




Welcome to XNAT Workshop 2022

Dan Marcus
Chief Scientific Officer, Flywheel
Professor of Radiology, Washington University



Presenter: Dan Marcus, Flywheel & WashU

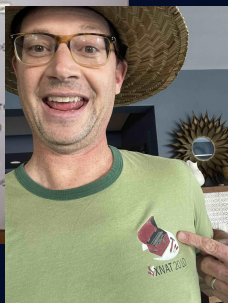
- Chief Scientific Officer (not meant to be ironic) @ Flywheel
- Professor of Radiology & Director of the Computational Imaging Research Center @ WashU
- Worked on XNAT since before it was XNAT
- Haven't been back to England since 2017 sabbatical. I will be needing some  **Nando's**



Workshops are an important part of the XNAT experience – thanks for coming

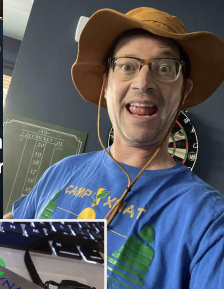
Installation: Setup

- bin/setup.sh
 - Builds the project directory
 - Location for site specific customizations
 - Built from the skeleton in the plugin-resources
 - Builds the initial deployment directory
 - Staging area for deployment to Tomcat
 - Combines contents of projects/ and plugin-resources
 - Reads schema and auto-generates data
 - Builds SQL for Database creation
 - Builds Java classes, reports and edit pages
 - Builds Display documents for use with the browser



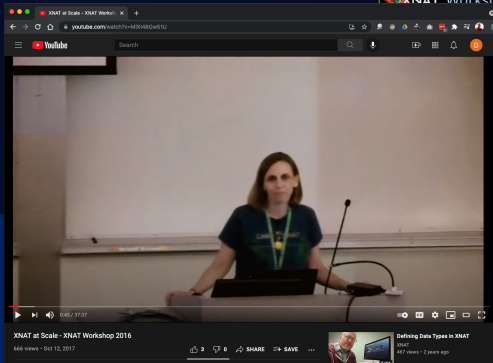
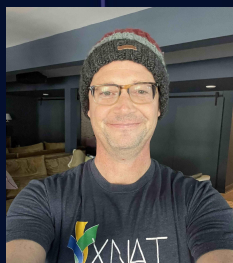
Getting the most from your time at Camp XNAT, or How not to be hung from flagpole by your underwear

