

Strategic Resources Exploration Program

Queensland Exploration Council – Technical Forum

28 Feb 2018

Tony Knight - Chief Government Geologist

Geological Survey of Queensland

Celebrating 150

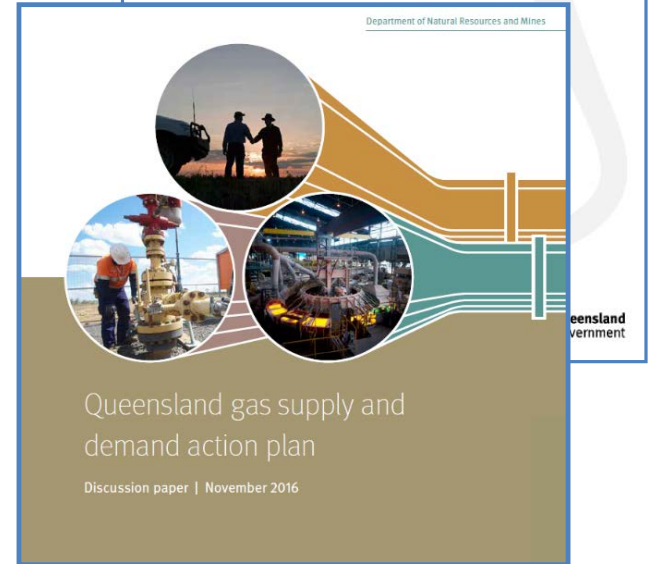
Exploring Queensland's Resources **Years**



Strategic resources exploration program

What is it?

- Application made in March 2017 to government to fund a four-year pre-competitive geoscience program.
- Justification for request based providing strong support to:
 - ***Northwest Minerals Province Strategic blueprint*** (public document)
 - ***Gas Supply and Demand Action Plan*** (not public)
- Granted **\$27.125M** over four years (FY17/18 – FY20/21)
 - **Geoscience** **\$20M**
 - **Geoscience data** **\$7.125M**



Strategic resources exploration program

How much?

Activity	2017/18	2018/19	2019/20	2020/21	Sub-total
	\$'000	\$'000	\$'000	\$'000	\$'000
Mineral geophysics	1150	1475	1250	400	4275
Mineral geochemistry	350	500	400	200	1450
Mineral synthesis	1250	1800	1500	400	4950
Uncover research	200	225	250	250	925
Collaborative exploration	0	1200	1800	600	3600
Investment attraction	300	300	300	300	1200
Frontier basin gas exploration	250	1500	1500	350	3600
Total Operating	3500	7000	7000	2500	20000
Geoscience data	2,595	3,545	435	550	7,125
Total Capital	2,595	3,545	435	550	7,125
Total program	6,095	10,545	7,435	3,050	27,125

Strategic Resources Exploration Program

Alignment with Queensland Exploration Strategy (not public)



•Key themes

- Thermal energy - gas, thermal coal, geothermal
- Renewable energy technology - raw material supply
- Emissions reduction - carbon capture and storage/use

•Government drivers

- Gas supply and demand action plan
- National climate resilience and adaptation strategy

•Key themes

- Primary prospectivity
- Secondary prospectivity
- Supply vs demand outlooks
- Resource protection

•Government drivers

- Northwest minerals province strategic blueprint
- National mineral exploration strategy

Energy transition

Resources scarcity

Exploration & investment challenge

Technology transformation

•Key themes

- Decline in new discoveries
- Decline in resource grade/quality
- Promotion & investment attraction

