

# The COVID-19 push: Accelerating change in Australian industries

As part of Vocus' Industry Intelligence program, welcome to our third piece in The COVID-19 push: Accelerating change in Australian industries series.

Created with The Economist Intelligence Unit, this series looks at how COVID-19 has provided powerful impetus to accelerate innovation and positive change in key industries, enabling them to bring forward significant benefits for customers, communities and the industries themselves.

In our third piece, we look at the mining sector. We look at how its rapid uptake of technology is leading to better decision-making and productivity gains, but how those gains are increasingly reliant on the industry keeping pace with the right investments in connectivity and cyber and network security.



# Securing an exciting future for mining

The mining industry is an example of where the integration of the virtual and physical worlds is happening faster than most of us would have imagined. What was once manual, onsite and machine operated is fast becoming technology-led, autonomous, remotely monitored and virtually managed.

In 2020, the COVID-19 pandemic forced the hand of mining companies to further accelerate their adoption of technology and change the way they operate, due to necessary restraints on expenditure, restrictions on the movement of people, and the need to rapidly enable remote working at scale.

Across the industry, the uptake of technology continues to generate higher volumes of data, increased reliance on data centres, and cloud platforms, and we're now seeing the emergence of edge networks as critical enablers for business.

*This is resulting in a far greater need for physical, cyber and network security to support and protect an organisation's key assets, data and operations.*

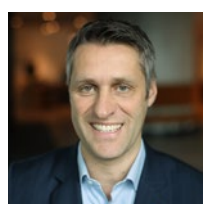
At the same time, we're seeing high levels of concern among leaders in the mining industry regarding their capability and preparedness to address the growing threats.

At Vocus, our national fibre network has been purpose-built for business, and provides secure, reliable and resilient high-speed connectivity to some of the biggest names in Australia's mining, and oil and gas industries.

Backed by a world-class team and partner network, Vocus is uniquely positioned to support and secure the digital transformation of the resources sector – a trend that is showing no signs of slowing down.

For an industry as critical to the Australian economy as the mining industry, it's vital we work to strike the right balance between maximising the efficiencies and improved decision making connected technologies enable, with the right levels of physical, cyber and network security to ensure business continuity and future growth.

Because as we know, while the threat of COVID-19 will eventually pass over time, the need for secure and reliable connectivity is here to stay.



**Andrew Wildblood**  
Chief Executive, Enterprise & Government  
Vocus

# Mining in Australia: On the edge of change

The use of cloud services among businesses in Australia doubled between 2014–18 from 19% to 42%.<sup>1</sup> The mining sector has been no exception, with companies in Australia increasingly moving their on-site operations over to the cloud, and adopting a host of other technologies.

Mining occupies a unique position in Australia's economy. The sector (including mining services) accounted for more than 8 percent of Australia's economy,<sup>2</sup> and resources contribute 62 percent of all Australian exports as of 2020,<sup>3</sup> generating more export revenue than all other industries put together.

The importance of mining and resources runs far beyond just the economy, however. Average wages in the resources sector were higher than in any other,<sup>4</sup> and it employed almost 243,000 people as of February 2020.<sup>5</sup> Moreover, the industry also paid AU\$39bn in tax in 2018–19,<sup>6</sup> underscoring its importance to Australia's socio-economic fabric.

*In recent years, there has been a higher tech uptake in the mining sector in Australia, and this trend has accelerated as a result of the pandemic.*

This is particularly so of cloud and edge computing, which allow mining companies to focus on core business, save costs as they don't need to invest in in-house tech and drive efficiencies, and manage real time mining and remote operations.

## Mining sector challenges

Mining is a capital-intensive industry, and in recent times, exploration costs have rocketed. As a consequence, profit margins have fallen and investors are expressing hesitation in initiating new projects – especially those led by smaller mining companies. Furthermore, mine lifecycles are decreasing.

