

Real integration vital to improvement

Holistic planning and scheduling, not hype, central to increasing mining revenues in good times or bad

By Lee Hochberg

Nearly every week in the past six months there have been articles, white papers or blogs telling mining companies how they need to take the right actions to lift productivity, manage costs more effectively, and come to grips with the recent downturn in commodity prices. What else is new?

Mining companies, probably more than most, understand the impact of cyclical markets – even if they often demonstrate collective amnesia when a boom hits. They scrupulously look at the return on investment for the life of the mine, the NPV of operational performance, the costs of running a mine and shipping ore, and the impact of market volatility. I have not heard a mining executive yet say that they are doing things perfectly, or standing still as markets and prices change, yet the hype continues to build around so-called performance improvement strategies and answers.

Unfortunately, there is no such Holy Grail. There may, however, be a significant weakness in the armoury of many mining companies.

They are experts at mining and the survivors will make a good job of improving performance. Applying supply chain methodology to manage pit-to-customer operations more effectively is one area in which most are deficient. What's eluded most mine operators is how to transition from 'silo' planning, scheduling and execution, to integrated supply chain management.

The fact is that supply chain thinking (and process improvements) has spurred dramatic performance improvements in other industries, and many mining leaders know that applying these principles and best practices can make a difference – a difference that can literally mean tens of millions of dollars of extra revenue in good times or in bad.

Anglo American chief executive Mark Cutifani has said: "We are focused on driving our management and operating practices up to industry best practice. That is, not the mining industry but the more progressive industrial or process-orientated businesses where the ability to compete and establish an advantage is measured in millimetres through the underlying efficiencies of your process... To deliver on our sector's potential, we will have to put in



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place new processes that reach outside the mining industry for their inspiration and application – and there is no reason why our industry should not use the best from all of these ‘restless innovators’.”

Thinking about and acting upon the value chain as an integrated whole is still fairly new to the mining industry.

Companies that have been working on incorporating supply chain thinking struggle to get the recipe right. Learning from the successes of other industries, and partnering with companies that are outstanding at collaborating with customers to apply these supply chain principles, practices and technologies, will be critical for mining companies to realise these performance improvements.

So let us understand the challenge better, so as to take the ‘right’ actions. There are three main reasons why mining operations have traditionally been managed in silos:

- ▼ Most mining companies do not own all the supply chain assets. Different business units have their own unique competencies built up over decades, and these do not include supply chain expertise; and,
- ▼ Most mining companies shy away from the perceived technological complexity of integrating and optimising a diverse group of connected operations.

Volatile markets and shipping costs make a huge difference to the bottom line. When times are great, the tendency is to push as much product out as possible: when times are tough, belt tightening is the first response. But is this the best way to run a business?

One thing is very clear to me having worked with a number of mining companies (as well as other complex supply chain businesses) over the years: if you plan, schedule and execute all these operational activities individually – in silos – you lose money. Why? Because when you make silo decisions in a complex,

dynamic supply chain operation, you simply cannot make optimal decisions because you cannot see the impact of your individual decision anywhere across the supply chain, good or bad. And, you cannot respond effectively to performance variation and disruptions unless you can see the impact across the whole supply chain of potential decisions before you make them.

If you want to be certain about the effectiveness of your decisions, in terms of their positive impact on your whole supply chain, especially before you make these decisions, you need to make these decisions with a clear understanding of the supply chain implications, and visibility of performance as these decisions are executed. That is not easy for complex, dynamic mining operations. Just managing the astronomical amount of data produced by these operations can be overwhelming – for example, a tier-one mining giant produces 2.4 terabytes of data a minute at one site.

You may not be able to control commodity prices, but you can run your mine operations much more effectively simply by planning, scheduling and executing your mining operations as a dynamic value chain. Why is this important? It is really common sense.

Supply chain throughput is determined by the main constraint operation. This means you have to know which operation in your value chain is the constraint since the constraint will dictate the total throughput of your operation. Therefore, you need a mechanism for model-

ling your unique value chain and how the components interact with each other in order to ‘see’ which operation is your constraint operation, and make decisions to ‘exploit’ your constraint to maximise throughput, and potential revenue, strategically and operationally. Otherwise, you will simply be guessing. Worse, you will be spending huge amounts of money on production at non-constraint operations that

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do not increase total revenue at all. (One greenfield mining operation discovered the value of this modelling, which identified their true constraint, and saved them several billion dollars of investment by focusing on investing on their constraint, rather than on another operation that had excess capacity.)

