

# What's New in Maptek Vulcan 10.1

Vulcan 10.1 continues Maptek's mission to deliver multiple applications on the Maptek Workbench. Eureka 4.0 is included in the release, with I-Site Studio and BlastLogic joining as integrated Workbench applications later in 2017.

- Automated pit designer
- Statistical analysis
- Drill & blast upgrades
- Dragline module
- Mining block generation
- Stope optimiser
- Underground scheduling
- Decline optimiser
- Other enhancements
- Workbench
- Eureka 4.0

## Overview

**Vulcan 10.1** features new functionality to streamline design and planning, optimise drill & blast and improve reporting and analysis of data.

Updated workflow in **Automated Pit Designer** makes it easier to use, with greater flexibility for engineering design impact studies.

**Vulcan Data Analyser** is enhanced with new statistical analysis, graphing and display options for better understanding technical data.

Open cut **drill & blast** upgrades enhance manual drill design and significantly reduce the time to create or update a design.

Updated **dragline** tools enable automatic creation of maximum dragline spoil topography.

A new **mining block generation** tool combines design and reserving tools for improved productivity.

New features in **Stope Optimiser** help create more accurate final stope shapes for mine planning and scheduling.

Enhanced integration sees the **Vulcan Gantt Scheduler** directly reading Vulcan block models for underground scheduling.

**Decline Optimiser** is integrated with Vulcan Level Designer to generate multiple underground development scenarios.

**Graphics driver** updates to the interactive interface more efficiently support large datasets. New transparency display algorithm and keyboard mode selection options speed up editing of designs.



Integrated dynamic model display is an intuitive tool for interpreting block models.

Create, assign and view **attributes** has been enhanced and reserving attributes can be automatically made available to the scheduler.

**CAD polygon** manipulation is faster and more accurate, and live preview allows users to select data and preview results while changing parameters.

**Python scripting** language provides an efficient method for working with large arrays of data for customising solutions for block models, databases, mapfiles, grids and triangulations.

New command line utilities allow users to **manipulate block models** to speed up workflow for lengthy computations.

Increased **grade estimation speed** is made possible by estimating groups of IDs together and making better use of multiple core processing.

A new transformation option allows users to transform **multivariate geostatistics** data forwards and backwards via the log-ratio method.

**Drafting Sheet Editor** allows users to add corporate logos, set up page sizes and apply new scale bar and north arrow styles across all plot utilities.

The **Maptek Workbench** is the interface within which all Maptek applications will ultimately be available. The Workbench platform enhances interaction with data and access to applications that support design and modelling.

**Eureka** now shares the Maptek Workbench environment with Vulcan, offering improved workflows, data sharing and access to additional applications on a single platform.

Vulcan 10.1, Eureka 4 and the Maptek Workbench are available for download in a single installer from a secure link in the Maptek Users Area.

Visit [users.maptek.com](http://users.maptek.com) to login or register with your corporate email for access. Current maintenance is a prerequisite.

Download file size is approximately 2.0 GB. USB keys can be mailed if you have difficulty downloading files.

## Automated pit design

Automated Pit Designer allows high level, long term mine planning analysis and integrates with other pit design options.

Major enhancements in Maptek Vulcan 10.1 deliver additional output triangulations, reserves run directly from the panel and faster iteration. An external executable facilitates scripting and sensitivity studies.

New features improve workflow. Additional triangulation modes remove the manual Boolean step of topography and pit design triangulations. Visualisation and analysis is improved.

New live reserving functionality allows faster iteration when evaluating different parameters. Change a design parameter and new tonnage and contained metal can be updated in a single click.

The new executable facilitates scripting and sensitivity analysis, allowing more elaborate engineering studies on the impact of different design considerations. Instead of only a few manual pit designs, multiple pits can be generated for multiple different parameter sets.

