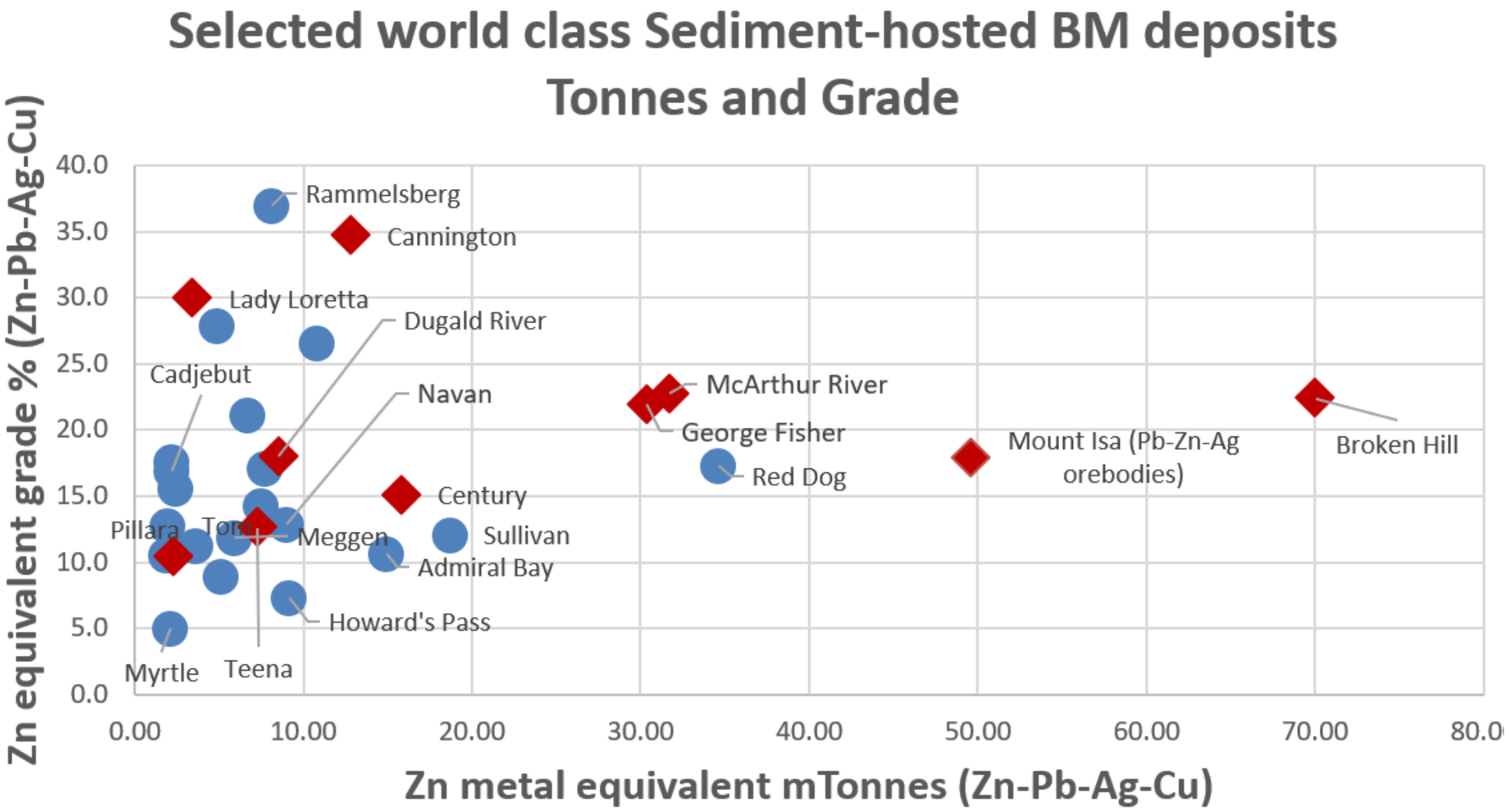
Northwest Mineral Province New Discovery Program

Rick Valenta – 5 December

Acknowledgements:
- *Vladimir Lisitsin, Tony Knight, and entire GSQ Team*
- *Collaborating researchers*
- *Industry contributors*

