DASSAULT SYSTEMES

3DEXPERIENCE®

TERRITORIES & CITIES

INTEGRATED MINE PLANNING

Extracting the value from your industrial minerals deposit

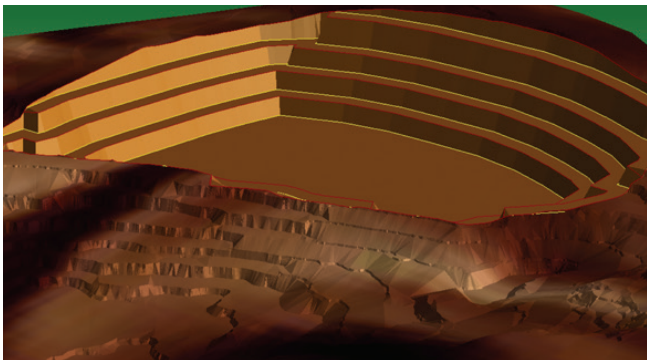


The Industrial Minerals sector encompasses a wide and diverse range of materials, with each deposit holding unique geological characteristics, which in turn present individual mining challenges for each site. At Dassault Systèmes we have a wealth of experience in working in partnership with quarries of all shapes and sizes across the globe, and have developed a wide number of solutions to address the challenges faced. We can work with you to understand your objectives, as well as the operational challenges you face, to deliver the optimal cost-effective and time-sensitive solution for your needs.

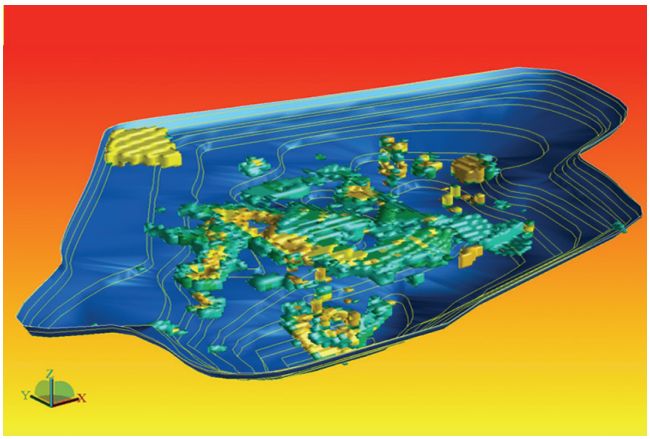
RESOURCE AND RESERVES REPORTING

There is ever-growing pressure for accurate reserve and resource reporting, occurring even before a site is put into production. Stricter licensing and permit rules are being enforced worldwide, often requiring companies to identify potential issues including geotechnical problems, shade issues and deleterious elements, with the focus on mining companies to plan from the outset how to control and manage these elements from initial production through to site reclamation. The requirement for accurate estimates, detailed designs and realistic visualizations is intrinsic to this process, but associated costs must be realistically monitored to ensure they don't escalate out of control.

To help you make more informed financial decisions for the present and the future, we can provide you with the tools you need to determine if you have enough resources to meet expected demand, when they will run out, and when you will need to acquire more.



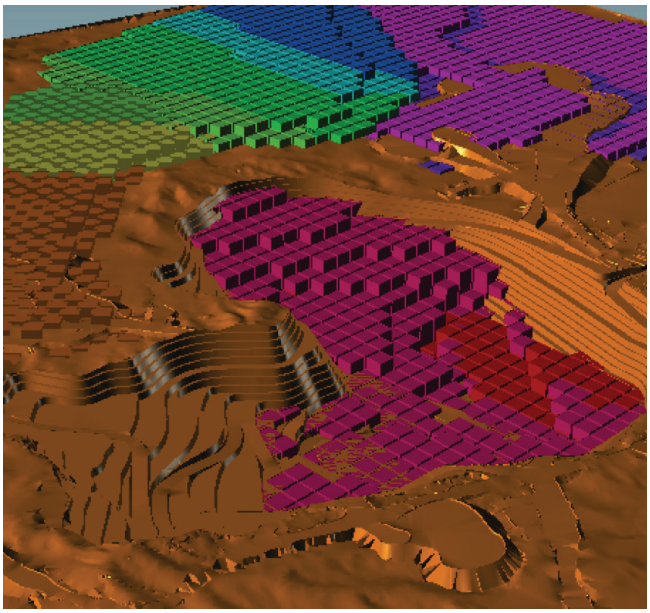
A pit design showing a push back into an existing topography with a draped texture.



