SERVICES MINING PROJECTS

SET UP AND TRAINING OF RESOURCE ESTIMATION

Software Categories: Geology, Operations

Location: Canada

Commodities: Industrial Minerals

Mining Method: Open Pit (Quarry)

Product(s): GEOVIA GEMS™

Services Provided: Set up and Training of Resource Estimation Function

CLIENT'S NEED

A long running mining operation, this client experienced a major turnover when a significant number of staff retired and were replaced by new and inexperienced workers. The operation needed to ensure that productivity was maintained during the hand-off and that new staff were trained in necessary skills such as resource estimation.

THE SOLUTION

Dassault Systèmes GEOVIA experts were able to provide the necessary experience to fill the skills gap as new staff were hired, and able to not only manage the resource estimation process and maintain productivity, but also upgrade the methods customer had been using in the past, increasing productivity while training the recently hired staff to take over.

Dassault Systèmes managed the project in three steps: reviewing the existing procedures, proposing, implementing and obtaining approval for a new plan, and finally executing the new processes and training the staff.

BENEFITS TO CLIENT

- Addressed skills and staffing shortage.
- Increased site productivity during a period of change.
- New staff mentored and trained.
- Simplified workflow.

MINING SERVICES

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Globally, Dassault Systèmes GEOVIA employs over 150 mining professionals in all major mining centers. With expert knowledge of their regions, and local language and cultural understanding, our services professionals are highly skilled at maximizing the benefits of its software solutions.

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SERVICES MINING PROJECTS

SOFTWARE IMPLEMENTATION, DATABASE ADMINISTRATION

Software Categories: Operations

Location: Botswana

Commodities: Industrial Minerals

Mining Method: Open Pit

Product(s): GEOVIA GEMS™

Services Provided: Software Implementation, Database Administration, Consulting, Training

CLIENT'S NEED

After performing an audit, Dassault Systèmes identified security and permission issues relating to the GEMS database. The client requested assistance with solving these security issues, as they were impacting data management and interfering with long and short term planning.

THE SOLUTION

Dassault Systèmes GEOVIA experts implemented the GEMS Security Administrator module because it ensures that information stored is always secure, and that data is accessible to those who need it. Administrator rights meant that certain users were interfering with the integrity of stored data. By setting up permission-based security restrictions, Dassault Systèmes ensured that data was only accessible to those who needed it.

In order to upgrade GEMS to its full operational status, Dassault Systèmes restructured existing GEMS profiles and also provided training to ensure staff was familiar with the operation of the newly implemented security model.

BENEFITS TO CLIENT

- Secure management of data.
- Control and monitoring of database and security permissions.
- Time savings with automated database administration.
- Users have better understanding of how to operate GEMS.
- Consistency of procedures.

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SERVICES MINING PROJECTS

SOFTWARE IMPLEMENTATION, DOCUMENTATION AND TRAINING

Software Categories: Engineering

Location: Australia

Commodities: Copper and Gold

Mining Method: Underground Block Cave Mine

Product(s): GEOVIA PCBC™

Services Provided: Software Implementation, Documentation and Training

CLIENT'S NEED

The client uses PCBC at another block cave and appreciates the performance and functionality the software offers. When starting production at a new operation, they turned to Dassault Systèmes to assist with a customized PCBC CMS installation.

THE SOLUTION

After engaging the client in discussions to assess their particular needs, Dassault Systèmes' Services team installed PCBC CMS on their network, configuring CMS to meet their specific reporting requirements, geotechnical and operational constraints, and economic objectives.

The customized CMS system allows the client to implement a draw strategy which ensures their short-term forecast meets their long-term objectives. They can be sure that the right amount of tonnage is being ordered from each draw-point during each shift.

Additionally, the CMS system has been configured to communicate automatically with the site's Automated Loader database automating the process of manually tallying and loading tonnage and status information from each draw point.

BENEFITS TO CLIENT

- Ability to maintain site productivity and track production objectives.
- Saves time by automating processes.
- Fewer and more simplified workflow steps.
- Confidence in accuracy of data.
- Production data is stored in a secure SQL database.
- Consistency of draw order compared with manual equivalents.

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SERVICES MINING PROJECTS

SOFTWARE UPGRADE AND AUTOMATED WORKFLOWS

Software Categories: Operations

Location: Canada

Commodities: Iron Ore

Mining Method: Open Pit

Product(s): GEOVIA Surpac™

Services Provided: Software Upgrade and Automated Workflows

CLIENT'S NEED

The client was using an outdated version of the software. Many of their daily tasks were taking more time than was necessary, and they were having difficulty hiring new employees who knew how to operate the older version of the software.

Additionally, the client had automated workflows in the outdated version of Surpac which needed to be transferred to the new version, but as the programming language had changed between versions, Dassault Systèmes was asked by the client to upgrade the software and transfer the workflows.

THE SOLUTION

After installing the latest version of Surpac, Dassault Systèmes re-wrote the original macros and integrated the client's automated workflows and scripts to be compatible with the new version. For example, one of their original macros previously took 25 minutes to run, and with the new version it runs in five minutes.

Dassault Systèmes also provided on-site training for staff, to ensure they were able to use the new interface, identifing drill and blast as a critical function and provided specific training to the drill and blast technicians.

BENEFITS TO CLIENT

- Reduced time needed to complete projects.
- Fewer and more simplified workflow steps leading to increased efficiency.
- Consistent procedures.
- Shorter lead time to train new staff in use of upgraded software.
- Improved flexibility for procedures as there are now alternate options for accomplishing tasks.

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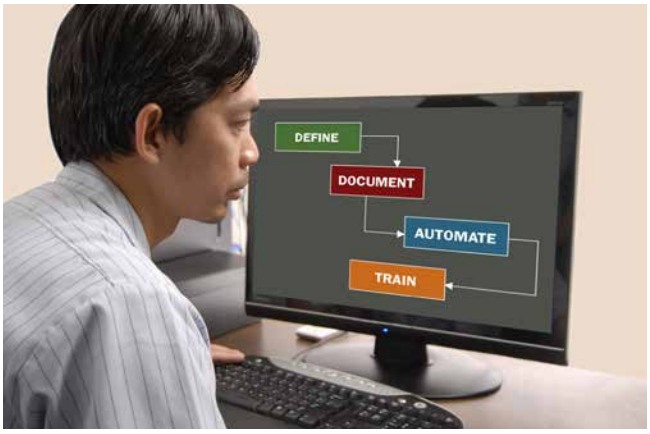

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SERVICES MINING PROJECTS

AUTOMATED WORKFLOW FOR GRADE CONTROL

Software Categories: Operations

Location: Republic of Côte d'Ivoire

Commodities: Gold

Mining Method: Open Pit

Product(s): GEOVIA Surpac™

Services Provided: Automated Workflow for Grade Control, Training and Documentation

CLIENT'S NEED

The client wanted a consistent and automated grade control system with documentation so all employees on site could easily use it and lead time for new hires is kept to a minimum.

THE SOLUTION

After consulting with the site's geology managers, Dassault Systèmes GEOVIA experts set up workflows for their grade control function. This allowed the grade control procedure to be performed faster while maintaining a consistent output. Training was provided in the software and the grade control function—enabling everyone to use it confidently. The site is managed remotely, and with this implementation of Surpac, the mine manager can be confident in the reliability and accuracy of the work being performed remotely on site.

BENEFITS TO CLIENT

- Addresses staffing and skills shortage.
- Allows off-site managers to be confident in their data.
- Ability to maintain and increase site productivity.
- Reduced time needed to complete production tasks.
- Fewer and more simplified workflow steps.
- Consistency of procedures.

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SERVICES MINING PROJECTS

AUTOMATED WORKFLOW FOR GRADE CONTROL

Software Categories: Operations

Location: Australia

Commodities: Iron Ore

Mining Method: Open Pit

Product(s): GEOVIA Surpac™

Services Provided: Automated Workflow for Grade Control, Training and Documentation

CLIENT'S NEED

The client wanted a consistent and automated grade control system with documentation so all employees on site could easily use it and lead time for new hires is kept to a minimum.

THE SOLUTION

After consulting with the site's geology managers, Dassault Systèmes GEOVIA experts set up workflows for their grade control function. This allowed the grade control procedure to be performed faster while maintaining a consistent output. Training was provided in the software and the grade control function—enabling everyone to use it confidently. The site is managed remotely, and with this implementation of Surpac, the mine manager can be confident in the reliability and accuracy of the work being performed remotely on site.

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SERVICES MINING PROJECTS

AUTOMATED PROCEDURES FOR QUARRY MANAGERS

Software Categories: Geology, Engineering, Operations

Location: Austria

Commodities: Industrial Minerals

Mining Method: Open Pit (Quarry)

Product(s): GEOVIA Surpac™

Services Provided: Automated Procedures for Quarry Managers

CLIENT'S NEED

The nature of the client's business is such that their operations are typically run by personnel with no formal training in Geology or Engineering. To ensure their operations run smoothly and efficiently, they requested changes to the software interface which would allow users to follow predefined workflows in order to complete critical tasks quickly and accurately.

THE SOLUTION

After analyzing the day-to-day activities of the Quarry Managers, the Dassault Systèmes GEOVIA Services team used scripting in Surpac to setup automated workflows to represent these tasks. These "macros" provide pushbutton functionality for the users which simplifies procedures such as: survey updates, block model updates and reporting. The new procedures allow the users to gradually increase their skills thanks to three different, graduated skill levels of automated options available to them. By working through the skill levels consecutively over time, the users can increase their competency without impacting their primary responsibilities. The objective is to enable an increasing number of users to leverage the full power of the software even if they do not have a background in Geology or Engineering.

BENEFITS TO CLIENT

- Enables wider use of technology across the organization.
- Ability to maintain and increase site productivity.
- Reduced lead-time to competent usage of the software.
- Fewer and more simplified workflow steps and lower risk of user error.
- Consistency of procedures.

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SERVICES MINING PROJECTS

OPEN PIT DESIGN

Software Categories: Engineering
Location: Madagascar
Commodities: Nickel
Mining Method: Open Pit
Product(s): GEOVIA Surpac™
Services Provided: Open Pit Design

CLIENT'S NEED

The client was in the process of revising their mine plan as part of a feasibility study, but their in-house team was short at least one Mining Engineer and urgently needed to complete six pit designs in one week in order to keep the project on track. As they had been engaging Dassault Systèmes for on-site training services for over four years, the client requested that Dassault Systèmes provide an Engineer with the appropriate mining knowledge and who was an expert in the GEOVIA software to assist their team in completing the designs on time.

THE SOLUTION

Surpac's pit design capabilities allow Engineers to design a pit while viewing relevant information simultaneously, ensuring that designs take into account the physical constraints of the mining area. Dassault Systèmes GEOVIA Mining Engineer was able to work with the clients engineering team to complete all six pit designs, merged with local topography and adjacent pits, within the required timeline. All this time the Dassault Systèmes GEOVIA Engineer was working remotely in Australia several thousand miles away from the project team in Madagascar.

BENEFITS TO CLIENT

- Addressed skills and staffing issues on demand.
- Enabled the client to complete the project in their designated timeframe.
- Confidence in the quality of the work carried out under time constraints.
- Reduces the risk and impact of future skills and staffing emergencies.

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SERVICES MINING PROJECTS

IMPLEMENTED DRILLHOLE DATA MANAGEMENT SYSTEM

Software Categories: Operations

Location: Canada

Commodities: Gold

Mining Method: Exploration

Product(s): GEOVIA GEMS™

Services Provided: Implemented Drillhole Data Management System

CLIENT'S NEED

This client was in the exploration stage and collecting large amounts of data. The operation had been using time consuming, error prone manual spreadsheets to track core samples and lab data and required a more efficient data management solution.

THE SOLUTION

Dassault Systèmes implemented the GEOVIA Custom Core Logger and Custom Lab Logger to work with GEMS. These tools store and organize the significant amount of data generated from drilling campaigns and laboratory test programs. Easy to use, these tools bring consistency to data recording and reporting.

The GEOVIA team began by conducting an audit to scope the structure and the type of data being collected, so the software could be adapted to suit their needs. Core Logger was implemented on two sites which are geologically different, requiring the database to be structured differently for each site. Lab Logger was then set up to create particular graphs and reports according to client specifications.

Following implementation, The GEOVIA team provided on-site training, created training manuals, and will continue to provide support and ongoing refinements as the operation's requirements change with new drilling campaigns.

BENEFITS TO CLIENT

- Data integrity assured.
- Data security increased.
- Manual workflows eliminated.
- Reduced possibility for errors.
- Skilled staff free to focus on area of expertise.
- Time saved.

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SERVICES MINING PROJECTS

SOFTWARE IMPLEMENTATION, SHORT AND LONG TERM

Software Categories: Operations and Geology

Location: Australia

Commodities: Lead

Mining Method: Open Pit

Product(s): GEOVIA MineSched™

Services Provided: Software Implementation, Short and Long Term Planning, Life of Mine and Production Scheduling

CLIENT'S NEED

The client required a sophisticated scheduling solution which could handle short and long term scheduling, improve their overall scheduling process and create reliable results. The operation was planning to schedule a mill production rate that would ramp up over a specific period of time. Accordingly, they needed to schedule a mining rate that would meet those increasing mill requirements.