A World Class Mineral Province

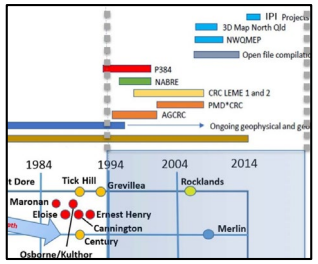


Current State

Mines Maturing

Time Frame

Economics



Lack of Exploration Success

Strong base of study

Untried approaches needed

Discovery Challenges

Cover

Deep/blind targets

Declining Technical Resources

Budgets

Technical support

Increased Junior Presence

Time frames

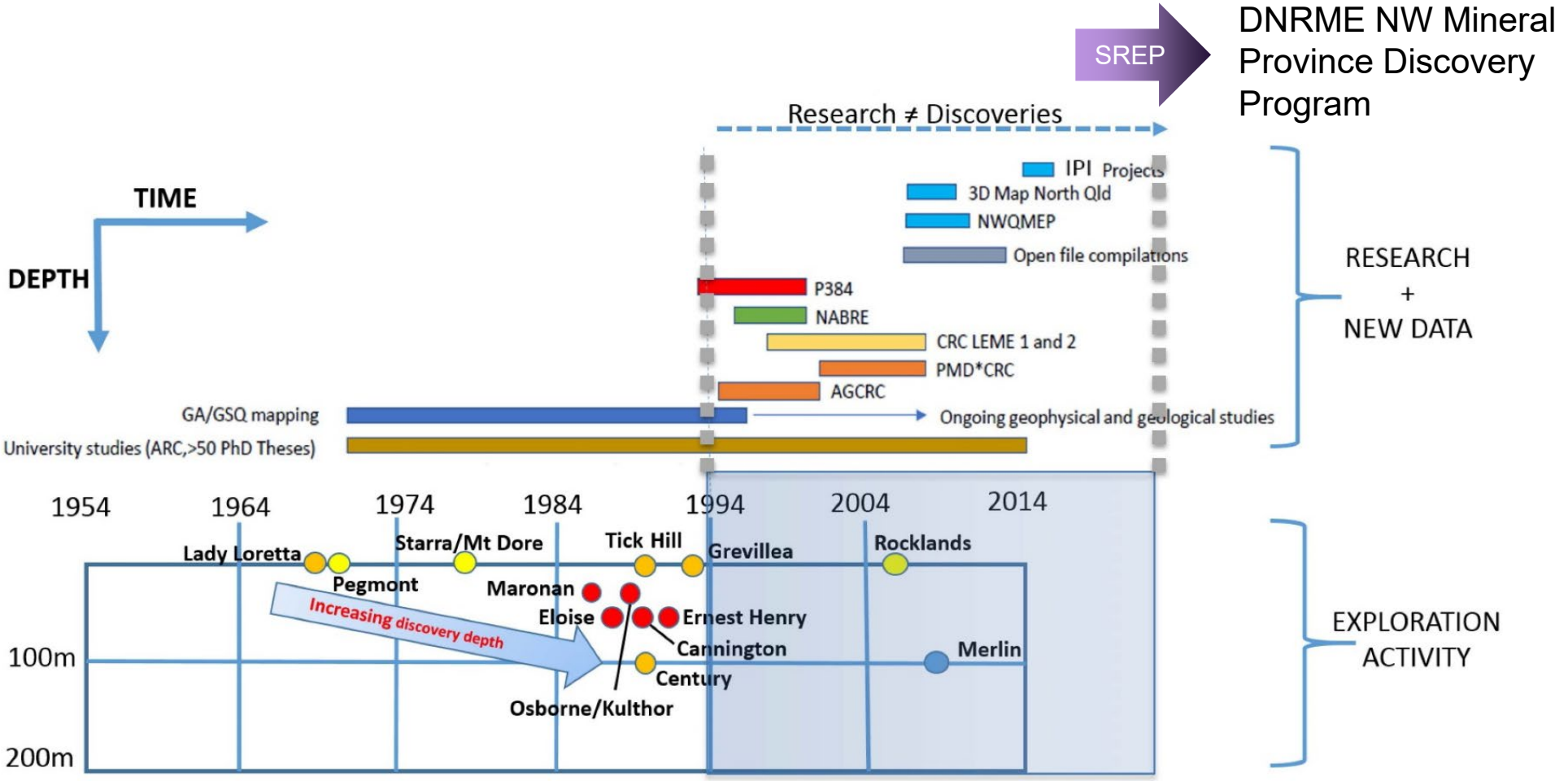
Promotion

Increased Responsibility

Access

Social/environmental

Recent history – discoveries and studies



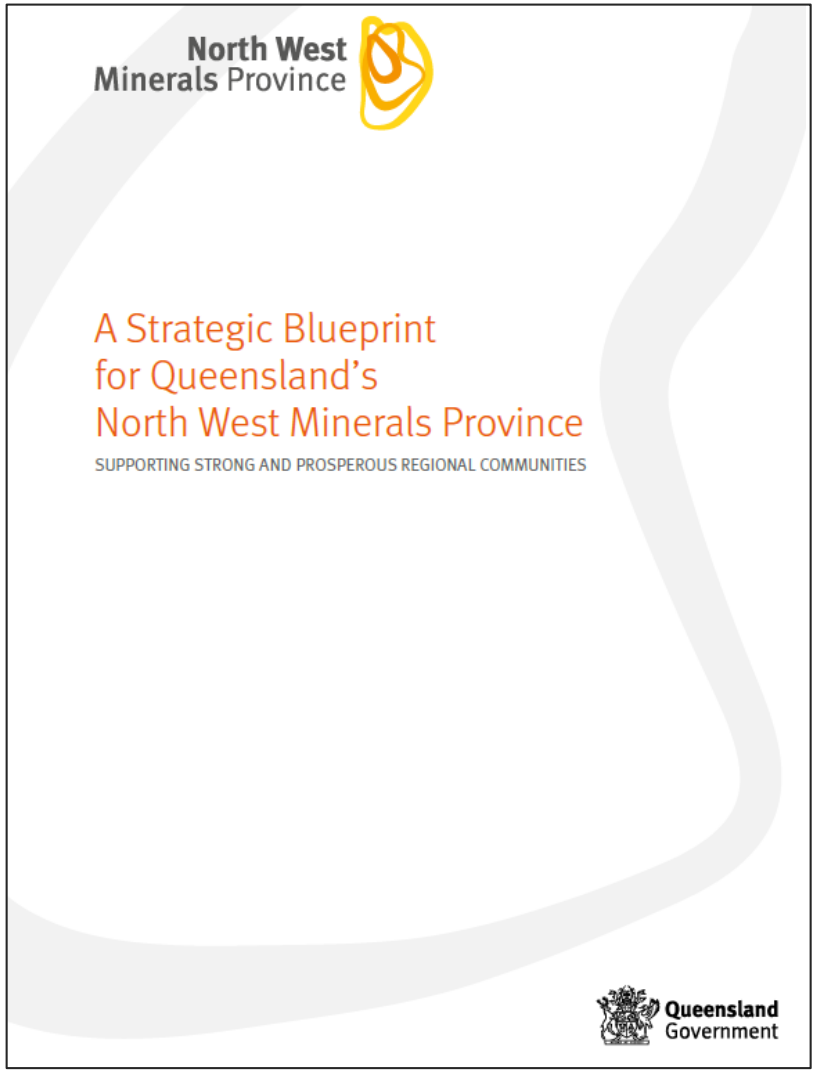
Observations

- Major studies did not lead to exploration success – why?
  - Nothing left to be found?
  - Exodus of majors?
  - Insuffient link to exploration outcomes?
  - Inappropriate scale?
  - Lack of industry takeup?
  - Other factors (eg moratorium, company strategies,…)
- Hard to make a compelling case for another set of similar studies
- Can we make better use of what has been done already?

