



Forge

June 2021 Newsletter

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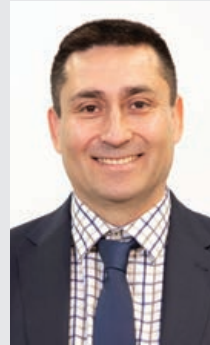
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Quality training, blended learning and industry mentoring are benefits of Maptek academic partnerships

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Around the world with laser scanners

Maptek laser scanners have been used for many exciting projects over the past 20 years



In 2021 Maptek is celebrating 40 years in business! We are proud to be part of a large, diverse global community that is committed to improving outcomes for the mining industry.

Thank you to our staff, customers and partners who help us remain at the forefront of innovation. Our website will feature their inspiring stories throughout 2021.

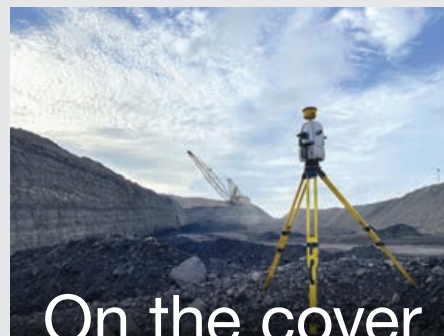
During May we hosted Maptek Connect 2021, our online global conference, where industry experts shared insights around the latest mining challenges and successes. Recordings of these sessions are now on our website for you to watch on demand.

At a recent industry event, high level discussions continued around the ever-present need to consolidate information available from advanced sensors, AI and robotics systems to optimise the mine value chain.

At Maptek our commitment remains intact. We are enjoying increased interaction with our customers and are grateful that this allows us to present our new solutions. Mining is changing fast and customers require a technology partner that can support them to become more efficient and to continue delivering value.

We hope you enjoy this issue and welcome your feedback to forge@maptek.com.

Eduardo Coloma
CEO



On the cover

Maptek XR3 laser scanner at BHP Mitsubishi Alliance Peak Downs, photographed by Callum Gardner



Maptek 40-year celebration

Customers are the centre of everything we do at Maptek and we are pleased to share their stories.



Professional expertise

An opportune meeting 10 years ago sparked a working relationship between Rocscience Australia Director Alison McQuillan and Maptek that is still going strong on the back of smart tools.



Geological foundations

Perilya Geology Superintendent Jared Broome has relied on Vulcan to do his geology and mineral resources estimation work for more than 20 years, and enjoys providing user feedback.



A 3D mining — civil interface

Maptek solutions play an important part in helping Richard Brehaut and PSM's civil construction clients move from traditional 2D methods into the 3D world, adapting technologies first deployed for mining.



University partnerships

The partnership with Maptek is critical to helping Associate Professor Chaoshui Xu and his team achieve remarkable outcomes in the University of Adelaide Mining Engineering degree program.



Supplier relationships

TCM Electronics is proud of their local supplier connection with Maptek, according to Sales Manager, Graham Burton, who handles the printed circuit board assemblies for laser systems.



Local and regional experts

Mining Engineer Munkhjargal Chukhal was introduced to Vulcan when studying in Adelaide. Today she continues to work with Maptek solutions as Project Manager for IT Experts LLC in Mongolia.



Supporting technical users

Peter McDonald, Survey Coordinator at Anglo American Coal has been running Vulcan for the past 34 years and finds it the most productive software for engineering, geology and survey.



Technology alliances

CEO and Co-founder of Emesent Stefan Hrabar welcomes the opportunity to integrate Emesent Hovermap with Maptek technology to bring productivity, efficiency and safety gains to mining customers.



Mining contractors

Senior Surveyor Tony Morgan has a long-standing association with Maptek going back to early 2011, when Downer Mining introduced laser scanners across their open cut mines.

Evolution of a mine

Maptek™ Evolution Strategy and Origin were used to produce complex financial models for the Havilah Resources open cut copper–gold operation in northern South Australia.

Havilah Resources holds 16,000 sq km of exploration tenements in the north of South Australia. The company has an approved pre-feasibility study (PFS) for the entirety of its Kalkaroo project, and recently pivoted to a study for a smaller oxide-only pit.

Havilah Resources has run multiple different scenarios to optimise both pit and schedule. The expectation is to break ground in early 2022.

The deposit has a unique character, with a very large orebody at depth and along strike. Drilling has proved 3 km of strike and four different ore types, with saprolite gold at the top (figure 1). Havilah Resources decided on the oxide area for the starter pit. Drilling continued during 2020 and created holes at up to 25 m centres (figures 2 and 3).

For long-term strategic planning, Maptek™ Evolution Strategy was used to build scenarios around the oxide pit, starting at the western end and developing east.

The block model was the geological data repository for this multi-element deposit. The net smelter return (NSR) was calculated and added as a field in the block model along with mining and processing costs, as well as different recoveries and geotechnical criteria.

The four different ore types and throughputs for two plants had to be filtered appropriately to run a range of scenarios, particularly for the larger PFS (figure 3).

Geotechnical parameters were incorporated in the block model and the data was run in Maptek™ Vulcan™ Pit Optimiser on oxide-only and oxide–sulphide, defining the starting area where the orebody is closer to the surface.

Vulcan Automated Pit Designer with ramps was useful for generating stage plans and designs. Having the pit stages already coded in the model made the process quick and easy and provided access to all the geotechnical information.