THE SOLUTION

Taking the overall scope of the project into account, Dassault Systèmes GEOVIA established a long term planning solution which would create various scenarios based on the client's changing input parameters. MineSched was used to integrate their data and to run a schedule for each scenario, which could then be viewed and reported on in a variety of formats.

The GEOVIA team also created: schedules for reporting; multiple working schedule scenarios; a series of life of mine schedules which can be analysed to select the final optimal solution; ongoing mine closure plans to ensure minimal environmental impact; and a new block model by decommissioning the previous Datamine block model and moving the model into GEOVIA Surpac™.

Dassault Systèmes also held classroom training to ensure staff were able to create future schedules themselves.

BENEFITS TO CLIENT

- Consistency of scheduling procedures.
- Flexible scheduling scenarios incorporate changing requirements.
- Staff trained in creating their own working schedules.
- Allowed client to maximize value from their
- software investment.

MINING SERVICES

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SERVICES MINING PROJECTS

LIFE OF MINE PLANNING, SHORT AND LONG TERM

Software Categories: Operations, Engineering

Location: UK

Commodities: Industrial Minerals

Mining Method: Open Pit

Product(s): GEOVIA Surpac™, GEOVIA Whittle™, GEOVIA MineSched™

Services Provided: Life of Mine Planning, Short and Long Term Scheduling

CLIENT'S NEED

Client needed to prepare short and long term schedules and life of mine plan. With numerous sources of material at varying grades, it was crucial to get the right balance of production and blending.

THE SOLUTION

The Dassault Systèmes GEOVIA team provided a solution in three phases. The first phase involved an operational audit of the client's data, systems, resources, and skills to identify how they use their data and whether any additional staff training would be necessary. The second phase entailed conducting a pilot study of one of their mines and demonstrating how GEOVIA Surpac™, GEOVIA Whittle™, and GEOVIA MineSched™ could interact most effectively. Once the procedures had been tested and outputs had been agreed upon, the third phase—implementation across all operations—was completed.

With the solution implemented, and training provided by Dassault Systèmes, the client is now able to complete their exploration program, update block models and geology planning and define the schedules for each pit and how they should interact.

BENEFITS TO CLIENT

- Addresses skills shortage and staffing issues.
- Staff trained in most efficient use of software.
- Ability to maintain and increase site productivity.
- Reduced time needed to complete projects.
- Consistency of procedures.

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SERVICES MINING PROJECTS

SYSTEMS AND SKILLS AUDIT, AND TRAINING

Software Categories: Geology and Engineering

Location: Republic of Côte d'Ivoire

Commodities: Gold

Mining Method: Open Pit

Product(s): GEOVIA Surpac™ and GEOVIA MineSched™

Services Provided: Systems and Skills Audit, and Training

CLIENT'S NEED

Facing a skills shortage, the client was looking to have staff trained in the most efficient use of the software to ensure that productivity could be maintained and even increased despite being short staffed. The client was using manual processes widely and was looking to automate as many routine tasks as possible.

THE SOLUTION

The Dassault Systèmes GEOVIA team began by performing a systems and skills audit, to understand how the client was currently using the software and to determine opportunities for process improvement, streamlined workflows, and training.

Once the audit was completed, the team developed several Surpac macros to automate commonly performed tasks; saving a significant amount of time and also eliminating the possibility of human error caused by manual data entry. Dassault Systèmes also conducted training in Surpac and MineSched; ensuring more staff was better skilled in the use of the software and reducing the company's dependency on only a few skilled individuals.

Dassault Systèmes translated all of the user guides into French, the main language of many of the users.

BENEFITS TO CLIENT

- Addresses skills shortage and dependency on few individuals.
- Ability to maintain and increase user productivity.
- Streamlined workflows.
- Reduced time needed to complete tasks.

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SERVICES MINING PROJECTS
HUB IMPLEMENTATION

Software Categories: Operations
Location: Mexico
Commodities: Gold
Mining Method: Open Pit and Underground
Product(s): GEOVIA Hub™ and GEOVIA Surpac™
Services Provided: Hub Implementation

CLIENT'S NEED

The client is a gold mining operation comprised of four different sites. Already using Surpac for geology and mine planning, they needed a way to centralise the data from all sites to their head office in Northern Mexico, as the senior managers there had no visibility into each project's data.

THE SOLUTION

The Dassault Systèmes GEOVIA team installed the Hub server, and configured it to meet their specific data management needs. Hub allows the operation to centralize the data from all four operations, providing transparency for the head office. With Hub, the remotely located sites can easily work independently, as head office staff can rapidly download and review data. Additionally, the implementation, configuration and training of Hub took only three days for the Dassault Systèmes staff to complete.

BENEFITS TO CLIENT

- Fewer and more simplified workflow steps.
- Data centralized and easily accessed by head office.
- Solution tailored to work with their data.
- Hub provides data security and version control.
- Data is easily backed-up.

MINING SERVICES

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SERVICES MINING PROJECTS

GEOLOGICAL MODELING AND RESOURCE ESTIMATION

Software Categories: Geology

Location: Canada

Commodities: Iron Ore

Mining Method: Open Pit

Product(s): GEOVIA GEMS™

Services Provided: Geological Modelling and Resource Estimation

CLIENT'S NEED

The client needed assistance with using GEMS for geological modeling and resource estimation. None of their current staff had advanced experience with the software, and they needed to learn the most efficient ways to use GEMS for their needs.

THE SOLUTION

GEOVIA GEMS experts worked side-by-side with the client on site, demonstrating how to do the procedures and showing the customer how to best utilize GEMS for their particular needs. This ensured the client learned hands-on, receiving training as they progressed through the workflows. The Dassault Systèmes GEOVIA staff also provided a list of the work done along with a detailed report explaining what was done and why. This way the client was able to use the profiles which had been created again on their own, without assistance.

BENEFITS TO CLIENT

- Addresses skills shortage and staffing issues.
- Improved confidence in most effective use of data.
- Full understanding of processes.
- Reduced time needed to complete tasks.
- Consistency of procedures.

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SERVICES MINING PROJECTS

SOFTWARE IMPLEMENTATION

Software Categories: Operations
Location: Mauritania
Commodities: Iron Ore
Mining Method: Open Pit
Product(s): GEOVIA GEMS™
Services Provided: Software Implementation

CLIENT'S NEED

The client was using GEMS Desktop, a single-user system which incorporates a Microsoft Access® database designed to run on stand-alone computers. Their data sets were very large, data management was fragmented for each separate project without flow-through of information between users, and they didn't have the data security they required. They needed a data management solution with the functionality to solve these issues.

THE SOLUTION

Dassault Systèmes GEOVIA GEMS experts upgraded the client from GEMS Desktop to GEMS SQL, a server based system which offers multiple users concurrent, managed access to the same source of data. They installed and configured it for their needs; migrating their geology, surveying, and planning data, and merging 12 desktop projects into five SQL projects.

With their data secured and integrated, they were prepared for future projects and able to collaborate across departments as employees now had access to each other's data. Dassault Systèmes documented changes made to project files to ensure users could continue working without interruption, while new training was unnecessary as both the Desktop and SQL systems operate with the same user interface.

BENEFITS TO CLIENT

- All data synchronized and centralized.
- Saves time spent searching for correct version of data.
- Addresses skills shortage and staffing issues.
- Ability to maintain and increase site productivity through more confident decision making.
- Increased security and integrity.

MINING SERVICES

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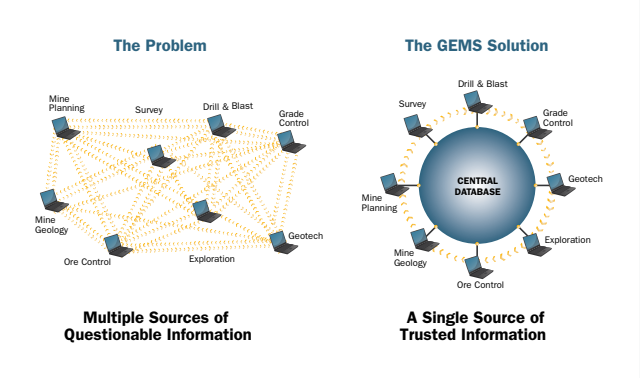

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SERVICES MINING PROJECTS

SHORT AND LONG TERM MINE PLANNING

Software Categories: Engineering, Operations

Location: New Caledonia

Commodities: Nickel

Mining Method: Open Pit

Product(s): GEOVIA MineSched™ and GEOVIA Surpac™

Services Provided: Short and Long Term Planning, Production Scheduling

CLIENT'S NEED

The operation was in a development phase, with the haul roads, plant and conveyor belt under construction. They needed a tactical schedule based on an operations feasibility study which included a complex conditioned model that contained multiple revenue streams.

THE SOLUTION

Improving on the strategic mine plan, the Dassault Systèmes GEOVIA team created a sustainable solution for scheduling the deposit; delivering a one year and three year scheduling plan. The schedule routed materials for feed based on targeted ratios, and also satisfied tight constraints with regards to stockpile capacities. Dassault Systèmes also created mine planning macros which would determine bin cut-offs, and provided training to the site's mine planners.

BENEFITS TO CLIENT

- Staff had better understanding of deposit and strategic mine plan.
- Addresses skills shortage and staffing issues.
- Fewer workflow steps.
- Confidence in accuracy of mine plan and schedules.

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SERVICES MINING PROJECTS

INSITE IMPLEMENTATION

Software Categories: Operations

Location: Canada

Commodities: Coal

Mining Method: Open Pit

Product(s): GEOVIA InSite™

Services Provided: Software Implementation

CLIENT'S NEED

The client needed a software solution to centralize data entry, storage and analysis for operations at six different mines, and to provide both pre-configured and ad-hoc reporting capabilities.

THE SOLUTION

The Dassault Systèmes GEOVIA team consulted with the client to understand their requirements and the functioning of their existing systems. They then implemented the InSite mine production management solution. InSite will integrate with the client's existing data management systems to centralize data storage and site analysis, providing easier and more comprehensive reporting. InSite also allows the client to compare actual, planned and forecasted data. With visibility into all sites, the client will be able to easily monitor operations in different locations and will have confidence in the accuracy of reports.

BENEFITS TO CLIENT

- Ability to analyze processes and determine areas to target for improvement.
- Simplified reporting and understanding of data.
- Confidence in data accuracy.
- Simultaneous insight into operations across different sites.

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DASSAULT SYSTEMES

GEOVIA

SERVICES MINING PROJECTS

GEOLOGICAL MODEL AUDIT

Software Categories: Geology

Location: South Africa

Commodities: Gold

Mining Method: Open Pit

Product(s): GEOVIA Surpac™

Services Provided: Audit of Geological Solids Model

CLIENT'S NEED

The client had two separate geological solids models, each created by a different staff geologist in different years. With large volume discrepancies between the two models, they needed an experienced Surpac geologist to perform an independent audit to understand where the differences existed. Approximately 30 solids made up this thin vein gold deposit.

THE SOLUTION

Dassault Systèmes GEOVIA Surpac experts audited the client's drillhole database to ensure data accuracy. They then carefully and systematically assessed the models through the drawing of cross sections at regular intervals, in order to understand the interpretations done by the previous geologists. They determined that both models were sound, and that the differences were due to different interpretations by the geologists.

BENEFITS TO CLIENT

- Addresses skills and staffing shortage.
- Confidence in accuracy of geological models.
- Valid solids produced from complex solids models.

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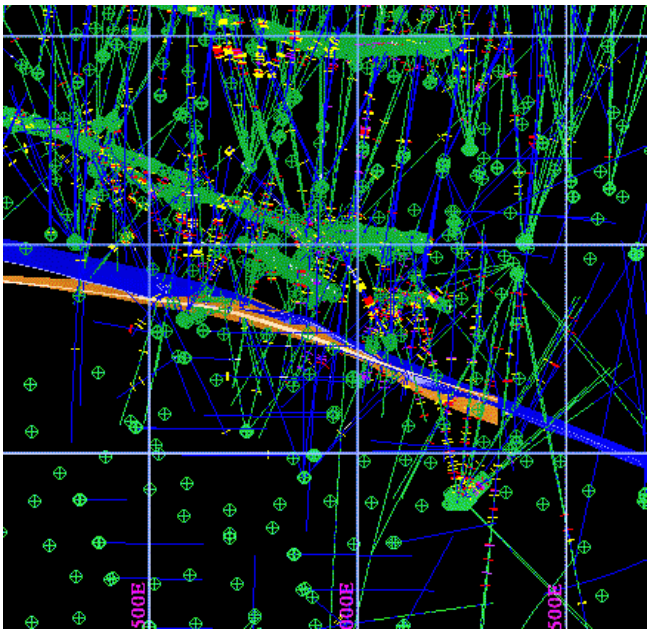

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SERVICES MINING PROJECTS

MINE DESIGN AND PLANNING

Software Categories: Engineering

Location: Chile

Commodities: Copper

Mining Method: Underground Block Cave Mine

Product(s): GEOVIA PCBC™

Services Provided: Mine Design and Planning

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CLIENT'S NEED

The client was looking to begin planning for a second level in their underground block cave operation. In order to determine the best location, they needed assistance from experts in cave mining.

