MineTwin is a configurable simulation-based decision support tool for underground and open-pit mines

MineTwin uses Amalgama® platform and libraries to provide fast and adequate simulation models of underground and open-pit mines

Scenario management environment with 2D and 3D mine layout editors and data correctness checking simplifies data management and scenario building

Determine production capacity

Find bottlenecks that constrain the ore flow – anything from drill & blast works to mobile fleet, lack of ore passes to slow trains or even skip hoist. Examine how robust the mine is against ore body heterogeneity and equipment failures.

Test mine plan feasibility

Consider mobile fleet congestion, ore quality fluctuations, queuing before ore passes and other factors before committing to weekly, monthly or annual production plan. Assess main risks of not reaching planned numbers.

Evaluate operational improvements

Simulate operator hot-seating, introducing one-way roads, intermediate ore buffers or virtually any other idea to evaluate the impact of the proposed changes both on production volume and costs.

Quantify return on investment

Perform comparative analysis of CAPEX initiatives in a risk-free environment. Use MineTwin to simulate various CAPEX scenarios including adding a hoist, rail system extension or even purchasing unmanned trucks and loaders. Quantify return on investment and see how mine operates during transitional period.

Consider real operational constraints and parameters

- Development and production mining
- Dynamic evaluation of stopes reachability
- Flexible rules of shift-to-shift scheduling
- Drilling, blasting and bolting
- Loading and bogging, vehicle priorities and bypass positions
- Road surface quality and slopes
- Transloading and using intermediate ore buffers
- Queuing in front of ore passes
- Scheduling rail operations and rail transportation
- Crushing and hoisting the ore
- Dependencies between processes in the same stope and between stopes
- Delays caused by de-watering, ventilation setup and other supporting activities

Keep data for the simulation always consistent and up-to-date

- View and modify mine layout in 2D and 3D editors. Show, lock and hide layers and areas
- Import mine layout from DXF files and auto-correct geometrical inconsistencies
- Use 100+ data checks to ensure the data is consistent
- Edit tabular data in Excel and upload it back to MineTwin

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2020
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Scenario management environment allows users to keep all data for simulation consistent and up-to-date

All data is organized into scenarios and experiments. Master data is shared between all experiments. Schedules, assignments and other settings can be experiment specific

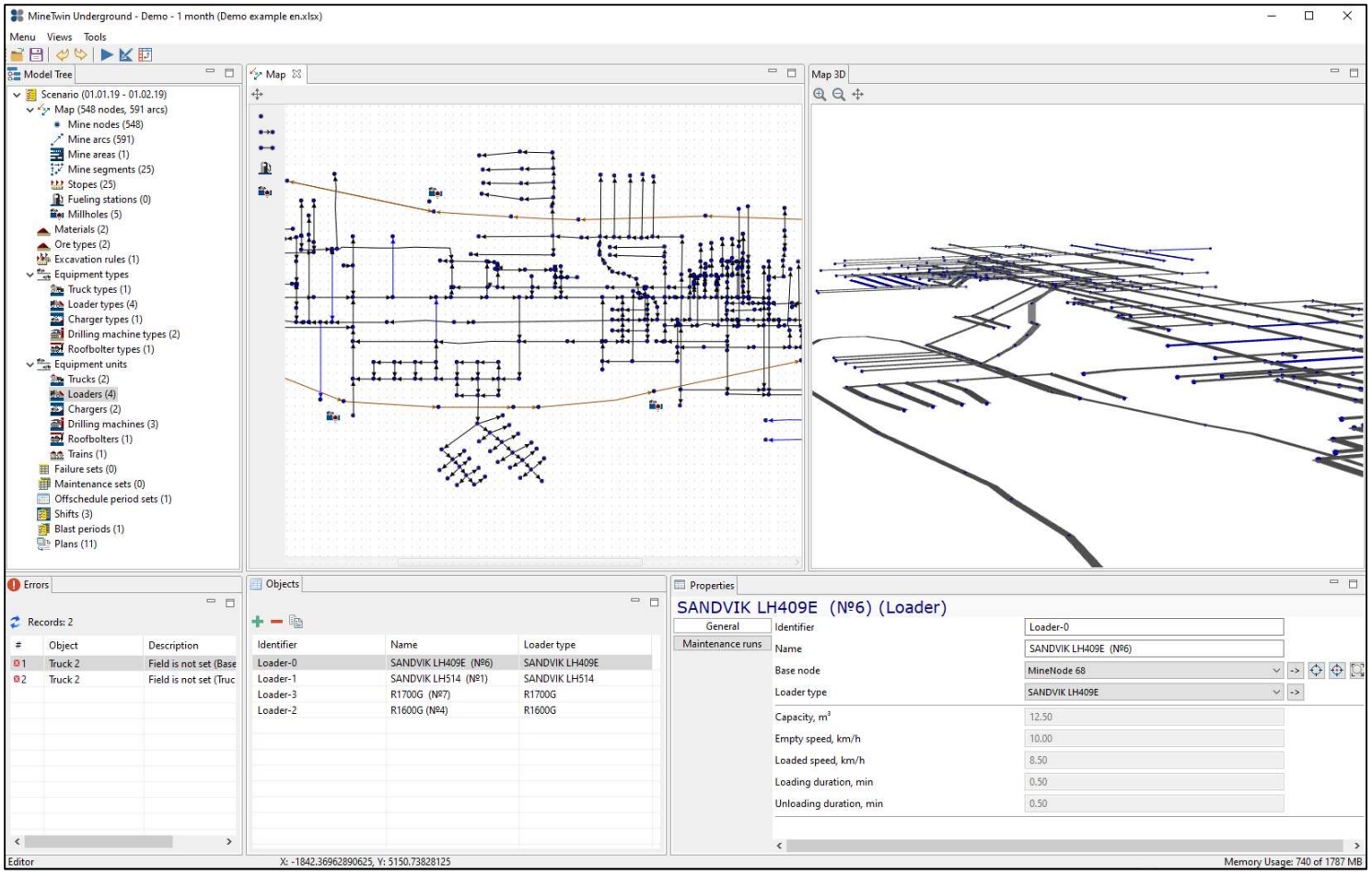
The data can be imported from various sources ranging from EAM systems and mine surveying software to simple Excel spreadsheets and text files

