

## TECHNOLOGY ADOPTERS ARE WINNERS

**Studies have indicated that the adopters of front-line technologies become industry leaders, with strong operational performance and profit.**

Their teams enjoy a high level of job satisfaction. The innovation drives the company to push boundaries and further enhance performance. The experience of using new technology to improve operations in itself engenders confidence in a forward thinking management.

Risks in making operational changes can be mitigated by using a trusted supplier with a commitment to the mining industry. This ensures careful implementation and reduces the risk to performance.

These technologies can be rolled out across corporations, transferring the benefits by employing a common set of tools. Further incremental benefits arise from proactive analysis of the operational needs, expanding the role of the innovations.

All innovation and development is risky. However, the rewards are substantial, placing your operation at the low end of

the cost curve, empowering a confident workforce, and improving performance. To do nothing or to opt for old technology is to guarantee a place at the wrong end of the cost curve and see motivated staff move to greener pastures.

The time to embrace technology is now, when the economic climate is still tough. Companies coming out of the downturn ready for action can instantly capitalise on improving markets.

### Latest software technology

In the coal industry, Maptek Vulcan aided the development of a vibrant export market. Producing coal at the lowest possible cost, because of optimised operational strategies, gave companies an edge over competitors slow to adopt the technology or using inferior products.

Others followed the success of the big users to gain the same advantages. Nearly 30 years later these advantages resonate throughout the coal industry.

Today, the latest Vulcan stratigraphic modelling software significantly improves workflow. New models, which are created automatically from triangulation or gridded surfaces, allow geologists and engineers to work with a single file containing all the structural, quality, faulting and allied data.

### Improving performance

Coal mines are now heavily computerised. All decisions are integrated towards improving the big picture - resource


efficiency, environmental values and human resources. Software which promotes efficient utilisation and tracking of all equipment, leads to a quantum jump in the way mines operate on a day-to-day basis.

Systems such as Maptek MineSuite have developed on the shoulders of foundation products like Vulcan. Rapid improvements can be delivered thanks to new communications technology. Coupled with integrated databases this provides managers and operators with a total view of the mine operation.

### Survey innovation

Hardware advances in other disciplines have resulted in exciting developments. Maptek I-Site laser scanning technology provides superfast survey mapping of complex and often unsafe areas.

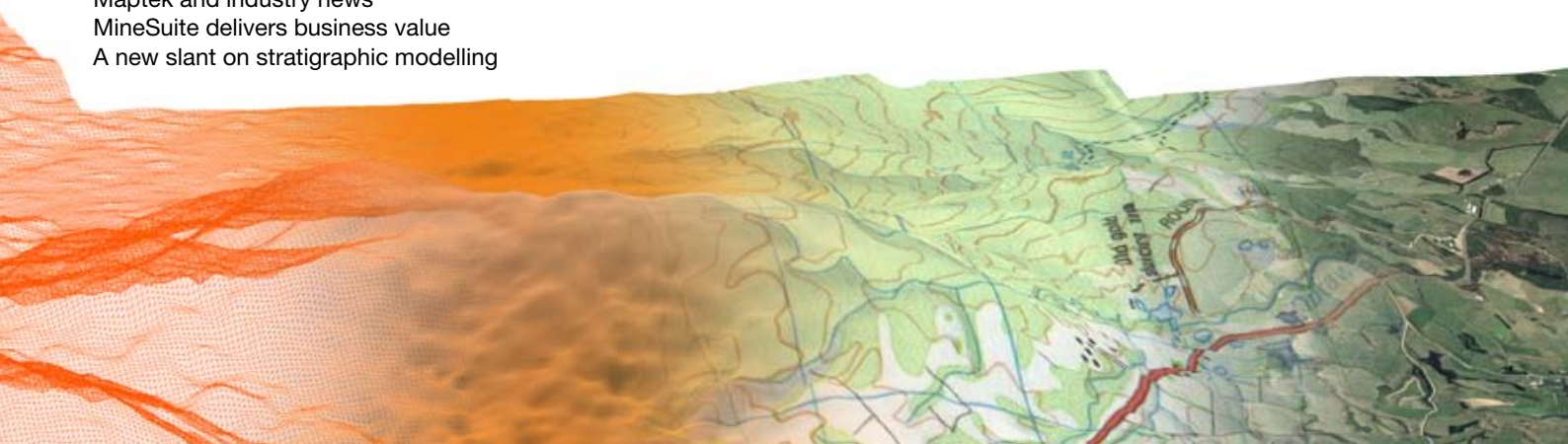
The I-Site system is fast becoming 'must-have' technology in any mine. It allows rapid response to survey needs and provides a detailed and accurate record of progress. Nothing is left to chance as all data is captured in a 360° sweep of a scene.

