

ITC Capabilities to Receive and Review Digital Diagnostic Imaging Data

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ATC • **Advanced Technology Consortium**

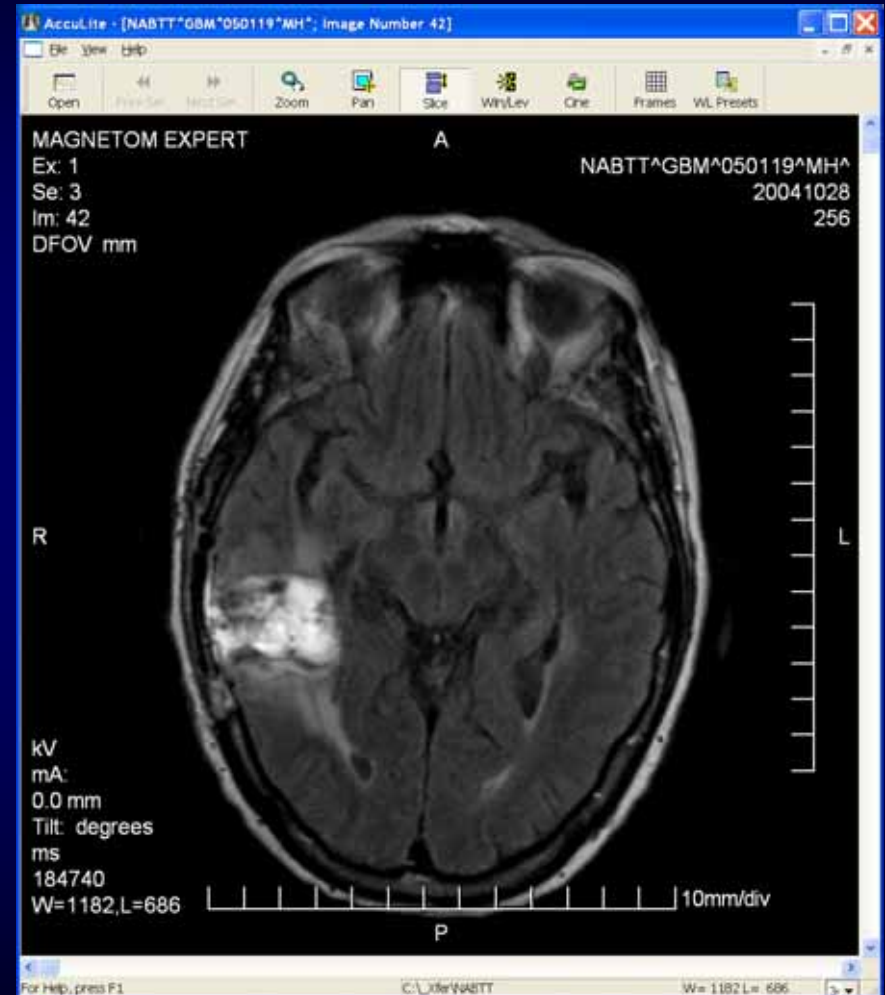
Providing support in quality assurance and data management for radiation therapy clinical trials

ITC Capabilities to Receive and Review Digital Diagnostic Imaging Data

- Diagnostic images can be received using ATC Method 1 (FTP upload or media exchange).
- DICOM files stored in FOCUS filesystem at ITC
- Review of images
 - DICOM Image download from secure ATC web server
 - Review using DICOM image display software on PC
- Multi-modality Fusion involving treatment planning CT and diagnostic (PET/MR/CT) images
 - Import TP images and data into XiO system at ITC
 - Import DICOM diagnostic images into FOCAL server at ITC
 - Images registered using MMI method
 - Review using FOCAL software over Citrix server