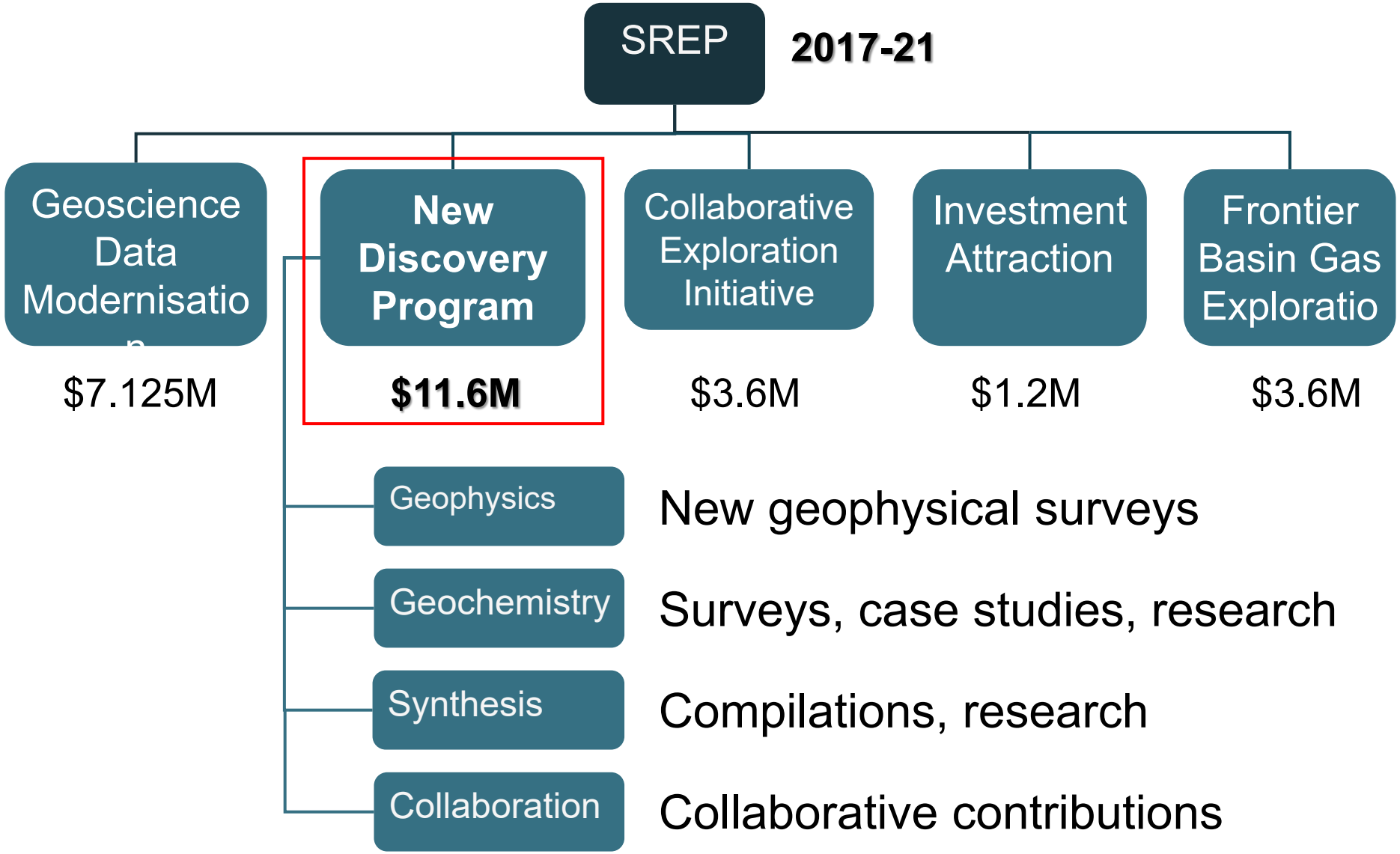
QLD Government response in NW QLD

Deliver minerals and natural gas geoscience data systems and promote the region's investment potential:

- Improve pre-competitive geoscientific data
- Establish a Minerals Collaborative Exploration Program
- Develop new geological databases
- Initiate gas exploration in proximity to the Province
- Promote the investment potential of the Province