New technology means it is possible to build this equipment so that minimal training is required to use it. The benefits, both technical and financial, can then flow quickly through an organisation. 

*Bob Johnson  
Maptek Chairman and Founder*

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I-Site 8800 long range laser scanner  
Maptek and industry news  
MineSuite delivers business value  
A new slant on stratigraphic modelling



# INTRODUCING THE MAPTEK I-SITE 8800 LASER SCANNER

- > From Mine Pit to Mine Model in under an hour!
- > The next generation of scanning hardware
- > Increased productivity and versatility
- > Laser scanning solutions match survey workflows
- > Mine, quarry, civil and engineering applications

  
**MAPTEK™ I-Site™ 8800**





THE I-SITE 8800 CAPTURES ACCURATE DATA FROM 2.5 TO 2000 METRES. IT IS THE ONLY LASER SCANNER WITH AN IN-BUILT DIGITAL CAMERA FOR CAPTURING HIGH RESOLUTION PANORAMIC IMAGES.

## NEW! MAPTEK I-SITE 8800

**Long range laser scanning and 70 megapixel digital imaging are combined with user-friendly features in this streamlined, premium survey package.**

The I-Site 8800 laser scanner can quickly survey any stockpile, pit or terrain, with data seamlessly transferred into an accurate deliverable. Results can be available in minutes depending on the scale of the scene.

### Integrated technology

The I-Site 8800 scanner has all the sensor technologies necessary for survey tasks. These are integrated into a single ruggedised system packaged in a new ergonomic design.

Intuitive tablet PC control allows users to accurately define scan parameters as well as integrating scan acquisition with survey control and other scan data.

High resolution panoramic colour data is acquired automatically with all scans by the integrated 70 megapixel camera. The camera, long range precision laser rangefinder, motorised alignment telescope and laser pointer cover the same wide field of view.

**SCAN POINTS ARE RECORDED WITH SCENE COLOUR. REAL 3D IMAGERY IS COLLECTED SIMULTANEOUSLY AT UP TO 70 MEGAPIXEL RESOLUTION.**

A survey grade telescope for backsighting automatically registers and stores the position. A return to backsight button orients the scanner to the correct starting position when a scan is completed.

### Efficient workflow

Streamlined setup and scan preparation, and improved scanning speed shorten the entire survey process, meaning less time spent in the field and safer operations.

Control coordinates are stored and combined with tilt compensation data to locate all scan data in the site coordinate system. Only two known control points are required for setup - one at the scanner location and the other anywhere that is visible by the telescope.

Control on each degree of freedom is independent, reducing the likelihood of errors and providing total confidence that data is recorded properly in the field.

### Design and performance

Portability and ease of use are hallmarks of I-Site hardware. The I-Site 8800 has all the controls built in and is so light it can be carried single-handedly.

Operating the I-Site 8800 is simple. Motorised controls for adjusting the telescope and focus make backsighting easier and more accurate.