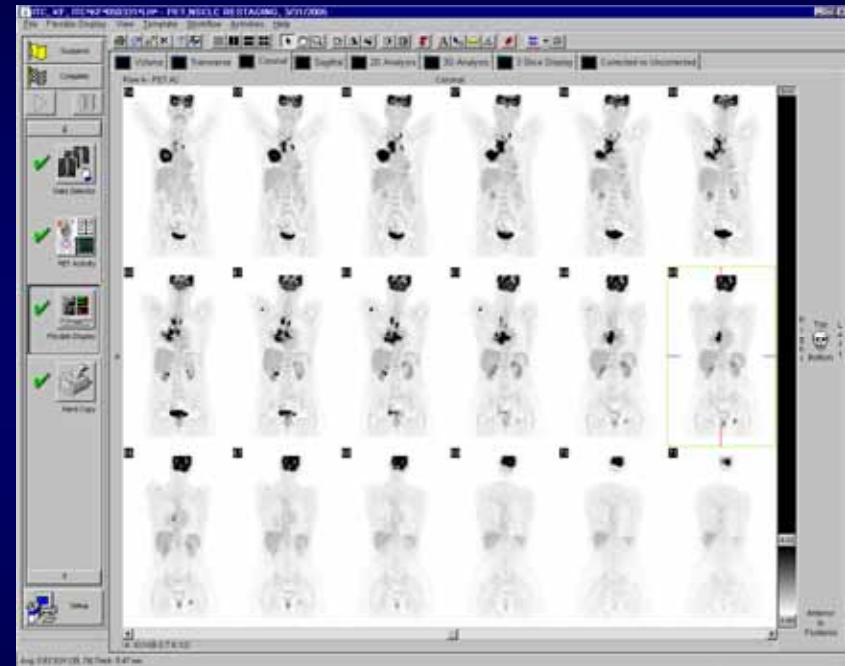
NABTT Schema

- Institution submits TP data (RTOG/DICOM) and MR DICOM Images to ITC using FTP or media.
- ITC anonymizes MR images, creates ZIP archive and places MR data set on ATC secure web server.
- NABTT reviewers download MR data and display them using DICOM viewer (AccuImage Lite, etc.) on PC; TP data are reviewed using RRT.



PET Image Review

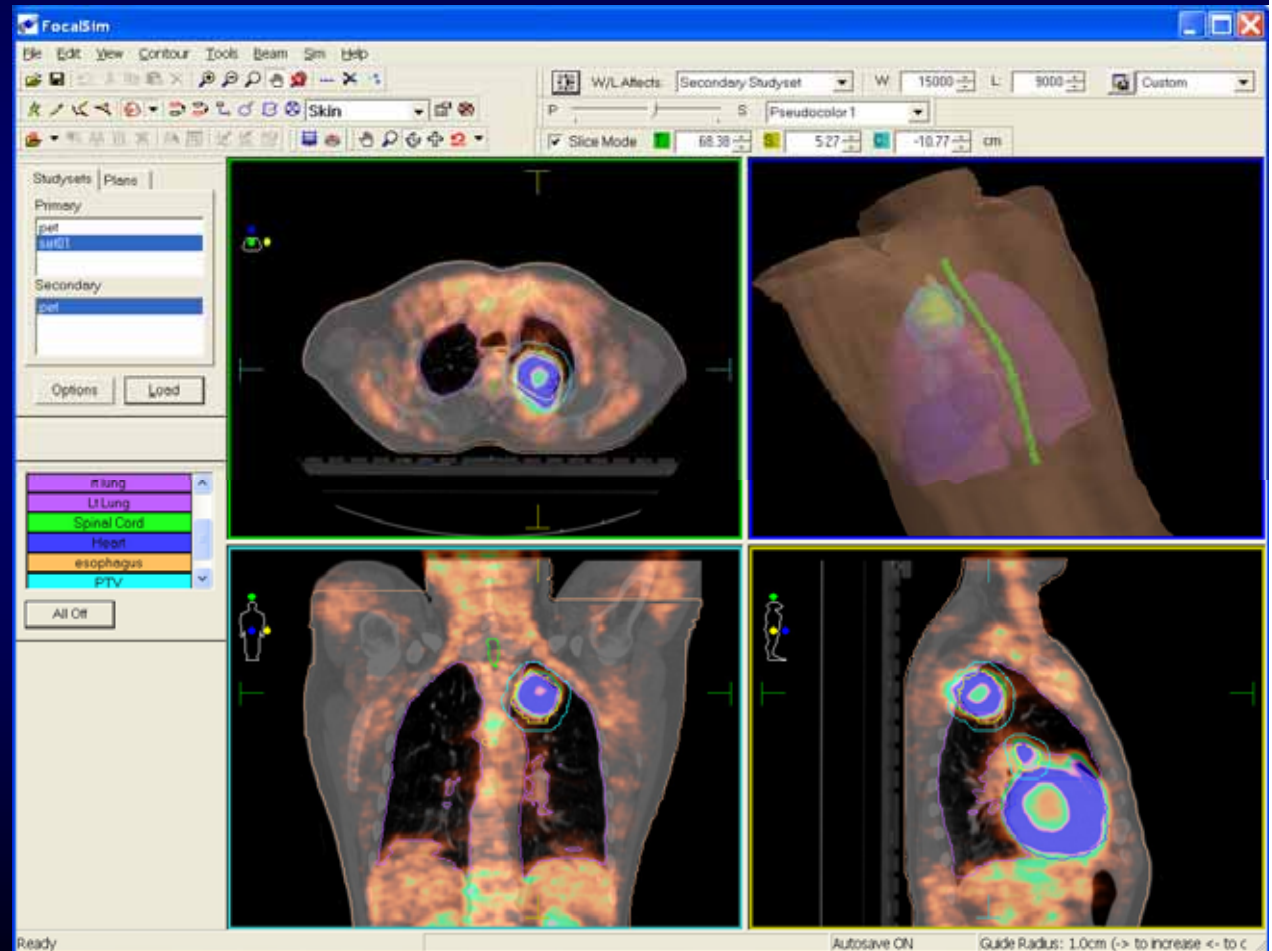
- Institution submits PET DICOM Images directly to ITC (qualitative) or via ACRIN (quantitative) using FTP or media.
- ITC confirms anonymization, creates ZIP archive and places data on ATC secure web server.
- Richard LaForest (MIR NM) downloads DICOM data and displays via eFilm / Syngo workstation.



