



SMARTER MINING EXPLORING THE INVISIBLE

OPTIMINE®



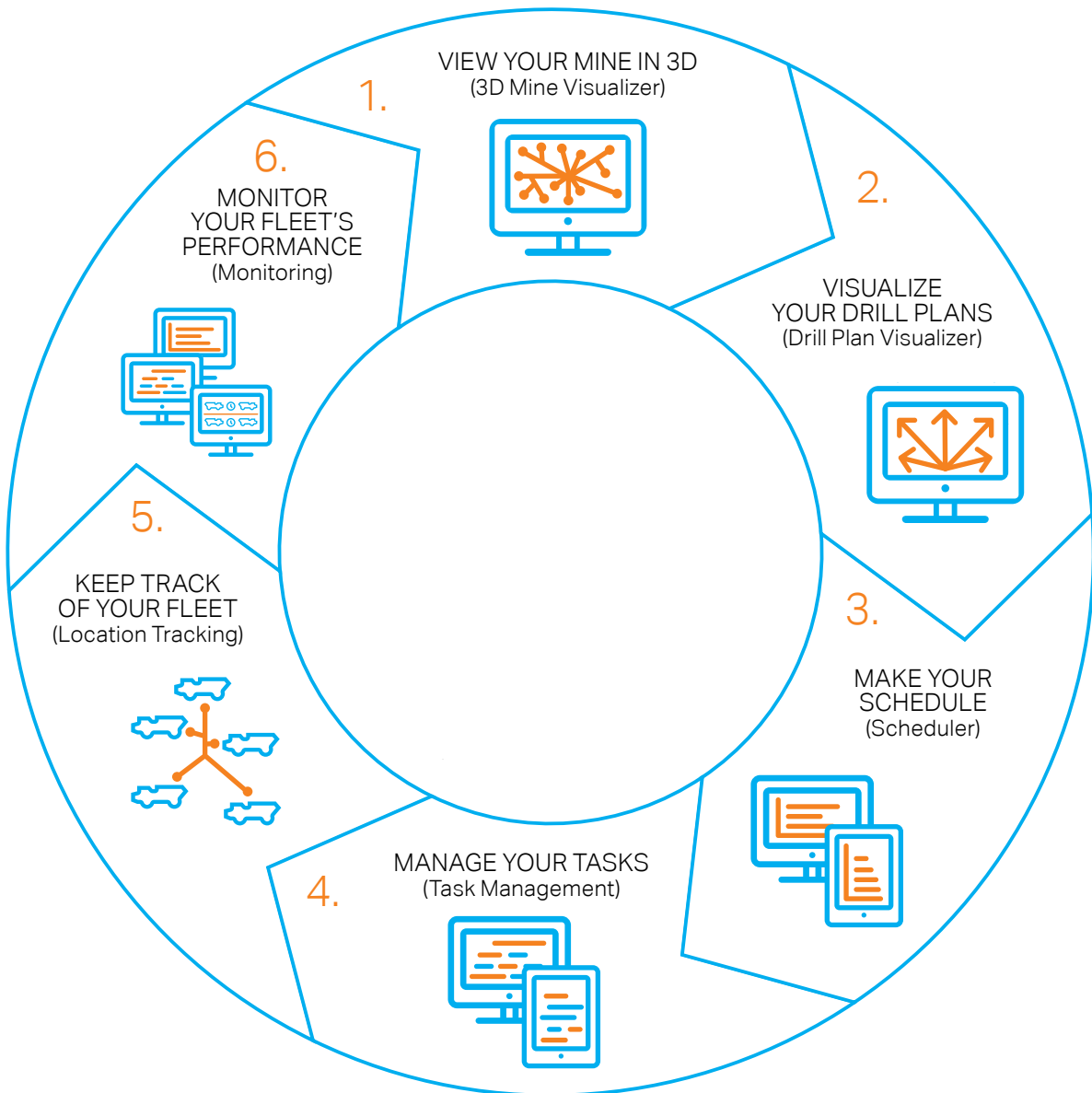
INTRODUCTION TO OPTIMINE®

OptiMine® is a modular information management solution that offers a real-time view of your underground mining operations. Suitable for all mining applications and mobile fleets, including other OEMs, the solution is designed to provide real-time tracking and production management tools for controlling manual and automatic mining operations.

OptiMine® modules can be combined to build up the required functionality to optimize your mining operations. With open interfaces, the solution can also be integrated to other mine IT systems.



PROCESS FLOW



SUITABLE

for all mining
applications.

BUILD UP A SYSTEM

that fits your needs now
and in the future.

1. VIEW YOUR MINE IN 3D

OptiMine® 3D Mine Visualizer brings a three-dimensional model of your mine into your office. Mine can be viewed and examined, both inside and outside. Situational awareness is improved, as information about the mine can be easily studied and understood at a glance.