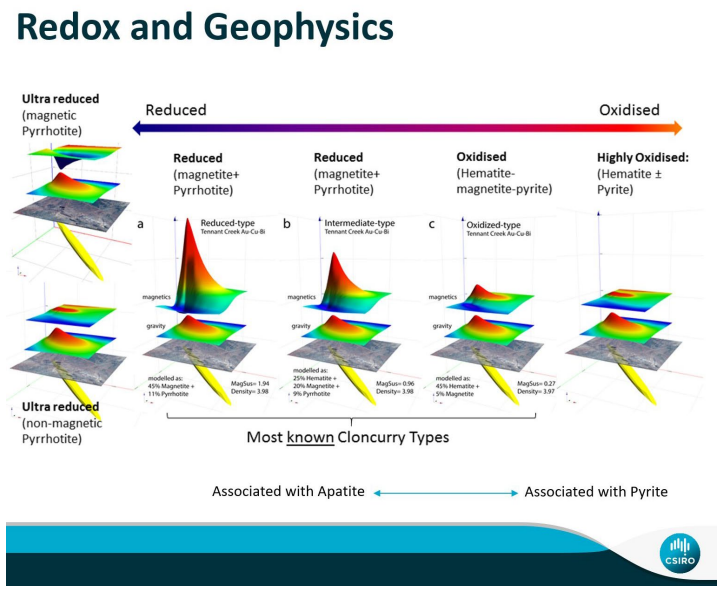
Strategic Resources Exploration Program



Potential Drivers for a step change

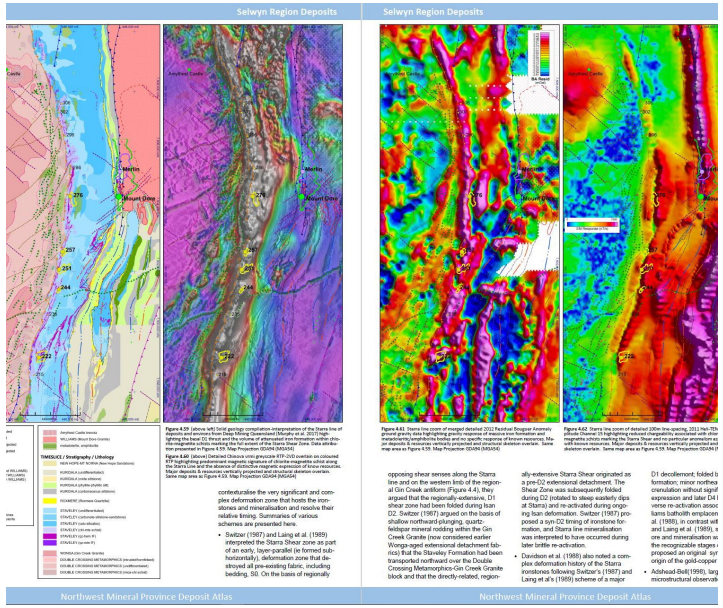
New understanding of mineral systems

- Process
- Empirical



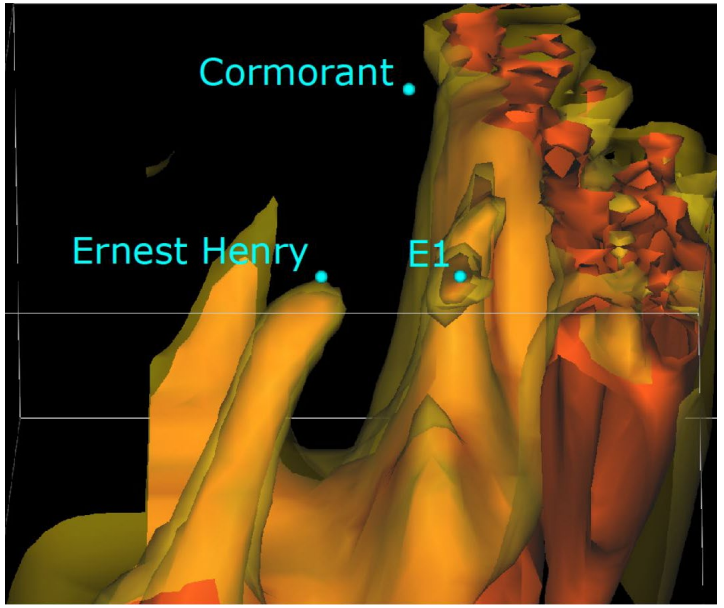
New datasets and geoscientific products

- Compilations
- Analysis

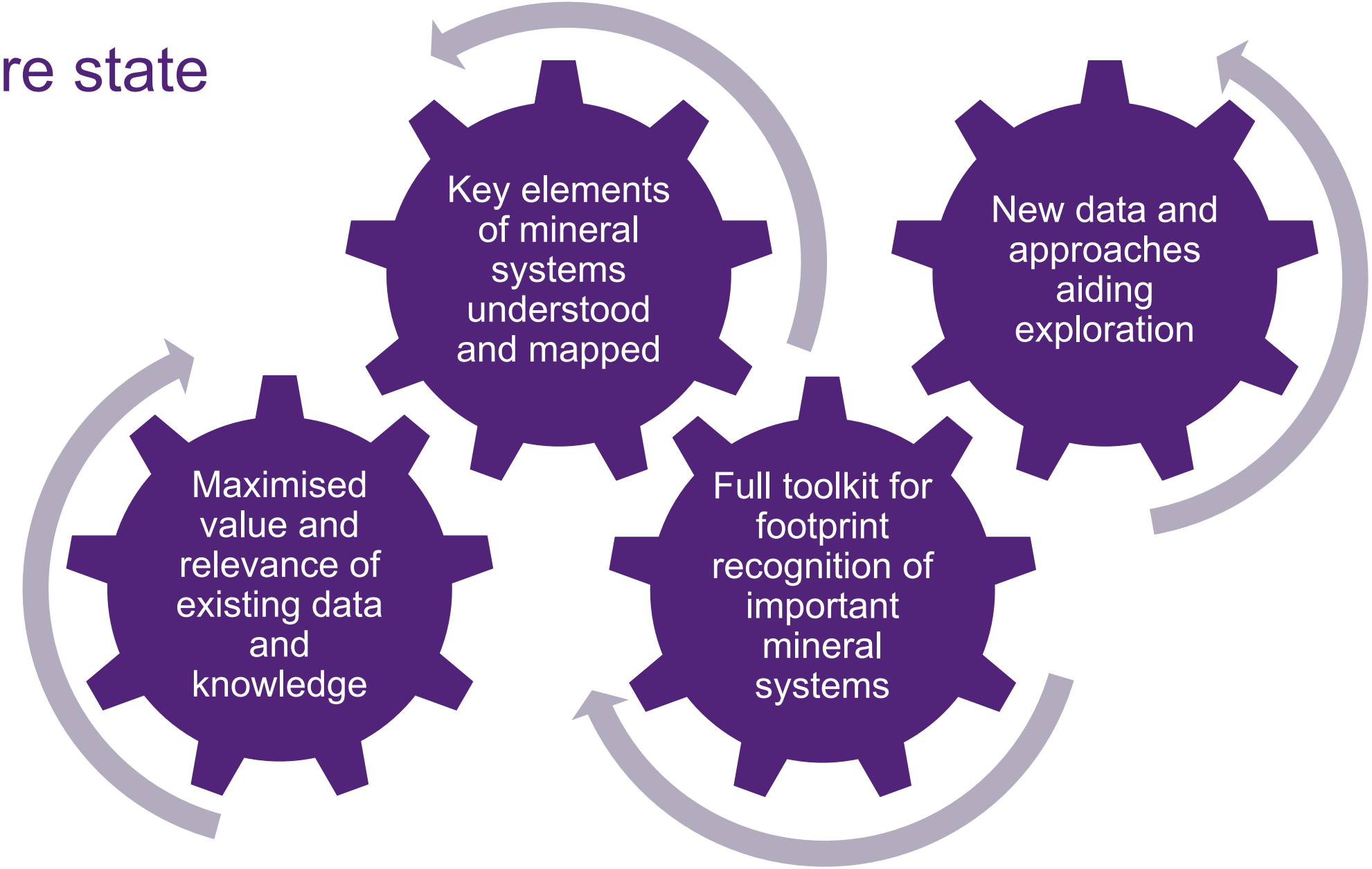


New search technology

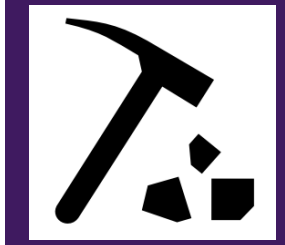
- Geophysics and geochemistry
- Data-driven exploration



Future state



Key Principles



Quality Geoscience

- Participation tailored to regional knowledge and appropriate skill set
- Best of Australian mineral exploration geoscience
- GSQ, Universities, GA, CSIRO

Collaboration with Industry and other initiatives

- Data sharing to maximise collective benefit
- Leverage funds to expand project (eg ARC Linkage)
- Financial support for exploration
- Maximise benefit from parallel initiatives – eg Exploring for the Future, Minex CRC

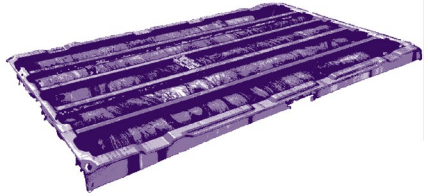
Targeted products to aid exploration

- Geoscience products of maximum usefulness to explorers
- 3D models; geoscientific data; exploration data; atlas of signatures; target rationales
- Consistency and simplicity of access
- Addressing immediate exploration and targeting needs

