



# 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



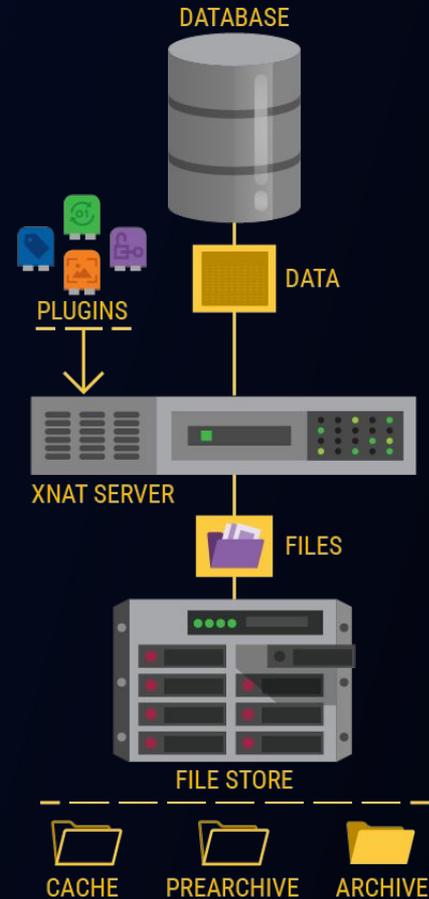


UNBOXING XNAT:

# WHAT IS IT?

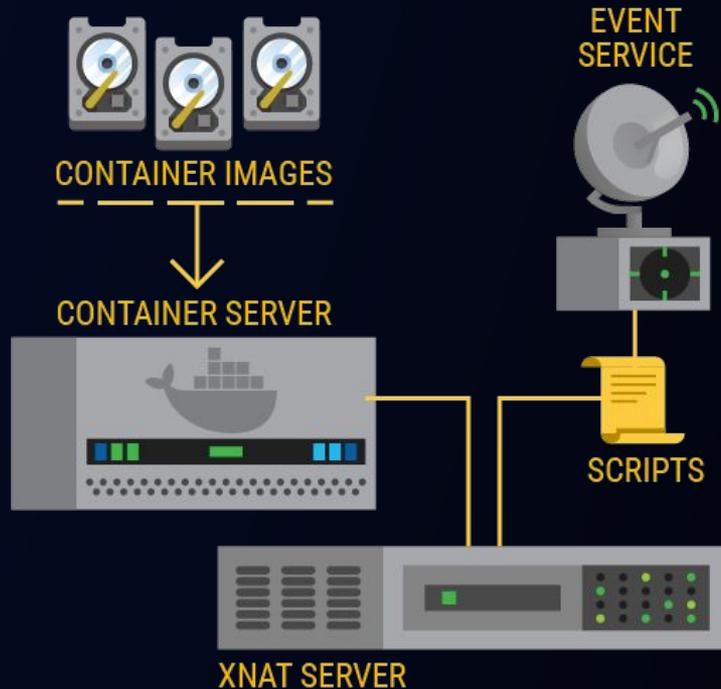
# Unboxing XNAT – What is it?

- 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



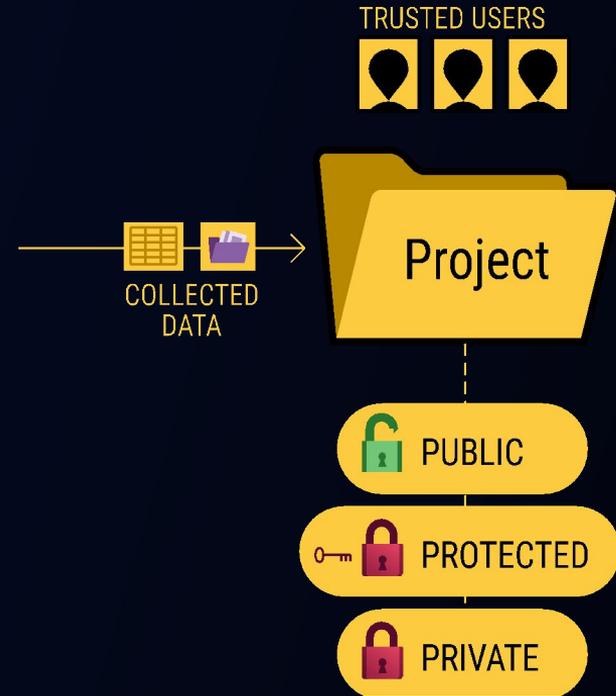


UNBOXING XNAT:

