ORANA MINING, ENERGY & TRANSPORT INDUSTRY FORUM
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METS IGNITED
Engage in our future

METS Ignited – Advancing the Competitiveness of Australia's METS Sector

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Australian Government
Department of Industry, Innovation and Science
Industry Growth Centres

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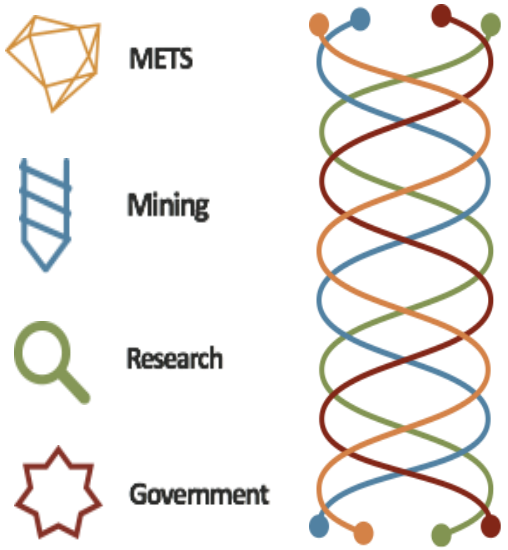


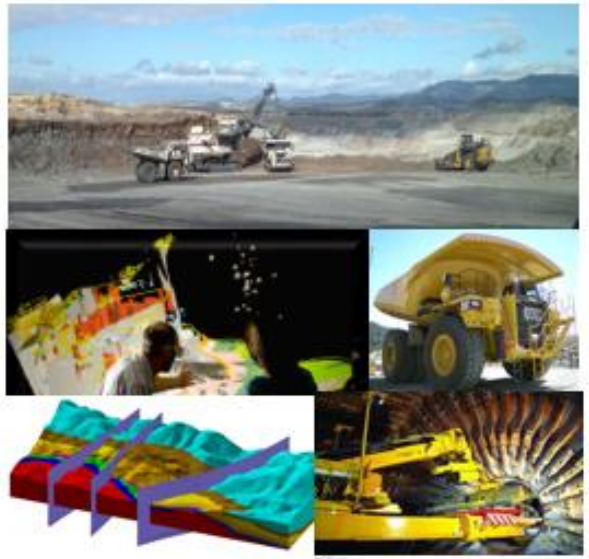
METS Ignited is one of six industry growth centres which are front and centre of the Australian Government Innovation Policy.

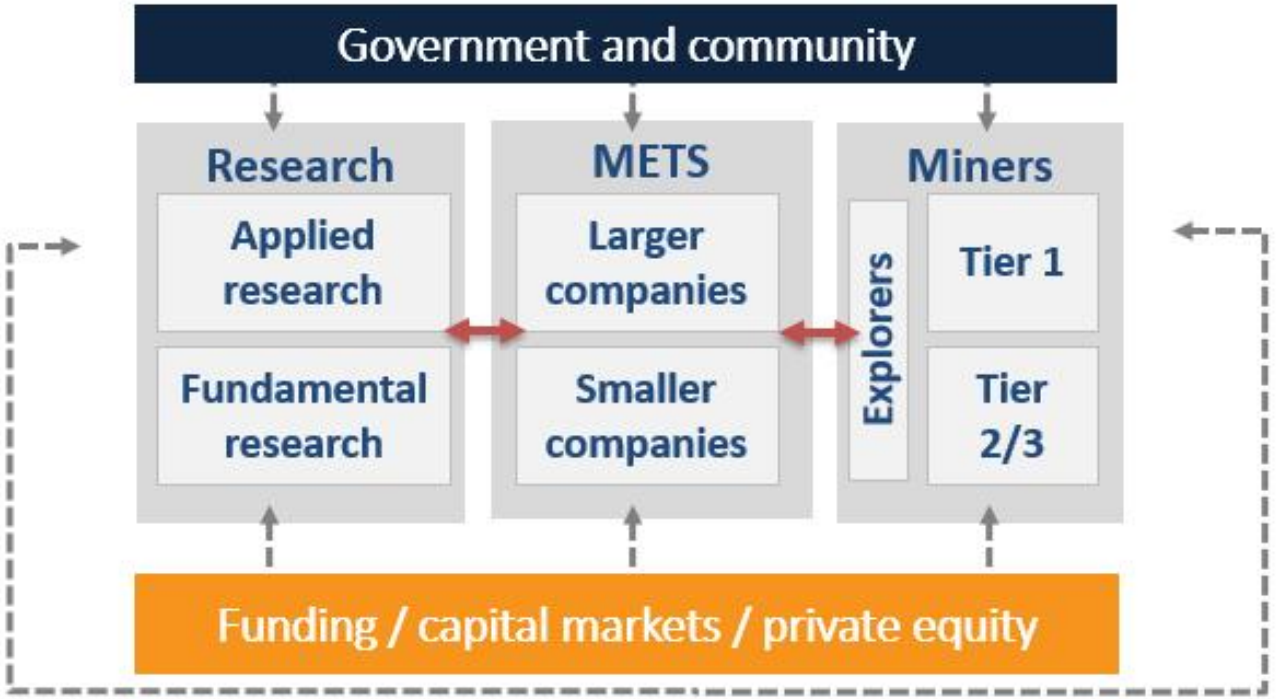
4 Objectives for each Growth Centre:

