

Mining 4.0 through Digital Solutions Cutting-edge solutions

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Mine of the Future Major challenges and trends



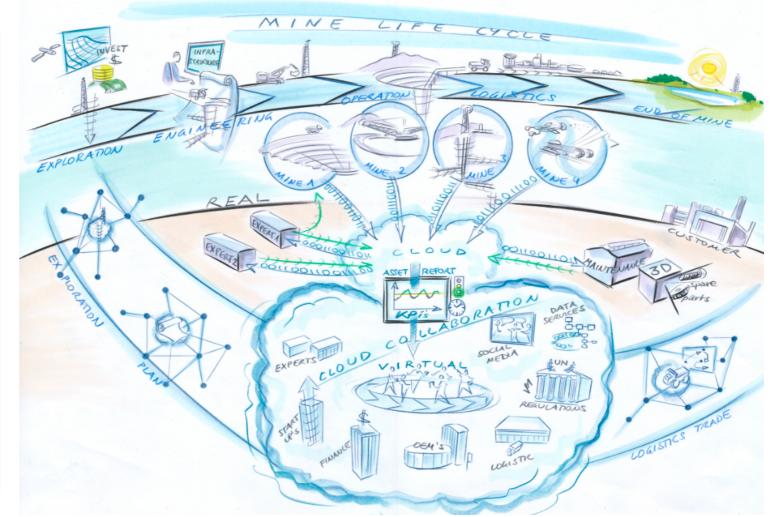
Digitalization is the major key for increasing cost-efficiency and automation of operations and processes in the mining industry, especially in hazardous and hard to reach environments.



Pictures of the Future – Mining Key topic | Value Mining Networks

SUMMARY

- Seamless horizontal digital integration of suppliers and partners along the value chain.
- Open standards to integrate vendorindependent solutions and asset management services.
- OEMs, IT-players and startups offer new digital data, analytics and consulting services.
- Expert and centralized operation centers run multiple mines and offer specialized services.
- On-demand business models, marketplaces and trading platforms are established.
- Digital branding and transparency initiatives are major pillars of governmental and community stakeholder management.
- Mining companies engage in continuous digital monitoring and management.
- End of mine business keeps mines partially in operation.



Minerals Digital Architecture Concept

Relevant functionalities for mining industry on short and long terms

Enterprise Performance Improvement predictive decision support and autonomous operation

Operations Management Level material flow simulation, pit-to-port optimization, short

interval control, dynamic planning and execution

Operational Level

process optimization, prescriptive maintenance, asset health analytics, online simulation, autonomous machin operation

Mining Engineering

integrated engineering, virtual commissioning, long term mine planning

Mine Planning and Design

Construction and Assembly

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Enterprise Operations Management

production planning and execution, maintenance mgmt, pit-to-port material tracking, performance analysis, quality mgmt

Mining Operation

asset condition monitoring, process and machine automation, energy monitoring, fleet dispatching, operational data historian, online ore

quality measurement

Commissioning and Start Up

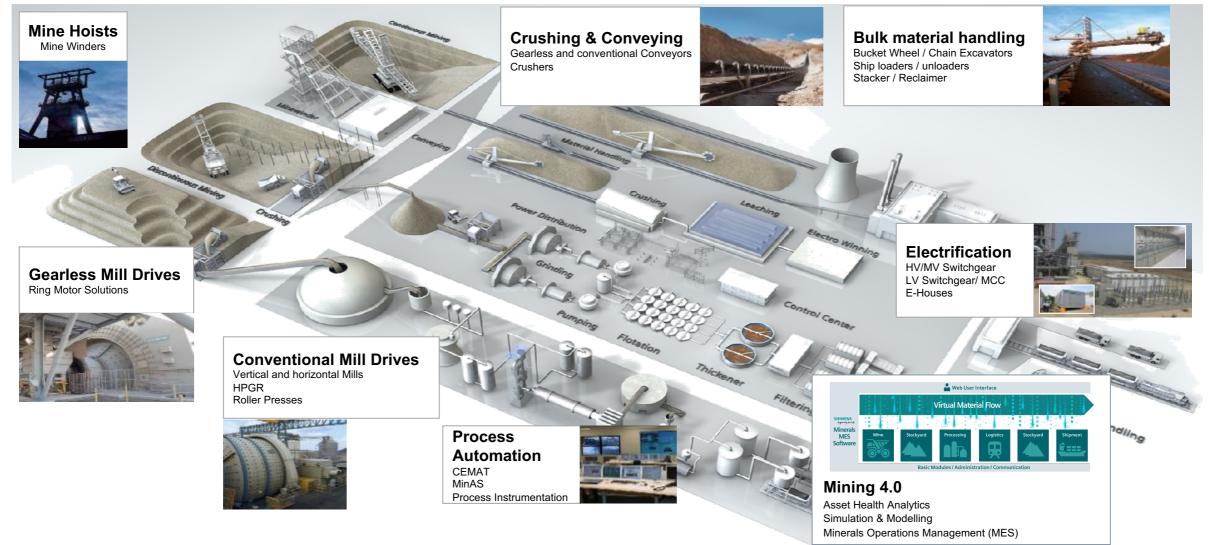




Siemens Minerals Portfolio

High-end and world-class solutions for the mining industry





Let's drive together the digital enterprise





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