'The mine planning work in Vulcan is mostly automated, and the block model was easily imported into Evolution, transferring all the stored data and all the stages along with it,' said Havilah Resources Mining Engineer, Richard Buckley.

Evolution Strategy scheduling parameters were initially set up for high-level strategic optimisation, enabling almost 40 different trade-off studies to determine the optimum extraction sequence. Havilah Resources evaluated the timing of operations and strategies around trading off optimal recoveries against a lower opex and capex within the process plant, as well as stockpiling strategies.

Evolution Strategy uses cut-off grade optimisation to determine the best cut off per period, and using the NSR variable allows the schedule to be converted into an Evolution Origin setup at the click of a button. The level of detail then reduces to the block level, which is important when considering how to mine.

Evolution Origin gives greater control over material targets and allows haulage considerations to affect scheduling decisions. This accurate understanding of material movement is critical for contract negotiations. Once mining has reached stage six or seven in the oxide material, the sulphide operation will commence (figure 4).

Modelling in Evolution provides flexibility on how the process starts, and Evolution Origin also allows Havilah Resources to review the stage release criteria to avoid mining too far ahead. With Evolution the data flows from the block model into the schedule and then ultimately into the financial model.

Variables carrying all the information are set up once in the block model and are carried through scheduling into the final report.

Evolution runs using cloud services, and can be run as many times as required. The results can be interrogated by period and by block to determine whether the schedule is adhering to the criteria provided in terms of the stages and the material left at a particular time.

The sulphide and oxide schedule is more complicated, with two plants and two ore targets. Evolution provides a realistic idea of how much material to move in the first years of the sulphide operation.

Evolution also enables ore blending, adjusting minimum and maximum targets to achieve the required mix to optimise process recovery. Stage release criteria is easily customised, and the different tonnes and grade for the various ore types output at the end of the schedule can be coded back into the block model.

The mine planning–scheduling process, previously handled with spreadsheets, is now all done in Evolution using the block model containing all of the relevant data.

If the targets change, the optimisation delivers a new schedule which allows for in-depth reporting with pivot table and graphing functionality.

Spreadsheets are used at the financial modelling stage, tabling the schedule of tonnes processed per quarter and the blends of saprolite and native copper, chalcocite and chalcopyrite exported from Evolution Origin.

This information supports decisions such as when to start the sulphide plant, metal pricing inputs to be considered and payback periods.

The financial model summarises price and cost inputs, recovered volumes of metal and concentrate, and overall revenues. Ultimately, Havilah Resources is looking for the highest valuation that can be achieved within the resource base and scheduling constraints so capital can be raised to mine.

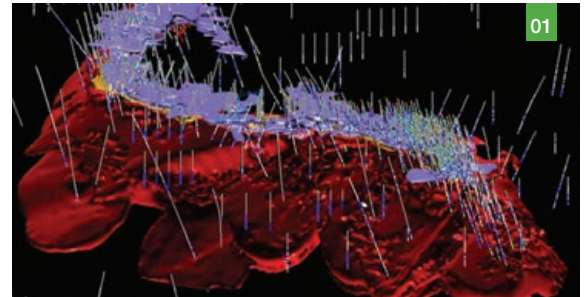
It is easy to drill down into the pre-development and sustaining capex, mining and processing unit costs for communications with shareholders and management. NPV (net present value) and IRR (internal rate of return) along with life of mine revenues and all-in costs allow risk scenarios to be run to look at long term price forecasting.

Consistency of data is preserved through the Vulcan–Evolution process. The block model contains all of the valuable information – geology, estimated grades, mining studies and geotechnical data. Pit optimisation is run on the block model, and stage designs reference the block model, so the Havilah Resources mine planner is confident before entering Evolution that the right level of detail is available to actually start scheduling.

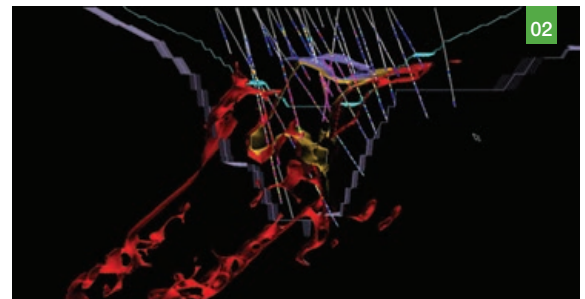
‘The ability to schedule from the block model is one thing that a lot of other systems don't have,’ stated Buckley.

Preprocessing of the data is not required outside the block model before proceeding to a scheduling system. It would not have been possible for Havilah Resources to do 40 or more trade-off studies for the original PFS without a block model backend.

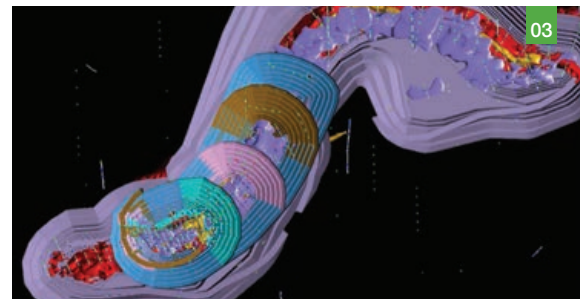
*Thanks to
Richard Buckley
Mining Engineer
Havilah Resources*



Saprolite gold sits at the top (purple), with native copper (orange) underneath, and the sulphide orebody below (red)



Cross-section showing the starter pit and the other orebodies, revealing scope to expand down the track



