MineRP Overview

Company Profile

January 2020

MineRP

Our Reputation

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Mining's Disruptor

MineRP is a software company focused on completely novel approaches to digital transformation in the mining industry. We have a reputation as disruptively innovative thinkers who punch far above our weight when it comes to audacious ways to solve wicked mining problems. Our speed, agility and innovation are due in part to our unbeatable team, but also to our unique software platform.

The Tesla of Mining?

Mining is at a crossroads, but with the MineRP Platform the art of the possible has been transformed - irrevocably. Our patented solutions bring order of magnitude improvements in mine planning and execution because our platform is not only better, but completely different. That's why we've been called the "Tesla of mining".

Away with slow, awkward mining decisions. Millisecond mining means immediate, real-time control of execution, supported by the ability to re-engineer mine plans in less time than it takes most mines to organize a meeting. With up to 400 times improvement in the time it takes to create new planning scenarios for the most complex mines on earth, the industry is about to be shaken to its core. Don't believe us? Ask our clients.

We enable the rapid development of mine planning strategies that are fully integrated with ERP systems for financial and logistic feasibility testing in minutes and hours.

Partnering for Exponential Growth

We're the ant that dances with elephants, and we like it! Our partner ecosystem includes global powerhouses like Deloitte, GE Wabtec, SAP, IBM and others who develop sustainable digital transformation strategies for mines of any variety, anywhere. Strategic partnering is core to our future, and our partners love telling our story and offering previously impossible solutions with us.

Innovation at Warp Speed

We innovate. It's what we do! We're independent, and love seeing the words we create appear on our competition's presentations. We were the first to develop feasible enterprise solutions for spatial mining data amalgamation, parametric mine planning, live geology, intelligent workplaces, responsive systems, and the list continues to grow…

The Mining Reality we service

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We're more interested in the future, but we'll spend a page on the past in any way. The (current) past of mining software is a bit of a mess. Actually, it's an obstinate mess that won't go away, because engineers create software problems while solving business problems, and most mining software out there were created by engineers, for engineers.

Engineers talk metrics, not money

Want to create and run a mine? Ask the engineers. The engineering systems are the heart and guts of the mine, without which nobody would know what to do, nor when or where or what with.

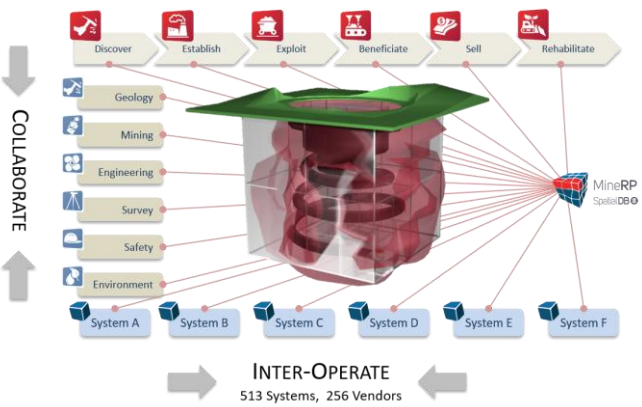
Broadly speaking, engineering systems are used to

- identify,
- model and evaluate,
- design and plan,
- operate and control, and
- rehabilitate mines.

Like most geologists and mining engineers, the systems they use don't collaborate too well. They approach data differently, and don't call the same things by the same names. Enter chaos.

MineRP solved this problem.

We created a platform that speaks both geologist and engineer (and everything in between!) A Platform takes care of complexities such as information governance, security and integration while allowing modular extensions that live on top of the platform to take care of expert domains and their functional demands.



CEOs talk money, not metrics

Want to get the money to buy and operate a mine? Ask the business people. Their systems manage the lifeblood of the mine - money.

CEOs and CFOs invest in ERP solutions that are geared to run mines like smart factories – and it's all about the money. The problem is that engineers and geologists dislike accountants and their systems even more than they dislike each other. This leaves us with an entirely disconnected technical and financial or business reality on every operating mine we know.

The gap between the engineers and the accountants mean that the CEO and CFO of a typical mine are incapable of running their mine as an integrated, modern enterprise. They cannot plan rapidly, nor control continuously, nor predict accurately. And so, they lose money and credibility, and investors lose confidence.

MineRP's platform addresses this problem too. We have patented solutions with the right partners to tightly integrate the technical and business domains and put CEO's and CFO's in the driver's seat with all the power they need

MineRP is a Platform Play

The MineRP Platform brings together all the technical data created on a mine in a single place, so you can analyse it or view it as a picture – just like the engineers do on the plans in their boardrooms.

There's a lot more to it, but unless you're an engineer you're probably not interested. If you are, call us, and we'll be happy to explain!