Scans are selected by pen touch on the ruggedised tablet PC handheld controller (HHC); minimal data entry is required. Multiple scans can be set up and queued for maximum efficiency in the field.

All data is recorded onto the HHC where it is immediately available for preview and evaluation. There is no need to return to the office to check for blind spots or missing data!

The performance of the I-Site 8800 is outstanding. It reliably captures data at extra long range while preserving data clarity, accuracy and detail.

### Data analysis & reporting


The collected point cloud data is easily converted into pit models and volumes. Data is simply transferred from scanner HHC to PC by USB memory stick.

**Transforming a point cloud into a useful 3D model in less than an hour delivers the ultimate solution for surveyors.**

Maptek I-Site Studio software provides tools to quickly and accurately filter, process and analyse survey data. Tools and features follow the workflow for common mining applications.

Registering multiple scans is easy. Surface, point and global registration tools replace hours of manual work, and provide far greater accuracy.

Once scans are registered, surfaces can be generated with the click of a button. Reference data can be imported and compared, and a datum established. It is a simple step to generate up-to-date pit models and accurate positions of toes and crests, or calculate material volumes from stockpiles or blasts.

Data and models can be exported in various formats for easy assimilation into mine modelling software and reports. Comparing specifications between laser scanners doesn't give the full story. The I-Site 8800 has to be seen to be believed. 

Visit [www.maptek.com/8800](http://www.maptek.com/8800) and contact your Maptek office for a demonstration.

# APCOM SPONSORSHIP

**Maptek's Eric González talks about the importance of involvement with computer applications research.**

**Why did Maptek feel it was important to attend APCOM?**

APCOM is the specialised venue for computer applications in mining. It's a recognised platform for new technologies and research results to be demonstrated to the industry. This isn't the first time we've sponsored this event.

We also sponsor one of the presenters, the University of Alberta. It's important for Maptek to have a presence at APCOM because we gain insight into the research and innovations of various research groups. It also helps us promote these innovations to the mining community. Much of the research will ultimately drive part of our development of Vulcan.

**What were some of the areas of focus at APCOM?**

The two main themes were optimisation/mine planning research, and resource determination and simulation. The optimisation and mine planning research is of particular importance because of its implications for Chronos development.

**Why does Maptek sponsor the University of Alberta?**

We sponsor them, and others, because they are at the forefront of research and innovation, defining the future of computer technology for the mining industry in their focus areas. The University of Alberta was actually a finalist for the most innovative student presentation. Our sponsorship gives us an inside track into the future of mining technology. We can leverage our partnership in practical ways, using their knowledge in our product development.

**Will Maptek continue involvement with APCOM in the future?**

It's important for us to continue to sponsor APCOM and research institutions. The next APCOM, which will be held in Australia in 2011, is an opportunity for Maptek to take an even more active role by participating in some of the research

presentations. Some of our newest technology like HARP, Underground Grade Control and MineSuite is a perfect fit for APCOM and would demonstrate how Maptek continues to be a leading-edge innovator in mining technology.

**'THE BEST THING ABOUT APCOM IS BEING ABLE TO SEE THE TRENDS, THE FUTURE REALLY, OF WHERE COMPUTING APPLICATIONS FOR MINING ARE HEADING.'**

*Eric González, Vulcan Product Development*

## IMAGINE

**Pablo Picasso said 'Everything you can imagine is real'.**

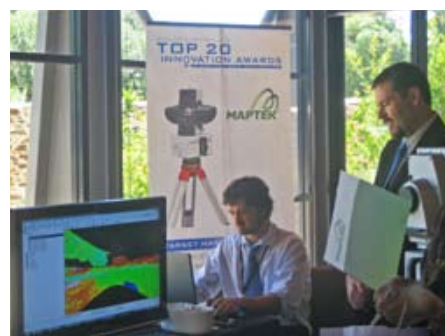
Imagine capturing real world data in true 3D. Maptek's vision makes it happen. Our I-Site scanner technology brings a fresh perspective to survey measurement.

