Global Activities
Maptek develops easy-to-use, game changing solutions that connect technical data with business considerations in a way that can immediately impact performance.

Our broad industry knowledge acquired from 40 years in commercialising products with proven value-in-use means that customers can confidently expect reliability, safety, flexibility and auditability.

Operations can trust Maptek to implement robust, practical solutions. If an application does not exist, Maptek has the expertise and drive to develop it.

Recently we released CaveLogic, a strategic approach towards defining the optimum economic footprint for panel caving. End users gain a set of intuitive tools for generating results that managers can rely on for informed decision making.

We look forward to working closely with industry in the year ahead to continue to develop and implement powerful, connected life-of-mine solutions.

Peter Johnson
Managing Director

I-Site XR3 laser scanner surveying an Australian coal operation

Contents

Drill core imagery helps refine vein interpretation 2
Vulcan optimises underground gold-silver operation

Significant improvement in daily operations 4
Latest I-Site technology delivers for iron ore mine

Strategic new panel caving simulation tool 6
CaveLogic unlocks underground resource value

Integrated drill & blast reporting drives productivity 8
BlastLogic reports on success

Rewarding scheduling enterprise 10
Evolution cloud scheduling

Harnessing emerging technologies 11
Technology Roadmap guides development

XVIII South American Users Conference 12
Product showcase for 200 attendees

Expansion into Canada 13
New Montréal and Vancouver offices

Calendar of events 13
Enhancing narrow vein interpretation

A Klondex Mines Ltd underground gold-silver mine uses Maptek™ Vulcan™ to optimise various stages of their operation.

The Fire Creek Mine, located in north-central Nevada, is an epithermal vein deposit. Underground bulk sampling began in 2013 and commercial mining commenced in 2014.

Fire Creek uses cut and fill and long hole stoping mining methods. Both methods require narrow mining dimensions to minimise dilution and maximise ore recovery. The behaviour and development of the veins at Fire Creek can be complex, therefore detailed geological modelling is required to optimise success.

In an effort to build a better model of the deposit, geologists review historic core logs and photos. As with many projects, geologists’ interpretations of drill core vary and logging data is often inconsistent through different generations.

Fire Creek is no exception. The geology team has spent significant time sifting through historic core photos and re-analysing core logs. To facilitate this work, the geology team needed a way to incorporate diamond drill core photos that illustrate lithology, alteration and the various styles of mineralisation alongside the geological data within Maptek™ Vulcan™.

Using Vulcan fundamentals learned on the job, brainstorming sessions during a Maptek site visit, and skills acquired during a lava scripting course, the geology team was able to turn this concept into reality.

Lava scripting

A custom lava script was built off existing Vulcan functionality to enable users to display images of core boxes directly down the drill trace. At the macro scale, geologists are able to view the differences in lithology, rock conditions, and alteration throughout multiple holes on drill fans and in three dimensions.

“It takes time up front to set up the naming convention and then roll out the new process to make sure the photos are actually usable. But once the leg work is done, being able to spin the drillholes around with the photos loaded adds a whole new dimension to how we use our data,” commented Mine Geologist Eric Hobbs.

The output allows the team to quickly review, correct, and test broader interpretations, providing a better understanding of the ore system, which results in improved models.

With computing enhancements delivered in Vulcan 10 and higher, the team is able to review the image registrations, assay data and other geological information.
Geologists can zoom out to view broader alteration and lithology differences between holes, or zoom in to the full resolution of the photo to look at individual vein textures and characteristics.

Workflow

“When I am flagging a new drillhole, I load the vein and lithology triangulations alongside the core photos. I can see exactly what the intercepts look like in relation to the surrounding drillholes and data,” said Hobbs.

“I can quickly view the core photos for multiple drillholes from the same drill fan and see how the vein behaves along strike, changes in elevation, lithology and so on.’

“I can then make a confident judgement on how to flag that intercept and adjust our lithology triangulations on the fly,” he concluded.

Outcomes

The biggest benefit to the mine site is an increased confidence and understanding of the deposit. They are able to build and update geological models significantly faster than previously.

This leads to more consistent logging data, allowing for faster target recognition for surface and underground drilling programs, and ultimately results in better ore/waste calls from the ore control geologists.

