



MINING INDUSTRY 2021 VISION: Achieving Key Goals Through Collaboration

Based on industry priorities brought forth during the GMG Fall 2020 Leadership Summit, here is a compilation of actions GMG is taking to foster and enable collaboration that will accelerate innovation in the mining industry.



GMG actions on industry priorities

SUSTAINABILITY RELATED GOALS, ESPECIALLY AROUND ADOPTING ELECTRIC EQUIPMENT AND ENABLING THE WORKFORCE

EXAMPLES

- Targets for meeting the UN Sustainable Development Goals
- Development and acceptance of electric equipment in mining operations
- Resources and guidance on employee wellbeing (training, physical and mental health, enabling flexible work)

PUBLISHED WORK

- Mine Tailings: A Review of Guidelines, Initiatives and Standards
- COVID-19 Response & Return to work portal

CURRENT PROJECTS

- Battery Electric Vehicles in Mining Guideline (BEV3)
- Electric Mine Operational Knowledge Sharing Platform
- Industrial Comminution Efficiency Guidelines (review projects):
 - Bond Efficiency of Industrial Grinding Circuits
 - Morrell Method for Determining Comminution Circuit Specific Energy
 - Methods to Survey and Sample Grinding Circuit

NEXT STEPS

- Prioritize and launch projects within the sustainability working group
- Publish and demonstrate BEV3
- Project for BEVs in surface mining operations
- Develop case studies for diesel-free mobile mining
- Integrate sustainability in all GMG initiatives
- Diesel-free surface mining roundtable

POTENTIAL FUTURE WORK

- Skills migration and community support
- Benchmarking metrics on carbon neutral mining
- Mental health resources and tools
- Benchmarking metrics around social licence, hiring practices, and workforce and community engagement

AUTONOMOUS MINING AND REMOTE OPERATIONS WITH THE GOAL OF CREATING SAFER WORKING CONDITIONS

EXAMPLES

- Enable fully integrated remote operations for mines
- Develop industry accepted roadmap for automation
- Working towards zero entry mines

PUBLISHED WORK

- Guideline for Applying Functional Safety to Autonomous Systems in Mining
- Guideline for the Implementation of Autonomous Systems in Mining

CURRENT PROJECTS

- Implementation of Autonomous Systems guideline (v2)
- Autonomous Mining Skills Migration Case Study Development
- System Safety for Autonomous Mining white paper

NEXT STEPS

- Collect case studies

POTENTIAL FUTURE WORK

- Collaborative work on remote operations (e.g. develop guidance, education, and KPIs)
- Advancements and a vision for the future in autonomous mining and enabling zero-entry mining
- Mining industry framework for automation development and implementation

DIGITALIZATION AND DATA, ESPECIALLY REGARDING DATA ACCESS, DATA ANALYTICS, AND ENABLING AI APPLICATIONS

EXAMPLES

- Data access, open data, and data integration
- Define a framework for IP
- KPIs, infrastructure and processes for analytics
- AI and machine learning applications
- Integrate equipment and technologies to support asset management lifecycle
- Benchmarking for communications infrastructure

PUBLISHED WORK

- Underground Communications Infrastructure guidelines
- Mobile Equipment Open Data Consensus guideline

CURRENT PROJECTS

- Mobile Equipment Open Data: Report on Industry Challenges and Next Steps
- Data Exchange for Mine Software (Open Mining Format)
- Open Data Sets for AI in Mining guideline
- Implementation of AI in Mining guideline
- Mobile Equipment Technology Integration leadership sub-committee
- Interoperability Definitions and Principles white paper
- Vendor Security Management guideline
- Interoperability landscape

NEXT STEPS

- Develop a Mobile Mining Technology Integration framework
- Defining the newly merged Data and Interoperability Working Groups

POTENTIAL FUTURE WORK

- Share different philosophies and methods for IP practices and develop case studies on IP framework
- Help narrow focus and prioritize innovation and technology development

OPERATIONS AND MANAGEMENT INITIATIVES TO IMPROVE PERFORMANCE AND OPTIMIZE PRODUCTION

EXAMPLES

- Advance machine reliability
- Reduce exposure of personnel to hazardous environments
- Supply chain management

PUBLISHED WORK

- A Standardized Time Classification Framework for Mobile Equipment in Surface Mining: Operational Definitions, Time Usage Model, and Key Performance Indicators guideline
- Guideline for Implementing Short Interval Control in Underground Mining Operations

CURRENT PROJECTS

- Location Tracking guideline
- Electric mine KPIs

NEXT STEPS

- Launch proposed Asset Management Working Group projects:
 - Mobile mining asset management framework
 - Common taxonomy

POTENTIAL FUTURE WORK

- Guidance for determining what information should be protected and what can be shared on open platforms

COLLABORATION AND DEMONSTRATION: WORKING TOGETHER TO DRIVE INNOVATION IN THE INDUSTRY



Next Steps

The priorities identified on the previous page will have a key role in defining GMG's actions throughout 2021 and beyond. Next steps include:

- Inputs to be fed into relevant projects and working groups.
- Stakeholder engagement
- Engaging with other organizations leading work in identified areas
- Research and industry landscapes

Get involved by:

- Joining GMG working groups and projects and encouraging members from your company to do the same
- Being a part of collaboration opportunities such as forums and workshops, and volunteer to give knowledge sharing presentations and safety shares
- Sharing use cases, case studies, success stories, and lessons learned

Keep in touch



GMGorg



Global Mining Guidelines Group - GMG



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