XNAT Bootcamp
Getting Started
Presenter: Will Horton, Flywheel

- Senior Product Owner, former UI / UX designer on the XNAT development team
- Worked with XNAT since 2010, mostly in the NRG Lab at Washington University School of Medicine
- Last visited England when he was 12 years old
UNBOXING XNAT:
WHAT IS IT?
Unboxing XNAT – What is it?

- Highly extensible Java web application
- Engineered for imaging and clinical research data
- Stores both indexed data and raw files
Unboxing XNAT – Built-in additions

- Docker Server for processing
- Event Service and script support for automated tasks
- Optional Pipeline Engine for legacy processing
Unboxing XNAT – Organization

- Project-oriented data and permissions model for research studies
- Indexed, searchable data in database
- File system for resource files
- Extensible data model
XNAT API connects user requests to internal services

- Data requests
- Processing requests
- Other services

- Accessible
- Secured
UNBOXING XNAT:
IMPORTING DATA
Unboxing XNAT – Importing Data

- Desktop Client Uploads
- SCP Receiver Imports
- Bulk data import via CSV or API script
- Manual data entry
Unboxing XNAT – Preventing PHI

- Inspect image sessions in Prearchive before archiving
- Automated application of DICOM anonymization scripts
- Optional pixel anonymization
UNBOXING XNAT:
SECURITY AND ACCESS CONTROL
Unboxing XNAT – Security and Access Control

- Project-based user permissions
  - Project owners can invite new users & grant permissions
  - All users can search, filter, share, and download data
  - Limited users can add, edit, or delete data

- Admin Controls: Administer user access across the site
Unboxing XNAT – User Authentication

- Local access (default)
- Optional Plugins for federated access via LDAP or OpenID
- Login via UI or API via alias token
UNBOXING XNAT:
EXTENSIBILITY
(PLUGIN ARCHITECTURE)
Unboxing XNAT – Plugins

● Data types
● New functionality & API:
  ○ Container Service
  ○ PACS query & retrieve
  ○ OHIF image viewer
  ○ Authentication
● Customize UI
● And more...
Unboxing XNAT – Processing Tools

- Pull container images for use in Container Service
- Install and enable processing pipelines
Unboxing XNAT – Advanced Extensibility

● Additional file storage
● High-performance computing & GPUs
● Load balancing
Understanding the Data Model

How is data organized in XNAT?
User Permissions

Controlling Data Access
Project COLLABORATOR

PERMISSIONS ON PROJECT

CRUDS A

PERMISSIONS ON PROJECT DATA

CRUDS S

Project

Data

Project
Practical Exercises

Let's have some fun
Dev VM Users: Meet Your Admins
Dev VM Users: How to Log In

Check your email for the VM assigned to you, and your temporary credentials

All VMs come prepopulated with anonymized data & preloaded plugins

- Container Service & Batch Launch
- DICOM Query Retrieve
- XNAT OHIF Viewer
- LDAP Auth
- And more…
Log on to XNAT Academy

Go to www.xnat.org/academy

Register for an account

Start the “Getting Started with XNAT” course and look for the practical exercises