

# A Living Labs Network for METS and Mining

## Seeking industry feedback on an initiative to fast-track innovation cycles for the sector

### Introduction

METS Ignited is progressing initiatives to fast-track the innovation cycle, de-risk investment, and improve collaboration to strengthen Australia’s mining innovation system. One such initiative seeks to establish a network of Living Labs bringing R&D providers, METS companies and miners closer together to work on significant industry challenges. A critical aspect of this is the provision of access to real (or near-real) mine operating environments. Development, testing and demonstration in such environments will act to reduce the real and perceived risks of investing in, and introducing, innovation.

We encourage you to provide input and ideas on the ways the **METS Living Labs Network** could be developed to best support industry’s needs and future capacity to innovate.

### Situation

Mining requires an effective innovation system in order to address pressing challenges including:

- Deeper ore bodies, decreasing ore grades and yields;
- Lower net prices and margins;
- Continuing and increasing need for safe disposal or storage of tailings/reject material;
- Increasing availability and demand for automation;
- Impact of disruptive technologies and ideas on traditional operations across the value chain; and
- Increasing social concern with the impacts of mining on communities and the environment.

Innovation systems for all sectors find the transfer of new ideas and technologies into business a challenging process. Developing innovations that combine step-change technology with business knowledge and commercial imperatives is a difficult process that requires expertise, the right partners, market knowledge and customer pull. In this context, the mining industry has distinct characteristics as illustrated below.

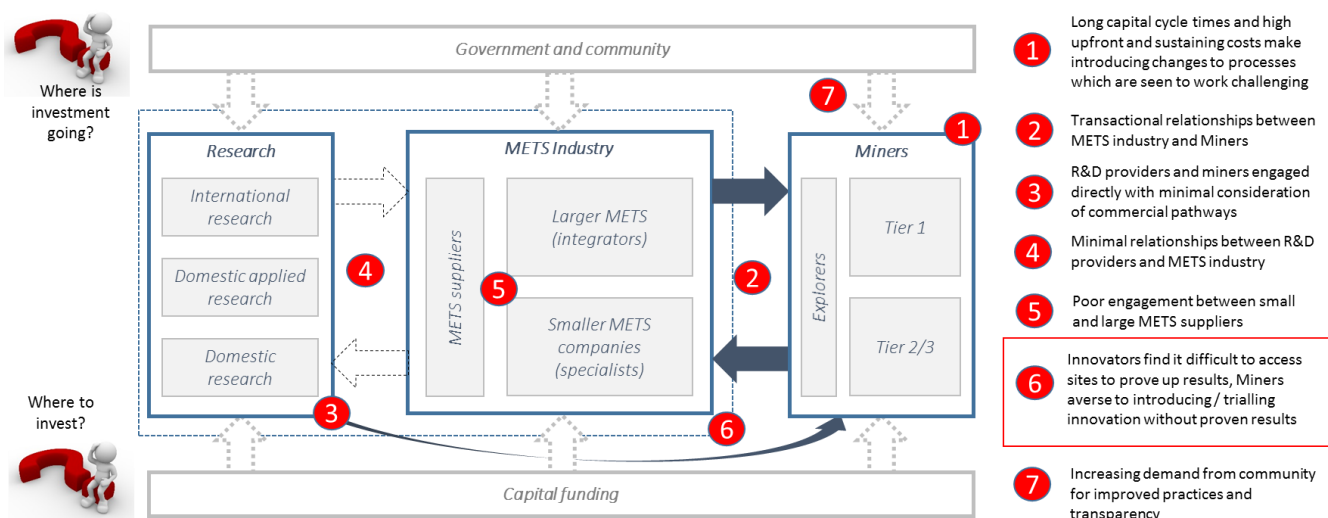


Figure 1: The mining innovation system highlighting some of its distinct features (adapted from VCI internal report to METS Ignited).

The METS Ignited sector consultation process and the *2015 Austmine National Survey*<sup>1</sup> revealed that innovators find the mining sector “risk averse” and reluctant to disrupt operations to trial or introduce new systems or approaches. Further, innovators experience difficulty in accessing operational sites for gathering data, testing, and demonstrating outcomes. In response, mining companies have advised that they are not risk averse but rather are reluctant to introduce innovations without sound evidence of benefits and minimisation of operational and HSEC risks. This is a Catch-22 which needs to be broken by addressing industry concerns and reducing both actual and perceived risk.

