SOFTWARE

Planning for a brighter future

Carly Leonida presents a roundup of new releases and updates for mine design and planning in 2016

Presenting a mine-planning model (in this case generated by Leapfrog software) to the client

Market conditions during 2015 were difficult in mining and mineral exploration, and all indicators point to a continued tough time in 2016.

Miners, like the rest of the industry, have been looking hard at their costs as commodity prices have plummeted. However, forward-thinking companies know that it's more important than ever to reap the benefits software can provide.

Miners are still investing in mine design and planning technology to reduce operating costs through fine-tuning mining plans, increase efficiency in operations and redefine their economic mining areas.

Mining projects are becoming more complex and more expensive to develop, so planning technology is critical in helping owners identify operations they wish to retain to carry them through the downturn, which operations to divest and which to acquire.

"We are seeing a definite move by the mining majors to enterprise architecture"

In line with this, and despite overall reduced spending by the mining industry in 2015, most major software providers have reported an increase in their customer base over the past 12 months.

Shaun Maloney, CEO at ARANZ Geo, tells *MM*: "We have continued to see strong demand and growth as companies seek to drive greater innovation and efficiencies into their existing workflows and processes.

"2016 looks to be another challenging year; companies are likely to continue to focus on extracting greater value from their existing assets with technology seen as a key to achieving this."

Bill Wilkinson, product manager for mine planning and design solutions at ABB's Enterprise Software product group, reports similar findings: "While we saw overall reduced spending by the mining industry in 2015, the MineScape customer base increased by 6%, and these new customers accounted for 30% of the 2015 MineScape licence revenues.

"Existing customers continued to expand their user licences, and we saw an increase in customer retention. With our new customers, we saw increased interest in our subscription-based licensing, which significantly reduces the initial cost of purchasing software."

In particular, software vendors that have invested in enterprise applications are seeing a renewed interest in what they are doing, perhaps more so than those that have focused on increasing features and functions in their desktop products.

"We are seeing a definite move by the mining majors to enterprise architecture," says Richard Mathews, CEO at RungePincockMinarco (RPM). "The leading miners understand that they have to be able to share data right across their operations in an accurate and timely manner, if they want to continue to get their costs per tonne down and productivity up.

"We believe that the next 12 months will be as tough as, if not tougher than, the last 12 months. History has shown that in challenging times, companies that are able to innovate and deliver solutions which provide value and savings to their customers will do OK, and those that cannot will find it very difficult to survive."

Despite the difficult conditions predicted, there is still an air of optimism for the coming financial year, and with a number of large tradeshows on the horizon including Bauma and MINExpo, there is a flurry of new and improved products planned for release.

ABB

MineScape is part of ABB's Intelligent Mining Solutions (IMS) suite, which provides an integrated solution from exploration through to mine design and planning. IMS products include the MineMarket logistics and sales solution; CCLAS laboratory information management system; and Production Accounting, which tracks and pinpoints losses within ore-processing systems.

ABB releases two versions of its software solutions per year. In 2015, MineScape 5.9 and MineScape 5.10 were added. New features include:

- CoalLog 2.0 support; an industry-standard database for data storage, facilitating Joint Ore Reserves Committee (JORC) studies;
- New Pit Optimization plug-in for defining economic pit limits and phases;
- 64-bit version for enhanced performance;
- Increased graphics performance;
- Software developer kit for creating plug-ins;
- New interface features; and
- Integration between MineScape Schedule and MineMarket.

Wilkinson explains: "As technology has progressed with data-collection devices such as laser scanners, our customers want to utilise the massive amount of data they collect in their geologic modelling and mine design work.

"In 2015, we began working on our big-data initiative by releasing a 64-bit version of MineScape. In 2016,

we will continue this as we begin to leverage 64-bit technology into MineScape by increasing data size and processing limitations. We will also begin replacing the MineScape graphics engine.

"Our product roadmap includes an upgrade of the 3-D graphics engine enabling the display and manipulation of billions of points and millions of triangles in real time."