•Government drivers

- TIQ strategy
- COAG Energy Council - investment attraction plan

•Key themes

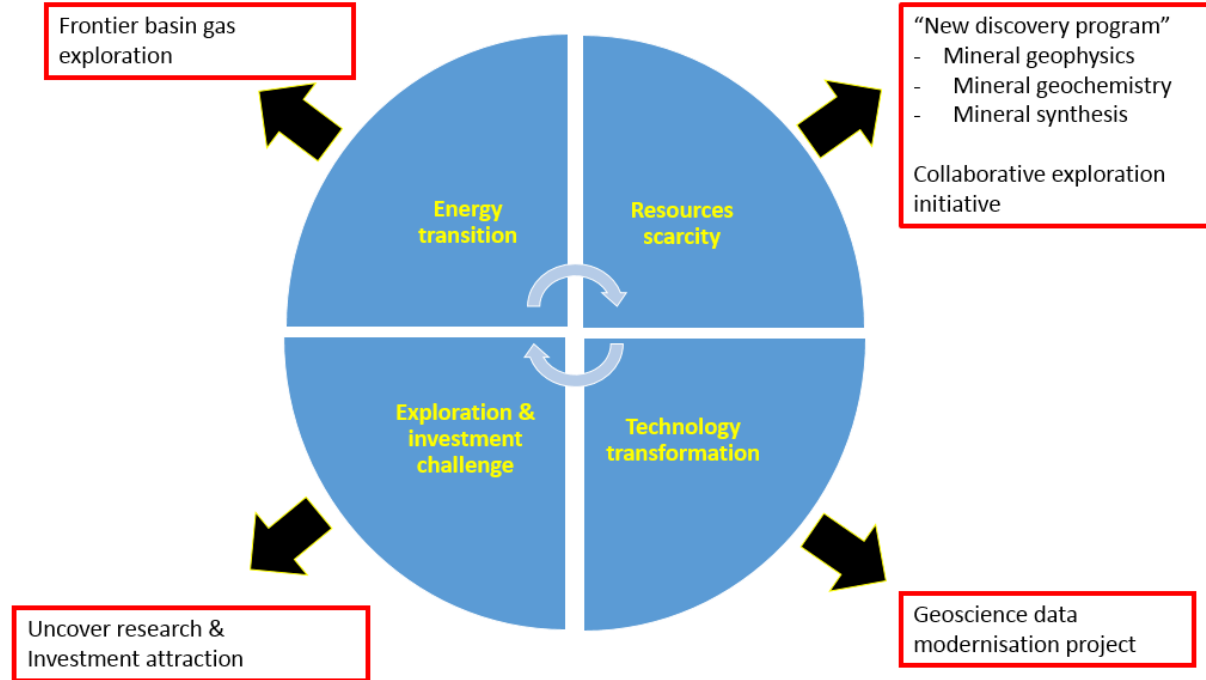
- Geoscience open-data
- Exploration technology

•Government drivers

- Qld Open data strategy
- Federal Resources data initiative

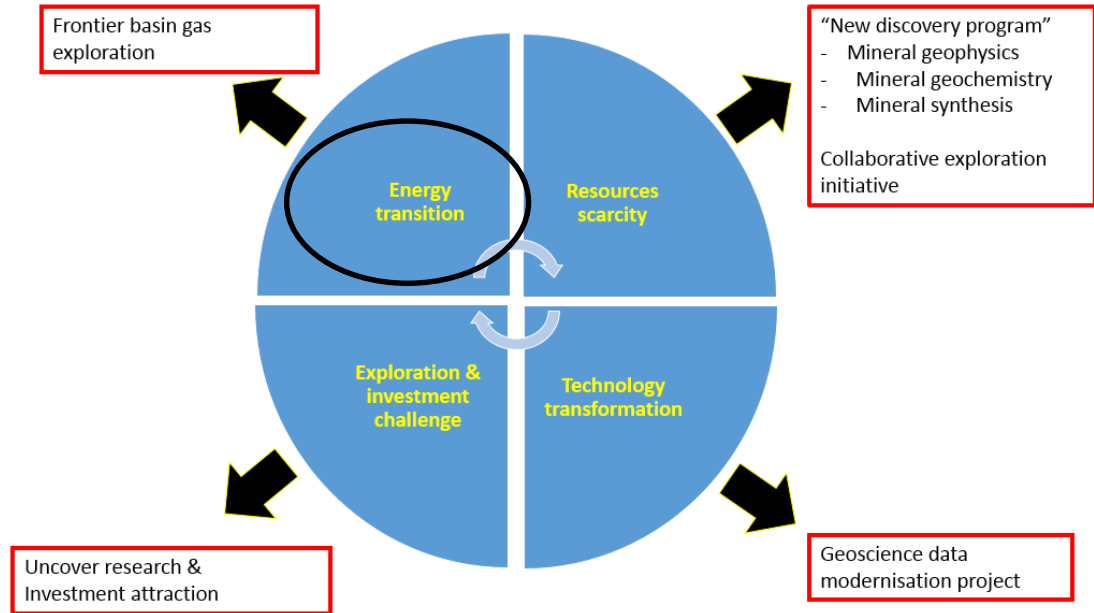
Strategic Resources Exploration Program

Alignment with Queensland Exploration Strategy (not public)

