QARC

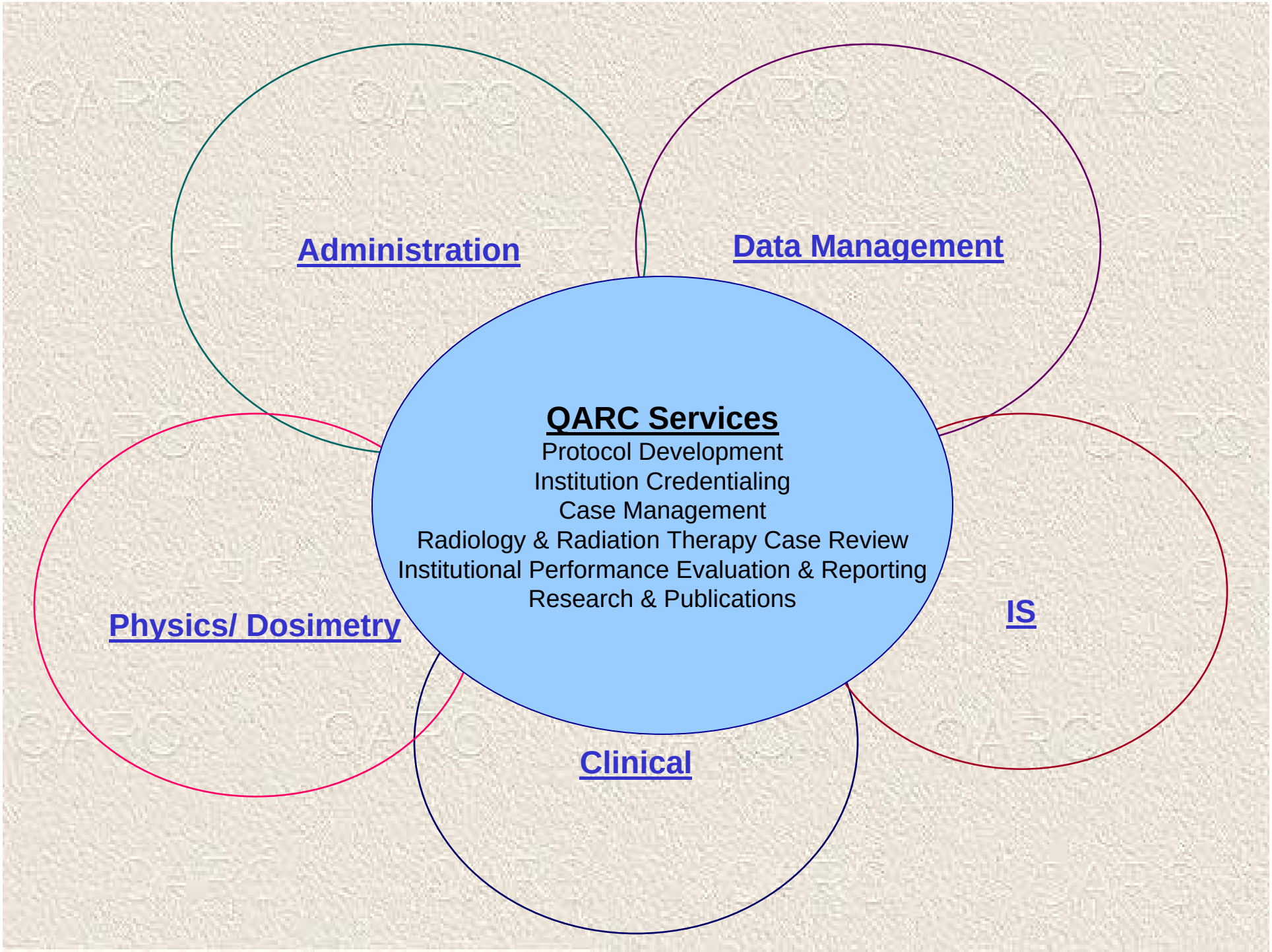
QUALITY ASSURANCE REVIEW CENTER

- Funded by the National Cancer Institute since 1980
- Provides Radiation Therapy Quality Assurance and Diagnostic Imaging Data Management for Radiation Oncology and Diagnostic Imaging Programs for six NCI supported Cooperative Groups
- Affiliated with the University of Massachusetts Medical School 1996. Located in Providence, Rhode Island
- Dr. T. J. FitzGerald, QARC Director