Enabling the Digitally Integrated Mining Enterprise

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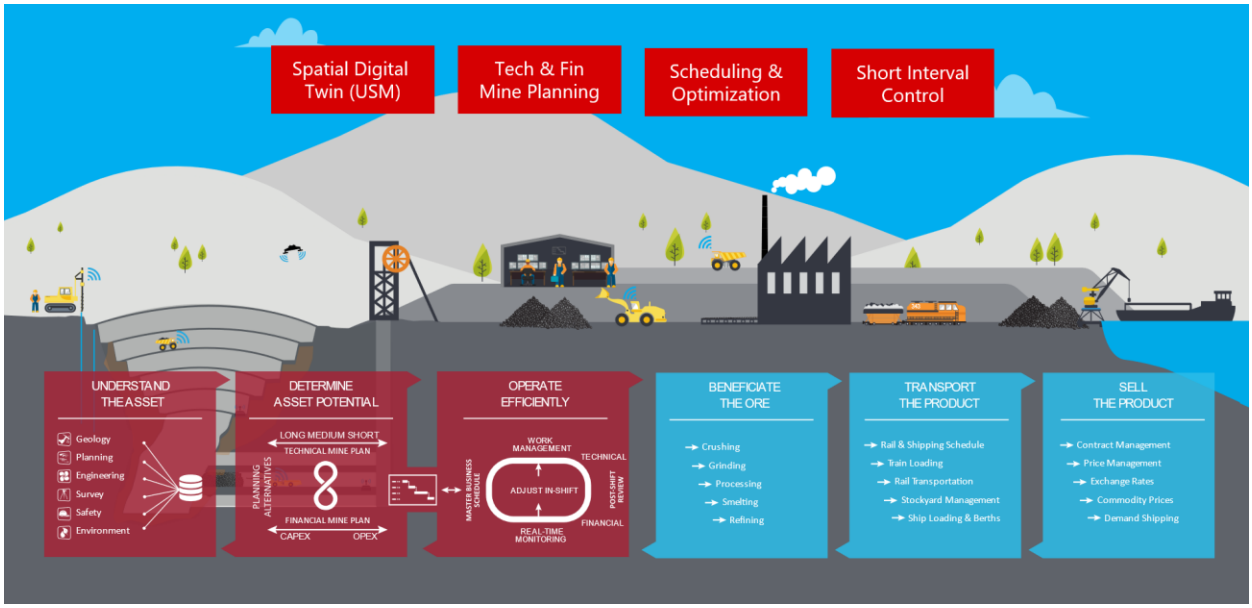
MineRP's vision entails the unification of the mining technical and ERP domains at every level of planning and execution to achieve digitally live asset and money versions of the mine. We focus on three integrated business processes core to mining and implement solutions to enable a growing list of digital capabilities that support this vision.



Understanding the Asset

Not only trucks have digital twins. The entire mine, from rock to dock, can be modelled, represented, and managed digitally.

MineRP is the undisputed leader when it comes to integrating the mining technical systems world onto a robust, proven spatial information management platform. This means that mines can stop importing and exporting files or worrying about information governance.

We don't ask our clients to replace the systems they have at the moment. Rather, we connect to the systems you bought to amalgamate the data you have and provide the actionable information you need.

The MineRP Platform amalgamates every aspect of your mineral asset - past, present, and planned, represented in a single spatially indexed picture. Analyse, plan, reconcile and report resources and reserves at every point in the value lifecycle of your asset.

Determining the Asset Potential

Getting the most from a mineral resource takes integrated strategic, tactical, and operational planning. MineRP gives mines **one plan** across all planning horizons.

Our parametric mine planning solutions are applicable for all methods and commodities.

MineRP allows clients to create strategic LOM plans fully integrated with their ERP systems and refine business plans and budgets to detailed master operations schedules in a fraction of the time it takes with other mine planning tools.

All this compute to confidence in plans and execution forecasts – delivering executive piece of mind that board and investor expectations can be managed to protect shareholder value and build confidence.

Operating Efficiently

Efficient operations require effective Short Interval Control capabilities that safeguard against deviations from short term plans.

The MineRP Platform delivers a single workspace for mine planning and execution. From detailed short-term planning through orchestrated dispatch and execution, our platform is able to manage detailed tasks and resource assignments while retaining continuity with agreed targets.

To deliver feasible, achievable and believable execution plans, we integrate all the planning and scheduling domain, including Production, Maintenance, HSE, Hoisting Schedules, HR Schedules (certification, rostering etc.) and others into a single, optimised Master Business Schedule – providing operations with a true, detailed reflection of every task required in the shift. This approach allows for detailed planning, management and control from production, costing, resourcing and logistical points of view, and unlocks immense productivity and efficiency gains.

Beyond scheduling and work management, MineRP offers platform-to-platform integration with IIoT Platforms and Physical Technology platforms that inform digital control rooms or digital nerve centres of real-time progress on the status of task execution.

Our clients are fully prepared for digitally orchestrated operations, even integrating technical, financial and logistics KPIs.

Digital Capabilities Enabled by MineRP

- Maintaining a spatially Intelligent Digital Twin of the Enterprise
- Resources & Reserves Governance (Ore Body Knowledge)
- Volumetric Spatial Information Management
- Integrated Mine Planning
- Unified Integrated Business Planning
- Integrated Supply Chain Planning
- Transactional R&R Inventory
- Ore Accounting (Mix & Blend)
- Unified Detailed Scheduling Process
- Orchestrated Dispatch & Execution
- Continuous Data Collection & Tracking
- Real-time Operational Adjustment
- Operational Financial Control
- Asset & Resource Management
- Maintain and Control Safe and Healthy Work and Natural Environments
- Mining Performance Analytics

