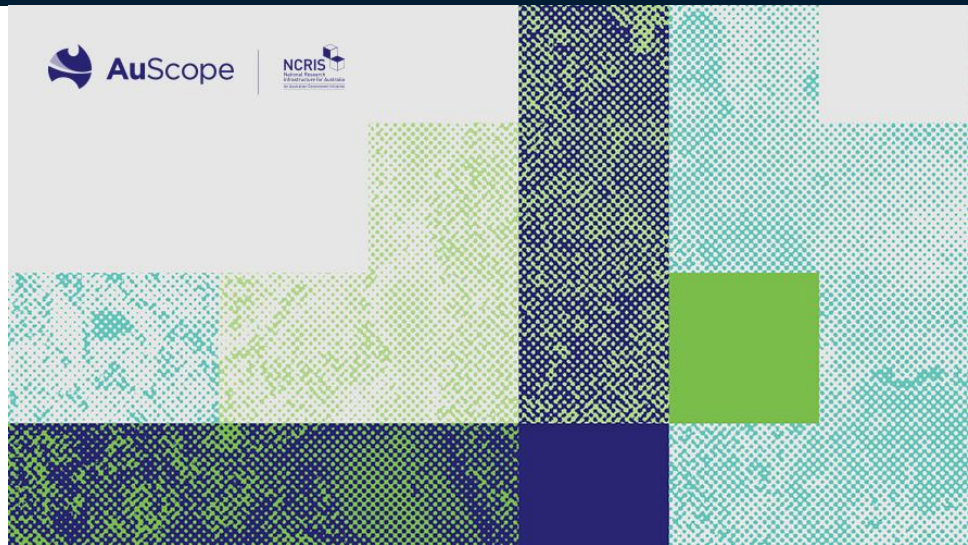
Australia's National Science Agency

AuScope Virtual Research Environment Build Program. Retrospective.

Golodoniuc P., Fazio V., Motevalli B. S., Taherifar N., Li Y., Klump J., Bradley S., and Devaraju A.



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I would like to begin by acknowledging the Turrbal and Yuggera peoples as the Traditional Owners of the land on which we're meeting today and paying my respects to their Elders, past and present.

'Eternal Wisdom, Infinite Innovation'
artwork by Rachael Sarra, working with Gilimbaa.

AuScope Virtual Research Environment

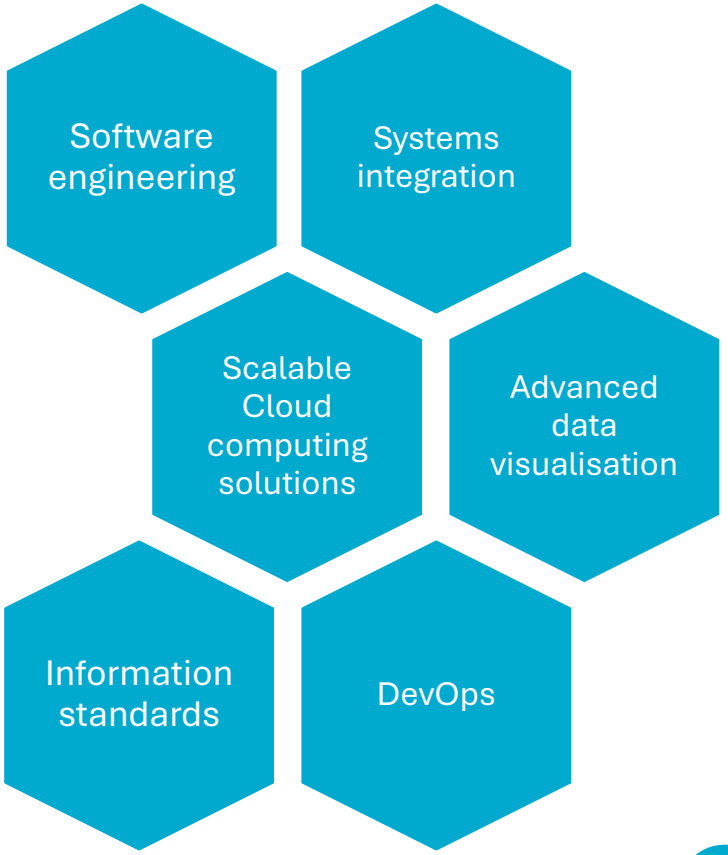
- The AuScope Virtual Research Environment (AVRE) provides a unifying technological platform for AuScope Programs' data and analytical needs.

