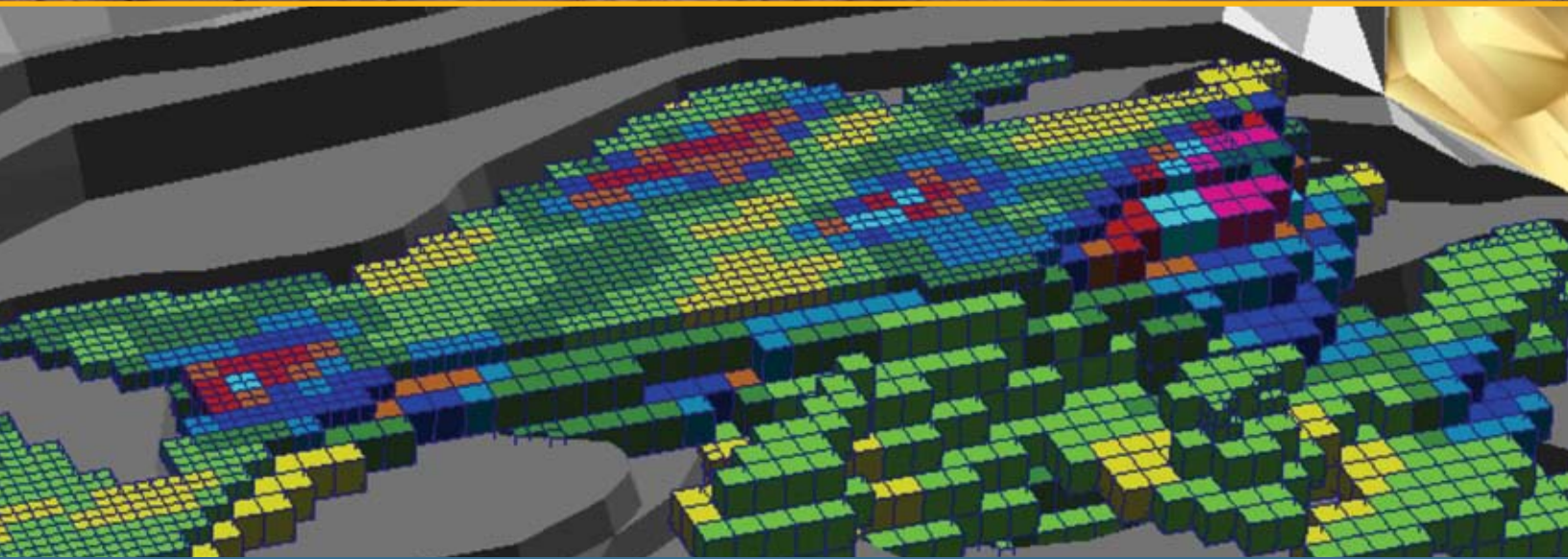


GEMCOM SURPAC™

Geology and Mine Planning



Integrated Geology, Resource Modelling, Mine Planning and Production

Gemcom Surpac is the most widely used software system of its kind in the world, supporting open pit and underground mining operations and exploration projects in more than 90 countries. Surpac enables mining practitioners to quantify and evaluate mineral deposits and to plan the efficient extraction of reserves.

Surpac Benefits — Efficiency, Automation and Ease of Use

- Increased efficiencies within teams result from better sharing of data, skills and project knowledge.
- All tasks in Surpac can be automated and aligned to company-specific processes and data flows.
- Software ease-of-use ensures staff develop an understanding of the system and of project data quickly.
- Surpac is modular and easily customised.
- Surpac reduces data duplication by connecting to relational databases and interfacing with common file formats from GIS, CAD and other systems.
- Multilingual support: English, Chinese, Russian, Spanish, German and French.

Geological and Resource Modelling

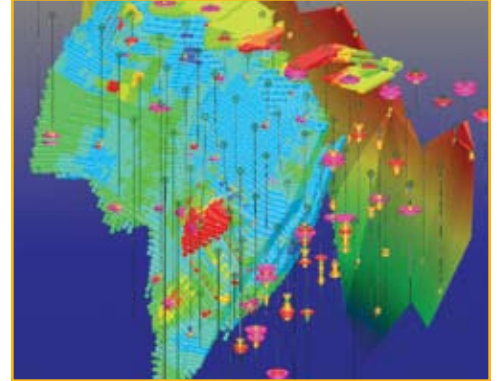
Enabling geologists to determine the physical characteristics of a deposit with limited information is a key capability of Surpac, which harnesses powerful 3D graphics, geostatistics, and an integrated modelling environment.

