SANDVIK

iSURE® 9.0

Drill and blast intelligence

ROCKTECHNOLOGY.SANDVIK

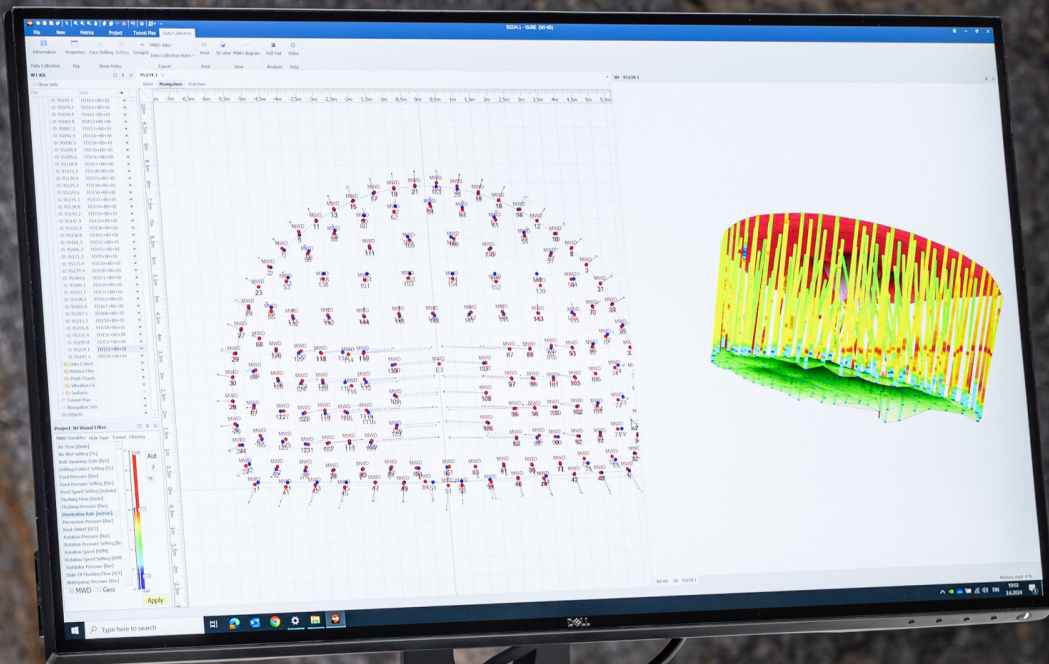# Intelligent Sandvik Underground Rock Excavation

iSURE® software is a computer program working seamlessly with Sandvik iSeries drills.

