



How digitalisation will lead mining's transformation

Mining is an industry that owes its fortunes to the products of pressure and time. And in many ways its own operating model has come to reflect these traits.

By Vassilis Roubos, Head of DMT GROUP's Consulting Services Division

Traditionally very conservative, change in mining comes slowly and at times, not at all, leaving the sector lagging well behind other industries and vulnerable to new and emerging risks.

According to BCG's Digital Acceleration Index (DAI), the metals and mining sector is around 30-40% less digitally mature than comparable industries – such as automotive or chemical. Yet the sector is not immune from real world pressures like volatile commodity prices and labour restrictions – stresses now exaggerated by the pandemic – and has reached an inflection point where mining companies must adapt to survive this evolving market if they wish to survive at all.

One area where mining is facing a crunch-point is in the growing investor, legislative and regulatory

activity aimed to promote environmental, social, and governance (ESG) obligations. The move has seen sustainability placed at the top of the global development agenda, with industry players worldwide forced to demonstrate and level up their ESG compliance if they wish to maintain their 'social' licence as much as their commercial licence to operate. With this has come an increased focus on health and safety requirements, and mining companies are now obligated to demonstrate rigorous health and safety compliance, environmental consciousness and disclose operational inefficiencies, safety incidents, working downtimes, amongst other key indicators.

In this environment, good intentions won't be enough – capturing and analysing quality data is a

pre-requisite for accurate reporting standards, which has led to the floodgates of innovation opening ever wider, with consultants and companies increasingly embracing digital tools which catalyse a host of transformative opportunities.

Digital tools offer new pathways for operational improvements across the mining sector, providing businesses with unparalleled opportunities for value creation and capture, and them to maintain resilience amidst existing challenges, and secure future competitiveness amidst new ones. From mineral exploration, through extraction, to processing and production and even distribution, digital tools are challenging the shortcomings of traditional modes of mining business. Not only can such tools ►

Above: Digital tools offer new pathways for operational improvements

- enhance productivity – reducing capital intensity and operational costs, but they can help foster a more nimble and agile business, increase employee safety, ensure informed decision-making, reduce environmental impact, and strengthen social performance.

Artificial Intelligence (AI) is one such digital tool which is having a transformative impact in the mining sector and enabling companies to capture new insights and ultimately make better decisions. AI helps the industry evolve past traditional labour-intensive methodologies, and ushers in a host of new trends and capabilities such as machine-learning, predictive analytics, and autonomous techniques. Leveraging algorithms and AI to process vast amounts of data provides real-time decision support and future projections, enables predictive maintenance, pre-emptive repair and minimises operational down-time, thereby preventing delays and lags.

With the last year seeing travel bans, border closures, and movement restrictions, automated and remote processes have proven their worth. From autonomous vehicles to robotic hardware, and remote monitoring tools, digital technologies have enabled continuity of production in these challenging times, making it possible to deliver the same or even better standard of service provision in real time.

Using digital tools to monitor mines, plants, products and machines, companies can achieve full operational visibility from anywhere in the world, and identify inconsistencies with equipment and productivity, reducing breakdowns. In addition, a new generation of robotics and machinery are able to perform tasks independently, and able to undertake more hazardous workstreams. In this way, autonomous technology is enabling miners to spend less time underground, and predictive analytics can assess rock mechanics to ensure workers' wellbeing on-site and reduce the frequency and severity of health and safety incidents. There is growing consensus that by 2025-2027, robots will replace around 50% of mineworkers, lessening the number of accidents by almost 75%.

The mining industry is asset intensive and laden with risks and variability. As roll-out and consolidation continues to happen across the sector, and industry players grow, combine, and become more global, digitalisation is connecting disparate operations and aligning corporate processes and reporting. However, a vast disparity is noticeable across mining companies in terms of technology uptake and success with large conglomerates more ready and able to absorb the high upfront costs, as compared to their smaller scale peers.

According to the World Economic Forum's most recent "Future of Jobs Report", 79% of mining companies are accelerating the digitalisation of their processes, seeing the pandemic as an opportunity to make advances towards innovation. Our experience has shown that it is not technology or digitization alone that will lead this next phase of evolution, but that success depends on how it is accepted, utilised, and applied to meet and advance the industry's needs.

The mining sector of the future will be best served by specialists who can integrate human and technological expertise and have a broader and more adept understanding of the industry itself. At DMT, we are committed to helping businesses understand the implications of digitalisation and support them on their transformation to drive improved operational, social and environmental performance irrespective of their size and resources. That is why earlier this year we launched our Digital Transformation Office, providing full-service support and delivering bespoke digital solutions to the mining businesses across the digital mining value chain through a four-step toolbox: digital readiness assessment, roadmap creation, digital process engineering and implementation supervision.

The future of mining is digital. Are you ready? ▼

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Annual 3-user subscription (Mining Journal print & digital)
 UK £595 Europe €685
 US/rest of world \$770 Australia \$1,015

Mining Magazine, ISSN 0969 - 3769 (USPS 001-430) is published 10 times each year with combined issues in Jan/Feb and July/Aug by Aspermont Media, Wework, 1 Poultry, London, EC2R 8EJ, United Kingdom.

The US annual subscription price is US\$770. Airfreight and mailing in the USA by agent named WN Shipping USA, 156-15, 146th Avenue, 2nd Floor, Jamaica, NY 11434, USA.

Periodicals postage paid at Brooklyn, NY 11256

US Postmaster: Send address changes to Mining Magazine, World Container Inc, 150-15, 183rd Street, Jamaica, NY 11413, USA

Subscription records are maintained at at Aspermont Media, 21 Southampton Row, London, WC1B 5HA, United Kingdom.

Air Business Ltd is acting as our mailing agent.

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 ISSN 0308-6631
 A member of BPA Worldwide