THE SOLUTION

The Dassault Systèmes GEOVIA experts used PCBC to run several options for different levels and cave methods. They then computed the NPV and production schedules for each different mine plan scenario to determine the optimum solution for highest economic value.

BENEFITS TO CLIENT

- Addresses skills shortage and staffing issues.
- Confidence in location chosen for second underground level.
- Lowest economic risk determined.
- Reduced time to create plan.
- Fewer workflow steps.

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SERVICES MINING PROJECTS

LONG TERM PLANNING

Software Categories: Operations

Location: Australia

Commodities: Iron Ore

Mining Method: Open Pit

Product(s): GEOVIA MineSched™ and GEOVIA Surpac™

Services Provided: Long Term Planning

CLIENT'S NEED

The client needed to create long-term schedules which would take into account very specific criteria for output rates and ore feed rates, while managing constraints with regards to the target quality of the ore. Their schedule also needed to minimize the use of stockpiles for early stages of development.

THE SOLUTION

The Dassault Systèmes GEOVIA mine planning experts worked with the client to determine a scheduling strategy with MineSched, and delivered a custom report with multiple life of mine schedules which worked with the very particular needs of the operation. The 30 year schedules were reported in specific increments: seven years were reported by month, five years by quarter, and 18 years and up by year. As a result of the schedules and reports created, the operation was granted permission by the EPA to expand its production rates by 47%.

BENEFITS TO CLIENT

- Addresses skills shortage and staffing issues.
- Able to significantly increase site productivity.
- Reduced time needed to complete projects.

MINING SERVICES

When you don't have the time or in-house resources available, Dassault Systèmes GEOVIA can assist with your **geology**, **engineering** and **operations** activities. As the largest global provider of mining software, we have more than 25 years of expertise working with diverse commodities and mining environments. Our typical services assignments include modeling, design, optimization, scheduling, data management, automated workflows, system configuration, and points in between.

Globally, Dassault Systèmes GEOVIA employs over 150 mining professionals in all major mining centers. With expert knowledge of their regions, and local language and cultural understanding, our services professionals are highly skilled at maximizing the benefits of its software solutions.

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SERVICES MINING PROJECTS

SOFTWARE IMPLEMENTATION AND TRAINING

Software Categories: Operations and Geology

Location: New Caledonia

Commodities: Nickel

Mining Method: Open Pit

Product(s): GEOVIA MineSched™

Services Provided: Software Implementation and Training

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CLIENT'S NEED

The client needed a long term scheduling solution, and as they were already using GEOVIA Surpac™ and GEOVIA Whittle™, they turned to Dassault Systèmes for implementation of MineSched, along with project assistance and training.

THE SOLUTION

The Dassault Systèmes GEOVIA MineSched scheduling experts reviewed the client's requirements, and over the course of a two week period developed and implemented a short and medium term scheduling plan, as well as a flexible long term scheduling solution. Dassault Systèmes also provided customized training for the site's MineSched users.

BENEFITS TO CLIENT

- Staff trained in most effective use of software.
- Accurate and reliable scheduling.
- Ability to maintain and increase site productivity.
- Reduced time needed to complete projects.
- Reduced workflow steps.
- Consistency of procedures.

MINING SERVICES

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SERVICES MINING PROJECTS

GRADE CONTROL ASSISTANCE AND TRAINING

Software Categories: Operations and Geology

Location: New Caledonia

Commodities: Nickel

Mining Method: Open Pit

Product(s): GEOVIA Surpac™

Services Provided: Grade Control Assistance and Training

CLIENT'S NEED

The client turned to Dassault Systèmes for assistance using Surpac to analyze the suitability of several different grade control systems for their various deposits.

THE SOLUTION

The Dassault Systèmes GEOVIA team provided an assessment of the grade control pattern based around the Surpac block modeling system, and implemented a grade control solution which would work with their data. The team also delivered a workflow map outlining the grade control processes, and conducted a Surpac refresher course, as well as Surpac Pit and Engineering Design training.

BENEFITS TO CLIENT

- Staff trained in how to complete processes more effectively.
- Addresses skills shortage and staffing issues.
- Ability to maintain and increase site productivity.
- Reduced time needed to complete projects.
- Fewer workflow steps streamline procedures.

MINING SERVICES

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SERVICES MINING PROJECTS

GEOLOGICAL MODELING AND MINE DESIGN

Software Categories: Geology and Engineering

Location: Chile

Commodities: Zinc

Mining Method: Underground Room and Pillar

Product(s): GEOVIA GEMS™

Services Provided: Geological Modeling and Underground Mine Design

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CLIENT'S NEED

The client needed to update their current block model, resource estimations and drillhole database to create a new mine design using the room and pillar method. With staffing issues and a skills shortage, the client turned to Dassault Systèmes GEOVIA GEMS experts to provide the software skills they required.

THE SOLUTION

Dassault Systèmes' Services experts used GEMS to update and revise the client's block model, and ensure their drillhole database was organized and accurate in order to create a new room and pillar mine design. They also validated all resource estimation data to ensure accurate reporting.

BENEFITS TO CLIENT

- Addresses skills shortage and staffing issues.
- Confidence in accuracy of data and new mine design.
- New workflows for reliable and consistent reporting.

MINING SERVICES

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SERVICES MINING PROJECTS

TAILINGS MODELING

Software Categories: Engineering

Location: Australia

Commodities: Gold

Mining Method: Open Pit

Product(s): GEOVIA MineSched™ and GEOVIA Surpac™

Services Provided: Tailings Modeling

CLIENT'S NEED

The waste rock and tailings at the client's site had very low acidic neutralization capacity. The potentially acid-forming characteristics and high lead levels of the waste were not expected based on the results of their previous work, and they needed a cover system which would provide a barrier to the environment in order to protect plants, animals and the air, and minimize the infiltration of groundwater.

THE SOLUTION

The Dassault Systèmes GEOVIA experts designed waste dumps for the client according to their specifications, and used MineSched to sequence them in accordance with the site's life of mine plan. They were also able to create a tailings site plan and calculate earthworks volume and containment volume, and design the tailings storage facility as per the clients requirements. In addition to meeting the client's cover system, design, and scheduling objectives, the work done by Dassault Systèmes helped the client to prepare both their cost model and their mine closure report.

BENEFITS TO CLIENT

- Cover system meets environmental requirements.
- Reliable and accurate scheduling of waste dumps.
- Control over tailings and waste planning, designing and scheduling.
- Confidence in accuracy of mine closure report and cost model.

MINING SERVICES

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SERVICES MINING PROJECTS

RESOURCE ESTIMATION, GEOLOGICAL MODELING

Software Categories: Geology

Location: Albania

Commodities: Gold

Mining Method: Oil Sand

Product(s): GEOVIA Surpac™

Services Provided: Resource Estimation, Geological Modeling

CLIENT'S NEED

The client required a replication of their existing resource estimation using block modeling, as their own estimation did not.

THE SOLUTION

The Dassault Systèmes GEOVIA team validated the database that had already been created by the client, and once issues were identified and corrected, created a replica using block modeling with variography in order to re-classify the resources as measured, indicated and inferred. Dassault Systèmes also created a report comparing the estimation carried out by the client with the modeling completed by the GEOVIA team; a summary of the resource classification; and a plan for a drilling campaign in line with the upgraded resource classification..

BENEFITS TO CLIENT

- Resource estimation conforming to JORC standards.
- Confidence in accuracy of updated drilling campaign.
- Reliable and accurate block model.
- Addresses skills and staffing shortage.
- Time savings.

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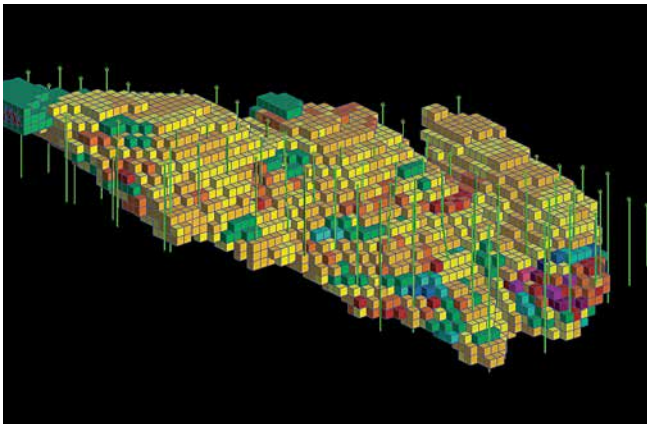

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SERVICES MINING PROJECTS
STATISTICAL ANALYSIS

Software Categories: Geology
Location: UK
Commodities: Gold
Mining Method: Open Pit
Product(s): GEOVIA Surpac™
Services Provided: Statistical Analysis

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CLIENT'S NEED

The client had two resource models which they needed to validate based on their input drillhole data, however the original data was in a non-Dassault Systèmes software package.

THE SOLUTION

The Dassault Systèmes GEOVIA experts converted the client's original data into Surpac in order to generate the input and output statistics. The team then evaluated the statistical similarity between the input and output models and completed a trend analysis and visual validation, and produced a report detailing the validation process and provided recommendations on how the client can increase the accuracy of the modeling of the deposit.

BENEFITS TO CLIENT

- Confidence in the accuracy of their data.
- Addresses skills and staffing shortage.
- Time savings.
- Reliable and accurate resource models.

MINING SERVICES

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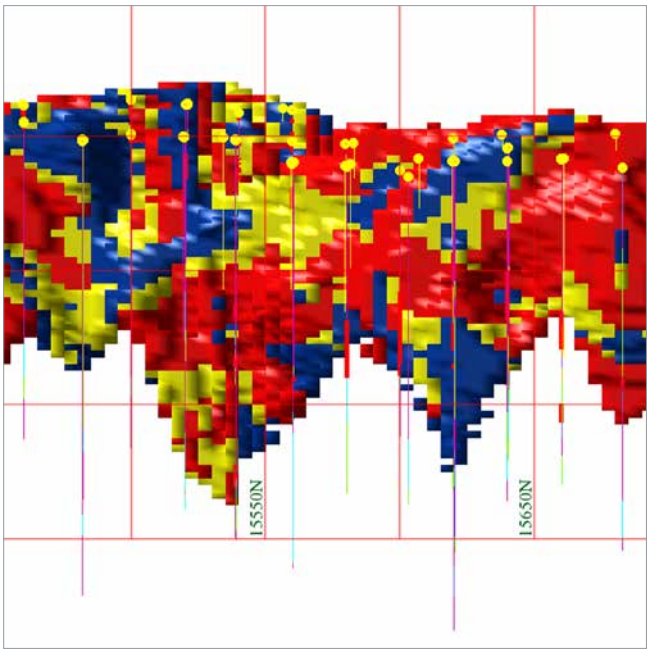

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SERVICES MINING PROJECTS
SECTIONS

Software Categories: Geology
Location: Armenia
Commodities: Gold
Mining Method: Underground
Product(s): GEOVIA Surpacc™
Services Provided: Sections

CLIENT'S NEED

The client required plotting of sections for their entire site in order to facilitate better planning for future exploration and development. Having a Dassault Systèmes GEOVIA Surpac expert create the plots would save them significant time.

THE SOLUTION

The Dassault Systèmes GEOVIA expert created almost 2000 A0 size sections representing the drillholes and geological models for historical and proposed mining. This involved conversion of all data to Surpac, and the creation of scripts in order to create all of the sections to the client's exact requirements. The Dassault Systèmes GEOVIA Surpac expert was able to save the client time and also provide high-quality reports consistent with company specifications, including corporate colors, layout and naming conventions.