iSURE® allows easy creation and adjustment of drill and blast plans, it collects rig data and delivers useful feedback to optimize the drill and blast process ensuring operational efficency and productivity.
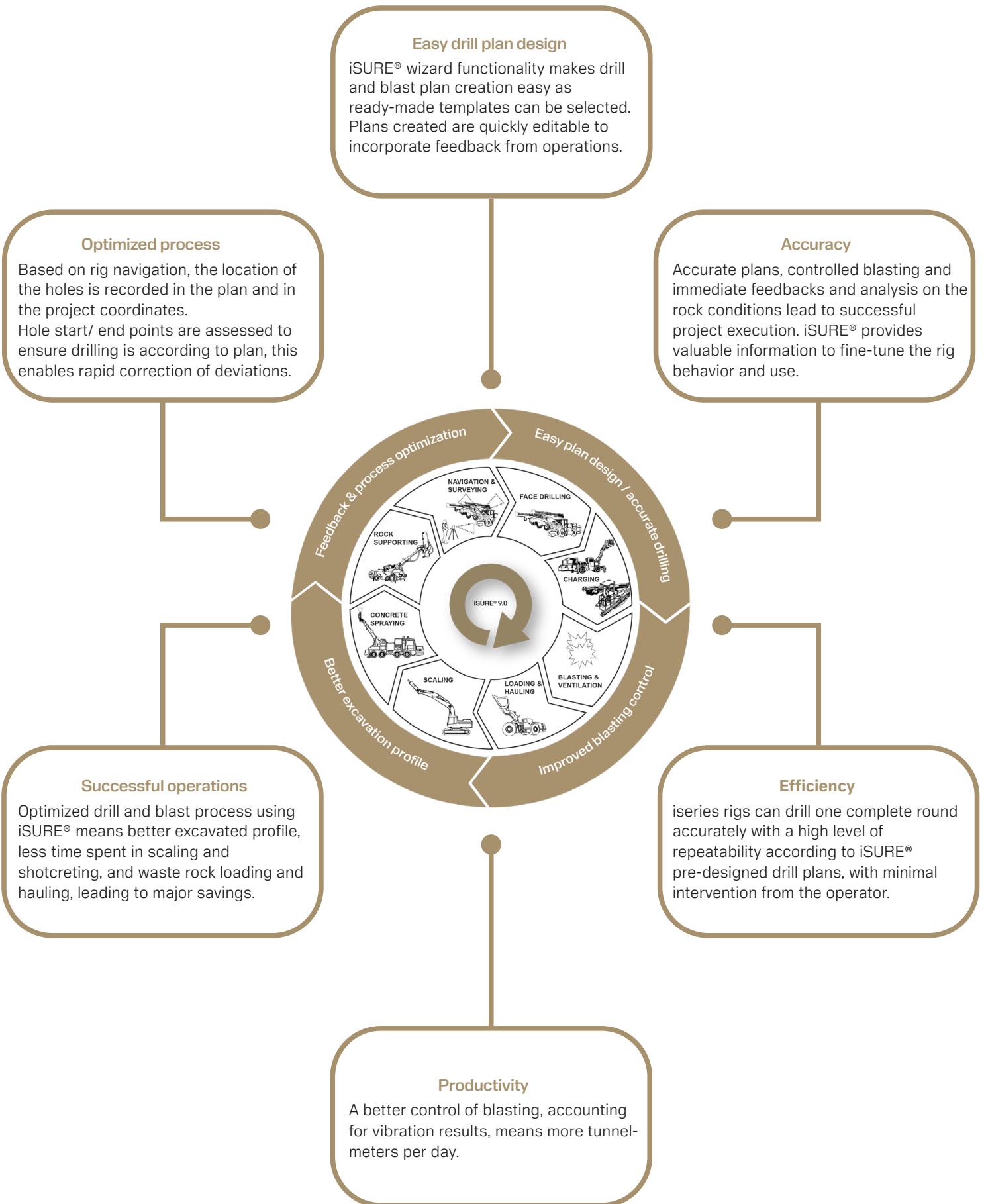
The software also improves the understanding of the geological environment for face drilling. It offers the possibility to transfer data from/to 3rd party systems.

Data transfer from and to iSURE® is smooth, using Sandvik DrillConnect, wifi, MySandvik File transfer or USB.

This license based software is available in different languages with training material including videos to best meet customers' and contractors' needs.

Benefits

Easy drill plan design
iSURE® wizard functionality makes drill and blast plan creation easy as ready-made templates can be selected. Plans created are quickly editable to incorporate feedback from operations.

Optimized process
Based on rig navigation, the location of the holes is recorded in the plan and in the project coordinates.
Hole start/ end points are assessed to ensure drilling is according to plan, this enables rapid correction of deviations.

Accuracy
Accurate plans, controlled blasting and immediate feedbacks and analysis on the rock conditions lead to successful project execution. iSURE® provides valuable information to fine-tune the rig behavior and use.

Successful operations
Optimized drill and blast process using iSURE® means better excavated profile, less time spent in scaling and shotcreting, and waste rock loading and hauling, leading to major savings.

Efficiency
iseries rigs can drill one complete round accurately with a high level of repeatability according to iSURE® pre-designed drill plans, with minimal intervention from the operator.

Productivity
A better control of blasting, accounting for vibration results, means more tunnel-meters per day.

Feedback & process optimization

Easy plan design / accurate drilling

Better excavation profile

Improved blasting control

NAVIGATION & SURVEYING

FACE DRILLING

ROCK SUPPORTING

CHARGING

CONCRETE SPRAYING

iSURE® 9.0

SCALING

LOADING & HAULING

BLASTING & VENTILATION

Drill & blast process optimization

iSURE® capitalizes on Sandvik iSeries rigs accuracy to ensure the best excavation results.

Thanks to iSURE® wizard-based plan generation tool, plans created are readily editable to incorporate drill and blast feedback to best suit the rock conditions, the tunnel requirements, the heading profile quality and the allowed excavation damage zone (EDZ).

Drill plans created in iSURE® can easily be downloaded and assigned through My Sandvik File Transfer to a dedicated drill rig in the fleet using Sandvik DrillConnect application.

iSURE® produces all information to assess and optimize the drilling and charging operations as well as official reports that may be required by the project.

Accurate drill and blast design is key to achieving the best excavation results with an effective controlled blast, good pull out, a restricted fracture zone and to ensure greater rock strength around the excavation area.