In 2000 Maptek started working with laser scan data. Then we dared to imagine what it would be like to build our own scanners. Five years, and much hard work later, Maptek I-Site scanners were launched onto the world market.

These credentials secured Maptek's place as a finalist in the Top 20 Innovation of the Millennium awards held in South Australia.

Maptek has always focused on the 'total solution' - providing hardware and software built to suit users' applications. Our users can capture 3D measurements and transform them into 3D models, quickly and easily. This technology is made in Adelaide for the world scene.

The I-Site laser scanner is the only instrument on the market with a fully integrated, 360-degree, 70 megapixel digital camera for simultaneous imaging and scanning.



## INDUSTRY LINKS

**The South Dakota School of Mines and Technology will benefit from the donation of mapping tablets by PCS Mobile and Xplore Technologies.**

Students on the Department of Geology and Geological Engineering field camp gain experience in rock structure mapping, application of the latest LIDAR/laser scanning technology, and using Vulcan.

Maptek has supported SDSM&T for some time, sponsoring the mining software lab opened in March 2008, and supplying Vulcan to train students in mine planning, design and scheduling.

Maptek provides an I-Site laser scanner and technician for the rock mechanics course, and linked SDSM&T with PCS and Xplore, who are supplying the rugged tablets for field mapping.



'Laser scanning is an accepted technology in mining and tunnelling. Virtual geology is gaining momentum, particularly in large size excavations,' commented Professor Ziggy Hladysz.

'This is the best way to learn high tech engineering applications. We're eager to introduce the tablet mapping program by mid-2010,' said Dr Nuri Uzunlar, Director of Black Hills Natural Sciences Field Station, who oversees the field camp.

The SDSM&T prides itself on turning out students with both academic excellence and strong practical skills. Links with outside organisations and businesses foster an awareness of real world needs. Graduates with good exposure to modern technology are more productive when they enter the workforce.

# THE FACE OF MAPTEK

Maptek offices participated in 'Growvember', or 'Movember' events, where employees grew a beard during November, or sponsored colleagues, to raise money for worthwhile causes.

In Denver, with some help from Sigma Phi Epsilon, Colorado Alpha in Boulder, Maptek staff raised more than \$7000 for the Make-A-Wish Foundation of Colorado. Maptek also donated another \$5000 to the Make-A-Wish Foundation on behalf of the 'winner' of the staff contest.



*Patti Murphy of the Make-A-Wish Foundation accepts a cheque for \$7500 from Denver staff who participated in the Growvember contest*

Australian staff raised \$3500 which was matched by Maptek; the \$7000 will be used to support prostate cancer and mental health research.



*Maptek 'Movember' participants in Newcastle, Australia: (L-R) Darren Hope, Andrew Douglass, Warren Webster, Colin Goudie, John Roach, Danny Bujna*

# GEOLOGY ROCKS!

Chris Johnson, Geological Engineer at Maptek, shared her passion for geology with 100 fourth grade students at Academy of Charter Schools in Westminster, Colorado.

Igneous, sedimentary and metamorphic rock types were discussed, as well as mineral identification techniques such as colour, taste, and cleavage. Geology was tied to biology (fossils), chemistry (supersaturation and crystal formation), astronomy (meteors) and physics (optics).

Samples on hand for investigation included fossils, crystals and fluorescent rocks. Students created their own sedimentary rocks, and explored a pile of sand with a magnet for meteor fragments.



Each student left with their hand-crafted sedimentary rock, an amethyst crystal, a nickel ore sample, an example of refined nickel, a small piece of potash, and a magnet for exploring playground dirt for those elusive pieces of meteor dust! They also took home a recipe for growing their own sugar crystals.

# APPLIED GEOSTATISTICS

Maptek will hold the 6<sup>th</sup> Citation Program in Applied Geostatistics in Denver, Colorado from July 6-30, 2010.