BENEFITS TO CLIENT

- Confidence in the accuracy of their data.
- Addresses skills and staffing shortage.
- Time savings.
- Reliable and accurate plots.
- Reports created to company specifications

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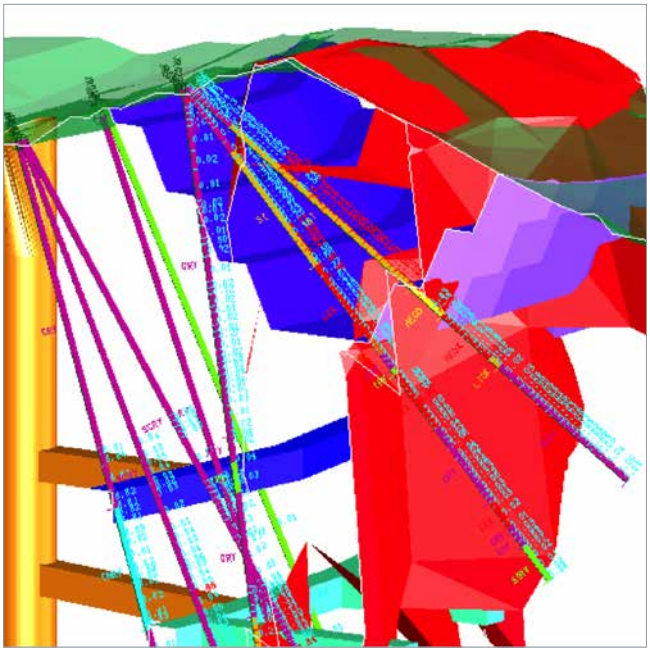

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SERVICES MINING PROJECTS

PIT OPTIMIZATION

Software Categories: Engineering

Location: Brazil

Commodities: Iron Ore

Mining Method: Open Pit

Product(s): GEOVIA Whittle™, GEOVIA Surpac™, GEOVIA MineSched™

Services Provided: Pit Optimization, Pit Design, Production Scheduling

CLIENT'S NEED

In order to gain additional investment in their project, the client needed to ensure their mine plan and scheduling were optimized. Having previously engaged Dassault Systèmes' Services professionals, they asked Dassault Systèmes for assistance with this project.

THE SOLUTION

The Dassault Systèmes GEOVIA Services experts applied new cost parameters to an existing block model in order to complete the pit optimization. Along with a report detailing the optimization, Dassault Systèmes provided a three year open pit scheduling plan, which would be generated every six months for re-evaluation. Working alongside the client on site ensured the responsible team would be able to continue the project development on their own, without Dassault Systèmes' assistance.

BENEFITS TO CLIENT

- Confidence in the accuracy of their data.
- Updated mine plan for obtaining investments.
- Accurate and reliable scheduling scenarios.
- Addresses skills and staffing shortage.
- Time savings.
- Able to continue work without assistance.

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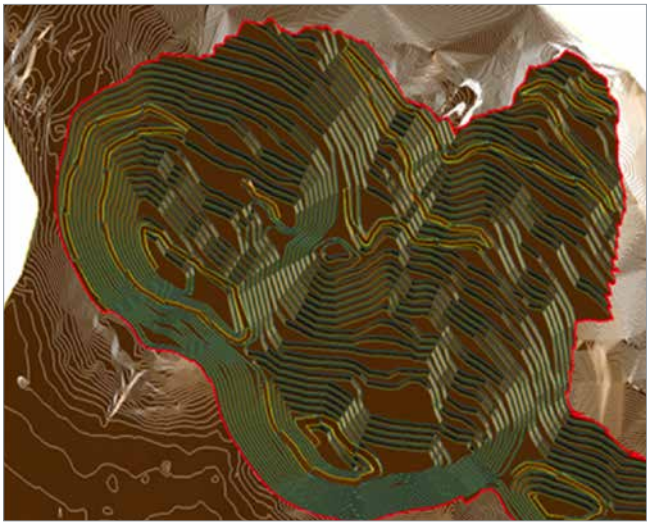

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SERVICES MINING PROJECTS

PCBC PLANNING

Software Categories: Engineering
Location: USA
Commodities: Copper and Molybdenum
Mining Method: Underground Block Cave
Product(s): GEOVIA GEMS™, GEOVIA PCBC™
Services Provided: PCBC Planning

CLIENT'S NEED

The client needed assistance to determine the economic value of their project and analyze different scenarios.

THE SOLUTION

The Dassault Systèmes' block cave experts analyzed multiple production scenarios for the client, and determined the ideal elevation for the block cave mine. With Dassault Systèmes' help, the operation was able to be fully confident in their project and the expected financial returns. The planning services effectively lowered the project's financial risk, as all possible scenarios had been reviewed and the most profitable was selected to move the project forward. Dassault Systèmes also delivered feasible production schedules which the site could continue to use for further analysis as they progressed.

BENEFITS TO CLIENT

- Reliable and accurate mine plan.
- Addresses skills and staffing shortage.
- Time savings.
- Feasible production schedule.
- Reduced economic risk.
- Confidence in projects' inancial returns.

MINING SERVICES

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SERVICES MINING PROJECTS
GRADE CONTROL

Software Categories: Operations, Geology
Location: Canada
Commodities: Iron Ore
Mining Method: Open Pit
Product(s): GEOVIA GEMS™
Services Provided: Grade Control

CLIENT'S NEED

The client needed a complete ore control system to implement the daily planning and grade control tasks at the mine.

THE SOLUTION

Dassault Systèmes' experts communicated with the client to establish their project goals. They then developed the process; designing the grade control system, and defining the polygon layers. The process was next implemented on site in collaboration with the client. Dassault Systèmes presented a training course for the client in order to teach them how to update information and use the grade control system for their day-to-day operations. The grade control system ensured the client's data was organized and that polygons were updated with geological field data. As a result, the resources estimated on a short term basis can be reconciled against the long term block model.

BENEFITS TO CLIENT

- Minimized dilution and maximized ore recovery.
- Improved reconciliation between predicted and actual production.
- Established consistency of procedures and continuity of knowledge.

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SERVICES MINING PROJECTS

GRADE CONTROL, BLAST DESIGN AND SURVEY

Software Categories: Operations, Geology

Location: Canada

Commodities: Iron Ore

Mining Method: Open Pit

Product(s): GEOVIA GEMS™

Services Provided: Grade Control, Blast Design and Survey implementation

CLIENT'S NEED

The client had upgraded from GEMS Desktop to GEMS SQL the previous year, and during the workflow analyses completed as part of the conversion, Dassault Systèmes' experts identified improvements in the operation's daily production activities. The Dassault Systèmes GEOVIA team presented more efficient ways for the client to work with production data, a new grade control system and daily production maps. The client engaged Dassault Systèmes' Services to implement the proposed changes.

THE SOLUTION

Dassault Systèmes' experts identified the client's grade control workflow and then set up grade control polygon layers and workspaces. Where the client previously performed manual calculations for grade control, they could now use a short term block model for grade calculation, which vastly improved accuracy and efficiency. Dassault Systèmes also set up new blast design framework in GEMS, which took a fraction of the time compared to their previous solution. The site's mining technicians were trained in its use. As part of the Services implementation, the historical data was validated and organized inside GEMS. Dassault Systèmes also set up reporting for month-end grade control and survey-generated Plotmaker templates to facilitate the generation of production and survey maps. The operation was provided with a step-by-step guide to carry out these activities.

BENEFITS TO CLIENT

- Improved accuracy and efficiency of grade calculations.
- Significant time savings for blast design.
- Data centralization, ensuring the right data is always accessible.
- Elimination of inefficient manual inputs streamlined workflows.

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SERVICES MINING PROJECTS

UNDERGROUND PLANNING WITH PCBC AND PCSLC

Software Categories: Engineering

Location: South Africa

Commodities: Diamonds

Mining Method: Underground Block Cave and Sub-level Caving

Product(s): GEOVIA PCBC™ and GEOVIA GEMS™ PCSLC Module

Services Provided: PCBC Planning

CLIENT'S NEED

With an in-production open pit operation, the client required assistance to develop a new approach for mining two kimberlite pipes.

THE SOLUTION

Dassault Systèmes GEOVIA PCBC software experts implemented and provided training for PCBC and PCSLC, working with the client to determine the best mining method for each pipe. Evaluating options for the first pipe, Dassault Systèmes helped the client to decide whether to use sub-level caving (SLC), and for the second pipe, whether to mine using either SLC or a block cave, or to use a block cave followed by SLC. The operation was trained how to generate production schedules for combined block cave and sub-level caving scenarios, and in using PCSLC for scheduling and sequencing of mining and dilution estimates.

BENEFITS TO CLIENT

- Reliable and accurate mine plan.
- Feasible production schedule.
- Reduced economic risk.
- Confidence in choice of mining method.

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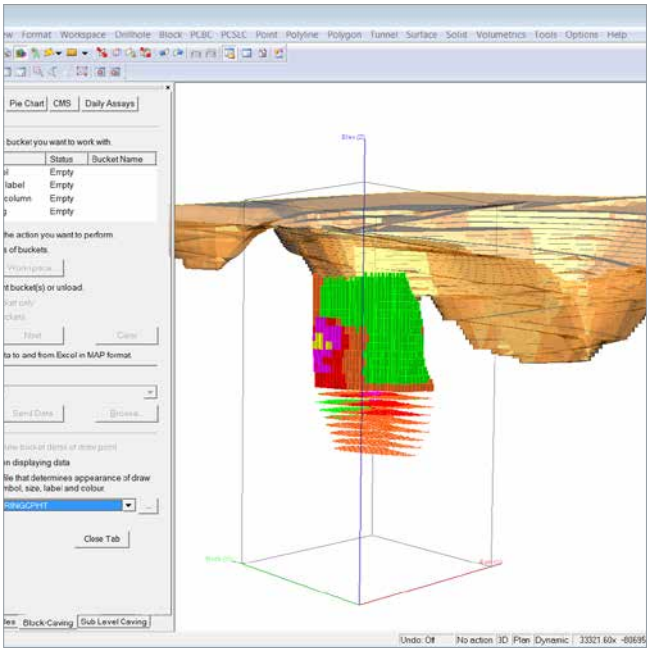

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SERVICES MINING PROJECTS

SCHEDULING SYSTEM REPLACEMENT

Software Categories: Engineering

Location: Canada

Commodities: Diamonds

Mining Method: Underground

Product(s): GEOVIA MineSched™

Services Provided: Production Scheduling, Development Scheduling, Software Implementation

CLIENT'S NEED

The client was looking to replace their existing competitive product, which they used for development and production scheduling as it was difficult to use and time consuming to setup multiple iterations of a schedule. The staff members who were familiar with the use of the software left the site, and so the operation chose to take that opportunity to implement GEOVIA MineSched.

THE SOLUTION

The Dassault Systèmes' scheduling experts spent time reviewing the site's data to identify any problems, enabling the client to address incorrect data prior to the implementation. Having implemented MineSched and ensured the system was up and running with the site's data, Dassault Systèmes provided three days of MineSched training for four staff members. After training, staff were able to quickly and easily setup numerous scheduling scenarios with multiple iterations. Working with the client, Dassault Systèmes demonstrated how to create a working life of mine schedule, successfully creating an underground schedule including over 900 stopes and nearly 100 kilometres in underground development.

BENEFITS TO CLIENT

- Reliable and accurate mine schedule.
- Staff fully trained in software use.
- Time savings.
- Feasible production schedule.
- Reduced economic risk.
- Confidence in data integrity.

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SERVICES MINING PROJECTS

SEAM MODELING, GEOSTATISTICAL ANALYSIS AND RESOURCE ESTIMATION FOR SOLUTION MINING

Software Categories: Geology

Location: Brazil

Commodities: Potash (Fertilizer)

Mining Method: Solution Mining (ISL)

Product(s): GEOVIA Minex™ and GEOVIA GEMS™

Services Provided: Basin-scale seam modeling of salt layers and adjacent stratigraphy followed by geostatistical analysis and resource estimation

CLIENT'S NEED

Following an initial study, the client is assessing the feasibility to incorporate seismic data and new data from an infill drilling campaign. Although a geological model had previously been generated, it was apparent from the new data that there was a need to reinterpret the geology and to update the model to reflect the complexity of the orebody. Understanding this complexity is essential to the engineering design and the economics of the project. Solution mining requires a significant capital outlay — the resource estimate was based on the best possible spatial representation of the target horizons.

THE SOLUTION

A team of GEOVIA geologists worked closely with the client project team to interpret and validate the new data and to append it to the existing project database. They generated a 3D model in Minex comprising of more than 40 layers and representing the complex stratigraphy and structure typical of basin geology. Extensive 3D surfaces covering up to 250km2 were imported into GEMS. Using the estimation capabilities of GEMS, including the Unwrinkle module, geologists ran the geostatistics and populated the block model to support a feasibility-level resource statement.

BENEFITS TO CLIENT

- Provided accurate model deposits through best-in-class software and skilled users.
- Increased efficiency and time savings through a validated database ready for use and modifications as the feasibility progresses.
- Reduced risk to personnel changes or third parties through documented procedures.
- Supported a future go/no-go decision on the project with an accurate 3D model and resource estimate.

