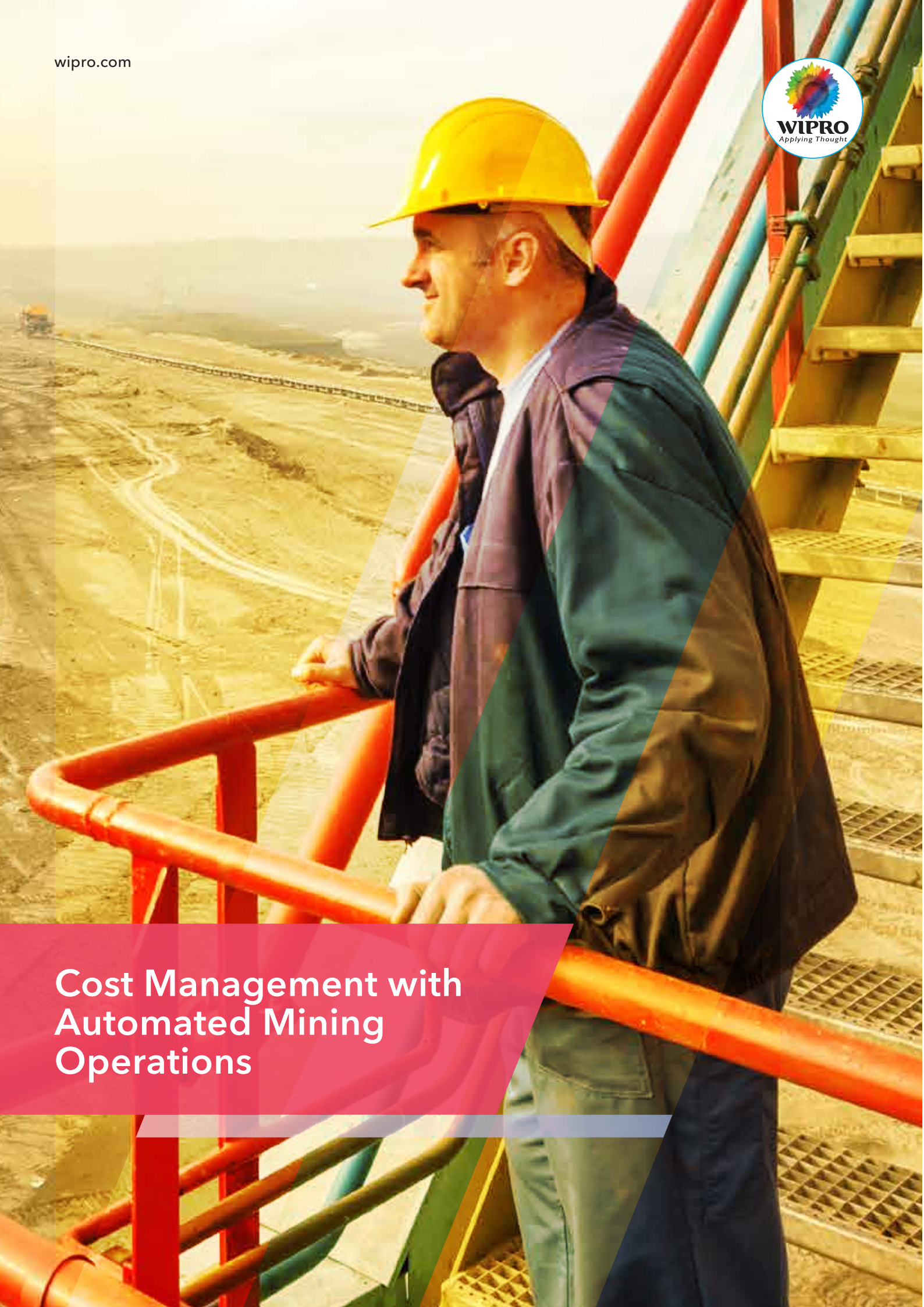
wipro.com



Cost Management with Automated Mining Operations

`Lights-out' is finally here

The pronounced decline of labor productivity that mining has experienced between 2007 and 2012 has turned the spotlight on automation. Each passing year saw more and more labor units needed to produce a tonne of mineral. Furthermore, the aggressive expansion projects fueled by unprecedented commodity prices combined with natural geologic scarcity have driven mining into even more remote areas, which increased the proportion of migrant labour required. This, combined with the need for safety, drove costs even higher making automation an imperative. Within a decade, companies such as the Alphabet-owned Boston Dynamics have created robots like Atlas that are turning heads, making analysts declare "the end of manual labor" and the arrival of genuinely dependable "lights-out" production processes.

Automation is making an extraordinary impact on industrial growth with its ability to influence productivity, efficiency, product quality, production flexibility and waste reduction. And although the mining industry has held back, it perhaps won't do so for long. With the boom in commodity prices and volume expansion there is a need to bring down costs. In such an environment, Automated Mining Operations are an attractive option.