Project Portfolio

COMPILATION

Compilation



NWQ Reference Collection

TOOLKITS

Geochemical Toolkit

Mineral Deposit Atlas

MINERAL SYSTEMS

Mineral Chemistry Vectoring

Cloncurry Mineral System

Tick Hill Deposit

Geology MK Domain

Magma Fertility

Cobalt/HREE systems

NEW DATA

Cloncurry Nth Airborne

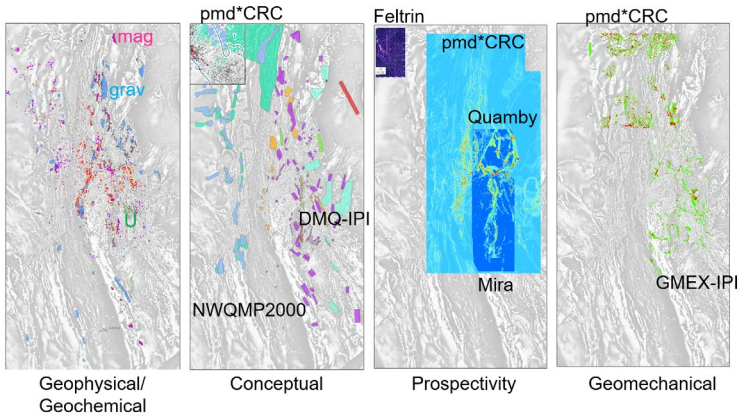
Central Isa Airborne

Hydrogeochemistry

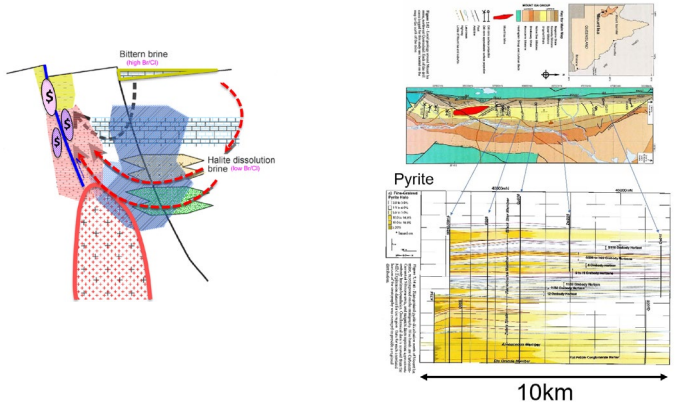
Data61/CSIRO pilot

Getting to the Future State – progress update

Comprehensive Compilation

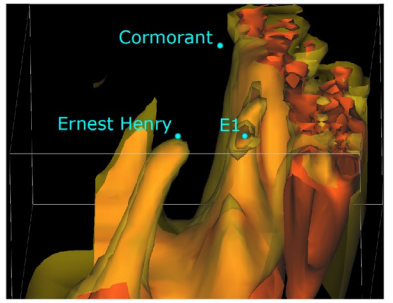


Mineral Systems Insight



