## Platforms EOI: Distributed Federation of Enhanced Australian XNATs

**Project title**

Distributed Federation of Enhanced Australian XNATs

**Field of Research code(s)**

- 02 PHYSICAL SCIENCES
- 03 CHEMICAL SCIENCES
- 05 ENVIRONMENTAL SCIENCES
- 06 BIOLOGICAL SCIENCES
- 07 AGRICULTURAL AND VETERINARY SCIENCES
- 08 INFORMATION AND COMPUTING SCIENCES
- 09 ENGINEERING
- 10 TECHNOLOGY
- 11 MEDICAL AND HEALTH SCIENCES
- 17 PSYCHOLOGY AND COGNITIVE SCIENCES
- 21 HISTORY AND ARCHAEOLOGY

**EOI Lead Name**

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**EOI lead Research Group**

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**EOI lead Organisation**

The University of Sydney

**EOI lead Email**


**Collaborator details**

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**Project description**

Universities and clinical sites across Australia struggle to manage large volumes of imaging data, balancing patient privacy and the need for sharing and accessibility in the research community. In the past 2 years, there has been...
rapid adoption of XNAT, a data management and informatics platform for imaging research. By integrating direct data capture from instruments, data in clinical sites, and containerized pipelines on both local HPC and cloud, we will create an end to end imaging research platform that is both feasible and solves significant data challenges for researchers. This critical mass uptake provides the opportunity to collectively align our work and transform the imaging and radiology sector.

Building upon work on reproducibility in the TDR project, on patient privacy in the Discovery Activity, and accessibility from the creation of the AAF plugin, we propose a 2-year project to standardize and integrate deployments of the XNAT platform to create a distributed federation. This will consist of multiple institutional deployments linked with a federated metadata search layer, common community practice, and expanded toolsets, ensuring ongoing ownership and accountability.

### Existing technology

**Adopt**

- **XNAT**: open source imaging data management and informatics platform, it will be the central technology of the platform, integrating and being extended by:
  - **Gadgetron**: open source framework developed by the NIH for cardiac and respiratory imaging modalities
  - **Redcap/TRRF**: Patient survey and clinical trial ready platforms to share/analyse data specific to a study participant without exposing personally identifiable information
  - **NextGen Connect**: Leading open source solution for HL7 data
  - **Clara**: framework for GPU accelerated AI workflows
  - **CTP**: open source gateway to anonymise and move data

**Adapt**

- **Non-DICOM Upload tool**: Expand the existing upload tool that automatically structures imaging modalities to the common Project->Patient/Session->Data Types. This includes TDR data such as Instrument ID (IID) and Quality Control Project ID (QCPID), as well as facility management reporting data such as timestamps.
- **XNAT Federated Search**: Altering the architecture used for Dementia UK, which is a series of federated local XNATs with a single master database.
- **Trusted Data Repository**: Develop a small XNAT plugin to standardize and display the IID and QCPID.

**Build**

We plan to only use or adapt existing technologies supported by international communities, ensuring feasibility of the implementation both during and after the conclusion of the project.

### Anticipated requirements

**Annual funding**

- $400,000 - $499,000

**Proposed length**

- 2 years

### Other information

**Other information you wish to provide**

Long term sustainability of the platform will be ensured due to 3 key reasons. The first is that all technologies are free and have large, domain specific buy-in from international communities, ensuring continued growth and a wide support network. Secondly, a distributed framework with institutional buy-in at the start will mean no operational transition cliff at the end of project funding. Lastly, XNAT and three of the proposed auxiliary technologies have enterprise support available.

We invite all interested parties to join our Australasian XNAT Roadmap Workshop at eResearch Australasia.

### Terms

**I agree to the terms**

- Yes