Digital Transformation for Millisecond Mining

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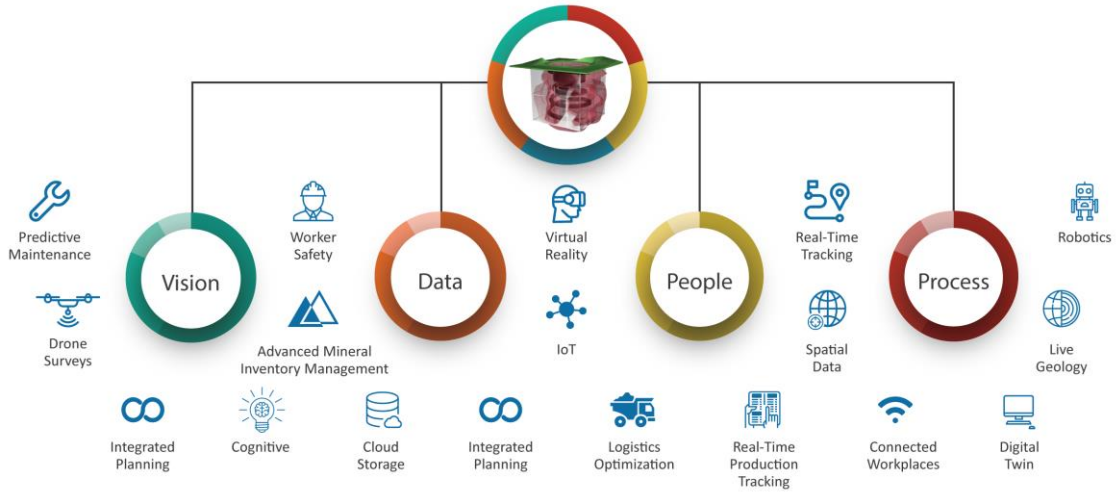
MineRP enables millisecond mining. It's a technical term, and it's ours. It means that mines can plan and re-plan faster than the time it traditionally took to organize the agenda. It also means they can make sense of everything that happens underground (or in the pit) as and when it happens. Why wait for the next shift?



Who mines at millisecond intervals? Actually, everybody does. Digital twin gurus tell us that we need to be Hyper Aware (thanks Cisco). But hyper awareness without the ability to respond means nothing. Then big data is simply big noise.

What we really want to do, is mine at the speed of data, and if that data comes to us in millisecond packages, we must be ready to make sense of it.

Modern mines are presented challenges covering areas relating to connectivity and infrastructure, integration, and collaboration of enterprise applications such as mining technical systems, manufacturing execution systems, enterprise resource planning systems to name but a few.

The ultimate aim is delivering a data-driven, fully connected business able to call on resources just-in-time, orchestrate tasks automatically, monitor execution in real time, and respond to internal and external demand signals in the time required to make a difference.

MineRP doesn't lead the mining transformation pack. We started a different race. Our platforms exist so that our clients and big-ticket partners can make their transformative strategies work.

We're the first company that really cracked the nut to unify the *business* (think CFO and SAP, SAGE or Oracle) and *science* (think COO and MES, or Sandvik, or general mine planning tools).

We're not all about the software though, we also understand what it means to create intelligent workplaces.

MineRP Connect extends connectivity and intelligence to the working face by hosting the MineRP platform on intelligent edge computing and communications devices. Together these capabilities provide real-time control against the planned mandate of the intelligent workplace.

Our strategy is to deliver decentralised (or edge) computing to the workplace, which means that decisions are made in and by the workplace while we can still do something about it!

The Art of the Possible

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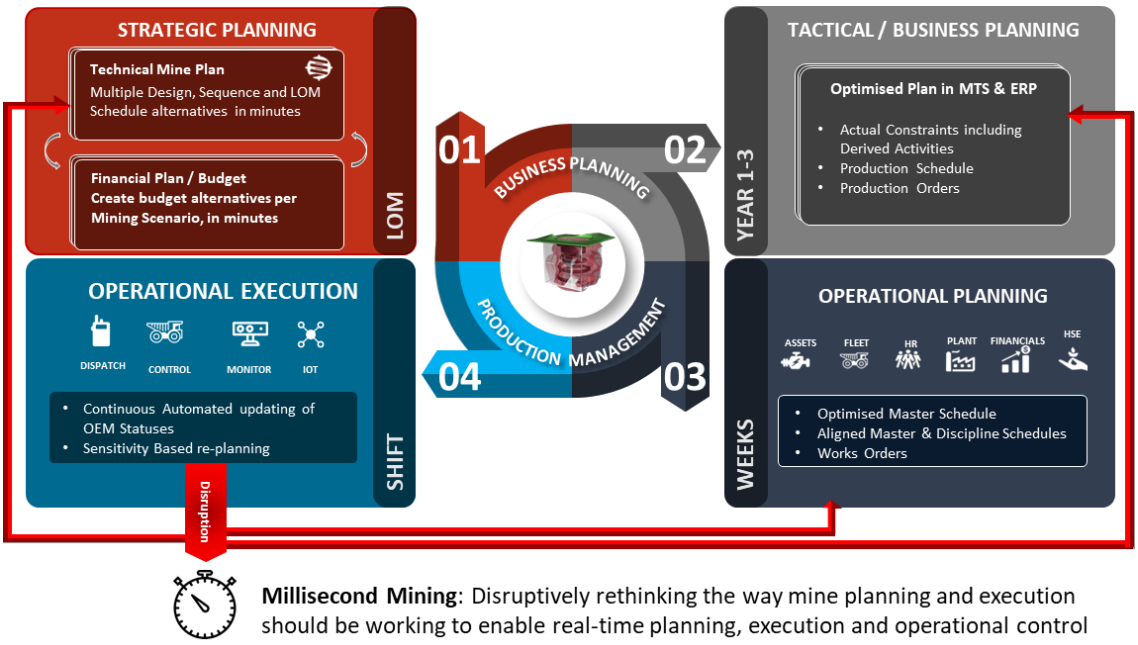
Yesterday, planning took months. The CEO was the referee between the COO and CFO, and at the mercy of their differing opinions. The board was his enemy.

