IRLDAT GeoData Use Case

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Introduction

iCRAG is the Science Foundation Ireland Research Centre in Applied Geosciences
- 150 researchers in 8 Institutions; 3 Government and 80 Industry Partners
- €22.5M core funding + €47.5M from other sources

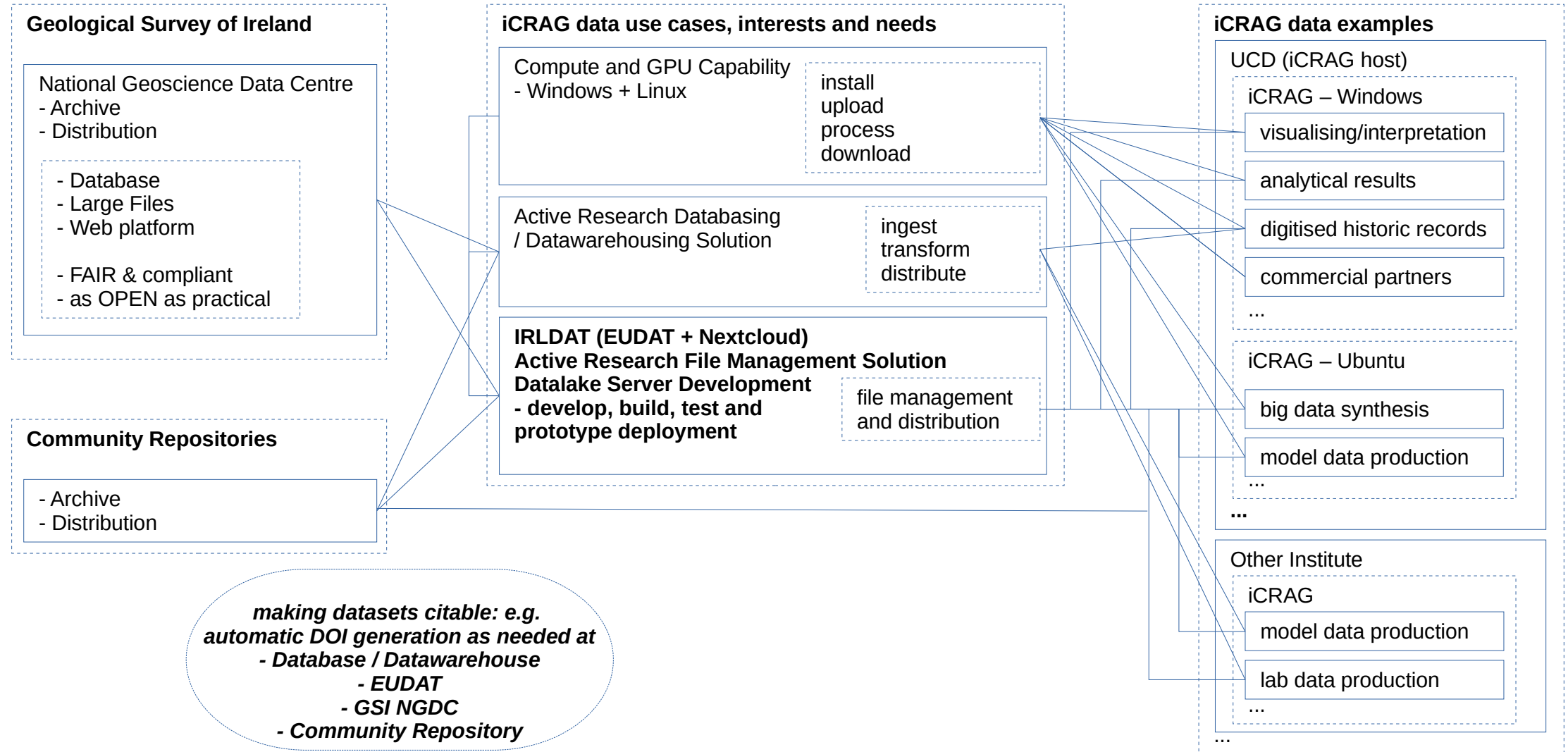- Projects across 3 Research Challenge Areas:
  · Earth System Change
  · Earth Resources
  · Earth Science

- Underpinned by 5 Platform Technology Areas:
  · Geomodelling
  · Geochemistry
  · Geophysics
  · Geosensing
  · Geodata

Conceptual Business Architecture

Geological Survey of Ireland

National Geoscience Data Centre
- Archive
- Distribution

- Database
- Large Files
- Web platform

- FAIR & compliant
- as OPEN as practical

Community Repositories

- Archive
- Distribution

*making datasets citable: e.g.
automatic DOI generation as needed at
- Database / Datawarehouse
- EUDAT
- GSI NGDC
- Community Repository*

iCRAG data use cases, interests and needs

Compute and GPU Capability
- Windows + Linux

install
upload
process
download

Active Research Databasing
/ Datawarehousing Solution

ingest
transform
distribute

IRLDAT (EUDAT + Nextcloud)
Active Research File Management Solution
Datalake Server Development
- develop, build, test and
prototype deployment

file management
and distribution

iCRAG data examples

UCD (iCRAG host)

iCRAG – Windows

visualising/interpretation

analytical results

digitised historic records

commercial partners
...

iCRAG – Ubuntu

big data synthesis

model data production
...

