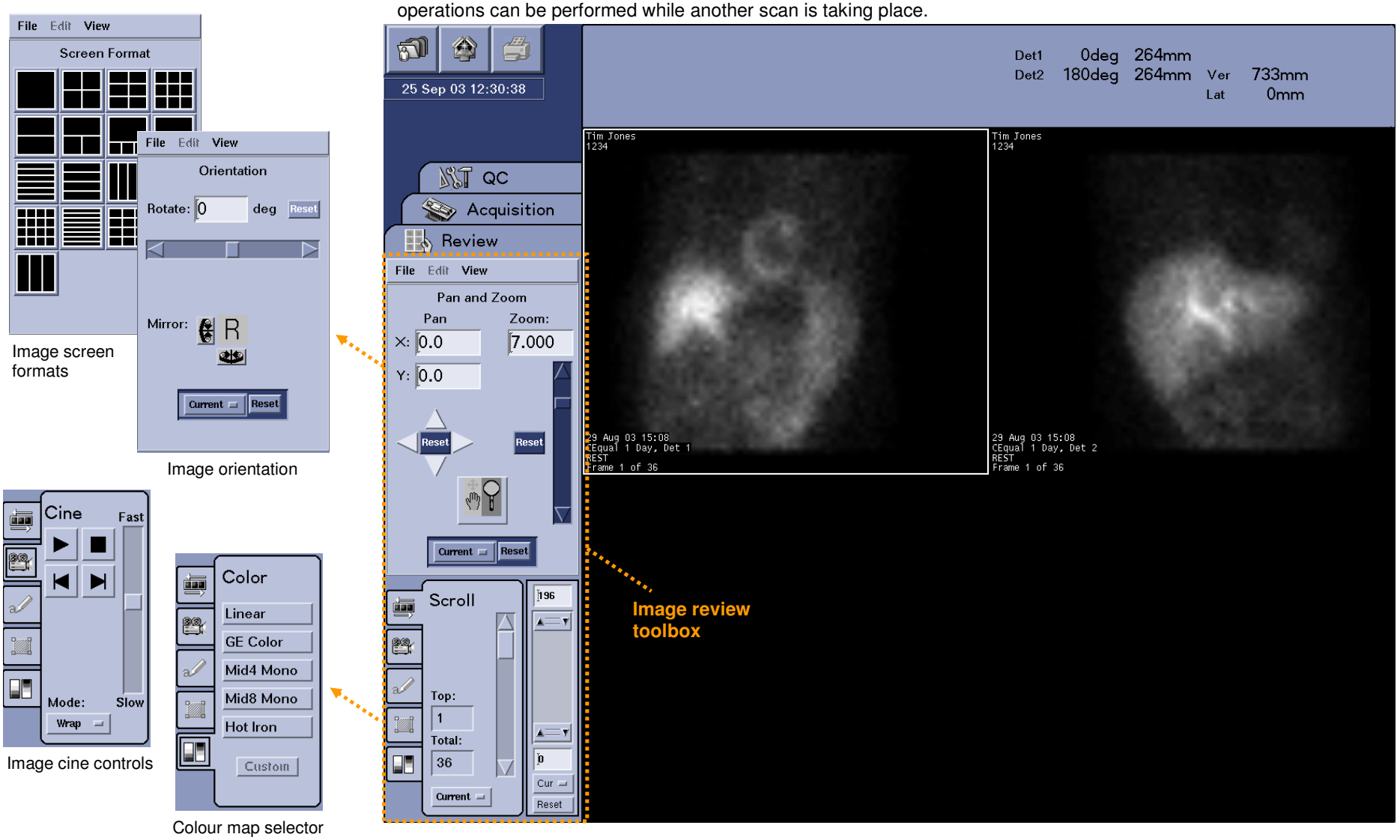


Number of views to be scanned is presented on the time subcard of the start/stop set-up tab card. This field is not editable and serves as guidance for users when defining the scan time.

One way in which users define the total scan time is to define the time per view. In this case, the user has set the time per view to 60 seconds. The total scan time for 36 views is 36 minutes.