Through ‘out of the box thinking’ and lava scripting training, Klondex geologists have created a step change in the level of understanding of the Fire Creek deposit.

Thanks to
Eric Hobbs, Mine Geologist
Christian Rathkopf, Data Analyst
Fire Creek Mine
Anthony Bottrill, Corporate Resource Manager, Klondex Mines Ltd
Accurate survey benefits mine expansion

Maptek™ I-Site™ technology has been instrumental in providing accurate and efficient survey deliverables across the Savage River iron ore operation.

Ownership changed several times and a mine plan developed in 1997 included completion of mining operations in 2009. In 2006 a feasibility study proposed to extend the life of the mine until 2023, and in 2009 Grange Resources acquired all interest in the mine.

History

Magnetite mineralisation was discovered at Savage River in 1887, however, for many years, interest centred on the copper and gold potential of the deposit.

Exploration in 1956 included ground and air magnetometer surveys, with diamond drilling in 1957 and 1959. In 1965 the Savage River Mines Limited joint venture was formed to develop the project. The Savage River Project was then operated for a 30-year lease.

Mining

Three principal open pits — North, Central and South — are oriented north-south. They cover a 4 km strike length and are separated by unmined zones of thin or low-grade material. The pits average a depth of 100–150 m; the proposed cut back and extensions will deepen them by up to a further 250 m.

An exploration lease is held over another occurrence of magnetite mineralisation further south.

North and Central Pits are separated by the Savage River which runs through a pillar area left to retain the river channel. North Pit is mined using conventional off-highway rear-dump trucks and hydraulic excavators, with drilling and blasting to prepare the ground ahead of mining.

Grade control sampling is carried out on all blast holes within the orebody, as well as on selected holes on the periphery.

Savage River’s biggest challenge centred on conducting mine survey safely and efficiently.

‘One of the most productive and cost-effective decisions was to buy the Maptek I-Site XR3 laser scanner and I-Site Studio software,’ said Senior Surveyor, Michael Sadural.

Survey improvements

The I-Site system streamlines survey compared to the traditional method using GPS and Total Station. UAV flights are contracted when required; they cover a wide area but are constrained by weather and the time needed for processing collected data.

Ongoing development of the project, and expansion of the pit by stages, meant that traditional mine topographic survey put even greater pressure on productivity.
‘We noticed an immediate difference as well as increased confidence arising from the implementation of I-Site at our operation,’ Sadural commented.

Employing the I-Site XR3 laser scanner to its full capacity highlights its ease of use and fast field acquisition. Accuracy and productivity has increased, with prompt survey deliverables across the Technical Services Teams.

Savage River now easily achieves weekly pit update, end of month pit and stockpile survey, fortnightly update of current dumps, main tailings dam topographic survey to update project development, as well as volumetric survey of the Port Latta pellet stockpile and design conformance reporting.

The system is also used to detect rock falls and wall movement, and to assist the Geotechnical Team with site geotechnical and structural mapping.

Expansion

The Maptek system overcomes the challenge of providing accurate and efficient survey deliverables for a wide range of operational requirements.

The Savage River survey team has welcomed the positive feedback received in response to significant improvements in daily processes.

Savage River uses the vehicle-mounted stop and go survey method as well as tripod setup. The I-Site XR3 laser scanner is robust and environmentally sealed to stand up to the harsh conditions on the mine site.

The dedicated I-Site Studio workflow for processing and reporting survey data straight from the field includes QA checks on scan registration to verify results. User friendly and powerful software tools process point cloud data and generate accurate 3D models to update mine plans.

The latest scanning technology offers Savage River multiple benefits. The operation is now exploring further ways to progressively leverage a more productive and cost-effective total survey solution.

Thanks to
Michael Sadural
Senior Surveyor
Grange Resources Tasmania

01 Detailed point cloud for geotechnical mapping
02 3D model of Savage River operations
03 I-Site XR3 survey setup
04 Pellet stockpile survey volumes
05 Design conformance report (perspective view)
Miners everywhere face the necessity to increase productivity and reduce costs.

Panel, or block caving, is widely considered to be the new frontier for underground mining. It involves massive volumes of material and large investment, requiring robust tools for assessing economic feasibility.