...

Other Institute

iCRAG

model data production
...

lab data production
...

...

Project Examples

Collection and management of active project and user data across centre activities

Consultation with researchers and iCRAG IT manager overview indicates up to 300TB
- targeted + personal + industry collaboration projects and working spaces ...
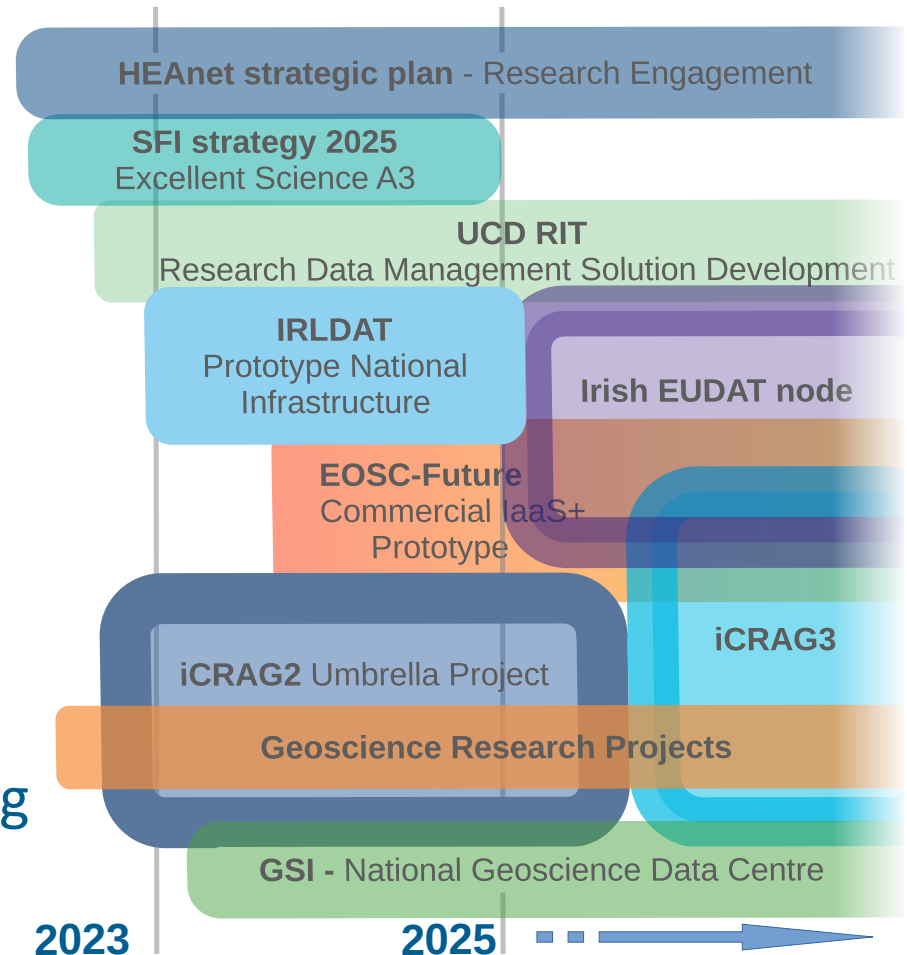- databases + maps + models + laboratory

IRLDAT pilot scope focus on example configurations and data in:
1. The iCRAG research professorship team
   - spatial data and machine learning for 12 post-docs and post grads
2. The newly established Petrophysics Laboratory at UCD
   - national database of physical rock properties to guide subsurface modelling
3. 3-and 4-dimensional subsurface architecture models of onshore Ireland
   - storage solutions for optimised .tiffs, preparation for archiving with GSI
4. DIAS-Geo geophysical networks local level data storage
   - local tier 0+ storage for seismic, acoustic and magnetotelluric data

Context and objectives

IRLDAT active storage will help iCRAG

- develop research data partnerships

- broaden use of open source and cloud IT

- build infrastructure and policies

- inform strategy and funding in iCRAG3

- collect, transform & send geodata for archiving

- improve FAIR Geodata and Open
      Geoscience provision in Ireland

HEAnet strategic plan - Research Engagement

SFI strategy 2025
Excellent Science A3

UCD RIT
Research Data Management Solution Development

IRLDAT
Prototype National
Infrastructure

Irish EUDAT node

EOSC-Future
Commercial IaaS+
Prototype

iCRAG3

iCRAG2 Umbrella Project

Geoscience Research Projects

GSI - National Geoscience Data Centre

2023   2025

iCRAG | SFI RESEARCH CENTRE IN APPLIED GEOSCIENCES

Initial Use Case Activity

EUDAT B2Access + Nextcloud client
https://b2find.eudat.eu
https://b2share.eudat.eu
https://b2drop.eudat.eu

EUDAT: IRLDAT space + personal space
Nextcloud client: Ubuntu & Windows desktops
Manual drop: geo-file types to IRLDAT space
IRLDAT folder sync: Ubuntu & Windows desktops
Basic folder structure, access and permissions hierarchy:
                    personal space, synced to desktops

Next: server testing, collaborative working
Then: real data with institute/centre/project admin control
Production: all-iCRAG active file management in the cloud