



Process automation: the next frontier in mining optimization

BRETT MARSH EXPLAINS THE ROLE PROCESS AUTOMATION CAN PLAY IN PREPARING MINING COMPANIES FOR FUTURE CHALLENGES AND OPPORTUNITIES

Historically, mining processes have been very human-intensive. Although new digital technologies are being introduced, there are still many tasks within businesses that are completed manually. To realize the full value of digitalization requires greater focus on the processes and systems that underpin the mining value chain.

Brett Marsh, Director of Product Management at Eclipse Mining Technologies, has observed that many key knowledge workers spend up to 60% of their day doing non-core activities, like data collection and manipulation. According to Marsh, companies are losing out on potential opportunities because their workers are focusing on repetitive, low-value tasks that could easily be automated.

Let's start by defining what a process is. A process is any activity that produces a desired outcome, for instance, generating a report or delivering a service. An automated process simply replaces or augments some of the steps that a human would normally perform with software or a machine.

Marsh explained: "A good example of process automation can be seen in automobile assembly lines. Originally, most tasks were completed by hand. Now the process is almost fully automated using robotics. Other examples include personal voice assistants, like Siri or Alexa, which can switch on lights or order groceries."

The whole mine value chain is ripe for automation, but, naturally, there are some areas that are higher value than

others. For instance, in cross-functional processes that span various departments, like engineering and planning, teams often need to share information. However, those hand-off points can have challenges today. Automation can help to break down work siloes and improve data transfer.

Process automation will play an important role in lessening the impact of skills shortages in mining and in closing knowledge gaps. Documenting and automating processes will ensure that mining companies capture institutional knowledge before experts retire and help bring new recruits up to speed. This will also reduce costs, as companies will not have to pay for people to relearn lost information.

There's also the potential to upskill workers. Repetitive tasks like data entry can be dull but, by automating these processes, workers could potentially be upskilled and redeployed into more fulfilling, higher paid and value-generating roles.

DELIVERING DATA CONFIDENCE

The first steps in automating a process are to define, refine and document it. This is important because it gives companies visibility into the way they are working and can potentially improve the process before applying automation. Process optimization and standardization are often overlooked in the rush to implement new digital technologies or systems. However, they are vital in ensuring that digital adoptions achieve their full potential.

Marsh explained: “There is always a perception that there’s not enough time to review processes, but there’s enough time to review work when a mistake is made. There’s a massive opportunity to drive efficiencies using an enterprise knowledge performance system like SourceOne® to document and automate processes; to really sit back and look at them strategically.”

At an operational level, process automation provides decision makers with confidence in the data that they rely on; studies have shown that automation can reduce human error in data entry by up to 80%¹. This also translates to the corporate environment where stakeholders expect the delivery of accurate, timely information.

Marsh illustrated this with an example: “From an operations perspective, it’s good to have confidence in execution around a mine plan,” he said. “At a corporate level, that confidence also extends to stakeholders who want guidance around production and Environmental, Social, and Governance (ESG) performance. If that information is inaccurate or unreliable due to significant variability, then investors and regulators will lose confidence in the corporation.”

Compliance with ESG-related standards also requires that mining companies define their processes and demonstrate that they are following them. A data platform like SourceOne from Eclipse Mining Technologies can ensure this and, given the level of importance ESG now plays in securing investment as well as a social license to operate, organizations need to get their arms around this swiftly.

UNIQUE CAPABILITIES

SourceOne offers robust process automation capabilities through user-guided and fully-automated digital workflows.

User-guided workflows can be simple or very complex. A user or company can define and visualize a process using SourceOne’s inbuilt Process Canvas application. The system then guides subsequent users through that workflow, prompting them to complete tasks in sequence. This is particularly useful in training or when importing files from one application to another.

“For example, if two people need to work on a model or spreadsheet, as one completes a task, the other will be notified that the file has been updated,” explained Marsh. “Both people can have that file open on their computers, and SourceOne uses file mirroring to ensure they both have the most up-to-date version.”

It can also be used to connect systems across departments or organizations and track progress on tasks. For example, if a corporate planning manager needs to complete a process each year to update reserves across ten operations, then SourceOne can manage the setup of that larger process, as well as the processes required at each site to deliver the necessary information on time. Working backwards from a specific date, the system can prompt each mine team to complete different workflows and tasks. Progress across the portfolio can be monitored at the corporate level, allowing leaders to manage expectations around data delivery, or take action if help is required.

Standard process automation can be applied to any rule-based task, but SourceOne also provides the foundation to connect intelligent third-party technologies, like machine learning and neuro-language programming, which could take automation one step further. This capability could potentially allow mines to automate certain decision points, or have users presented with optional actions based upon changing conditions.