If you want to maximise revenue, make sure all the value chain operations are synchro-

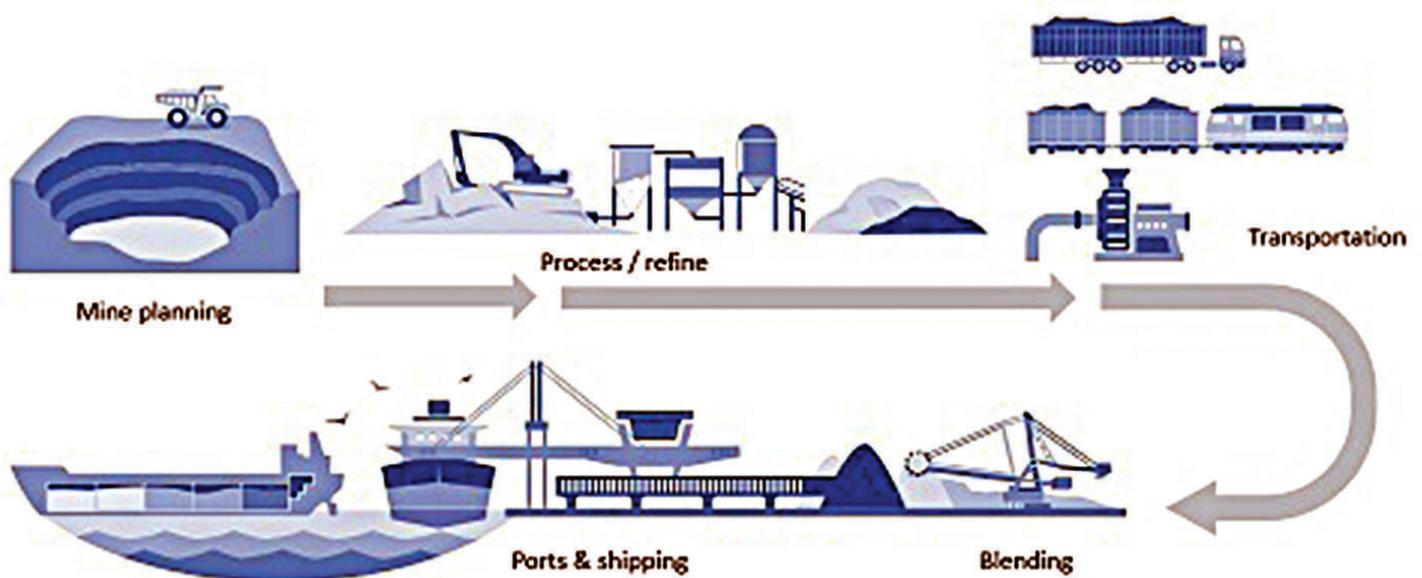
nised to the throughput of the constraint, and make sure that that constraint operation is working close to full capacity – 24/7/360 – or increase capacity at that constraint with investments in improving performance and throughput. That is not hype: that is basic constraint management.

To make these decisions requires a capability to model, plan, schedule and execute the dynamic interactions of your entire mine value chain, even if you do not own and/or run all the assets from pit-to-customer. It is that simple, and that complex, since integrated end-to-end supply chain modelling and planning/scheduling requires proven technology that can handle this level of complexity and dynamic interactions. Static planning and scheduling, which is what most current technologies offer, simply will not do. Here is what best practice companies in many industries have done:

- ▼ Transition from silo to supply chain decision making;
- ▼ Accurately model the complexity and dynamic interactions of their supply chain with appropriate technology and processes;
- ▼ Plan, schedule and execute supply chain activities effectively; and,
- ▼ Ensure everyone aligns their work every day with these plans and schedules.

How well are operations achieving these fundamentals in the way you do your work?

It is not enough to be expert at mining any more. Being proficient and effective in managing a supply chain will make a dramatic difference in performance.



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