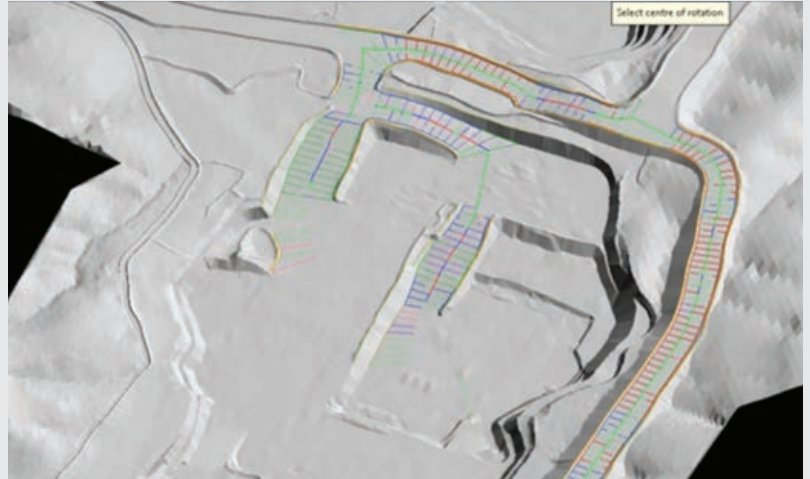
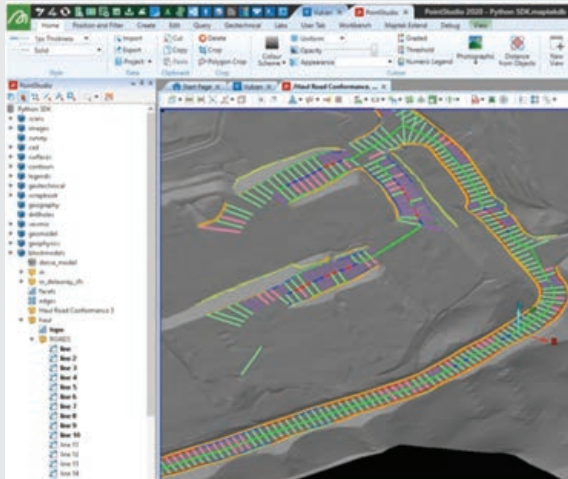
Staged mining pits across the entire Kalkaroo orebody



Block model coloured by scheduling phase

Smart tools for haul road compliance

Mining companies want to maintain a safe working environment. Well designed and maintained haul roads are key to minimising costs and improving productivity.



Mandated design parameters for haul roads and interest in enhanced inter-ramp compliance prompted Maptek™ to develop an analysis tool to report on haul road compliance quickly, accurately and visually.

Key customer requirements based on feedback included:

- > Haul road width
- > Haul road grade
- > Crossfall/camber
- > Safety berm/bund height
- > Safety berm/bund width

The Maptek approach quickly detects toe and crest lines, crossfall grade, bund height/width and road width, providing a clear visual display of conformance or non-conformance.

The haul road conformance tool can be applied to as-built surfaces as well as design models.

Inputs require an approximate centreline for each roadway to be queried, and an as-built surface. As-built surfaces can be simple stringline derived surfaces, or data from Maptek Drive, aerial lidar or UAV models.

Results are split into various objects for each reportable metric, allowing statistical calculation of conformant chainage against non-conformant.

This approach to identifying areas of non-compliance allows clear communication through to production where improvements are necessary. It also allows changes to haul road design, improving mine processes and safety outcomes.

The tool has been designed to work in both Maptek Vulcan™ and PointStudio™ to cater for users in either environment.

To learn more, please contact your local Maptek office.

Downer Mining is currently using the haul road conformance tool across its mining sites on the East Coast of Australia, with great results.

From the initial set up of applying the required mine settings through to the final generated line strings, it is a simple reporting tool to use. We can now highlight to production what areas need attention, to provide our workforce with a safe working environment and comply with regulatory requirements. A great feature of this report is the ability to select individual CAD line strings as required.

Tony Morgan, Senior Site Surveyor OCE, Downer Mining

Modelling marble reserves

Applying machine learning to model marble reserves resulted in faster results and more uniform quality classifications to guide extraction.

Marble quarrying is an important industry in northeastern Greece, and standard reserve estimation and modelling techniques present several challenges.

Machine learning systems take advantage of the power of personal, embedded and cloud computing systems to rapidly build models of real processes.

Marble reserves are based on marble quality categories, unique to each deposit or quarry. The categories represent visual and physical characteristics such as colour, texture and fractures. Classification is typically conducted by experienced personnel on samples that are much smaller than the blocks that are mined.

Maptek™ DomainMCF was applied to marble classification at the Volakas Quarry, owned by Iktinos Hellas SA, and compared to a previous Maptek™ Vulcan™ study.

The following parameters were identified and used to characterise Volakas marble:

- > Lithology – Dolomite or calcite
- > Type – Flower or diagonal veins
- > Background – Visible defects
- > Tectonic – Discontinuities/sq m

Iktinos Hellas has been using Vulcan since 2014, employing an inverse distance method on the block model. Block dimensions are configured based on the volumes extracted from the quarry.



Samples are seeded around each block using search ellipsoids oriented according to geological features. A block model script is run to assign a final marble classification that consolidates the interpolated indicator field value.

