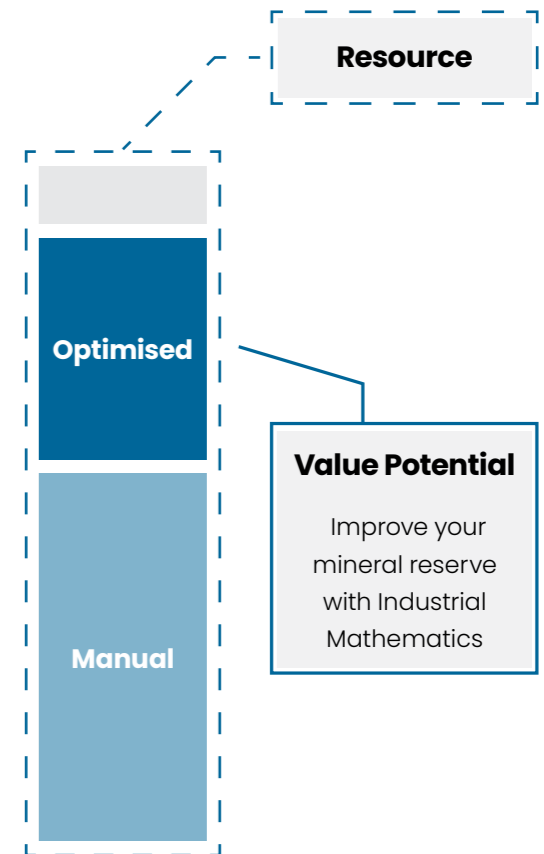# Mining with Industrial Mathematics

Optimising the value of your mine

Polymathian offers mathematical optimisation software designed to solve large and complex mine planning and scheduling problems to maximise your mineral reserves.

Optimised vs Manual Planning

Our products help you make optimal mining decisions by using proprietary industrial mathematics to simultaneously consider multiple business objectives and system constraints.

Unlike manual planning, optimisation based software can automate the planning process to efficiently produce plans which maximises the total recoverable value of a mine.

Resource

Optimised

Manual

Value Potential

Improve your mineral reserve with Industrial Mathematics

Who is Polymathian?

We are the industrial mathematics experts.

Polymathian software products add significant value for our customers by using industrial mathematics to provide optimal solutions to complex problems.

We are a team of innovators, software engineers and mathematicians who are transforming the way the mining sector makes planning and scheduling decisions.
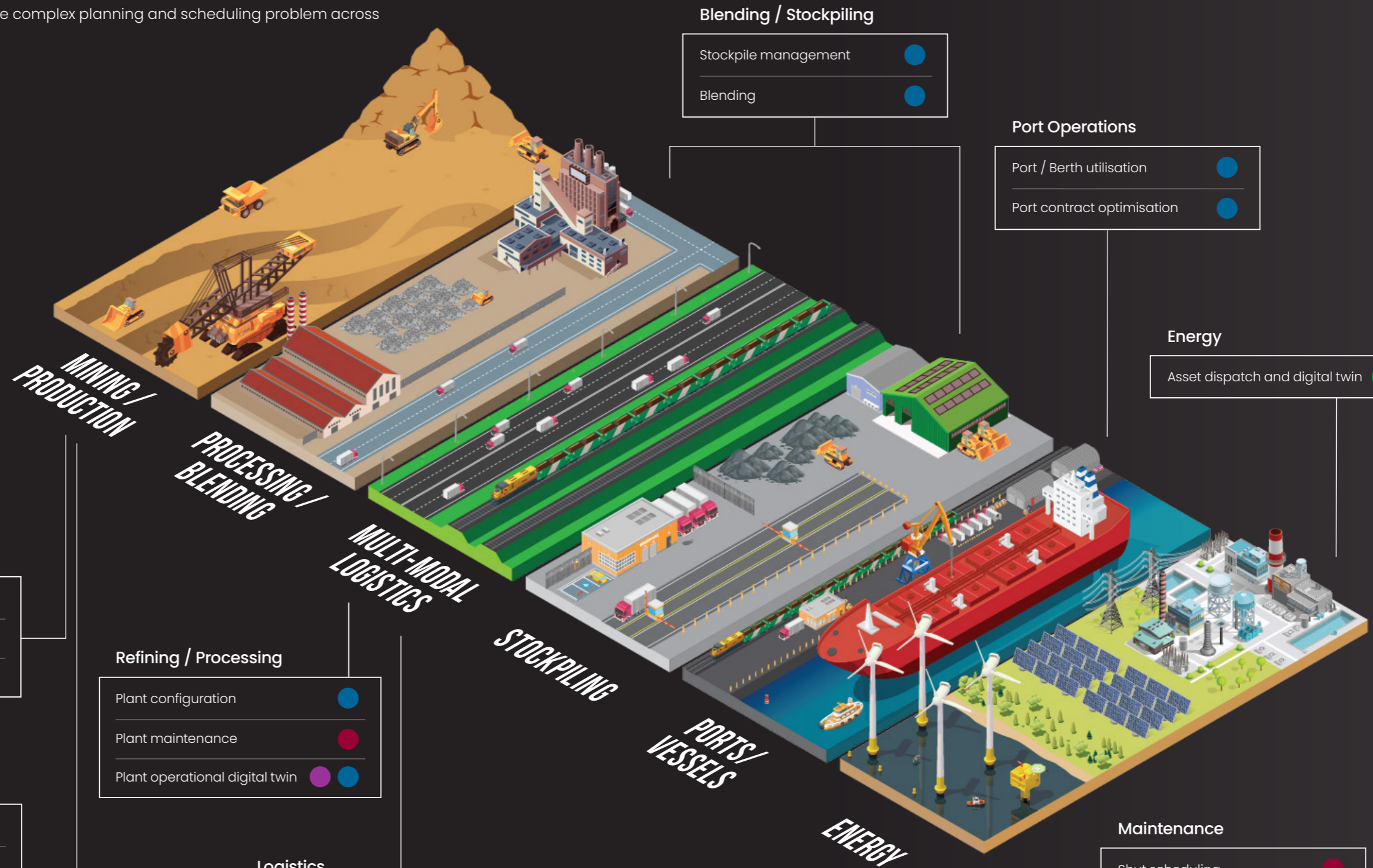
Problems we solve