Exploration Toolkits

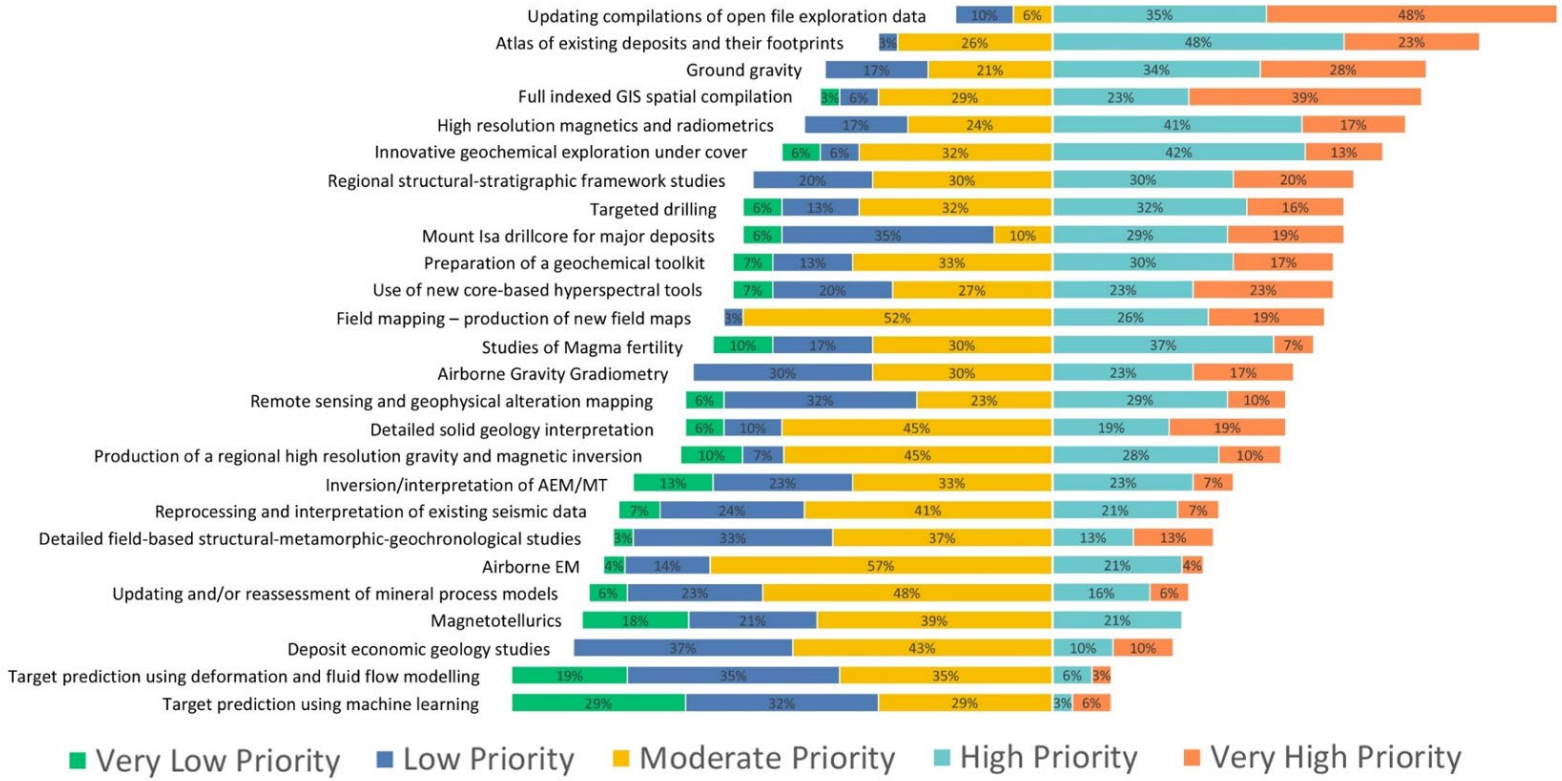
New Data and Interpretations



Feedback and Knowledge Transfer

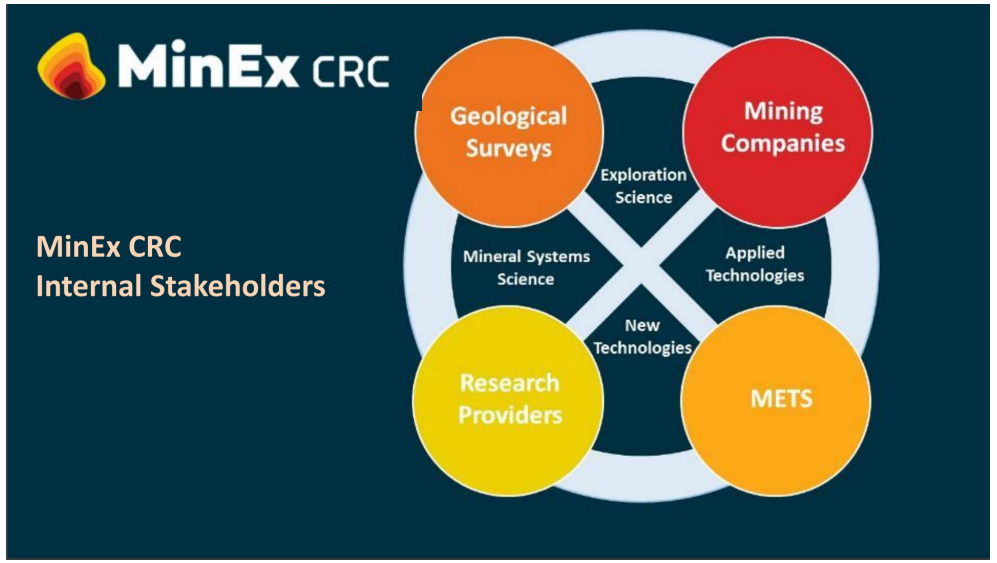
Survey of Industry - results

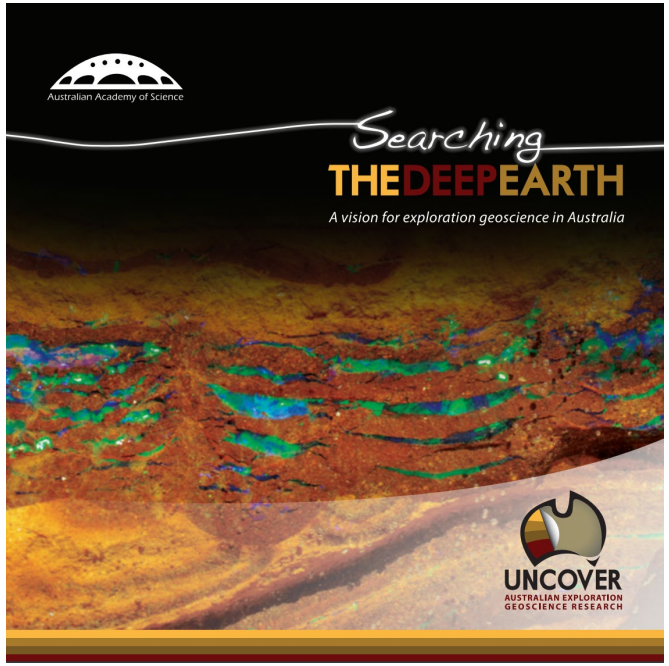
- Responses from a range of major and junior companies
- Roles covering range from MD/CEO to Project Geologist



- Industry Advisory Panel
- Regular industry and public consultation forums
- Knowledge transfer workshops

Integration with other initiatives





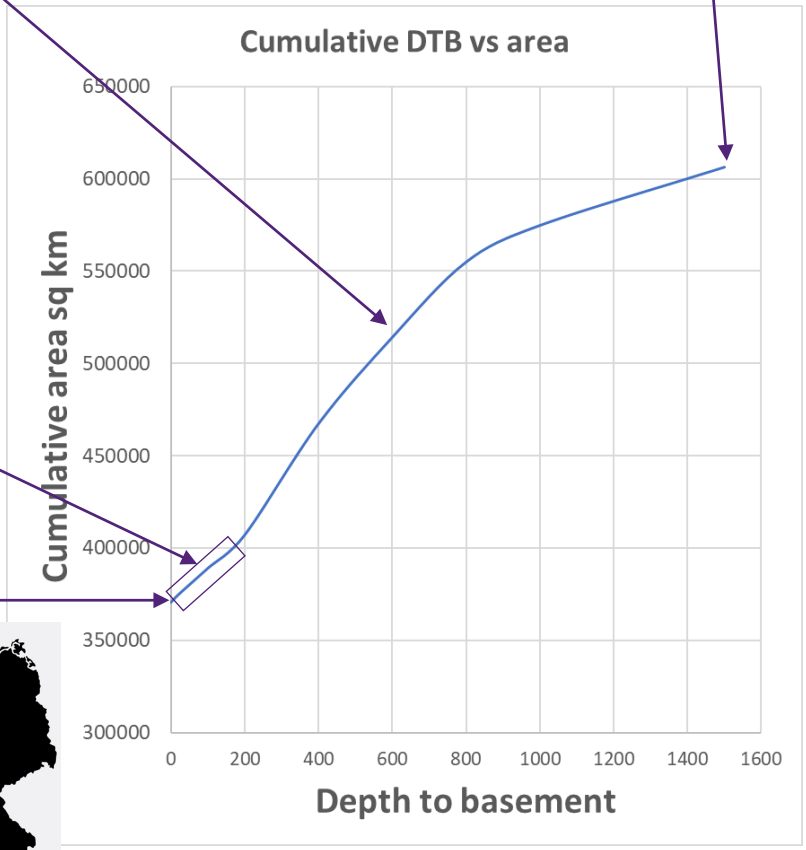
Success Scenarios – Challenge and Opportunity