DomainMCF models the spatial distribution of the marble quality characterisation parameters by sampling a discrete set of domain values. The data for the Volakas study consisted of 95 drillholes and quarry face analyses, giving a total of 3570 one-metre samples.

Sample data was composited in separate files for each of the marble quality parameters and then run in DomainMCF. A block model definition file was applied to control the application area, also limited using an upper and lower surface.

DomainMCF is fast and simple to set up and run, and operates directly on drillhole and other data.

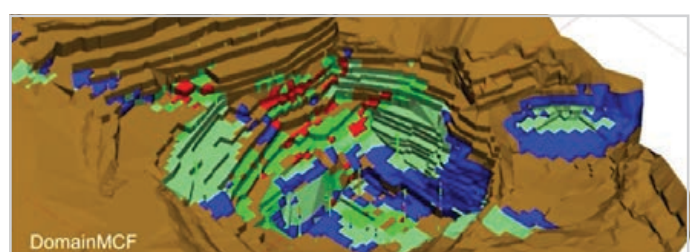
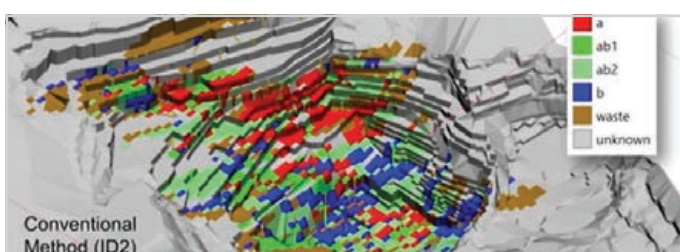
Processing 3750 samples and 2 million blocks took less than 2 minutes to complete.

Comparing the marble quality classification produced by DomainMCF to the conventional method, it was clear that the machine learning classifications appear more uniform for the blocks included in both methods.

The machine learning engine also requires no structural analysis of the categorical parameters and provides a measure of uncertainty for predictions. This is useful for identifying areas where more sampling may be required or existing samples have higher variability, leading to less certainty.

Future studies include using anisotropy for predicting parameters, better understanding of confidence levels and how they can be associated with resource categories, and investigating the influence of grade on domain predictions.

*Thanks to
Dr Ioannis Kapageridis
Associate Professor
Department of Mineral
Resources Engineering
University of Western Macedonia*



One to many mine measurement tools

Maptek™ sensing systems are extremely safe and easy to use, collecting mining or large civil project data, and feeding results and reports to downstream consumers.

Maptek™ has been providing laser scanners dedicated to mining since 2004, with many early models still in field use. Over the years the versatile vehicle mount and subsequent continuous Maptek Drive mobile solution have built on this foundation of trusted, survey-grade acquisition sensors for mining.

Drone technology and autonomous data capture have a role to play, but terrestrial laser scanners remain the most popular method for capturing high accuracy survey data.

The mining industry is eyeing developments around multiple smaller sensors on equipment. Streaming output to the Maptek terrain data management system enables continuous, dynamic topographic updates to provide a live model of a mine.

The July 2021 mine measurement release from Maptek enhances user experience and outcomes through improved range, imagery clarity and quality, and speed of data acquisition.

Developing hardware alongside purpose-built processing software allows users to dynamically interact with data acquired in the field, and ensures that resource, recovery and conformance reporting quickly flows through to guide planning and production teams.

Listening to user feedback and research into the latest sensing technologies has resulted in a raft of new and improved tools for automated mine measurement.

In-field scanner control

An exciting development sees the Maptek FieldHHC released as a product in its own right.

FieldHHC has long been the surveyor's most trusted field assistant. Following standard survey set up and scan georeferencing, it enables users of Maptek systems to enjoy the best survey experience.

FieldHHC combines a powerful, simple GUI with impressive, intuitive features that allow users to control their workflow. The user-friendly interface offers:

- > Field registration
- > Dynamic 3D view
- > Immediate view of scans
- > Measuring tools
- > Design conformance
- > RTK GPS integration
- > Multi-language support

A new add-on design conformance tool on the controller helps surveyors instantly recognise in the field whether pit walls are conforming to design. This allows issues to be resolved more quickly rather than waiting for office processing. Dynamic reporting means everyone stays up to date.

R3 mkII improvements

The Maptek R3 mkII laser scanners deliver incremental improvements on range, image quality and speed of scan acquisition. The new models can be ordered for delivery from July 2021 and include:

- > Improved LIDAR quality
- > Levelling sensor improvements over various temperature ranges
- > Increased number of laser returns to help improve data quality in dusty conditions
- > Improved scanner statistics for servicing requirements

Dual window scanning

The new XR3-D mkII laser scanner is another exciting development. Conventional terrestrial laser scanners capture data from one window, spinning to achieve a 360° field of view.

The new XR3-D mkII halves the scanning time through a dual window system. It captures data from both sides simultaneously, with the scanner head only needing to spin 180°. This approach means even more efficient scanning from the safety of vehicles.

For daily processes, survey crews can scan surrounding terrain in both directions while travelling into a pit to capture surface and stockpile data. There's no need to return to the pit at another time as haul roads, gradients and infrastructure have already been acquired seamlessly.