This 4 week accredited course covers the theory and use of modern geostatistical tools, with emphasis on mining. Experience with Vulcan software is not required. Maptek's state-of-the-art training facility can accommodate up to 20 students. A computer, software, internet access and course materials will be provided for each participant during the course.

The presenter is Dr Clayton Deutsch, Professor and Director of the School of Mining and Petroleum Engineering, Department of Civil and Environmental Engineering at the University of Alberta. Dr Deutsch teaches and conducts research in geostatistical methods applied to resource estimation and grade control.

Students whose final project is approved will be awarded a Citation in Applied Geostatistics from the Faculty of Extension at the University of Alberta, Canada. This gives postgraduate students credit for a full semester course: MIN E 710: Application of Mining Geostatistics.

Mining professionals who want to improve their theoretical and practical knowledge of geostatistics should register their interest via email to [info@maptek.com](mailto:info@maptek.com)

# REGIONAL VULCAN TRAINING

Maptek North America has expanded its services to include regional Vulcan training.

In February, Introduction to Vulcan/Advanced Triangulation Modelling and Underground Design, Ring Design and Stope Analyzer courses were held at hotels in Nevada and Minnesota.

Visit [www.maptek.com/training/index.html](http://www.maptek.com/training/index.html) for information on all courses offered.

## MAPTEK USERS CONFERENCE

Maptek will hold a North America users conference at the Inverness Hotel and Conference Center, in Denver, Colorado from September 13-15.

'Efficiency and Productivity' will be the focus of the event. Mark your calendars now. A great opportunity for presentations, discussion forums and networking.

For more information, email [info@maptek.com](mailto:info@maptek.com)

# MINESUITE BUSINESS VALUE

**MinLog, regional representative for Maptek MineSuite™ in Africa, is building a reputation for excellence as a trusted partner in managing the mining execution value chain. Assmang has chosen to install MineSuite across its mining operations.**

After successful implementation at the Beeshoek iron ore mine, Assmang approached MinLog to deliver the MineSuite Production Management Information System (PMIS) at the 2-year-old Khumani iron ore mine in the Northern Cape of South Africa.

Production at Khumani has already reached 10 mt per year. Assmang plans to expand this to 16 mt within the next few years; such a high-volume environment is known to pose operational challenges calling for practical, user-friendly and scalable technology solutions.

**'ONE OF OUR BIGGEST CHALLENGES IS TO KNOW, FROM AN OPERATIONAL PERSPECTIVE, EXACTLY WHAT IS HAPPENING IN OUR PRODUCTION ENVIRONMENT, WHEN, WHERE AND FOR HOW LONG.'** *Jorina du Toit, Assmang*

The MineSuite PMIS delivers information to monitor operational performance and downtimes for timely decision making. Assmang's production quality and quantity is thereby optimised, maximising throughput and minimising costs.

The PMIS system uses information from the plant to calculate usage, availability and tempos. The high quality of data provides management with an accurate picture of the production environment, improving the delivery of product in accordance with specifications.

## A phased approach

The first phase of the MineSuite installation addressed PMIS data acquisition. The information feeds into Assmang's ERP system and other 3<sup>rd</sup> party systems. Assmang gains better control over condition-based maintenance and monitors progress based on selected events to manage the value chain.

The next phase will enhance data acquisition via an interface to other 3<sup>rd</sup> party systems installed in the plant, and provide for expansion of the plant itself.

## Ideal solution partners

Assmang and MinLog work continuously to take advantage of opportunities for further development or customisation.

'MinLog's project managers apply best practice standards aligned with our way of work and which result in timely delivery,' says Assmang's Jorina du Toit.

On-site and classroom-based training ensures that all stakeholders are equipped to apply the systems to their varying needs. Mindful of the limited time available to senior managers on site, MinLog



Beeshoek East Pit

coaches individual managers on the system functionality to assist them in accessing features and KPIs related to their work. Operators receive practical training related to data acquisition and validation specific to their area of work, with 'super-users' trained to provide on-site first line support.