	Development drill	Tunneling drill	Rock support drill
Optimized parameter-based drill and blast plan design with Sandvik templates	√	√	-
Charging, Blasting detonation and Surface delay design	√	√	-
Injection / Probe hole design (navigation plane design mode)	√	√	-
Systematic bolting plan design	√	√	√
Design printouts, blasting plans for authorities	√	√	√
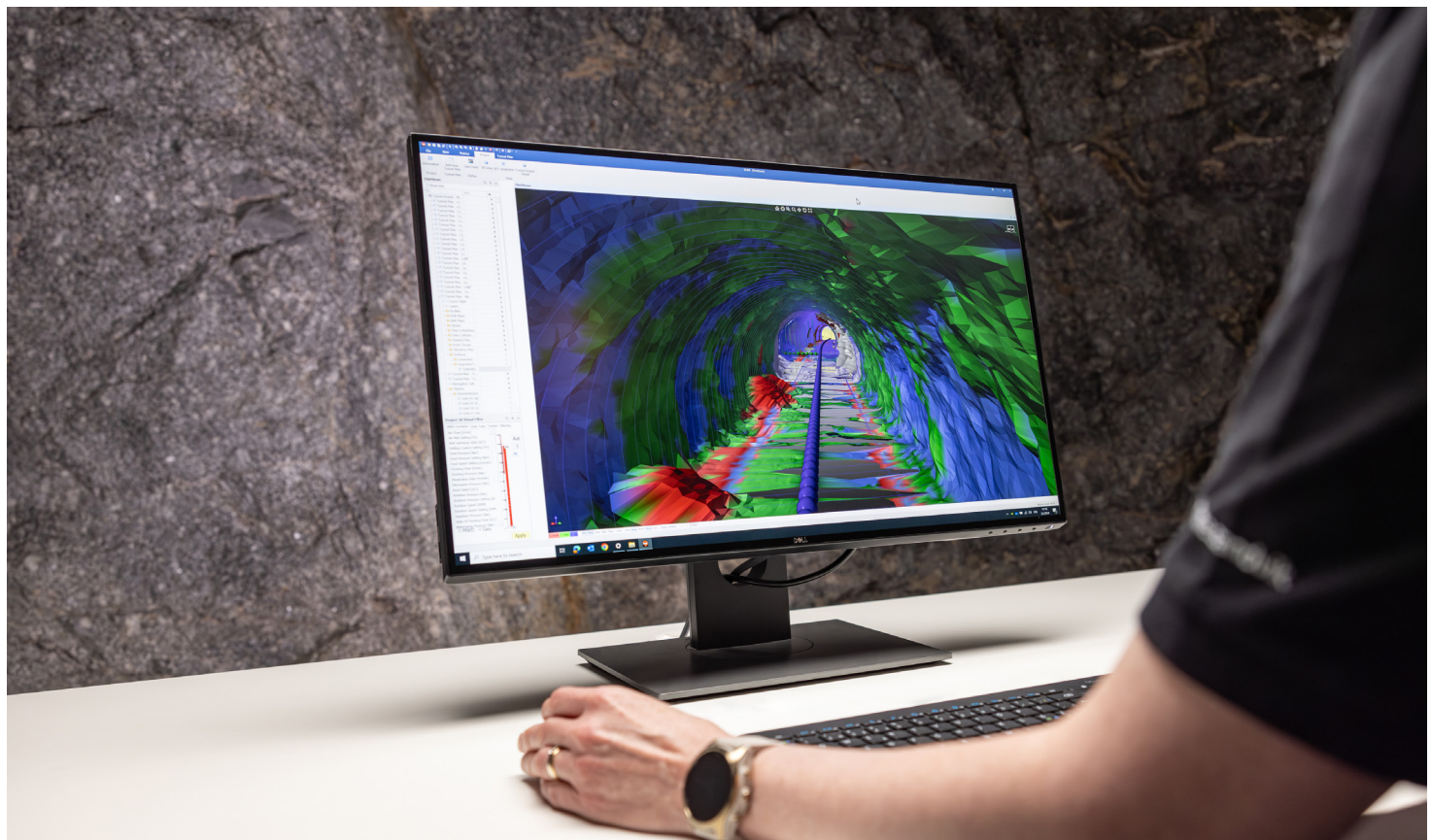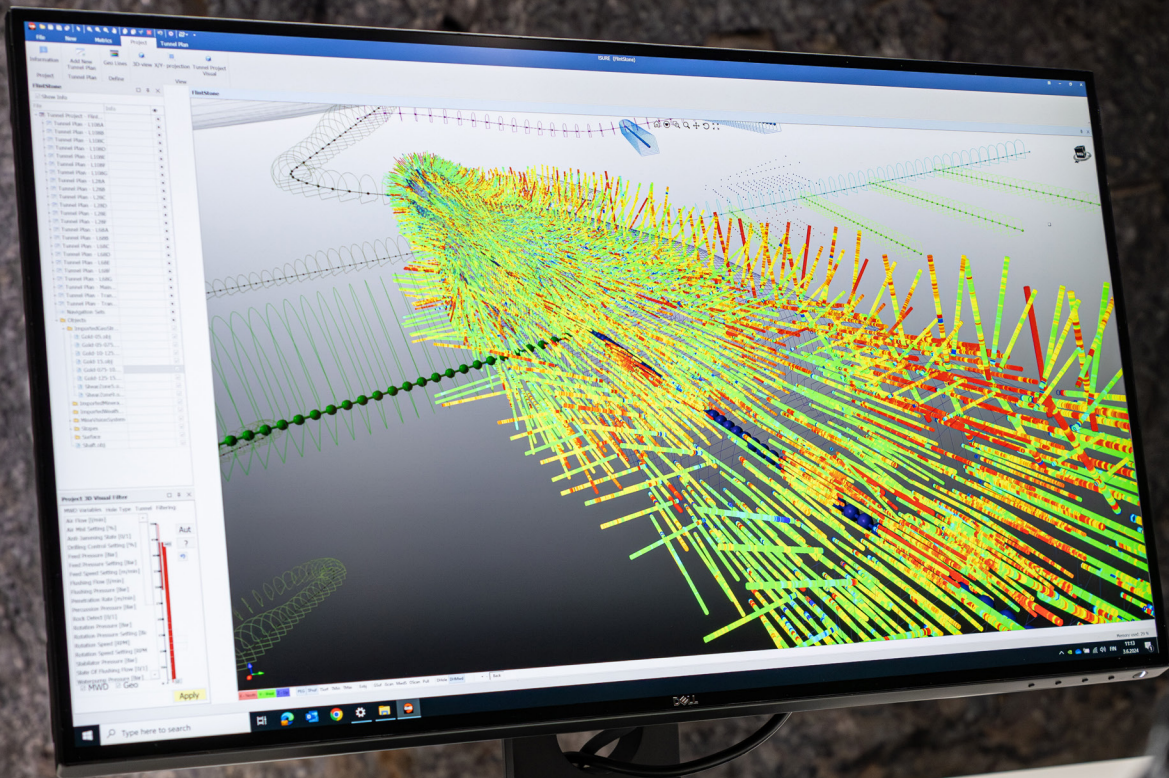
Data driven productivity