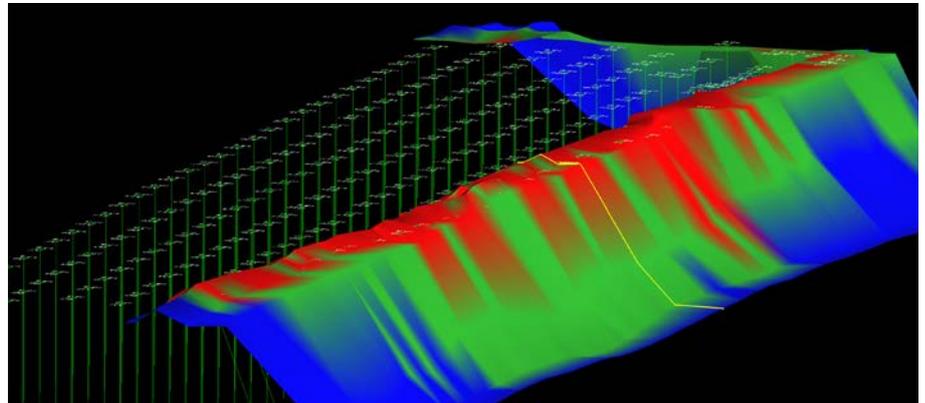
## Statistical analysis

Vulcan Data Analyser allows resource geologists and engineers to make informed decisions about the holistic mine planning process.

In Vulcan 10.1 new functionality sees general statistics, histogram, cumulative frequency, scatter, P-P and Q-Q charts available with a single click.

Users can superimpose statistics on graphical representations. Support for block models allows analysis of mine planning data. The new caching system makes analysing datasets with different charts almost instantaneous.

Users can find outliers, compare distributions and perform other tasks by simply picking the data and the analysis to perform.



## Open cut drill & blast

Open cut drill & blast upgrades in Vulcan 10.1 enhance manual drill design and significantly reduce the time to create or update a design.

One new option creates rows which merge from a straight back row to fit a curved free face. Sequential row/echelon joining and continuous naming streamlines workflow when combining separate blasts.

A new option enables minimum burden checks, calculations and adjustments, providing face triangulations which reflect the actual rather than the designed face.

Viewing options for triangulations and blast rows have been updated, as have tools for selecting and adjusting holes. Vulcan 10.1 also includes new graph options for profiles and minimum burdens.

## Dragline

New dragline functions automate creation of a maximum dragline spoil topography and spreadsheet template setup to compare available spoil room to actual sectional spoil volumes.

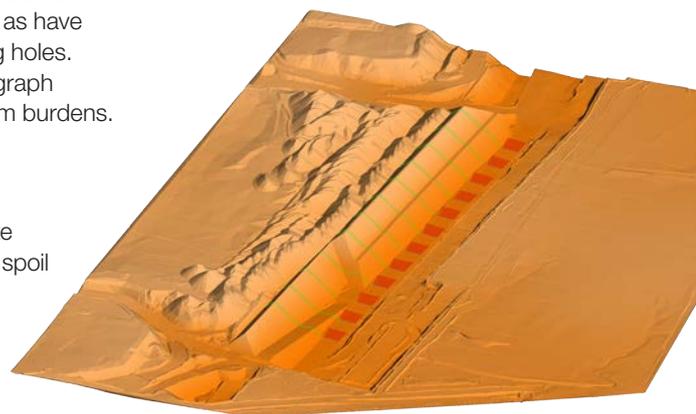
Another new option allows the creation of a level bench of specified width or RL in one step. New options in Dragline preferences allow users to tailor prompting and defaults for rehandle.

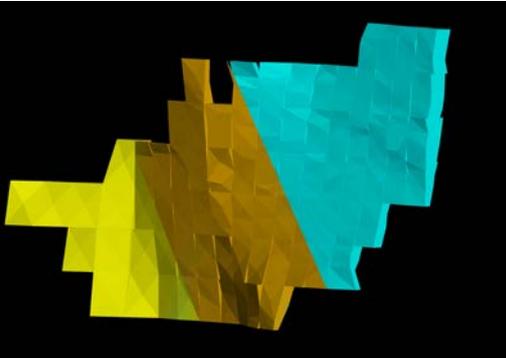
## Mining blocks

Mining block generation is now handled by a single tool that allows users to segment information contained in block models (polygons, solids, surfaces) to prepare mining blocks for short term scheduling. The new option combines design and reserving tools, improving productivity.

Users can now interrogate mining blocks for defined attributes as well as reserves calculations through dynamic link to the block model.

