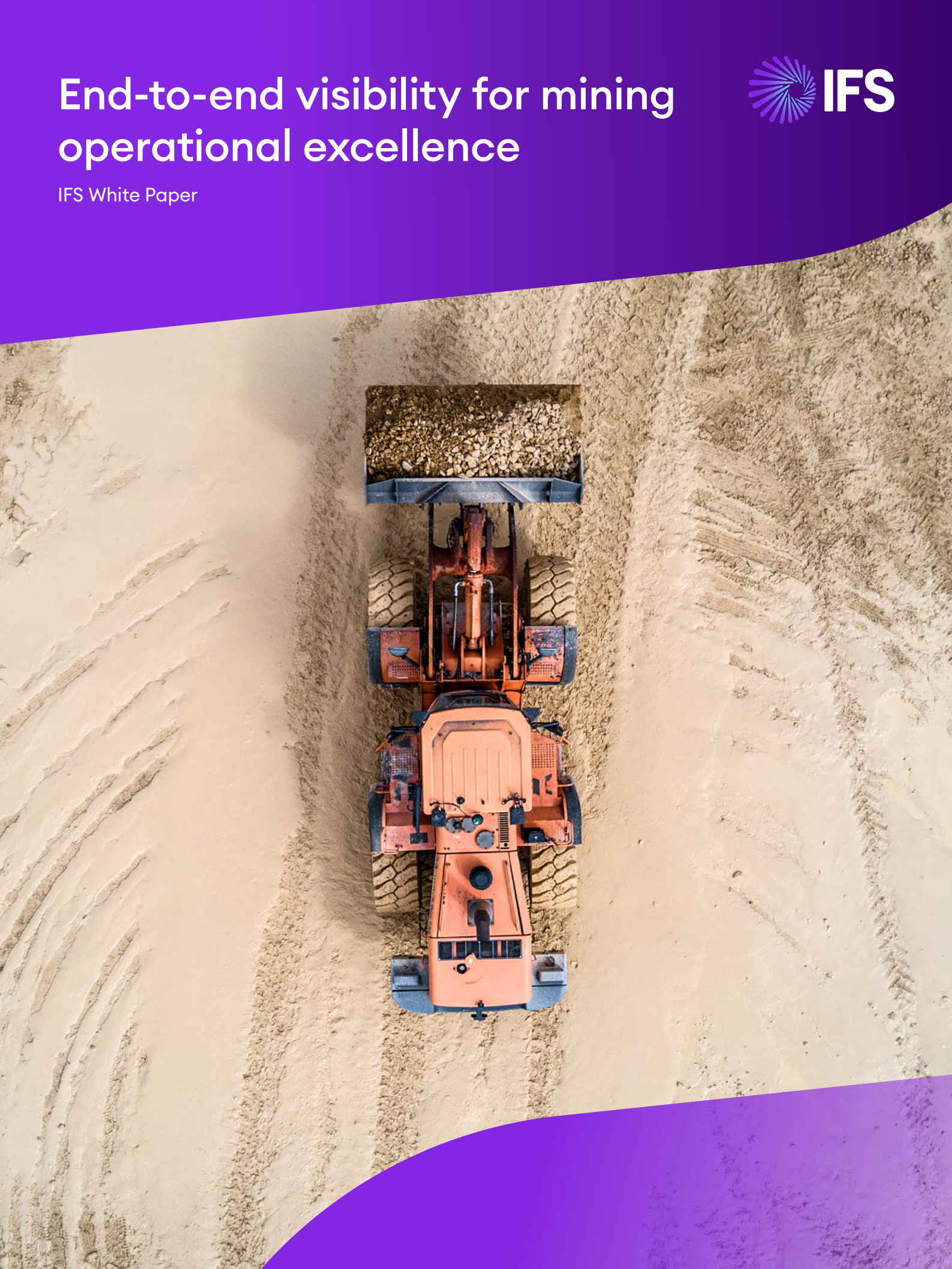
End-to-end visibility for mining operational excellence

IFS White Paper



End-to-end visibility for mining operational excellence

Operational excellence is a deep discipline with its own set of professional practitioners and culture. At its core, though, operational excellence is really all about execution of a strategy, and specifically executing better than your competitors operating the same strategy. In mining, this is of critical importance because everyone is really operating in a similar fashion. The mining company that executes on this natural resource extraction and marketing process successfully every time will outperform their competitor.