Maptek™ recognised the need for a solution that addresses this challenge, taking a strategic approach and delivering results in a transparent and analytical way.

Maptek mine planning solutions collect and analyse data, and deliver results to support decision making for all commodities and operation types. Maptek CaveLogic underground strategic planning software is the latest development.

Connectivity between orebody knowledge, mine execution and production systems provides a unique design and planning environment. Well-informed decisions can have an immediate effect on mine performance.

CaveLogic provides planning engineers with powerful tools to define the footprint of the economic envelope and analyse the subsidence and interaction between the different underground levels. Using the most modern of optimisation techniques, including evolutionary algorithms, CaveLogic creates a practical production plan.

The high impact graphical interface allows planners to develop visual animations of the production sequence and simulate strategic scheduling scenarios.

CaveLogic offers powerful new opportunities for strategic and long-term planning, allowing mining companies to retain control of their planning tasks.

A stronger user experience is an important priority for Maptek. Marcelo Arancibia, Vice-President South America, believes that mining operations will welcome the intuitive tools and powerful capability of CaveLogic.

‘When mine planners operate without black boxes they can be more confident of robust results for supporting decisions. Auditability further enhances certainty in the process, particularly when reporting to shareholders,’ said Arancibia.

‘CaveLogic works directly on the block model, considering the topography and the technical–economic parameters of the deposit. It is easy to use with a fast learning curve.’

An optimised interface facilitates the development of mining activity, simplifying process flow. This is very attractive for operations striving to meet KPIs.
The unique Maptek approach allows intuitive development of multiple scenarios for a project.

Practical production plans created by CaveLogic allow for simple configuration to exploit a caving deposit using more than one level of collapse.

CaveLogic is applicable to greenfield and brownfield projects. Analysis of options can also guide management decisions in open pit operations transitioning to underground mining.

Maptek solutions are based on a deep technical understanding of mining variables. The aim is to transform data into accurate information for unlocking resource value.

Customers can trust Maptek for the continuous evolution of CaveLogic as well as 24/7 world class support for all levels of user-software interaction.

HAPPY HOLIDAYS FROM MAPTEK

Maptek remains committed to developing innovative technology and we look forward to sharing this with you in 2018.

Wishing you a safe and happy holiday season!
Reporting for success

Maptek™ BlastLogic™ provides advanced reporting around drill and blast, allowing operations to benchmark the process for identifying and realising areas for improvement.

The Maptek™ BlastLogic™ OData Service is a value-adding subscription resource which addresses three fundamental customer requirements: Custom reporting, Benchmark reporting across multiple mines and Interfacing data from BlastLogic to third-party clients.

OData delivers a flexible way for customers to access and distribute their data stored in the BlastLogic Server to authorised non-BlastLogic users within their business.

OData underpins BlastLogic as a mine operational tool to track, report and analyse design, implementation and blast performance metrics.

Value-in-use decisions can now be considered by a broader audience to advance improvements in blast design and process.

Importantly, the OData Service eliminates any inconsistencies or discrepancies in metrics reported, as the calculations and data used are derived from the BlastLogic single source of truth.

Custom reporting

A common request by BlastLogic users, especially engineers and planners, is the need to support custom reporting. Mines have in place many and varied reporting requirements for regulatory compliance, blast approval and tracking status of drillholes in the field, to name a few.

The BlastLogic OData Service provides direct feeds of data to clients such as MS Excel 2010/2013 Power Query and MS Excel 2016 Data > Get & Transform.

Engineers and planners are generally very knowledgeable Excel users. Now they can adapt their current templates, or create new ones that are auto-populated with data direct from BlastLogic.

This promises to save many hours which are currently spent transforming and formatting data for weekly and monthly blast reports. Maptek also offers consulting assistance with report creation.

In the graphs below, a customer has used OData to digitise reporting of hole status for management and supervisors. A monthly drilling report compares each rig and cumulative metres drilled.

Benchmark reporting

Benchmark reporting allows individual sites to compare trends and watch for nuances. It is also particularly powerful for BlastLogic customers who operate multiple sites.

One large corporation has developed compliance to design reports as a mechanism to track performance over time. Primarily used as a lead indicator, these reports also allow management to monitor the rate of improvement, and address gaps to drive more consistent and sustained alignment to blast design.
Improvements in design can be targeted with confidence and measured against downstream processes. Examples of benchmark reporting shown below provide insight into how reports can be structured using MS Power BI.