- Increasing collaboration and commercialisation
- Improving international opportunities and market access
- Enhancing management and workforce skills
- Identifying opportunities for regulatory improvement

METS Ignited has received funding from the Queensland Government to demonstrate Federal-State collaboration by developing a range of pilot programs to improve METS SME performance.

Australia's mining innovation ecosystem





Research from The Centre for METS Business Innovation… 75% of all patents lodged in mining in Australia have come from METS… 13% from miners… and 12% from researchers.

Economic snapshot
METS and mining sector

REGIONAL IMPACT Greatest economic contribution was in 3 regions

PILBARA REGION (Western Australia)
$37.8 billion
88% of total regional economic activity

BOWEN-SURAT REGION (Queensland)
$18.6 billion
63% of total regional economic activity

HUNTER REGION (New South Wales)
$15.2 billion
34% of total regional economic activity

66% of METS companies are in NSW, Queensland and Western Australia

TOTAL ECONOMIC CONTRIBUTION
$236.8 BILLION

A report commissioned by the Minerals Council of Australia has revealed the total economic contribution of Australia's mining and the mining equipment, technology and services (METS) sector for 2015-16.

Explore the contribution in greater depth in the *Mining and METS: engines of economic growth and prosperity for Australians* by Deloitte Access Economics.

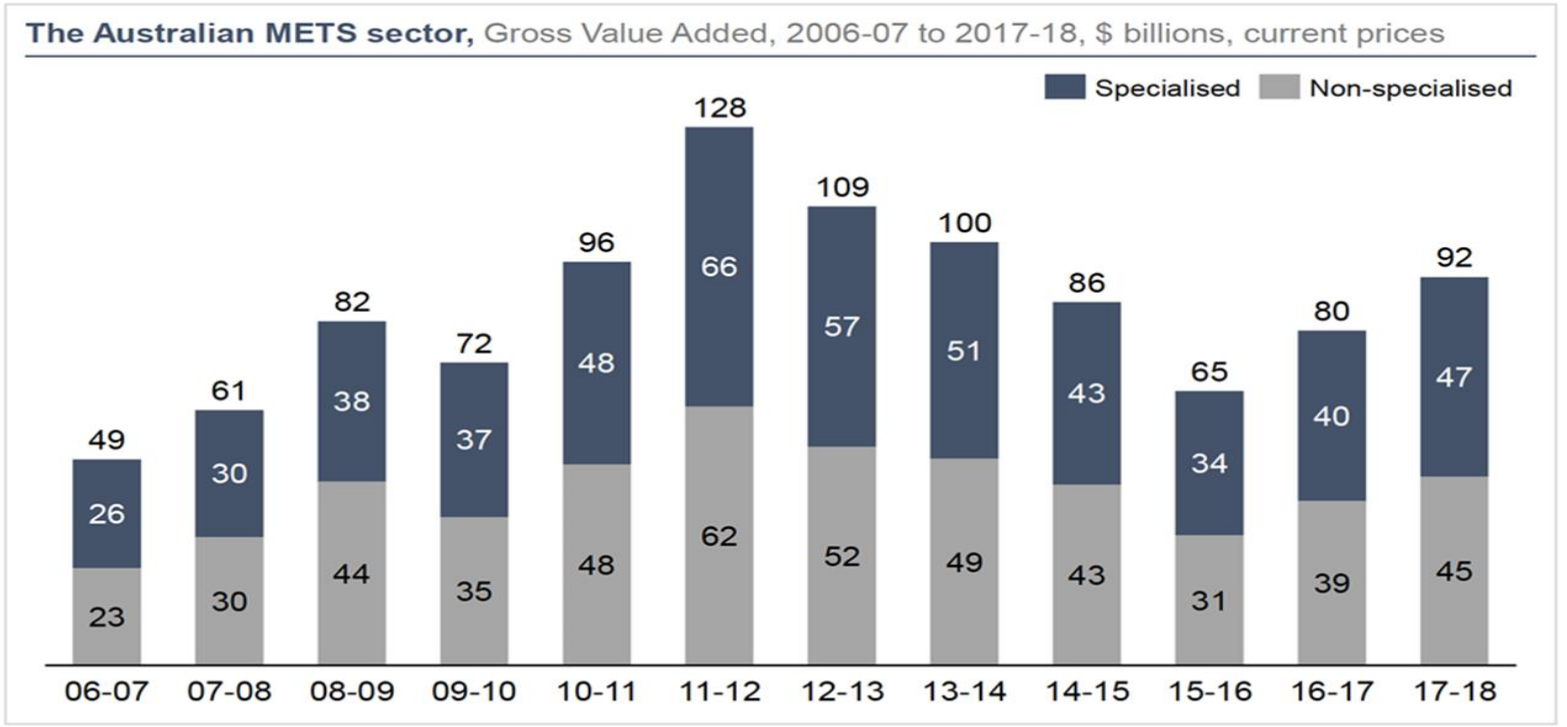
of Gross Domestic Product (GDP)