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Software updates

Software updates improve the automation of daily tasks and support the R3 mkII laser scanners. Maptek™ PointStudio™ includes new and enhanced functionality to:

- > Colour line by grade
- > RQD on ScanLine tool
- > Display line as elevation profile
- > Set up multi-dimensional filters

Requested improvements to the inter-ramp conformance reporting tool include:

- > Automatic creation of ideal toe and crest strings
- > Apply design toe/crest string as conformance parameter
- > Specify the location of collapsed sections spatially
- > Supported in custom workflows

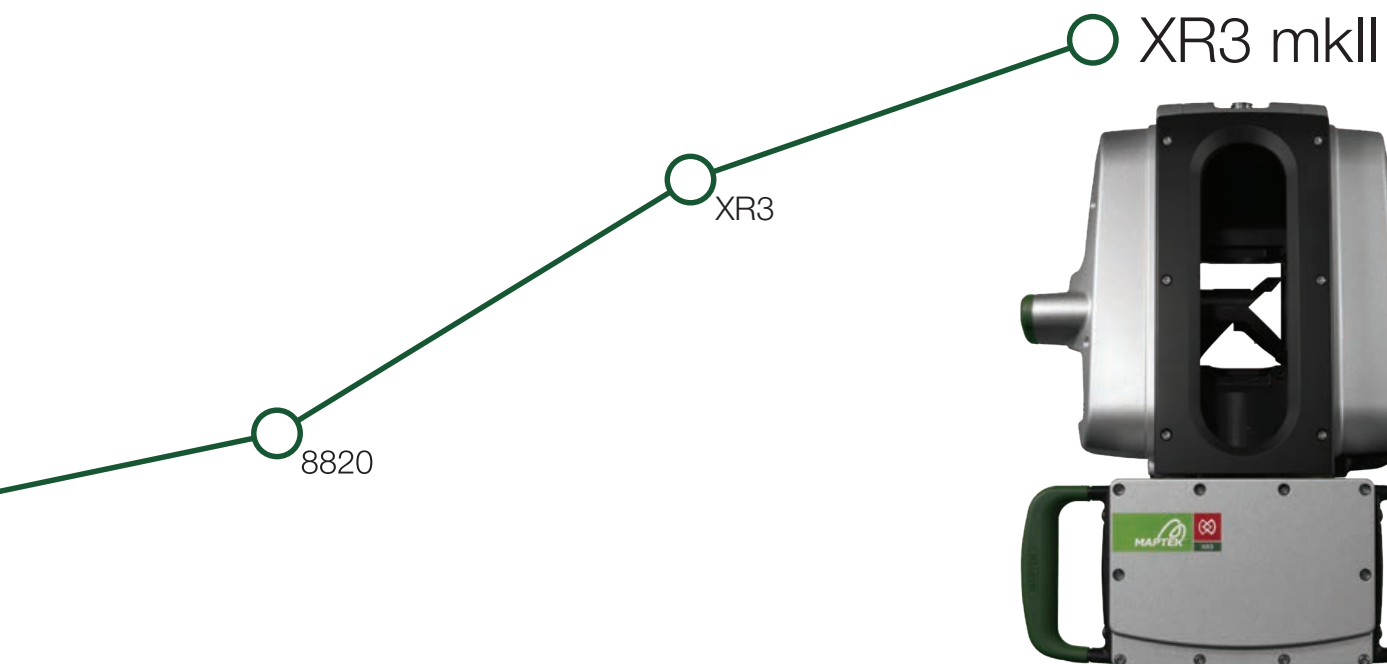
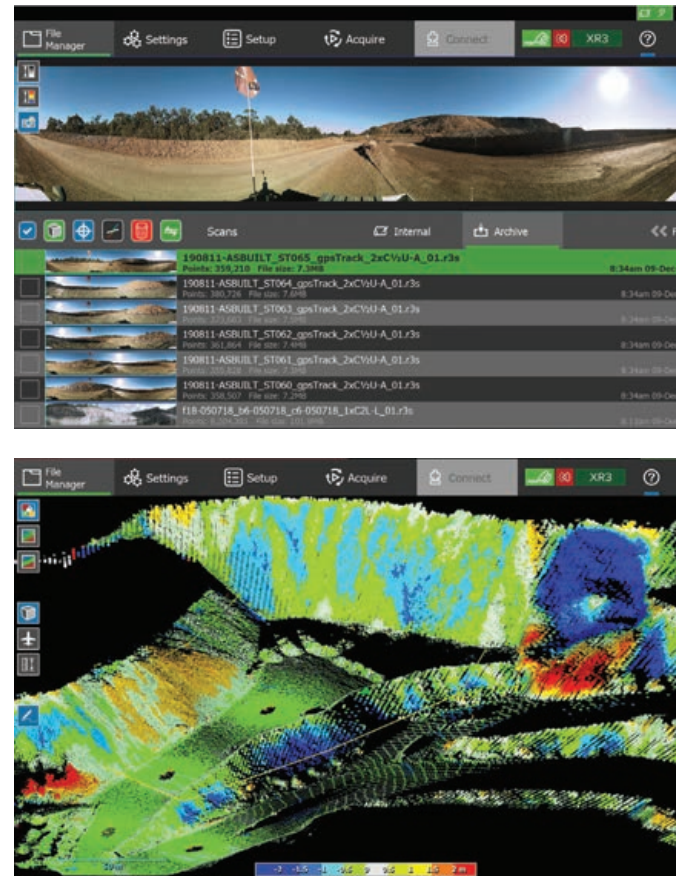
Users can easily define coordinate systems from Python and associate rasters to a surface.

Simplified monitoring

Maptek Sentry 2021, now on the Maptek Workbench platform, delivers enhanced interoperability and user experience for monitoring, analysing and reporting on surface movements.