Data Management

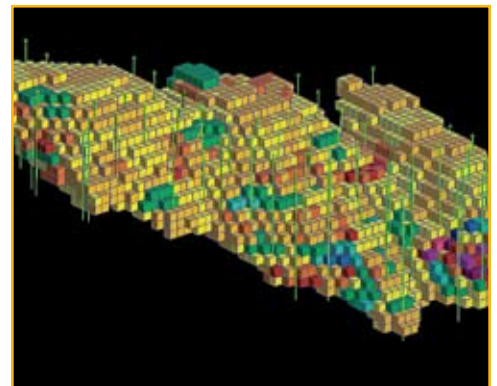
- Employ sophisticated database tools to store, manage and review drilling data.
- Interface to any popular database product and work in real time while connected to that data.
- View and output sections quickly and easily using drillholes and existing topographic or pre-modelled data.

Estimation and Modelling

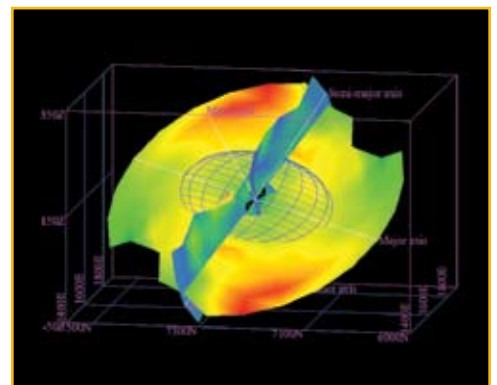
- Surpac contains outstanding tools for sample compositing and geostatistics.
- Variogram modelling includes variogram fans and dynamic lag adjustment to help identify the best variograms for data.
- Estimation tools include an interface to GSLIB for both normal kriging and conditional simulation options.
- Comprehensive 3D wireframing tools enable the development of a truly representative model of any orebody.
- Surpac block modelling tools cover an extensive range of functionality and are easy to use. Validating a model and generating any level of report can be done quickly and efficiently.



Wireframe orebody model showing grade block model and drilling data.



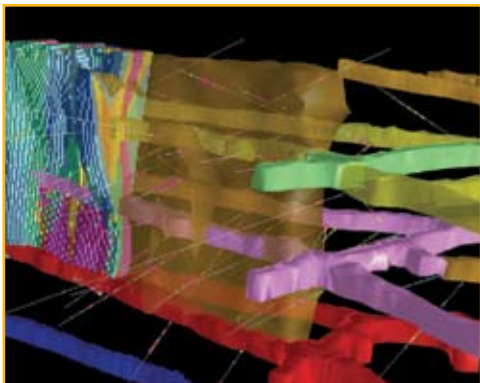
Surpac block model constrained by ore zone and coloured by grades.



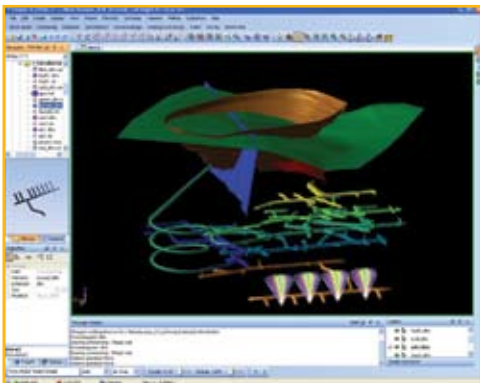
Surpac geostatistical anisotropy ellipsoid defined by variogram maps.

“Having used all the major competitive products over the last 10 years, we have standardised on Surpac because it not only provides the right features for exploration and mining projects, but also the capabilities needed to support global staff with differing skills sets, working in multiple languages.”

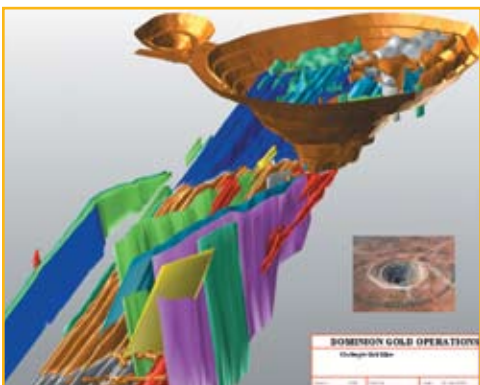
— Michelle Stone, senior geologist at Capstone Mining Corporation.



Surpac at a base metal operation. View drillholes, underground workings, ore zone and resource block model.



Surpac maximises on-screen visualisation of data and allows data to be selected directly in the viewport.



Plotting functionality - includes images and digital terrain models to scale.

Mine Planning

Whether creating designs and plans for open pit or underground operations, Surpac provides engineers with all the tools they need. In this integrated environment, designs can be created to maximise ore recovery, while complying with project constraints such as cut-off grade, economic limits and ground stability.

- ⇨ Data from various sources can be viewed and incorporated into plans to support feasibility projects.
- ⇨ Different pieces of information can be viewed simultaneously to ensure designs are within the physical constraints of the mining area and to maximise the economic extraction of a resource.
- ⇨ Data can be used directly from other software package formats with Surpac’s sophisticated Data Plug-ins.
- ⇨ Interact with all mine design data: drillholes; existing orebody and surface models; optimised pit shells; block and grid models, coloured by grade distribution; and many more.