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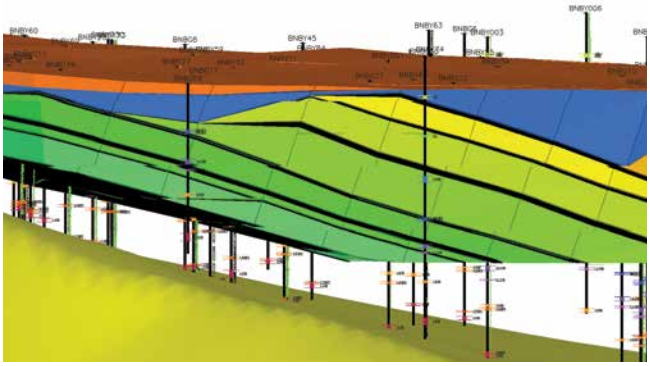

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SERVICES MINING PROJECTS

SOFTWARE IMPLEMENTATION, TRAINING AND SUPPORT FOR CENTRALIZED DATA MANAGEMENT

Software Categories: Operations

Location: Australia

Commodities: Coal

Mining Method: Open Pit

Product(s): GEOVIA InSite™

Services Provided: Implementation of the product, training, post go-live support and ongoing solution enhancements

CLIENT'S NEED

The client needed an efficient solution complete with training to integrate and centrally manage all operational information.

THE SOLUTION

The Dassault Systèmes GEOVIA team worked with the customer to understand their needs, successfully implement the software, and train their staff. The team worked to integrate InSite directly with the client's existing fleet and plant systems. The centralization of data storage and site analysis, providing easier and more comprehensive reporting, were immediate requests. The customer underwent an initial five month training program comprised of both offsite and onsite learning that was so successful, they immediately purchased additional training, customizable for desired projects. All training culminated onsite to foster immediate use and best practices amongst staff. The post go-live support and ongoing solution enhancements has the Dassault Systèmes team on site fortnightly to ensure all systems and projects remain efficient and on track.

BENEFITS TO CLIENT

- Efficient and refined month-end reconciliation through customized reports.
- Optimized production costs through reliable management of production information.
- Enhanced control, influence and visibility over the mining operations.
- Solid software comprehension by staff and immediate onsite use of product.

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SERVICES MINING PROJECTS

MINE PRODUCTION MANAGEMENT SOFTWARE IMPLEMENTATION GRADE CONTROL WORKFLOW IMPROVEMENT

Software Categories: Operations and Geology

Location: Finland

Commodities: Gold

Mining Method: Underground and Open Pit

Product(s): GEOVIA InSite™ and GEOVIA Surpac™

Services Provided: Software implementation and grade control

CLIENT'S NEED

The client required a cost-effective, fully integrated production management system to automate the capture of all operations data for reporting and analysis. They also wished to improve their grade control workflows.

THE SOLUTION

Dassault Systèmes GEOVIA Services professionals worked with the client to understand their objectives in improving mine productivity through the implementation of InSite mine production management and reconciliation software. The goal was to provide reports and data for analyses that could be used by different mining departments to improve not only their functions, but also the overall productivity of the mine site. With InSite, data is captured and validated automatically across the mine site.

In addition to implementing InSite, Dassault Systèmes GEOVIA also reviewed the workflows used in the Surpac geology and mine planning software to streamline, document and automate them. The end result was the establishment of repeatable, best-practice grade control workflows.

BENEFITS TO CLIENT

- Increased site productivity.
- Enhanced ability to control costs through better utilization of equipment.
- Automated and standardized data capture and validation.
- Centralized operational database for reporting and analysis.
- Compared and analyzed scheduled mining to actual activities.
- Created accurate daily reports quickly and with minimal effort.
- Simplified grade control workflows.

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SERVICES MINING PROJECTS

FAULT SEAM MODELLING CONSULTING AND TRAINING

Software Categories: Geology

Location: Canada

Commodities: Coal

Mining Method: Open Pit

Product(s): GEOVIA Minex™

Services Provided: Project assistance and staff training for fault seam modeling

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CLIENT'S NEED

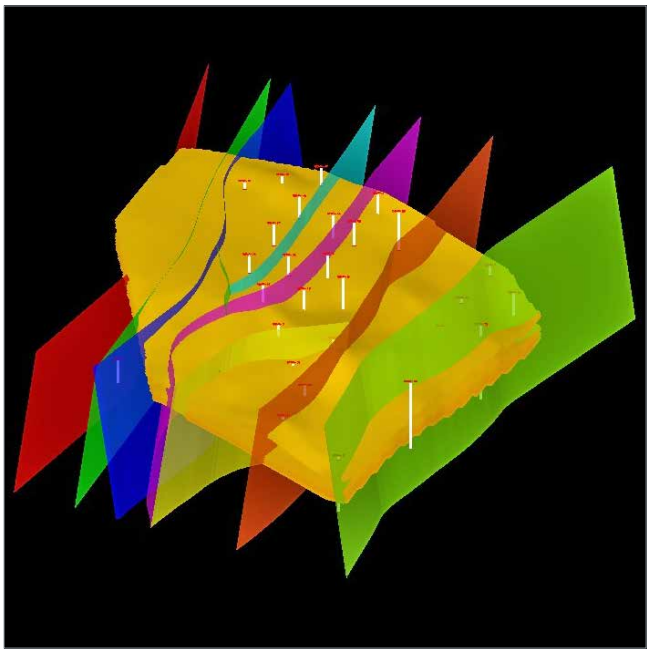
The client was looking to update and replicate an existing seam model, previously completed by an external consultant.

THE SOLUTION

The Dassault Systèmes GEOVIA team worked with the client not only to complete the model, but also to train the staff to update the model going forward, regularly. The team provided geological expertise and taught the client to load updated borehole data, review fault interpretation parameters and perform grid seam modeling.

BENEFITS TO CLIENT

- Improved proficiency, confidence and solid software comprehension by staff.
- Enhanced employee productivity by updating the model, in-house, going forward.
- Increased time and cost savings by eliminating the need for external assistance on future modeling updates.
- Increased savings through the reduction of modeling mistakes.



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SERVICES MINING PROJECTS

SOFTWARE IMPLEMENTATION AND TRAINING

Software Categories: Operations
Location: Canada
Commodities: Gold
Mining Method: Underground and Open Pit
Product(s): GEOVIA GEMS™
Services Provided: Software Training

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CLIENT'S NEED

Implementation and Training of GEOVIA GEMS™ software to further develop team skills.

THE SOLUTION

In addition to implementing the software, Dassault Systèmes GEOVIA Services professionals provided a week long, onsite training for staff in GEMS foundation and geological modeling. The end objective was for staff to become proficient with the software to proceed with the modeling of both an open pit and underground mine.

BENEFITS TO CLIENT

- Solid software comprehension by staff.
- Increased proficiency with trained users.
- Improved productivity in mine planning and modeling.

MINING SERVICES

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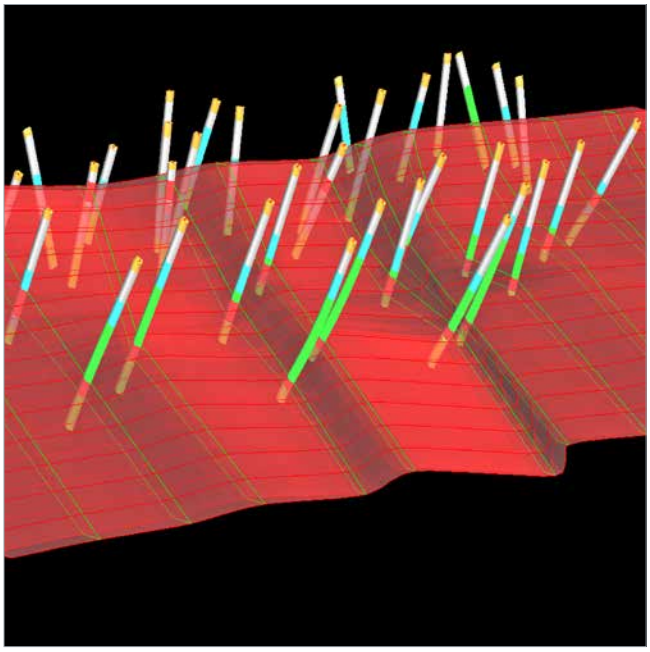

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SERVICES MINING PROJECTS

DATA ACCURACY AND RECONCILIATION

Software Categories: Operations

Location: Spain

Commodities: Copper, Zinc and Lead

Mining Method: Underground

Product(s): GEOVIA InSite™

Services Provided: Data accuracy assessment and reconciliation processes design

CLIENT'S NEED

The client engaged the Dassault Systèmes GEOVIA Services team to understand if existing data structures and collection tools were adequate for month-end reconciliation.

THE SOLUTION

The Dassault Systèmes GEOVIA team undertook a week-long scoping exercise to verify the accuracy of the client's data used for production and reconciliation. A follow-up report identified all areas of potential data inaccuracy complete with recommendations for improvement to ensure the best data was available for production. Dassault Systèmes GEOVIA provided the client with a better understanding of the production processes, using the software to create better plans and reduce the variance between forecast and actual production figures, resulting in better reconciliation. Following the data accuracy assessment, Dassault Systèmes was engaged to design a comprehensive process to test and identify reconciliation issues.

BENEFITS TO CLIENT

- Improved understanding of the production processes.
- Identification of potential data inaccuracy in order
- to implement change.
- Enhanced productivity with the ability to create better plans.
- Increased cost savings and improved reconciliation with fewer discrepancies between forecast and actual production figures.

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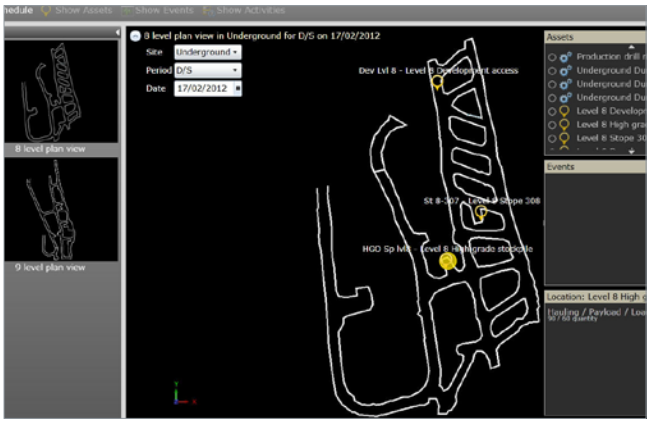

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SERVICES MINING PROJECTS

RESOURCE EVALUATION TO EASE IN-HOUSE MODELING

Software Categories: Geology

Sub Categories: Orebody Modeling

Location: Canada

Commodities: Gold, Narrow Quartz Veins

Mining Method: Underground

Product(s): GEOVIA GEMS™

Services Provided: Assistance to update and replicate a previously-created resource model by studying details such as composting, capping and domaining to identify a suitable search strategy

CLIENT'S NEED

The client needed to develop a process to populate a vein block model.

THE SOLUTION

The client was concerned with the difficulty in the methodology previously adopted and required guidance to replicate the model in-house. The Dassault Systèmes GEOVIA team worked with the client to update block model folders using GEOVIA GEMS™ needling technology. As well, Dassault Systèmes GEOVIA trained the client to become proficient with the software enabling them to update the model accurately, and more efficiently, going forward. As part of the consultation, the team investigated the key parameters during data analysis, variography and estimation to help develop a method to successfully update the block model.

BENEFITS TO CLIENT

- More streamlined workflow to handle the variability of width of the vein.
- Increased staff confidence to update models in-house going forward.
- Significant time savings by eliminating the need for outside support for model updates.

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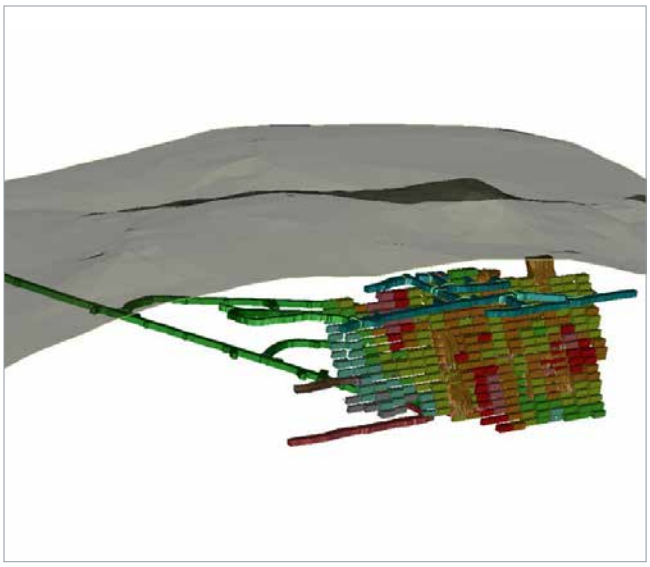

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SERVICES MINING PROJECTS

PRELIMINARY SEAM MODELING

Software Categories: Geology

Sub Categories: Seam Modeling, Resource Estimation, Sections

Location: Colombia

Commodities: Coal

Mining Method: Underground

Product(s): GEOVIA Minex™ & DraftSight Pro Pack

Services Provided: Preliminary modeling of a faulted multi-seam coal deposit

CLIENT'S NEED

Required a fully functional faulted seam model, and the ability to rank and evaluate coal mineral resources to identify proven resources as defined by the Colombian Mining Legislation Code.

