METS challenges and successes: Diffusion and adoption of technology across the mining sector

CASE:
Dingo: Predictive maintenance – caring for asset health

The Innovation
Dingo offers solutions for predictive maintenance of mining equipment. The Trakka software system provides tools, insights, and decision-support for an asset health program that is based on the condition of the asset, and thereby replaces maintenance approaches based on time intervals. Data from equipment and machinery is collected, analysed, and translated into actionable intelligence. This contributes to predictability, productivity, and performance – and saves costs.

The diffusion and adoption process
What are the factors driving the adoption?

A number of factors on the industry and organisational level have been favourable for the diffusion and adoption of Dingo’s software solution:

**Overcoming information asymmetry:**
OEM manufacturers possess a knowledge advantage related to health data about their original equipment; while mining companies have been lacking access to this advanced information. However, this OEM data is a crucial input to the successful implementation of more cost-effective maintenance solutions.

**The pressure to cut costs:**
More effective maintenance approaches meet the demand among miners to save costs related to their heavy equipment and machinery.

**Technological advancement:**
Technological advances such as cloud-computing, artificial intelligence, and machine learning make the implementation of predictive maintenance software more feasible and fruitful.

**Real-world successes:**
Case studies and pilot programs prove that the solution is working and help to ‘spread the word’ across the industry.

**Communication and knowledge sharing:**
Increasing market penetration, knowledge exchange, and media coverage draw increasing attention to predictive maintenance solutions.

“We had to do a lot more education of customers ten years ago. Now, there is more information and market demand for what we are doing. You pick up any mining magazine, and there will be some talk about predictive maintenance, analytics, or machine learning.”

Paul Higgins, Dingo Executive Chairman
Challenge

A risk-averse mining industry:
Mining is a capital-intensive industry with well-established operational routines. The implementation of innovative solutions may be perceived as an organisational risk.

Strategy:
- Convincing ‘champion’ within a mining company to support technology
- Using data and real-world results to prove advantage of new technology
- Small-scale pilot programs to provide evidence of effectiveness
- Contractual arrangements to share financial risks

Challenge

Disruption of workflows:
Switching from one approach to another while in operation can be challenging and can result in temporarily increased workloads during the implementation phase.

Strategy:
- Provision of process mapping, planning, and scheduling to support a smooth implementation
- Proactively communicating challenges throughout the implementation process

“For the first years, we were dealing predominantly with early adopters and innovators. What we are starting to see now is the emergence of the early majority. Most mining customers are now starting to talk about predictive maintenance as being mainstream in their efforts.”
Paul Higgins, Dingo Executive Chairman

Challenge

Resistance from on-site maintenance workforce:
Operators and maintenance teams are used to operational routines. The implementation of new technology challenges the status quo and may cause fears about the potential exposure of shortcomings with previous maintenance practices.

Strategy:
- Educating workforce about benefits of technology
- Utilising communication strategy that considers different styles among staff
- Considering cultural differences when implementing technology overseas

Challenge

Tendency for autonomy:
Many mining organisations prefer internal solutions in order to be independent from third parties.

Strategy:
- Adapting to this need by offering flexible arrangements that allow decreasing commitment from the supplier, and increasing internal commitment

“When we implement our new process, the work for the maintenance team temporarily increases because they have their existing workload; and then they have the predictive maintenance workload as well. If you don’t set this expectation up front, it is difficult to get buy-in because people think: ‘This program is just creating more work.’ It is important to proactively communicate how the short-term pain will lead to significant, longer-term gains.”
Paul Higgins, Dingo Executive Chairman

What are the barriers to diffusion and adoption? And how is Dingo managing these bottlenecks?

While some factors have been favourable for the adoption of Dingo’s solution, the company has been facing challenges and bottlenecks. However, Dingo has used a variety of different strategies to successfully address these challenges.