Overall the mining sector is not effective at systematically translating R&D and innovation into real benefits, commercial or otherwise. In innovation circles, this chasm between good ideas and actual commercial outcomes is commonly known as “the valley of death”.

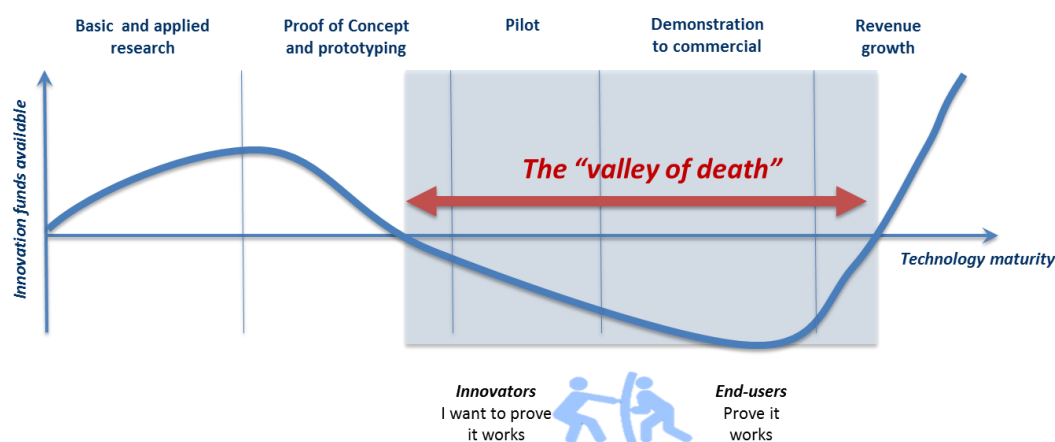


Figure 2: Illustration of the innovation “valley of death”, (adapted from [http://gsm.ucdavis.edu/sites/main/files/file-attachments/big\\_bang\\_nov\\_12\\_v.pdf](http://gsm.ucdavis.edu/sites/main/files/file-attachments/big_bang_nov_12_v.pdf))

A further imperative is the growing global attention on mining innovation. Canada, South Africa, and Chile in particular are strongly supporting innovators to address industry challenges. This includes the establishment of capability clusters and test-mines. Without the right focus, Australia risks being left behind.

### Supporting innovation

One method proposed to bridge the “valley of death” is to establish collaboration projects consisting of innovators (researchers and METS providers) and end-users (miners) to address problems in real/near-real world testing environments. Broadly based on the successful MIT and European industry innovation models, this concept is known as a “Living Lab”. A Living Lab supports innovation through:

- **Collaboration:** Building collaborative projects that bring industry partners together from across the innovation system - mining, METS suppliers and research
- **Scale:** Focusing on projects to address industry challenges that require industry, research and government to work together
- **Testing:** Providing real, near-real and virtual mine test-beds to develop and demonstrate products
- **Capability:** Developing expertise in innovation and collaboration across research, METS and the mining industry
- **Commercialisation:** Support in finding paths to market for new ideas, products and services.

A crucial factor throughout the above is end-user driven development.

<sup>1</sup> <http://www.austmine.com.au/Industry-Insights>

## No one size fits all solution to innovation

The challenge to developing a Living Lab innovation initiative for the mining system is that the sector is not homogenous; indeed mining will require many innovations, collaborations and new approaches. The mining innovation system includes:

- Coverage of different commodities and mining approaches (e.g. underground vs open-cut)
- Geographic spread of mines and innovation providers in Australia
- Differing activities across the mining value chain (e.g. geology vs logistics)
- Early vs late stage innovation requirements
- Scale of operations including capital cost and meeting safety and regulatory requirements.

In all of the above, critical to breaking the “Catch-22” is access to real, or realistic, testing environments.

## Proposed Living Labs Network

Given the diversity of requirements in mining, it is unlikely that industry innovation needs will be met in a single facility, at least in the short-term. To overcome this, a networked approach is proposed. This needs to consider innovation stage, technology domain, the target market, and clustering (e.g. whether for geographic convenience, by expertise, or technology type). Critically it needs to consider what the industry is demanding.