In ensuring this efficient operational approach, enterprise software has a role to play. Enterprise software including enterprise resource planning (ERP) and enterprise asset management (EAM) can standardize and streamline the core business processes of a mining organization, from exploration, feasibility, construction to operation and maintenance managing regulatory compliance/financial analysis and reporting results during the 'life of mine'.

Enterprise software, developed in a pure play and fully integrated fashion, can also ensure that different parts of the organization are operating on the same set of data, and streamline or even automate seamless handoff of processes from one functional group to the next. For instance, installation of a portfolio of equipment at a new mine site can trigger the scheduling of preventive maintenance and the purchase of required spares and repairs to sustain that equipment over its lifecycle. The preventive maintenance activities can signal to a human capital management module the hiring, man hour and skills requirements necessary to complete the work. A decision to wind down operations at a mine from finance can signal to a maintenance department that they can slow down spares and repairs purchases as those items may not be used at that location.

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Mining operations also commonly span multiple geographies and are affected by business dynamics outside the organization–like commodity price fluctuations and risk profiles of operations in a given country or locale. Enterprise software must also provide a single, unified way for an executive team to manage far-flung operations in a rapidly changing environment. Only then will they achieve operational excellence and successfully compete for both revenue and capital investment.

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Asset management: a core process

The single most expensive and critical business function in mining is the preventive and break-fix maintenance of equipment including fleet assets used below and above ground. Below-ground assets are the most challenging because they are harder to get to, but mines in general tend to be in remote locations. These locations are distant from supply chains, and that means that supply chain management for spares and repairs inventory is critical. The ability to reliably complete planned maintenance work and ensure that equipment failures result in as little down time as possible is contingent not just on inventory, but personnel. So, ERP and EAM software for the mining sector should include embedded human resources functionality that aligns work that must be done to sustain mining asset with the skills, certifications and manhour and requirements. This enables an operation’s human resources team to recruit, retain and train personnel to meet these needs.

Failing this, performance versus competition will be suboptimal because of:

- Stockouts of components preventive maintenance or break-fix repairs, leading to unplanned downtime
- Failures caused by not tracking condition of spare parts–new, overhauled or repaired. What preservation activities, like turning motors and valves by hand, have been completed, and at what periodicity?
- Lack of maintenance technicians required to sustain the asset
- Maintenance and repair work completed by unqualified personnel, leading to enterprise risk and regulatory compliance issues
- Overstocking of spares/repairs parts, causing excess capital to be tied up in inventory
- Extended down time of equipment, eating into productive operating time and output

These dynamics will affect any asset-intensive operation, but in mining they are compounded by the challenging working environment. One element of this is the fact that access to the operating site is restricted. Transport in the shaft may be available once or perhaps twice during a shift. This places an additional constraint on maintenance technicians as they must make these precise windows to get to where maintenance work is performed.

If they get to the work site without the requisite tools or materials, they will be unproductive until they can get back to a tool crib or parts storage area, which might be hours. This means that software used in this setting needs to deliver tight integration between the mobile work order used by the technician and spares/repairs inventory. Inventory functionality may also be used to determine if certain tools or materials should be located closer to the site of consumption, in the actual shaft.

More advanced inventory logistics functionality may determine if certain longlead time, high-cost parts can be part of a shared inventory across mine sites. A long lead time item like a spare conveyor drive may be located at one of several mining sites or could be in a central facility within reach of several different mine sites. But either way, shared inventory will spread the money tied up in a high-dollar spare across multiple sites. The right enterprise software will give each mine visibility of shared inventory, enable one mine to pull from shared inventory and then trigger either a replenishment transaction, an internal depot repair process or both. And that part or component is on hand and more rapidly available than if it were ordered from a supplier that may have to fabricate it to order and then ship it over long distances.