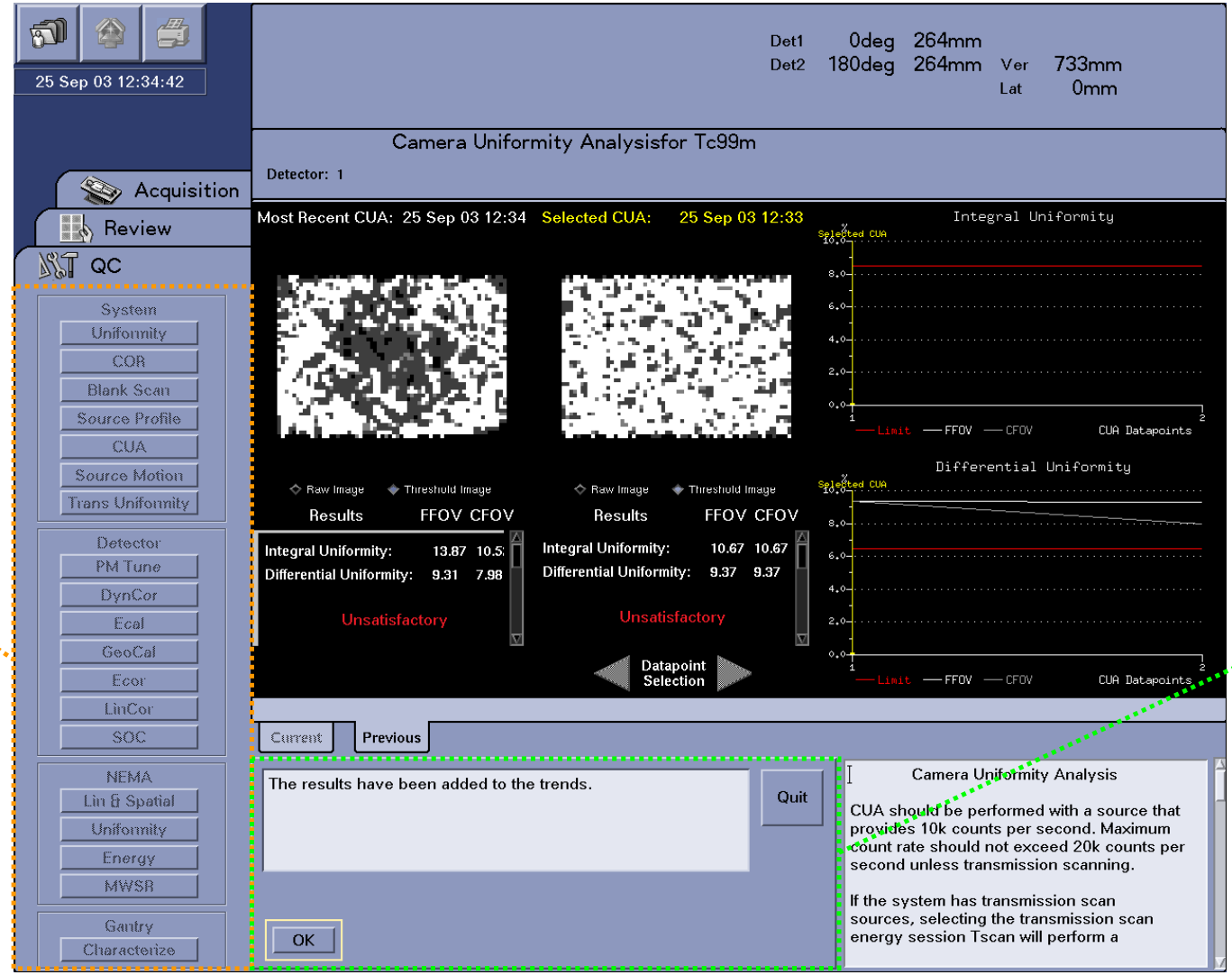
GENIE Acquisition: Image Review Card

The Image Review card presents all of the functions required for the operator to review acquired images. This includes image screen format, pan, zoom, mirror, rotate, image cine and colour map selection controls. These operations can be performed while another scan is taking place.



GENIE Acquisition: QC (Quality Control) Card

The QC Card presents all of the functions required to calibrate a gamma camera and to analyse changes in image quality. Some functions are only made available to a “Service” user.