Ore and waste blocks help the mine planner during the conceptual mine design process.

BENEFITS

- Quickly develop a clear understanding of the geology of your deposit, allowing greater control over ore and waste extraction. This reduces the chances of unforeseen geology issues, and limits the likelihood of loss of production time or profitable material.
- Create more efficient, easier to mine quarry and blast designs.
- Develop enhanced production schedules that are immediately responsive to changes in demand, or changes within your quarry environment.
- Use your software to its optimum capabilities, increasing user productivity by reducing time to process, as well as minimizing manual activities required.
- Increase the capabilities of your workforce with intuitive software interfaces, effective training and specialist staff contractors, resulting in a productive workforce that is scalable to demand requirements.
- Capture data centrally, allowing you to accurately control your data and distribute effectively throughout remote sites, enhancing communication and ensuring one version of the truth.
- Ensure maximum economic optimization from your quarry operation.



Automatically schedule block by block up until your end of mine life and share the schedule.

"This was the first project we used to link everything together. We wanted a solution that represents the geological and the reserve and the resource estimation, but also allows us to do economic optimizations and also at the end, allows us to schedule in terms of blending and in terms of NPV management."

—Mark Scrutton, Senior Mining Manager, Carbonates, IMERYS Minerals Ltd.

Dassault Systèmes has the ideal solution for reporting requirements. It delivers efficiency and accuracy through ease-of-use, powerful 3D graphics and workflow automation. Geological modelling, mine planning, and presentation tools are also available for quarry productivity and profits improvement while saving geologists and engineers significant time.