SUPPORTS **1.1 MILLION JOBS**

of total full time employment

Source: http://www.minerals.org.au/file_upload/files/reports/Mining_and_METS_engines_of_economic_growth_and_prosperity_for_Australians.pdf

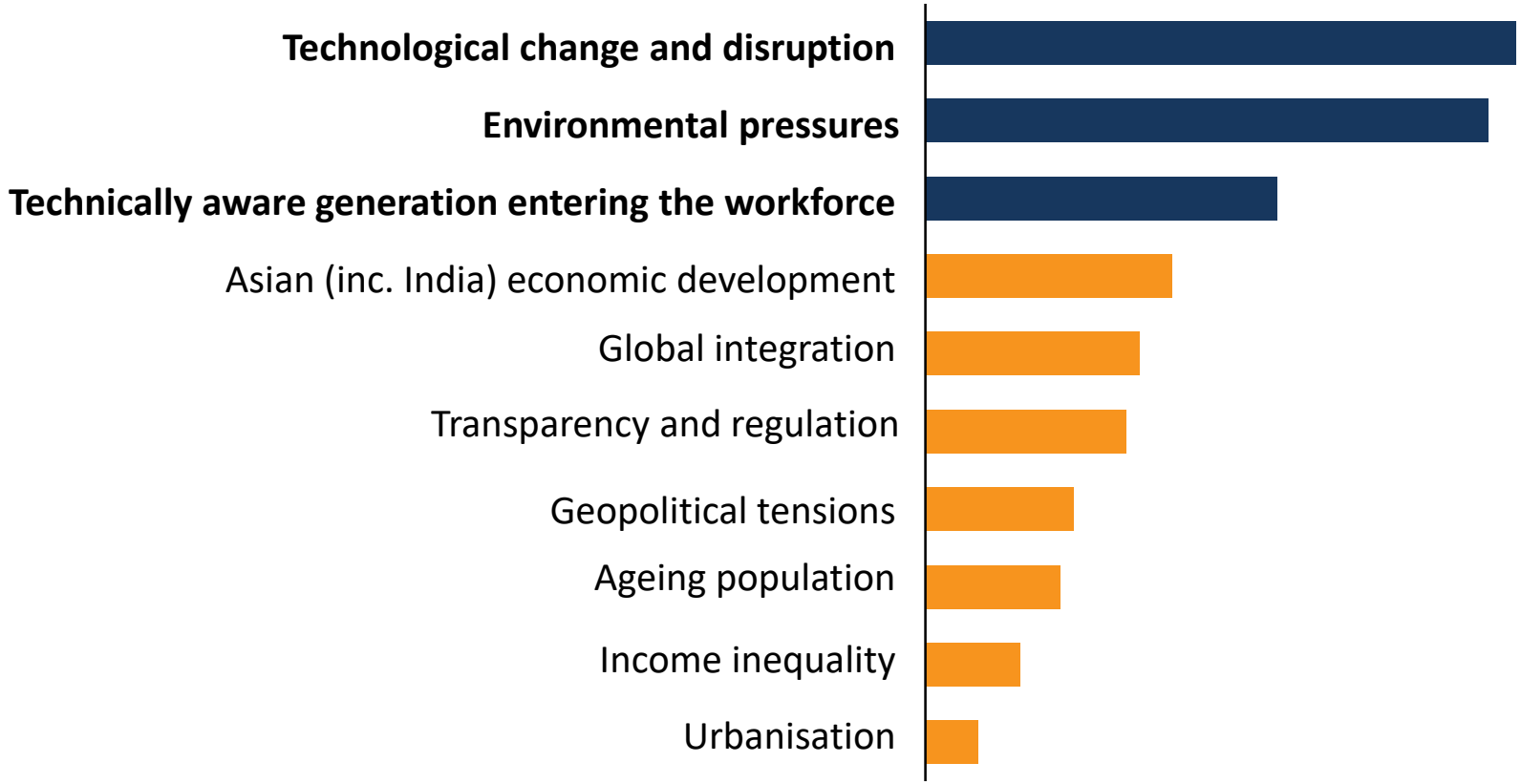
The METS sector has rebounded with two years of GVA growth with particular strength in ICT, professional & technical services



6,000+ firms contribute 70% of METS sector revenues

Highest Impact Macro Trends to 2030

Question: Which of the following macro trends will have the biggest impact on mining over the next 15 years?