Interfacing data

Many customers want to interface data from BlastLogic to other applications or Business Intelligence reporting systems like TIBCO Spotfire and SAP Business Objects. The BlastLogic OData Service can be used by system integrators, architects, and developers for integration projects.

It supports integration with Microsoft SQL Server Integration Services, Software AG webMethods or any Client or Agent capable of consuming JSON over HTTP.

One example is to connect BlastLogic explosive inventory management data used by engineers and planners, to SAP which is used by procurement teams to monitor and trigger the ordering of stock.

A second example is to integrate drillhole status like Design, Drilled, Charged, Fired with the mine system used to track and control reconciliation of short-term plans.

OData feeds

Seventeen specific OData Feeds are currently available to cover many data elements. Considering the ever-growing amount of data, OData Feeds are filterable at the server before results are returned, or after the results are published to the Client.

Additional data elements can be incorporated to support specific operational reporting requirements.

The BlastLogic OData Service performs calculations and coding to transform raw data into useful information for analysing performance. It is therefore the only mechanism that Maptek supports to interface data from the BlastLogic Server with third-party applications and platforms.

Maptek’s mine operations solutions target value-in-use decisions by instantly connecting and visualising operational processes. In this way, Maptek fosters efficient, optimised blasting that maximises resource value.

The OData Service can be added to BlastLogic installations. Contact blastlogic.sales@maptek.com.au to find out how advanced reporting can benefit your operation.
Rewarding enterprise

A high grade gold deposit in Western Australia relies on Maptek™ Evolution cloud-based technology to solve scheduling challenges.

The Enterprise deposit is located 68 km northwest of Kalgoorlie within the Ora Banda district on the eastern limb of the Kurrawang Syncline. The Kurrawang Syncline is a major regional fold structure in the Norseman-Wiluna Greenstone Belt of the Eastern Goldfields.

Historically mined by open cut methods to 100 m, Enterprise is a large high-grade deposit and an important component of the Norton Gold Fields production plans in the next five years.

Scheduling challenge

The technical services department wanted an optimal scheduling solution for the open pit operations that would allow them to work directly with Multiple Indicator Kriging (MIK) block models and non-MIK block models in the same multi-mine schedule scenario.

This would reduce the amount of data manipulation required and mitigate mine planning risk.

Moreover, the cost associated with waste material was an important factor. In addition the encapsulation required to isolate the acid reactive material had to be considered.

Norton Gold Fields has acquired Maptek™ Evolution software to help address these challenges.

At a strategic level, alternative scenarios generated in Evolution will be evaluated from a cutoff grade optimisation point of view, with particular emphasis on the haulage component.

The productivity rate for each hydraulic excavator model is associated within the block model for each material type. This provides full flexibility for the mine planning team to evaluate multiple alternatives in a short time using cloud-based technology.

Waste dump encapsulation is one aspect requiring special attention from an environmental viewpoint.

Encapsulation needs to be controlled during the scheduling process. Information is imported into Evolution to allow simulation of different mine schedule scenarios, ensuring that this important variable cannot be ignored and is managed efficiently.

The graphical interface provides the visual link for communicating the mining implications of different scenarios with various stakeholders, improving understanding and subsequent actions.

Every piece of data is populated back into the block model, allowing information to be managed and shared across different departments for incorporation in the short-term mine planning process.

Evolution has given the mine planning team at Norton Gold Fields all of the tools and options required to evaluate and add value to the Enterprise project.

Thanks to Flavio Magalhaes, Technical Services Superintendent; Morteza Abyazani, Planning Engineer
Norton Gold Fields (subsidiary of Zijin Mining Group)
Harnessing emerging technologies

Maptek™ transforms industry concepts around the Internet of Things, machine learning and artificial intelligence into a true ‘connected mine’ reality.

The Internet of Things (IoT) is transforming industry through collection of high volume data from systems and processes. Managing big data is the new challenge, as Maptek™ Chief Technology Officer Simon Ratcliffe explains.

Data collected from IoT devices used in mining, such as fleet management and drilling systems, when marshalled in the right way and properly analysed can stimulate cost savings, efficiency gains and better understanding of deposits.