ENHANCING YOUR WORKFORCE CAPABILITIES

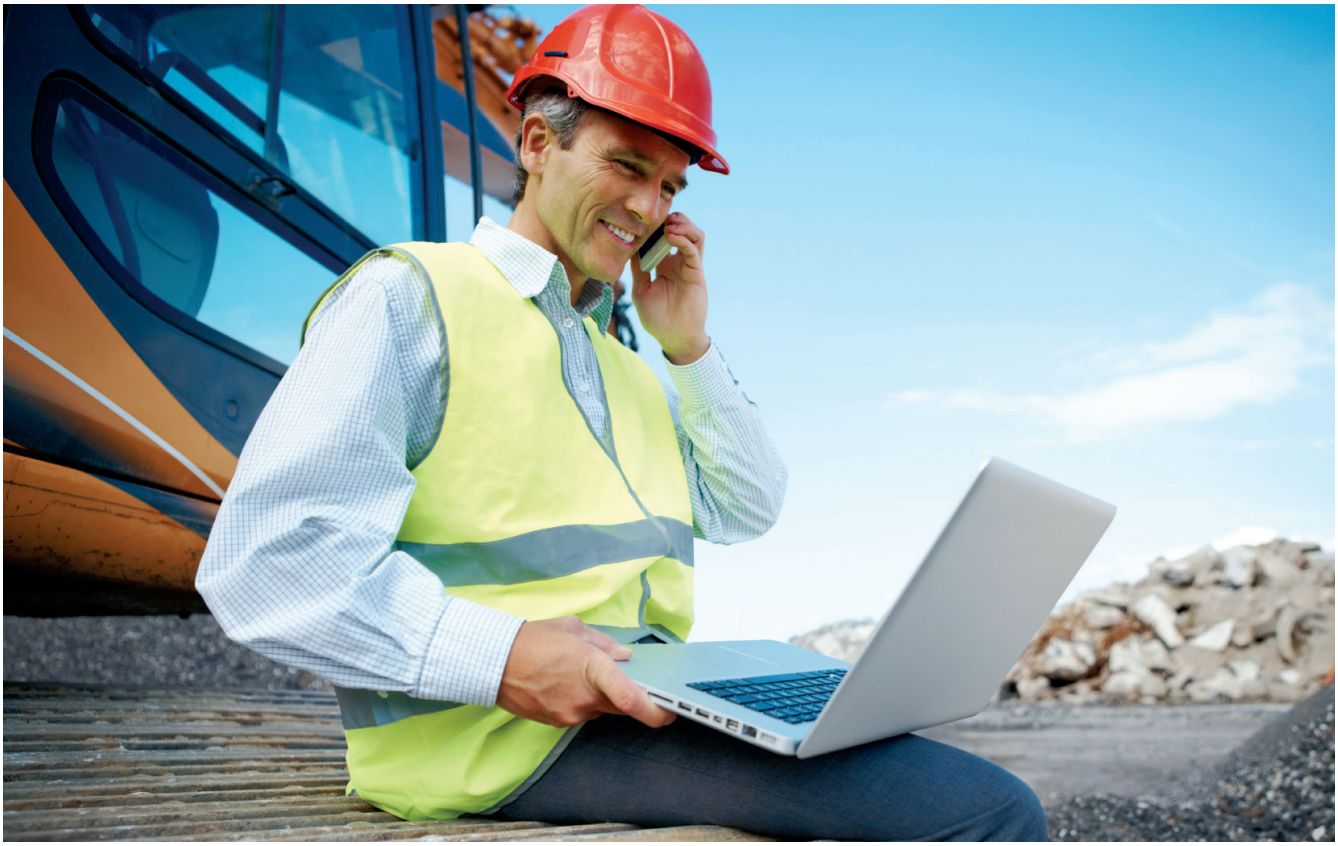
Dassault Systèmes software is specifically designed to be easy to use, with intuitive functions allowing your team to begin utilizing the solution with minimal training and disruption to your daily activities. Our flexible, cost-effective learning programs can be tailored to suit the requirements of your team, with our personal approach ensuring our team of experts evaluates the needs of your workforce as training progresses.

Changes in supply and demand requirements, or unexpected abnormalities within your deposit, can cause disruptions in the day-to-day mining of your product, increasing the need for skilled technical workers on site immediately. We have a highly-skilled team of experienced Industrial Minerals Consultants across the globe, all of which are experts in Dassault Systèmes software applications, who can partner with you to assist with projects at short notice, eliminating the pressures associated with staff shortages.

In addition to training your staff, Dassault Systèmes´ team of mining professionals will work with you to document and establish best practices workflows to increase productivity and save time. This ensures that no matter the skillset or the background of your team members, they will know which tasks to perform and when, bringing greater consistency to planning and production.

MANAGEMENT OF MULTIPLE SITES

Many quarry operators, especially in an age of industry consolidation, find themselves having to manage and assist numerous operations. With engineers and geologists supporting multiple sites, Dassault Systèmes´ applications enable data to easily be shared between remote and central locations. This allows head offices to update geological data, develop dig plans, plots, and schedules which can be easily provided to local operations.



Remote collaboration.

With Dassault Systèmes technology, it is easy to acquire data from drilling results and other sources, and to share, protect and secure it, along with geology, planning, and scheduling data. Data can be centralized onsite or at a corporate office, and quickly synchronized between locations. Geographically dispersed operations can feed data into a central technical center, allowing engineers and geologists located there to more effectively support the increasing number of quarries for which they are responsible, This reduces staffing and travel costs and increases information accuracy through minimized reaction times and the creation of a single version of true data.

Solutions for innovative scheduling experience for productivity and profits, or strategic mine planning software, are ideal for optimizing and planning multiple quarries.