Dan Marcus
Camp Director
June 24, 2012



XNAT Workshop 2012

September 13-14, 2012 | Munich, Germany

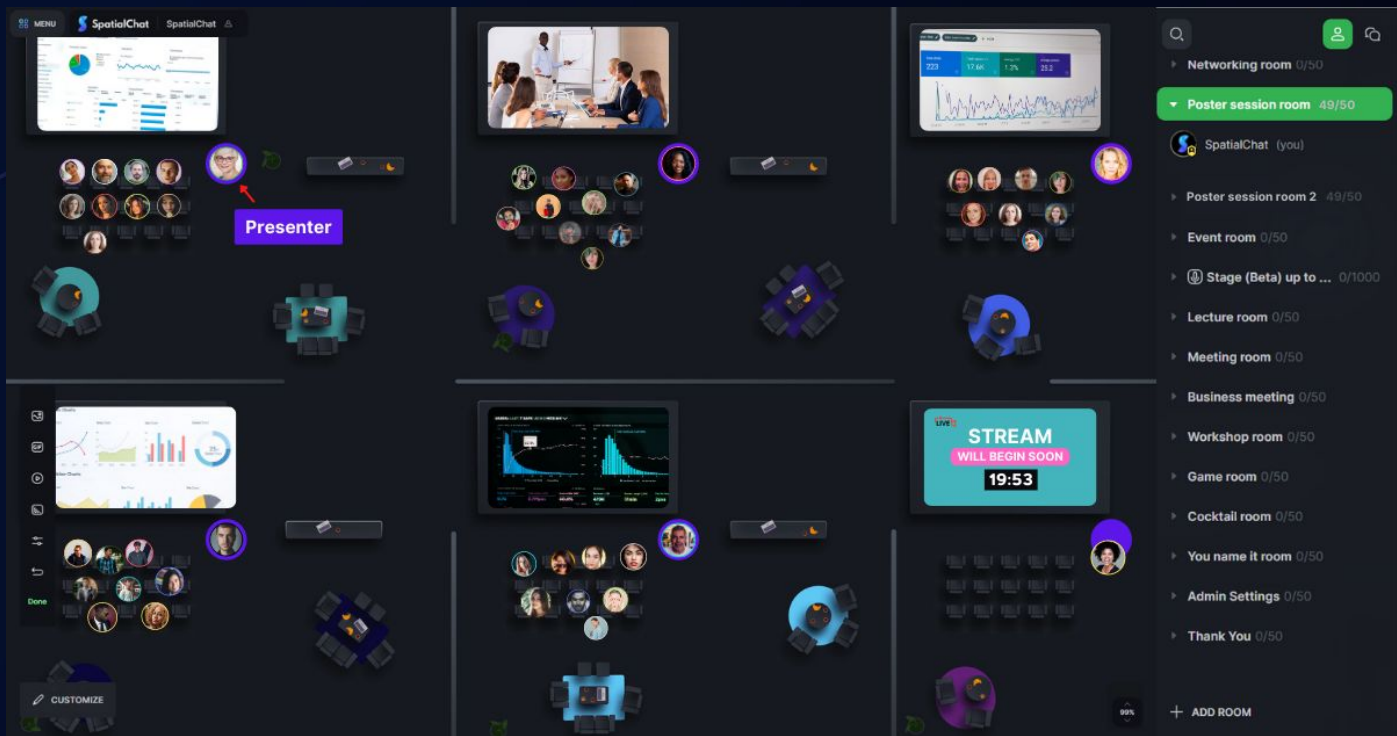


XNAT DEVELOPER WORKSHOP 2017

OCT 16-18 2017 • ROTTERDAM, NL



Workshops are an important part of the XNAT experience – thanks for coming

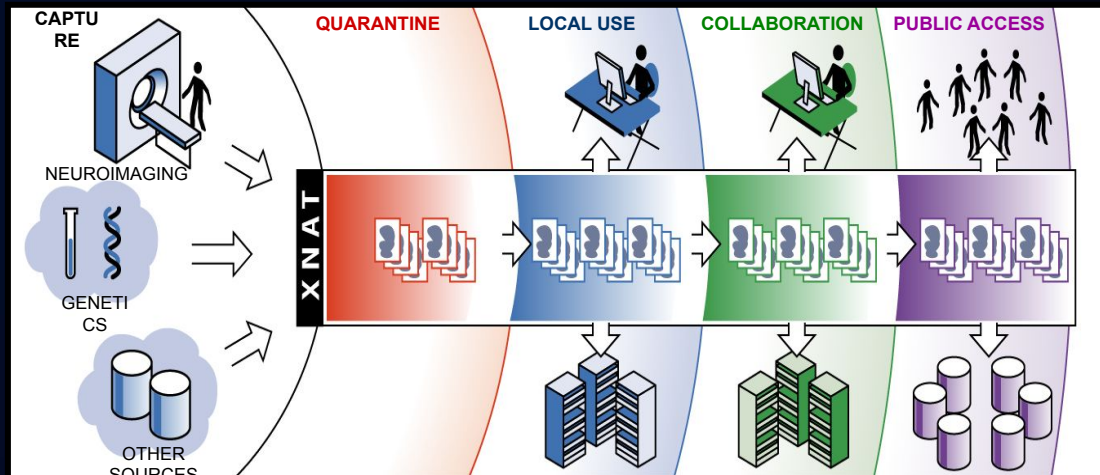


Today's Themes

- Continuity
- Evolution
- Sustainment

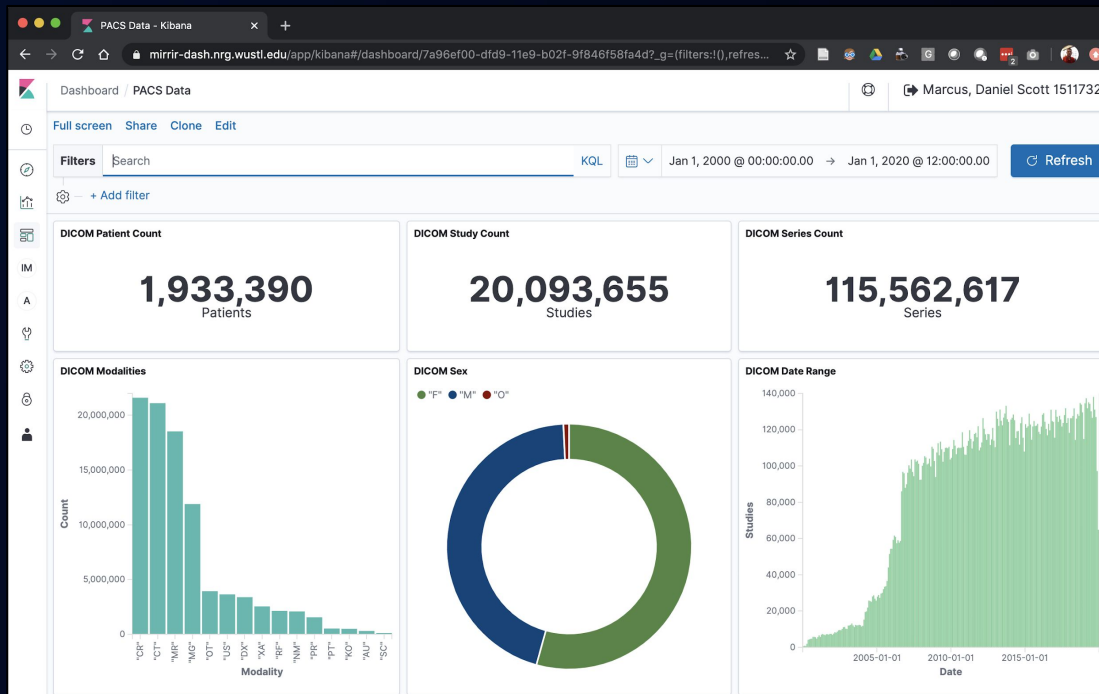
Today's Themes

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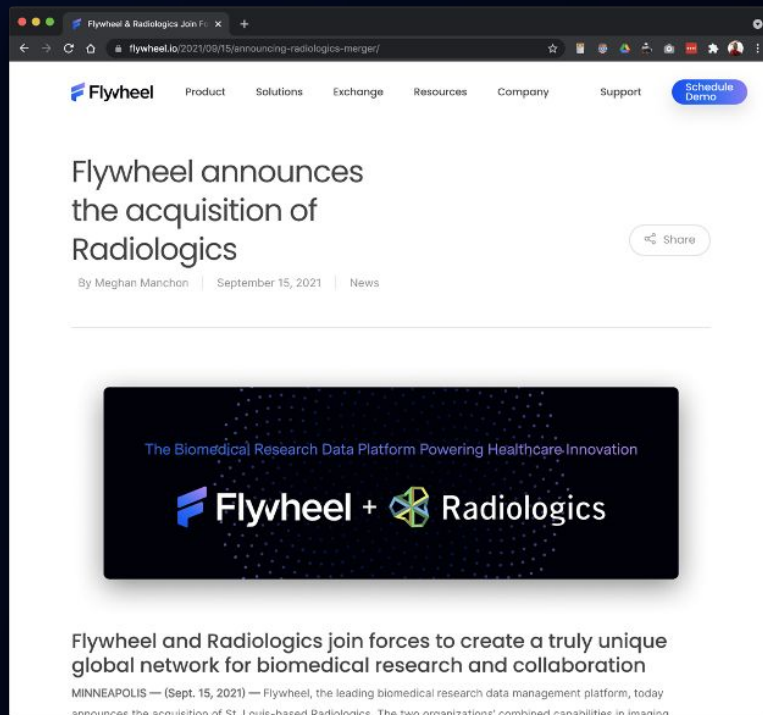
Today's Themes

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Today's Themes

- Continuity
- Evolution
- Sustainment



The origin story: Birth

- It all begin ~2001 at the WUMC Alzheimer's Disease Research Center
- CDs were awkward, QC was sporadic, and processing was inconsistent.
- DICOM was barely a thing.
- Randy Buckner asked me to write some scripts to better manage the data

ADRC
central neuroimaging data archive Home Help Logout

Tasks

- Administration
- Add Experiment
- Add Subject
- Upload XML
- Search
- Super Search
- My CNDA

Browse

- MR Session
- Participants
- Man. T1 Vol.
- Res. Rad. Assess.
- Man. WM Assess.
- eTIV / ASF
- Clin. Assess.
- Psych. Eval.
- CSF
- DTI
- nWBV
- Auto. SubCort. Vol.
- LS_Demog
- LS_Health
- LS_Neuropsych

Super Search

Man. WM Assess. ADR Clinical Assessment Participant Demographics eTIV / ASF Mr Session

Search >>>

Pages: [1] 2 3 4 5 6 7 8 9 (478 Records in 12 Pages.)

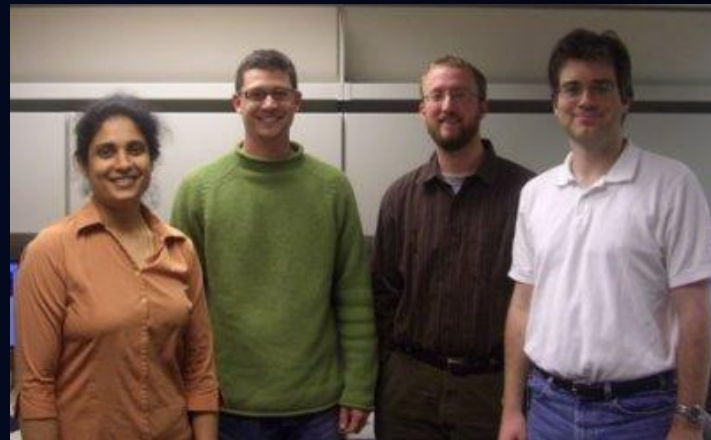
	Session	Date	PI	Prtcpt	M/F	Age	Total	DWM	BG	PV	Diff
1		2005-02-28	Burns		F	90	14	8	3	3	1208
2		2005-02-28	Burns		M	69	23	15	4	4	108
3		2004-12-14	Burns		M	84	35	15	13	7	103
4		2004-12-14	Burns		F	83	26	16	4	6	104
5		2003-11-03	Burns		F	76	19	9	5	5	122
6		2003-11-03	Churc		F	78	33	15	11	7	453
7		2003-11-03	Churc		F	71	27	14	9	4	216
8		2003-10-17	Churc		M	42	21	11	6	4	690
9		2003-10-17	Churc		M	77	27	13	10	4	403
10		2003-10-17	Churc		F	75	28	12	11	5	101
11		2003-10-17	Churc		F	81	38	16	15	7	247
12		2003-10-16	Churc		M	71	22	12	6	4	988
13		2003-10-16	Churc		F	71	36	16	14	6	248
14		2003-10-16	Churc		M	86	31	15	11	5	51
15		2003-10-13	Churc		F	92	29	13	11	5	642
16		2003-10-13	Churc		M	70	31	15	11	3	301
17		2003-10-13	Churc		M	90	41	15	18	8	41
18		2003-10-13	Churc		F	90	36	16	14	6	228
19		2003-10-10	Churc		M	77	45	22	14	9	122
20		2003-10-10	Churc		M	86	24	13	7	4	126
21		2003-10-10	Churc		F	88	27	13	9	5	104
22		2003-10-10	Churc		M	88	26	10	11	5	968

Bundles

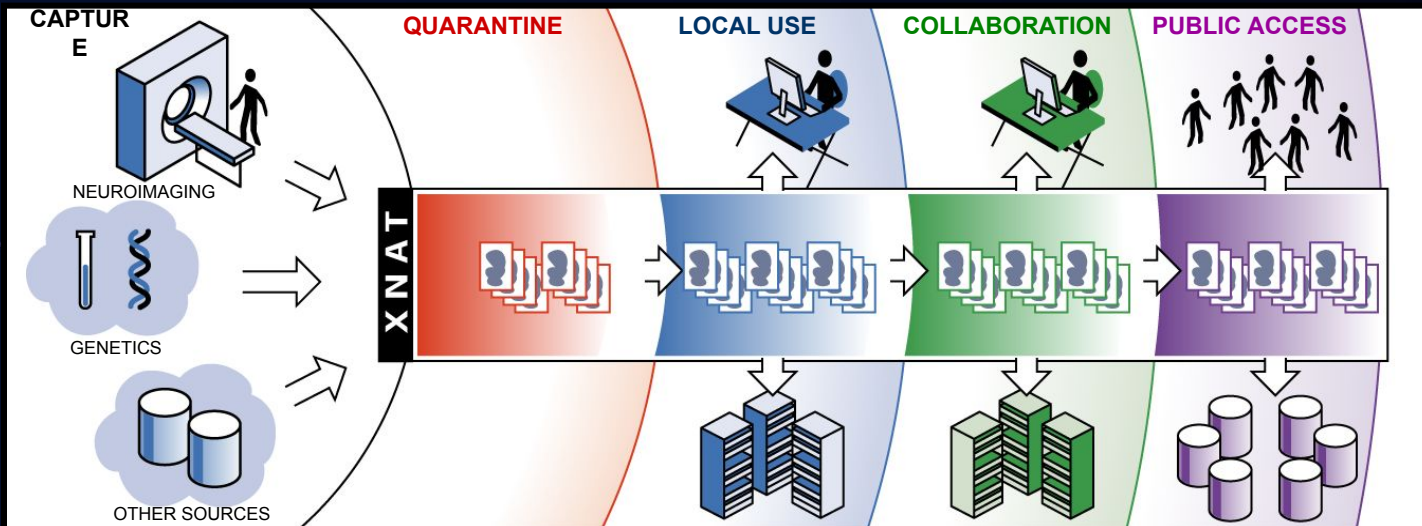
Pages: [1] 2 3 4 5 6 7 8 9

The origin story: Infancy

- Instead, I wrote a web app. Randy liked it. We called it the CNDA.
- He committed HHMI resources to build it.
- Tim Olsen & Mohana Ramaratnam hired as the first XNAT developers. Kevin Archie joined soon after in 2002
- First open source release followed soon after.



