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Extracting the real value of mining data mining

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Mines are awash with data and the flood keeps building, creating more and more complexities and unmanageable systems. Many industry leaders are still wondering how to integrate data into their operations to get the answers to the critical questions they have.

There are three primary areas where information is needed most:

- ## Planning

  It almost goes without saying that plans should be based on clear analytics that show the path to maximum value. It is, however, far easier said than done. Plans are often rushed through or based on disparate areas with no integrated view. Companies should start by considering what information they need to make effective plans, as well as to what degree of detail.

  The next step is to elevate the importance of the analysis while making plans, and to share it with those who will be implementing the plan. This will ensure that decision makers not only buy into the plan, but understand why it was chosen. New technology allows cascading of these plans and analytics – a shift supervisor should be able to easily pull up the previous shift outcomes and issues before he arrives at the site.

  Furthermore, whenever there is a deviation from the plan, there should be an analytics event to investigate the deviation and a feed-in into the next planning cycle to improve the planning model.

- ## Management

  Analytics must form the cornerstone of data-driven management and decision-making. The right system should bring the right data at the right time and place (in a useful visual form) to the different decision makers. They should have a clear idea of what has been driving performance and where they should focus their efforts for corrective action. As one moves up the chain of command, a linked integrated view should be available on demand.

  Therefore, analytics must also apply to performance management. Teams and individuals should have simple

measures of performance tied to operational drivers they can control. The measures are identified by deep analytics of operational dynamics and their values should come from automated real-time data. The users are then enabled to chase those drivers and make decisions based on both short-term and long-term goals.

- **Productivity**

  Analytics has the potential to identify and value productivity changes and initiatives across sites. The rapid growth in micro-sensors, processors, and communicators are allowing for far deeper and nuanced measurements. For example, one could easily measure the load per scoop from an excavator and feed this directly to a screen by the operator. Eventually, every movement will be measured and an automated system will take over to optimise the loading.
  This can additionally be combined with predictive modelling. Such models are already in play by equipment providers. Numerous factors on a piece of machinery are measured to understand time to failure and predict when preventative maintenance is required, thus avoiding a costly breakdown.

  As a starting point though, sites need to consider how they are using basic analytics to value and prioritise their productivity initiatives. What is the benefit and cost of adding another shift? Should it get priority over buying a new hauler?

Across these areas, elevating and empowering analytics are important, but it can't be done at the expense of decision-making. One can't simply tell planners to analyse more before committing to plans, which could make the process lethargic with "analysis paralysis".

Taking it a step further

In addition to defining the role of analytics in each of these areas, operations need to upgrade or revamp their analytics function in three more specific spheres:

- **Infrastructure:** To enable analytics, users need rapid access to up-to-date, broad information. Quicker data can lead to quicker insights and quicker decisions. This will often require investment in new technology in the form of measurements, networking, or visualisation tools. At many mines the data already exists, so it is more a case of bringing the data together in an accessible way.

- **Capabilities:** Data is meaningless without understanding. In most cases, mines still tend to drive by intuition. Even once the analytics have been delegated to applications and technology, a distinct role needs to be carved into the operations framework, and people need the skills to interpret and employ the analytics.

- **Routines:** Similar to computers having subroutines performing specific functions when called, analytic events should be built into the routines of operations. This ensures that it forms part of the planning, management, and productivity areas.

Extracting essential value

Although not comprehensive, focusing on the items described in this model will be a start to bringing real value from mines' data and analytics function.

ABOUT THE AUTHOR

Graham is a manager at [[http://www.dbassociates.consulting/ Datta Burton]], and has been involved in various optimisation projects, including redesigning and implementing the management system for the head office of a major resources company, completing strategy planning for South Africa's largest multinational construction and engineering company, and heading the financial and market analysis of a state-owned terminal.

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