Today, CEOs can consider alternative strategic business options, and CFOs and COOs can run enterprise simulations that tell them exactly what the technical, financial and logistical impact of those options are. While the CEO waits. If they have MineRP.



Millisecond Mining: Disruptively rethinking the way mine planning and execution should be working to enable real-time planning, execution and operational control

Perfect plans last until the start of the next shift. And then things change as miners encounter real-world mining conditions. When mining plans change, so do production and sales forecasts, logistics requirements, processing parameters and everything else. The engineers know their plans are feasible, but what about the rest?

Sometimes these disruptions require far-reaching strategic alternatives impacting the entire life of mine plan, while less significant incidents may only impact the real-time deployment of resources for during the current or next shifts. Which sound easy to fix until you're working in the pit!

Whatever the scope of the disruption, or the requirement for replanning, mines must be able to change their strategic, tactical or operational plans or face their investors when they don't make targets. It's a competition for their money, after all.

Digital transformation points to a mine's ability to know (systems) and manage (people and processes) the current and future state and status of their entire operation (read digital twin – or triplet if you add money), and their capability to provide fast and feasible alternatives.

We work with ERP companies like SAP to unify technical, financial and logistical planning processes. At the operational level we partner with equipment manufacturers, IoT experts and digital experts like GE and IBM to keep a real-time eye on the status of execution and its relation to the plan.

Unified Business Planning

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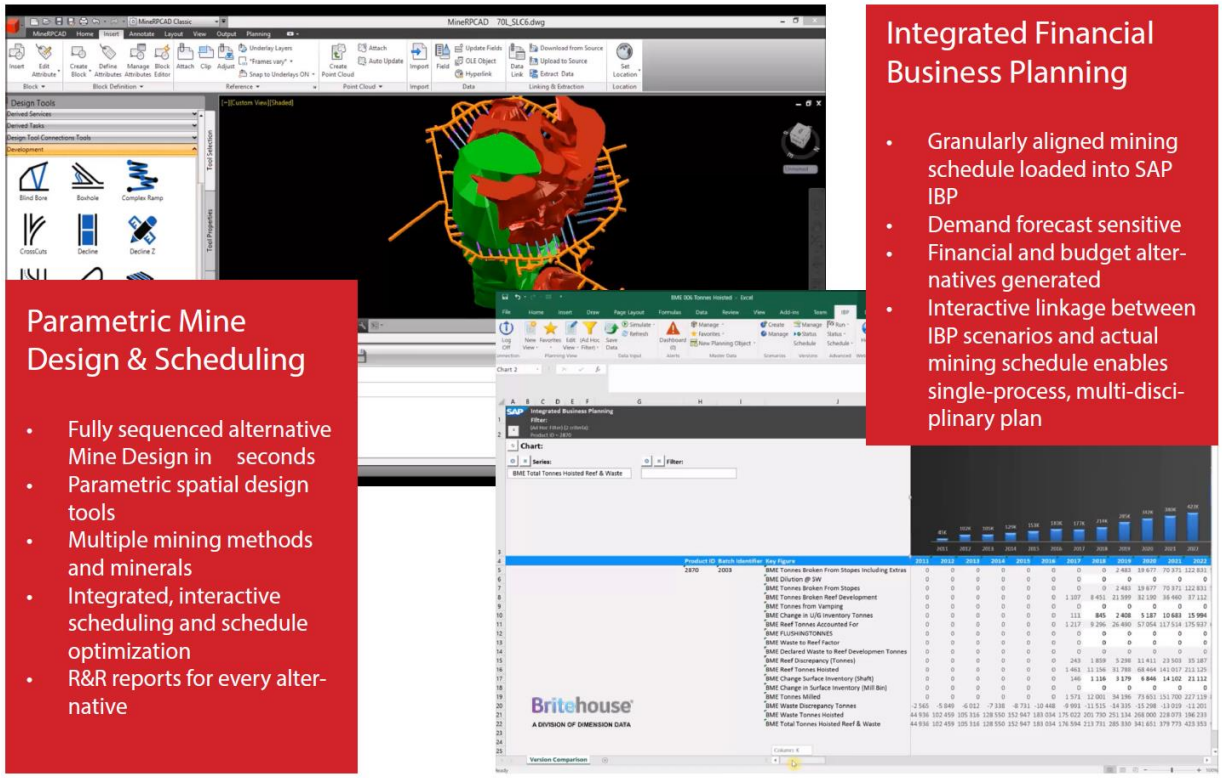
Mine planning is not business planning. You need the geologist and the engineer and the accountant and the supply chain manager and the plant manager to agree. And it should not take weeks or months.