In an added challenge, miners' health and safety is further jeopardised with deeper mines that are more susceptible to collapses.<sup>7</sup>

But even as technology adoption at mines has increased, there are still complexities in regard to harmonising information technology (IT) and operational technology (OT) at mines, according to Cornelius Mare, director of security solutions at Fortinet in Australia. These challenges are a wedge in mining sector operations, preventing the unlocking of the industry's full potential.

More recently, the COVID-19 outbreak has impacted the Australian mining industry, as it has resulted in essential expenditure being cut, including non-essential capital projects and reduced payrolls.<sup>8</sup>

It has also exacerbated the challenge of attracting and retaining talent in the industry, with restrictions being placed on the movement of people during the pandemic. Border closures in mining-rich areas such as Western Australia have made it difficult to access labour markets in Australia's eastern states.<sup>9</sup>

This has led to longer rosters and extended stays



on site, adding further pressure to the mental health and wellbeing of mining workers.

However, more broadly speaking, Australian mining has remained in good health through the pandemic as it has continued to capitalise on Chinese demand for iron ore, which has rebounded as economic activity in the country has resumed.<sup>10</sup> This is largely because Australia's mining sector has not been as badly disrupted as that in other key mining countries such as Brazil, which have seen COVID-19 outbreaks in mines, resulting in disruption to operations. In Australia, mining has been able to continue operating as it has been marked as an essential industry by the Australian government.

In addition to government policy, this has largely been made possible with the greater adoption of technology.

## Higher technology uptake

The resources sector in Australia has seen the adoption of technologies for things such as remote operations monitoring, real-time analytics driven planning tools, predictive maintenance, fatigue detection and wearables.

In the past few years, there has been a move to the cloud and less storing of data and information on-site. Scott Hunter, cloud value advisor, head of JAPAC at Google, says the internet of things (IoT) is used increasingly for digital twins in mining operations. This provides a copy of the actual mine in a simulated digital world, where those running the mine's operations have access to different variables they can manipulate to influence the timing and estimates for drilling, extraction, crushing and the like. This also helps cut costs as a lot of the tests can be done in the simulated environment as opposed to physically in the mine, with otherwise the same results.

*But as most mine sites in Australia are in very remote locations, there is a latency issue to deal with, especially because connectivity can be poor in remote areas.*

Even with Industry 4.0 enablers in effect, the remote locations can impact the reliability of network access. Adding to this predicament is that connected devices demand massive bandwidth to process the vast data sets being generated, which contributes to latency.

As a result, there is a greater demand for edge computing, says Mr Hunter, which means latency issues can be resolved with data being processed on the edge, as opposed to having to be transmitted to a central location.

The growing popularity of edge computing stems from its ability to perform operations and process data closer to the devices being used, instead of sending them to central locations. This allows for decision-making in real-time or near real-time, enabling greater



efficiency, reducing downtime, increasing throughput, and enhancing security as well.

Mr Hunter says, “if you don’t have connectivity at the mines or they are in remote locations, data is collected on the edge and then a couple of times [per day], it gets burst into the cloud. You want to process in near real time on the mine site,” he said, rather than have the collected information transferred to the cloud at time intervals.

IoT and edge computing increase the visibility of on-site operations, which enables better decision-making. They also allow assets to be monitored remotely, allowing predictive maintenance and servicing, which in turn results in lower maintenance costs and a reduction in downtime.

Edge computing also enables the automated reporting of health and safety incidents on-site at mines, and improves accuracy and reduces manual errors in mine operations, both of which boost safety.

In corporate functions such as finance and human resources, cloud adoption helps streamline and standardise business processes at the enterprise level by centralising data and enabling collaboration, thereby saving time and costs.

With the COVID-19 pandemic, remote connectivity has become even more important as a greater number of employees have needed to work remotely, with fewer preferred at the mines. Automated vehicles, which were already popular in mining, are becoming more popular still.