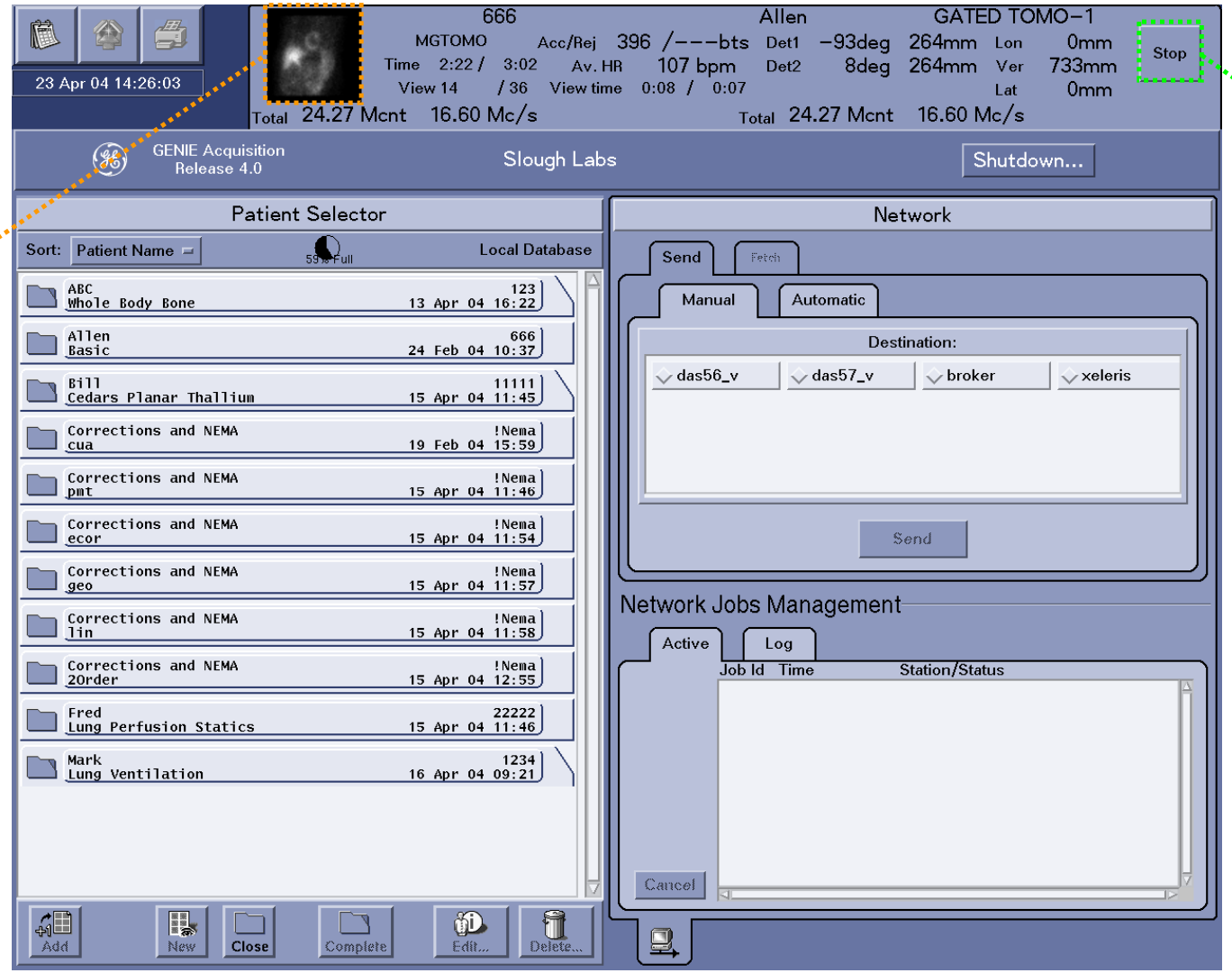
Calibration and Image Quality Toolbox

Quality Control Set-Up and Control Area

GENIE Acquisition: Database and Network Management Screen

The Database and Network Management screen is used to manage the review, deletion and transfer of patient data. These tasks can be performed at the same time as monitoring and controlling the current scan.

ExamWatch™
A small acquisition display keeps the operator intuitively informed of a scan's progress.



Acquisition Stop Button
Scanning can be halted with one-click no matter what part of the user interface is currently displayed.