MineRP's Unified Business Planning (UBP) solution includes native integration between Mine Planning and Business Planning (ERP financial enumeration of mine plans).

MineRP and global ERP provider SAP have joined forces in a SAP Co-Innovation Laboratory program to extend mine designs and schedules through detailed financial and operational planning in SAP IBP (Integrated Business Planning) into SAP BPC (Business Planning & Consolidation) - ready for production execution and control.

The bi-directional capabilities of MineRP UBP allows mines to rapidly adjust mining schedules, or even designs to respond in real-time to the changing demands of grade, quality, volume and the constraints implicated by downstream processes including plant or logistics capacity, availability of capital, market demand signals, etc.

With MineRP Unified Business Planning, mines can create comprehensive Business Planning alternatives persisted into the SAP financial management modules, executable as Work Orders with concomitant Bills of Material at lightning speeds.

The "Unified" name does not mean that we re-wrote SAP and created our own budgeting and logistics tools. We work hard to avoid wasting time, and we don't think you should buy software you already own.

Unified Production Planning

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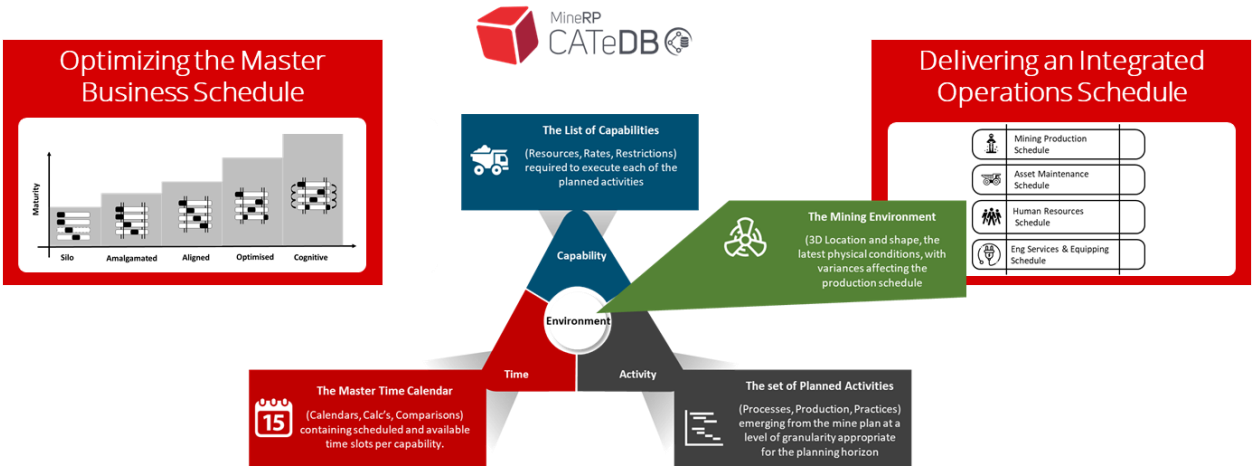
Miners are good at planning. So are asset managers, maintenance people, HR managers, health and safety people, ventilation engineers and the list goes on. What they're all truly bad at, is planning together. Which boils down to a lot of shouting in the mine – and the loudest voice normally wins.

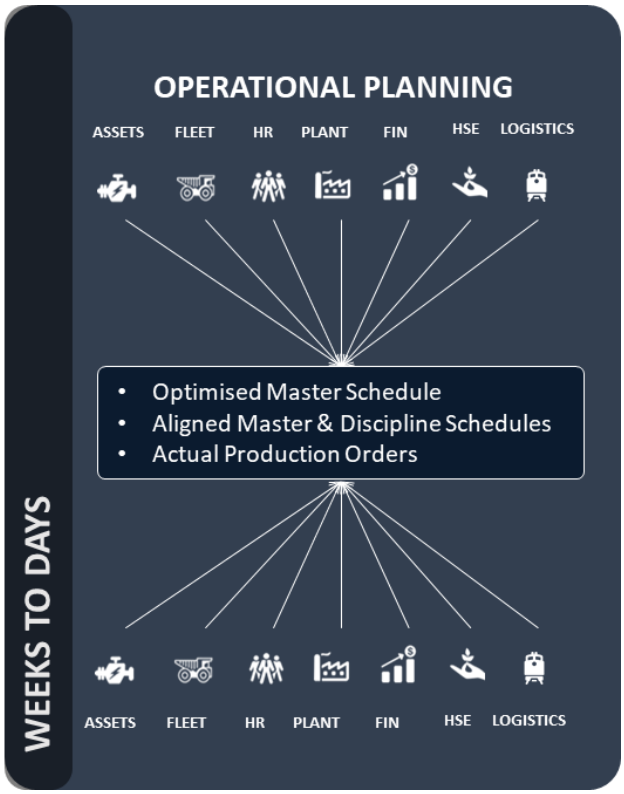


We all know that alignment of schedules is the basis for enterprise wide control. Our Platform is really good at integrating with other systems, so we can help you to integrate the capabilities (i.e. resources), activities (i.e. tasks) and timelines (i.e. calendars) of everyone that schedules in their own systems.

What you get is an amalgamated Master Production Schedule containing everything that was planned by everyone. Even better – everyone can access this central schedule, and we have friends with the best schedule optimization tools in the world!