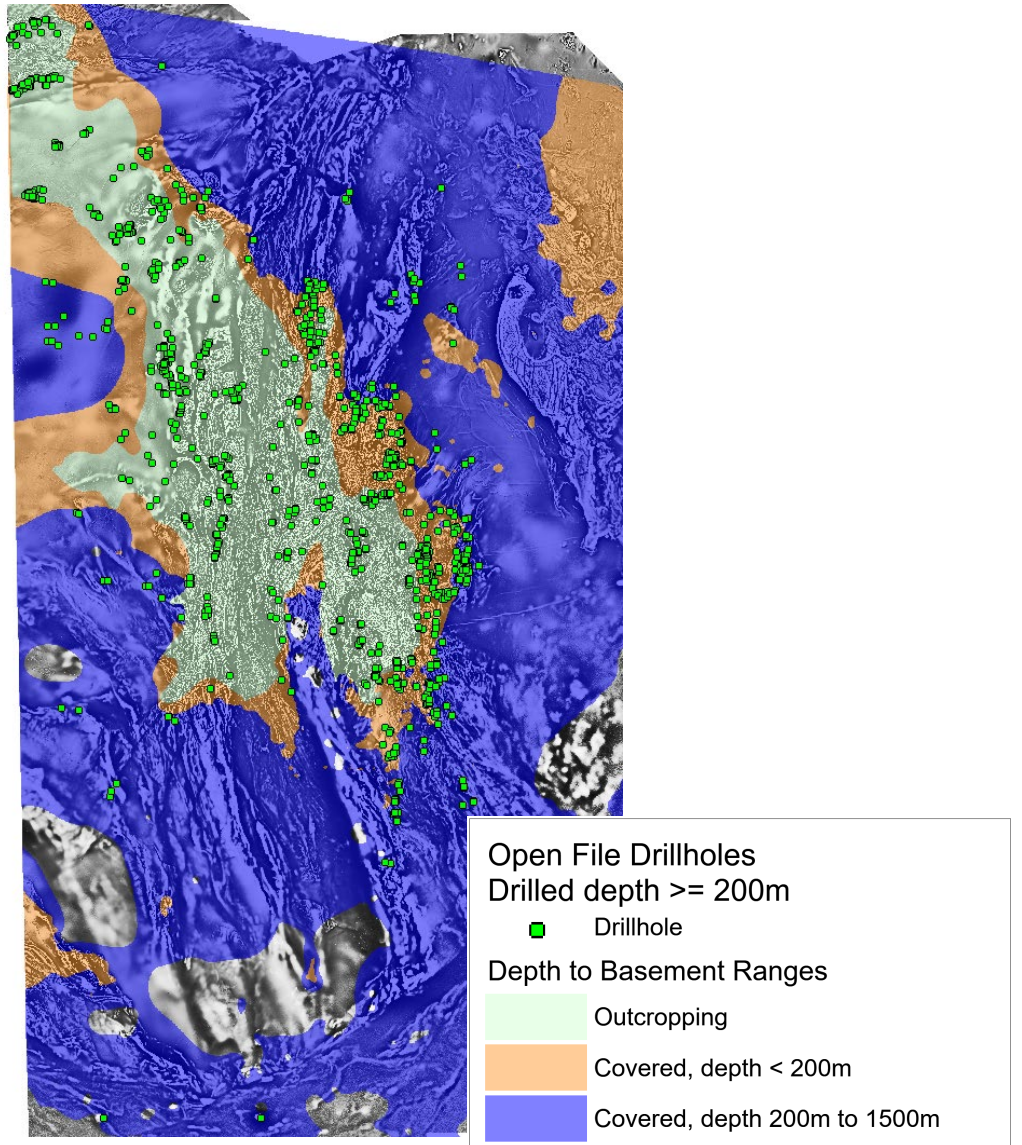
Deeply covered areas (217,400 sq km)

Areas under relatively thin cover (36,492 sq km)

Exposed and data-rich areas of the Mount Isa region (370,690 sq km)

Approx limit of mass underground mining





Success Scenarios – Outcropping Areas

In exposed and data-rich areas of the Mount Isa region:

Target

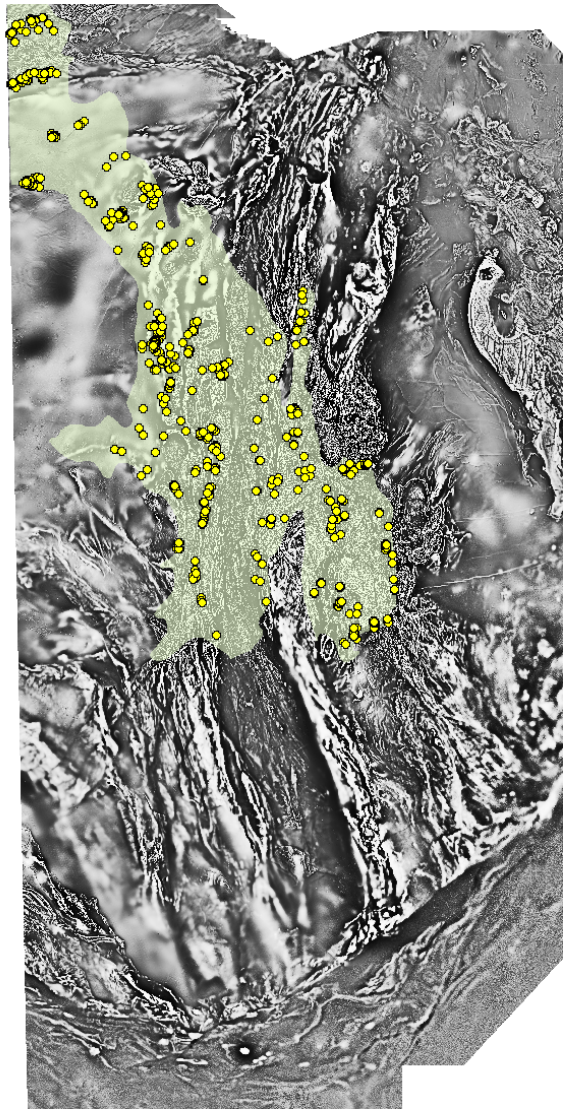
- previously unrecognised or under-appreciated (blind) target
- which turns into a major discovery