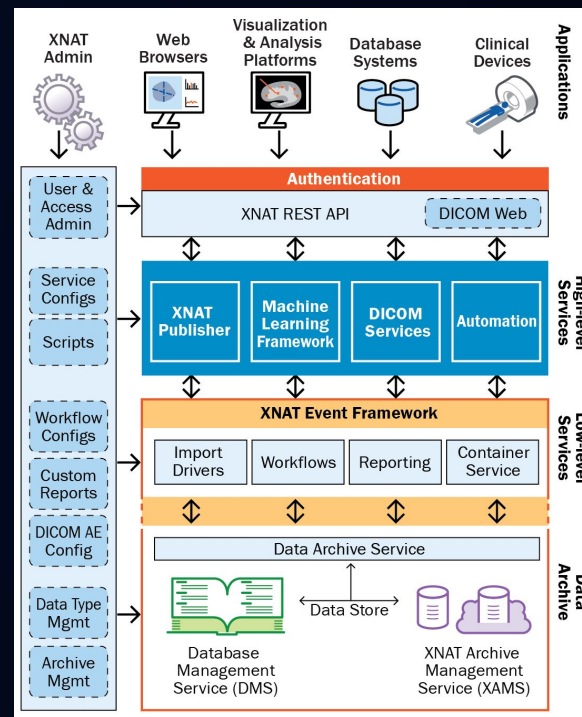
The origin story: Adolescence



- We joined the Biomedical Informatics Research Network (BIRN) in 2005
 - Freesurfer, 3D Slicer, ADNI, Human Connectome Project, XNAT, BIDS, Pipelines
- First XNAT R01 grant started in 2008 (24 letters)

The origin story: Coming of Age

- Growth of the XNAT team (40+ developers over the years)
- Expansion beyond neuroimaging
- Radiologics founded (2009)
- Human Connectome Project (2009)
- XNAT R01 renewal (2012: 53 letters)



The origin story: Adulthood

- Global adoption across many biomedical domains
- Links with many industry and academic initiatives
- Containerization introduced
- AI drives many use cases
- XNAT grant renewal (2016: 107 letters)



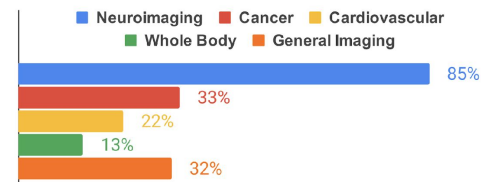
XNAT Today

- Broad DICOM support
- Modern open image viewer
- Containerized processing
- Comprehensive API
- Extensive administration interface
- Automations
- Integrated notebooks

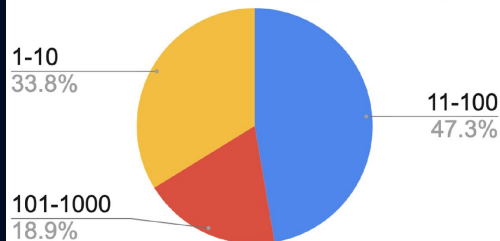
XNAT impact by the numbers

XNAT.org visitors:	>100,000
XNAT application downloads:	>20,000
XNAT plugin downloads:	>7,500
XNAT Forum members:	>850

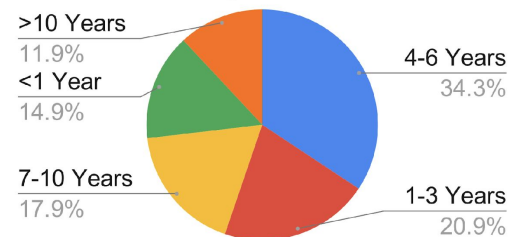
Supported Research Areas



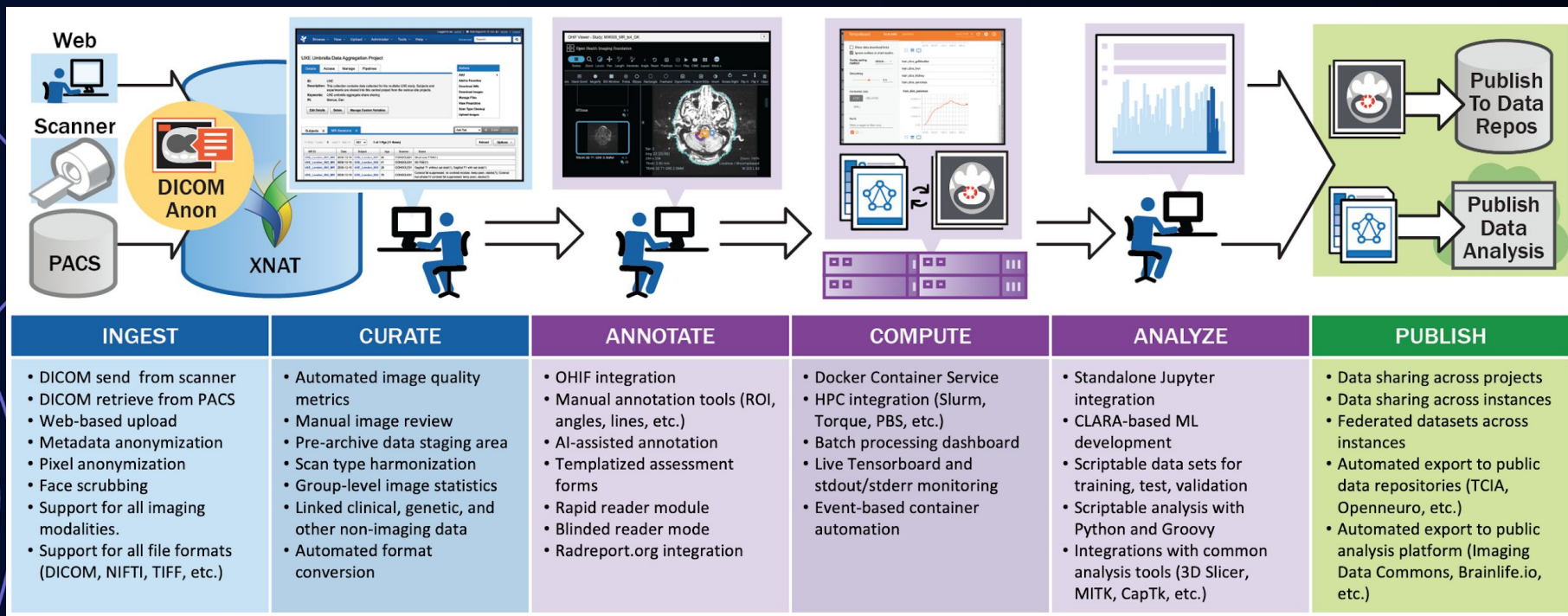
Number of users (per XNAT)