Master Production Schedule optimization means that everyone benefits – not only the supervisor with the loudest voice or the best contacts. Our solutions allow world-leading advanced analytics and optimization engines to tell you what the best way is to get to your target (called prescriptive analytics), or they can look back and do descriptive analytics to help you understand why things went wrong to begin with.

That's the future, but you must start by getting the schedules into one place, and that's where we come in.



Unified Production Management

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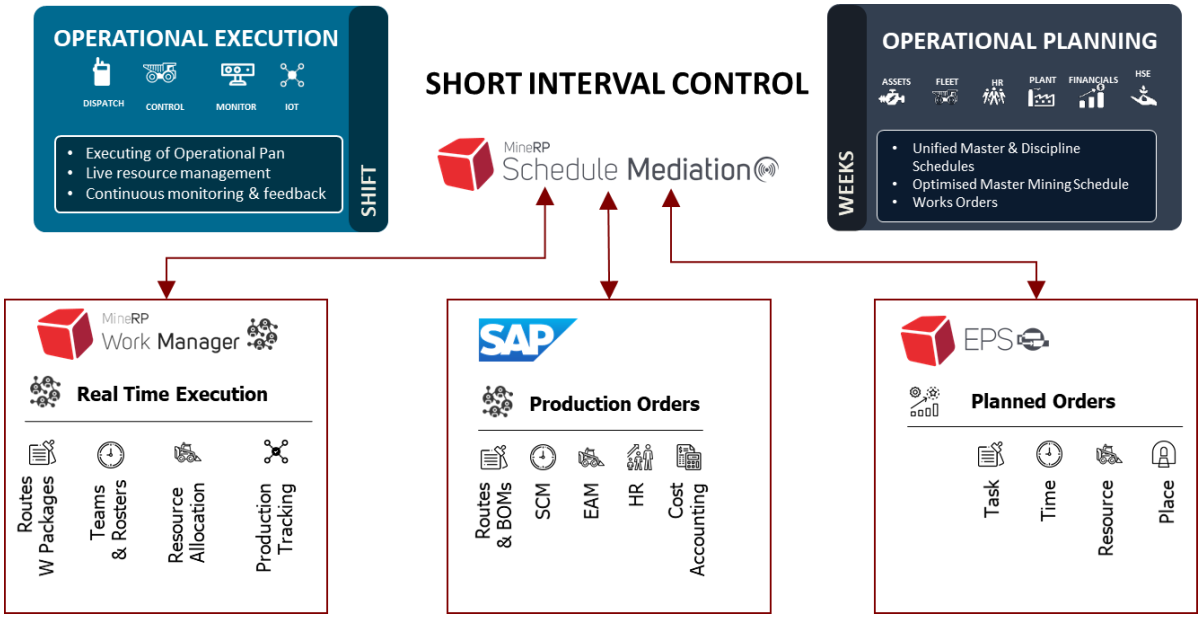
Lots of people communicate digitally with diggers and loaders and call themselves digitally transformed. Unifying production means that beyond establishing a technical digital twin for the mine, we also want to track the costs, logistics and other metrics that pertain to each task.



Everyone is talking mechanization and automation – which means everyone needs an effective way to digitally orchestrate the tasks they have planned. ERP systems are brilliant at this, because they have nice recipes for each task, and know just how much ingredients are required, what these things cost, and when they should be available.

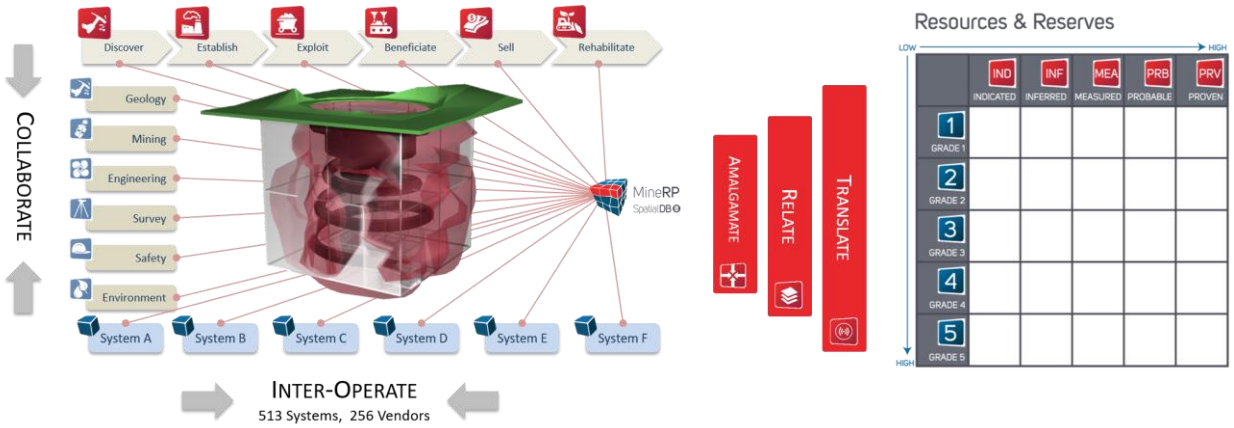
During planning and execution, MineRP works with partners like SAP to extend production orders with all the processes that work so well into the daily tasking of equipment, teams and other resources. Here's how it works: If the job is in the ERP, we can use its logistics and supply chain wizardry to ensure everything else is available on time, properly maintained, people are trained and licensed and so on.

