

Adapt or die: Tech will save mining

By [Graham Schwikkard](#) and [Aaron Burton](#)

20 Oct 2016

A storm is brewing that could shift the nature of the South African mining industry. At its heart is disruptive innovation has affected many industries, something the sector has been very slow in embracing.

The pressure to improve margins in the current mining climate has pushed many disruptors to the fore that will fundamentally change mining, particularly in South Africa. Although many will be viewed as a threat to the current SA set-up, they could also be a rich vein of value.



© Sumit Buranarothtrakul [123rf.com](#)

Autonomous vehicles

Advances in autonomous vehicles are particularly impressive of late. Automakers are pushing hard to build autonomous vehicles, such as Tesla, through their autopilot functions. The same technologies will be used in more industrial cases, such as mining and transport itself. This has the potential to greatly increase efficiency and to reduce direct costs. Some big players, including BHP Billiton, Rio Tinto, and Caterpillar are leading efforts here.

The first likely candidates in mining are traditional haul and load equipment. This will then spread to continuous miners, drill rigs, and others.

Autonomous vehicles will significantly reduce unit cost through efficiencies from not just labour savings, reduced fatigue breaks, improved fuel consumption, better equipment balancing (such as load and haul), reduced damages and others too numerous to mention. Fundamentally, mines will be able to significantly reduce their asset base and sweat each asset more.

Mass analytics

With Moore's law increasing processing power while reducing cost, as well as advancements in self-learning algorithms, mines have the potential to capture exponentially more data, then process this data into useful information that management can use to make better and faster decisions. Take this a step further, and mass analytics with processing power could be used to optimise the full value chain at a level far superior than humans can comprehend.

Bespoke and broader ERPs

New integrated information systems (broader than traditional ERP systems like SAP) have still not been developed within the mining space. Many mines still utilise a mine planning/mapping system, a maintenance planning system, a commercial/procurement system, etc. Each of these off-the-shelf systems, often costing tens of millions, is cumbersome, slow, and inaccurate.

The development of bespoke end-to-end operational control systems are coming to the point where it is price competitive with off-the-shelf tools leading to increased accuracy, improved efficiency, and reduced demands on management's time. The increased transparency that these systems will bring will help management spend their time in those places where the improvement efforts will reap the biggest rewards.

The best reaction to disruptive innovation and changing markets

Minetech can have huge impacts on the market dynamics; labour in particular. From a South African perspective, the bigger picture is that the more productive and safer the mines, the better for South Africa. The government, labour and business must support the inevitable tide or otherwise risk continuing to reduce the size and importance of mining in the South African economy.

We know that historically, in other industries, attempts to prevent disruptive innovation and changing markets have been ineffective. At this time, all stakeholders need to take stock of the wave of change about to hit them.

The clear trend from the past is that first movers are always likely to succeed in the end. South Africa needs to make a fundamental change to the structure of the mining industry or, inevitably, it will continue its steady decline. Efforts by government should be on how to manage the change to reduce the impact, and not try to slow it or stop it.

Miners themselves need to embrace the technology, and think about what investments that need to be made in terms of mine layout, organisational structure, future required skills, and training as well as other potential roadblocks or speed bumps. Those mines that adapt the fastest will thrive.

ABOUT THE AUTHOR

Datta Burton & Associates is a niche management consulting firm operating out of Australia and South Africa. The consultancy's strength lies in its ability to bring together powerful analysis, drive transformational change and leverage technology to help clients achieve sustainable results.