iSURE® provides continous feedback through the drill and blast process, which is essential for effective and optimized operations.

The software assists in the analysis of data collected along the heading progress to build a trend of various key performance indicators. The 'as drilled' data is collected by the instrumented rig during the drilling of each round or fan.

iSURE® provides information on the rig productivity, calculates excavated volumes (scanner-option), reports geological factors, and helps to control blasting vibrations.

Data is collected for each boom providing precise information on drilled meters, percussion hours, pull-out, round time, number of holes, applied drilling power, achieved gross, net penetration and trends experienced.

The 'measure while drilling' (MWD) analysis uses multiple parameters logged to report the achieved penetration rate for the used drilling power, flushing sufficiency, or disturbances in drilling.

iSURE® has an interface to import vibration data from 3rd party systems, this data in connection with current plan design helps to identify the holes generating exceeding vibration. Based on the vibration analysis, the charges, detonation control and location of the holes in the plan can be adjusted.

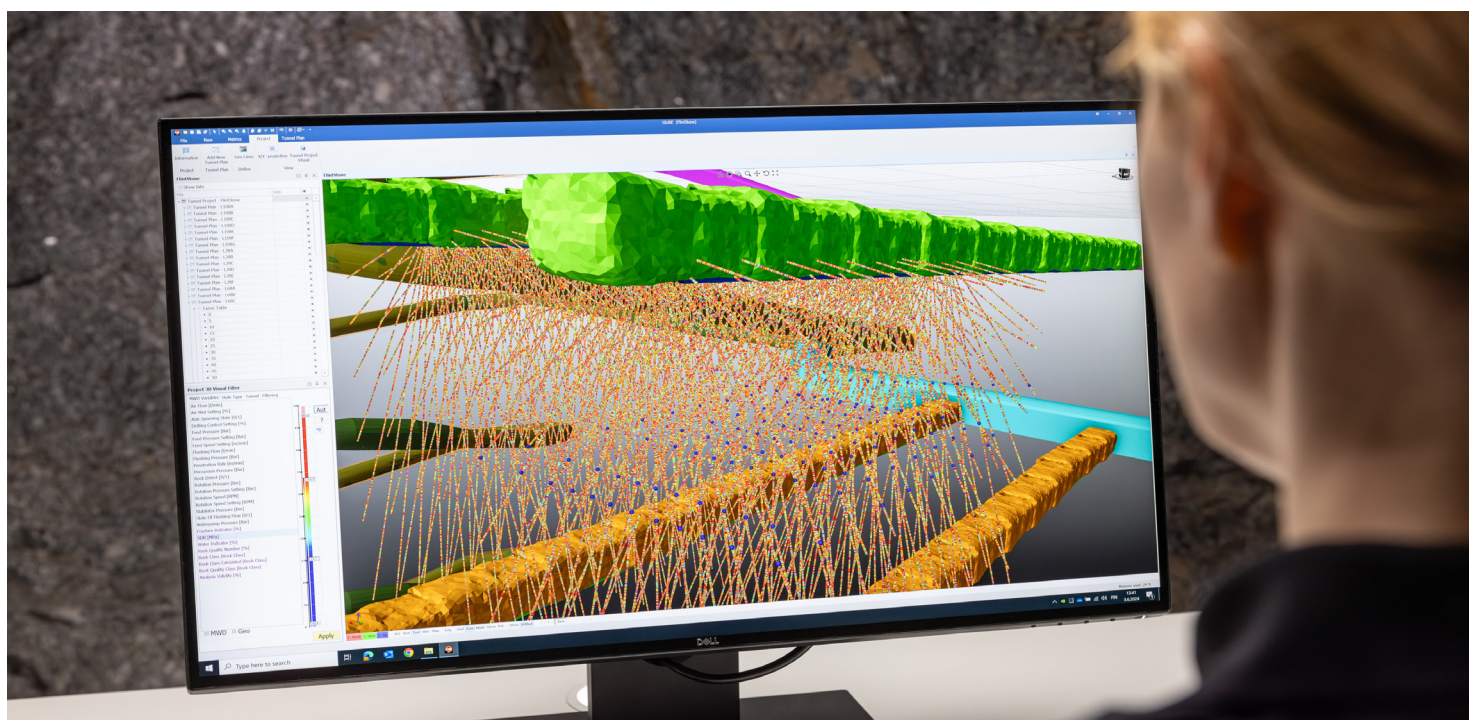|	Development drill	Tunneling drill	Rock support drill	Longhole drill
Productive counters	√	√	√	√
As drilled (2D) comparison	√	√	-	√
As drilled (3D), face shape	√	√	√	√
Face drilling pull-out analysis (needs navigation of the rig)	√	√	-	-
MWD-analysis; 2D/3D	√	√	-	√
Drill steel reporting (supporting rig's option)	√	√	-	-

Advanced information management

iSURE® can include an optional toolset for geological analysis (GeoSURE). This subsystem is meant to assist managers in their daily work.

The drilling rig can be equipped with onboard profile scanners to quickly reveal the tunnel profile status. Based on this data, iSURE® creates 3D view with under/overbreak visualization and 2D view for drill and blast design optimization, along with production in numbers.

iSeries face drilling rigs can be equipped with geo-calculation (optional), that decodes geological parameters based on drilling.

Parameters like Sandvik drilling resistance factors (MPa), rock mass fracture indicator, rock classification are calculated by the rig. Results of these calculations are saved and can be visualized in iSURE® for each of the holes in 2D or in extrapolated round 3D views.

	Development drill	Tunneling drill	Rock support drill	Longhole drill
Blasting vibration feedback analysis (import .txt and .xml files, no sensor sales)	√	√	-	-
Tunnel based statistics and rig(s) usage analytics (trend)	√	√	-	-
GeoSURE, geological analysis based on onboard calculation	√	√	-	-
iSURE onboard scanner support under overbreak analysis	√	√	-	-
iSURE metrics, fleet and process analytics toolset	√	√	-	-
Renewed 3D project canvas with layers	√	√	√	√
Import of .obj, .dwg, dxf objects	√	√	√	√
3D visual filter to adjust 3D environment	√	√	√	√
Support of 3D space mouse	√	√	√	√
Exporting of generated Geo-raw data for 3rd party software (Deswik, Leapfrog)	√	√	-	-
Import and visualization of 3rd party generated geological structures	√	√	√	√
TCAD, TCAD+, TDATA support (drill plan design part)	√	√	-	-

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