MineRP's Work Manager solution is the final recipient of the planned work orders and takes care of publishing tasks for dispatching, monitoring and tracking of work to ensure granular short interval control. Work Manager also caters for that all-important capability of managing unplanned tasks on the fly. Managers can spatially analyze the impact of unplanned work, and dispatch changed orders to prevent unnecessary idle time or resource assignment clashes.

Strategic partners such as Deloitte who specialize in Digital Orchestration / Nerve Centres with fancy big screens enable line-of-business operational control as execution is monitored through digitized equipment and workplaces, and rules-based events triggering and workflow ensure appropriate (where possible automated) response and escalation.

Unified Mineral Inventory Management 9

Understanding and describing the current and future state of a mine's resources and reserves is complex business, and legally regulated. Which means mines have to be able to back up what they tell the market. Which means they do it only once a year, make all the promises they need to make, and wait for next year's reconciliation to tell them how far they got it wrong. Enter impairment and other swearwords.



Classification and evaluation of resources and reserves (the mine's biggest asset!), is based on highly technical calculations by clever people who rely on a multitude of non-integrated, non-synchronized data-sets for input. It's hard and takes a lot of time!

Other industries use ERP systems to manage their inventory, because ERP systems enable best practice for production-, logistics- and financial asset accounting practices and processes.

We've already told you that MineRP integrates all the technical data, and knows the current state and status of the mine at any time. Now we've gone that one step further and patented (yes, it's only ours!) a system that allows mines to have on-demand access to their current and future resource and reserve positions!

Complicated things like resource to reserve conversion forecasts and the continuous re-classification that happens as budgets, plans, actuals, sampling, drilling, inspections and evaluation takes place can now be expressed in real time as ERP-like materials management transactions. Long sentence. Read it again – it's that good.

This streamlines R&R processes immensely, with savings potential for just-in-time production and logistics management coming to mind immediately. At least for us.

Just so you know – you can get a lot of the Mineral Inventory Management benefits from MineRP even before putting anything in SAP – so don't think years of work and buckets of money before you get actual value!

Intelligent Mines and Workplaces

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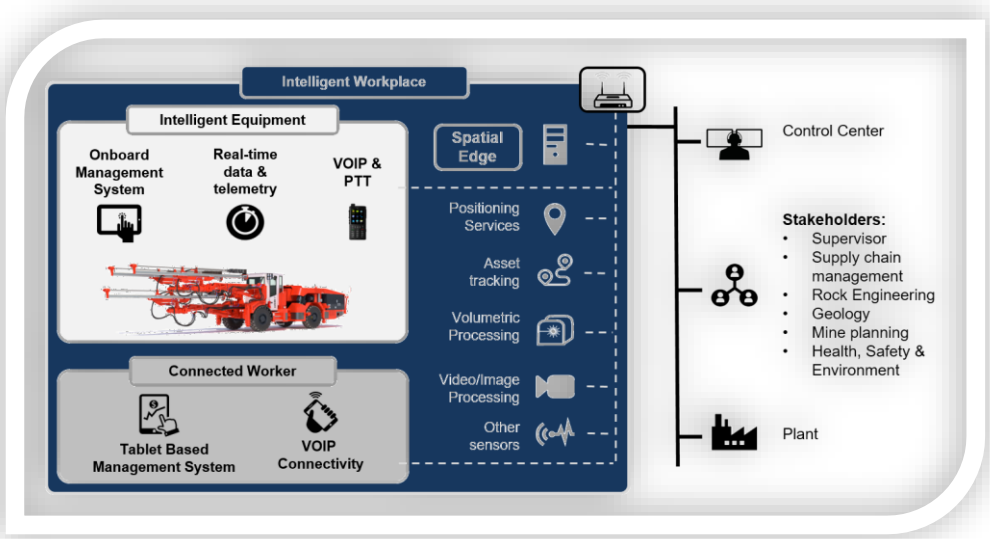
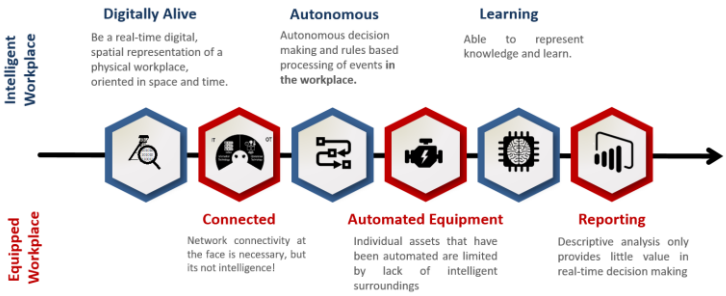
Intelligent mines contain collections of intelligent places of work, where intelligent capabilities perform planned activities at the right time, to the right quality. Welcome to the future. Brought to you by the Internet of Mining Things which some get right, and most don't get at all.



When it comes to harnessing the Internet of Things (IoT for those in the know), everybody seems to have a great solution. To be fair, many companies do, but in our opinion, they stop too short because they are satisfied with merely digitally equipped mines.