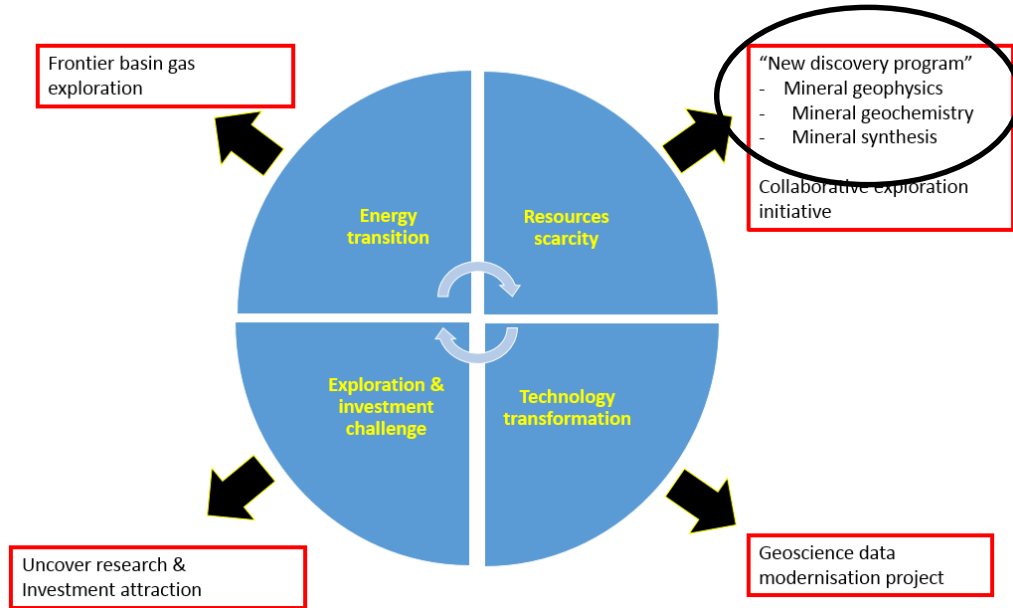


Good alignment between SREP and GSQ Exploration Strategy

- Targetting frontier basins in NW of state:
 - South Nicholson
 - Isa Super
 - Georgina
- Uses petroleum systems approach
- FY17-18
 - SEEBASE update (basin architecture)
 - Completed
- FY18/19 – FY20/21
 - Major seismic program
 - In planning phase

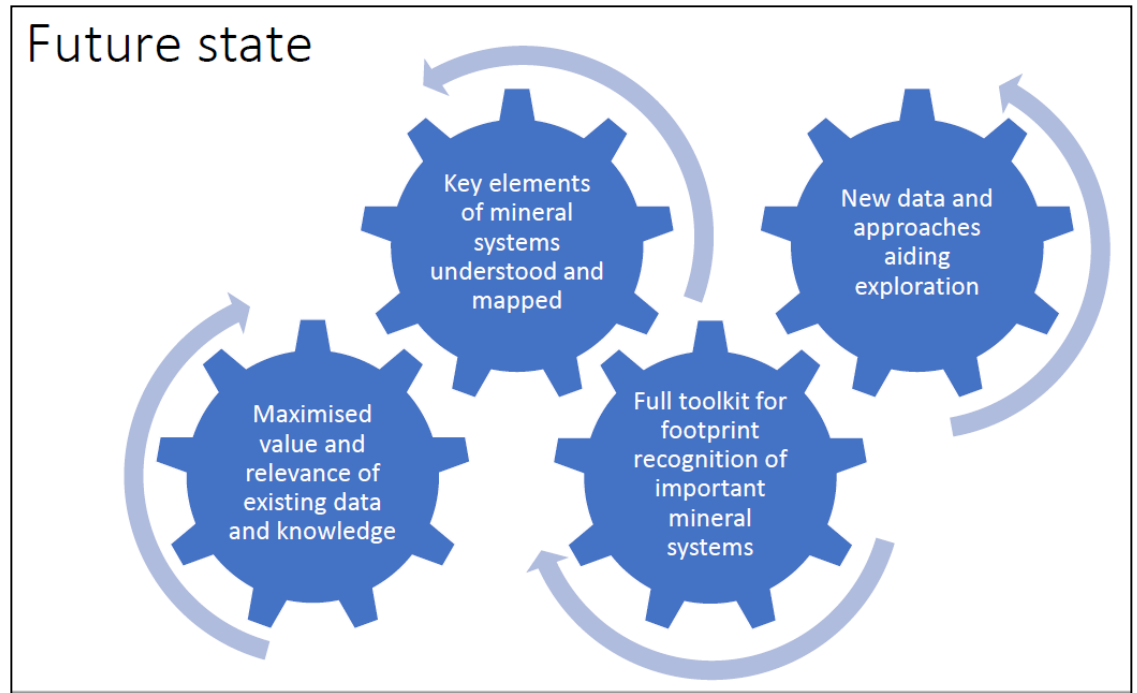
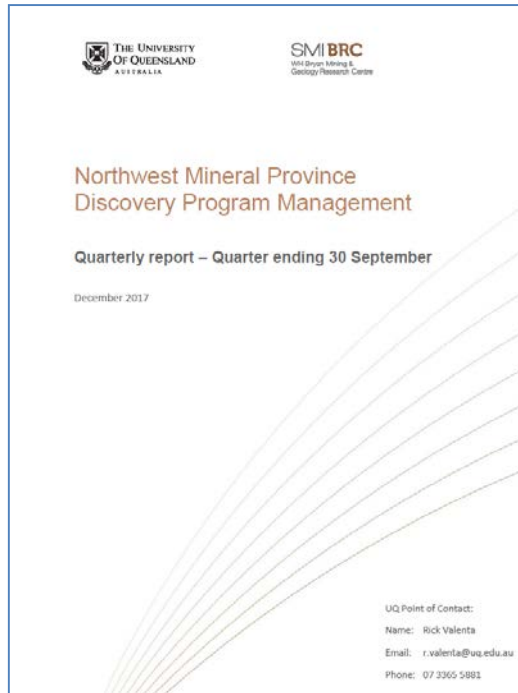