All data about stopes, ore passes, equipment units, trains, hoists and other assets is organized in a tree view and grouped by types and models

All parameters of objects (equipment units, etc.) are edited through property views. Property views are designed to help users avoid errors while entering and editing the data

Mine layout can be viewed and edited in both 2D and 3D views. Navigation between these views is synchronized to make the work fast and intuitive

Built-in error checking functionality helps users find inconsistencies in the data and navigate to the places which need to be fixed. Some errors in spatial data can be fixed automatically



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MineTwin uses advanced Amalgama® libraries that allows users to simulate 1 year of mine operations within minutes on a regular PC

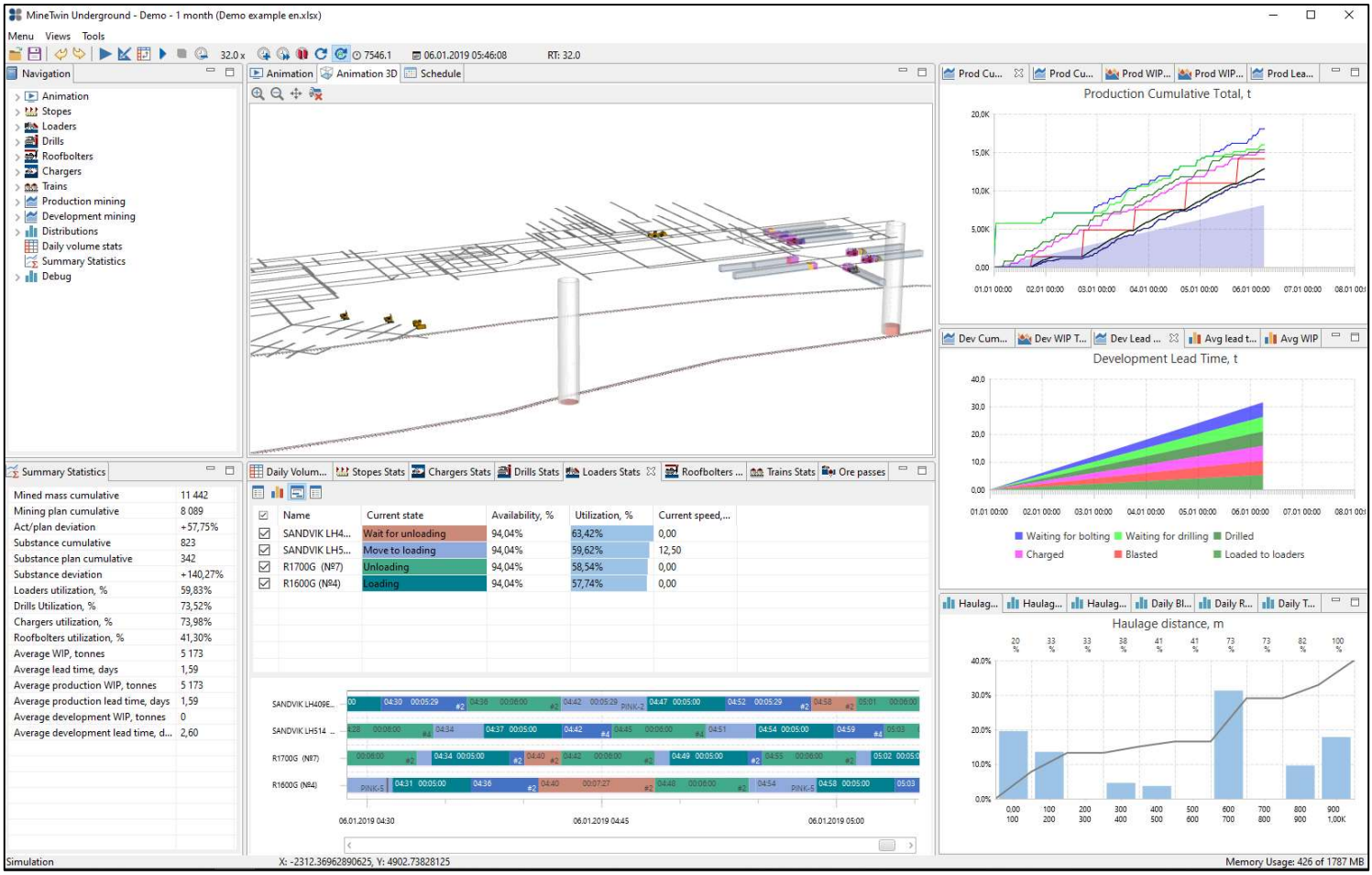
Simulation can be run with or without dynamic animation. Switching off the animation allows to accelerate the execution by a factor of 2

Simulation can be speeded-up, slowed down or run to a specific moment of time to explore particular process or mine area

Gantt charts show all details of equipment functioning. Cumulative flow charts allow users to quickly analyze ore flow balance by mine areas, stopes or for the entire mine

Similar to scenario management environment, dynamic simulation can be shown in 2D and 3D views. Dynamic heatmap shows utilization of mine roads

Formatted Excel report is generated after every experiment run. Detailed logs ensure that modeling results are transparent and explainable



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