Mining block generation is easy to set up and run and multiple pits are supported.





## Stope optimiser

New features in Stope Optimiser give greater flexibility and control in defining stope shapes, helping to create more accurate final stope shapes for mine planning and scheduling.

The resultant shape can now be defined by 6 or 8 points on section. Users can specify true dip and width, work better with narrow ore regions, handle variable dilution and use the prism method for defining stope shapes. Simulation data can now be incorporated in the optimisation using risk options.

## Underground scheduling

Enhanced integration in Vulcan 10.1 allows the Vulcan Gantt Scheduler (VGS) to directly read a Vulcan block model, removing the need to run templated attributes and advanced reserves to populate designs with reserve information. The process for updating the schedule with changes made in Envisage has been streamlined.

Multiple vgant files can be imported and exported for scheduling shorter range plans from LOM. Multiple users can schedule different zones and schedules can be imported for a comprehensive view of the entire mine schedule.

### Schedule optimisation

Schedule Optimisation Tool is an add-on to VGS for creating long term schedules that optimise NPV while adhering to operational resource constraints. Multiple scenarios can be run for analysis and built-in reporting improves user experience.

## Decline optimiser

Decline Optimiser is integrated with Vulcan Level Designer to generate multiple underground development scenarios for consideration in the mine planning process. This new tool creates cost optimised single or complex decline networks in seconds.

## Other enhancements

### Graphics

Graphics driver updates improve the interactive interface for efficiently supporting large datasets. New transparency display algorithm and keyboard mode selection options enhance speed and convenience when editing designs. Dynamic model display is integrated with the Property Editor for intuitive block model interpretation.

### Attributes

Vulcan 10.1 updates make it easier for users to create, assign and view attributes which pass important information to downstream processes. Reserving attributes can be assigned to design data and triangulations can be automatically made available to the scheduler. Users can now visualise the attributes of a group of triangulations and apply bulk changes.

Changes to Templated Attributes give more control over updating and viewing attributes, with guidance for creating expression type attributes.

### CAD polygon tools

Enhanced CAD polygon tools in Vulcan 10.1 improve performance and results in day to day drafting work.

Speed and accuracy allow many edge cases previously ignored to be correctly handled. Live preview allows users to select data up front, and preview results while changing parameters.

### Python scripting

Vulcan 10.1 includes an interface to the Python scripting language, providing an efficient method for working with large data arrays. Users can customise solutions for block models, databases, mapfiles, grids and triangulations.

### Block model manipulation

New block command line utilities allow users to manipulate block models by splitting and joining regular block models on parent boundaries. Benefits include chopping a model, running lengthy computations on separate computers, and then joining the models for the combined result. This speeds up workflow and benefits users working with large datasets and block models.

### Multi-id grade estimation

Increased speed for grade estimation arises from estimating groups of IDs together and making better use of multiple core processing. Estimation runs that took 5 hours have been reduced to less than an hour.