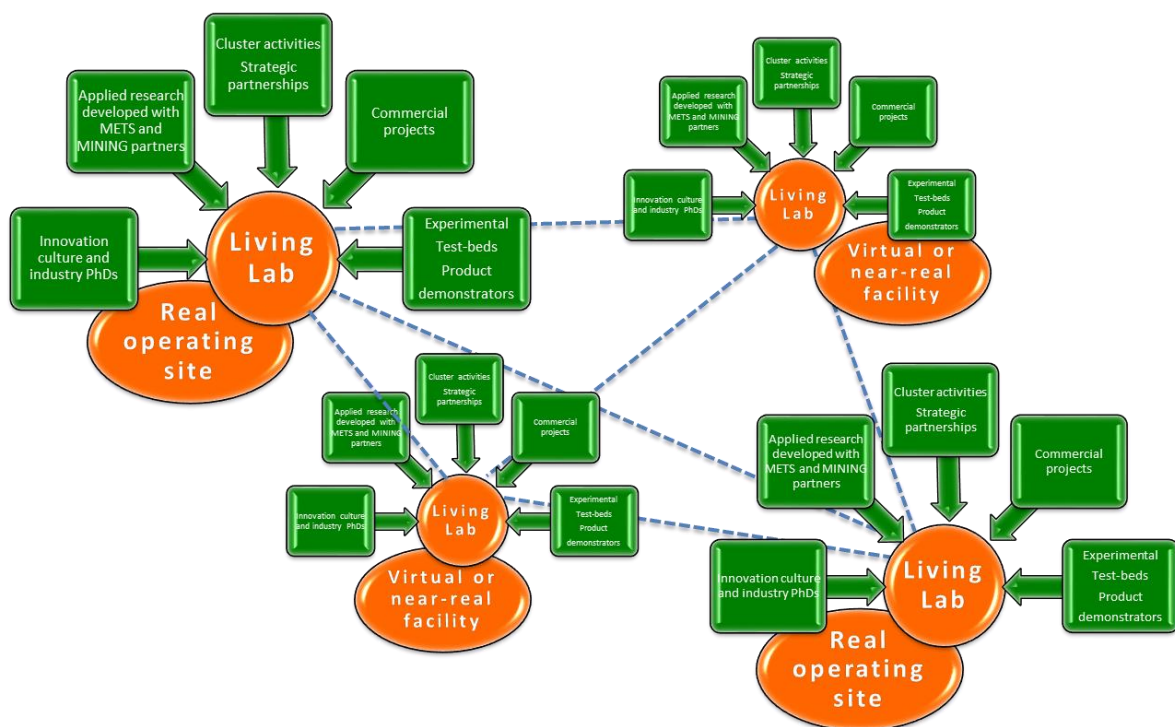


Figure 3: METS Living Labs Network conceptual vision.

The vision is to create a **METS Living Labs Network**, being a system of clusters, relationships, and virtual/near-real/real world testing facilities, with appropriate governance and processes, to bridge the “valley of death”. Projects and activities will be driven by industry partnerships tackling shared challenges.

Critically, the network requires access to real or (very near-real) world test sites. This will assist in breaking the nexus between innovators looking to demonstrate outcomes, and miners seeking proven benefits (and mitigation of change management risk) before introducing innovation.

To progress this concept, METS Ignited proposes to leverage existing/emerging facilities and test sites, and to work with the industry to establish new facilities where there are gaps and demand dictates.

### Expected outcomes

The outcomes sought from the **METS Living Labs Network** are to shorten the innovation cycle, de-risk investment, and to improve the success rate of ideas translating into business benefits. Ultimately, the intent is to ensure an ongoing pipeline of innovation ideas, improving the competitiveness of mining, which Australian industry can take to the world.

For miners, this means faster realisation of improvements in financial, social and environmental outcomes. For innovators (METS companies, R&D providers), it means the ability for testing insights with end-users, establishing a basis for commercialisation, and the ability to develop, test and deliver in a more agile way. For capital providers and investors, it means de-risking investments and reducing time to market.

### Next steps & how you can be involved

METS Ignited is working towards establishing early stage Living Lab “nodes” through identifying organisations with the desire, capability and capacity to progress this industry changing initiative.

In parallel, METS Ignited seeks your feedback on:

- The METS Living Lab Network concept and your interest in participating in it;
- Potential supply and demand for testing facilities and open innovation.

This information will be used to analyse where to focus METS Living Labs Network activity through identifying gaps in suitable test facilities (considering demand) and identifying future needs.

Please [register your interest here](#). Your response is required by 28 October 2016.

Should you require further details or have any queries, please contact: [projects@metsignited.org](mailto:projects@metsignited.org) or visit the link above.