Source: VCI: Innovation State of Play

Build on METS / mining innovation strengths…

Over decades, Australian mining personnel have developed global credibility as smart miners, adept at "integrating others' technologies" to deliver the strongest operational performance. Factors supporting this are:

- The imperatives driven by remoteness
- A safety culture that is a global benchmark
- Our minerals industry education system
- Understanding how to extract value via operational efficiency
- The rise of contract miners (and their interest in integrated operations)
- The predominant global status of Australian mining software
- International investors contracting Australian mining personnel.

Staying Ahead of the Game Report findings...AlphaBeta, 2018

PART A: MINING & OIL & GAS

Three stages of development in automation technology to 2030

	Present 1 Automated equipment	2025 2 Connected, digitized pieces of equipment	2030+ 3 Integrated value chain
Example technology	Proprietary drones, autonomous haulage systems, autonomous underwater vehicles	Smart sensors that both monitor and control equipment in plant / mine	Automated machinery and equipment that is working in concert together e.g. drills, trucks, shovels
Level of interoperability	Low: technologies developed by a handful of OEMs; not standardised or interoperable	Medium: equipment and data from a range of different vendors capable of operating together	High: open source platforms which allow integration and inter-operability across value chain
Drivers	▪ Safety ▪ Operational and capital productivity	▪ As with stage 1 ▪ Reduced automation costs	▪ As with stages 1 and 2 ▪ Integration benefits / access to new resources
Level of automation	Mainly semi-automated tech; but with some full automation	Most equipment now fully automated; limited self-learning	Equipment and processes capable of self-learning and making decisions without human input
Data Maturity	Low: identifying value of existing data sets using machine learning	Medium: filling gaps in datasets to enhance machine learning	High: Advanced data analytics across value chain
Size of the prize[1]	▪ Additional annual GVA generated in 2017-18 by automation in: ▪ Mining = $3bn ▪ Oil and gas = $0.5bn	▪ Additional total annual GVA generated in 2025-26 by automation in: ▪ Mining = $33bn ▪ Oil and gas = $5bn	▪ Additional total annual GVA generated in 2030-31 by automation in: ▪ Mining = $65bn ▪ Oil and gas = $9bn

Source: Interviews, AlphaBeta analysis
1. Total GVA across economy including primary firm impact, supply chain and wider economy.

Australia's opportunity in mining's supply chain…

Economic analysis suggests…

- We can transition more jobs and economic benefit to future work than will be lost due to automation
- Greatest benefit to Australian mining in the near term will come from grass-roots integration and the application of data analytics
- These benefits will be available to non-Tier 1 miners if this demand is pooled

Are Australian METS ready to embark on this journey?

Transformative automation in METS & Mining…

The focus is to help METS firms enhance the design of their businesses (e.g. culture, business models, systems, skills, capabilities) for the most effective application of a full suite of analytics and automation technologies in their customers' operations.

1. Mobilise Australian METS to introduce key elements of analytics, automation and robotics (i.e. Industry 4.0) into mining operations

2. Plan, motivate and implement supply from within Australia of those digital niches for which Australia is or can be world leading

3. Capture economic / job opportunities for Australia from the development of domestic supply chain capabilities to deliver these.

Other METS Ignited's supporting initiatives…

- Matched funding of METS-Miner collaboration and clustering
- Enhance METS SMEs' capabilities via industry and government partners
- METS Capability Mapping
- Assist SMEs in "challenge-based" engagement e.g. *BHP Supply Innovation*
- Increase industry-driven major research funding i.e. *CRC & ARC programs*
- Focus national business acceleration on 'scale-up' of SMEs
- Facilitate Australian METS narratives to build global branding
- Accelerate pathways to international opportunities
- Implement Regulation Roadmap priorities that drive innovative solutions.

Calls to action!

Witness and promote Australian METS' innovative solutions

Talk to the RISE cohort about "acceleration"

Engage with the students… these are your future!

Get these messages back to your community

Become a Network Associate @ www.metsignited.org

@metsignited

METS Ignited Australia Ltd