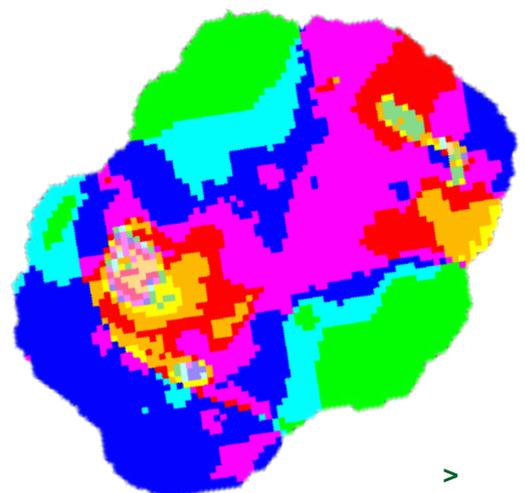
### Multivariate geostatistics

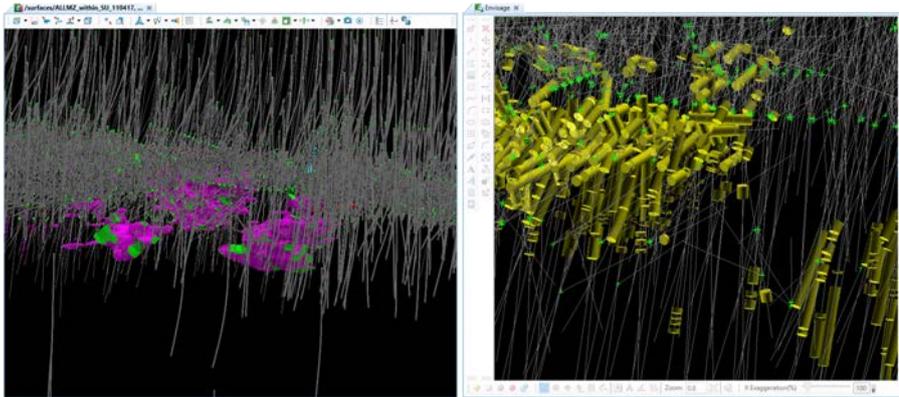
A new transformation option allows users to transform multivariate geostatistics data forwards and backwards via the log-ratio method.

### Drafting sheet improvements

Fast creation and modification of custom drafting sheets greatly improves plotting. Users can create better looking and more standardised plots regardless of plotting method.

Vulcan 10.1 Drafting Sheet Editor allows users to add images to drafting sheets, set up page sizes and apply new scale bars and north arrow styles. Users can save and import title blocks between drafting sheets, and move and resize title blocks and all associated data.





## Eureka 4.0

Eureka now shares the Maptek Workbench environment with Vulcan, offering improved workflows, data sharing and access to additional applications on a single platform.

Eureka provides an interactive 3D environment for visualisation and modelling of exploration and project data including drilling, geophysics, seismic, GIS data, maps and other imagery.

Vulcan and Eureka maintain their own file explorer and menus. Tied views allow viewing of Eureka data on one screen and the same or different data in Vulcan on another. Rotate or zoom actions in one window are replicated in the other. Drilling data edited in Vulcan is dynamically updated in Eureka boreholes. An implicit model created in Eureka is instantly available for use in Envisage as a triangulation file.

## Eureka timed trial

Core drillhole viewing and exploration tools in Maptek Eureka 4.0 are available on a timed trial expiring on 30 June 2017.

Eureka provides an interactive 3D environment for visualisation and modelling of exploration and project data including drilling, geophysics, seismic, GIS data, maps and other imagery.

Simply click on the Eureka icon on the Workbench to get started.

## Workbench

The Maptek Workbench is the interface within which all Maptek applications will ultimately be available. This release incorporates Vulcan 10.1 and Eureka 4.0.

The Workbench platform enhances interaction with data and access to applications that support design and modelling.

Users can create their own toolbars, menus, command lists and shortcut keys, to suit their own work patterns. All of these customisation points may include both Vulcan and Eureka.

An integrated text editor includes advanced features such as syntax highlighting and region folding. An integrated spreadsheet application provides efficient editing functionality.

Enhanced tooltips now show summary and status information for all items. Files and file components are colour coded to reflect their state as changed, loaded or edited by a Workbench application.

Items capable of rendering to an image include a preview thumbnail. Groups of items can be displayed as icons or details, scaled and dragged into other windows.

Thumbnail views can be docked to the side or base and used as a palette. The dynamic filter can be used to quickly search for assets.

The Workbench Explorer knows which files can be edited and will make the edit option available in the context menu. A new tab lists file changes in the current working folder. This chronological log records creation, modification, renaming and deletion of file types shown in the data tab.

Working space can be increased by auto-hiding docked windows, such as the Explorer, Logs and Properties. Windows can be pulled out and docked together on another monitor to create a richer working environment. The Envisage window can be undocked and maximised on another monitor. Attached toolbars move with the windows.

Toolbars can be resized into any rectangular shape. Docked toolbar windows can be set to auto-hide and only appear when needed.

Users can dynamically switch between supported languages.

Command lines and scripts can be edited in panels that recognise the types of required values. Editing a command line automatically takes users to the correct panel for that executable.

The Workbench can constantly monitor memory usage of client and server processes, as well as overall system memory. A dashboard displays memory usage in easy-to-read scrolling charts. This information can be used to help identify performance issues in the software or platform.