MEMBER REPORT

A new chapter begins
GMG Ecosystem

INDIVIDUAL PARTICIPANTS

- OEMs
- OTMs
- Academia

MEMBERS

- Regulators
- Researchers
- Mining Companies
- Service Providers
Over the past year GMG has gone relatively quiet, as events, projects, and news from us have slowed down, and I would like to sincerely apologize to the entire GMG community for this silence.

The Executive Council and I have worked hard to bring the vision of GMG as an independent organization to fruition, and as such have focused most of our energy and efforts towards making that a reality. To those who felt that GMG has not been operating at full speed, that the standards our members have set for us, or that the value of GMG wasn’t there, I apologize for not being able to give my full attention to supporting the work and community that is at the core of GMG.

One of the fundamental pieces of GMG’s identity is the sense of community that comes from working and collaborating with others from around the world, and like many of you I have missed having this. But now operating as an independent organization as of November 15, all attention is laser-focused on our community and delivering on projects and initiatives that reflect our members needs.

Looking towards the next chapter of GMG, I am excited for the numerous opportunities and possibilities we have as a global community that will continue to come together to develop, endorse, and collaborate on innovative solutions for the industry. Being independent will allow GMG to be a fully global organization and ensure that all of our work continues without bias or partiality, as we seek to serve all of our stakeholders around the world.

As a member-led organization, our members guide the direction and priorities of GMG, and during this period of transition, I along with your incoming Chair, Kal Ruberg, have had the pleasure of connecting with many of our members, and hearing their priorities, needs, and ideas. In the coming months, as an organization we intend to continue discussions and facilitate dialogue with members to ensure that GMG keeps moving in a direction that is defined by and aligns with what our members want.

I want to reaffirm GMG’s commitment to our mission to facilitate and drive the application, utilization, and development of global mining guidelines and enable a global community to support these guidelines and educational resources as positive tools for the industry. I will continue to support GMG in serving this mission and will ensure that all of our work is guided by our principles of operation: inclusivity, collaboration, encouragement, and accessibility.

As we are preparing to restart our projects and activities, I am pleased to announce the recent publication of the System Safety for
Autonomous Mining White Paper, which will serve as a valuable resource on the use of a system safety approach for mining companies deploying and using autonomous systems. In the coming months we expect to publish the Determining the Bond Efficiency of Industrial Grinding Circuits Guideline and the Morrell Method for Determining Comminution Circuit Specific Energy and Assessing Energy Utilization Efficiency of Existing Circuits Guideline.

As always, I would like to thank all of our volunteers for their hard work and dedication over the past year. Your commitment and time spent contributing to projects, activities, and the development of guidelines and educational resources are an invaluable part of GMG.

I would like to extend my thanks and gratitude to each of our members for continuing to support and carry on the work of GMG over the past year.

I would also like to thank the governance committee for their work in creating stronger and more transparent governance processes for GMG, and the Executive Council for guiding us all through this process of becoming independent.

To the entire global mining community, I would like to extend my thanks and appreciation for your ongoing support, and I look forward to continuing to work together in the next phase of GMG.

Stay safe and happy,

The SYSTEM SAFETY FOR AUTONOMOUS MINING white paper aims to increase industry knowledge and enable industry collaboration on applying a system safety approach to autonomous systems.

On November 15, 2021, GMG began operating as an independent legal non-profit organization. Heather Ednie has resumed her role as Managing Director of the organization, a position which she has held since GMG was launched in 2012.

This month kicks off a strategic planning exercise for GMG – your input is needed for us to build the GMG of tomorrow. A myriad of networking and collaboration opportunities are in the works, with a handful planned to take place before the end of the year. We need to hear from you to understand what is critical, what would have the most value, what the members’ and industry’s needs are, and what guidance is needed to address those needs.

A big thank you goes to the GMG Executive Council who have worked tirelessly this past year to secure GMG’s future. Thank you also goes to the GMG Governance Committee for their work in reviewing and updating the GMG Governance Manual.

Michelle Ash
BRIEF HISTORY
The road to independence

Pre-launch
Conversations led by Surface Mining Association for Research and Technology (SMART) on the need for a global multi-stakeholder organization in mining.

Growth
With a global focus: engaged mining industry; established a brand; guideline framework process developed.

2018
Financially ready to become an independent legal entity - planning began; member consultation.

2020
Draft agreement reached with CIM, with a couple remaining items to agree on.

June-Oct 2021
Ongoing GMG and CIM negotiations to determine the best path forward.

Launch: 2012
Start-up funding received from mining companies and SME, AusIMM, CIM and SAIMM. Launched as a sub-committee of the CIM Surface Mining Society with the intent to become an independent legal entity.

Member levels
Formed the Leadership Advisory Board; delivered on membership value.

2019
GMG Executive Council approved plan for an independent GMG and engaged with CIM.

March 2021
CIM advises GMG of its decision for GMG to remain within CIM.

November 2021
On November 15 GMG begins operations as an independent legal entity.
**1 WHITE PAPER**

*System Safety for Autonomous Mining*: Provides a comprehensive view of the need for a system safety approach for mining companies deploying and using autonomous systems and increase awareness of the system safety and its benefits. [Read the press release](#).

**2 REPORTS**

*Mobile Equipment Open Data, Report on Industry Challenges and Next Steps*: An important step towards getting to the heart of the challenges the industry faces when it comes to mobile equipment open data. [Read the press release](#).