## Ongoing relationship

MinLog's Eldrid Koortzen says 'Assmang has a mature environment and highly experienced engineers. Management recognises how our systems can assist them to meet business objectives, and makes suggestions for customising the modules to better meet their requirements. We're pleased that our installation at Beeshoek has resulted in the opportunity to add value at Khumani too.'

*Thanks to  
Jorina du Toit, Assmang  
Karel Gilliland, MinLog*

## MINESUITE VALUE

MineSuite provides a unified information base for data acquisition, validation, real-time and end-of period reporting. Performance managed across functions, disciplines and systems allows operational decisions based on accurate information.

- > The Production Management Information System (PMIS) sits above process level systems such as SCADA and LIMS.
- > Task-specific modules target needs such as unifying data capture, processing and reporting; tracking breakdowns; and monitoring production performance.
- > Electronic Log Sheet (ELS) and Breakdown Tracking Module (BTM) are scalable, fully customisable and integrate seamlessly with existing components of enterprise resource planning (ERP) systems.



Khumani stockpiles

# A NEW SLANT ON STRAT MODELLING

**HARP modelling provides the best technique for accurate modelling of stratigraphic units, crucial for the planning of coal operations.**

The HARP process provides the geologist with tools for interpretation and interpolation of coal horizons using drillhole data and downhole geophysical characterisation. Emphasis on modelling of the shallowest, thickest and best quality seams is of greatest importance to the economic viability of mining.

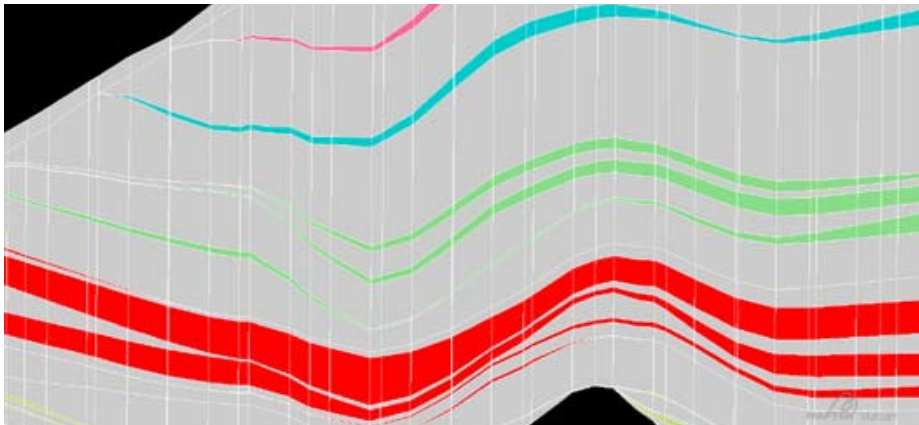
Operationally it is also important to understand the spatial distribution of thinner uneconomic seams which must be mined during burden removal. The mining, management and storage

of this waste coal often needs to be planned well in advance to prevent potential spontaneous combustion and associated environmental impacts.