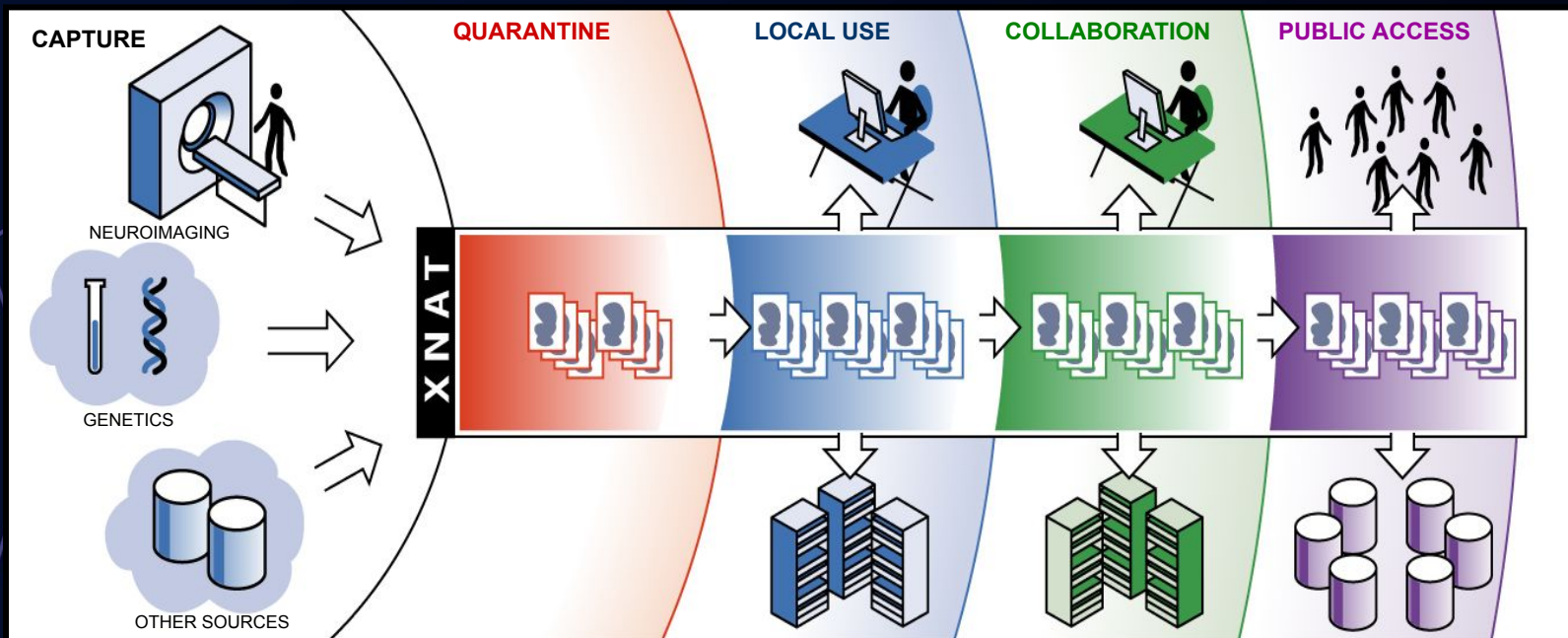
Number of years in service



XNAT Today



XNAT Today



XNAT Today



Kate Alpert
Sr Director of Engineering



Tim Olsen
Sr VP of Clinical Engineering



James Dickson
Senior Director, Customer
Solutions and Support



Dan Marcus
Chief Scientific Officer,
Professor of Radiology



Andy Lassiter
Programmer



John Flavin
Backend Team Lead



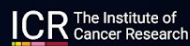
Rick Herrick
Sr Software Engineer



Will Horton
Sr Product Owner



Matt Kelsey
Programmer



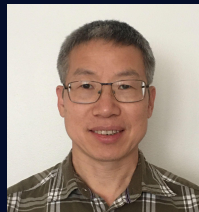
XNAT Today



Dana Gleason
Technical Project
Manager



Dakota Castleberg
Lead Frontend Engineer



Bin Zhang
Software Engineer



Rose Lutz
QA Analyst



Aaron Mintz
Medical Director



Michael Hileman
Solutions Engineer



Angela Farrar
Sr Director of
Regulatory Affairs



Roger Chylla
Senior Director, Clinical
Solutions



James Ransford
Senior Software Engineer



Ian Gauthier
Software Engineer



Tyler Ratliff
Clinical Quality
Assurance Lead



Kevin Archie
Sr Software Engineer



Brian Holt
Director of Clinical
Infrastructure & IT



Sean Petrick
System Administrator



Remya Nair
Senior Solutions
Engineer



Blake Griggs
Senior Account
Manager



Charlie Moore
Sr. Software QA Engineer



**Mohana
Ramaratnam**
Sr, Programmer Analyst



MD S Hussain
Quality Assurance
Analyst



XNAT Today



Gunnar Schaefer
Chief Technology Officer &
Founder



Justin Ehlert
Senior Director of
Engineering



Amina Chebira
Director of Relationship
Management



Quinn Proffer
VP of Customer Operations

Evolution: Installation

Installation: Setup

- bin/setup.sh
 - Builds the project directory `bin/setup.sh`
 - Location for site specific customizations
 - Built from the skeleton in the plugin-resources
 - Builds the initial deployment directory
 - Staging area for deployment to Tomcat
 - Combines contents of projects/ and plugin-resources/
 - Reads schema and auto-generates data model
 - Builds SQL for Database creation
 - Builds Java classes, reports and edit pages
 - Builds Display documents for use with the search engine

XNAT

Evolution: Installation

Installing

Start by cloning the [xnat-docker-compose](https://github.com/NrgXnat/xnat-docker-compose) repository and checking out the `features/dependency-mgmt` branch:

```
$ git clone https://github.com/NrgXnat/xnat-docker-compose
$ cd xnat-docker-compose
$ git checkout features/dependency-mgmt
```

Launching

At this point, you can start XNAT with a basic configuration just by building and launching the `docker-compose` configuration:

```
$ ./gradlew composeBuild composeUp
```

Evolution: Viewer

http://cnda.neuroimage.wustl.ed...

Type: MPRAGE
Data: ASEG
Run: 2226-3
View: Sagittal
Display: Stack
 radiologic
GO

Session information

SESSION ID: 020313_vc8755
LAB ID: FB9230P
MAP#: 12479
AGE: 73
GENDER: Female
HANDEDNESS: Ambidextrous
ACQ. DATE: 2002-03-13
SCANNER: Bay 3 Vision 1.5T
STABILIZATION: mask
REF. MARKER: left vitamin E

Applet org.nrg.plexiViewer.lite.applet.PlexiViewerApplet ...

020313_vc...

File View

Coordinates (TAL_111):
1, 11, 13:21.0

Java Applet Window

020313_vc8755:MPRAGE...

File View

169, 127, 134: R-Cerebellum-Cortex
Display: All Regions
Vol.Cnt: 0

Java Applet Window

Evolution: Viewer

The screenshot displays the ICR OHIF-XXNAT Viewer 200 interface. The main window shows a cross-sectional CT scan of the abdomen with various organs segmented in different colors: spleen (purple), kidneys (green and yellow), gallbladder (blue), esophagus (orange), liver (pink), stomach (red), pancreas (magenta), and duodenum (yellow-green). The interface includes a top navigation bar with options like Scans, XNAT Nav, Previous, Next, Play, CINE, Layout, Scroll (S), Zoom (Z), Levels (L), Pan (P), Annotations, ROI, Segment, Delete, More, Clara Annotate, Clara Segment, and Help. A right-hand panel titled 'Segments' contains a table of segmented organs and their properties.

Paint	Label	Type	Hide	Delete
	spleen	Bone - Tissue	<input type="checkbox"/>	<input type="checkbox"/>
	kidney	Bone - Tissue	<input type="checkbox"/>	<input type="checkbox"/>
	kidney	Bone - Tissue	<input type="checkbox"/>	<input type="checkbox"/>
	gallbladder	Bone - Tissue	<input type="checkbox"/>	<input type="checkbox"/>
	esophagus	Bone - Tissue	<input type="checkbox"/>	<input type="checkbox"/>
	liver	Bone - Tissue	<input type="checkbox"/>	<input type="checkbox"/>
	stomach	Bone - Tissue	<input type="checkbox"/>	<input type="checkbox"/>
	pancreas	Bone - Tissue	<input type="checkbox"/>	<input type="checkbox"/>
	duodenum	Bone - Tissue	<input type="checkbox"/>	<input type="checkbox"/>

Below the table, there are sections for 'NVIDIA Clara AIAA' with server URL and segmentation/annotation models, 'Smart CT Gate Selection' with a dropdown menu, and 'Smart/Auto Gate Settings' with sliders for fill holes and paint regions.

Technical details at the bottom left: Ser: 49621430, Img: 80 (80/136), 512 x 512, Thick: 2.50 mm, T: 0% PR=99% -> 4% AR(cm)=0.58 -> -0.07 General 4D CT Images. Zoom: 185%, Lossless / Uncompressed, W 400 L 40.

Evolution: Interfaces

Why REST?

- History
 - SOAP, ArcGet, ArcPut, StoreXAR, StoreXML
 - Cumbersome, Difficult in some languages
- URLs uniquely identify resources (meta & file)
- Uses basic HTTP model
- REST, REST-ful, REST-like
 - HTTP Sessioning



5



Evolution: Interfaces

XNAT REST API

The XNAT REST API (XAPI) functions provide access to XNAT internal functions for remote clients.

Created by XNAT

See more at <http://www.xnat.org>

[Contact the developer](#)

[Simplified 2-Clause BSD](#)

anonymize-api : XNAT DICOM Anonymization API

Show/Hide | List Operations | Expand Operations

GET	/xapi/anonymize/default	Gets the default anonymization script.
GET	/xapi/anonymize/projects/{projectId}	Gets the project-specific anonymization script.
PUT	/xapi/anonymize/projects/{projectId}	Sets the project-specific anonymization script.
GET	/xapi/anonymize/projects/{projectId}/enabled	Indicates whether the project-specific anonymization script is enabled or disabled.
PUT	/xapi/anonymize/projects/{projectId}/enabled	Enables or disables the project-specific anonymization script.
GET	/xapi/anonymize/site	Gets the site-wide anonymization script.
PUT	/xapi/anonymize/site	Sets the site-wide anonymization script.
GET	/xapi/anonymize/site/enabled	Indicates whether the site-wide anonymization script is enabled or disabled.
PUT	/xapi/anonymize/site/enabled	Enables or disables the site-wide anonymization script.

automation-api : Automation Service API

Show/Hide | List Operations | Expand Operations

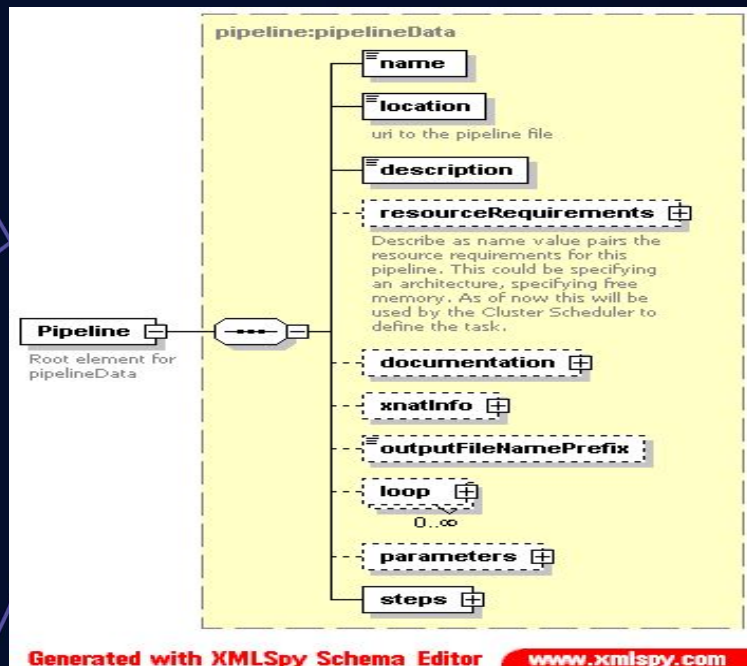
catalog-api : XNAT Archive and Resource Management API

Show/Hide | List Operations | Expand Operations

The screenshot shows the GitHub repository for 'xnatpy' by 'Radiology Erasmus MC'. The repository has 569 commits, 6 branches, 40 tags, 48.7 MB project storage, and 9 releases. The description states: 'A new XNAT client that exposes XNAT objects/functions as python objects/functions. The aim is to abstract as much of the REST API away as possible and make xnatpy feel like native Python code. See <https://xnat.readthedocs.io>'. The repository includes a README, Apache License 2.0, CHANGELOG, CONTRIBUTING, and CI/CD configuration. A table of recent commits is shown below:

Name	Last commit	Last update
doc	Update documentation for CLI	9 months ago
examples	Renamed weird upload_nifly script.	2 years ago
xnat	Bump version and update CHANGELOG	6 months ago
gitignore	Change mentions of bitbucket into gitlab	2 years ago

Evolution: Compute



Runs on: MR Sessions

Generates:

Description: Pipeline creates NIFTI files from DICOM files. The NIFTI files are added at SCAN level

Authors:

Name	Email	Phone
Ramaratnam Mohana		

Version: 1

Input Parameters Required:

Name	Description	CSVValue	Schema Link
scanids	The scan ids of all the scans of the session		xnat:mrSessionData/scans/scanID
xnat_id	The XNAT ID (Accession Number) of the session		xnat:mrSessionData/ID
sessionId	The session id of the session		xnat:mrSessionData/label
project	Project ID		xnat:mrSessionData/project
subject	Subject ID		xnat:mrSessionData/subject_ID

Step 0: Create NIFTI folder

Step 1: Create folder for each series in NIFTI subfolder

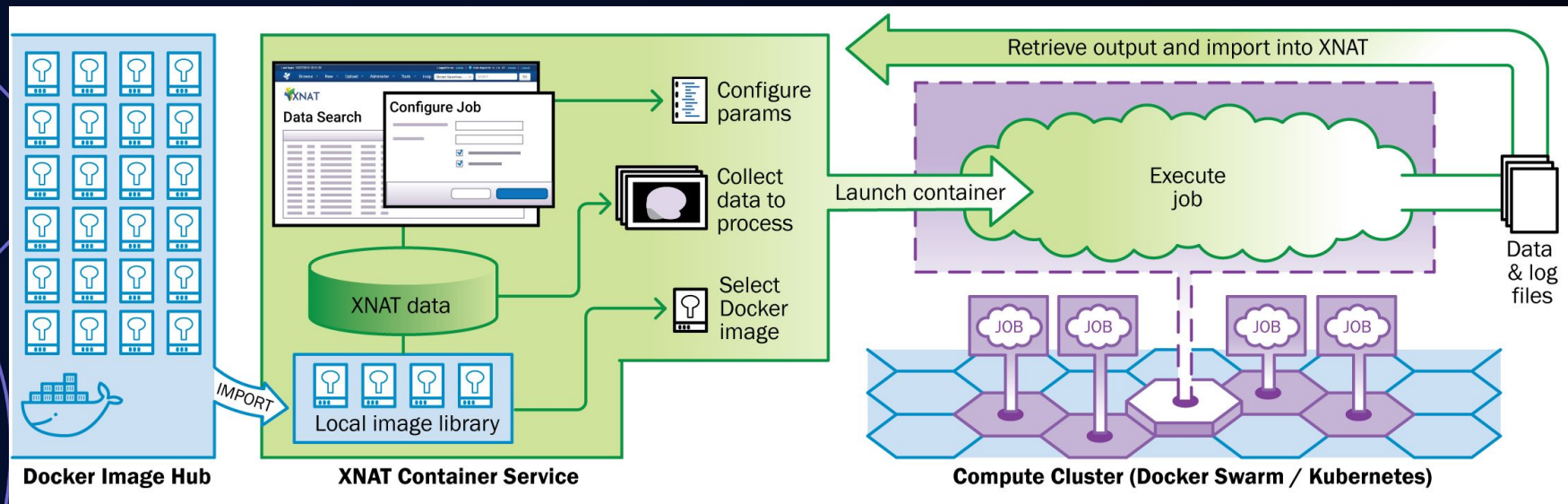
Step 0a: Create RAW folder

Step 1a: Copy Scan DICOM DATA into RAW folder

Step 2: Convert each series file into a 4d NIFTI file

Step 3: Upload files to XNAT

Evolution: Compute



Evolution: Compute

The screenshot displays a JupyterLab environment. On the left, a file browser shows a directory structure with files like 'image_vie...', 'MONAI_M...', 'reslice_c4...', 'reslice_up...', and 'xnatpy.zip'. The main area contains a code cell with the following Python code:

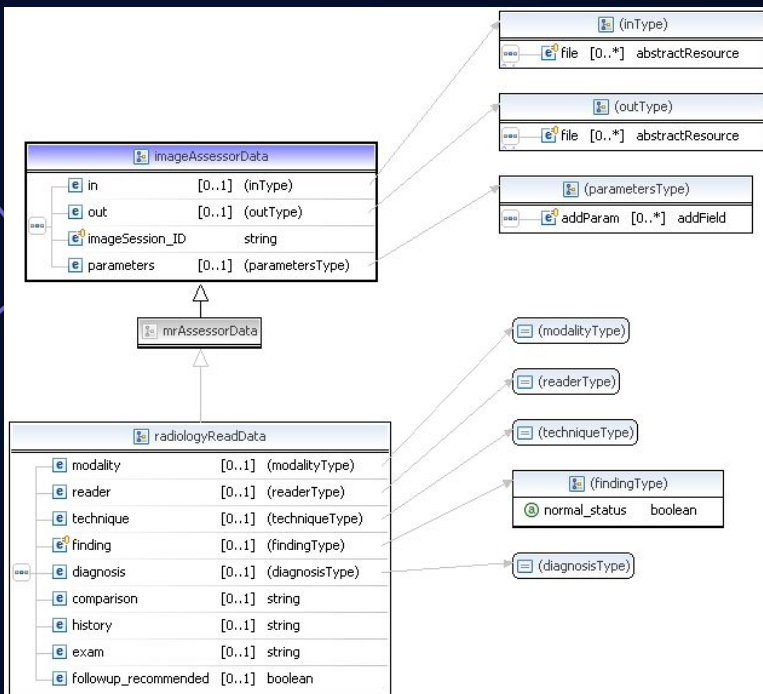
```
[8]: plt.subplots(3, 3, figsize=(8, 8))
for i, k in enumerate(np.random.randint(num_total, size=9)):
    im = PIL.Image.open(image_files_list[k])
    arr = np.array(im)
    plt.subplot(3, 3, i + 1)
    plt.xlabel(class_names[image_class[k]])
    plt.imshow(arr, cmap="gray", vmin=0, vmax=255)
plt.tight_layout()
plt.show()
```

Below the code, a 3x3 grid of medical images is displayed. The images are labeled as follows:

- Top row: ChestCT, ChestCT, BreastMRI
- Middle row: CXR, Hand, Hand
- Bottom row: (partially visible)

The status bar at the bottom indicates 'Mode: Command' and 'Ln 1, Col 1 MONAI_MedNIST_Tutorial.ipynb'.

Evolution: Customization



```

<?xml version="1.0" encoding="UTF-8"?>
<!-- edited with XMSLSPY v2004 rel. 3.1.U (http://www.xmlslpy.com) by Tim Olsen (Washington University) -->
<Displays xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:noNamespaceSchemaLocation="J:/xdat/xdisplay.xsd" schema-element="xnat:mrSessionData" full-description="MR Session"
brief-description="MR Session">
  <Arc-Definition id="ASSESSOR">
    <CommonField id="EXPT_ID" type="STRING"/>
    <CommonField id="ASSESSED_EXPT_ID" type="STRING"/>
    <Bridge-Element name="xnat:mrSessionData" field="SESSION_ID"/>
    <Filter field="EXPT_ID" filterType="distinct"/>
    <Filter field="ASSESSED_EXPT_ID" filterType="equals"/>
  </Arc-Definition>
  <Arc name="PARTICIPANT_EXPERIMENT">
    <CommonField id="PART_ID" local-field="SUBJECT_ID"/>
    <CommonField id="DATE" local-field="DATE"/>
    <CommonField id="EXPT_ID" local-field="SESSION_ID"/>
  </Arc>
  <DisplayField id="DATE" header="Date" visible="true" searchable="true" data-type="date" sort-order="DESC">
    <DisplayFieldElement name="Field1" schema-element="xnat:mrSessionData.date"/>
    <description>MR Session Date (DATE)</description>
  </DisplayField>
  <DisplayField id="DATE_CHAR" header="Date" visible="true" sort-by="DATE" sort-order="DESC">
    <DisplayFieldElement name="Field1" schema-element="xnat:mrSessionData.date"/>
    <Content type="sql">CAST(@Field AS VARCHAR)</Content>
    <description>MR Session Date (String)</description>
  </DisplayField>
  <DisplayVersion versionName="tsting" default-order-by="DATE" dark-color="DEDEDE" light-color="FFFFFF" default-sort-order="DESC">
    <DisplayFieldRef id="LABEL"/>
    <DisplayFieldRef id="DATE"/>
    <DisplayFieldRef id="PROJECT"/>
    <DisplayFieldRef id="SUBJECT_LABEL" element_name="xnat:subjectData"/>
    <DisplayFieldRef id="GENDER_TEXT" element_name="xnat:subjectData"/>
    <DisplayFieldRef id="AGE"/>
  </DisplayVersion>
  <ViewLink alias="ORDERED_WORKFLOWS">
    <Mapping tableName="ORDERED_WORKFLOWS">
      <MappingColumn rootElement="xnat:mrSessionData" fieldElement="xnat:mrSessionData.ID" mapsTo="id"/>
    </Mapping>
  </ViewLink>
  <SQLView name="ordered_workflows" sql="SELECT wrk_workflowdata.id, status, wrk_workflowdata_id,
CASE pipeline_name
WHEN 'Transfer' THEN 'Archive'::text
ELSE
CASE xs_lastposition('?.text, pipeline_name::text) WHEN 0 THEN pipeline_name ELSE
substring(substring(pipeline_name::text, xs_lastposition('?.text, pipeline_name::text) + 1), 1, xs_lastposition('?.text, pipeline_name::text) +
1) - 1)
END END AS pipeline_name
FROM wrk_workflowdata
RIGHT JOIN ( SELECT wrk_workflowdata.id, max(wrk_workflowdata.launch_time) AS launch_time
FROM wrk_workflowdata
GROUP BY wrk_workflowdata.id) wrk_max ON wrk_workflowdata.id::text = wrk_max.id::text AND wrk_workflowdata.launch_time = wrk_max.launch_time"/>
</Displays>
  
```

Evolution: Customization

The screenshot displays the XNAT web interface. At the top left is the XNAT logo. Below it, a status bar indicates "XNAT currently contains 1 projects, 0 subjects, and 0 imaging sessions". A navigation menu includes "Projects", "Subjects", "MR", "PET", and "CT". A dropdown menu is open, listing "XNAT Tools", "XNAT Desktop Client", "DICOM Browser", "Command Prompt Tools", and "Custom Forms". The "Custom Forms" option is selected, showing a sub-menu with "Manage Custom Forms" and "Migrate Custom Variables".