THE SOLUTION

The Dassault Systèmes GEOVIA Services team worked with the customer to both develop a plan and design a new exploration drilling project based on a previous model. They built and validated a borehole database, which allowed the customer to analyze and filter geological information. In addition, GEOVIA Services helped the client create a fault seam model to rank and estimate the coal mineral resources.

BENEFITS TO CLIENT

- Increased user confidence with the software.
- Improved geological modeling process for more accurate results.
- Confidence that resources were accurately identified in accordance with Colombian code.
- Significant cost savings with the ability to update the model in-house.

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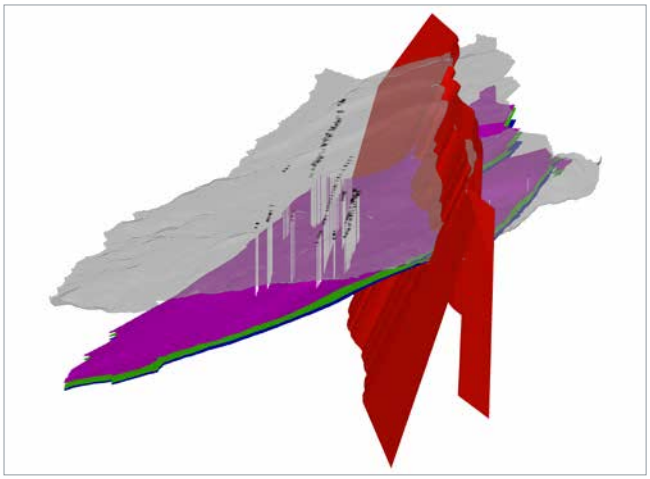

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SERVICES MINING PROJECTS

ACCURATE MODELING FOR JORC REPORTING

Software Categories: Geology

Sub Categories: Geological Modeling, Resource Estimation

Location: Australia

Commodities: Coal

Mining Method: Open Pit

Product(s): GEOVIA Minex™

Services Provided: Training and assistance to complete accurate geological modelling and resource estimation in-house

CLIENT'S NEED

Lacking the required skills and manpower necessary to complete modeling for JORC compliant resource estimation, the client engaged Dassault Systèmes GEOVIA to assist in both the preparation of the model and the publishing of the JORC statement.

THE SOLUTION

The Dassault Systèmes GEOVIA Services team worked on a customized geological database consisting of raw and wash qualities. Along with the geology team, they developed a JORC compliant model. During this period of work, the team worked alongside the geology team demonstrating the procedures and showing the customer how to best utilize Minex for their particular needs. The client can now comfortably work on these models for any changes in the future.

BENEFITS TO CLIENT

- Improved staff skills and resources through mentoring and training.
- Confidence in accuracy of data resulting in correct resource estimation for JORC standards.
- Reliable and accurate geological model that led to better and more economical production schedules.
- Increased cost savings by bringing resources in-house.

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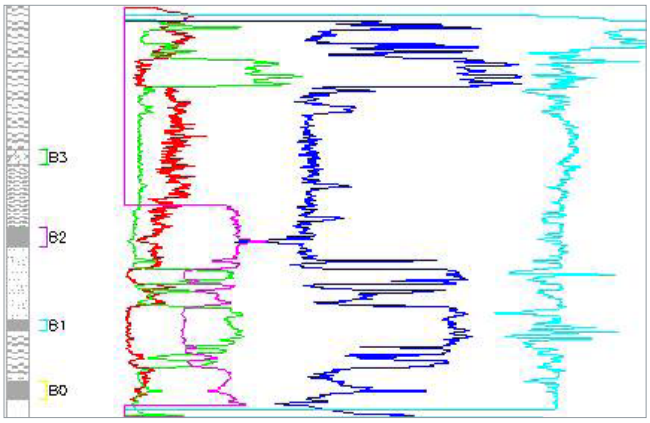

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SERVICES MINING PROJECTS

ESTABLISH OPERATIONS & DEVELOP ANNUAL SCHEDULING

Software Categories: Engineering

Sub Categories: Mine Design, Project Scheduling

Location: Brazil

Commodities: Aluminum, Nickel, Zinc

Mining Method: Open Pit

Product(s): GEOVIA Surpac™, GEOVIA MineSched™

Services Provided: Updated block modeling and production scheduling

CLIENT'S NEED

The customer engaged the Dassault Systèmes GEOVIA Services team to oversee the initial operations of an open pit mine and to develop annual scheduling.

THE SOLUTION

Combining pit mathematics with the client-provided block model, the Dassault Systèmes GEOVIA Services team validated the necessary steps to render the pit operational, provided an updated block model, and delivered itemized spreadsheets and schedules detailing when and how each block should be mined. Upon validation of all pit data, the team created an annual schedule to maintain stable levels.

BENEFITS TO CLIENT

- Increased employee software proficiency.
- Improved confidence in their data findings and modeling.
- Increased productivity with the ability to successfully mine their deposit.
- Enhanced cost savings by updating the model, in-house, going forward.

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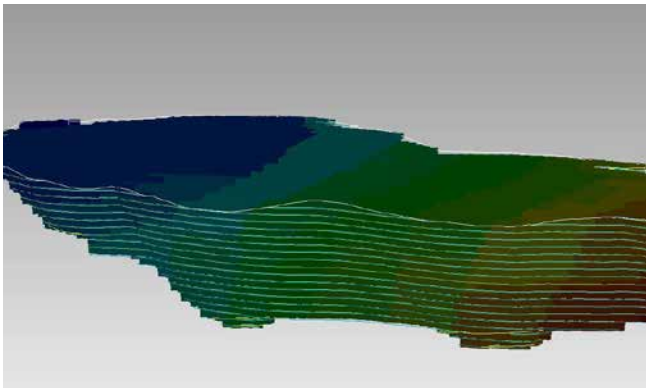

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SERVICES MINING PROJECTS

EXPLORATION BLOCK MODELING FOR RESERVE ESTIMATION

Software Categories: Geology

Sub Categories: Orebody Modeling

Location: Russia

Commodities: Manganese Ore

Mining Method: Open Pit

Product(s): GEOVIA Surpac™

Services Provided: Block modeling and block model validation

CLIENT'S NEED

With a tight deadline looming, the client needed a full-grown geological model to support mining operations at the deposit.

THE SOLUTION

Dassault Systèmes GEOVIA Services worked with the client to revise an outdated deposit exploration project model, and provided an official estimation of mineral reserves.

BENEFITS TO CLIENT

- Digestible information regarding ore and waste rock location.
- Confidence in findings.
- Ability to advance deposit exploration.

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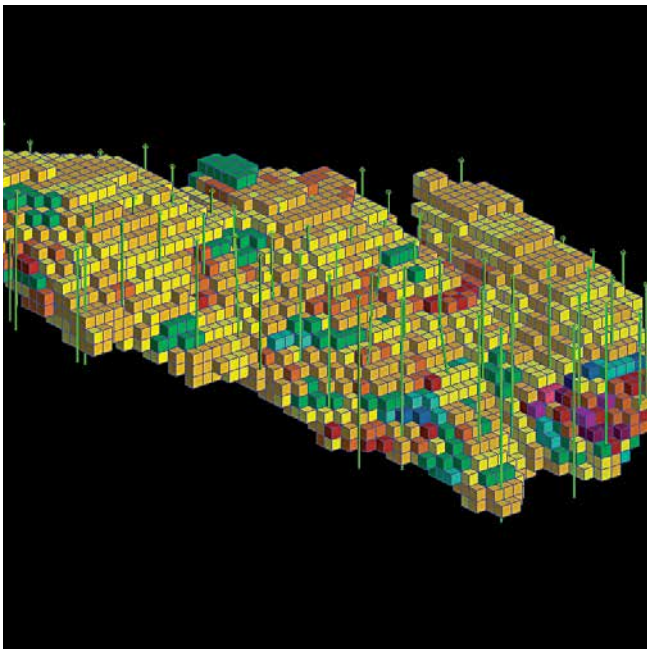

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SERVICES MINING PROJECTS

TAILINGS MODELING & SCHEDULING

Services Categories: Engineering & Operations

Sub Categories: Production Scheduling, Tailings Modeling, Reserves Calculation, Grade Control, Short-Term Planning, Long-Term Planning, Advanced Reporting

Location: South Africa

Commodities: Diamonds

Mining Method: Conveying, Truck & Shovel

Product(s): GEOVIA Surpac™, GEOVIA MineSched™

Services Provided: Tailings resource model, optimal haulage routes, and tailings treatment schedule scenarios

CLIENT'S NEED

The client engaged Dassault Systèmes GEOVIA Services to define a tailings resource, create an exploitable tailings model, create a number of optimal tailings treatment schedule scenarios and to set up an optimal base activity scheduling approach.

THE SOLUTION

Dassault Systèmes GEOVIA Services worked with the client to identify the geological viability of tailings material. They created an exploitable tailings modeling process, which involved the conversion of resources and implemented tailings treatment scheduling.

BENEFITS TO CLIENT

- Head grade increased from 23.8 cpht to 26.5 cpht.
- Tonnes output increased by 2.5 mil tonnes a year.
- Tailings resource increased by 11 million tonnes.
- Exploitable tailings increased by 7.4 million tonnes.

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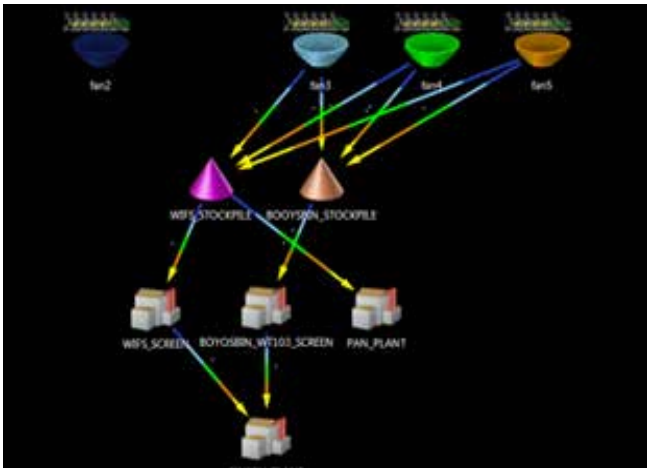

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SERVICES MINING PROJECTS

MINE PLANNING PROJECT ASSISTANCE

Services Categories: Engineering & Operations

Sub Categories: Production Scheduling, Surveying, Advanced Reporting

Location: South Africa

Commodities: Mineral Sands

Mining Method: Open Pit

Product(s): GEOVIA Surpac™, GEOVIA MineSched™

Services Provided: Software implementation, short and long term planning, life of mine and production scheduling

CLIENT'S NEED

Due to unexpected staff turnover, the client required a mine planner to complete geology, engineering and survey tasks/projects.

THE SOLUTION

Dassault Systèmes GEOVIA worked with the client to temporarily back-fill the vacancy and complete the monthly production mine plan ensuring the project stayed on track. Dassault Systèmes GEOVIA Services oversaw the client's in-house team and helped them to not only implement the software, but also complete regular geology, engineering and survey updates.

BENEFITS TO CLIENT

- Streamlined workflows and increased user productivity.
- Reduced time needed to complete production tasks.
- Overcame skills shortage and dependency on a few individuals.
- Establish consistency of procedures.

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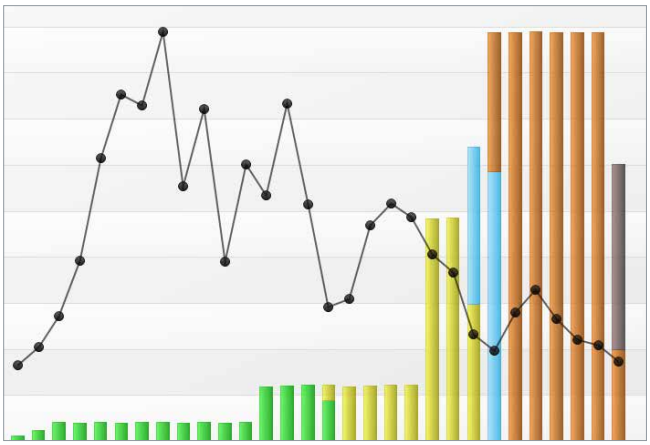

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SERVICES MINING PROJECTS

IMPROVED PRODUCTION SCHEDULING & PLANNING

Services Categories: Engineering

Sub Categories: Production Scheduling, PCBC/PCSLC

Location: South Africa

Commodities: Copper

Mining Method: Block Caving

Product(s): GEOVIA GEMS™, GEOVIA PCBC™

Services Provided: Production scheduling and planning

global provider of mining software, we have more than 25 years of expertise working with diverse commodities and mining environments. Our typical services assignments include modeling, design, optimization, scheduling, data management, automated workflows, system configuration, and points in between.

Globally, Dassault Systèmes GEOVIA employs over 150 mining professionals in all major mining centers. With expert knowledge of their regions, and local language and cultural understanding, our services professionals are highly skilled at maximizing the benefits of its software solutions.