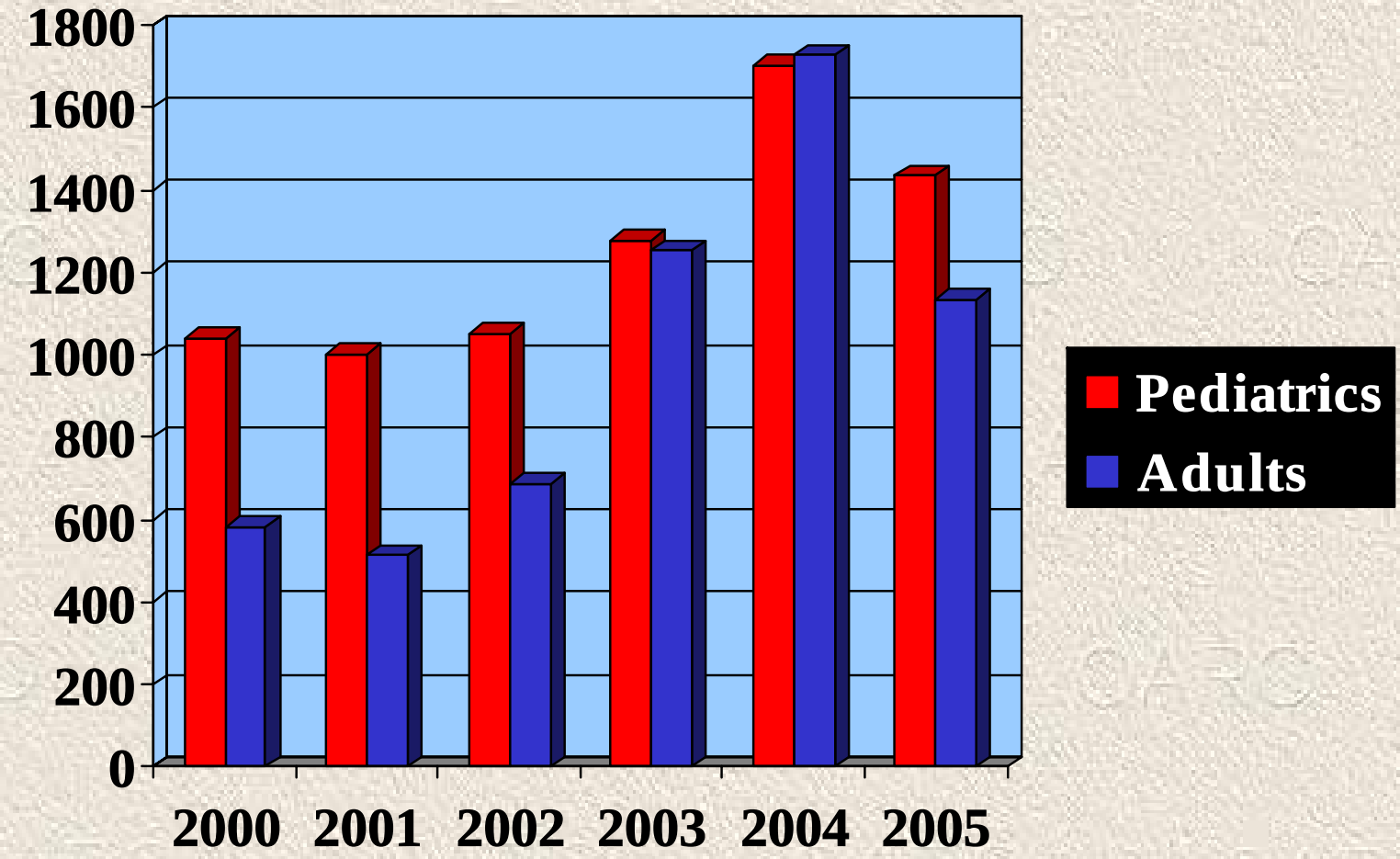
Cooperative Groups

- American College of Surgeons - ACOSOG
- Cancer and Leukemia Group B – CALGB
- Children's Oncology Group – COG
- Eastern Cooperative Oncology Group - ECOG
- Pediatric Brain Tumor Consortium – PBTC
- Southwest Oncology Group – SWOG

- Industry Trials


Administration
Data Management
QARC Services
Protocol Development
Institution Credentialing
Case Management
Radiology & Radiation Therapy Case Review
Institutional Performance Evaluation & Reporting
Research & Publications
Physics/ Dosimetry
IS
Clinical

QARC – Patient Enrollments



QARC – Protocols

Group	Active/Open	Active/Total	In Development
ACOSOG	3	6	2
CALGB	6	13	1
COG	27	69	32
ECOG	6	22	6
PBTC	1	4	1
SWOG	12	15	4
Industry	3	4	2

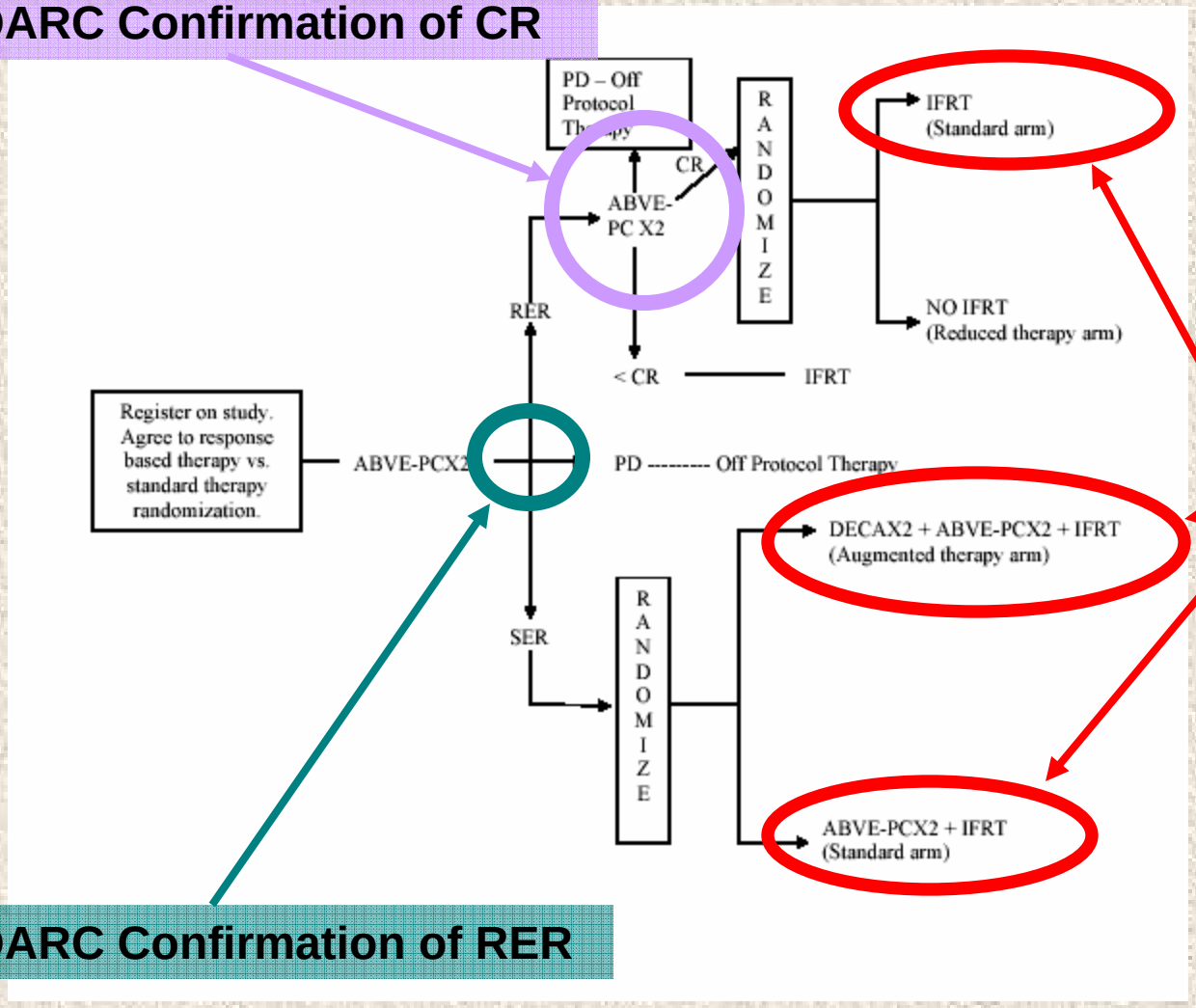
Total Active: 133

Modern Protocol

- Multiple endpoints with correlative studies
- Advanced Technologies
- New requirements for real time central reviews including metabolic imaging reviews
- In COG there are 45 studies with diagnostic imaging central reviews that are active or about to open
- Need for QARC to facilitate this role
- A partnership with OSU image core lab for CALGB
- Develop partnership for other adult studies

