Bounding ahead

IT maturity takes the mining industry from laggard to leader

JAY JENKINS – Up until recently, almost every other industry surpassed mining when it came to using information technology to support and enhance their business. Surveys by market research companies consistently report that industry as a whole generally spent 3 to 5 percent of revenue on IT while miners spent less than 1 percent. That has all changed over the last five years. The exploitation of IT in mining is enabling companies to increase productivity despite the many challenges faced by the industry.

The increased level of complexity in the mining industry has been a tremendous driver in getting mining companies to look toward IT to help them stay competitive, especially in cost containment. The shift toward IT in the mining industry has been helped by an influx of high-level executives from outside the mining sector. These executives have come from consumer-product companies, high-tech businesses and financial institutions, and are driving IT investment philosophy. This has raised the bar for the whole industry. Finally, large industrials have recently acquired their way into the mining equipment, technology and services (METS) industry – a segment worth $90 billion per annum and representing 6.5 percent of Australia's GDP, for example – and are applying their mature approaches to IT enterprise-wide when creating solutions for mining companies.

These factors have created an opportunity in the mining sector to learn from the pioneering efforts in other industries

Title picture
Information technology is transforming the mining industry by connecting its many disparate parts into an integrated operating environment.

when it comes to deploying technology. Other manufacturing sectors, both discrete and process manufacturing, learned early on that islands of automation and

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islands of information led to performance issues that created both production volume and quality problems ➜ 1.

IT/OT convergence – an integrated enterprise
One of the most promising results of cross-pollination from other industries is the introduction of integrated remote and autonomous operations. The convergence of IT (information technology such as enterprise asset management and enterprise resource planning, logistics and operational systems) and OT (operational technology such as process logic controllers on machinery) in this area has led to more efficient processes.

Of course, mining companies have been investing in their own research and development – work that finds synergy with the technology adopted from other industries and allows technology advances on an enterprise scale.

It is possible to bring autonomous equipment into mining on an industrial scale. This autonomy and ability to control equipment with highly standardized, mature and integrated IT systems means that mines can be run effectively from remote operation centers many hundreds of kilometers away ➜ 2.

The key drivers for pursuing the integrated mining enterprise, as identified by Gartner [1], include:
– Critical skills shortage all the way from the mine face to the corporate level.
– The ability to effectively optimize the entire value chain, not just certain parts of it.
– Increased public visibility and accountability, including in areas of sustainability as well as financial performance.

A research study concluded that one of the biggest opportunities miners had was to learn from other industries and move toward an integrated mining enterprise through the adoption of standardized architectures.

– Consistency of output from both a quality perspective as well as from a predictability of performance perspective.
– Ability to operate in a highly volatile economic atmosphere.

These align very closely with the results of the Ventyx 2012 Global Mining Survey [2] as well as recent published executive interviews [3]. Recognizing these benefits, a number of leading mining companies are now pursuing integration – but they are achieving less-than-optimal results as the lack of industry-accepted enterprise architecture (EA) standards in mining is slowing the integration

should follow a similar approach and leading companies are already adopting OAGIS, S95, B2MML and standards like PAS55, for example. Ventyx, by learning from the lessons of others and applying detailed mining expertise to these standards, acts as a catalyst for customers who are on the road to quicker maturity.

No one single industry standard will serve the complete breadth and depth of the mining industry, but there are several EA activities that deserve the industry's attention and support. Key among these is the Exploration, Mining, Metals and Minerals (EMMM) forum of The Open Group (a vendor and technology-neutral industry consortium), which has developed an EA reference model for the industry. Being a reference model it is sufficiently generic to serve as the foundation for any mining enterprise's specific architecture but with ambitions and capability to automate more of the complexity required for an efficient autonomous mining enterprise.

There is a huge opportunity in the mining sector to learn from the pioneering efforts in other industries when it comes to deploying technology.

effort. Other industries, from automotive to semiconductors, have all faced this issue in the past and over the course of the last 15 to 20 years have adopted numerous industry standards that have facilitated speedier implementation of integrated operations. Mining can and

The first step then for any mining company in moving toward an integrated operating environment is to ensure that it:

3 The location, quality and quantity of product in transit can easily be tracked in an integrated operating environment.

One of the most promising results of cross-pollination from other industries is the introduction of integrated remote and autonomous operations.

– Understands the benefits of integration
– Has a strategy and approach to how it intends to achieve integration
– Selects vendors and products that are compatible with that integration strategy and intended blueprints that make this practical

Buying technology that is isolated and stands alone might solve a point problem but it ultimately creates an insurmountable barrier to achieving the competitiveness that an integrated enterprise can deliver. Therefore, Ventyx is investing in more seamless integration within its own products as well as working with relevant players who are also aiming for the outcomes of an open platform.

The Ventyx integrated mining model
Ventyx has significant intellectual property (IP) that almost any mining organization should be able to leverage when crafting their integration strategy. The Open Group has convened a global forum, the Exploration, Mining, Metals and Minerals Vertical (EMMMv), to create enterprise architecture standards and reference models for the exploration, mining, metals and minerals industries. Ventyx methodologies and process models generally align with the EMMMv model. Ventyx's unique IP can cut through the complexity of integrated mining models and help mining companies focus on the critical processes that make them excellent when performed well.

Bottom line
The mining industry has advantages that other industries did not have. It can leverage the 15 to 20 years most other industries spent in trying to understand and then move toward an integrated enterprise. By adopting an integration model, communication and data standards that facilitate integration, and then selecting and deploying solutions that fit within the parameters of their plans and the standards they choose, they can achieve in a few years what other industries took decades to accomplish.

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