The main form area has a "Projects" tab selected. It contains the following fields:

- ID:
- Title:
- Description:
- Keywords:
- Investigator:

A "Submit" button is located at the bottom right of the form.

Below the form are two panels:

- Projects**: Teaser section showing "Project ID: teaser" and "You are an owner for this project."
- Recent Data Activity**: An empty section.

Evolution: Customization

XNAT Desktop Client
v3.1.0-alpha.2 MENU xnat-demo.radiologics.com Welcome danAdmin

Upload Image Session to [xnat-demo.radiologics.com]

Project / Data Selection | **Confirm Details** | Inspect Bulk Images | Upload to XNAT

Bulk Upload

The bulk upload process allows you to modify session metadata and add parameters for multiple image sessions, and also includes visual PHI inspection and pixel anonymization, before uploading to your XNAT.

Relabeling Settings HELP

Subject Labeling Pattern:

Session Labeling Pattern:

Alternate Relabeling HELP

Download this table as a CSV file, then reupload with edited values.

[Download CSV](#) [Upload CSV](#)

Patient Name	XNAT Subject ID	Study Id	Study Date	Modality	Scans	XNAT Session Label
1160145	I295	SCREEN MAM-DIGITAL BILAT ERAL (WHSCREENB)	2013-09-20	SR, MG	10	I295_MG_1
1160145	I295	SCREENING MAMM BI	2013-09-20	SR	1	I295_undefined_1
1261268	XR082	XR CHEST 1 VIEW	2020-03-03	DX	1	XR082_DX_2
1261268	XR082	TheraX*CHEST_HIRES (Adult) (375734000)	2020-03-03	CT	9	XR082_CT_1
1261268	XR082	XR CHEST 1 VIEW	2020-04-07	DX	1	XR082_DX_4
1261268	XR082	XR CHEST 1 VIEW	2020-04-07	DX	1	XR082_DX_5
1261268	XR082	XR ABDOMEN AP-1 VIEW	2020-04-07	DX	1	XR082_DX_1
1261268	XR082	XR CHEST 1 VIEW	2020-04-08	DX	1	XR082_DX_3
1307761	RES97	CT CHEST PE W CONTRAST (MG3146)	2020-05-01	SR, CT	17	RES97_CT_1

[Cancel](#) [< Prev](#) [Next >](#)

XNAT BX HOME / STUDY DETAILS Logged in as campbell Logout

Study details

NAME: test3
STUDY ID: XNAT02_E00029
DATE: 05/23/2014
TIME: 12:00 AM
CONTAINER: cirrus

Current status Finalizing RUN WITH CUSTOM

QC status QC Pending REVIEW QC

Study status Inactive

Cirrus Output

Time	User	Action
08/14/2019 03:21 PM	jamesAdmin	PERFORM QC
08/14/2019 09:46 AM	admin	PERFORM QC
07/19/2019 11:28 AM	jamesAdmin	PERFORM QC

Scans

Id	Type	Series Desc	Usability	Files	Note
5	SAG T1 MPRAGE	SAG T1 MPRAGE	usable	96.50 MB in 192 files	
40	TRA fMRI RESTING STATE 1	TRA fMRI RESTING STATE 1	usable	132.55 MB in 160 files	
47	TRA fMRI RESTING STATE 2	TRA fMRI RESTING STATE 2	usable	132.55 MB in 160 files	

Total: 361.60 MB in 512 files

A bit about Flywheel

2011

Dr. Brian Wandell and Gunnar Schaefer work together at Stanford University's Center for Cognitive and Neurobiological Imaging to develop a medical imaging data management and collaboration platform.

2015

Wandell and Schaefer partner with Minnesota-based Invenshure to launch Flywheel.

2018

With a focus on the academic research community, Flywheel grows quickly, helping researchers focus on research and not IT.

2019

Flywheel lands its first commercial customer, Roche and Genentech, providing a global platform to enable the ingestion and automated curation of massive amounts of data for their digital transformation initiative.

2021

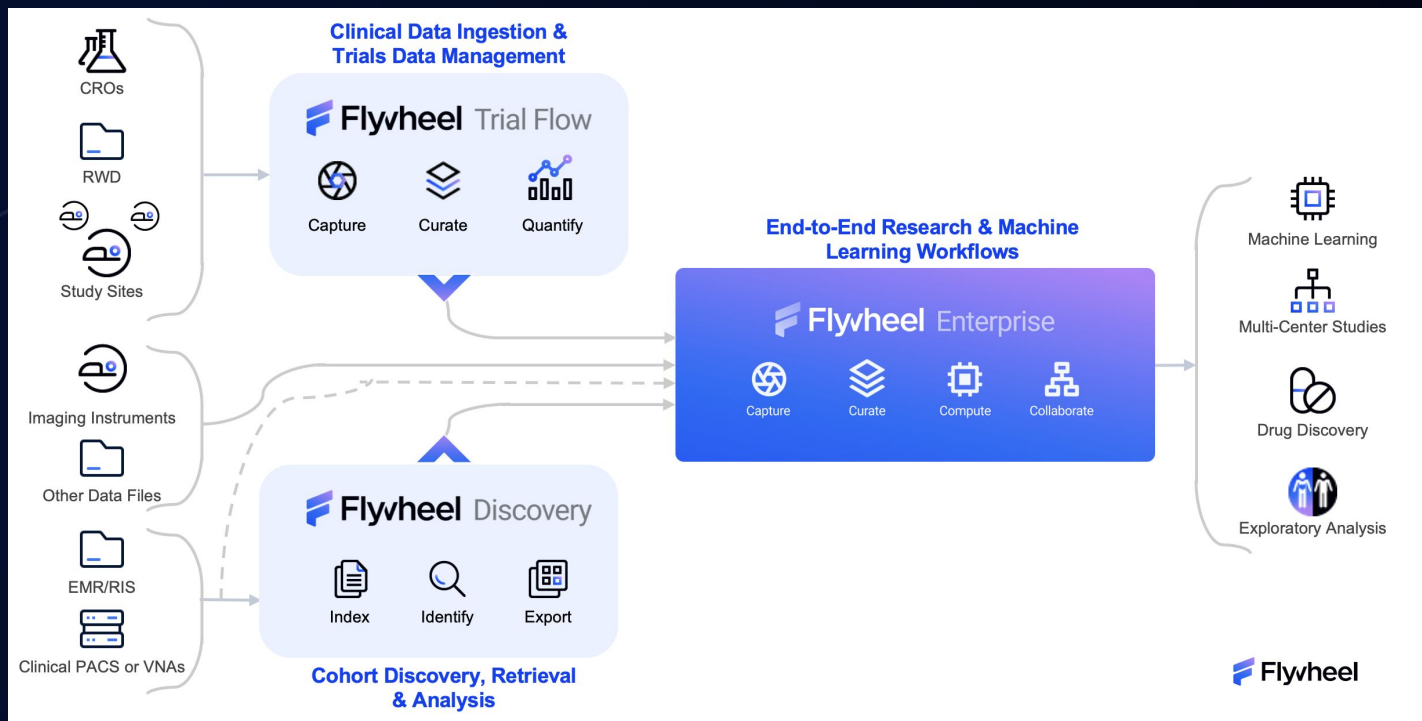
Flywheel adds to its expertise and talent base with the acquisition of Radiologics creating the only global network for biomedical research and collaboration.

A bit about Flywheel

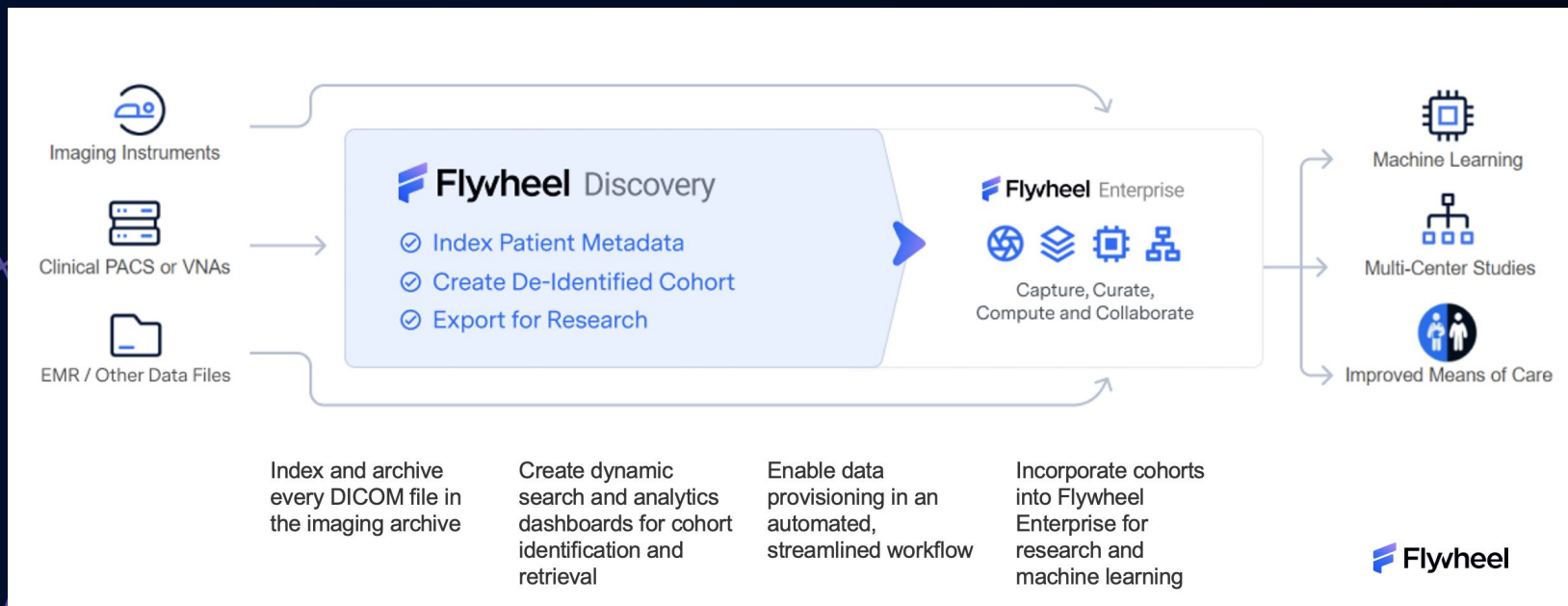
- Project-based data management
- OHIF Viewer
- Containerized apps (Gears)
- DICOM de-ID
- Provenance & audit trails
- Roles & managed access