AHOD0031: Multiple Roles of QARC

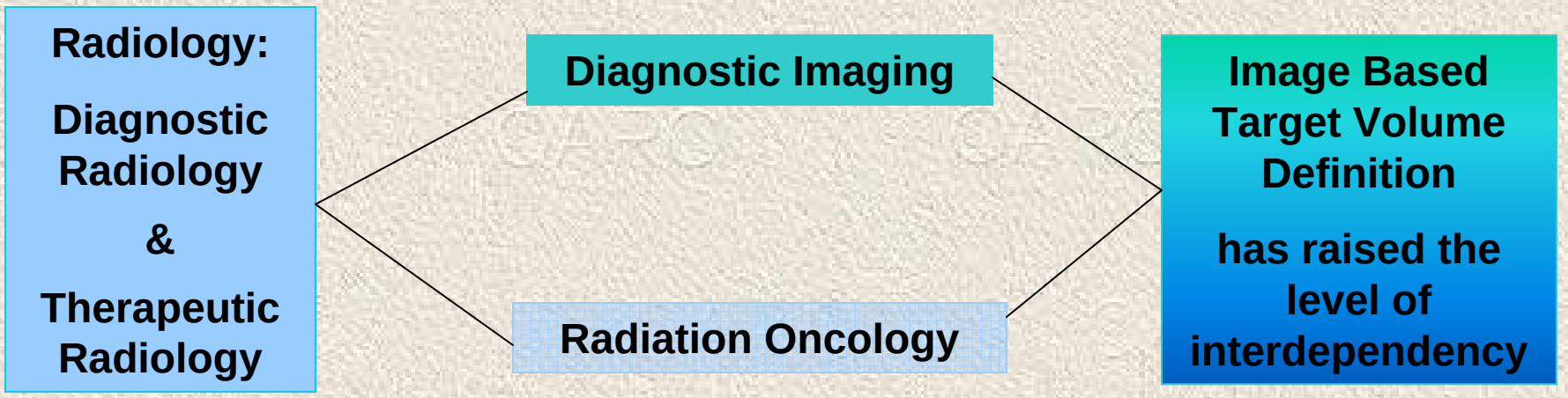
QARC Confirmation of CR



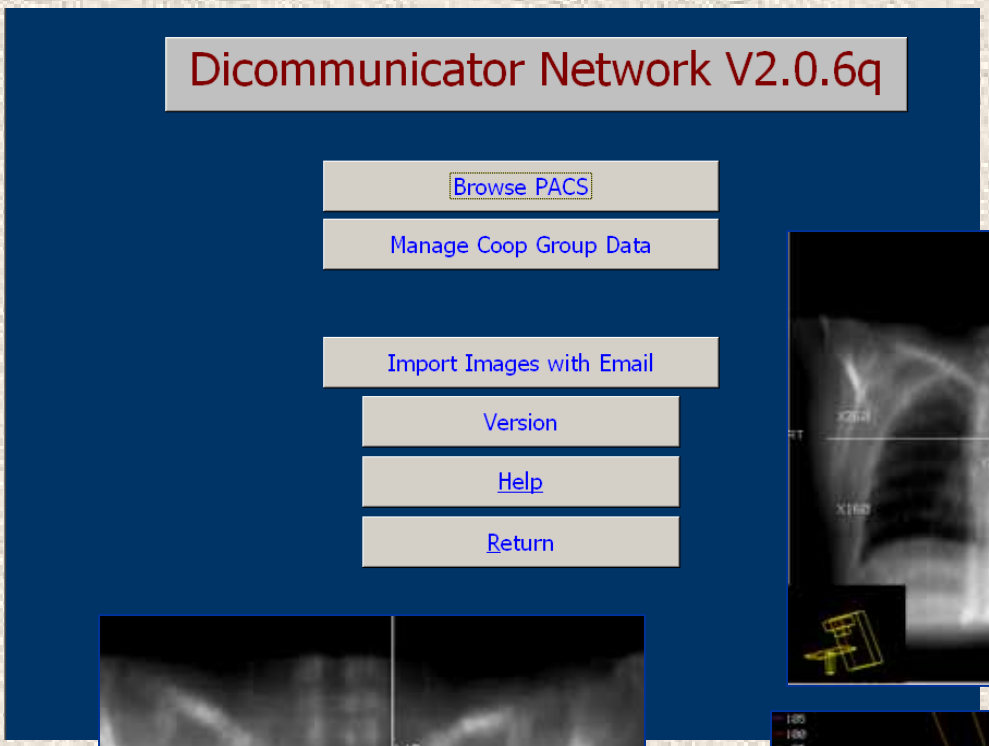
QARC Pre-Treatment RT Review

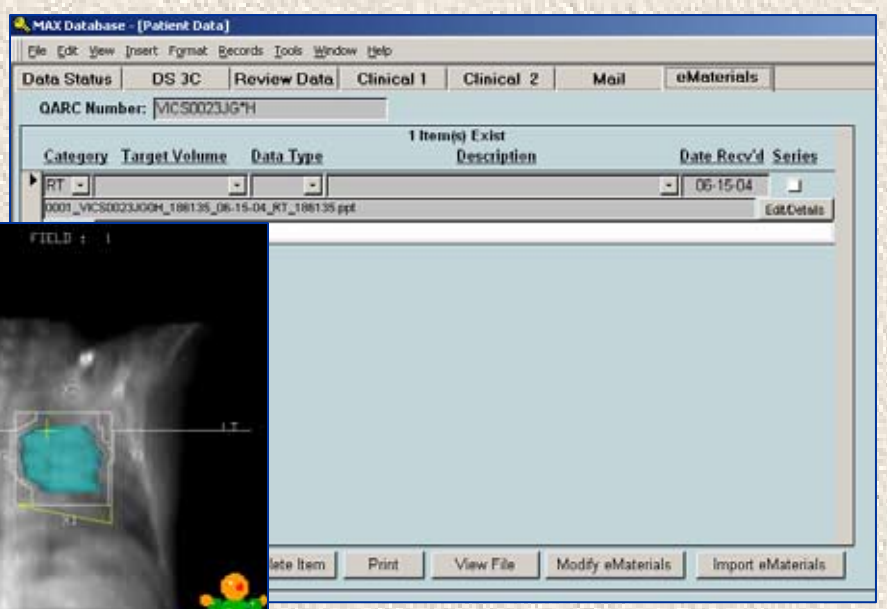
QARC Confirmation of RER

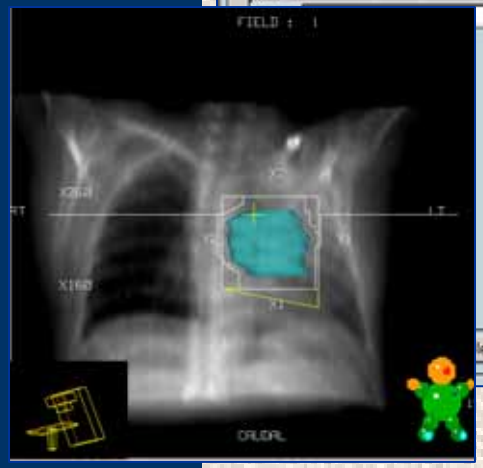
Image Based Radiation Therapy

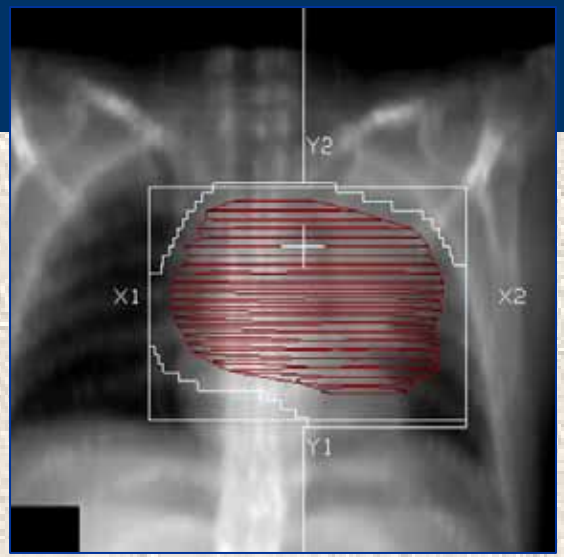


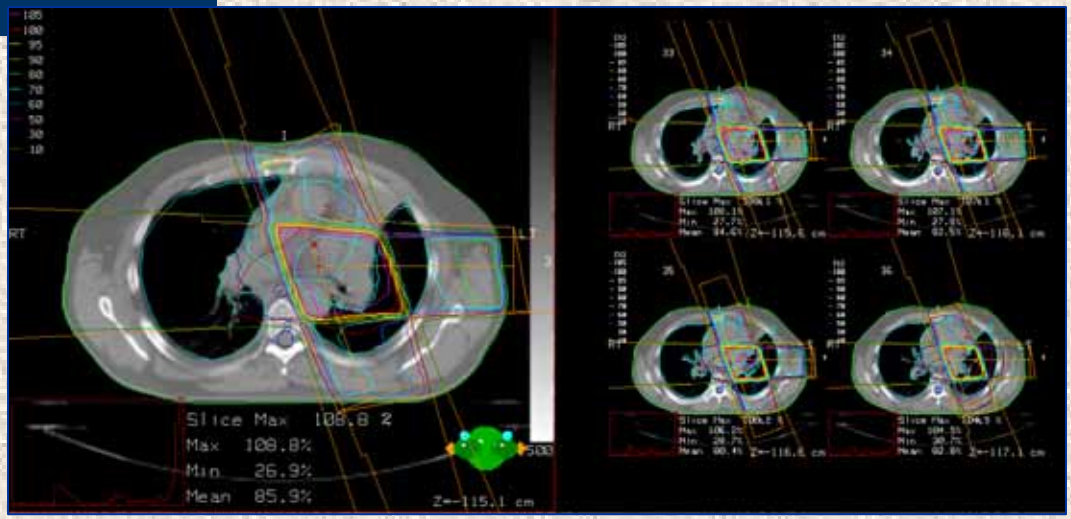
Digital Data