New Discovery Program

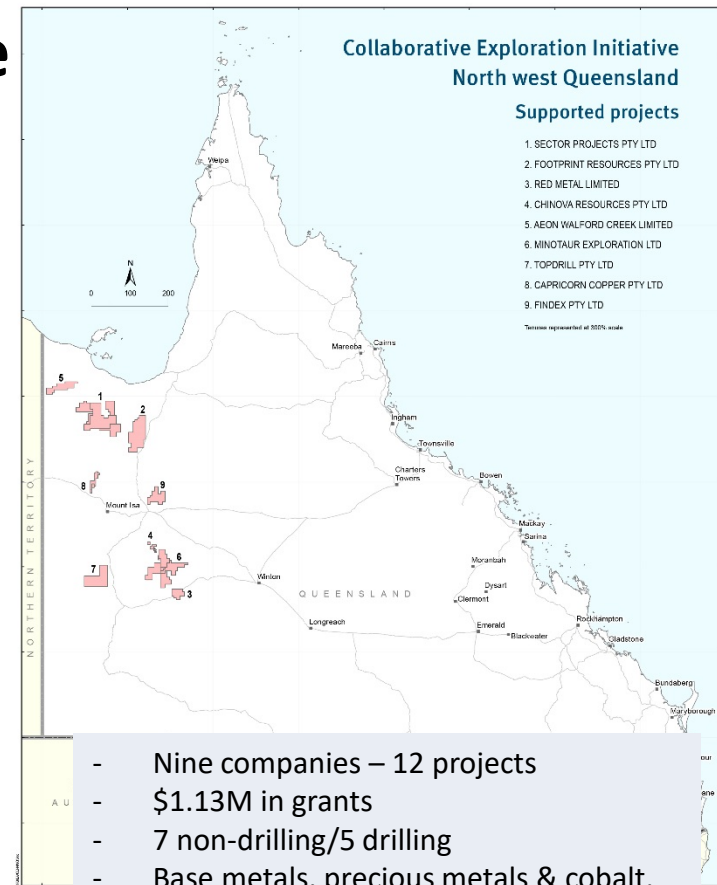
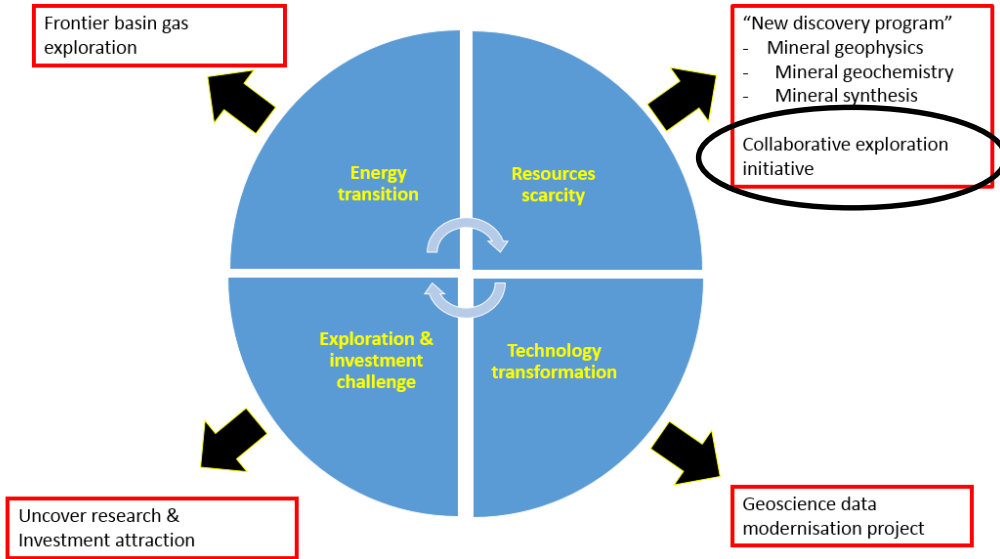


- Basic aims:
 - To provide an integrated understanding of the entire province – from deep earth to surface
 - Make best-use of existing data and knowledge
- Developed agreed set of “future state” objectives via industry engagement in Mt Isa (Aug 2017)
- Four year program
- Strategic lead – Prof. Rick Valenta (U.Q)
- Multiple projects underway
- Integrated with Cth “Exploring for the Future” program

