GSQ’s New Discovery Program

Enabling data-driven exploration in the North-West Minerals Province

QEC Technical Forum
February 2019
Geological Survey of Queensland

• What is our purpose?
  • To enable ongoing success for the resources industry in Queensland

• Who are we?
  • Mineral Geoscience
  • Basin Studies
  • Geoscience Information
  • Industry Engagement
  • Resources Planning
The ‘bridge’ between academia and industry
The ‘bridge’ between academia and industry
The ‘bridge’ between academia and industry
The ‘bridge’ between academia and industry
Responsibilities

• **Support and embrace GSQ’s ongoing evolution**
  • Industry first
  • Geoscience Data Modernisation Program
  • Work collaboratively, support debate

• **Stay at the forefront of developments in geoscience and industry**
  • **Science** - new concepts and ideas
  • **Technologies** - new ways to see deeper, detect better

• **Communication**
  • no uptake in application of new science, new technology if not partnered with **effective communication**
  • GSQ important bridge between academia and industry; unique role
    • Information custodian
    • Information dissemination
Goals for 2019:

New Discovery Program

• Mary Kathleen Domain
  • hunting for IOCG signatures in granites

• Reference Collection
  • a digital library of deposits from the North West Minerals Province

• Hydrogeochemistry of the NW Minerals Province
  • Developing new tools for minerals explorers to see through cover

• Manage, support and engage with research partners (UQ, QUT, CODES, GA, CSIRO, JCU....)

• Disseminating Knowledge
  • Regular Technical Workshops for Industry
Coverage of the New Discovery Program
Data-Driven Exploration

Effective and efficient use of knowledge to enable industry success
(discovery, cost, time, resources, waste)

* Draft Mineral & Coal Reporting Guidelines available for Industry feedback after 31st March 2019
Geoscience Data Modernisation

Data Lake

Interact with the data via spatial, textual, graph, 3D

Optimise, enhance, cleanse & curate data

Index all digital & physical data

Store every piece of data as an object

Find insights in data

DATA VISUALISATION

DATA PROCESSING

DATA CATALOGUE

DATA OBJECT STORE

DATA ANALYTICS

MACHINE LEARNING

DATA ACCESS

AI that learns from data, and identifies patterns & insights

Human, computer & cloud data access
Geoscience Data Modernisation

- Less than 10% of all open file data is publically accessible on GSQ systems
- Aiming to have >90% available by 2021
- Imagine the possibilities…. 
Future of the Mineral Geoscience group

• Our main goal is to enable industry success
Future of the Mineral Geoscience group

• Our main goal is to enable industry success
• Traditional activities need to be modernised
Future of the Mineral Geoscience group

• Our main goal is to enable industry success
• Traditional activities need to be modernised
• Do the jobs that will help industry, but are:
  • too big
  • too hard
  • too expensive
  ….. for any one company to undertake
Future of the Mineral Geoscience group

• Our main goal is to enable industry success
• Traditional activities need to be modernised
• Do the jobs that will help industry, but are too big too hard, too expensive for any one company to undertake
  
  • Regional geophysics (already do well – ongoing)
Future of the Mineral Geoscience group

• Our main goal is to enable industry success
• Traditional activities need to be modernised
• Do the jobs that will help industry, but are too big too hard, too expensive for any one company to undertake
  • Regional geophysics (already do well – ongoing)
  • **Regional geology**…. Of areas under cover; change our map production to mapping under cover
Future of the Mineral Geoscience group

• Our main goal is to enable industry success
• Traditional activities need to be modernised
• Do the jobs that will help industry, but are too big too hard, too expensive for any one company to undertake
  • Regional geophysics (already do well – ongoing)
  • Regional geology…. Of areas under cover; change our map production to mapping under cover

• Greatest value for industry in reducing the unknowns
  • Minimise risk
The Under Cover problem

Known mineral occurrences and outcrop vs cover
The Under Cover problem

No outcrop means exploration risk higher

GSQ Mineral Geoscience’s role is to minimise that risk
Example: Landsborough Graben

Example: Landsborough Graben
Mineral Exploration through Hydrogeochemistry

- Seeking other novel ways to detect mineralisation at depth
  - Aiming at areas under cover
  - 400 boreholes to be tested
  - TDS, anions, cations, pH, Pb & stable isotopes
Future State

- All exploration and mining data that should be accessible, IS accessible
• All exploration and mining data that should be accessible, IS accessible

• Data is reliable, good quality; an effective exploration tool
Future State

• All exploration and mining data that should be accessible, IS accessible
• Data is reliable, good quality; an effective exploration tool
• GSQ is an effective bridge between academia (universities, CSIRO, GA) and industry
  • Enabler, facilitator, collaborator
Future State

• All exploration and mining data that should be accessible, IS accessible
• Data is reliable, good quality; an effective exploration tool
• GSQ is an effective bridge between academia (universities, CSIRO, GA) and industry
  • Enabler, facilitator, collaborator
• GSQ is doing the work that industry needs
  • Not exploration, but filling in knowledge gaps in high risk/high prospectivity areas
Thankyou