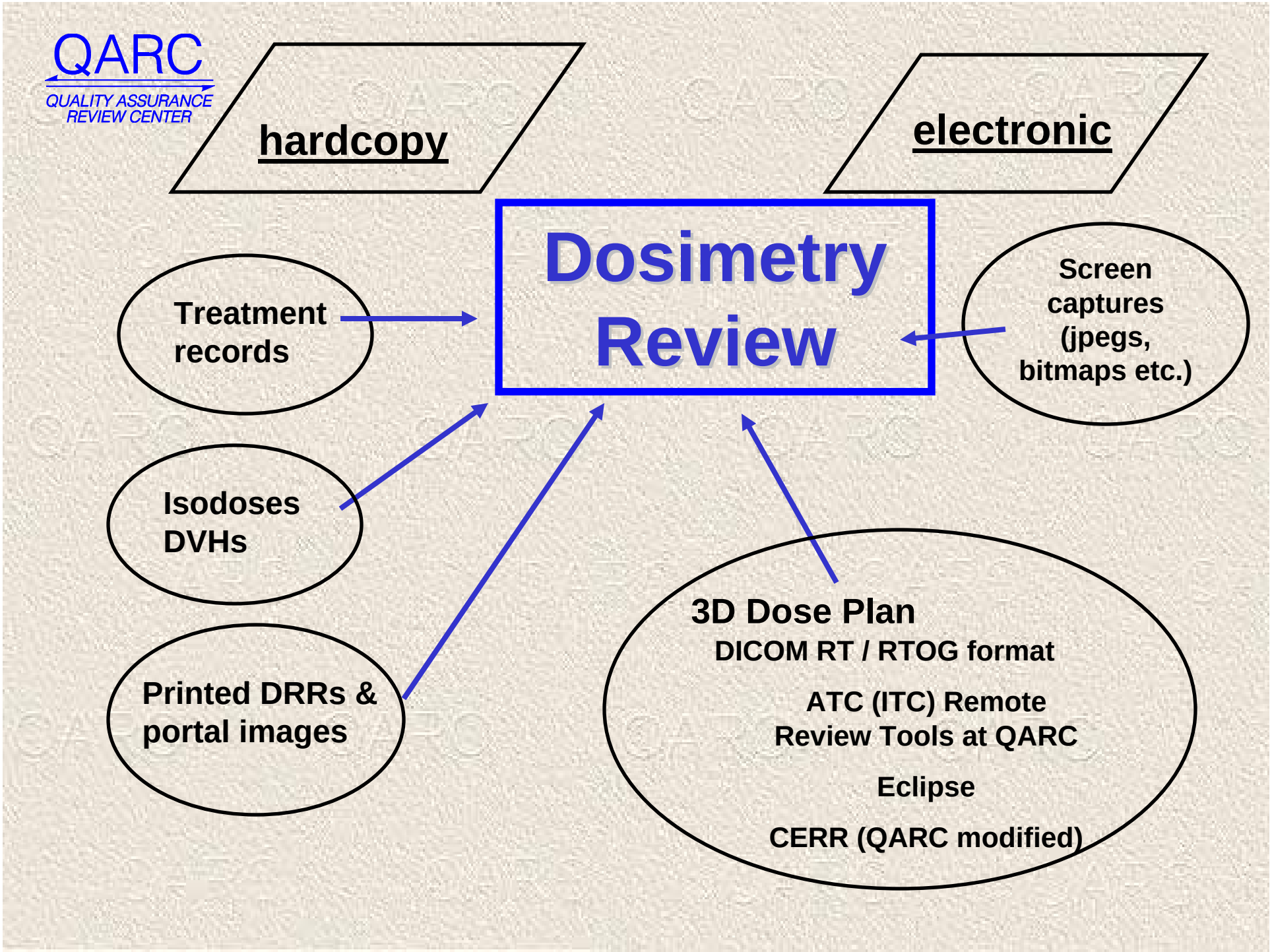








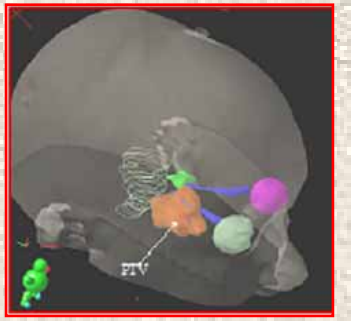


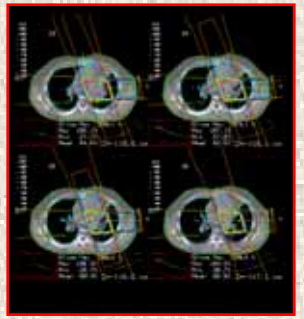

QARC
QUALITY ASSURANCE REVIEW CENTER
hardcopy
electronic
Dosimetry Review
Treatment records
Screen captures (jpegs, bitmaps etc.)
Isodoses
DVHs
Printed DRRs & portal images
3D Dose Plan
DICOM RT / RTOG format
ATC (ITC) Remote Review Tools at QARC
Eclipse
CERR (QARC modified)

