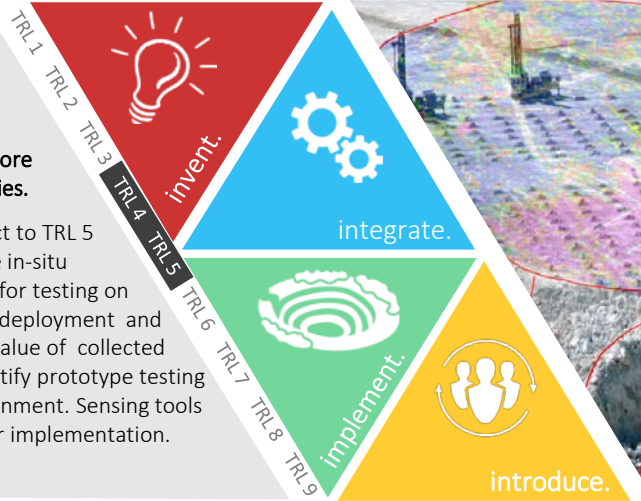


Sensors for rock mass characterisation Phase 1

PROJECT P2-001

To investigate the application and development of in-situ rock mass characterisation sensors to upgrade ore through Grade Engineering® strategies.

Successful completion of this project to TRL 5 will identify practical and high-value in-situ rock mass sensing systems suitable for testing on end-user sites. Specific equipment, deployment and data collection processes, and the value of collected information, will be identified to justify prototype testing and demonstration in a mine environment. Sensing tools and techniques will be de-risked for implementation.



Research collaboration

Mining3 has expertise in material characterisation and sensing technologies. It has developed systems and technologies for in-situ rock mass characterisation and undertaken numerous field testing programs for evaluation and development.

The initial phase of this project investigates and plans the construction of a detailed development pathway. It aims to clearly identify relevant technologies, conceptualise system solutions, and determine testing and validation opportunities.

Future work, including site-based activities, will likely require integration of industry partners (technology/product suppliers) to support testing and validation programs.



Background & aims

Ore upgrading via in-pit separation processes can benefit significantly from sensing the orebody conditions at each opportunity where a rock face is exposed. Critical information on the heterogeneity of a resource can be compiled to then influence the various downstream operational processes. This includes drill and blast, material handling and ore processing.

By developing a suitable sensors set in applicable systems, it will be possible to carry out orebody characterisation. This will be coupled with the development of high-resolution 3D models of mineral spatial distribution, or of grade distributions. This will form the basis for differential blasting designs that control ore upgrading opportunities for a deposit.

Primary aims of this project include:

- Identifying key technologies and approaches for acquiring and delivering rock mass information for blast design, which enable effective fragmentation control for ore upgrading.
- Planning development, testing and validation activities.

Focus on outcomes

- Identify technologies for in-situ rock mass characterisation to inform differential blast designs.
- Classification of the in-situ data capture requirements that improve precise differential blast designs.
- Determination of the performance of sensing and measurement technologies for various rock masses and deposit types.
- Determination of data collection and processing options to allow data fusion and information transfer to the blast design processes.
- Proof-of-concept system for collection, collation and processing of data from integrated in-situ characterisation tools to better inform fragmentation options.
- Proof-of concept demonstration of integrated data collection from in-situ sensors.

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Timing: November 2016 – April 2017

Participants: Mining3, CRC ORE

Image: Instrumenting the bench