Search area

- 370,690 km^2
- 841 drillholes > 200m depth
- 0.33 drillholes per 100km^2
- 99.7% untested below 200m
- *Highest value known orebody is subhorizontal*

Tools

- Value-added interpretation of geoscientific datasets
- state-of-the-art data-driven exploration

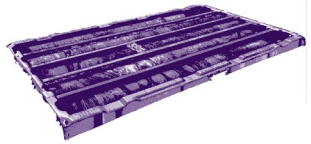


Compilation

Tick Hill Deposit

Cloncurry Nth Airborne

Central Isa Airborne



NWQ Reference Collection

Cloncurry Mineral System

Geochemical Toolkit

Mineral Chemistry Vectoring

Geology MK Domain

Magma Fertility

Cobalt/HREE systems

Mineral Deposit Atlas

Success Scenarios – Under Shallow Cover

In areas under relatively thin cover:

Target

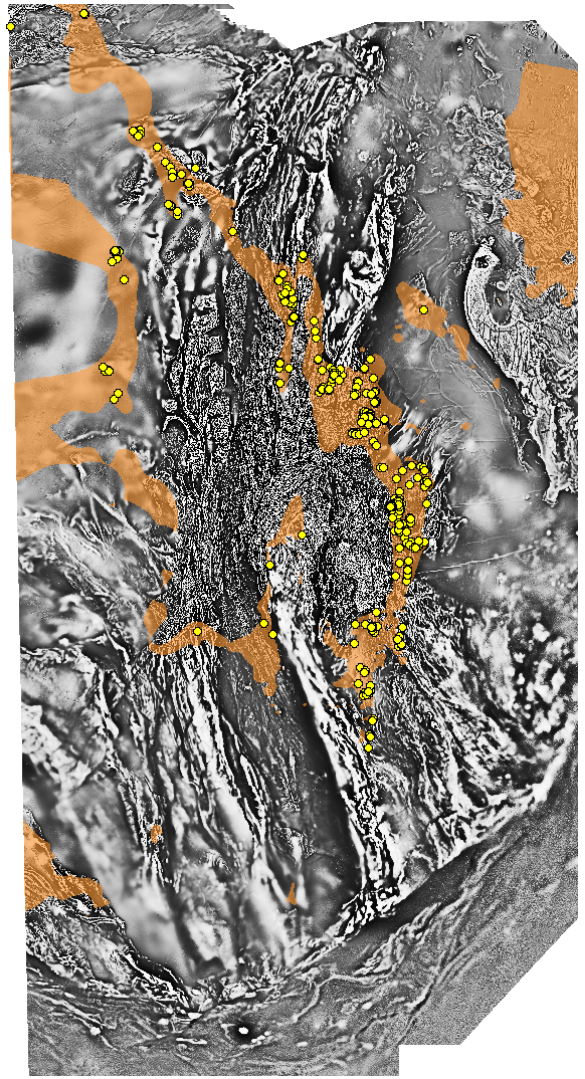
- New major discovery under shallow cover

Search area

- 36,492 km^2
- 360 drillholes
- 0.99 drillholes per 100km^2
- 98.1% untested*

Tools

- insights into key controlling features and halos
- new geophysical and deep-looking geochemical data



Cloncurry Mineral System

Cloncurry Nth Airborne

Mineral Chemistry Vectoring

Compilation

Geochemical Toolkit

Hydrogeochemistry

Mineral Deposit Atlas

Data61/CSIRO pilot

Success Scenarios – Under Deep Cover

In deeply covered areas:

Target

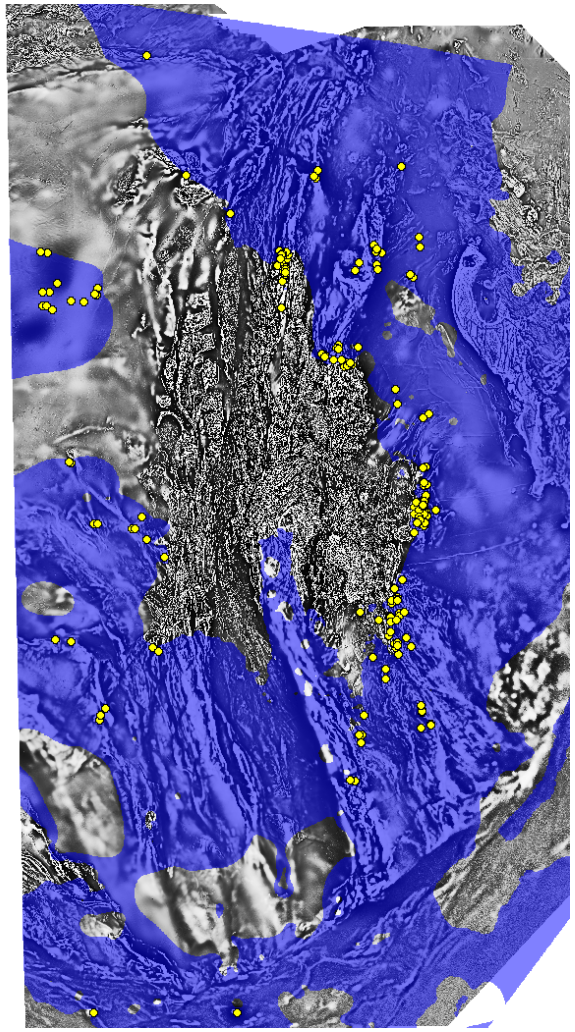
- major deep discovery

Search area

- 217,400 km^2
- 219 drillholes
- 0.23 drillholes per 100km^2
- 99.8% untested*

Tools

- New interpretations and 4D models
- Deep-looking geophysical datasets
- Knowledge of maximum deposit footprints
- Knowledge of buried target economics



Cloncurry Mineral System

Cloncurry Nth Airborne

Hydrogeochemistry

Mineral Chemistry Vectoring

Mineral Deposit Atlas

Compilation

Conclusions

- New Discovery program is now well under way
- Huge remaining potential in one of the world's greatest base metal provinces
- Portfolio of projects tailored to supporting exploration success in the region
- Strong emphasis on practical outcomes and Industry collaboration and takeup
- Ongoing communication and feedback vital to success

Thank you

Prof Rick Valenta | Director
WH Bryan Mining and Geology Research Centre
Sustainable Minerals Institute
r.valenta@uq.edu.au

www.smi.uq.edu.au

facebook.com/uqsmi

twitter.com/smi_uq

linkedin/school/sustainable-minerals-institute