

Geological data analysis and ore grade prediction

This workflow automatically analyzes geological data from drill samples and sensor readings to predict ore grades and optimize extraction planning. It reduces manual analysis time by 70% and improves ore grade prediction accuracy for enhanced mining efficiency.

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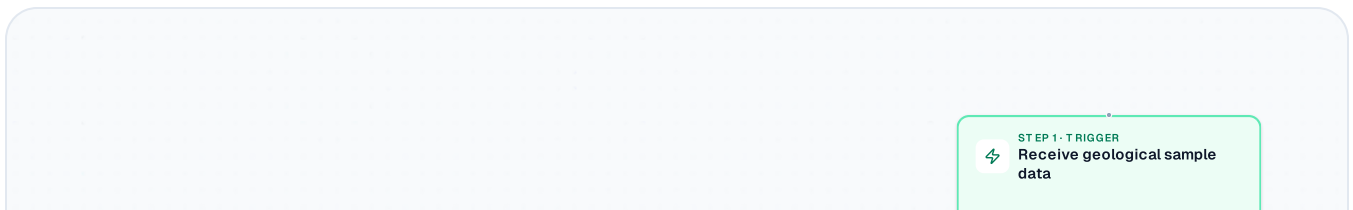


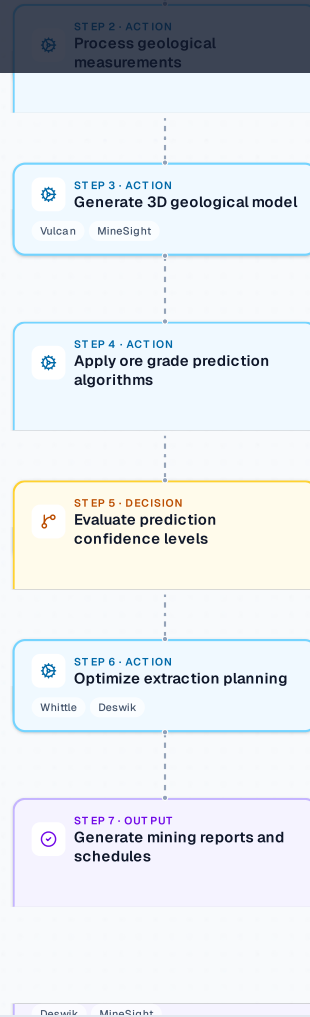
WORKFLOW TRIGGER

New geological drill sample data is uploaded to the mining database system.

Visual Flow

Each node represents an automated step. Connections show how data and decisions move through the workflow.





Step-by-Step Breakdown

Detailed explanation of each automated stage in the workflow.

1

⚡ TRIGGER

Receive geological sample data

New drill core samples and geological survey data are automatically detected and ingested from field collection systems. The system validates

2

 ACTION

Process geological measurements

Raw geological data including mineral composition, density, and chemical assays are processed and standardized. Spatial coordinates are validated against existing geological models.

Surpac

Vulcan

3

 ACTION

Generate 3D geological model

Historical and new geological data are integrated to create updated 3D block models showing rock formations and mineralization patterns. Geostatistical interpolation fills data gaps between sample points.

Vulcan

MineSight

4

 ACTION

Apply ore grade prediction algorithms

Machine learning models analyze geological patterns, mineral distributions, and historical grade data to predict ore grades throughout the deposit. Confidence intervals are calculated for each prediction.

MineSight

Whittle

5

 DECISION

Evaluate prediction confidence levels

The system assesses whether ore grade predictions meet minimum confidence thresholds for production planning. Low confidence areas are flagged for additional sampling or alternative analysis methods.

Whittle

6

 ACTION

Optimize extraction planning

Validated ore grade predictions are used to generate optimized mine plans including pit designs, extraction sequences, and resource allocation. Economic parameters are applied to maximize profitability.

Whittle

Deswik

7

 OUTPUT

Generate mining reports and schedules

Comprehensive reports containing ore grade maps, extraction schedules, and economic forecasts are automatically generated and distributed to mining engineers and operations teams.

Deswik

MineSight



Outputs

- 3D ore grade distribution maps

AI Business OS

- Optimized mine extraction schedule
- Economic viability reports
- Updated geological block models



Key Metrics

- Ore grade prediction accuracy percentage
- Time reduction in geological analysis
- Mining plan optimization score



Tools & Integrations

- MineSight
- Surpac
- Vulcan
- Whittle
- Deswik

AI Business OS

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