A new ribbon interface in Sentry Office increases the visibility of functions. Scans can be easily transferred between Sentry and PointStudio and zones created in one application appear in the other, for easier analysis.

Sentry scans can now be coordinated to mine grids in the field, streamlining interoperability. Sentry databases now contain single scenes to improve data management and enhance performance.



Controlling stockpiles

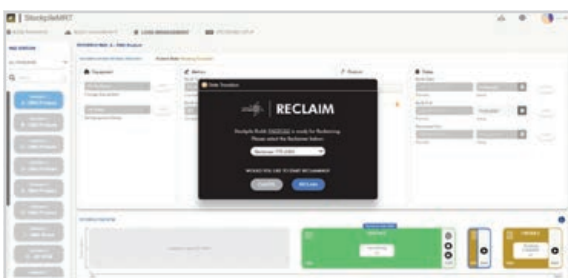
A new Maptek™ solution helps schedule and control the stage cycle of stockpiles to better manage space, grade and inventory to deliver product on time every time.



Large mining operations face a common challenge of managing stockpile space while simultaneously ensuring that the required product consignments are being delivered. Stockpile builds depend on availability, and when space is limited it is difficult to avoid costly rehandle.

Maptek™ StockpileMRT helps manage and monitor available space, tracking where material is moved to and how it is reintroduced into the environment.

StockpileMRT provides a clear graphical schematic of the stockyard, stockpile pads and builds.



The concept is similar to the well-known London Underground, where commuters use schematic maps that are neither geographically precise nor to scale.

At a mine, planners must decide how much material is allocated to build stockpiles, so that grade and inventory targets are achieved.

Completed stockpiles must have consistent grade and composition, which requires careful scheduling of the stage cycles of stockpile builds to maintain operational control from survey to laboratory results, to load-out.

StockpileMRT supports the specific stages that stockpiles cycle through, tracking the status of each stockpile based on inventory and grade.

Automated interfaces with control and instrumentation, laboratory information and train management systems provide users with near-live status and measurements.

A cloud-ready server and advanced web-based user interface provide near-live views and reporting to all stakeholders in the planning, building and loading processes.

StockpileMRT supports more informed value-in-use decision making. Take a manganese mine for example, that prepares run-of-mine stockpiles, feeding the processing plant with ore at target composition of grade and contaminants.

From the plant, physical and source characteristics are sorted and allocated to existing or new truck tips and fines stockpiles that are then blended into intermediary or product stockpiles ready for delivery. Once a particular stockpile is full, a new one is generated and enters the process, or a depleted stockpile begins the process again.

StockpileMRT enables more accurate planning and forecasting of inventory by increasing the visibility of grade and tonnes currently available on stockpiles, or that will soon be available through the upstream mining and plant processes.

Near-live accurate inventory and grade composition data is delivered throughout the stockpile stage cycles, and each rehandling event is tracked. This helps minimise costs that arise from time delayed in-shift decision making, such as around train loading, blending profiles and the reclaim process.

StockpileMRT ensures optimal utilisation of available space, and that value is preserved by avoiding delivery of variable or off-spec product. Additionally, it provides the ability to improve the price premium by reducing final product quality variability and bias.

Data integration and interoperability

From scripting to data APIs and low-code solutions, Maptek initiatives around data integration and interoperability are solving previously unsolvable problems.

The past 40 years has seen many changes in the mining industry and Maptek™ has been a key player in bringing new technologies to solve real world problems for miners.

Several Maptek software products began as purpose-built solutions, targeting a specific task or group of users. Standalone products such as Maptek™ Vulcan™ and PointStudio™ satisfied an immediate need, allowing people to become comfortable with new technologies, and ultimately embedding them into their everyday workflows.

As solutions matured alongside the industry, Maptek identified the need to integrate across various mine activities and stages. Combining tools in meaningful ways targets both data integration and data interoperability.

The customer is central. User experience is much more than individual satisfaction around a particular tool.

Investing in how functionality can make teams more efficient overall resulted in the Maptek Workbench, which hosts all Maptek applications, enabling shared data and easily deployed add-ons.

An example of this flexibility is the haul road conformance tool available to Vulcan and PointStudio users, integrating with their different workflows. Interoperability between Maptek and third party products, such as PETRA FRAGx, is another example.

All of the data in the mine value chain has to be passed along a route, stored somewhere and retrieved for use.

Retrieving the volume of stored data and creating value from it remains a challenge to many. Maptek Data Systems (MDS) solutions target dynamic data capture, storage, management and access.

Imagine being able to harness a continuous flow of terrain data and output your surface topography at a given point in time! The up-to-date terrain model can be queried for any location or time for planning and reconciliation activities.

VulcanMDS, due for release later in 2021, expands on current data management tools, introducing greater flexibility in how that data is stored and accessed. It also streamlines the data interactions between Maptek applications.

Maptek Compute Framework (MCF) speeds up and simplifies processes, shortening the time between data acquisition and value creation. It provides an environment to help evolve Maptek solutions using new technologies such as cloud computing and machine learning.

Computationally intensive processes that took a very long time, required top end machines, or tied up local devices are now run in the cloud. The process is secure and flexible for both Maptek and customers.