IMPROVED AND CONSISTENT WORKFLOWS

Workflows can be enhanced, documented and automated in geology, survey, design, and scheduling software to increase the productivity of your operations.

With documented and automated workflows, your staff will employ the same methods and execute them consistently regardless of their experience or skillsets. As an added benefit, one person can often do the work of several technicians.

Workflow improvements deliver fast and easy:

- Plotting
- Updates to survey information
- Updates to mine plans and schedules
- Report generation
- Drillhole data import
- Block model updates

GEOLOGICAL VISUALIZATION AND MODELLING

The better you understand your deposit, the less likely you are to encounter issues along the mining cycle. To help you truly understand your deposit a flat 2D design will not give you the whole picture, or the insight you require to make informed decisions. Dassault Systèmes 3D modelling solutions enhance the power of 3D visualization, enabling you to build a clear model of your deposit. Using Dassault Systèmes´ software, you can create geological and topographic surface models, and view drillholes, lithology and chemistry results interactively in 3D.

DESIGN, SCHEDULING AND OPTIMIZATION

Since Dassault Systèmes´ geological and engineering tools are integrated with one another, engineers can interact directly with the resource model to build more accurate designs, dig plans and schedules. With easy-to-use resource based blending and scheduling tools, the plant is kept continuously fed, keeping customer specification alignment and delivery on track. Further, engineers are in full control over blast designs, ramps, roads, berms, slope gradient and bench width parameters.

Throughout the design process, reports can be generated which can include the breakdown of volumes by level or quality within each level and pit optimization tools can be incorporated to test economic sensitivities of the design.

SUPPORT FOR ALL INDUSTRIAL MINERAL COMMODITIES

Dassault Systèmes´ products are used throughout the industrial mineral and aggregate mining industry. The geological environments are varied, yet the products have the flexibility to produce realistic models and mine designs. The tools are available to optimize the value of the material produced, not only through the initial design but through short term planning .

If you are producing cement, for example, Dassault Systèmes can provide you with tools and expertise that will enable you to maximize the natural chemical composition of the available rocks and reduce the amount of additives and power required during processing. This will allow you to produce more while reducing costs.

©2016 Dassault Systèmes. All rights reserved. **3DEXPERIENCE®**, the Compass icon, the 3DS logo, CATIA, SOLIDWORKS, ENOVIA, DELMIA, SIMULIA, GEOVIA, EXALEAD, 3D VIA, 3DSWYM, BIOVIA, NETVIBES, IFWE and 3DEXCITE are commercial trademarks or registered trademarks of Dassault Systèmes, a French "société européenne" (Versailles Commercial Register # B 322 306 440), or its subsidiaries in the United States and/or other countries. All other trademarks are owned by their respective owners. Use of any Dassault Systèmes or its subsidiaries trademarks is subject to their express written approval.

Our 3DEXPERIENCE® platform powers our brand applications, serving 12 industries, and provides a rich portfolio of industry solution experiences.

Dassault Systèmes, the **3DEXPERIENCE®** Company, provides business and people with virtual universes to imagine sustainable innovations. Its world-leading solutions transform the way products are designed, produced, and supported. Dassault Systèmes' collaborative solutions foster social innovation, expanding possibilities for the virtual world to improve the real world. The group brings value to over 210,000 customers of all sizes in all industries in more than 140 countries. For more information, visit **www.3ds.com**.



3DEXPERIENCE®

DASSAULT SYSTEMES | The 3DEXPERIENCE® Company

Americas
Dassault Systèmes
175 Wyman Street
Waltham, Massachusetts
02451-1223
USA

Europe/Middle East/Africa
Dassault Systèmes
10, rue Marcel Dassault
CS 40501
78946 Vélizy-Villacoublay Cedex
France

Asia-Pacific
Dassault Systèmes K.K.
ThinkPark Tower
2-1-1 Osaki, Shinagawa-ku,
Tokyo 141-6020
Japan