While MineScape made its reputation in the coal industry, its capabilities have also proven applicable in the bulk metals, phosphates, mineral sands and oil sands segments.

"In 2016, we will begin working on additional functionality for MineScape to fill in gaps that our non-coal customers have been asking for, including integrated 3-D geostatistics and grade-control solutions," explains Wilkinson.

ABB says that MineScape GDB (Geologic Database), Stratmodel (stratigraphic modelling solution) and Open Cut design tools are its most popular plug-ins.

MineScape GDB is a database for storing, validating and displaying geologic data, including drill-hole data and survey information. "The benefit our users gain from GDB is that it's integrated with our downstream geologic modelling plug-ins, and it provides grapsia pacichical correlation and editing tools, which streamline our customers' business processes, enabling them to load, query, validate and correlate data quickly and more accurately than with non-graphical methods," says Wilkinson. "In December, we added CoalLog 2.0 support to GDB for storing and validating coal data."

MineScape Stratmodel takes the work out of stratigraphic modelling using automation. It can handle even the most complex deposits and, ABB states, "has the best fault-modelling technology available".

"Our customers have reported a reduction of 50-75% in the effort required to generate the same geologic models using competitor packages. The efficiency gained enables users to experiment more and refine their models, improving the accuracy of their results," says Wilkinson.

Stratmodel is integrated with MineScape Block Model for added flexibility when block models are required for stratigraphic deposits.

MineScape's Open Cut plug-in provides tools for designing surface mines. When models are finished, they are immediately accessible in Open Cut. An automated design process is available through wizards, automated batch processes, or through forms, whichever is more convenient for the user. The design tools enable long-range mine design layout, short-range design, ramp design, and reclamation, as well as reserve calculation.

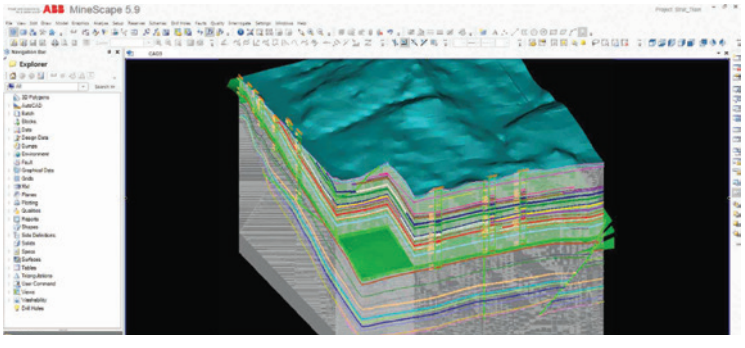
ARANZ GEO

ARANZ Geo states that its flagship modelling product Leapfrog Geo is helping to redefine the way mining companies conduct their planning processes, bringing benefits in speed, efficiency and risk management.

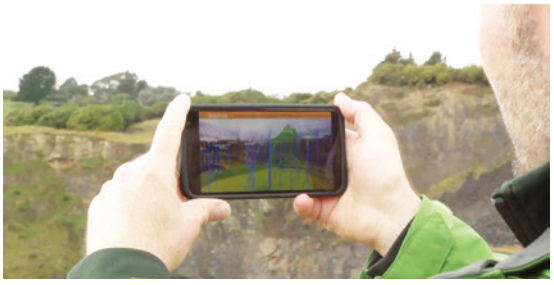
"The message from our clients is very clear," Maloney tells *MM*. "Slow, cumbersome processes that aren't dynamic are no longer acceptable. They want better information, faster, and integrated end-to-end."

Maloney adds: "We are focused on providing Leapfrog customers with integration to deliver the best software solutions throughout the entire mine-planning value chain. The Leapfrog partner programme brings specialist providers together to collaborate on an ongoing basis to ensure users can readily switch between programmes and reap the benefits."