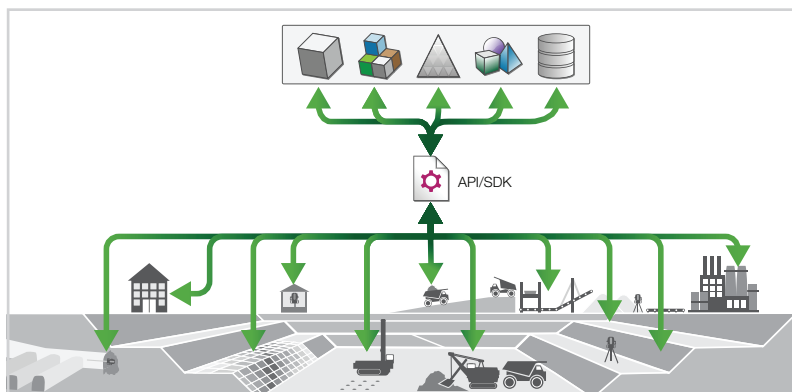
The first Maptek machine learning solution targets domain modelling prediction. DomainMCF unlocks investment value by improving a traditionally lengthy process and quickly uses all available data.

Customers can now use data APIs to connect with Maptek solutions. Data scientists and scripters can custom fit data that passes to their workflows and solve specific problems. Code-savvy engineers or geologists can use the Maptek data integration tools themselves, or our Technical Services staff can embed tailor-made tools.

The Workflow Editor on the Workbench automates workflows across Maptek applications, scripted solutions and third party tools, allowing users to innovate with low-code or no-code solutions.

Maptek enables users with different levels of expertise to become citizen developers by embedding custom applications, workflows and tools to help their team or organisation.

Beyond streamlining individual or team work, this holistic approach to data management, cloud computing and machine learning creates repeatable and auditable processes that enhance automation.



Turning a crisis into opportunity

Online courses provide skills and knowledge to prepare for mine engineering careers.

The Department of Mineral Resources Engineering of the University of Western Macedonia in Greece has always valued the integration of mine planning software in the undergraduate and postgraduate curriculum.

Maptek™ Vulcan™ has been used for more than 20 years in the Mining Informatics and Geostatistics courses of the Environmental and Geotechnology Engineering degree. It has now been introduced in the Mine Planning and Applied Geostatistics courses of the new Mineral Resources Engineering degree.

The Mining Informatics course was tailored to deliver all necessary mine planning knowledge to undergraduate students using comprehensive Vulcan design, analysis and modelling tools.

These were applied through a set of exercises using real world data and well-established design and modelling procedures employed in the mining industry.

A textbook, *Introduction to Mining Informatics Using Maptek Vulcan*, has been written in Greek and is given to all third-year students.

'The COVID-19 pandemic and the associated limitations on the way higher education is delivered in Greece meant that our Department had to find a different mode of working with the students to ensure that they would still receive all necessary knowledge and gain the same level of mine planning skills', explained Dr Ioannis Kapageridis, Head of the Department of Mineral Resources Engineering.



A bright moment for Department of Mineral Resources Engineering and Mining Informatics students who have successfully completed the course, holding their Maptek Vulcan training certificates in one of the virtual classrooms.

At the Department's request, Maptek provided 30 academic Vulcan licences and online access to the software for students through Maptek Account. This allowed them to use Vulcan on their home computers and follow the courses through virtual classrooms.

Maptek Account also allows better monitoring of software usage and easier licence administration.

Many students took advantage of the online access and used Vulcan any day of the week, not just the day of the scheduled course. Maptek Account also offered flexibility in delivering the new course content.

At the end of the course, and after successfully passing the exam, the students were delighted to receive a training certificate from Maptek Europe General Manager, James Moncrieff.

'We hope that the training certificate and the skills and knowledge they have gained will be valuable assets for our students in their engineering careers', concluded Dr Kapageridis.

Integrated operations for complex resources

Research scholarship initiatives help shape next generation of scientists.



ARC TRAINING CENTRE FOR

INTEGRATED

OPERATIONS FOR **COMPLEX RESOURCES**

Maptek™ has always placed a high value on contributing to education within the mining industry, supporting universities globally through the supply of technology and resources at no cost to help ensure the continued success of the industry as a whole.

Maptek is proud to be involved with the Industrial Transformation Training Centre (ITTC) for Integrated Operations for Complex Resources. The centre is supported by the Australian Research Council (ARC) and offers higher degree by research scholarships.

The unique training opportunity combines excellent support from academic and industry organisations, access to the latest technology and expertise in specific fields, and work placements to help shape the next generation of scientists and engineers.

The Training Centre aims to deliver the vital enabling tools – advanced sensors, data analytics and artificial intelligence – for automated, integrated and optimised mining.

Integration of all mining and processing stages allows intelligence across the value chain to be automatically generated, delivered and exploited.

Three universities (University of Adelaide, University of South Australia and Curtin University), two mining companies (BHP and OZ Minerals) and 16 mining equipment, technology and services organisations contribute to the initiative.

Maptek is providing a range of technology to the Training Centre for use in several projects.

One project will help create a model for fragmentation characterisation to improve productivity and safety in underground mining. Maptek will provide laser scanning equipment and expertise to assist with measurement requirements and, along with partner PETRA, will supply the FRAGx system to help characterise the rock.