# HOW IS IT ORGANIZED?

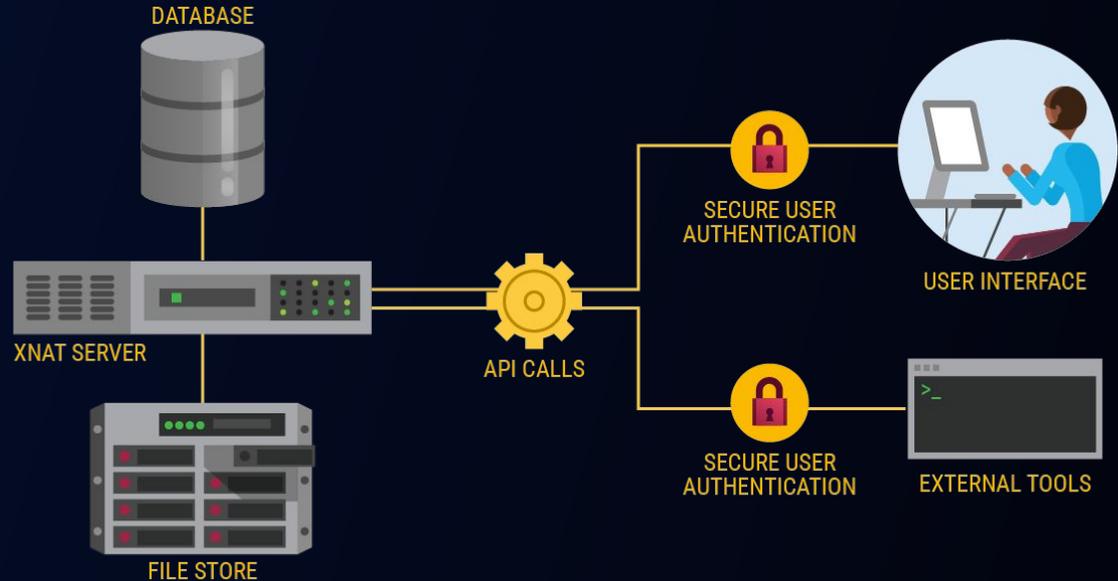
# Unboxing XNAT – Organization

- Project-oriented data and permissions model for research studies
- Indexed, searchable data in database
- File system for resource files
- Extensible data model



# Unboxing XNAT – The XNAT API

- XNAT API connects user requests to internal services
  - Data requests
  - Processing requests
  - Other services
- Accessible
- Secured





UNBOXING XNAT:

# IMPORTING DATA

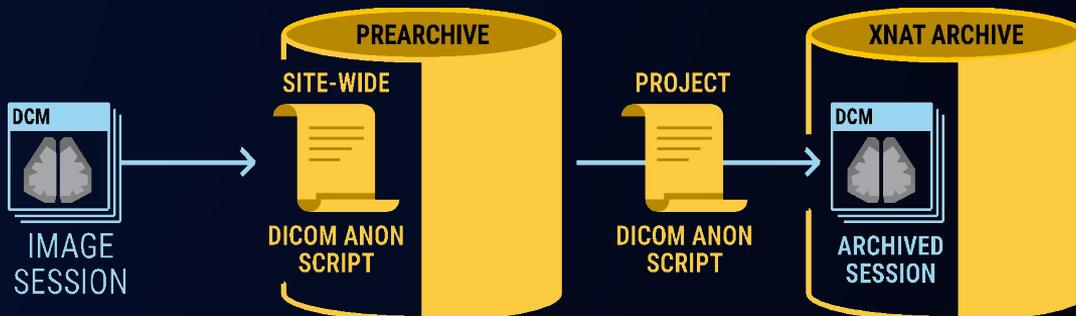
# Unboxing XNAT – Importing Data

- 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



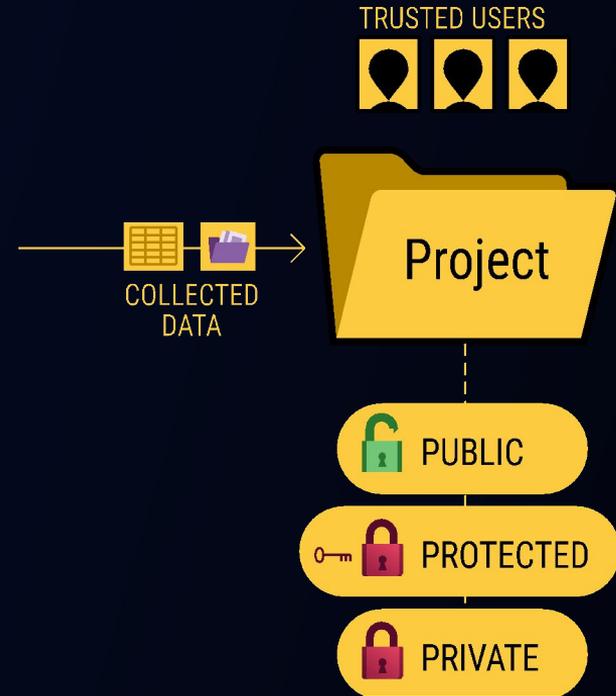


UNBOXING XNAT:

# 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

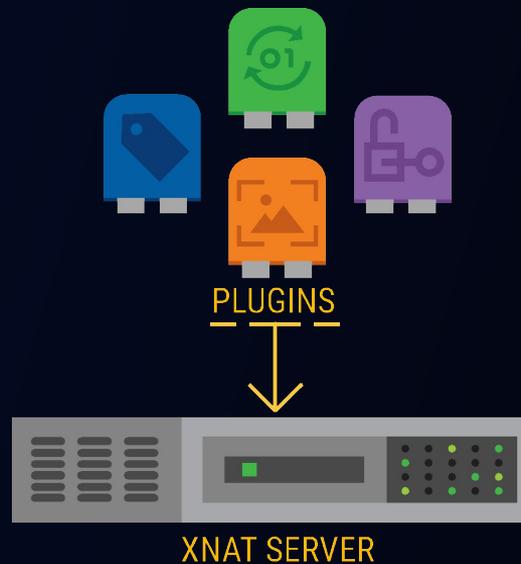


UNBOXING XNAT:

# **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?



ICR The Institute of  
Cancer Research



NCITA  
National Cancer Institute  
Translational Accelerator



SynerBI

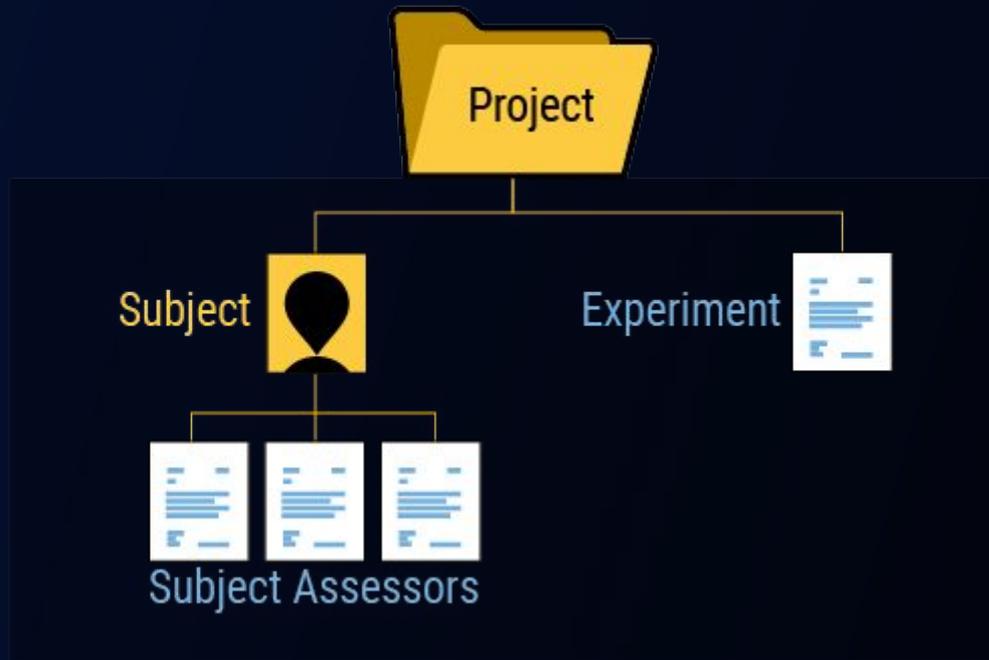
Health+BioScience  
IDEAS

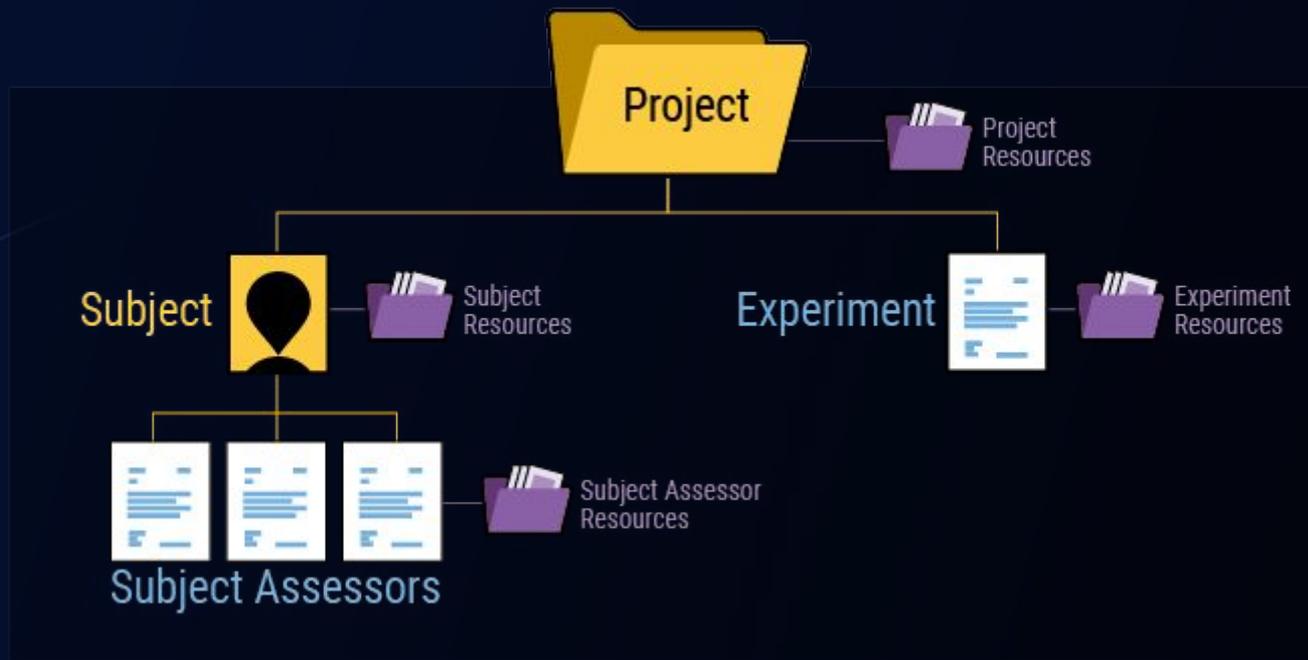


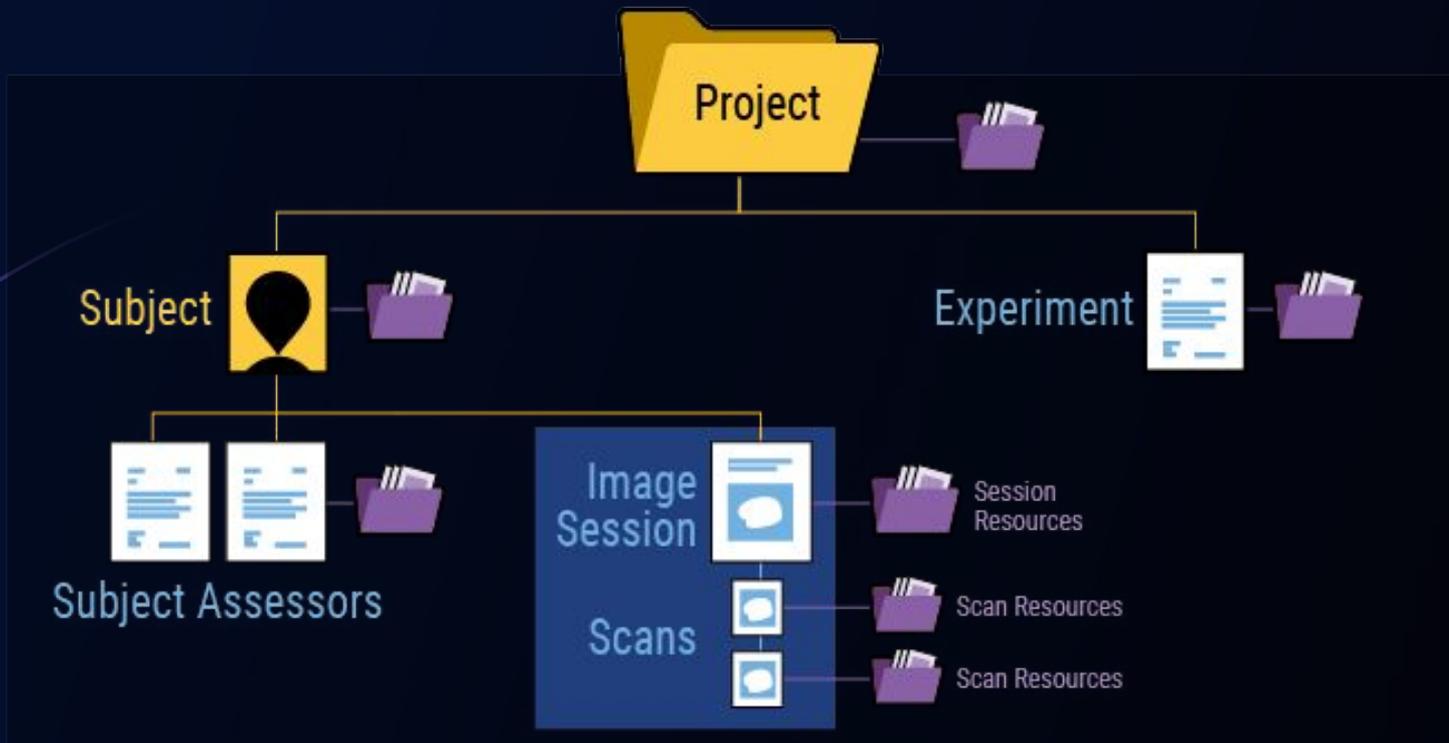
Flywheel