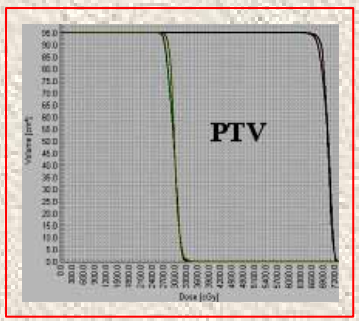
QARC
QUALITY ASSURANCE REVIEW CENTER

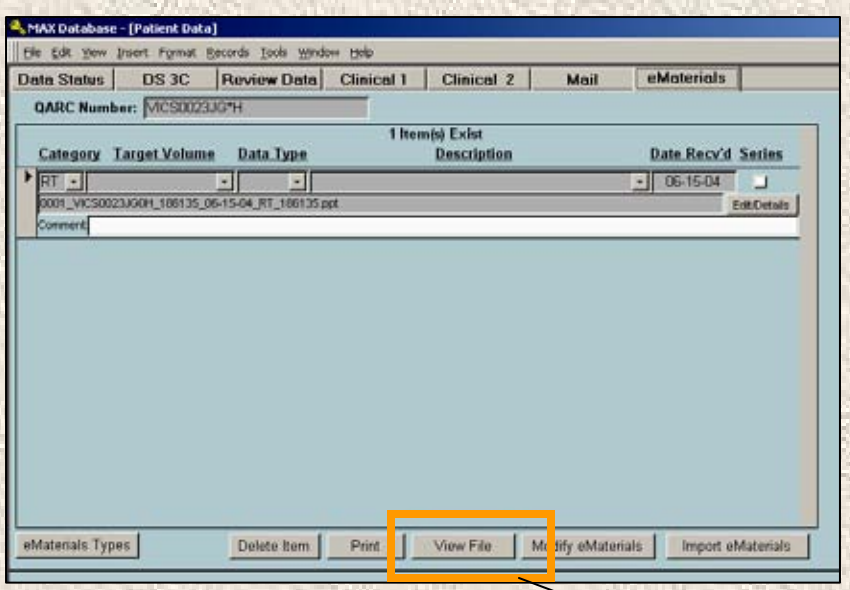
Screen Captures

- **Imaging Import Wizard** – Transfers RT image data received as jpegs, bitmaps, etc. into PowerPoint files. PowerPoint file linked to patient record in database.

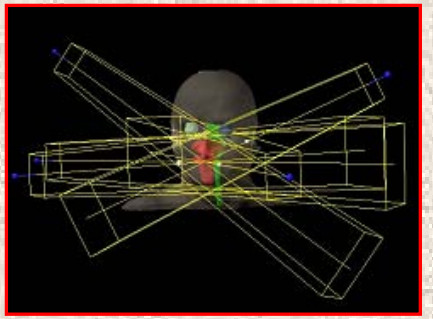








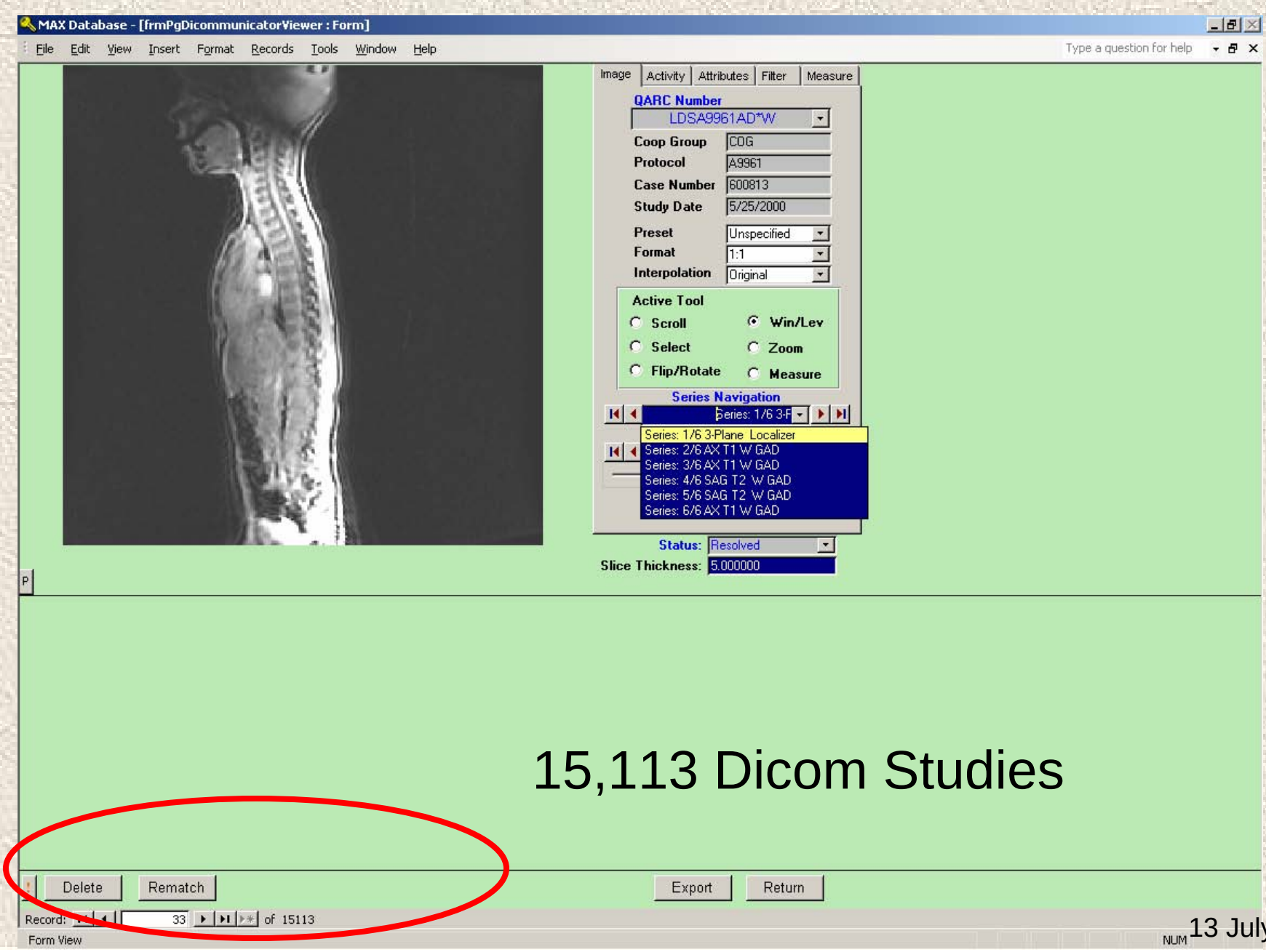
View File



Pre/ On Treatment Review

- Interventional review within 24 hours
- WebEx when indicated

QARC Digital Image Management System



QARC Digital Image Management System - Overview

- QARC has evolved its IT infrastructure to create an environment that can successfully manage digital DICOM imaging through…
  - developing sophisticated image transfer software (Dicommunicator)
  - evolving a comprehensive patient database into a full multi-institutional PACS
  - adapting IT environment to accommodate the different interpretations of the DICOM standard presented by various PACS vendors

