

# CASE STUDY

## Automated Equipment Scheduling for Optimal Asset Utilisation and Hard Rock Mining Efficiency

# ORB

**Mining Method**  
Hard-rock development

**Module**  
Equipment Scheduler

### The Customer

The customer is an international copper-focused mining company based in Australia.

### The Challenge

There are many different types of equipment involved in hard rock mining which must be mapped to specific tasks. With more work than there is equipment, certain areas must be prioritised. The equipment also has multiple constraints regarding where, when and how long, and in which sequence it can be assigned.

Before engaging Polymathian, shift bosses made schedules manually, which required considering vast amounts of information: far too much for individuals to keep track of without support. The manual process also meant there was no planning consistency. The schedule consistency and quality was dependant on the experience of the person making it, but the sheer volume of data to consider would challenge even the most experienced person.

### The Solution

Polymathian's ORB equipment scheduler module incorporates the mine's strategic plans to ensure all schedules prioritise the dispatch of equipment to areas that drive value. Included in the model are both static configurations, including constraints and asset compatibilities. When changes occur in this dynamic environment, data is fed into the digital twin to reflect the current cave state, ready to be re-planned again.

### About ORB

ORB is a world leading optimisation-based planning and scheduling tool designed to maximise efficiencies and asset value in mining operations.



### The Value



#### Automation

Plans are created at the click of a button



#### Optimisation

Equipment is optimally allocated to priority work areas



#### Consistency

Mathematically optimised plans are produced every time





ORB generates automated and optimised schedules at the push of a button which allows shift bosses to devote more time to other essential aspects of their jobs, such as conducting safety inspections. They only need to review the generated schedule to ensure nothing is missing. The software can easily create a revised version if changes are required.

### The Benefits

#### Greater speed and quality of schedules

Any user can generate mathematically optimal schedules within minutes.

#### Constraint-based scheduling

Consider that all static and dynamic constraints are both feasible and compliant.

#### Task Prioritisation

Assign equipment to the areas that drive the highest long-term value.

#### Greater asset value

Equipment is sequenced to reduce unproductive movement around the mine.

### Decision support

- What schedule is most efficient when assigning equipment to work areas?
- How can available equipment be mapped to current tasks to ensure priority is given to the right work areas?
- What work area allocations will minimise unproductive tramping of equipment around the mine?
- How can the schedule be adjusted to respond to unexpected maintenance?
- When should firings, including mid-shift firings, be scheduled to ensure progress that most benefits the mine?