Standout features from Leapfrog 3D include an implicit modelling engine that allows models to be built and updated directly from the data without wireframing. Leapfrog can harness over one million data points with great speed and is interoperable with many other solutions. "In 2015, new features were developed for greater flexibility, control and interoperability. A big focus was to bring geologists and engineers closer together in the decision-making process, and that remains our clear focus for 2016," explains Maloney.



A view from Stratmodel, one of ABB's most popular plug-ins for MineScape 5.9



Leapfrog Augmented Reality technology in action

The April 2015 release contained features that improved Leapfrog's compatibility with mine design and scheduling packages. Leapfrog Geo 2.2 strengthens the path between Leapfrog and mine engineers with the introduction of industry standard sub-blocked models. Block models can be built in Leapfrog and exported into formats such as Datamine and CSV. The release also improved Leapfrog's core interpolant modelling functionality.

A second release in November 2015, Leapfrog Geo 3.0, focused on control and flexibility for the Leapfrog geological modeller, especially in stratigraphic settings, and a beta version of the Leapfrog AR augmented-reality tool was released. This is being tested with selected clients.

Leapfrog AR users can visualise geological data and models on a tablet, superimposed over an exploration site, pit or underground operation in the real world. "This 'big picture' view of the geology can be readily understood by multiple audiences and delivers improved physical validation, collaboration and communication," says Maloney. "We will conclude our beta trials this year and anticipate strong demand for installation.

"Imagine standing on the edge of a mine pit and seeing the geological model superimposed over it. The geologist viewing the model can use their knowledge of the deposit and terrain to give a contextual visual check and collaborate in the development of the best model solution."

In 2015, ARANZ Geo also announced a technology partnership with Deswik, the developers of Deswik.CAD mine planning and engineering software, to enhance effi- ►

"Slow, cumbersome processes that aren't dynamic are no longer acceptable"

Carlson has released a new 3-D graphics engine, Precision 3D. Apps and plug-ins for this range from topographical work to drill-and-blast design (as shown here)

ciency and improve workflows in mine planning and operations. The partnership allows customers to integrate Leapfrog dynamic implicit modelling into the mine design and planning processes of Deswik.CAD. Users can create a sub blocked model in Leapfrog Geo, then import it into Deswik for mine planning, optimisation and basic estimation.

CARLSON SOFTWARE

The Carlson Mining suite includes modules for Geology, Underground Mining, Surface Mining, Natural Regrade, Survey, Civil, Hydrology and GIS. Carlson software lets users work in CAD files, using AutoCAD or IntelliCAD, allowing easy transfer of data to others working on the project.

Grant Wenker, VP and director of mining at Carlson Software, explains that the company releases a new version of its main office product every year, usually in the June quarter, to coincide with the new version of Autodesk products.

"Each of these releases usually includes 300 new features and commands," he says. "There are also updates provided by automatic download periodically throughout the year. Carlson has recently released a new 3-D graphics engine called Precision 3D. Apps and plug-ins for this new engine range from topographical work to drill-and-blast design."

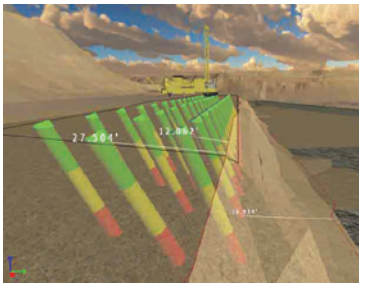
"The engineers are very happy with the product and how it has improved their productivity"

Carlson states that its software is used by over 90% of the US coal industry. "We are seeing new opportunities in India, Indonesia, Mongolia, Mexico and Eastern Europe. Working with our Russian distributor, we have over 50 mines running Carlson Mining software," Wenker adds.

"One major benefit customers see right away is cost savings due to the competitive pricing of the software. Another benefit is that projects are completed more efficiently, due to the ease of use of the software, and the fact that it is AutoCAD based.

"One major thing that separates us from other mining-software companies is that Carlson does not provide consulting services on our software. We develop, sell and then train on the software, so the engineers can use and retain it. This keeps cost down and productivity high, as the engineer is doing their own design and planning, not contracting it out."