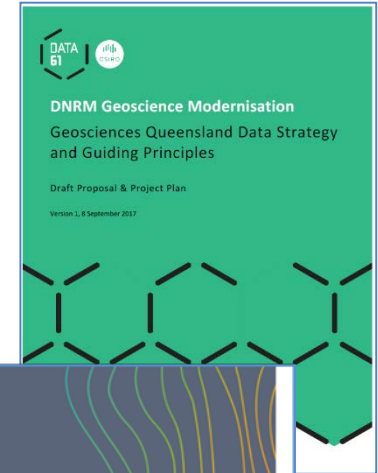
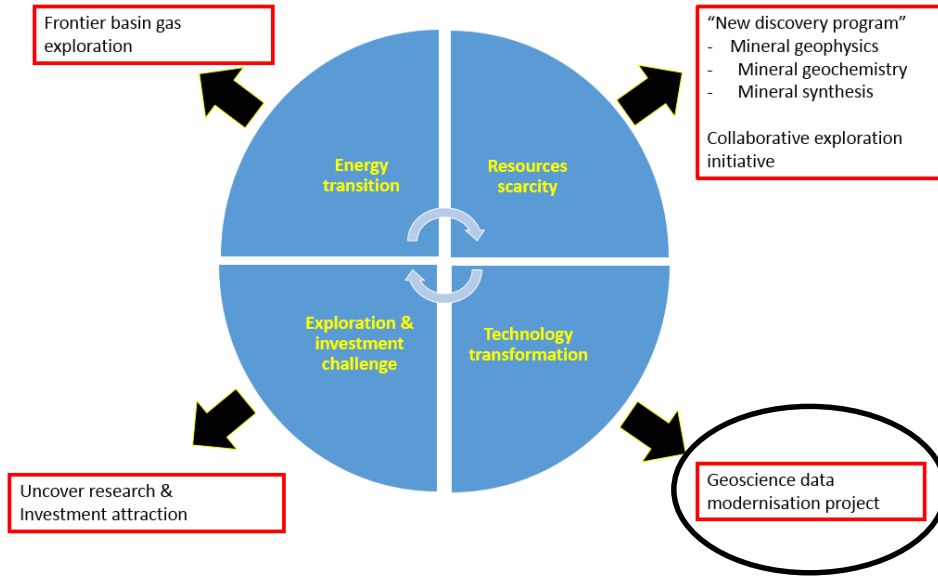
New Discovery Program (cont.)



Collaborative exploration initiative



Geoscience data modernisation program



Geological Survey of Queensland
Celebrating 150
Exploring Queensland's Resources Years

Industry forum: Data-driven exploration

Transforming resources exploration and appraisal in Queensland

The Geological Survey of Queensland is working with industry to transform our approach to exploration and appraisal in Queensland; towards a future where “data-driven exploration” enables industry success.