The screenshot displays the Flywheel web interface. On the left is a blue sidebar with navigation options: Search, DATA, Projects, Sessions, Collections, Upload DICOM, COMPUTE (Jobs Log, Installed Gears), REPORTING (Project Report, Usage Report), and ADMIN (Users, Groups, Roles, Applications). The main content area is titled 'Projects' and shows a search bar with 'ACME' entered. Below the search bar are 'Project Tags' (Control, Failed_QC, Passed_QC, Reviewed) and 'Therapeutic Areas' (Dermatology, Devices, Endocrinology, Family Medicine, Neurology). 'Body Regions' include Abdomen, Abdomen+Pelvis+Lower extremity, Breast, Chest, Head, and Organ/System (Bone Marrow, Brain, Nervous System, Skeleton). Two project cards are visible: 'Alzheimers' (ACME University) with 10 Subjects, 27 Sessions, 684 Acquisitions, and 3136 Files; and 'BIDS' (ACME ryansanford@flywheel.io) with 15 Subjects, 15 Sessions, 75 Acquisitions, and 124 Files. Each card includes a 'Read More' link.

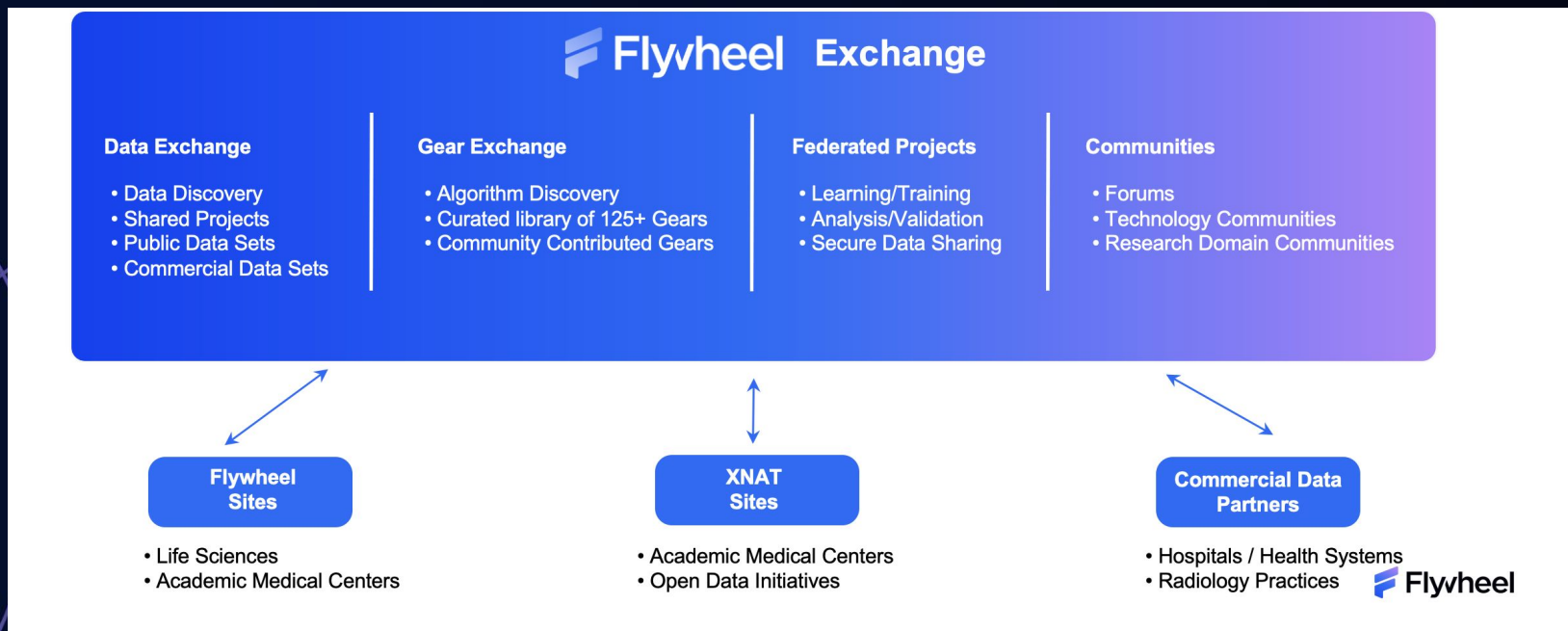
A bit about Flywheel



A bit about Flywheel

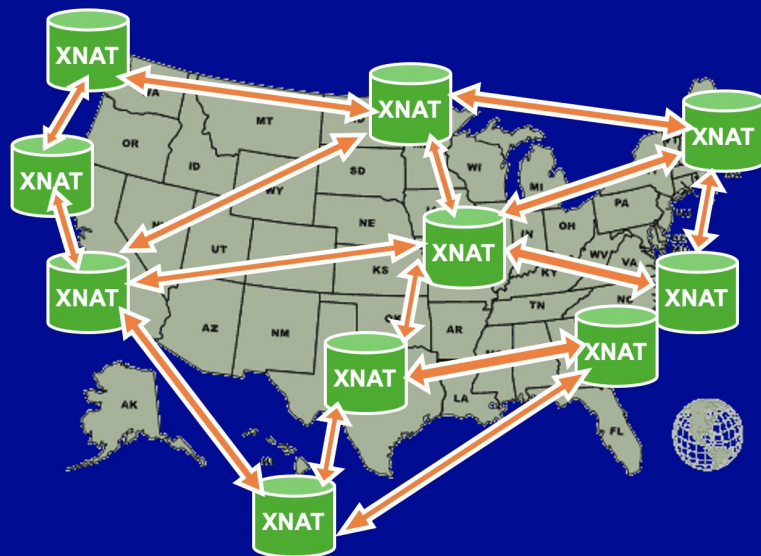


A bit about Flywheel



A bit about Flywheel

The XNAT network

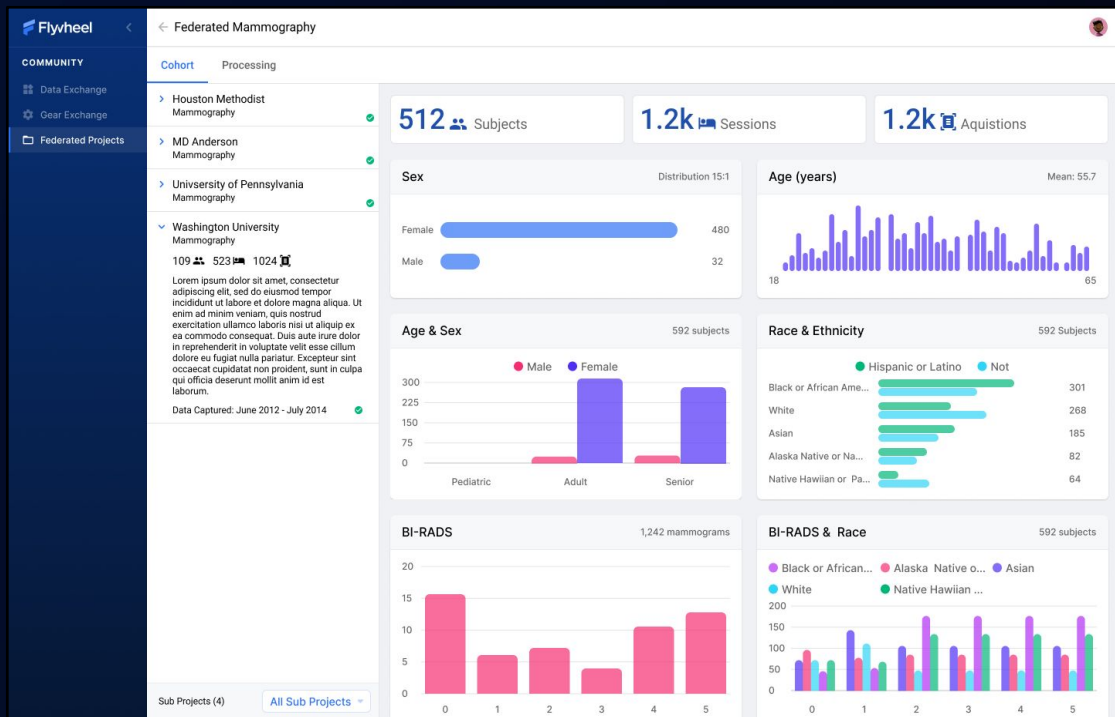


A bit about Flywheel

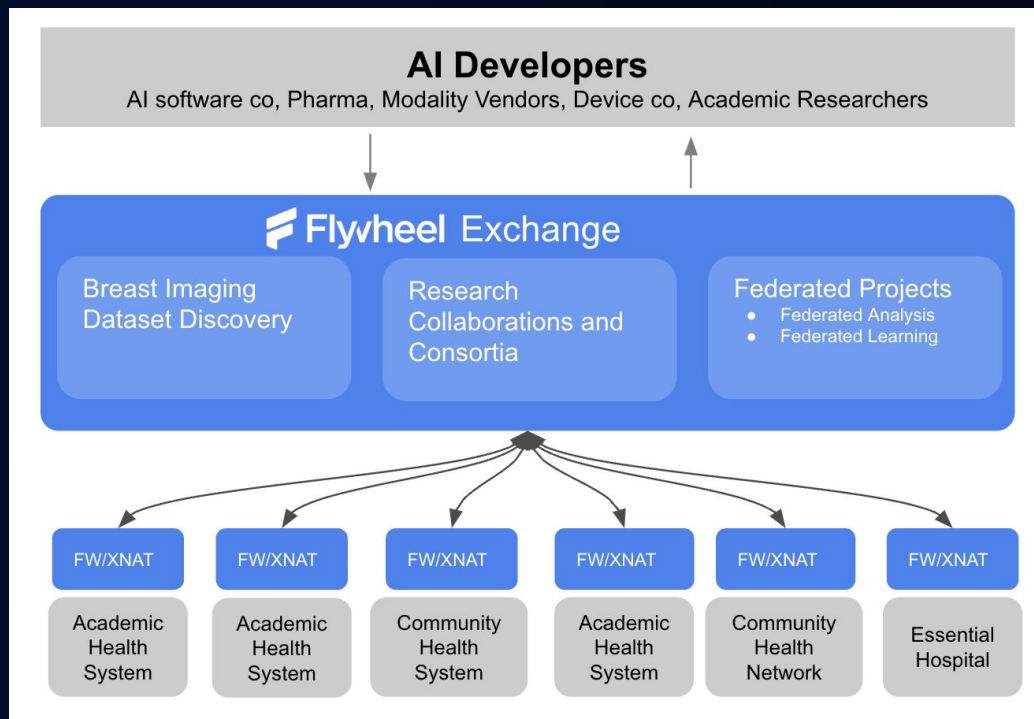
The screenshot displays the Flywheel Data Exchange 'Data Exchange' page. On the left is a dark blue sidebar with the 'Flywheel' logo and a 'COMMUNITY' section containing 'Data Exchange', 'Gear Exchange', and 'Federated Projects'. The main content area is titled 'Data Exchange' and features a 'New Federated Project' button. Below this is a 'Project Finder' section with a search bar and a list of filters: Therapeutic Areas (Cardiology/Vascular Disease, Genetic Disease, Neurology, Oncology, Ophthalmology, Pulmonary/Respiratory Disease, Trauma), Body Regions (Abdomen, Abdomen+Pelvis, Breast, Chest, Head), Organ System (Brain, Liver, Lungs, Heart, Exocrine, Ocular), Age (Pediatric, Adult, Senior), Modality (MR, FS, MG, RG, SM), Measurement/Scan (T1, T2, T2*), and File Type (dicom, nifti). A summary shows '428 projects' with an 'Add All to New' button. The project list includes four entries for 'Mammography' from Houston Methodist, MD Anderson, University of Pennsylvania, and Washington University, each with a table of statistics and a 'More' link.