Carlson's recent customers include several Indian coal miners that bought licences in 2015, and are expected to add to their purchases this year.



"Carlson provides them a faster, easier workflow for their mine design and scheduling than their previous software solution," explains Wenker. "The engineers are very happy with the product and how it has improved their productivity. Worldwide coal sales have slowed, but industrial minerals are picking up the slack. Limestone and aggregates are standardising on platforms, and Carlson Mining is one of their choices going forward for planning and geology."

DATAMINE

Datamine's flagship products include the Fusion geological database suite, Studio products for resource modelling, and a range of strategic to short-term open-pit and underground planning applications such as NPV Scheduler, Studio OP, Studio 5D Planner and EPS.

Since being acquired by Constellation Software in July 2015, Datamine (formerly part of CAE Mining) has released major upgrades in the form of Studio RM, tailored for resource geologists, and Fusion 8.0 with significant performance improvements in remote database synchronisation and new QA/QC reporting functionality.

2016 will see a major upgrade to the Studio OP system, with version 2.0 combining short- and medium-term planning capabilities in a single environment, and the release of an advanced geostatistics module in Studio RM, resulting from an ongoing collaboration with Geovariances.

A new release of the MSO underground strategic stope-design optimiser is also planned. This will cater for more complex shapes to mimic medium-term planning levels of detail. "In the mining segment, the Datamine brand will continue as the primary public face of the business, with additional expertise and sustainability provided by Constellation along with opportunities to leverage technology from other parts of the company," explains Dylan Webb, Datamine's technology director.

Datamine recently won a tender to supply and implement a geological data collection, storage and reporting system at a large nickel producer in New Caledonia. The company is also in the process of rolling out its Ore Controller system to a multinational gold company. Ore Controller improves the short-term process to manage sampling, modelling, blast displacement and dig line communication, reducing ore loss and dilution in open-pit mine production environments. For a medium to large gold or base-metals operation, annual bottom-line improvements can be in the range of US$20-40 million.

Datamine believes that as communications technology and access improves at mine sites, the use of cloud-based services will increase substantially. It has thus invested in a cloud-based platform called Summit.

"This allows customers to rapidly conduct scenario analysis and optimisation across hundreds of remote processors, improving the turnaround time for decision making and freeing up locally based computer hardware for ongoing day-to-day tasks," Webb tells *MM*.

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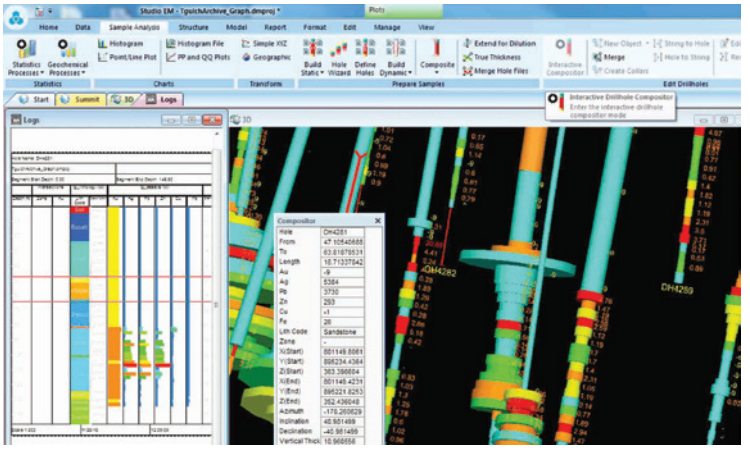
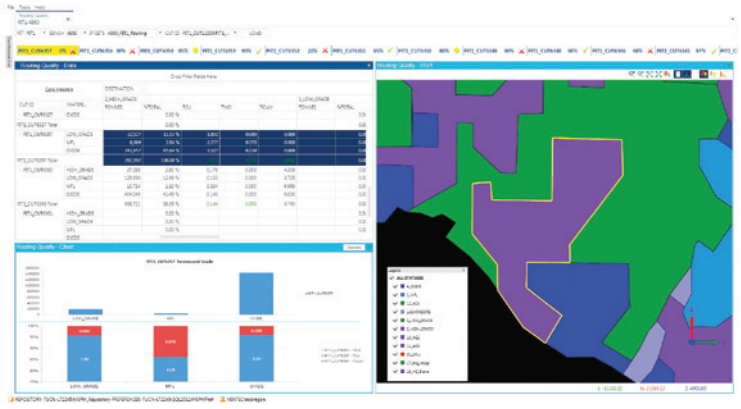