Date: 01/03/2018

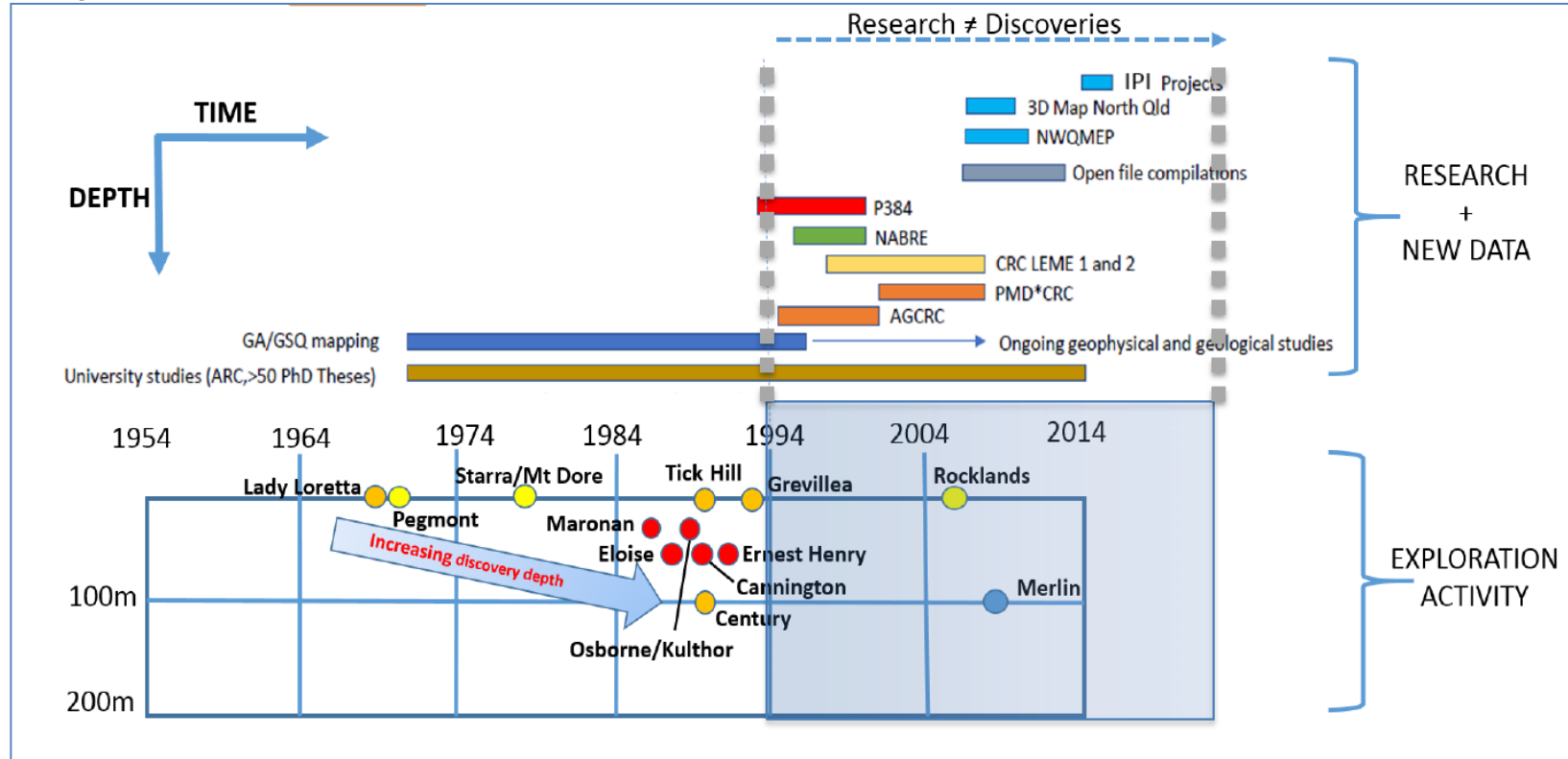
Time: 09:00 AM to 4:00 PM
(Registrations from 8.30am)

Venue: Grand Ballroom,
Marriott Hotel, 515 Queen
Street, Brisbane

To do that, we need to modernise Queensland's geoscience data ecosystem—our technology.