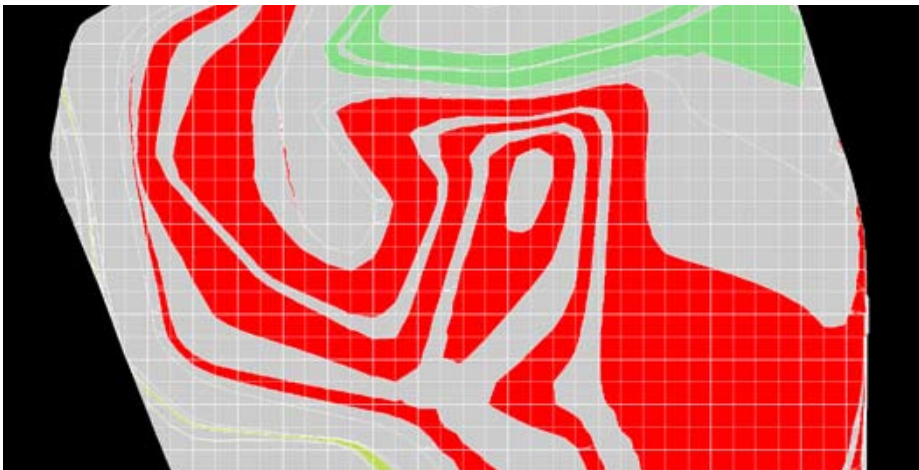
**In open cut mines, coal from thin or low quality seams is often spread throughout the overburden stockpiles. Pockets of spontaneously combusting coal can then inhibit reclamation over a large area. Identifying this problematic reject coal at the modelling and planning stage would allow it to be selectively mined and disposed of safely.**

Once mining has commenced, HARP modelling can be enhanced using positional information of seam contacts collected by I-Site scanning of highwalls.

The I-Site data can be modelled using smart line interpretation and imported into Vulcan to control the HARP modelling process in the vicinity of the highwall. This ensures that the geological model provided to the mine planner represents the best understanding of the known geological data. *∞*



... Cross section through a HARP model showing coal seams in coloured blocks with burden shown in grey. The seams are folded in places and thicken/thin along strike. The HARP process provides accurate modelling of thin seams, down to centimetre scale, which are easily visualised.



... Plan view slice through a folded and domed sequence of coal strata. The integrity of thin seams is maintained in the HARP model, even in a complexly folded example such as this one.

## VISIT THE MAPTEK BOOTH

### March 30-31

OzMine 2010  
Jakarta, Indonesia - Booth 51

### April 11-16

XXIV FIG International Congress  
Sydney, NSW, Australia - Booth 3

### April 12-16

EXPOMIN  
Santiago, Chile - Booth 809-2

### April 21-23

VIII Conferencia Internacional de Minería  
Chihuahua, México - Booth 14

### May 6-7

37th Symposium on the Geology  
of the Sydney Basin  
Hunter Valley, New South Wales

### May 9-12

CIM Conference & Exhibition  
Vancouver, British Columbia - Booth 228

### June 10-11

Elko Mining Expo  
Elko, Nevada - Booth 110

### June 23-25

Best Practices in Mine Haulage  
Brisbane, Queensland  
Maptek technical paper

### August 11-13

Australian Institute of Mine Surveyors  
Gold Coast, Queensland

### September 14-15

Oil Sands Trade Show  
Fort McMurray, Alberta - Booth 2212



David Catterall from Scotgold Resources, winner of the booth prize at Mines & Money 2009, with Maptek CEO Barry Henderson



Maptek staff talk to visitors at SPAR 2010, held in Houston, Texas in February

# NEW CUSTOMERS

## VULCAN

**BHP MANGANESE**, based in South Africa, has purchased Vulcan MineModeller to assist with modelling manganese interests in Africa.

**BHP YEELIRRIE**, a uranium project in Western Australia which is expected to be in production in 2014, will use Vulcan for geological modelling.

**CLEAN COAL VICTORIA (CCV)** has purchased Vulcan for planning, modelling and resource estimation. CCV's aim is to maximise the value of an estimated 33 billion tonnes of economic lignite resource, primarily used for electricity generation.

**COLOSSUS MINERALS INC.**, headquartered in Toronto, Canada, has purchased Vulcan for mine feasibility planning on the Serra Pelada project in Brazil. The flagship project hosts a gold-platinum-palladium deposit.

**CORTONA RESOURCES**, a Perth based exploration company with gold projects in WA and NSW, is renting Vulcan for the Majors Creek project in NSW.

