MINING VALUE CHAIN TECHNOLOGY SOLUTIONS MAP

Segment → Sub-segment

Segment	Sub-segments
Mining	Exploration & Geology · Design & Plan · Drill & Blast · Load & Haul · Stockpile · Maintenance & Support
Processing	Budget & Plan · Crush & Convey · Grinding · Flotation & CIL · Load & Transport
Smelting	Smelting · Refine & EW
Control & Optimise	Metal Accounting & Production Reporting · GHG Accounting/ Carbon Accounting · Digital Twin Process Optimisation Analysis · Cost Accounting · Maintenance & Support
Sales & Record	Financial Accounting · Manage Inventory · Transport & Logistics

Levels / Solutions

Level	Row	Mining	Processing	Smelting	Control & Optimise / Sales & Record
MANAGEMENT LEVEL	Enterprise (ERP)	Enterprise Resource Planning Solution (ERP) — (spans all segments)			
PLANNING LEVEL	Data Visualisation & Analysis	Data Visualisation & Analysis Tools — (spans all segments)			
	MES: Data Warehouse	Vendor Specific Data Sources	Process Digital Twins/ (Digital Twin Enabled) Manufacturing Execution System (MES)		
	MES: Digital Twins	Asset Digital Twins/ Visualisations of Lower Layer Mining Solution Data			
	MES: Data Quality Control	Mine Control, Medium & Long Term Mine Planning Solutions			
	Manufacturing Execution Systems (MES): Source Data Integration & Centralisation	Mine Control, Medium & Long Term Mine Planning Solutions			
SUPERVISORY LEVEL	Weighbridge / Product Data	Dispatch/ Fleet Tracking Solutions	Weighbridge/ Product Movement Solutions		
	Data Historians	Dispatch/ Fleet Tracking/ Short Term Mine Planning Solutions	Data Historian Solutions		
	Laboratory Information Management Systems (LIMS)	Drill Hole/ ROM Sampling Solutions	Laboratory Information Management Systems (LIMS)		
CONTROL LEVEL	Control Systems, SCADA	Onboard Vehicle /Loader/ Drone Data Collection Systems	Control Systems/ SCADA		
FIELD LEVEL	Physical Production Process	Machinery/ Sensors/ Instrumentation	Machinery/ Sensors/ Instrumentation/ Manual Data Entry		