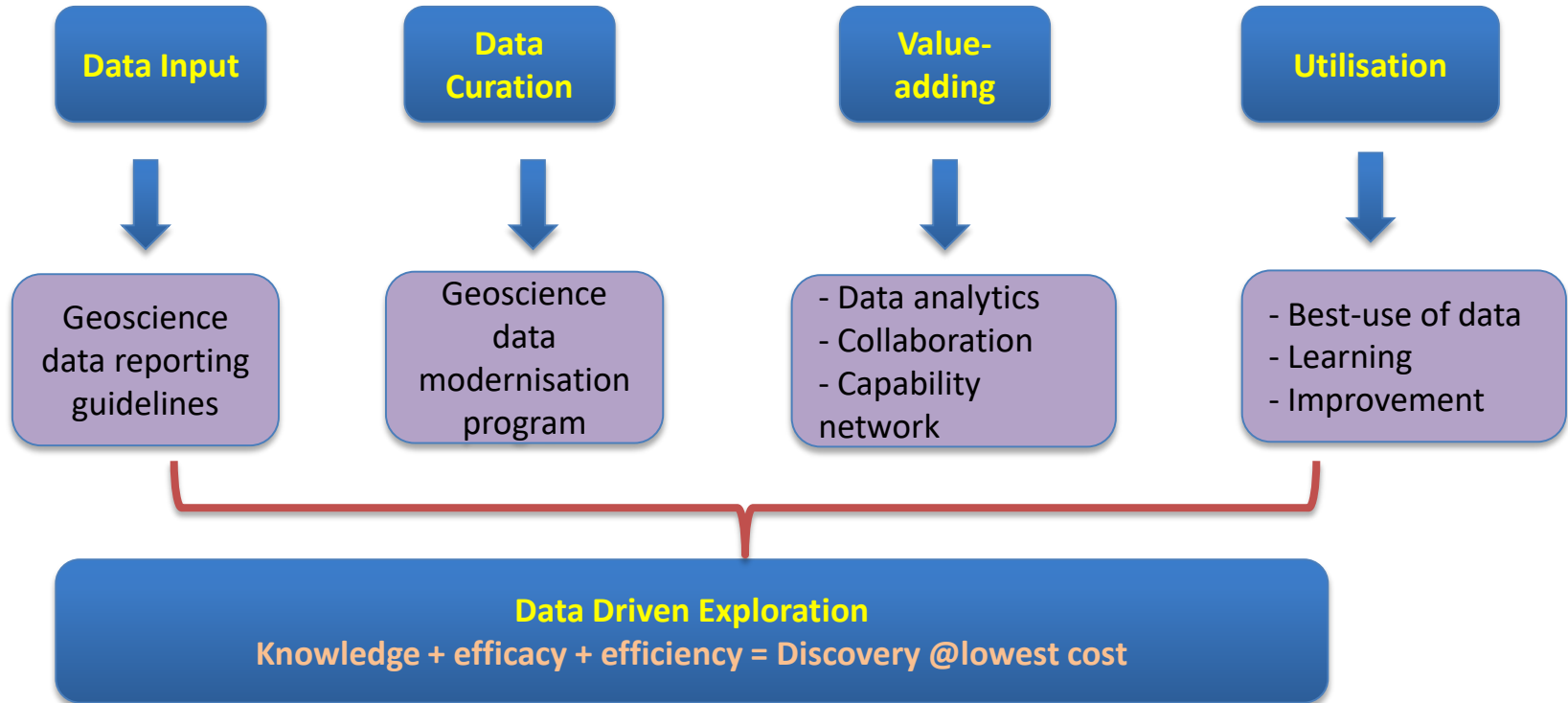
Geoscience data modernisation program

Why?



Geoscience data modernisation program

How?



Geoscience data modernisation program

Integration

➤ Queensland government policy directions

- Digital 1st strategy
- Open data policy and action plan

➤ National level geoscience platforms

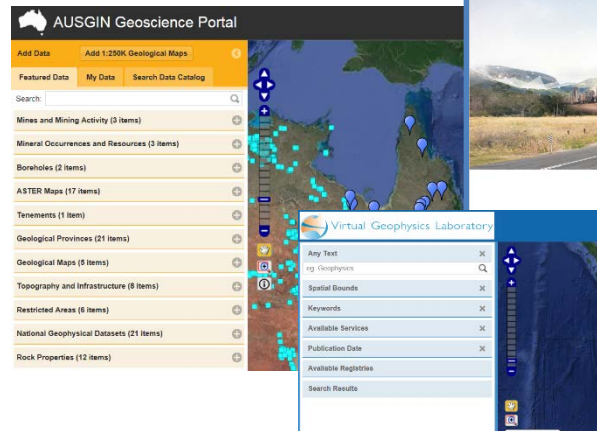
- AUSGIN geoscience portal
- National Virtual Core Library
- National Virtual Geophysics laboratory

➤ Capability network

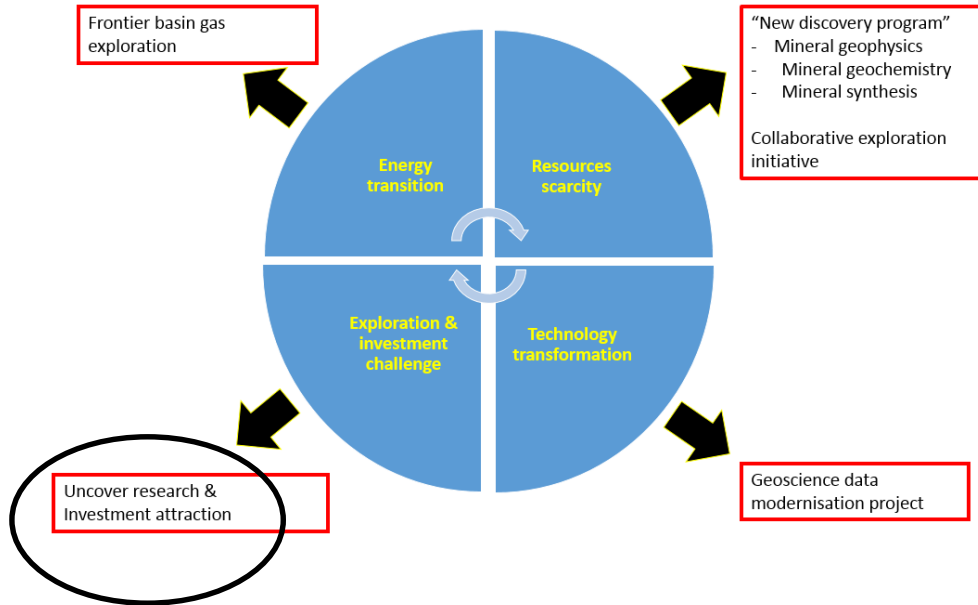
- CSIRO Data 61
- CSIRO Minerals
- Geoscience and exploration centres of expertise around Australia

➤ National support mechanisms

- NERA – collaborative projects
- NERA (& others) COREHUB initiative



Investment attraction



Opportunity promotion

Key messages for Queensland Resources Investment Strategy

The following key messages support the communication of various initiatives currently underway through the Queensland Resources Investment Strategy.

