RSNA QIBA
Open Image Archives Requirements Project

DCE-MRI User Requirements Gathering Session

October 26, 2011

Goal

- RSNA needs to begin utilizing an Open Image Archive (OIA) to store, organize, and disseminate important imaging datasets.

- Understanding individual project requirements is critical to getting this right.

- The goal for this session is to walk through OIA requirements categories and capture DCE-MRI priorities and needs.

OIA Requirements Categories

- **Archive Representation and Input**
  - Sheet 3: Data Acquisition
  - Sheet 1: Data Model
  - Sheet 2: Metadata

- **Archive Functionality**
  - Sheet 7: View/Query/Analyze
  - Sheet 4: Business Analytics and Metrics

- **Additional Areas**
  - Sheet 6: Computing Environment
  - Sheet 5: Workflow
  - Sheet 8: Regulatory Aspects
  - Sheet 12: Performance
  - Sheet 14: Availability/Reliability
  - Sheet 16: Accessibility/Usability
  - …

Notes

- Have not been storing raw data
- Sharing of information has been through powerpoints and other things
- Need for storing and sharing exists
- NCIA has been used previously
- Have looked at other potential projects
- ISMRM/NIST project has turned to an internal solution until a more widely available solution becomes available

Notes

- QIN has been using the NBIA – not the most user friendly – so have been using ftp lately

- Data storage format is not that user friendly for metadata

- Not easy to find data – based on UID.

- Wound up posting excel spreadsheets to decode

- Currently tech subcommittee does not have a central archive

Notes

- Getting the data there was not the problem
- Hard
  - Linking metadata to source data and analysis
  - You need to make linkages as you go
- DCE-MRI specific requirements
  - Support both dicom and xml (*Important*)
  - Descriptions of experiments
  - Ancillary software – models and macros to generate data
  - Synthetic data and expected results (32 bit for dicom, and raw data)
  - Annotation for images (*Important*)
    - target lesion(s) for vessels
    - Location of artifacts
  - Phantom Designs – ISMRM and others were all open source designs

Notes

- Metadata Requirements
  - All issues of subject pertinent to data analysis
  - Location of IV
  - Amount, type of contrast agent (usually in DICOM)
    - Archive should check certain key fields to make sure they are enterred
  - Regions of interest
  - Support for saving expanded acquisition protocols (defined in pdf files) so it can be reproduced.
    - Shadow groups are stripped off because third party dicom software does not know how to handle it (sometimes important)
  - Most calibration information is not that useful

Notes

- Quality control is important
  - Nag, not demand…
  - Annotating whole datasets as to where it deviates from a protocol, archive helps in automating and/or storing

- ACRIN
  - Test/retest protocol will be first real test of protocol storage
  - Any processing done on images (filters, kernels, motion correction, transforms)