CLIENT'S NEED

Assistance in creating production schedules and draw point layouts to find the most optimal layout while maintaining a set grade range.

THE SOLUTION

Dassault Systèmes GEOVIA Services established an ongoing project where multiple draw point layouts were created. The team created several production schedules for each layout using different sequences, which were evaluated by geotechnical engineers. Pleased with the end result, the client retained Dassault Systèmes GEOVIA Services to produce more production schedules going forward.

BENEFITS TO CLIENT

- Improved grade control increases quality of output.
- Increased revenue through maximized tonnage.
- Significant time savings with efficient production schedules.

MINING SERVICES

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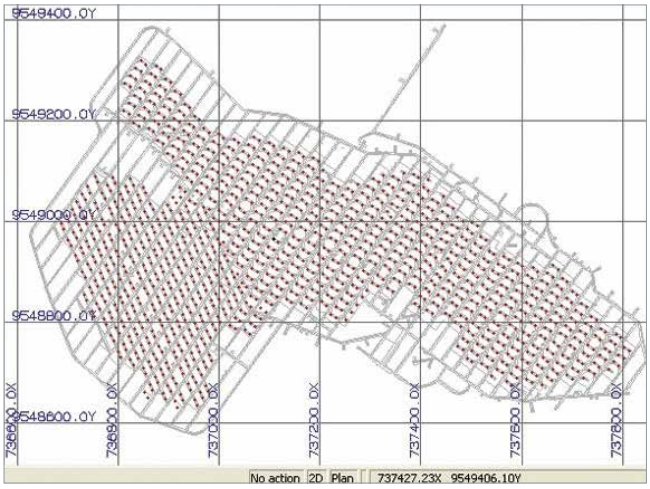

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SERVICES MINING PROJECTS

BLOCK MODEL REPLICATION

Services Categories: Geology

Sub Categories: Statistical Analysis, Resource Estimation

Location: Mexico

Commodities: Gold, Silver

Mining Method: Open Pit, Underground

Product(s): GEOVIA GEMS™

Services Provided: Replicate the current block model to realize ongoing in-house updates

CLIENT'S NEED

As the clients' exploration team undertakes many drilling campaigns throughout the year, they wanted to bring the updating of the block model in house to evaluate the increase in resources and reserves in real time.

THE SOLUTION

Dassault Systèmes GEOVIA Services helped the client to replicate block models with minimal difference in GEMS format. They provided the client with a detailed procedure for the steps taken to create the block models within GEMS and provided support in updating the block models. The end result saw the client successfully update their own block model.

BENEFITS TO CLIENT

- Improved communication between exploration and planning.
- Reduction in costs due to improved understanding of their resource estimation procedure and its implications.
- Improved drillhole campaign targets.
- More time to focus planning on specific areas of expansion.
- Improved cost and budget programming.

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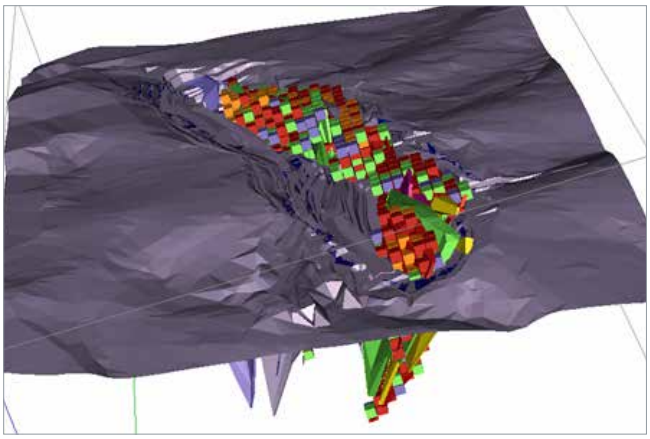

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SERVICES MINING PROJECTS

ORGANIZING, VALIDATING & IMPORTING DATA

Services Categories: Geology

Sub Categories: Drillhole Data Maintenance

Location: Canada

Commodities: Iron Ore

Mining Method: Open Pit

Product(s): GEOVIA GEMS™

Services Provided: Drillhole data maintenance, ataset preparation, validation and importing into GEMS

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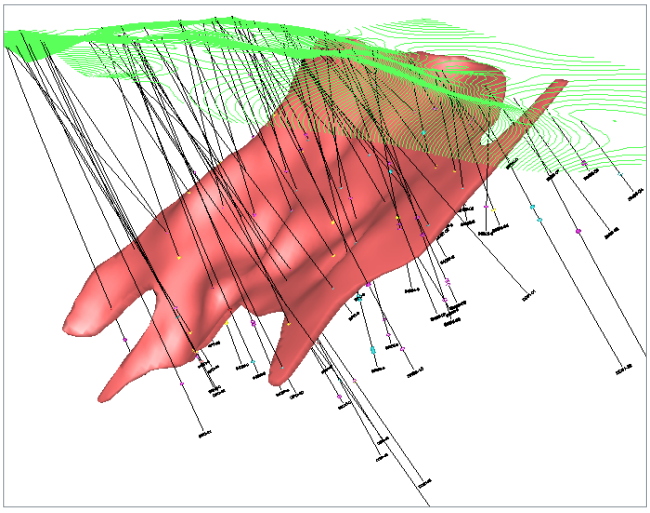
CLIENT'S NEED

The client needed to organize, clean up, import, and validate the dataset for geological modeling and resource evaluation.

THE SOLUTION

Dassault Systèmes GEOVIA Services developed a process for the client to populate a vein block model. They prepared the dataset to provide ore reserve certification for use in both database preparation and importing into GEMS. Throughout the project, Dassault Systèmes GEOVIA Services provided staff with GEMS training to advance their use of the software.



BENEFITS TO CLIENT

- Boosted confidence of data for NI-43-101 certification.
- A clean and reliable database in GEMS format.
- Validated dataset for drillhole workspace.
- Improved software skills amongst staff.

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SERVICES MINING PROJECTS

GEOTECHNICAL MODELING

Services Categories: Geology

Sub Categories: Geotechnical Modeling

Location: Brazil

Commodities: Iron

Mining Method: Open Pit

Product(s): GEOVIA GEMS™

Services Provided: Production of the horizontal sections; validation and identification of solids generated using classification

CLIENT'S NEED

The client needed a geotechnical model to advance operations.

THE SOLUTION

Dassault Systèmes GEOVIA Services worked with the client to produce horizontal sections, and cross referenced that information with the existing vertical sections to generate a geotechnical model. With the geotechnical model, the client can now facilitate the extraction and beneficiation of the order.

BENEFITS TO CLIENT

- Faster decision making.
- Optimized production and processing of the ore through pit sizing and placement of sections in different directions.
- Understanding of different attributes relative to the competence of the material, degree of compaction fracturing and the amount of silicon dioxide.

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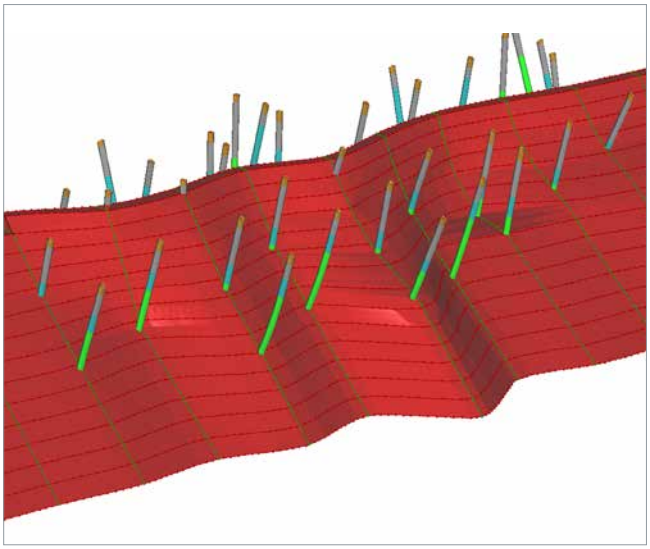

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SERVICES MINING PROJECTS

SECTION MODELING TO INCREASE MEASURED RESOURCES

Services Categories: Geology

Sub Categories: Geological Modeling

Location: Brazil

Commodities: Iron

Mining Method: Open Pit

Product(s): GEOVIA GEMS™, GEOVIA Surpac™

Services Provided: Model and update the horizontal sections at four mines

CLIENT'S NEED

Increase the level of technical knowledge of its mines.

THE SOLUTION

Dassault Systèmes GEOVIA Services underwent a two-phase approach for this project. In Phase One, they worked with the client to update and model horizontal sections at one mine. In Phase Two, they unified the models of the remaining three mines. After updating and modeling all sections, the geological section of the models were adjusted to unify them carefully from south to north. As drillholes increased, the client obtained a more detailed and clearer understanding of the area.

BENEFITS TO CLIENT

- Improved decision making with more information and variable elements.
- Significant increase in measured resources.

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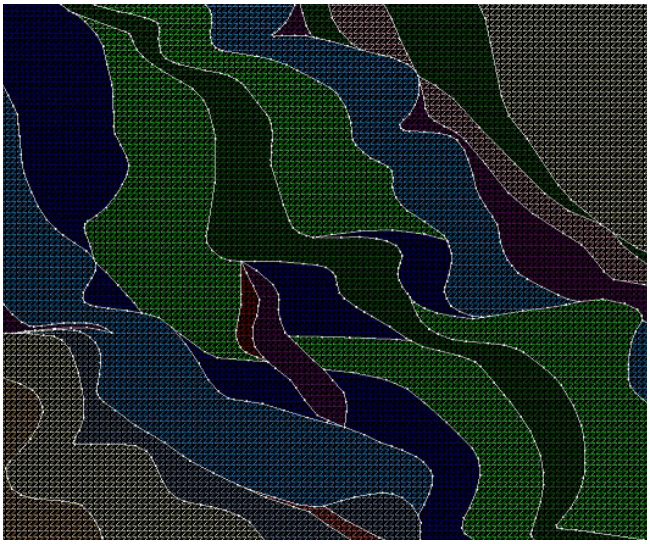

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SERVICES MINING PROJECTS

RESERVE CLASSIFICATION

Services Categories: Geology

Sub Categories: Resource Estimation, Statistical Analysis

Location: Bolivia

Commodities: Calcium Carbonate

Mining Method: Open Pit

Product(s): GEOVIA Surpac™ Quarry, GEOVIA GEMS™, GEOVIA Whittle™

Services Provided: GEOVIA Services provided a resource estimation report and block model interpolated by ordinary kriging

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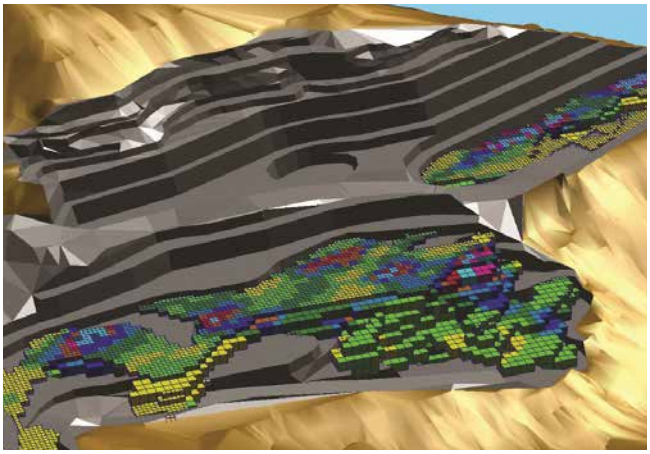
CLIENT'S NEED

The client was looking to obtain a better and more accurate resource estimation.

THE SOLUTION

Dassault Systèmes GEOVIA Services was originally engaged to provide training for Surpac Quarry; however, the scope of work expanded to include kriging resource estimation. The team worked with the client to perform a database integrity review. They studied composite size and generation, and provided variography, block model estimation, and validation, as well as classified and resourced the pit. In the end, GEOVIA Services prepared a report that provided the customer with a higher standard of quality, confidence and reliability in their resource estimation.



BENEFITS TO CLIENT

- Significant time savings.
- Improved software comprehension and skills amongst staff.
- Reliable and accurate database.
- Increased confidence in resource estimation.