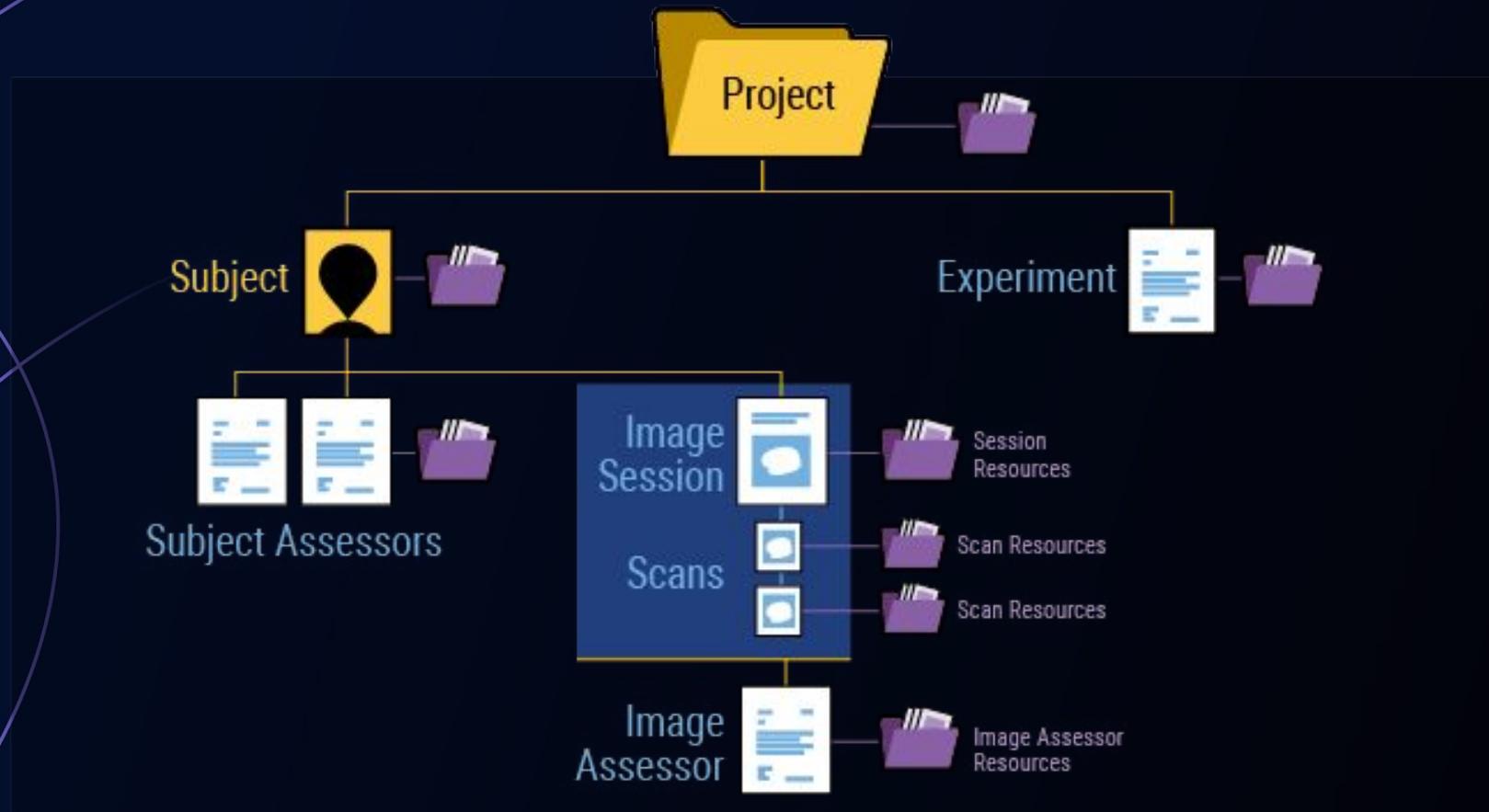
Project Data









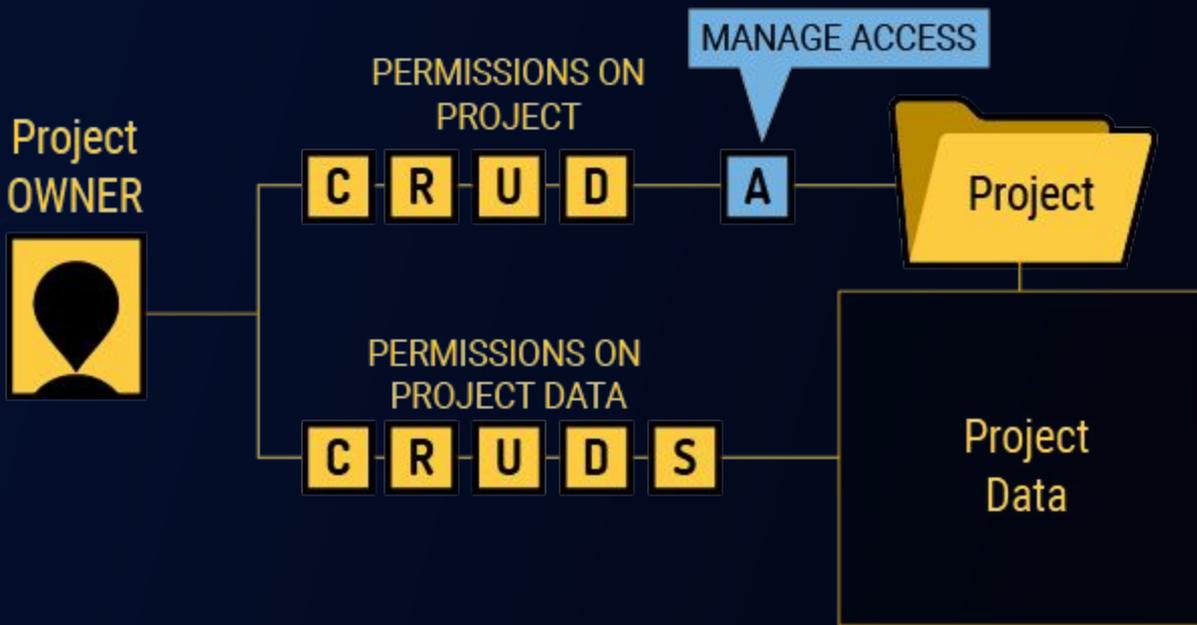




# User Permissions

## Controlling Data Access





Project  
MEMBER



PERMISSIONS ON  
PROJECT

C R U D A



PERMISSIONS ON  
PROJECT DATA

C R U D S



Project  
COLLABORATOR



PERMISSIONS ON  
PROJECT

C R U D A



PERMISSIONS ON  
PROJECT DATA

C R U D S





# 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](http://www.xnat.org/academy)

Register for an account

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



# XNAT WORKSHOP LONDON 2022



ICR The Institute of  
Cancer Research



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