Dicommunicator

- Dicommunicator software is installed at remote institutions to help CRAs submit digital imaging to the Quality Assurance Review Center (QARC) in Providence, RI
  - Users can either email imaging directly to QARC, or burn to CD and submit
- Dicommunicator is also a core component for managing digital imaging at QARC
  - Used to import imaging into QARC PACS Archive and link to patient record
  - Used as a viewer for patient reviews

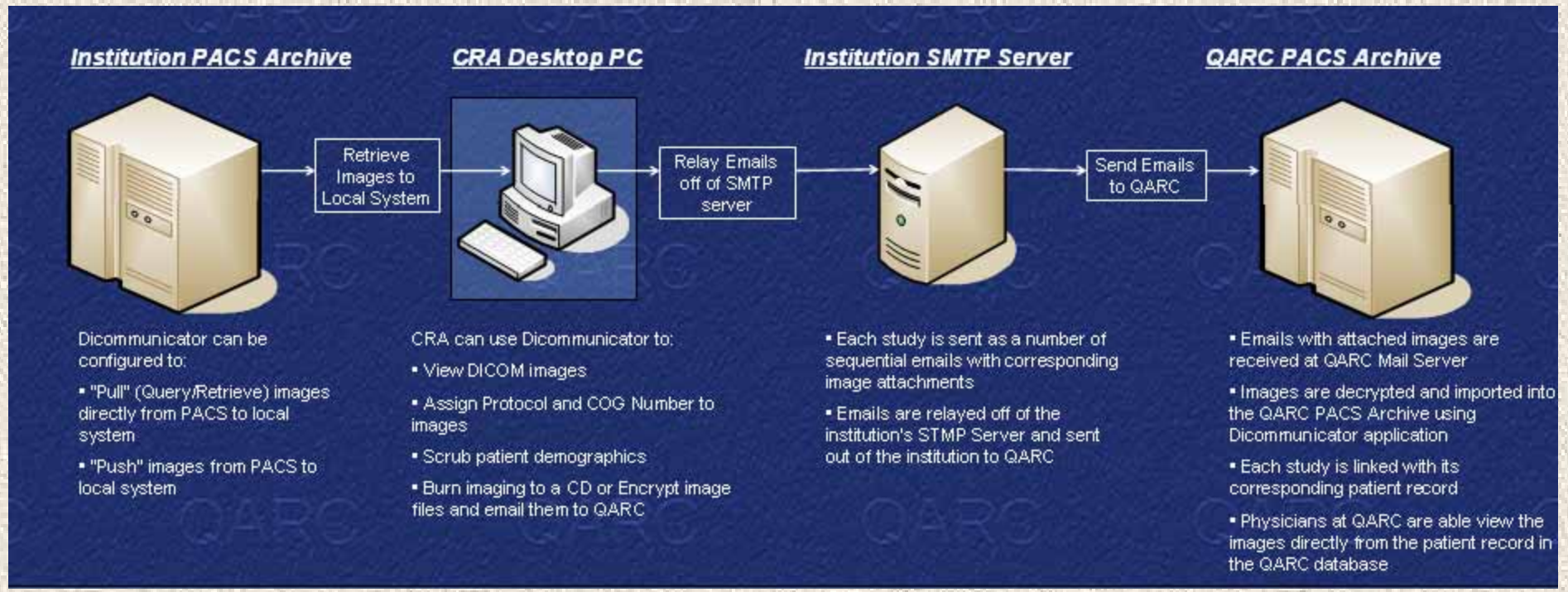
Dicommunicator At QARC

- Dicommunicator development and support at QARC have become a critical component in managing digital imaging
- Software is used at QARC to import imaging into PACS archive and link to patient database
  - Imaging can be imported from any media or transmission vehicle (eg CD, DVD, email)
- Physicians can review DICOM imaging directly from the patient record in the QARC database

Dicommunicator - Remote

- Originally developed and donated to COG by Dr. Keith White of Primary Children's Medical Center in Salt Lake City, UT
- Collaboration with QARC since 1999
- Allows the CRA to 'Pull' or 'Push' DICOM imaging from PACS to local system
- Anonymizes / Encrypts images before they are sent via email or burned to a CD
- Allows the CRA to manage which studies have been submitted and which are due