MineRP's Intelligent Place of Work moves beyond the technology layer that provides connectivity and data collection. We are working to equip every workplace with an Intelligent Spatial Edge Computer.

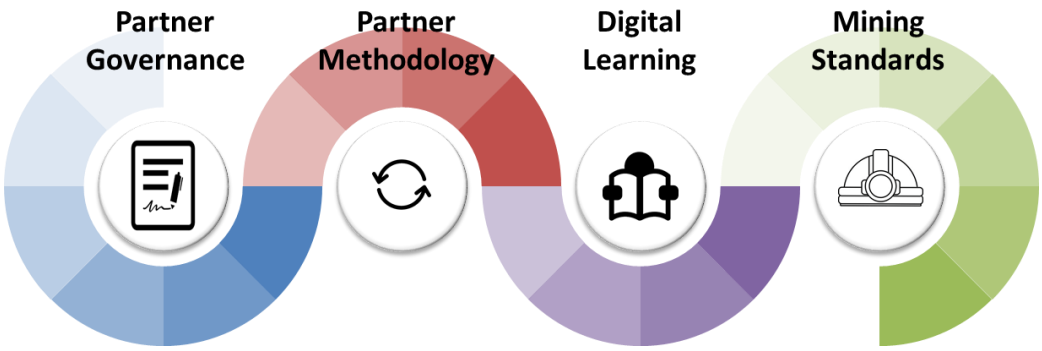
What that means is that we see workplaces that are intelligent. Intelligent Workplaces are aware of planned work, and continuously monitor conditions as well as compliance to plan in real time. They're also equipped to kick off corrective processes when things go wrong, while providing Digital Orchestration Centers with immediate access to everything that happens underground. We think workplaces should be mandated to process some events directly without flooding the network to get a decision made elsewhere.



The MineRP Connect provides a unique opportunity to deliver industrial strength digital Internet of (Mining) Things seamlessly integrated with the MineRP Platform.

We have great Partners!

MineRP is a small company. We pack a mean punch, but we choose our battles well. We know mining inside out, and we also know that no single company will be able to provide a complete, end-to-end turnkey solution to the modern mining company. That's why we're friends with a whole ecosystem of partners. And it doesn't hurt that we have the biggest and most popular friends on the playground!

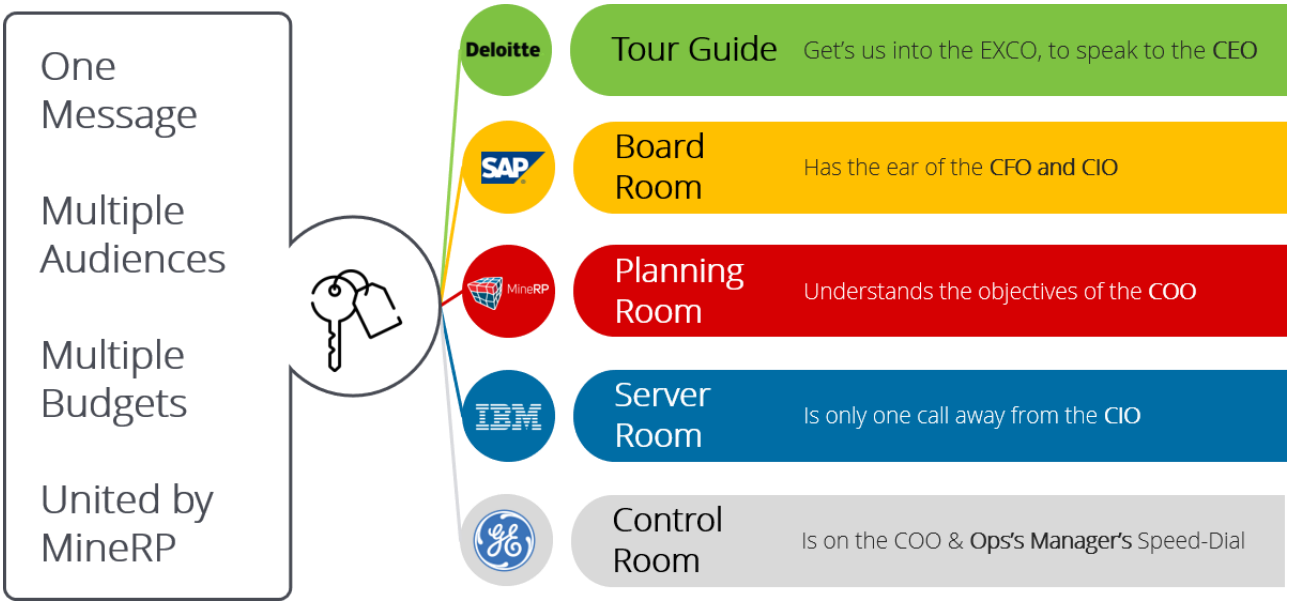


It's important to us to choose partners that are industry thought leaders, and have a clear mining vision.

We don't provide our partners with tools and leave them to figure out what to do with it. We're growing an international capability to support global companies who are active in the mining industry through a structured partnering methodology.

Our partner support capabilities include go-to-market models, solution implementation methodologies and digital learning assets to enable sales and implementation teams.

From a best practice point of view, we are prominent players in global mining standards development, and have developed processes that enable repeatable, reliable enterprise software implementation projects.

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