SEE THE BIG PICTURE

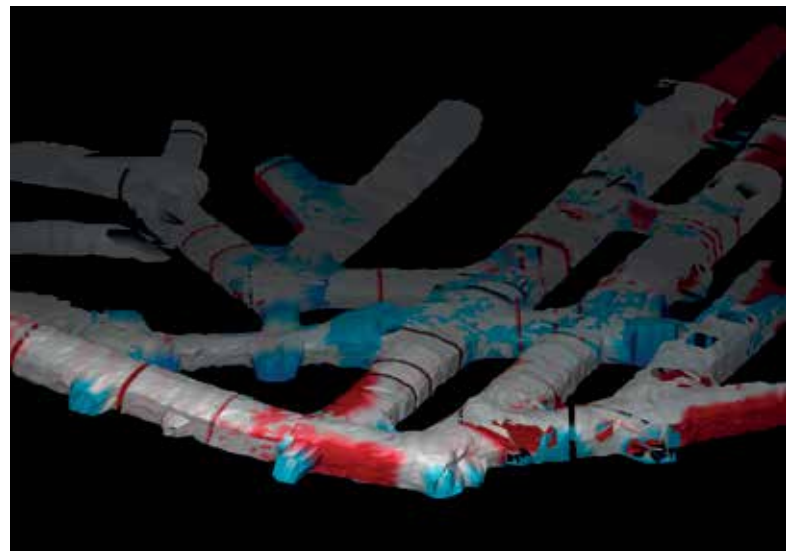
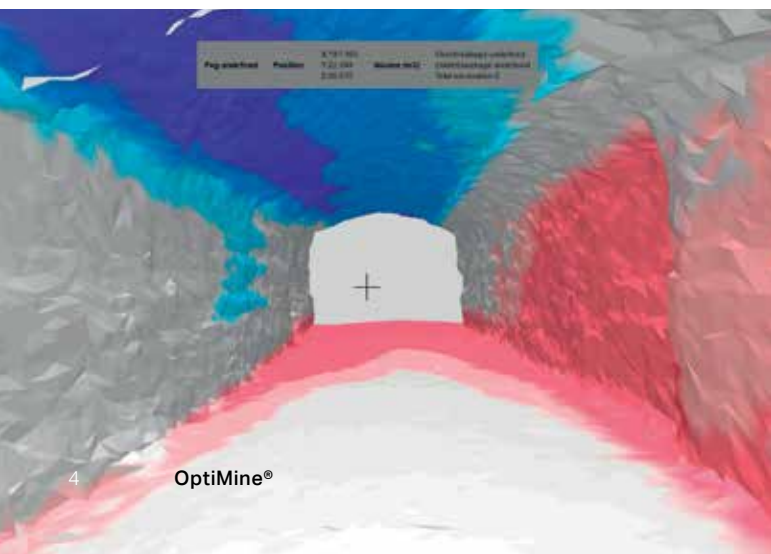
3D Mine Visualizer is a priceless tool in operations planning, analyzing problematic areas and following mining development over time. One of the key benefits of the tool is how it enables users to communicate more effectively and interpret data of the current situation and future plans in a mining environment.

CONNECT YOUR DATA

Mine conditions are gathered from various 3D scanning sources. 3D Mine Visualizer shows the progress of a tunnel's development and compares the scanning data history to the most recent scanning results – highlighting exceptions and possible problem areas.

3D MINE VISUALIZER

enables users to communicate and interpret data more effectively.



Real-time drilling data is immediately available in the production control system.



2. VISUALIZE YOUR DRILL PLANS

OptiMine® Drill Plan Visualizer is an easy to use visualization tool for longhole drilling and rock support. In the Drill Plan Visualizer, drill plans and drilling results are visualized in a user-friendly and informative way to give a mine planning crew the necessary tools to compare drilling results to longhole drilling and bolting plans.

ANYWHERE, ANYTIME, ANY DEVICE

With an easy-to-use and user-friendly web user interface, the information of both planned and actual drilling is available anywhere, anytime, and with any device. With Drill Plan Visualizer, drill plans are transferred to the drill rig automatically and actual, real-time drilling data is immediately available in the production control system.

ACTUAL DRILLING RESULTS IN REAL-TIME

For longhole drilling, Drill Plan Visualizer shows existing plans and actual drilling results in a 3D format, including measured-while-drilling data (MWD) when available. MWD data is also available in 2D graphs for a more detailed analysis of the drilling results.

3. MAKE YOUR SCHEDULE

OptiMine® Scheduler is an efficient graphical scheduling and resource allocation tool for mine development, production and maintenance activities. It is an ideal tool to increase your productivity through greater operational visibility and task management.

EASY FOLLOW-UP ON ACTIVITIES

Scheduler allows planning, control and follow-up on mining activities in a user-friendly and easy manner. With an intuitive graphical user interface, you can just drag an activity, drop it to a desired location in the tool and enable short interval control of your mining activities.