Demonstrating value and safety

Mining companies need to not only realize value on capital investment, but present that value effectively. Many mining companies are publicly-traded, and that means they need to meet the rigorous demands of the exchange on which they are traded, often consolidating results in different regions across multiple currencies.

Privately held mining companies face perhaps a greater challenge as they need to present value in a forward-looking fashion to draw private investment required to make new capital investments and start new projects. This requires not only a strong financials package, but a project-based solution that can present a forward-looking view of the entire mining project lifecycle from exploration and planning to decommissioning. Once work starts on a site, operational costs and revenue can be captured not only historically but estimated through to the end of the mine lifecycle. This not only helps inform capital investment decision making but makes for a convincing and honest prospectus for individual investors or investment groups.

ERP and EAM software may also enable an executive team to quickly pull and present data to regulators. Here, again, an integrated solution that encompasses human resources functionality that contains lost time accidents, equipment stoppages with root cause analysis and other pertinent data will streamline these processes.

> “Once work starts on a site, IFS captures operational costs and revenue not only historically but estimated through to the end of the mine lifecycle."

Spanning geography

Mining operations are often geographically dispersed, with active mine sites spanning different countries and potential exploration projects dotting a rugged landscape. This creates two distinct challenges–centralized management of dispersed operations and decision support regarding potential exploration projects or mining starts in geographical context.

Managing distant operations, measuring them against globally consistent metrics and making and operationalizing decisions–these types of challenges are addressed by a newer technology–operational intelligence software.

Operational intelligence software is built around a strategic business map,which defines the way that cost and value flow through the different parts of an organization. This graphical representation of the business:

- Captures the strategic roadmap to ensure company strategies are available to everyone
- Develops leading and lagging key performance indicators to monitor performance
- Implements connected management cockpits for key personnel from executive management to the mine manager

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> Operational intelligence connects people and processes throughout the organization, and specific cockpits can be crated for asset managers, process managers, the CEO–anyone who should be empowered to make decisions based on the latest insight."

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> A fully integrated enterprise solution will help a mining operation achieve operational excellence by streamlining and standardizing key business processes."

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The real power of operational intelligence though flows from its ability to not only support executive decisions but to operationalize those decisions in the organization. Operational intelligence rests on top of one or multiple ERP or EAM systems. As priorities, goals or business processes in the business map change, that in turn initiates change in the underlying ERP or transactional systems.

And while an ERP software suite may be the system of record for mining operations, geologists in the field may make heavier use of a geographic information system (GIS) to record conditions at a site that drive new exploration decisions. ERP optimized for the mining industry should be integrated with popular GIS platforms like eSRI so geologists can search for and update information on current and potential exploration projects using a map interface directly to records in the underlying system of record.

Conclusion

From initial exploration through decades of operations, a fully integrated enterprise software environment will help a mining operation achieve operational excellence by streamlining and standardizing key business processes. It will also ensure that processes are handed off seamlessly between different business disciplines. Applications that lie on top of ERP can not only support mining executive team decisions but push those decisions into the operational layers of the product. And because mining operates in the context of the natural environment, enterprise software must also be integrated with software used by geologists at the tip of the spear. Only when optimal business processes are centrally instituted and facilitated by enterprise software will a mining organization achieve operational excellence. And then they will be in a position to dominate their competition in the market, and with investors.

About IFS

IFS develops and delivers enterprise software for companies around the world who manufacture and distribute goods, build and maintain assets, and manage service-focused operations. Within our single platform, our industry specific products are innately connected to a single data model and use embedded digital innovation so that our customers can be their best when it really matters to their customers–at the Moment of Service.

The industry expertise of our people and of our growing ecosystem, together with a commitment to deliver value at every single step, has made IFS a recognized leader and the most recommended supplier in our sector. Our team of 4,000 employees every day live our values of agility, trustworthiness and collaboration in how we support our 10,000+ customers.

Learn more about how our enterprise software solutions can help your business today at ifs.com.

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