For instance, a manager might be alerted if a set of governance rules haven’t been followed correctly and presented with three actions that they could take to rectify the situation. The system would then automatically inform other users of the change and update their workflows.

“In mining, the intelligent component will be key to future efficiencies and in creating integrated operations,” said Marsh. “There are a number of examples where intelligent automation is currently used in mines, particularly in processing plants, but the challenge will be extending those capabilities to mobile equipment as well.”

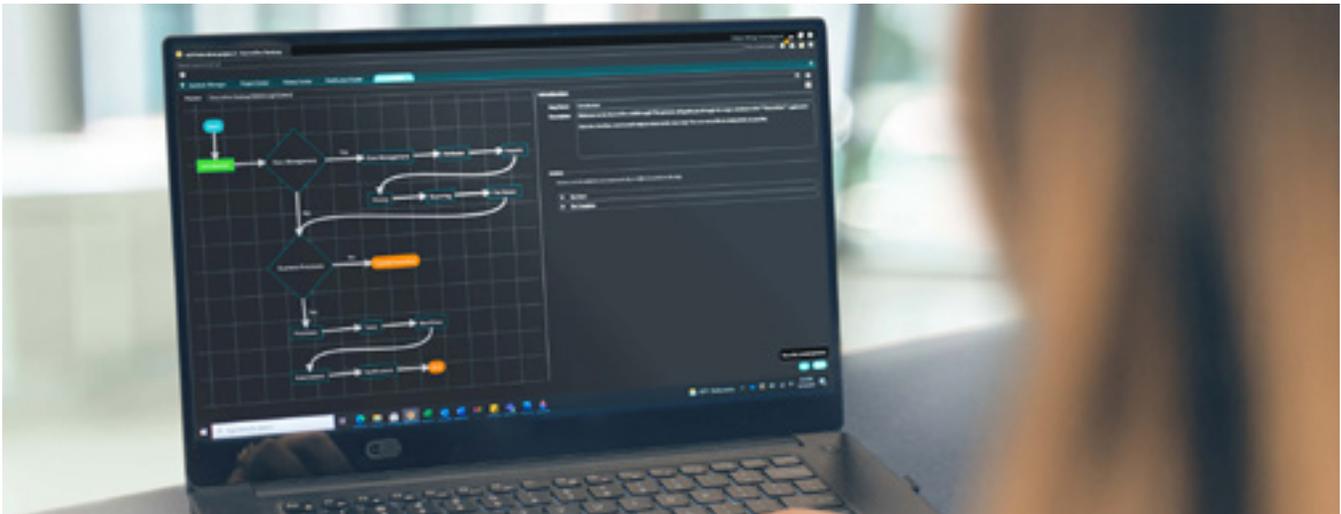
Within SourceOne, workflows and workspaces are simple and intuitive to use. A step-by-step tutorial guides users through documenting their processes and aids them in

evaluating whether or not they could be streamlined to deliver better outcomes. It's easy to go back and make changes with the proper permissions, and customizable templates and examples are included for common mining-specific processes, like importing data into a block model or generating a mine plan.

"We have a lot of mining-specific knowledge that we're building into the system," said Marsh. "Since we have the mining context within each process, we can also augment

the data or actions with other attributes, like metadata. This creates a detailed historical report of what happened within the process. That information can be valuable in auditing situations, particularly around carbon cache or safety and environmental compliance."

If an automated process fails, there are also tools within SourceOne that can take auditors back to the last current mistake, to correct and rerun processes forward in minutes. To do that manually could take months.



WHY NOW?

Around 10–15% of the data that mines produce today is fully evaluated². Most is captured and stored, or used to create a summary, but rarely is it examined in context or with a view to process efficiency. Going forward, the mounting challenges that mining companies face mean they will need to extract greater insight from their data.

"Data is becoming almost as valuable as ore," said Marsh. "Mines are going to adopt more technology as it becomes available. The amount of data they have to manage is increasing exponentially, so they need to look again at their processes if they want to remain competitive."

Aside from delivering bottom-line improvements and better predictability throughout operations, process optimization and automation present a practical way to close the gap between digital strategy and execution – something that many mining companies struggle with today.

CONCLUSION

"A lot of executives see technologies like artificial intelligence as a silver bullet to solve their problems. But there are a number of steps that are necessary for those technologies to deliver their full potential," said Marsh. "Implementing a solid foundation that includes standardization of systems and capturing institutional knowledge is really important. Then, we can layer on top, so that when companies implement artificial intelligence projects, they can properly support and scale them."

"SourceOne, as an enterprise knowledge performance system, can provide that foundation across the value chain."

REFERENCES

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 Eclipse Mining Technologies

UNLOCKING THE POWER OF YOUR DATA