This document has been prepared for internal use only and aims to complement the communication framework that has been developed by Strategic Communication & Engagement.

Key messages

1

Key message 1: Investment attraction

Queensland is one of the world's leading destinations for mining and resources investment.

2

Key message 2: Minerals for energy

Queensland has the range of minerals needed to support the transition from thermal coal to renewable energy.

3

Key message 3: Minerals for industry

Queensland has a world-class minerals for industry sector, with the availability and potential for the sector unmatched anywhere in the world.

4

Key message 4: Minerals for technology

Queensland is well placed to supply the wide array of minerals essential for the manufacture of advanced and energy efficient technologies.

5

Key message 5: Capability

Queensland's strength lies not only in its rich deposits of minerals and energy, but also its experience, capability and professionalism in operating a world-class resource sector.

Investment attraction

➤ International

- Delivered via COAG Energy Council “Australia Minerals” program in Nth America & Asia
- Key events
 - PDAC (~25,000 attendees)
 - China Mining
 - Investment seminars
- Strong co-operation with TIQ & Austrade

➤ Domestic

- Investor Forum (in conjunction with QEC) Dec 6 2017
- AEGC – Sydney Feb 2018

Queensland
Resources and investment overview

Tony Knight
Chief Government Geologist
Geological Survey of Queensland
Tokyo-Australia Investment Seminar
26 September 2017

Why Queensland?

#1 - World class mineral and energy provinces

#2 - Established operating and infrastructure networks

#3 - Ability to help meet future supply and demand needs

➤ “Minerals for technology”
➤ Advanced exploration and discovery programs
➤ Government support to fast-track new discoveries

➤ 2017 Fraser Institute report
➤ - 4th in world for Mineral Potential
➤ - 10th in world for Investment Attractiveness

AUSTRALIA MINERALS

Fraser Institute Annual SURVEY OF MINING COMPANIES 2016



PDAC 2018
International Convention, Trade Show & Investors Exchange
March 6 - 7, Melbourne Convention Centre, Toronto, Canada

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Land of the giants: The mid-Proterozoic basins of northern Australia

Chair: Bill Gole, Independent, Burlington, Canada & Tony Knight, Brisbane, Australia

Geological framework and evolution of the Carpentaria zinc belt: A world-class zinc province

8:10 AM - 9:35 AM [add to calendar](#)

Queensland Resources INVESTOR FORUM

Uncover Research

➤ State (in support of New Discovery Program)

- Agreements in place with leading geoscience research providers around Australia:
 - Bryan Research Centre (U.Q)
 - Economic Geology Research Unit (James Cook)
 - Centre of Excellence in Ore Deposits (U.Tas)
 - CSIRO Minerals
 - CSIRO Data 61
 - University of Adelaide

➤ National

- Support to Co-operative Research Centres
 - Deep Exploration Technologies (existing)
 - Minerals Exploration (proposed)
 - Uncover initiative

www.csiro.au

DATA 61 CSIRO + CSIRO Mineral Resources

DRAFT North Western Mineral Provenance data-driven mineral exploration
Ref: CDR-001-000-NWMP-Analysis-v1

Opportunity & Approach

Geosciences Queensland (GSQ), as part of the Dept of Natural Resources & Mines, is undertaking a four-year Geosciences Modernisation program. This includes replacement of existing legacy hardware and software systems to enable transition to a new operating model. The new operating model to be defined, but could broadly be described as enabling data-driven exploration and development of resource opportunities in Queensland. As part of this strategy GSQ have indicated that they are interested in:

1. using probabilistic machine learning to generate new resource targets within the North Western Mineral Provenance (NWMP), and
2. in the longer term, develop new data products and collection workflows/strategies which are designed to rapidly improve these predictions within the NWMP and across the state.

By engaging with CSIRO's Data61 and Minerals teams, GSQ can draw on a deep pool of expertise in

DEEP EXPLORATION TECHNOLOGIES CRC
Uncovering the future

MinEx CRC
3D DRILLING

VALUE PROPOSITION FOR MINING COMPANIES AND INDUSTRY PARTNERS

MinEx CRC: 3D Drilling For Discovery And Definition Of Mineral Deposits
MinEx CRC will build on the technical success of the DTI CRC to address declining mineral discovery rates in Australia by utilizing 3D mineral target drilling.

FUNDING

\$330.5M*
*Cash contributions from industry partners
\$95M*
*From industry partners and Federal CRC programme

CAR exploration R&D

Mining Company cash and in-kind

Mining Company cash and in-kind

UNLOCKING AUSTRALIA'S HIDDEN POTENTIAL.

An industry roadmap.

AMIRA INTERNATIONAL

Creating value through collaboration

UNCOVER AUSTRALIA