

Reserving the Maptek way

Maptek™ Evolution challenges the paradigm that reserving is onerous and requires high levels of programming expertise to generate reliable results.

Converting a mineral resource into an ore reserve requires geological expertise. In the past it has also required programming skills and patience while scenarios are running.

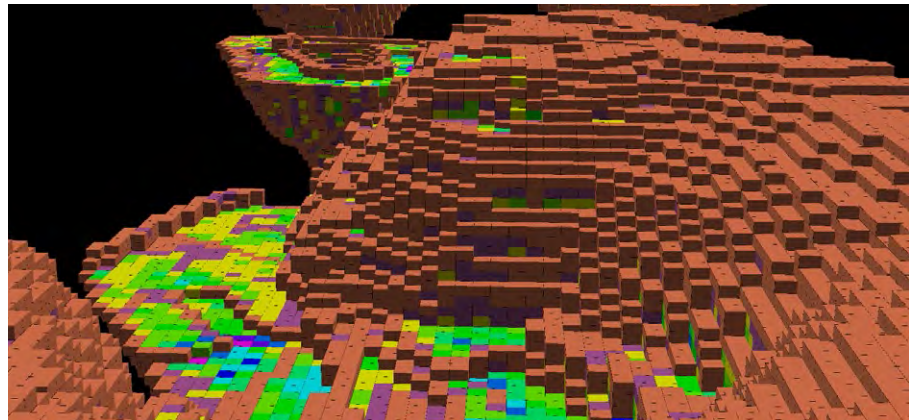
The transition from resource to reserve is defined by increasing geological knowledge and confidence. Even with the best information, assumptions must be made around mining method, metallurgy, legal, economic, social and environmental conditions. All of these could affect projections.

Spreadsheet-based products with optimisation engines using techniques like linear programming, dynamic or mixed integer linear programming, were traditionally used for reserving. Setting up and generating results was incredibly time consuming.

Maptek™ Evolution challenges the tradition. It uses an evolutionary algorithm which delivers the best optimised schedules as well as the best user experience.

Strategic planning requires mining engineers with requisite management experience and knowledge of scheduling software to prepare and run the reserving process. In most instances a senior mining engineer must define strategies and make decisions.

Evolution saves substantial planning and processing time across the entire scheduling process.



The Evolution solution

Evolution open pit planning tools work off a single dataset to generate strategic scheduling, medium and long term planning across the life of an operation.

Engineers can be confident that the cutoff grade optimiser approach maximises project NPV.

A single interface minimises file management and the schedules produced are auditable. Features include dynamic generation of production schedules, automatic route calculations and cycle times, and integrated waste haulage.

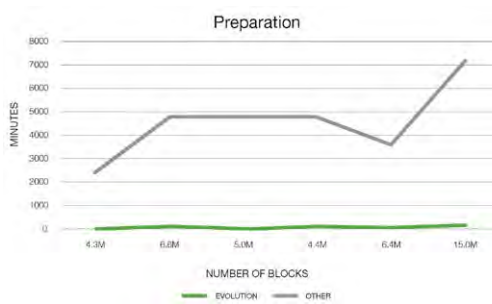
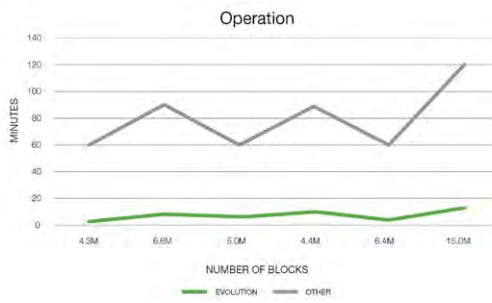
A South American study compared Evolution to traditional methods of strategic planning in medium to large mines. It showed that Evolution increases productivity by 50 to 120 times in preparation and processing, and by 10 to 20 times in generating operational scenarios.

The Evolution interface presents an intuitive, sequential workflow. Errors due to data manipulation are reduced dramatically.

Panels are populated by user-familiar parameters such as block models, mining and processing cost, recoveries, prices and mine or process capacity. Data is entered and processed without the need for any programming.

Mining companies welcome this approach. They can employ mining engineers for their knowledge of mine planning concepts, rather than their skills with a specific software tool.

Evolution workflows streamline the mine planning process and allow senior engineers to focus on training graduates in good mine planning practice.



A study showed that Evolution is up to 120 times more efficient across scheduling setup, and up to 20 times faster for running scenarios.

Time savings

Before Evolution, preliminary economic assessments could take weeks or months, with added time to define the operational reserves model or operational phases.

An experienced software user had to work alongside decision making staff who did not typically use the software.

Preparing the economic model alone, with consideration of crushing, flotation, leaching, ore exposure, pushback ratio, sink rate and geometric constraints could take 2-3 weeks.

Generating production plans for a period with cash flow, production, and cutoff optimisation could take several hours to days to resolve.

Weeks of preparation and daily optimisation runs produced a unique scenario for evaluation. Any subsequent adjustments meant days of further processing.

Conclusion

The old paradigm has been overturned. Senior mine planning engineers can easily set up the reserving process in Evolution. They can quickly deploy alternative planning scenarios, even when parameters are constantly changing.

Valuable mine planning time can now be spent analysing scheduling scenarios. Now Maptek has the solution for a process which has traditionally been difficult and expensive. Operations using Evolution can find a substantial improvement in productivity.

Blocks (million)	Block size (metres)	Phases	TPA (million)	Processes/Sites		Productivity increase	
				Plants	Waste	Evolution:Other	
						SETUP	RUN
4.3	10 x 10 x 10	10	32	1	1	53:1	20:1
6.6	20 x 20 x 15	11	170	2	1	96:1	13:1
5.0	15 x 15 x 15	12	80	2	1	106:1	12:1
4.4	15 x 15 x 16	8	280	2	3	96:1	10:1
6.4	15 x 15 x 15	7	75	2	1	80:1	15:1
15.0	20 x 20 x 15	30	400	4	1	120:1	10:1