Project Name	Acquisitions	Subjects	Female	Majority Race	Age Range
Mammography (Houston Methodist)	523	153	95%	55%	40-63
Mammography (MD Anderson)	523	124	95%	55%	40-63
Mammography (University of Pennsylvania)	523	126	95%	55%	40-63
Mammography (Washington University)	523	109	95%	55%	40-63

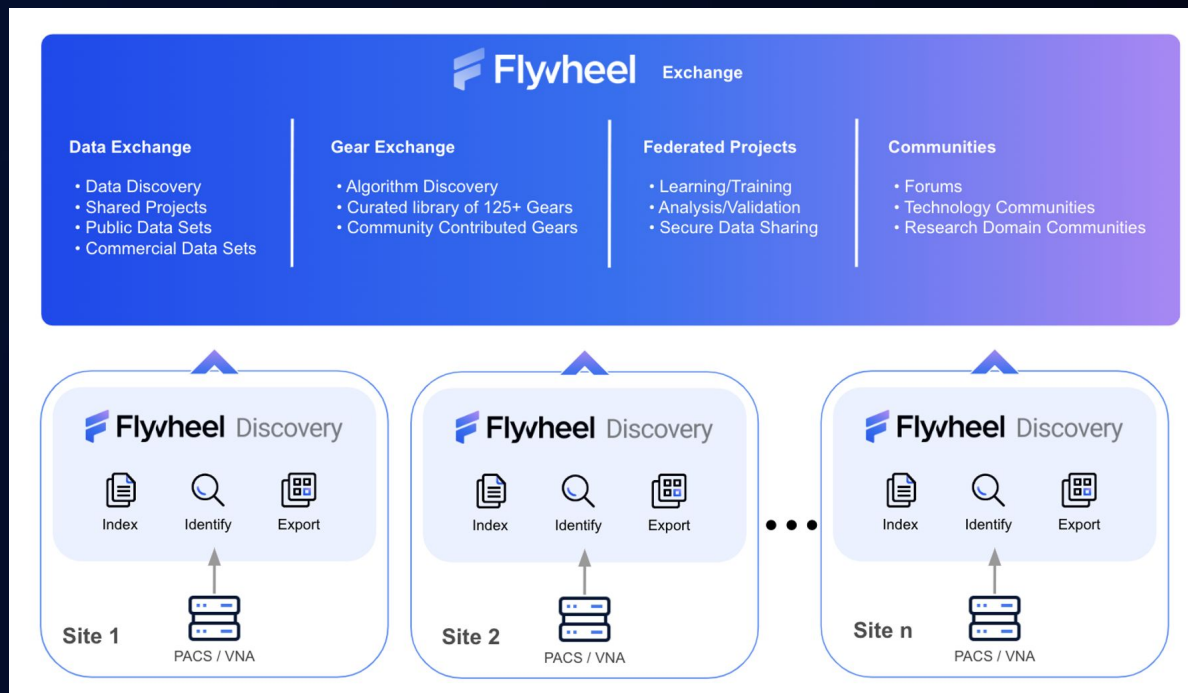
A bit about Flywheel



A bit about Flywheel

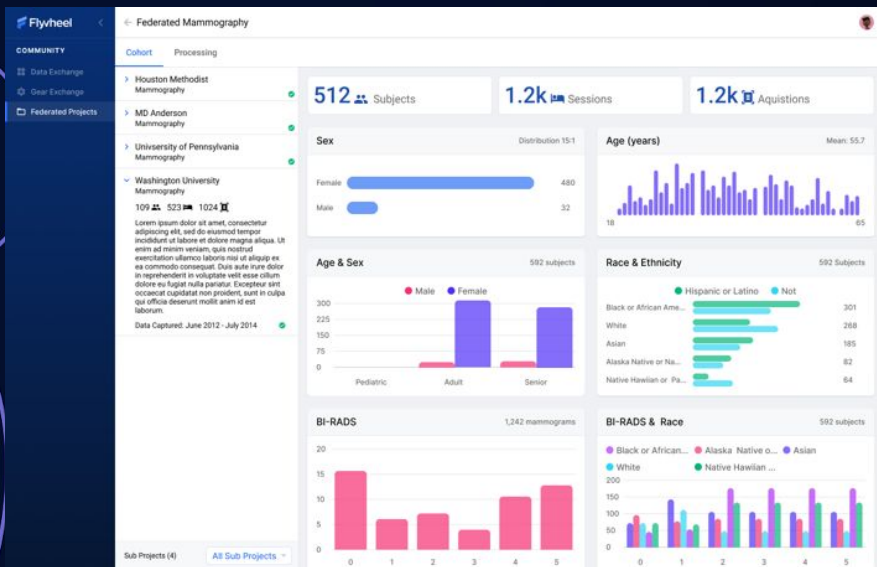


A bit about Flywheel



A bit about Flywheel

2-year \$2m NCI contract will build the breast cancer network!



NCI Contract Objectives

1. **Data:** Geographically, demographically representative patient network
2. **Platform:** Federated data discovery and AI development & validation
3. **Governance:** Secure data management w/ differential privacy, provenance, and auditability.

Clinical Data Partners

- 10+ AMCs
- + OneMedNet
- + America's Essential Hospitals

XNAT in the context of Flywheel

- Ongoing development and support of XNAT has moved from WashU to Flywheel
 - NIH R01 grant officially renewed at Flywheel (Sept 1, 2022 – Aug 30, 2026)
 - XNAT core development team (mostly) moved to Flywheel.
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- XNAT site engagement in Flywheel initiatives (e.g. Exchange).
- Path to ongoing sustainment beyond NIH funding.

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XNAT in the context of Flywheel

- XNAT R01 (NIBIB) is renewed at Flywheel through 2026.
- XNAT U24 (NCI: I3CR) was renewed through 2025.
- XNAT U24 (NCI: PIXI) was funded in 2025.
- Foundation grant (TWCF: Lab notebooks) funded through 2023.
- SBIR (NCI: Intelligent Anonymization) funded through 2023.
- SBIR (NCI: Breast Cancer Federation) funded through 2024.

XNAT sustainment is a community endeavor



ICR The Institute of
Cancer Research



Health•Bioscience
IDEAS



XNAT sustainment is a community endeavor



**THANKS
TO
THESE
GUYS!!!**