Mine Production

Surpac is used at mine sites throughout the world for mine production, providing integrated applications for mining engineers, geologists and mine surveyors, ensuring clear plans, effective communication and consistent data utilization. The software manages borehole, blasting and survey information, while linking to other databases used at mining operations.

Mine Survey and Ore Control

- ⇨ Calculate and validate volumes quickly.
- ⇨ Compare kriged models against raw drillhole data to optimise reserve extraction.
- ⇨ Produce high quality to-scale maps of any relevant project information.
- ⇨ Road and pit design tools are geared towards surveying setout, ensuring the necessary details required by earth movers are marked out accurately.
- ⇨ Integrated resource models, pit designs and survey data results in up-to-date ore markouts and dig plans with grade and tonnage reports.

Automated Workflows

- ⇨ Highlight end-of-month reconciliations and reporting problems through the simple automation of comparison reports using Surpac’s macro tools.
- ⇨ Automate repetitive grade control and plotting tasks using macro functionality, customisable to company-specific processes and data flows.
- ⇨ Develop new functions using the scripting language embedded within Surpac and assign routines to customised menu bars to better manage work flows.

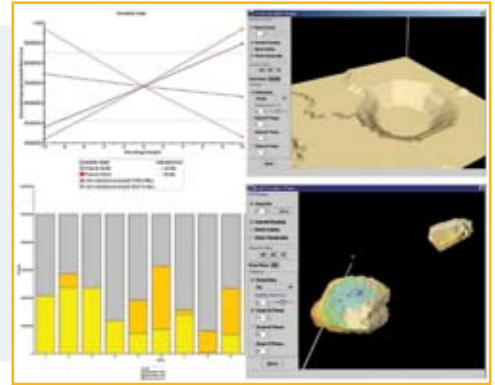
GEMCOM SURPAC™

Geology and Mine Planning

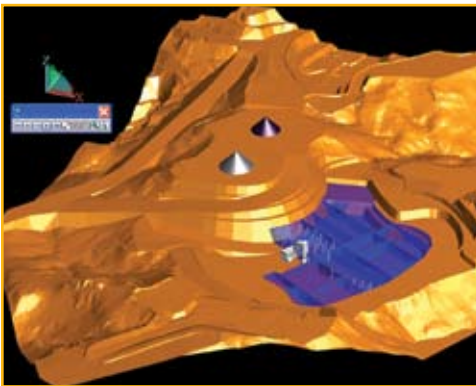
Extend Your Capabilities with these Gemcom Systems

Gemcom Whittle: Economic Analysis and Optimisation

Whittle is the world's most popular and effective life-of-mine scheduling, optimisation and analysis system for open pit mines. Mine planners depend on the system to help them maximise NPV, balance schedules, and to optimise blends and stockpiles. With results that are trusted by the financial community, Whittle is also used in pre-feasibility and feasibility studies.



Gemcom Whittle: Economic optimisation.



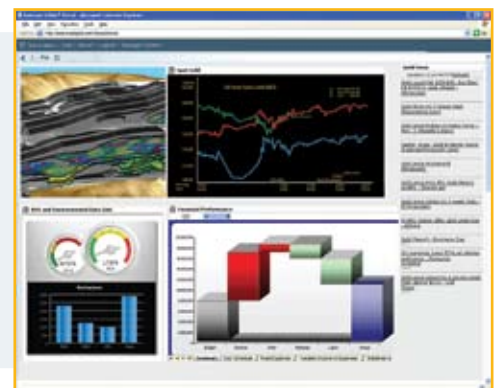
Gemcom MineSched: Short-term plan.

Gemcom MineSched: Production Scheduling

Scheduling is a vital step in maximising the economic benefits of a mineral resource project. MineSched integrates seamlessly with Surpac, long and short term schedules can be produced quickly, alternative scenarios explored, and multiple grade and material targets that vary over time can be set. On projects where MineSched is used, planning engineers can explore mine-to-mill strategies or optimise the quality of stockpile strategies.

Gemcom InSite: Mine Performance Management

InSite adds business intelligence, analytics, reporting, reconciliation, and stockpile management capabilities to your operation. InSite delivers planning and production information to the enterprise through a highly flexible web portal that draws upon a single source of integrated data. These capabilities also enable standardisation of corporate reporting and the overall evaluation of mining operations.



Gemcom InSite: Mine performance management.

For more information email surpac@gemcomsoftware.com.

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When mining companies seek to increase mine productivity, they turn to Gemcom for technology and services. The Company is home to world-renowned mining solutions like GEMS, Surpac, Minex, Whittle, and InSite, and to industry thought-leaders who are pushing the boundaries of what's possible in mining.