Key drivers of automated mining operations

The industry has already been active in bringing down costs. The first wave of cost containment included the cancellation of new projects. This resulted in immediate savings. Although it was relatively easy to do, the wave has run its course. The second wave to bring down costs included sweating assets. It was kicked off in 2013. It continues with vigor even now. This wave places relentless pressure on suppliers, creates incessant productivity reviews, focuses on simplification and standardization and looks at the divestment of poor performing assets. The third wave, triggered in 2014, has prompted process re-engineering. This wave is perhaps the hardest to execute since it has long-dated returns. But the wave also splits the pack between the leaders and laggards. While it is imperative the industry focuses on all three, automation is predicted to leave the most profound impact.

Automation is perhaps the most sophisticated trend in the industry's 200 year history of mechanization. It is being driven by the urgent need to bring down costs, replace skills that are becoming scarce, ensuring safer operations by moving people away from hazardous locations and from exposure to dangerous equipment. Society too has zero-harm expectations from mining organizations. As a consequence, the industry has begun to aspire for zero fatalities and on lowering its impact on the environment.

Balancing priorities and bringing automation within reach

These are not simple objectives. They involve investment on a giant scale. Additionally, solutions based on automation need to be sustained over decades before they begin to show returns. Funding such projects is proving to be a major challenge.

A survey of mining organizations in Australia conducted by Coleman Parkes Research for and on behalf of Wipro in 2015 showed that cost management was the top priority. The key challenge was to bring down the cost of extraction (88%). More significantly, 75% of the respondents said they are challenged by the lack of investment funds for new technology. This largely reflects the situation for mining operations across the world.

With growing markets, the industry has doubled its size in the last 10 years. Today, with the dramatic fall in commodity prices, lower ore grades and increasingly remote mine sites, expansion has come to a grinding halt. There is an internal fight for capital (returning interest on debt, returning capital to shareholders and staying in business). This pushes automation out of reach.

Leaders shining the light of automation

However, there are a few shining example of Automated Mining Operations including that of underground drill sites undertaken by Northparkes, Glencore, Leighton Contractors, Discovery Metals and Hatch showing the way. The Rio Tinto, a global leader in mining automation, has one of the world's largest civilian integrated robotic projects underway in the Pilbara region of Western Australia (WA). Rio Tinto's driverless trucks, rail (the longest and heaviest trains in the world) and port operations, prompted by the need to reduce labor, are making headlines. Its driverless truck fleet has expanded from 30 to 90, and is being progressively rolled out across the rest of its 900-strong global fleet of trucks. Automation on this scale is ground breaking and has important implications related to productivity improvement, material usage and human safety.

Importantly, organizations like Rio Tinto and Glencore initiated their automation projects in the mid-1990s. Now those investments have matured and are showing positive results. Other organizations can be more confident of adopting them, with lowered levels of risk and faster ROI.

A simple roadmap to automation

Doubtless, automation is a long-term investment. Fortunately, since the days leaders like Rio Tinto and Glencore initiated their projects, the cost of automation as well as technologies has been falling. There is less reason to park it as an aspirational initiative.

Organizations must look at implementing automation in a logical manner, starting with their mobile fleets and operations that are near the rock face or in open pits where safety and productivity can be improved dramatically.

Perhaps the best news for the mining industry is the fact that automation technologies are easier to integrate into existing operations than they ever were, eliminating a very real barrier to adoption. Finally, there is the fact that organizations that embrace automation will be doing the single-best thing in the decades to come for their stakeholders. That is a tough-to-beat motivational factor.

About the author

George McCullough is a Consulting Partner at Wipro's Mining Advisory Services. He comes with over 16 years of experience in the mining and metals domain. He has deep expertise in Strategic Consulting and Management in areas such as Geological Modeling, Mine Planning, Resource & Reserve Reporting, Mining Systems Deployment and Implementation, amongst others.

About Wipro

Wipro Ltd. (NYSE:WIT) is a leading information technology, consulting and business process services company that delivers solutions to enable its clients do business better. Wipro delivers winning business outcomes through its deep industry experience and a 360 degree view of "Business through Technology." By combining digital strategy, customer centric design, advanced analytics and product engineering approach, Wipro helps its clients create successful and adaptive businesses. A company recognized globally for its comprehensive portfolio of services, strong commitment to sustainability and good corporate citizenship, Wipro has a dedicated workforce of over 160,000, serving clients in 175+ cities across 6 continents. For more information, please visit **wipro.com** or write to us at **info@wipro.com**

DO BUSINESS BETTER

CONSULTING | SYSTEM INTEGRATION | BUSINESS PROCESS SERVICES

WIPRO TECHNOLOGIES, DODDAKANNELLI, SARJAPUR ROAD, BANGALORE - 560 035, INDIA. TEL : +91 (80) 2844 0011, FAX : +91 (80) 2844 0256

IND/B&T/JAN-DEC2016