Maximising your mine's value across the supply chain

Polymathian software products solve complex planning and scheduling problem across a mines' entire value chain.

Product influence in the value chain

- ORB
- BOLT
- GEAR
- RACE
- VOLT
- SIM

MINING / PRODUCTION

PROCESSING / BLENDING

MULTI-MODAL LOGISTICS

STOCKPILING

PORTS / VESSELS

ENERGY

Blending / Stockpiling

Stockpile management	BOLT
Blending	BOLT

Port Operations

Port / Berth utilisation	BOLT
Port contract optimisation	BOLT

Energy

Asset dispatch and digital twin	VOLT

Surface Operations

Mine planning	SIM, BOLT, ORB
Haulage	SIM, BOLT, ORB
Mine digital twin	SIM, ORB

Refining / Processing

Plant configuration	BOLT
Plant maintenance	GEAR
Plant operational digital twin	SIM, BOLT

Underground Operations

Mine planning	SIM, BOLT, ORB
Equipment scheduling	ORB
Short interval control	ORB
Haulage	SIM, BOLT, ORB
Mine digital twin	SIM, ORB

Logistics

Logistics scheduling	BOLT, RACE
Rail contract optimisation	RACE
Crew management	RACE

Maintenance

Shut scheduling	GEAR
Asset management	GEAR

Marketing

Portfolio optimisation	BOLT

The Polymathian software portfolio

Interested in learning more?

Book a demo with us to learn how Polymathian software products are transforming complex decision making for the mining industry.

ORB — Mining Optimisation

Mining optimisation software to increase profit, reduce cost and maximise efficiency from strategic planning to real-time dispatch.

Modules

Live	Autonomous	Operational	Tactical	Strategic
Capture, monitor and visualise your mine operations	Highly automated Short Interval Control to manage your fleet	Plan the shift to manage development, construction, and production tasks	Manage development, construction, and production tasks to defend strategic plans	Plan strategically to maximise Net Present Value of the mine

BOLT — Supply Chain Optimisation

Mine to market optimisation software to maximise margins across the value chain and all time horizons.

Modules

Live	Operational	Tactical	Strategic
Gain insights by tracking and reconciling material movement at all steps of the supply chain	Plan day to day down to the individual train and vessel level to defend tactical plans	Manage all stockpiles and product to vessel allocations at a weekly level to defend strategic plans	Plan strategically against your business objectives including CAPEX, OPEX and Take-or-Pay contracts

GEAR — Asset Maintenance Optimisation

Optimise maintenance strategies to improve safety, reduce costs and minimise downtime.

Modules

Shutdowns	Accommodation	Spares
Determine the timing of shuts to minimise system impact and maximise workforce utilisation.	Optimise accommodation allocation to minimise disruptions and maximise workforce utilisation	Evaluate procurement and inventory strategies for key spares to minimise impacts on productivity

RACE — Heavy Rail Supply Chain Optimisation

Rail supply chain optimisation software to maximise throughput and asset utilisation.

Modules

Live	Crew	Planner
Plan and manage your train services in real time to anticipate and resolve conflicts	Allocate rostered-on drivers from multiple depots to train services	Synchronise rolling stock schedule, terminal and vessel operations to maximise efficiency

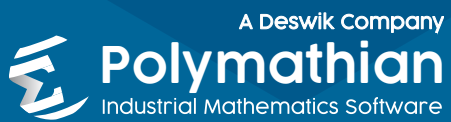## VOLT — Energy and Utility Dispatch Optimisation

Digital process twin to minimise operating costs and maximise revenue in real-time.

Modules

Live	Autonomous	Planner
Capture, monitor and visualise your asset performance and traded position	Automatically create dispatch plans to react to changes in demand, assets or market conditions	Run scenarios to support planning processes and bespoke 'what-if' analyses

SIM — Discrete Event Simulation

Gain valuable insights of complex systems to verify or predict future performance in digital environments.