PET scan (GE) downloaded and displayed on MIR NM eFilm software

Fusion of PET images with RT Treatment Planning Data

- CMS FOCAL software supports fusion, review of
 - CT images, RT Structure sets, 3D Dose (DICOM, RTOG formats)
 - DICOM MR and PET images (Siemens and GE demonstrated to date)

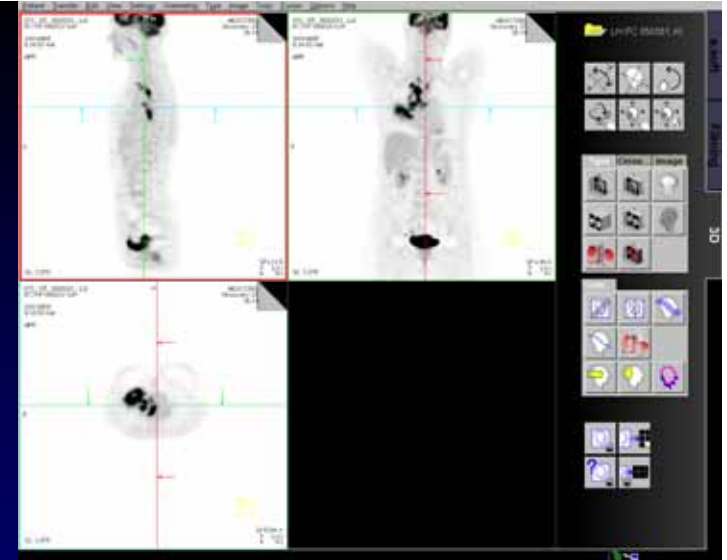


PET Scaling Issues

- GE and Siemens
 - DICOM Image pixel values expressed as activity (Bq/ml)
 - SUV scaled (correctly) using physiological data in the DICOM header when viewed on eFilm, Syngo software.
- Philips
 - DICOM Image pixel values expressed as (scaled) SUV SUV Factor is expressed as a proprietary attribute (7053,1000)

RTOG PET Protocols

- RTOG 0515 (Qualitative PET)
 - PET data submitted to ITC
 - Transferred to MIR/NM (LaForest)
 - Read (qualitatively) using eFilm or Syngo (Siegel)
 - PET/CT image registration checked at ITC (Bosch, Forster)
 - TV contours evaluated with/without PET (Bradley)
- RTOG 0522 (Quantitative PET)
 - PET data submitted to ACRIN Core Lab
 - ACRIN checks PET images and forwards image data and SUV scale factors to ITC
 - PET/CT image registration checked at ITC



PET scan (GE) downloaded and displayed on MIR NM Siemens Syngo software

Potential Changes to ATC Method 1 at ITC

- ITC is evaluating a potential network reconfiguration as part of the Washington University Clinical Operations Network
 - Increased security, increased complexity
 - Must maintain continuity and reliability of service
- ITC is investigating the use of WU Oncology Computing Facilities Citrix servers to provide
 - Secure upload of protocol data to replace FTP
 - Access to RRT for TP data review
 - Access to CMS FOCAL/broadband for multi-modality image and TP data review
- Eclipse utilization at ITC