**GENIUS MINEIRA**, based in Angola, is using Vulcan for exploration projects in iron, gold, copper, uranium and diamonds.

**MINERA ISLA RIESCO**, a new coal project in the south of Chile, has bought Vulcan for geology and mine design.

**MINERALES MONCLOVA**, part of the AHMSA group, has purchased Vulcan for geological modelling of the coal mine located in Piedras Negras, Coahuila State, in the north of Mexico.

**NEWCREST MINING**, the largest gold miner in Australia, has entered into an Enterprise Agreement with Maptek to provide flexible deployment of Vulcan for mine planning and geological modelling across existing sites. Newcrest sites include Telfer in Western Australia, Cadia Valley in New South Wales, and Gosowong Gold Mine in Indonesia, as well as head office in Melbourne, Victoria.

Cracow Gold Mine in Queensland already uses MineSuite for production monitoring and fleet management, while Vulcan is employed for ongoing investigations at the Namosi project in Fiji.

**NOVAMINA EMPREENDIMENTOS SA**, a consulting company based in Belo Horizonte, Brazil, has purchased Vulcan for geostatistics and open cut mine design.

**PARSONS BRINCKERHOFF** is active globally in transportation, power and urban development. The new UK-based mining consultancy which has used Maptek Services on a pre-feasibility study, has now purchased Vulcan, with staff undertaking training to improve their skills.

**RIO TINTO, TECHNOLOGY AND INNOVATION**, in Salt Lake City, Utah, has purchased the Vulcan Tetramodelling module for use in unfolded variography and grade estimation in complex, overturned geological formations.

**SIGA INGENIERIA Y CONSULTORIA SA**, an engineering and consulting company based in Santiago, Chile, has purchased Vulcan for geology, geo-technical and open cut mine modelling.

**SOCIETE LE NICKEL (SLN)**, New Caledonia, founded in 1880 and a subsidiary of French group Eramet, exports 80% of its nickel production to Asia and Europe. SLN will use Vulcan for open cut mine modelling and geostatistics.

**SRK CONSULTING (CHILE) SA** has purchased Vulcan for mine modelling, grade control, geostatistics and simulation.

**TOTAL E AND P** in Madagascar has recently purchased Vulcan software for modelling oil sands.

**UNICEM** is a cement company based in Nigeria. Vulcan has been purchased for geological modelling and mine planning.

**XSTRACT GROUP**, mining consultants in Perth, Western Australia, will rent Vulcan for geological modelling and data management.

## I-SITE

**ANGLO COAL CALLIDE** will use an I-Site 4400LR plus vehicle mount at the mine west of Gladstone, Queensland. Applications include monthly volume reporting and pit survey to update the geological model; mapping coal seam and partings; drill and blast design; and blast profiles. Geology uses include identification of faults and planes for hazard mapping.

**JOHN HOLLAND GROUP**, a contract mining provider, will implement an I-Site 4400LR plus vehicle mount for the Isaac Plains open cut coal mine, in the Bowen Basin, Queensland. John Holland is providing whole of mine services from clearing through to delivery of coal. The main application for I-Site will be end of month and blast surveys.

**KANSANSHI MINE** in Zambia has purchased an I-Site 4400LR laser scanner for month-end survey pickups and accurate copper concentrate stockpile volumes. The system will also be used for volumetric spot checks on contractor truck haul loads.

**MACMAHON CONTRACTORS** will use the I-Site 4400LR plus vehicle mount system at the Eaglefield open cut coal mine in Queensland. The main applications will be general end of month survey and geological highwall mapping.

**NEWMONT'S PHOENIX** open pit gold mine, near Battle Mountain, Nevada, has acquired an I-Site 4400LR laser scanning system for end of month pit updates and volume measurements. I-Site will also be used for monitoring subsidence in pit floors and benches due to old underground workings, and monitoring of a new copper heap leach pad. Photo draping will improve geotechnical analysis of pit walls.