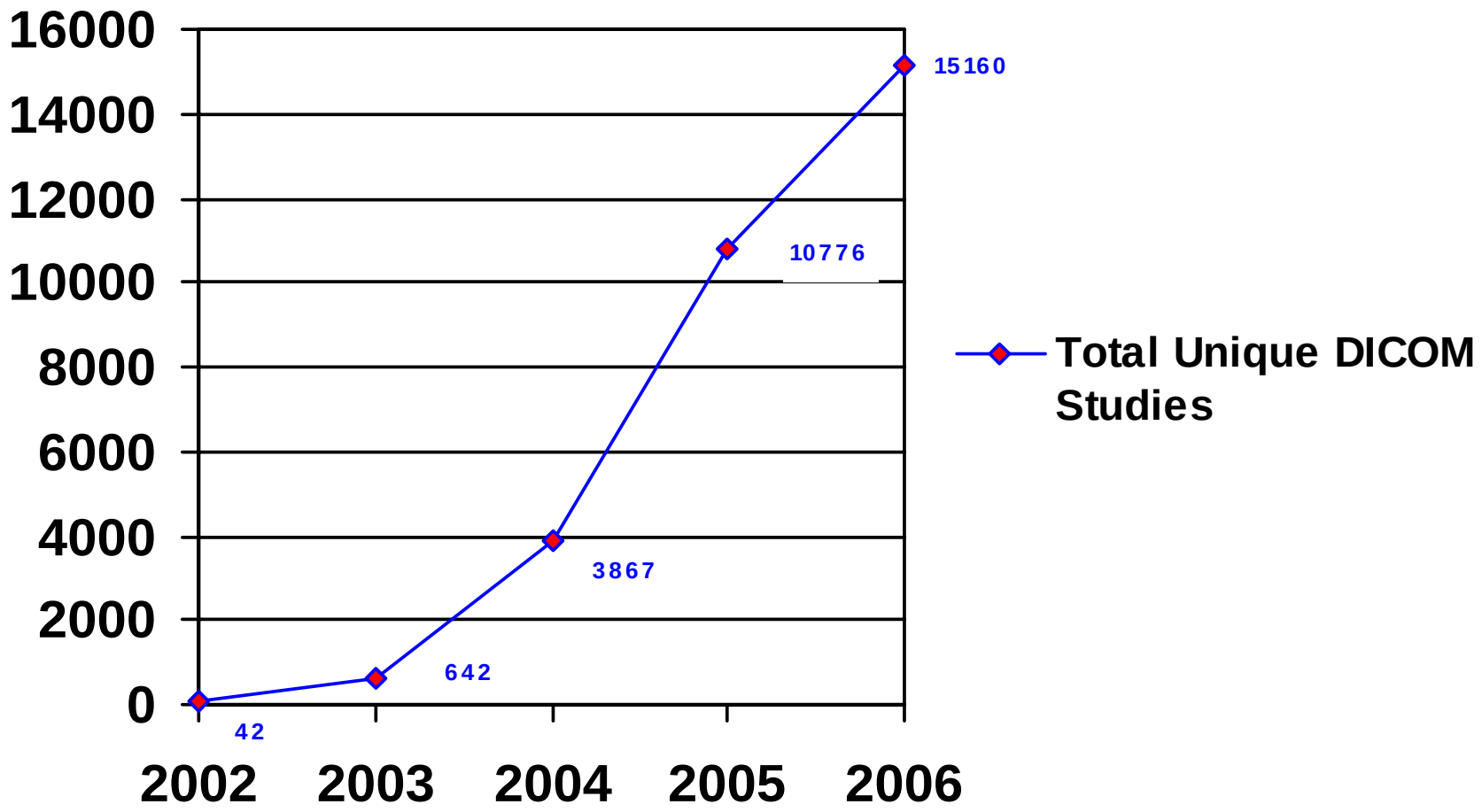
Dicommunicator - Remote



Accomplishments

- 25 total “Fully Functional” institutions
- 7 Pending Installations
- Full Functionality with 8 major PACS manufacturers
  - Agfa, Fuji, GE, Integrad Web, Kodak, Philips, Siemens, Stentor
- Over 15,000 digital DICOM studies have been archived in the QARC PACS