Datamine Studio EM is tailor-made to meet the needs of exploration geologists



HxM Athena from Hexagon imports, validates and analyses from multiple sources. Real-time fleet-management telematics are overlaid with geological and geographical models

ware can be completed in a few days using Summit. The platform also provides off-site data storage, and the ability to share data securely with nominated company personnel, including full 3-D animations streamed to an internet browser."

GEOVARIANCES

Isatis is Geovariances' flagship software product for geostatistics with functions for data exploration, statistical analysis, visualisation, manipulation and estimation. It was developed in partnership with the Fontainebleau school of geostatistics and is constantly evolving to offer advanced methodologies that Geovariances says cannot be found in any other mining package. The company says that innovation derives from research consortia created in partnership with mining companies in order to better address their needs.

The addition of a Simulation Reduction application was the main improvement to Isatis in 2015.

This new tool provides a quick way to identify grade realisations. It comes in addition to the standard simulation post-processing, delivering risk curves and probability maps on the full set of results. Because this approach is easy to set up in an industrial context, and the selected scenarios are more manageable, it can be implemented to characterise a project's risk due to uncertainty associated with open-pit optimisation and mine scheduling, and mine optimisation for a portfolio of projects.

Isatis 2016 (released in March) will include several new applications:

- Neighborhood Statistics: this tool will help the user to choose the best neighbourhood parameters for the estimation process;
- Mixed Support Kriging: allows the mixing of different support data in a single kriging process; and
- Product Variability: for anticipating and comparing production variability between zones defined by polygons.

"A study that typically takes a month using traditional desktop software can be completed in a few days using Summit"

Released in 2015, Minestis is Geovariances' software product dedicated to mining resource estimation. Minestis 2016 (to be released in June) features implicit domain modelling with uncertainty assessment on domain envelopes. This will enable modelling directly from borehole data.

Other new features include multivariate geostatistics with multivariate variography, co-kriging and co-simulations. In order to refine estimates, nested neighbourhoods have also been made possible. This means the user will be able to define different neighbourhoods according to the distance (medium, large and infinite) between the estimated block and the input sample. Lastly, the new Kriging Validation tool will enable the display of different statistics combining input data and kriging results.

DASSAULT SYSTÈMES

Dassault Systèmes' Perfect Mine and Plant solution encompasses business and mine planning, operation modelling and simulation, production scheduling, production management, and work management. The solution, which incorporates numerous GEOVIA software applications including Surpac and GEMS, has the ability to utilise data from across operations to inform planning and execution.

Marni Rabassó, vice-president for natural resources at Dassault, tells *MM*: "Perfect Mine and Plant enables companies to reduce variation in their operations, boost productivity and control costs, while achieving their mine plans. It also gives them a virtual twin of their business through the use of big data, 3-D collaboration, modelling, planning and simulation."

Perfect Mine and Plant's new Operation Modeling and Simulation module provides tools to create simulation process flows – comprising a variety of applications, including commercial software, internally developed programs and Excel spreadsheets – to automate the exploration of planning alternatives and identification of optimal performance parameters. With it, planners can produce plans to a defined level of confidence using simulation and decision support; understand the driving factors in the mining process; and have confidence in strategic and tactical plans before execution.

"Within Operation Modeling and Simulation, mine planners gain new capabilities to create and review more planning options than they can today, to boost confidence in the one that is ultimately chosen," says Rabassó. "In addition, should economic conditions change, or operational objectives change at the mine, off-the-shelf plans are available, which can be rapidly deployed with Perfect Mine and Plant."

