Phase II of the Imaging Data Service: Expanding XNAT

Presented by
Dr Ryan Sullivan¹,²

¹Research Technology, ICT
²Operations Team, Core Research Facilities
Imaging Data Service Overview

Instrument Acquisition
- Sydney Imaging
- Clinical Sites
- PACS

Data Management
- XNAT
- CTP
- RDS

Analysis & Informatics
- PC
- Virtual Desktops
- Artemis
- AWS Cloud

Data Flow:
- Raw
- Anonymized
- Processed
IDS: Data Management and Collaboration

- Secure, searchable, and sharable repository
  - Standard data hierarchy
  - Project based user access controls controlled by CI
  - Expandable data formats for supporting modalities
- Cloud based, browser accessible
  - View and annotate DICOM
  - Australian Access Federation (AAF) login
    - Collaborate with 52 research & health institutions
  - Generate custom reports across projects
IDS: Automated Instrument Upload

- **Send to CTP**
  - CTP
  - Read DICOM Metadata
  - Inject IID, QC-PID
  - Upload to Project
  - Error Handling

- **Upload to RDS**
  - Read Folder Structure
  - Read DICOM Metadata
  - Read Proprietary Metadata
  - Inject IID, QC-PID
  - Upload to Project
  - Error Handling
  - Email alert
  - Upload to instrument triage project
Reporting

- Determining ROI
  - Instrument ID
  - Project ID
- Quality Control
  - NIF TDR
  - QCPID
- Facility Management
  - Combine booking & instrument metadata

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Central Operations

- Research Dashboard (DASHR)
  - Project allocation
- Service Now
  - Integrated Helpdesk and tickets
- Future:
  - Ethics controlled user access
ARDC Discovery Activity – Sensitive Data

Semantic mapping using CTP

Plain Language Consent

I consent to…:
• share my medical images for research purposes, but not including information such as my name or date of birth
• share my sociological data such as occupation and the region I live in

Grouping

• <Direct Identifiers>
• <Sociological data>

Technical

• (0010,1080) Military Rank
• (0010,2150) Region of Residence
• (0010,2160) Ethnic Group
• (0010,2180) Occupation
AAF & Security

- Testing and implementing AAF Plugin
- External Security Audit
- Remediation report to be released
- Worked with Washington University to patch XNAT
  - 1.7.5.4-6
A Cloud Based Dentomaxillofacial Imaging Resource

Clinical Site

CTP

Instrument

PACS

Anonymized data

OHIF

Academic curation

Annotated Data

OHIF

Student Viewing

Imaging Data Service

Seamless Education Frontend (Future Ambition)

Canvas

SMART SPARROW
Proposed Extensions

Gadgetron

Cardiac and respiratory imaging platform developed by NIH

NextGen Connect is an Open Source platform for HL7 integration with clinical sites

NVIDIA's Clara recently open sourced GPU accelerated AI and Machine Learning SDK

What's important to your research?