A fair share of work that required physical workers can now be comfortably executed using robotics and automation, and COVID-19 is accelerating this trend. For instance, operational uptimes of autonomous vehicles can be boosted by using energy harvesting and battery technologies.<sup>11</sup> Separately, traditional on-site mining roles such as those of drill operators and geologists, may become redundant, with remote operators or geologists being able to fulfil these roles just as well.<sup>12</sup>

Additionally, large mining companies no longer own big equipment – they either lease it or they buy blocks of operating hours. Mining equipment from the likes of Komatsu and Caterpillar is increasingly

connected and is part of the connected mine.

However, these different ways of operating are accelerating the need to address new risks, particularly around cyber and network security. These must become a priority consideration for mining companies given the rate at which they are adopting technology, which in turn is resulting in the creation of multiple new entry points for cyber criminals.

*According to a recent survey, many Australian mining companies are unprepared for cyber security attacks and failing to put in required measures.*

Worryingly, 45 percent of those in charge of their organisations’ industrial control systems were “extremely concerned” about companies operating in industries such as mining, energy and utilities.<sup>13</sup>

Similarly, a PricewaterhouseCoopers (PwC) study found that Australia’s top 40 miners have a lot of catching up to do in terms of cyber security as the adoption of automation and other digital technologies increases.<sup>14</sup> Damningly, it found that just one in 10 (12 percent) of mining and metal CEOs say they are “extremely concerned” about cyber threats, despite a significant increase in the number of reported cyber breaches among mining companies.

## Not all smooth sailing

One of the key challenges with cloud and edge computing is there is an increase in the number of threat vectors on account of operations being conducted over multiple sites, across more devices and over networks that may involve third parties.

Mr Mare says that it is not enough just for technology to be available for use – the integrity and confidentiality of data and processes is critical. Several people are connecting to critical information, so who has access to what must be controlled. “Monitoring is very important, but it is also complicated because there is a legacy environment,” he adds.



In many ways, this is a greater concern in a post-COVID context.

*As technology has been adopted rapidly, and remote and more flexible working options more accepted, enterprise networks and systems are being accessed in very different ways.*

At mining sites, it's not just cyber components that are at risk, but the physical critical infrastructure too. Given the increase in the number of connected components, there is a lot of data at mine sites, and securing it can be a challenge.

“Whenever there is a new site, there is a new edge forming. There is a cloud and so many new edges being formed. How do we protect all of it?” Mr Mare asks. The protection here refers to data, physical infrastructure and people.

One of the key security challenges in the mining sector, as with many other sectors, is alignment between the corporate and IT functions of a business. Mr Mare says those working in the OT environment have been in control for decades, so there's sometimes a reluctance to listen to how IT wants them to do things, “which is a barrier to cross”.

This is an important point that makes allocating priority to cyber security a challenge as the business case is not tangible and the return on investment not immediately evident, which means many still consider investments in cyber security a cost. This is a huge concern in an economy as dependent on mining as Australia.

There is, however, growing awareness around the need for greater investment in cyber and network security as mining companies look to protect their capabilities.

## No turning back

Security concerns are not reason enough to discourage mining companies in Australia from adopting the greater use of technology in their day-to-day on-site and corporate operations, and this trend is expected to continue.

Mr Hunter says that while mining has traditionally been “somewhat of a laggard in regards to how tech is adopted”, this is rapidly changing, and there are a few factors that will push mining companies towards further tech adoption.

This includes the declining costs of technologies such as IoT devices and other products. “That makes it compelling,” he says, because the benefits are clear to companies.

This is likely to be the most important factor in whether these changes will stick on the other side of the pandemic. As Mr Mare points out, the permanence of tech adoption is largely going to be dependent on the balance between costs and benefits. However, data and cyber security must be prioritised, especially as the adoption of technology accelerates.

The pandemic has forced the hand of mining companies in terms of technology adoption, and there's no turning back.



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