- AVRE's role is to ensure that other AuScope Program components can find and deliver data and analytics following the FAIR (Findable, Accessible, Interoperable, Reusable) principles.

- Increase uptake of data-driven research through outreach and embedding engineers within specific AuScope Programs that aid in data delivery and data analytical enrichment activities.

AVRE Build Program

- Launched in 2020
- Aimed at:
  - Increasing collaboration between research institutions
  - Bridging the gap between geoscientific research needs and technology capabilities
- Collaborated with 6 organisations
- Delivered 10 projects



Our Approach

Problem definition

Early vision of the solution

User-centred design

Iterations with direct user involvement

Relationship with users

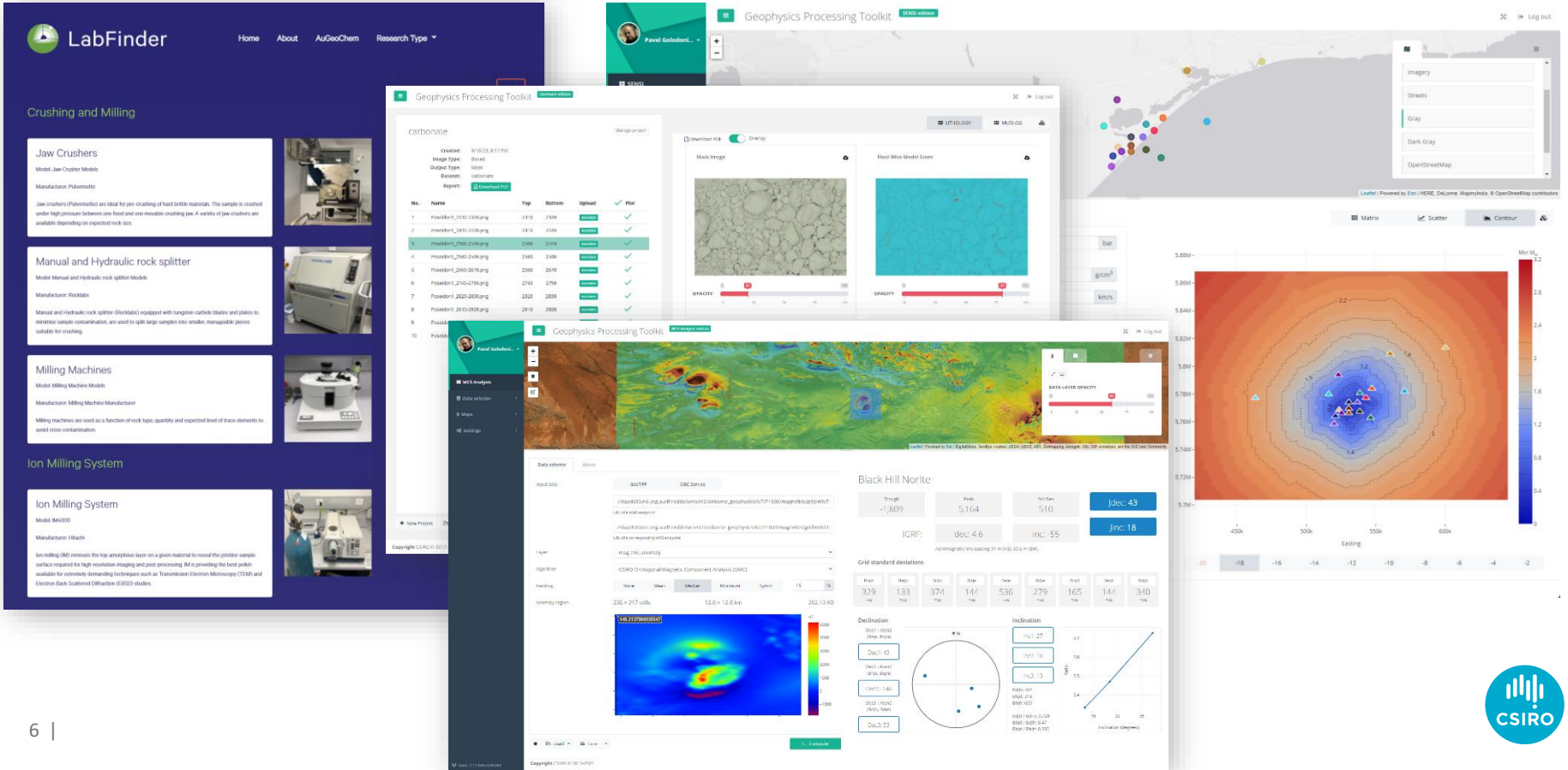
Product management

Discipline

User ownership

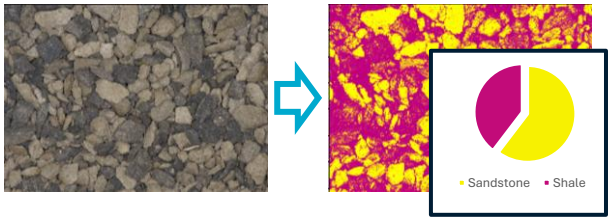
Celebration of success

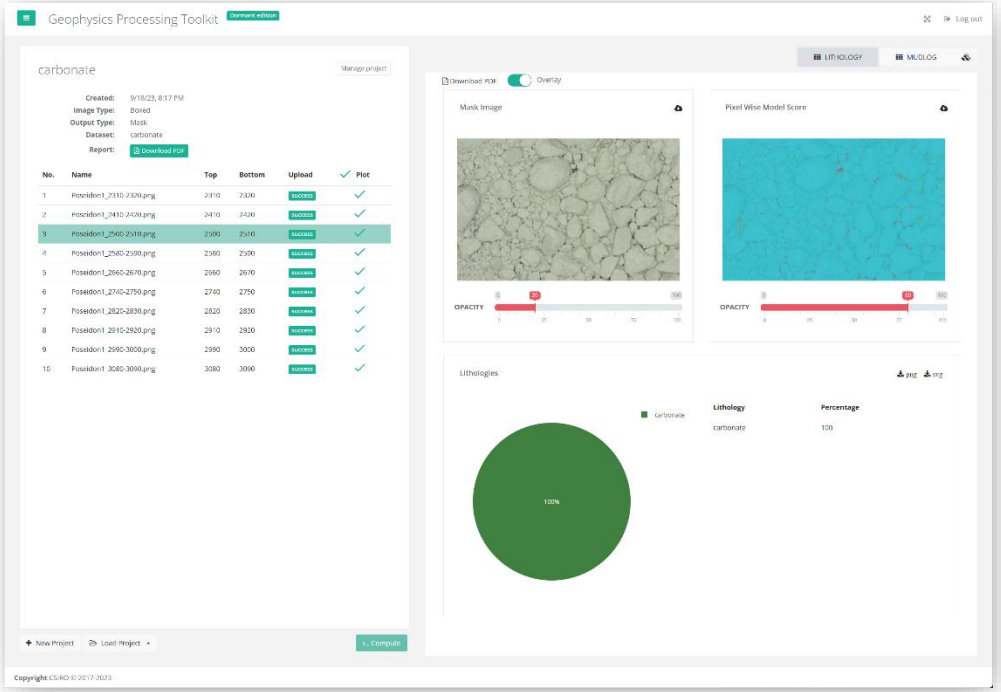
Multitude and Broad Spectrum of Projects