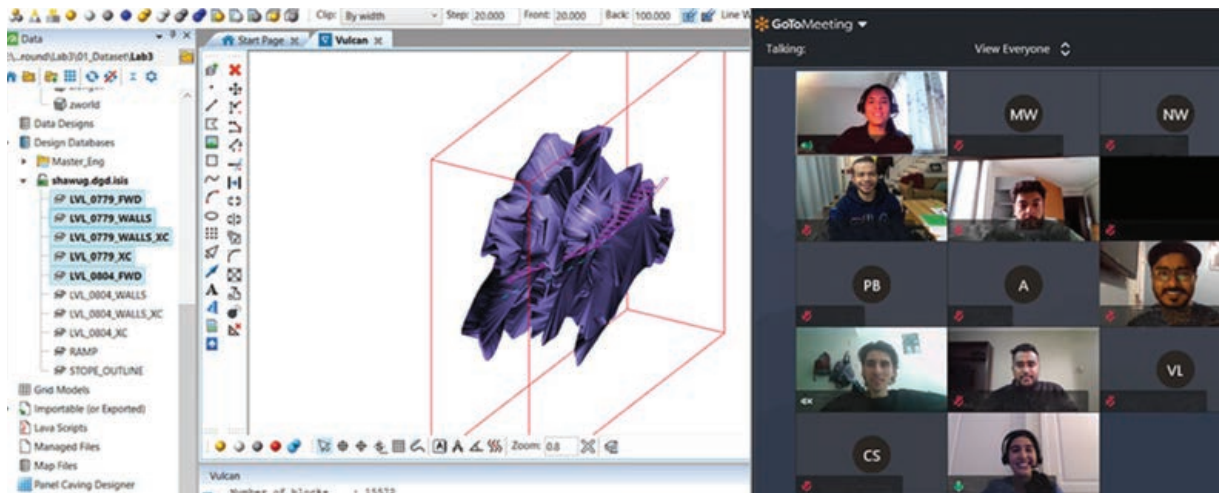
Maptek will also contribute to two other projects that apply Maptek technology to help connect the mining value chain using sensors, to better understand the movement of ore through a mining production process in real time, and to use available downstream sensor data to help make real-time updates and improvements in orebody knowledge.

The focus on integrated operations – linking data, knowledge, decisions and systems across the whole value chain – is the direction the industry needs to be moving.

Maptek is pleased to join with our university partners to support these research projects and looks forward to what the future holds!

Quality training matters

Blended training supports distant education and industry mentorships.



Higher education worldwide was massively affected by COVID-19. Many universities increased their investment in blended learning, combining on-campus education with online components.

Outside partnerships can provide unique expertise to ensure students are engaged and have a meaningful learning experience in a virtual setting. Instructors may need additional support to explore these additional teaching modes.

The University of British Columbia (UBC) and Maptek™ worked together to create a blended training program for 73 students in the mining and geology departments.

Maptek and UBC have partnered in rewarding and fun learning experiences for students competing in the Canadian Mining Games. This shared history with the university meant Maptek was ideal for the project. Above all, Maptek brings experienced instructors to deliver lessons for different learning styles.

A blended training program was developed with success and safety in mind.

Maptek provided free educational licensing of Vulcan and PointStudio. Students gained experience using some of the most popular software in the industry for geological modelling, mine design, mine planning, mine scheduling, point cloud modelling and point cloud analysis.

The main takeaways from the course included:

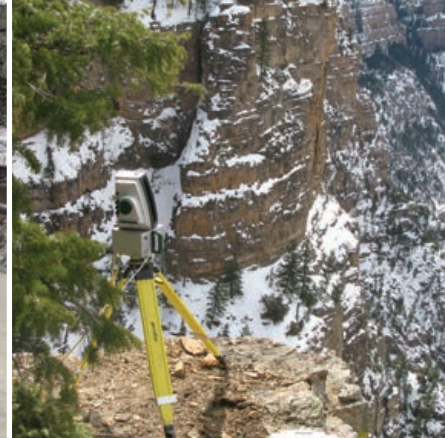
- > QA/QC and data validation
- > Generating block models
- > Performing pit optimisation
- > Designing a pit
- > Reviewing geotechnical parameters

Using industry-standard general mining packages plays a huge role in accomplishing any of these tasks. The new skills translate to success in a future role and also provide an advantage when job searching.

Maptek's tailored approach included access to the Online Training portal to make it easy for everyone in the same location. Class material could be reinforced with relevant online courses such as Vulcan Essentials, Design Data, Drillholes and Databases, and Orebody Modelling.

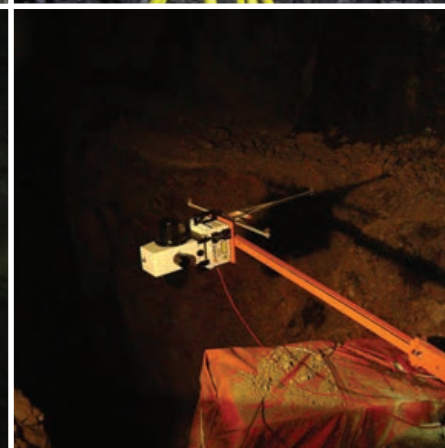
Students also receive mentorship from their Maptek instructor, which is invaluable as they navigate the curriculum before joining the workforce as mining professionals.

Maptek understands that students who receive a quality education can change the industry and even the world we live in for the better.



Laser scanners built to last

For almost 20 years Maptek has been building laser scanners to handle the extreme conditions encountered on mining and civil engineering projects





Do you have any photographs of Maptek technology in action?

If you have great photographs of Maptek hardware or software technology in use that we can share with Forge readers, then we'd love to hear from you.

Send your pics to forge@maptek.com





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