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 Commination Efficiency Guidelines (review projects):
  - Bond Efficiency of Industrial Grinding Circuits
  - Morell Method for Determining Communion 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

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**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

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**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)
- Mobile 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

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**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

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**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