Maptek already has a range of products that provide the data analysis in that space. We are working on technologies to bring it all together and create solutions using this data holistically.

Decision makers have so much data coming at them, that there is no time to reduce it, analyse it, add value to it and use it. We are keen to leverage the huge advances in artificial intelligence and machine learning to offer a way forward.

Computers are now able to see relationships and patterns in data, often beyond human ability, so there is potential to use machine learning for tasks such as estimating grade.

With hardware reaching consumer price points, augmented reality and virtual reality are also experiencing a new era of buzz, and have great applicability for mining.

Virtual reality allows you to physically move around a model. That’s a win for understanding complex 3D data – the classic case being an orebody.

We see strong merit for harnessing virtual reality as a communication tool in the mining environment.

Think of an open pit mining operation with a schedule to communicate and a series of complicated blasts or pushbacks to be completed to achieve a certain outcome. That’s a lot of variables.

Communicating the total picture to stakeholders could be done in a far superior way with an augmented reality or virtual reality environment than with plots, maps or diagrams.

Augmented reality will allow you to stand in the field and compare your model with a highwall. Imagine seeing the geology from the reserve model overlaid on the face in-situ.

Our PerfectDig solution displays design conformance information over the 3D scene captured by a laser scanner. Using augmented virtual reality technology with head tracking will enhance the PerfectDig experience in the field.

The Maptek technology roadmap is guided by current and emerging technologies. We can plan where the company is going and how we intend to get there.

This journey of exploration and discovery is a very exciting time for Maptek and our customers.
South American users conference

The XVIII Maptek™ South America Users Conference in Viña del Mar highlighted technical developments and new products.

Held over three days in October, the conference was attended by almost 200 participants, with 26 technical sessions including customer presentations.

New developments were highlighted in well-known Maptek™ products I-Site and Vulcan. Special emphasis was placed on the tactical and strategic planning of Evolution Origin and Strategy. In addition, there were presentations on BlastLogic and its application in iron ore mining.

Conference attendees were able to test features of the new smaller, lighter and faster I-Site XR3 and LR3 laser scanners. They also had the opportunity to appreciate the characteristics and true magnitude of functionality of Maptek Sentry, the new deployable mobile system for remote and secure surface monitoring.

Among other presentations, the new Maptek CaveLogic software was introduced. This strategic planning software for mines operated by panel caving methods is easy to use, providing robust planning with no ‘black boxes’.

Attendees recognised the value of the new Grade Control Optimiser tool which builds optimal polygons that meet operational restrictions. Users can ensure the maximum economic benefit and minimise misclassification.

‘We thank all our clients and students for attending our XVIII Maptek Users Conference; it was a great opportunity to share knowledge and experiences.’

Marcelo Arancibia
Vice-President South America
North American expansion

Maptek™ has expanded its footprint, opening new offices in downtown Montréal and Vancouver.

General Manager Maptek North America, Rob Hardman says the new bases will allow Maptek to provide regionalised services that address the unique needs of the Canadian market.

“We’re excited to position ourselves in these strategic locations for future growth of the Canadian mining industry and gain better understanding to serve local needs. Improved communication will lead to more effective partnerships,” Hardman says.

“We enter this market with best-in-class resources and infrastructure to really make a difference. Over the next 30 years, Canada will lead the way in mining production and mining technology innovation. Maptek will help our clients be successful in both.”

Business Development Manager Rodrigo Villarreal, Geologist Anne Gauer and Accounting Manager Ken Shulman make up the Montréal team.

“The recent Québec Mines event allowed the team to meet with customers and hear the latest news on their projects. Our Québec friends know that we are here for them,” said Villareal.

Business Development Manager Pouya Tabassian, Senior I-Site Technical Solutions Manager Kono Rodriguez and Mining Engineer Ann McCall staff the Vancouver office.

Maptek responds to increased industry demand related to next-generation technologies by providing expertise for multi-platform solutions.

“This expansion is indicative of our commitment to innovation and the transformation of the mining industry,” says Hardman.

Customers across North America’s most respected mining companies rely on Maptek to consistently deliver best-in-class technology. As a result, Maptek has enjoyed steady growth and expects this trend to continue into 2018 and beyond.