Dassault has also added new Production Scheduling optimisation capabilities to Perfect Mine and Plant, which help mines boost productivity by using a real-time key performance indicator approach to scheduling. Production Scheduling identifies and collects all tasks necessary to reliably deliver production forecasts, and integrate and synchronise them for execution excellence.

Recent updates to Perfect Mine and Plant's Mine Planning applications include Surpac 6.7, which features better grade estimation and increases in the processing speed of block models. Surpac 6.7 helps users optimise performance of block models through its support of multiple CPU cores, reducing estimation times from hours to minutes.

Whittle 4.6 can help users to add more economic value to projects, and save time by streamlining mining processes. With a 64-bit version and Windows 8.1 support, Whittle 4.6 handles large datasets, optimises operations processes and runs bigger models, making this version more efficient to use than previous versions. A new Block Model Import Wizard also provides a simplified workflow for exporting files from Surpac, and improved floating-point arithmetic provides more accurate binning by grade range for a more positive impact on net present value (NPV).

HEXAGON MINING

The MineSight Schedule Optimizer (MSSO) is Hexagon's go-to product for short-, medium-, and long-term planning. It determines the most productive mining sequence to achieve the highest project profitability and generates practical schedules.

Block-model scheduling is now part of MSSO following the December 2015 release of version 9.3. This lets users import blocks from a block model and aggregate them into full-bench scheduling units, or smaller scheduling units by defining the number of blocks in each direction. Planners can obtain more accurate cycle times from a block to each destination.

Hexagon states that mining software's greatest contribution will be to help companies deal with an ever-increasing flow of data. "Big data is a bit of a buzz-phrase, but the digital mine of the future is closer than people might realise," Glenn Wylde, executive vice-president of technology and innovation at Hexagon Mining, tells *MM*.

To that end, the company has introduced HxM Athena, a business-intelligence and analytics tool that can help companies transform their data into knowledge.

"It's a unique solution based on synergies within Hexagon Mining. Our goal is to understand the big problems, but provide practical, achievable and scalable solutions in the short term. HxM Athena is central to plans for connecting with enterprise resource planning (ERP) systems. Athena will preside over all the data that flows in the operation of the mine and will be the one source of information that everyone needs, including SAP," says Wylde.

HxM Athena imports, validates, analyses and combines data from multiple sources. Real-time fleet-management telematics are overlaid with geological and geographical models, planning and mine-centric KPIs. By displaying the information in near real-time in a centralised location, inefficiencies are exposed, allowing problems to be solved and productivity improved.

Future versions of HxM Athena will address safety, production and machine health, with links to Hexagon's SAFEmine collision-avoidance system and Leica Jigsaw Jmineops and Jhealth.

Coming later in 2016 will be HxM LIVEterrain. Daily planning and operations require terrain data for delivering plans and regular updates in order to quickly turn around new or revised plans. Information must be retrieved from disparate surveying and measurement sources and then interpreted before making decisions.

Hexagon is developing a live terrain model capable of integrating data from total stations, unmanned aerial vehicles, scanners, LiDAR and mobile mapping into a streamlined workflow. By harnessing these technologies, HxM LIVEterrain is intended to complement autonomous mining, acquiring terrain data as remotely as possible, and processing it with limited human input.

Hexagon Mining Autonomous, meanwhile, is developing applications that can be incrementally integrated into an OEM-independent autonomous haulage solution.

MAPTEK

Maptek has a range of solutions for mine design and planning. Its Vulcan software provides a dynamic 3-D environment for modelling, visualisation and analysis of technical data. More than 7,000 licences are currently installed across all types of resources and operations.

Vulcan 10, set to be released in March, includes a new Automated Pit Designer to create mineable pit shells after the optimisation process has been completed. The model becomes a dynamic factor in the planning process, allowing engineers to work more efficiently.