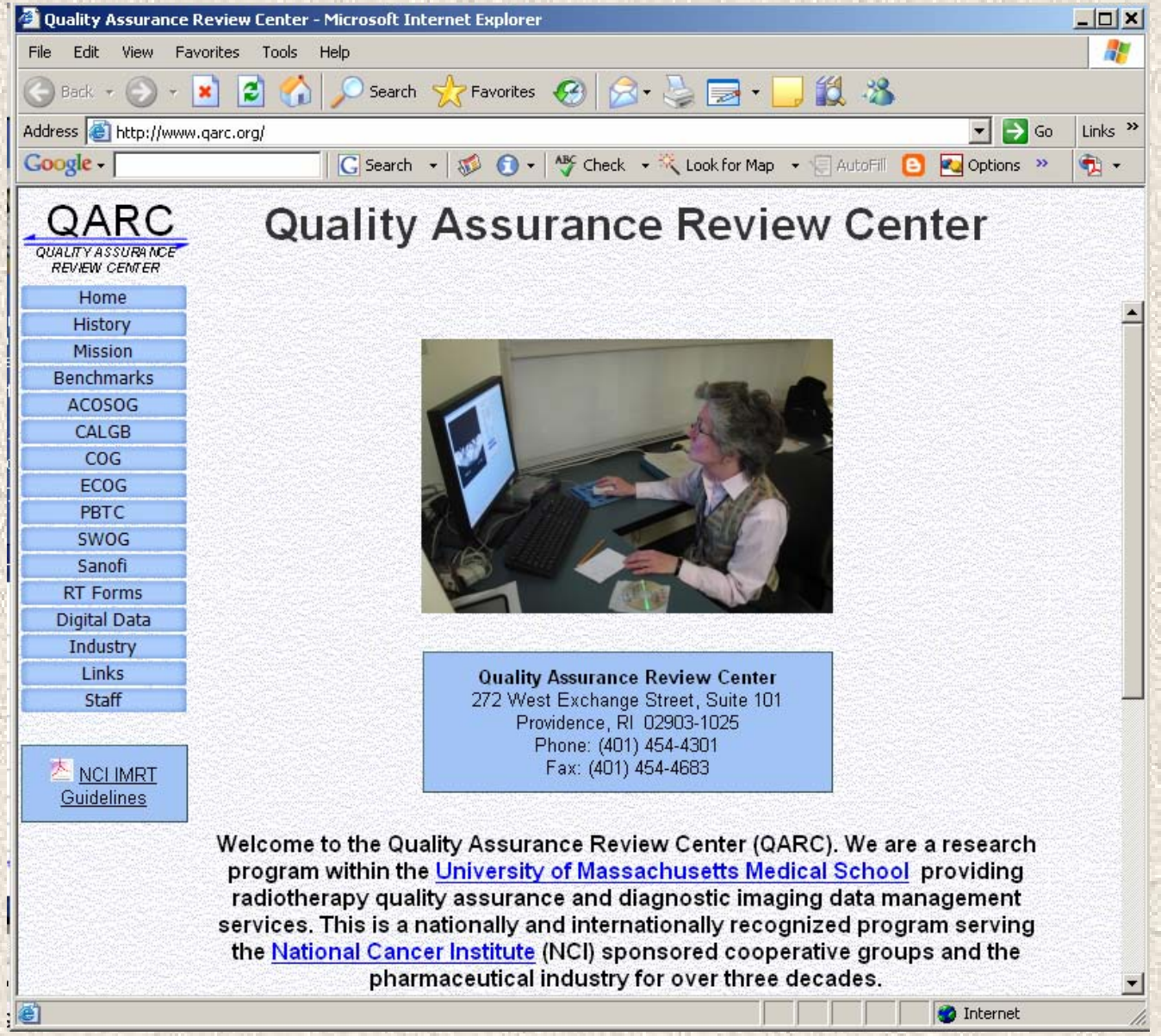
Growth of QARC PACS



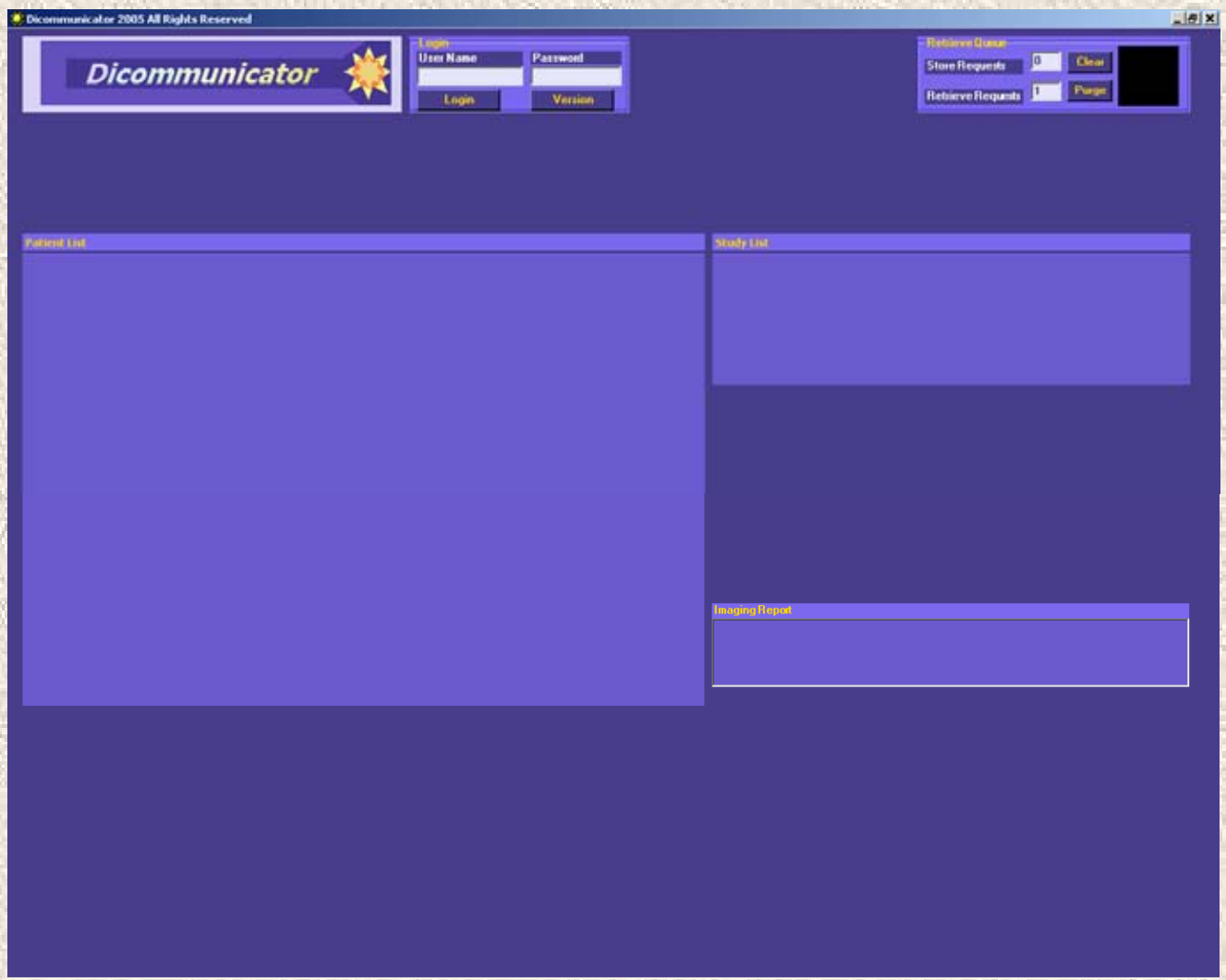
14 July 2006

Dicommunicator .NET web viewer

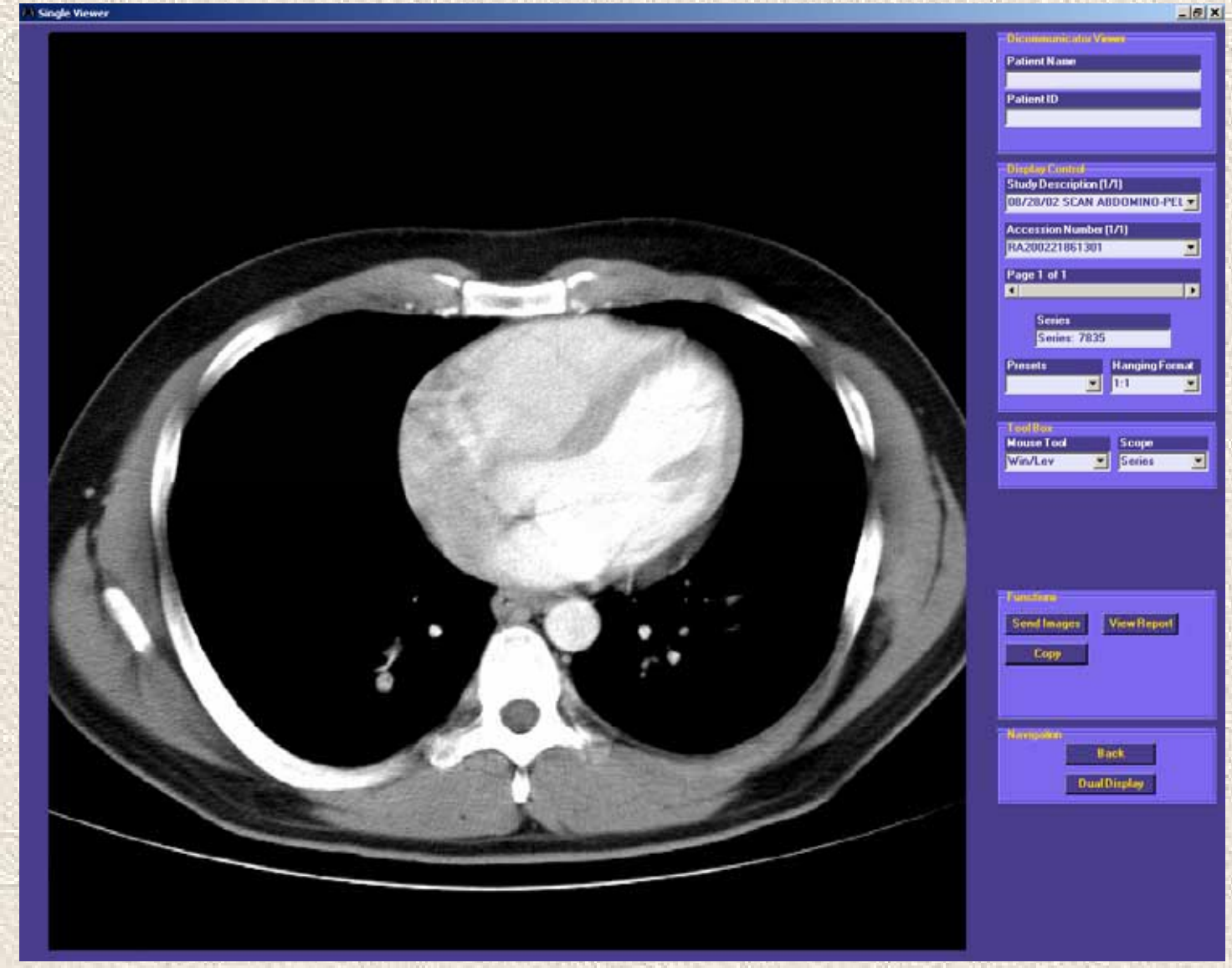
- QARC CRA can post anonymized, digital DICOM imaging to a secure web server for access by reviewers off-site
- Physicians can authenticate into the imaging area of the QARC website using an assigned username and password
- Each user is given an access key to view imaging for those protocols s/he is reviewing
- Physicians use the Dicommunicator .NET web viewer to remotely review the imaging using the provided image navigation and manipulation tools
- Dicommunicator .NET web viewer has been developed by Keith S White, MD



http://www.qarc.org



Dicommunicator .NET Login Screen



Dicommunicator .NET Web Viewer

QARC Digital Image Management

MIRC

- accepts images pushed to the site MIRC system
- anonymizes and submits images to National Cancer Imaging Archive (NCIA)
- validates and enters images into the NCIA
- authenticated users can download imaging from NCIA and display with viewer they must provide
- users must clear file archive

Dicommunicator

- accepts files pushed from PACS and has ability to query/retrieve
- de-identifies and encrypts images before submitting electronically to QARC
- automatically purges local PC of “expired” image files
- authenticated users can download image files from QARC PACS using .NET version and display with provided viewer object

Future Integration Strategies

- Provide a foundation for image based clinical trials
- Facilitate the development of image analysis algorithms
- Integrate multiple legacy platforms
- Must be open source
- Support caBIG standards