ML-based classification of drill cuttings

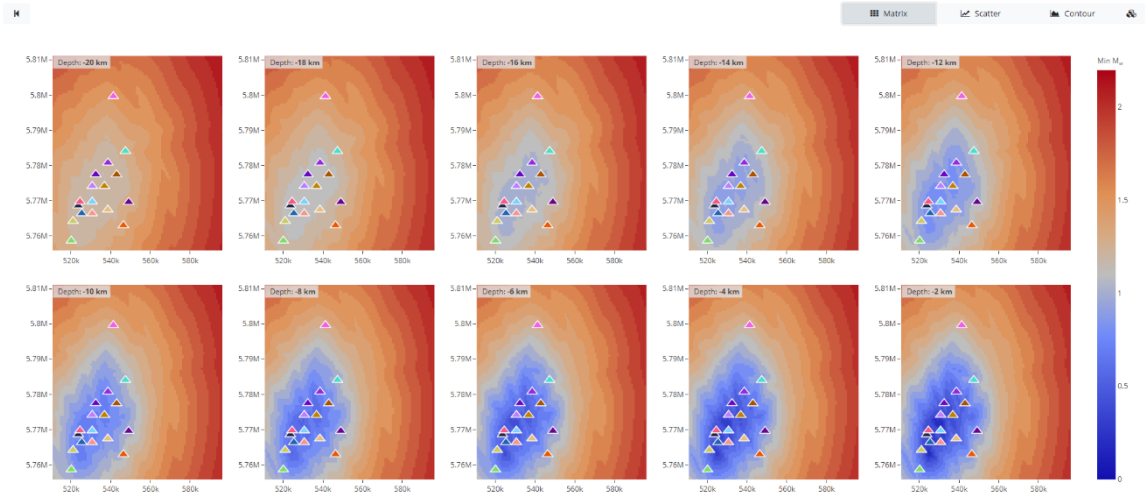
- Facilitated deeper subsurface insights significant for advancing renewable energy projects and critical minerals exploration
- Integration with the AuScope National Virtual Core Library (NVCL) and reuse of the HyLogger™ imagery data
- Efficient lithology classification techniques at scale
- In collaboration with CSIRO and the Geological Survey of Western Australia
- Core concept:





Interactive Seismic Network Modelling Tool

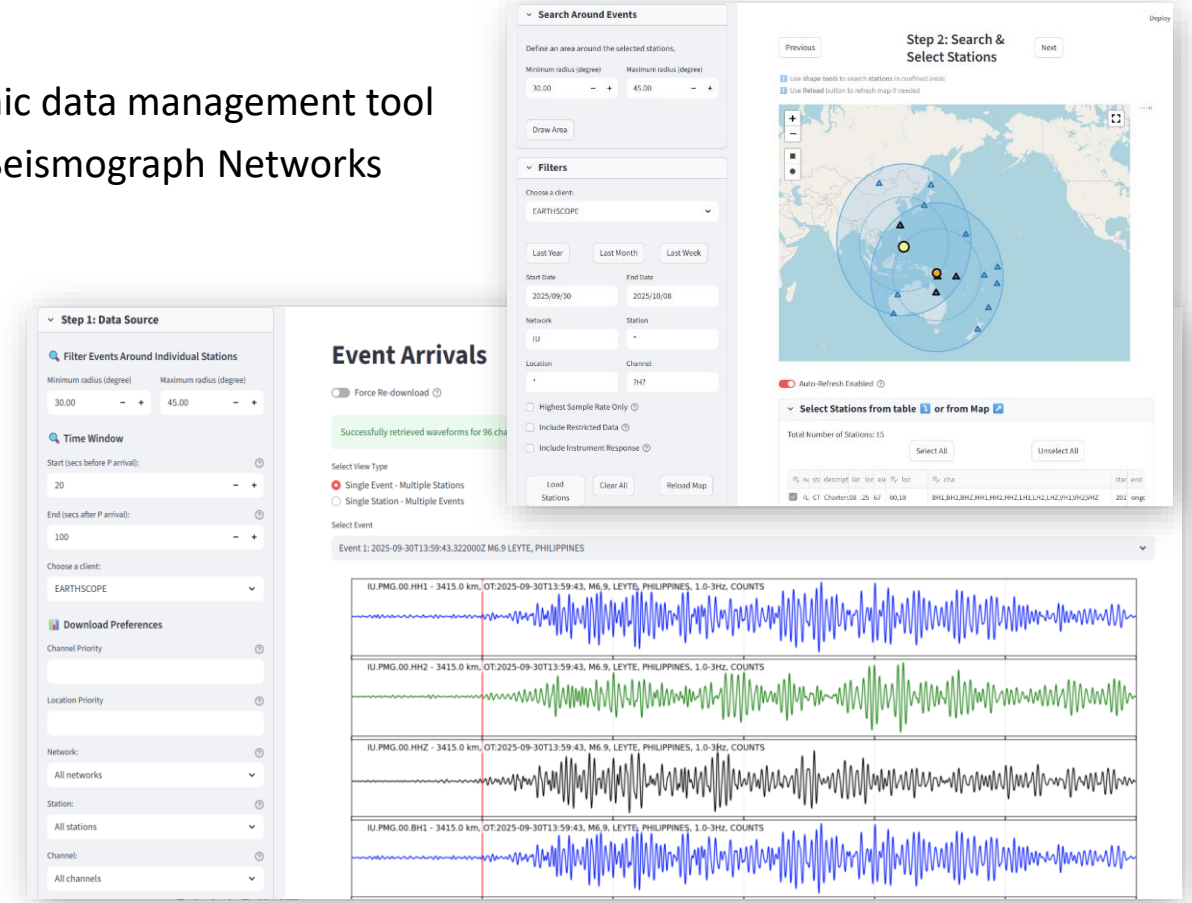
- Leveraged existing SENSI modelling algorithms and the Geophysical Processing Toolkit
- Cloud integration
- Parallelisation and scalability
- Interactive visualisation capability
- Human-computer interaction



SEED-Vault

- A cross-platform, open-source seismic data management tool
- Leverages the Federation of Digital Seismograph Networks (FDSN)
- Built on open-source libraries for seismic data processing
- GUI and a command-line interface
- Collaborative project with ANU

- **See Poster #1** in the poster hall!



The Legacy

- Despite being envisaged as a kick-starter program, many projects are still alive and well
- Many projects evolved from an AVRE Build produced MVP to full-fledged projects
- CSIRO's Exploration Toolkit (XT) team adopted the process of collaborative project engagement via involvement in the AVRE Build project activities

Learnings

- Improved co-design process
- Direct researcher/user early engagement in the rapid and iterative development process:
  - Research, develop, present, test, break, iterate…
- Long-term sustainability challenges and opportunities
  - Management of technical debt
- Early planning and management of the MVP transition into the researchers' custodianship
- Community uptake

Evolution of Build

- Outward to Inward facing program:
  - Shift in strategic priorities from external collaboration to internal priorities and serving the already vast AuScope research community

- What's on the horizon:
  - Catalogue technology development
  - AuScope Instrument Register (using PIDINST)
  - AuScope Projects Register (using RAID)
  - Natural Language Query search interface
  - Improved user statistics and product analytics

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Thank you!

Dr Pavel Golodoniuc
CSIRO, Mineral Resources
pavel.golodoniuc@csiro.au

Presented by
Dr Jens Klump
CSIRO, Mineral Resources
jens.klump@csiro.au