The new Vulcan Data Analyser integrates variogram analysis tools into a streamlined workflow leading up to grade estimation. The option provides new methods for handling structural and grade-based anisotropy, giving users with a better understanding of their geological data.

Vulcan 10 implicit modelling will include a new radial basis function (RBF) option. Domains with shared or independent structural trends can be defined and modelled together in a single run.

Vulcan 10 delivers new methods for creating local anisotropies for implicit modelling, grade estimation or simulation. This ensures that grade estimation matches complex folded structures.

Uncertainty modelling has also been added, allowing multiple orebody models to be automatically generated from drill-hole datasets. Applying financial information allows mining viability to be quickly assessed for different design scenarios.

Vulcan 10 features improved output stratigraphic modelling, including the ability to directly incorporate data points from drill holes or CAD inputs into gridded output via triangulated hybrid surfaces.

A new open-pit tool will streamline the creation of valid scheduling blocks. Users will be able to work with models containing billions of blocks, zooming in to view areas of interest at greater resolution, with processing power only used where necessary.

Dynamic optimised scheduling will be carried across to Evolution Epoch, set for release in 2016, which will include new functionality to load solids with mining method and tonnage/grade attributes for short-term planning. The new tool is able to schedule projects containing more than 100,000 solids and related activities. A hybrid approach from the best of existing and new Evolution tools allows users to choose the approach that best fits their operation.

I-Site Studio 6, released in January 2016, includes new reporting modules and major updates to CAD and geotechnical functionality. New CAD tools in version 6 reduce the need for users to switch between applications, and provide a better graphical indica-

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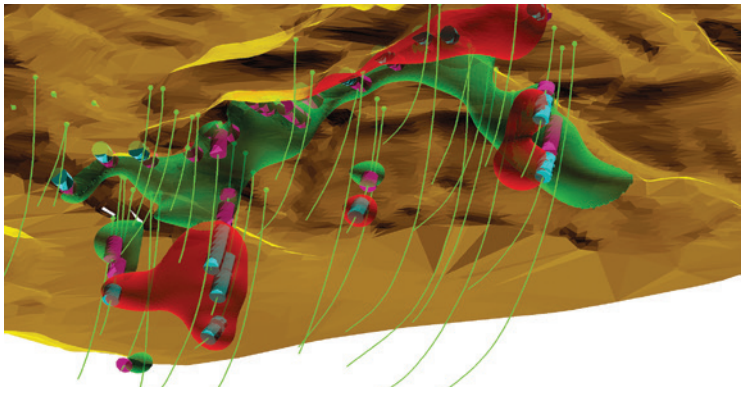
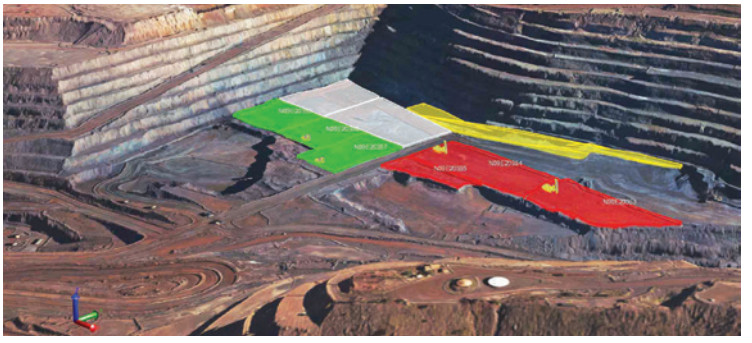


Implicit modelling in Maptek's Vulcan 10



RPM's ultra-short-term scheduling product XECUTE enables scheduling down to the shift level

tion of relationships between neighbouring geometry.

A new Geology module, developed in response to customer feedback, allows users to split, colour and apply textures to surfaces to define geological boundaries. New volume and design conformance reporting menus present a wizard tool for configuring professional presentation reports, improving user experience and daily survey productivity.

Maptek also announced in October last year that it will now sell and support the full suite of 3d-Dig dragline simulation products of Earth Technology alongside its range of existing mine planning and design solutions.