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SERVICES MINING PROJECTS

RESERVE CLASSIFICATION

Services Categories: Geology & Engineering

Sub Categories: Resource Estimation, Pit Optimization, Open Pit Design

Location: Turkey

Commodities: Antimony

Mining Method: Open Pit, Underground

Product(s): GEOVIA GEMS™, GEOVIA Surpac™, GEOVIA Whittle™

Services Provided: Data review on existing client project. Completed and validated the solid modeling, as well as provided geostatistical analysis, block modeling and pit design

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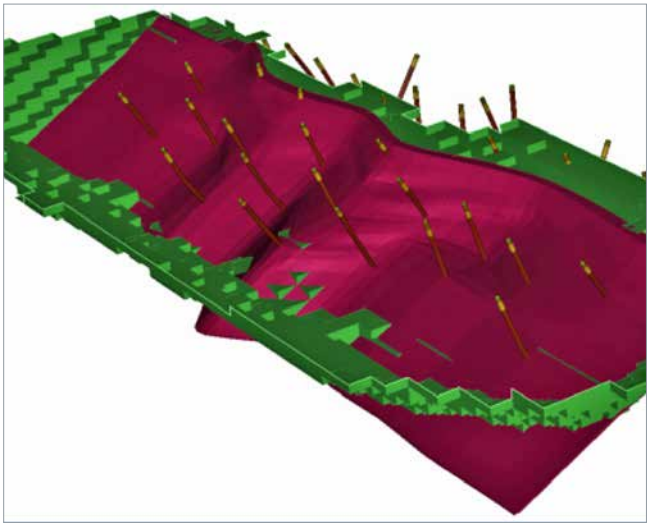
CLIENT'S NEED

The client needed an assessment of the mineral value of their deposit.

THE SOLUTION

Dassault Systèmes GEOVIA Services began the project by reviewing and correcting existing client data. Solids were then created around the lithological contacts to delineate the mineralized envelope and estimation domains. Geostatistical analysis ascertained the domains and required parameters for estimation. The Services team then created and coded a block model that was used for inverse distance estimation, which was then validated. They updated and classified the current available resources, and provided an economic analysis of the deposit where a number of scenarios were assessed, and optimal pit shells were created for later use in pit design. In the end, GEOVIA Services provided a written assessment detailing the findings, conclusions and recommendations for the clients project.



BENEFITS TO CLIENT

- Inclusion of assessment in client's 43-101 report.
- Improved efficiency and time savings resulting in the ability to devote more time to geological investigation.

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SERVICES MINING PROJECTS

WORKFLOW ASSESSMENT & TRAINING

Services Categories: Geology & Engineering

Sub Categories: Resource Estimation, Open Pit Design

Location: Egypt

Commodities: Gold

Mining Method: Open Pit

Product(s): GEOVIA Surpac™

Services Provided: Workflow transition and software training

CLIENT'S NEED

The client needed a smooth transition of workflow from a competitor's application.

THE SOLUTION

Dassault Systèmes GEOVIA Services provided assistance to assess and transition current workflows from a competitor's product to Surpac. The workflow mentoring not only assessed the current workflows from the competitive product, but also created new custom workflows in Surpac, which would use the same input data to produce the correct output required by the technical staff. At the end of the project, GEOVIA Services created a written manual for the workflow steps to help the customer continue future projects.

BENEFITS TO CLIENT

- Increased time savings through the use of a faster application.
- Seamless training and software use with a custom-developed manual.
- Automated scripts increase employee output and reduce number of hours previously spent on software tasks.

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SERVICES MINING PROJECTS

SOFTWARE IMPLEMENTATION & TRAINING IMPROVES GEOLOGICAL MODELING

Services Categories: Geology

Sub Categories: Drillhole Database, Orebody Modeling, Statistical Analysis, Block Modeling, Resource Estimation, Software Implementation, Staff Training

Location: Russia

Commodities: Iron

Mining Method: Open Pit

Product(s): GEOVIA Surpac™, GEOVIA MineSched™

Services Provided: Implemented software and trained staff to create a geological block model for two deposits, and a survey model for one pit

CLIENT'S NEED

The client was looking to transfer initial digital information and geological data from common or special formats, so staff could update databases and geological models.

THE SOLUTION

Dassault Systèmes GEOVIA Services implemented software and trained client staff to create and update block models and the geological drillhole database. In addition, GEOVIA Services helped the client use 3D visualization of the pit surface to create a survey pit model and update it with initial data. They also created the roof and floor surface of sedimentary cover, and the horizontal and polygonal models of ore and overburden.

BENEFITS TO CLIENT

- Created block models and survey pit models.
- Trained staff can now update block models.

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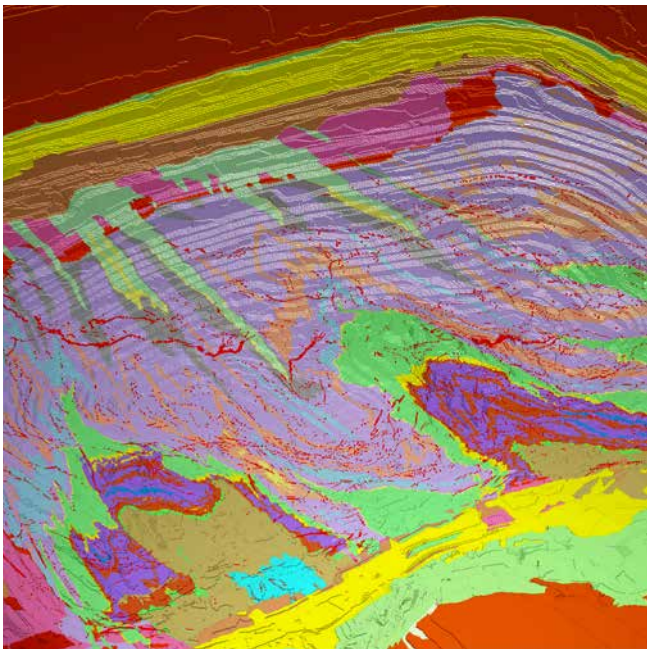

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SERVICES MINING PROJECTS

BLOCK MODEL RESERVE ESTIMATION

Services Categories: Geology

Sub Categories: Drillhole Database, Orebody Modeling, Surface Modeling, Statistical Analysis, Resource Estimation

Location: Russia

Commodities: Iron Ore

Mining Method: Open Pit

Product(s): GEOVIA Surpac™, GEOVIA MineSched™

Services Provided: Created a geological model of multiple deposits and produced a mine schedule

CLIENT'S NEED

The client wanted to validate its geological database and create a three-dimensional block model of multiple iron ore deposits to determine the quality and technical characteristics of the deposits.

THE SOLUTION

Dassault Systèmes GEOVIA Services worked with the client to create and validate its exploration database, and prepared it for solids modeling. The completed block model provided reserve estimation, which allowed the team to develop a schedule to achieve the designed capacity of 15 million tonnes per year.

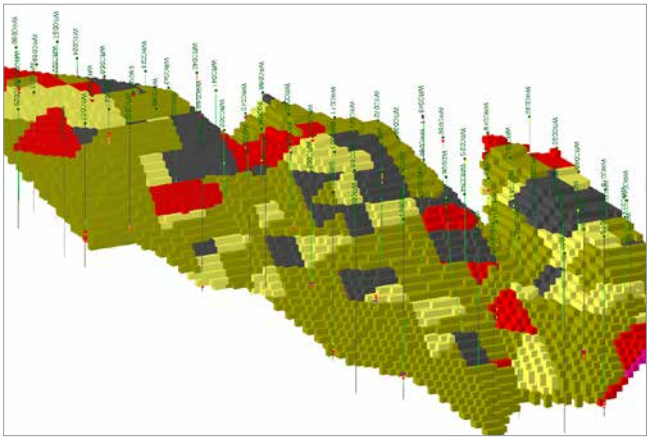
BENEFITS TO CLIENT

- Ability to reference block models for use in further exploration of deposits.
- Defined locations for subsequent drilling.
- Accurate and valid data for economic assessment of deposit.
- Long term schedule for mine planning.

MINING SERVICES

When you don't have the time or in-house resources available, Dassault Systèmes GEOVIA can assist with your **geology**, **engineering** and **operations** activities. As the largest global provider of mining software, we have more than 25 years of expertise working with diverse commodities and mining environments. Our typical services assignments include modeling, design, optimization, scheduling, data management, automated workflows, system configuration, and points in between.

Globally, Dassault Systèmes GEOVIA employs over 150 mining professionals in all major mining centers. With expert knowledge of their regions, and local language and cultural understanding, our services professionals are highly skilled at maximizing the benefits of its software solutions.



For more information email
GEOVIA.Info@3ds.com

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SERVICES MINING PROJECTS

UNDERGROUND PCBC PRODUCTION SCHEDULING ASSISTANCE

Services Categories: Engineering

Sub Categories: GEOVIA PCBC™

Location: Canada

Commodities: Gold, Silver, Copper

Mining Method: Underground Block Cave

Product(s): GEOVIA GEMS™, GEOVIA PCBC™

Services Provided: Run PCBC with an updated block model

CLIENT'S NEED

The client was lacking skills to effectively use the software to complete a production schedule.

THE SOLUTION

To help produce mining reserves, Dassault Systèmes GEOVIA Services worked with the client to deliver production schedule results, which included adjusting different design parameters to determine the largest increase to the NPV of the project. The final report prepared by Dassault Systèmes GEOVIA Services showed the value of the deposit increased, as a result of changing design parameters.

BENEFITS TO CLIENT

- Improved knowledge of software use.
- Increased NPV of the deposit.

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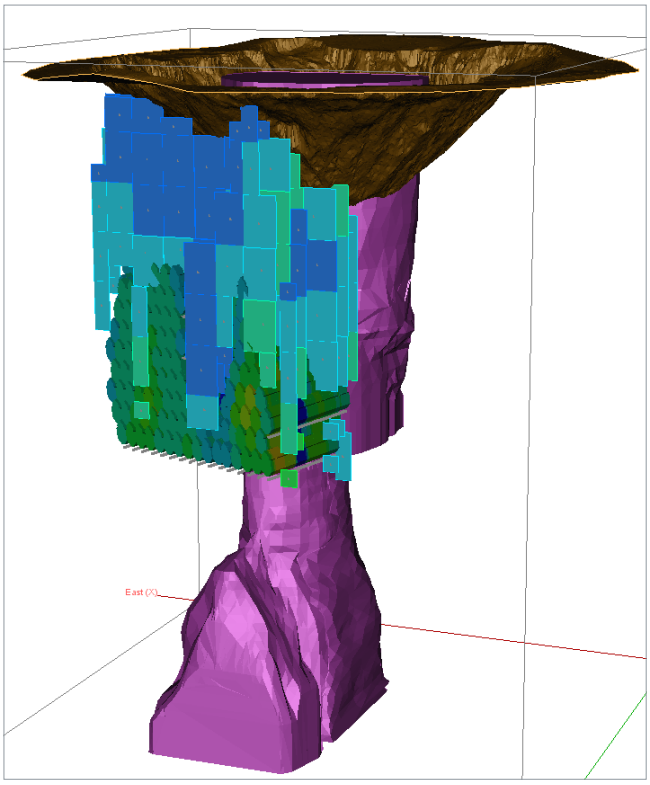

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SERVICES MINING PROJECTS

BROKEN MATERIAL ESTIMATION

Services Categories: Geology & Engineering

Sub Categories: PCBC, Resource Estimation

Location: Chile

Commodities: Copper

Mining Method: Block, Panel Caving

Product(s): GEOVIA GEMS™, GEOVIA PCBC™

Services Provided: PCBC training, broken material block model

CLIENT'S NEED

Lacking the necessary skills internally, the client needed assistance with mineral resource management.

THE SOLUTION

Dassault Systèmes GEOVIA Services provided PCBC training and worked with the client to deliver both a current and end-of-life broken material block model, which included the remaining grade, material type and classes. By simulating the extraction of historical production along with the production plan to the end of the life of the mine, GEOVIA Services identified a generation of the remaining material post block caving extraction. In addition, they classified block models, even for complex scenarios at different production levels, using a complex mixing algorithm to generate a realistic picture of the residual material.

BENEFITS TO CLIENT

- Increased comprehension and software skills.
- Ability to upgrade the model in-house.
- Improved mineral resource management.

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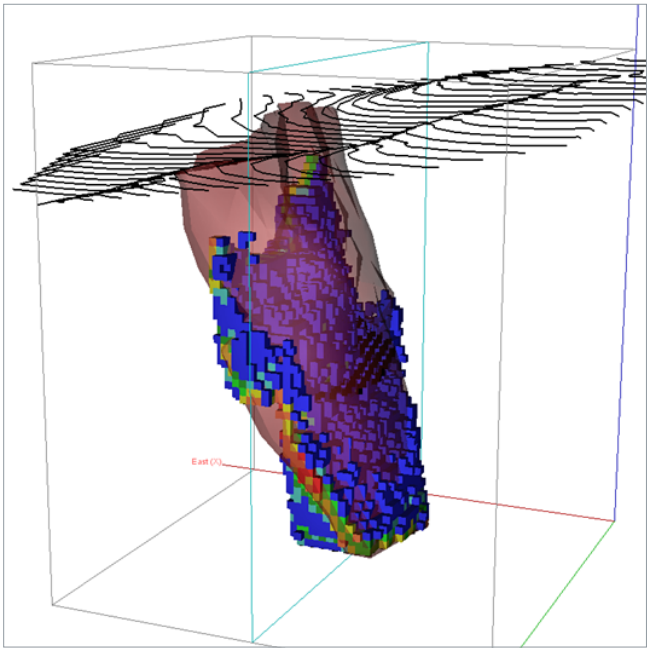

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