AUTOMATED DISTRIBUTION TO THE OPERATORS' TABLETS

It is also possible to import long-term plans into Scheduler from other mine planning systems and export actual mining results for a more detailed

analysis. After the tasks are created with allocated resources, they will be automatically distributed to the operators' tablets via OptiMine® Task Management.

AN IDEAL TOOL TO INCREASE

your productivity through greater operational visibility.



4. MANAGE YOUR TASKS

Scheduled tasks are received by OptiMine® Task Management, allowing operators underground to respond and adapt immediately to any changes in their working environment.

Operators can manage work tasks easily with a tablet application and make immediate corrective actions when needed, so that resources can be utilized to optimize the ongoing shift results.


**RESPOND
AND ADAPT**
immediately to changes
in the working environment.

**THE TABLET APPLICATION PROVIDES
THE FOLLOWING FUNCTIONALITIES:**

- Receive tasks from Scheduler
- Task updates and tracking
- Report on any delays
- Location information of equipment, people and resources
- Send messages between operators and the control room for effective information sharing

The tablet application also includes summary views for the shift supervisor where all of the tasks/operators' statuses can be seen.





Location data enables identification of any possible traffic congestions.

5. KEEP TRACK OF YOUR FLEET

OptiMine® Location Tracking provides accurate and real-time location of all mobile fleet, including other manufacturers' mining equipment and light vehicles. Location tracking and location determination are done locally on the location tracking unit, which does not need any additional production area infrastructure. Whether in a control room or underground in the mine, with the Location Tracking application, you are constantly aware of the status and location of your fleet on 2D and 3D models of the mine.

IMPROVED SITUATIONAL AWARENESS

With accurate location data of the resources, mining companies can drive efficiency in mining operations and unlock other capabilities when optimizing mining processes. Situational awareness is significantly improved by having constant, up-to-date information of the location of resources.

IDENTIFY CONGESTIONS

Location data enables mines to quickly identify any possible traffic congestions, which translates into better productivity. Traffic awareness underground can dramatically improve safety. In case of an emergency, equipment can be immediately located, which in turn helps to evacuate the mine if and when needed.

6. MONITOR YOUR FLEET'S PERFORMANCE

EASIER DECISIONS BASED ON FACTS

With OptiMine® Monitoring, information is automatically updated in real time. This ensures you always have an up-to-date view on the status and production of your Sandvik fleet. Information is presented in a clear and intuitive manner, which helps you make fact-based decisions. Data can also be integrated with other mine IT systems.

User interface views and reports are interactive and the data selections can be done easily. You can also zoom in on reports for more visible and clearer details. This allows an easy way to drill through the data to find information of what is really required.

EASY ACCESS

You can view reports from any device with a web browser and from anywhere, as long as there is connection to the mine network. Information can also be easily shared, as various report types can be automatically sent by email to selected groups of recipients.

Information is
**AUTOMATICALLY
UPDATED**
as changes occur.



OPTIMINE'S KEY BENEFITS



1. VIEW YOUR MINE IN 3D

- Integrate into other OptiMine® operations management tools
- Easy-to-use tools for comparison of scans and plans with automatic deviation recognition
- Create automatic environment models of 3D scanning data.



2. VISUALIZE DRILL PLANS

- Upload drill plans easily and check plans to avoid mistakes
- Utilize "as drilled" results to optimize your mining operations
- Make decisions faster and improve planning of drilling operations
- Identify rock properties with 2D MWD data visualization.



3. MAKE YOUR SCHEDULE

- Create tasks according to location
- Allocate equipment and operators to a task
- Monitor progress and task status
- Quickly update the schedule as required throughout the shift.



4. MANAGE YOUR TASKS

- Receive tasks from OptiMine® Scheduler
- Updates and tracking of the tasks
- Report on any delays
- See location information of equipment, people and resources
- Send text messages between operators and control rooms for effective information sharing.



5. KEEP TRACK OF YOUR FLEET

- Track your fleet in real time, including other OEMs' equipment
- Improve situational awareness and productivity
- Make position-based decisions from accurate and real-time information
- Fit the high precision laser scanner hardware easily to any equipment.



6. MONITOR YOUR FLEET'S PERFORMANCE

- Monitor equipment condition online and act quickly to rectify or avoid problems
- Identify incorrect usage of equipment or training needs
- Improve predictive maintenance planning with condition monitoring
- Understand equipment utilization and improve productivity
- Optimize your mining process by identifying bottlenecks and inefficiencies.

A TAILOR-MADE SOLUTION FOR YOUR NEEDS

Since OptiMine® is built from six modules, you can choose the best setup for your specific needs. As a modular solution, OptiMine® can grow with your operational requirements. Learn more about the modules and your own optimal solution by contacting your local sales representative, or visit MINING.SANDVIK.COM





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