MICROMINE

MICROMINE's three solutions, Geobank, Micromine and Pitram, cover the whole mining cycle from geological exploration and 3-D mine design to production management and data management.

Geobank captures, validates, stores and manages data from diverse sources, while Micromine captures, manages and interprets the data. Micromine provides modelling, estimation and design tools to help simplify day-to-day design and production tasks.

Pitram is a mine control and management reporting solution that records, manages and processes mine-site data in real time. As a scalable solution, it is suitable for underground and open-pit mine construction, development and production.

All three products are scheduled for a major version release in 2016.

The new features in Micromine 2016 focus on intuitive usability with enhanced workflow methodologies and logical processes. It contains intuitive functionality, improved performance and new features relevant to both exploration and mining operations. These include:

- Full Windows 10 compatibility;
- 3-D PDF output;
- Vizex Interactive Rotate Strings tool;
- Vizex notification area to assist user with tool workflows;
- String-Utilities-Coalesce functions for intelligently joining multiple strings;
- Drill-hole database filter options; and
- Enhanced DTM Assign to support dipping and vertical surfaces.

"Big data is a bit of a buzzphrase, but the digital mine of the future is closer than people might realise"

MICROMINE's chief technology officer, Ivan Zelina, believes that the company's future lies in helping to better design and assist with mining operations though mathematical optimisation.

Zelina says: "Micromine can optimise ultimate pit shape to maximise the NPV. The 2016 release will showcase a new version comprising schedule optimisation.

"We generate mathematically optimised strategic plans for the expected mine life, then look to break down the mine lifecycle into efficient, mathematically optimised, medium- and short-term production plans. What we want to improve is the execution of these plans by the shift crew – especially in underground mines," Zelina says.

Shift execution optimisation is one of the areas where MICROMINE would like to bring new solutions to its customers. "An underground mine can become a tightly controlled environment; connecting all these things over a fast network to monitoring and optimisation systems will allow MICROMINE's Pitram solution to see, monitor and optimise production in real time," adds Zelina.

RPM

RPM's roots are in mine-planning technology focused on scheduling, simulation and financial modelling software. The introduction of specific mining method and commodity solutions to RPM's XPAC solution in 2013 was a game changer for the industry. Over the past two years, the company has added packages tailored for open-pit metals, oil sands, diamond and aggregates operations with features such as workflow, dynamic haulage and ERP integration.

"We have also released an ultra-short-term scheduling product (XECUTE), which enables scheduling down to the shift level," CEO Richard Mathews tells *MM*. "This has been built on a gaming technology architecture – a first for the industry."

HAULSIM, RPM's simulation product, was launched in 2014. This put 4-D discrete event simulation into the hands of mine planners, giving them greater visibility, more accurate assumptions and the ability to explore multiple scenarios for haulage and equipment usage in a 4-D environment. "Our latest simulation product, SIMULATE, provides the same environment to OEMs," says Mathews.

In the past 12 months, RPM has also released Plan Manager, which enables enterprise users to view, analyse and approve mine plans across different horizons (LOM and long, medium, short and ultra-short term) and then publish an integrated plan in a variety of formats up to the enterprise level. The consolidated mine plan can be consumed by enterprise financial systems, process control and fleet-management systems, and then analysed through corporate business-intelligence systems.

The entire XPAC solution suite has received an upgrade in the past 12 months to enable enterprise integration and add features such as interactive scheduling. Performance and speed has also been boosted.

New products for 2016 include the XPAC Open Cut Coal solution with new design and reserving functionality along with 4-D scheduling. The XPAC Open Cut Phosphate solution will also be added.

RPM tells *MM* that it also has three new products in the pipeline for release during 2016 that have not yet been announced.

"We will continue our key focus on building out our enterprise-planning framework to provide full interoperability between our software solutions and the other industry software providers," says Mathews. "We will also continue our work with the ISA95 Standards Board to ensure that our software products conform to these important industry standards."