*Interoperability Definition and Guiding Principles Report*: Shares industry input on the drivers and context around interoperability in mining and identifies an aligned industry definition and set of guiding principles. Intended to be a reference for more focused initiatives and is for informational purposes only.

**3 GUIDELINES IN FINAL APPROVALS STAGE**

*Guideline for Sharing Open Data Sets in Mining*: Aims to provide best practices for data sharing based on existing initiatives for those within the mining industry so they can benefit from the opportunities of open data.

*Determining the Bond Efficiency of Industrial Grinding Circuits (Revision)*: Can be used by operators and designers to evaluate the energy usage efficiency of comminution circuits.

*The Morrell Method to Determine the Efficiency of Industrial Grinding Circuits (Revision)*: Can be applied to improve the design and optimization of comminution circuits and to predict the specific energy of comminution circuits to enable clear expectations, greater efficiency, and improved productivity.

**4 AUTONOMOUS MINING SKILLS MIGRATION CASE STUDIES**

By providing examples around communication strategy, change management, training, skills pathways, and lessons learned based on lived experience, these case studies aim to assist the industry in creating a workforce that will enable autonomous mining.

*Rio Tinto’s Experience with Automation Improving Safety for Employees and Creating Value*

*Transition From Haulage Technicians to Autonomous Controllers at Vale*

*Lessons Learned When Workforce Reduction was a Factor in Migrating Truck Drivers to Autonomous Fleets*

*Skills Migration for Remote Drill Operators*

**1 LANDSCAPE**

*Landscape of Interoperability Initiatives in Mining*: Aims to increase the industry’s visibility of what different organizations are doing on interoperability to enable collaboration among organizations and accelerate the progress of ongoing efforts.

**NEW MEMBERS**

- BBA
- Beijing ROCK-ai Autonomous Driving Technology Co
- Capstone Mining
- China Enfi Engineering Corp
- Codelco
- Immersive Technologies
- Kirkland Lake Gold
- Peñoles
- Rokion
- Schneider Electric
- Senseye
- SGS
- SNC-Lavalin
- Strayos
- Tunnel Radio of America
- Uptake
- Volvo
- Wabtec

**NEW COLLABORATION PLATFORM COMING**

We are setting up a new collaboration platform with an aim to officially launch in Q1 2022. Users will benefit from enhanced collaboration and networking capabilities.

**NEW CRM**

We implemented a new CRM to help us better serve our community.

**UPDATED GOVERNANCE MANUAL**

GMG updated its Governance Manual to ensure it continues to reflect the organization’s mandate. Thank you to the Governance Committee and its Chair Mark Richards for their work on this over the past year.
Bringing back the magic

GMG is an industry-driven organization – YOUR organization. We consult our members, participants, and the industry at large on an ongoing basis to ensure that what GMG is focusing on reflects the industry’s needs.

As a new independent entity, it is important that we hear from you to understand what is critical, what would have the most value, what the members’ and industry’s needs are, and what guidance is needed to address those needs.

Building the GMG you want

Over the coming months, we will be meeting with you and gathering input from within and outside GMG to effectively build the GMG of tomorrow. This will happen through one-on-one meetings, small group meetings, virtual and in-person workshops, forums, and participation in industry events. I want to hear from everyone: members, participants, partners, those net yet part of the GMG community and more.

We’ve booked meetings and workshops to take place before mid-December (see the next page) and will have a Q1 2022 calendar of activities and events set within the next month. Please keep an eye on your Inbox for invitations, our website for details, and follow us on social media.

No commitment issues here

It has been a bumpy road to achieve independence and we’ve not been as in touch with you as we would have liked. But that changes now – the dawn of a new day as the saying goes.

The GMG team is committed to increase transparency and increase the global nature of GMG. As a now truly unbiased globally focussed organization, having all jurisdictions equally involved in the global mining innovation conversation is within our reach.

My ask: participate, participate, participate. We’re looking for your leadership to define the GMG of tomorrow that will deliver critical value. I am excited to welcome the community together again and to start bringing back the magic that is GMG.

I can’t wait to see and speak to you soon,

Heather Ednie, GMG Managing Director
UPCOMING ACTIVITIES

Launching in December and going into 2022, we will be speaking with our members, participants and the industry at large to understand what is critical, what would have the most value, what the members’ and industry’s needs are, and what guidance is needed to address those needs. The goal: to make sure we are focusing on what directly creates the most value for the industry.

Become a GMG Huddle Host!
GMG Huddles are focused in-person meetings being rolled out across the globe.
If you are interested in hosting a GMG Huddle in your region, please contact Heather Turnbull.

The Q1 2022 schedule of activities will be available next month. It will include:

- Calls with GMG members
- Calls with partner organizations
- Working Group Steering Committee meetings
- Working Group meetings
- Project Steering Committee meetings
- Project meetings
- Working Group Coordination Committee meeting

Contact Julie Stuart if you would like to schedule a discussion.

Strategic planning exercise launching
A flurry of activity is set to begin next month as we embark on defining GMG’s goals for the coming 3 years and setting the strategy needed to achieve them.

Bringing our community together is critical. Major consultation with our stakeholders will take place to ensure the new strategic plan reflects the needs and priorities of our members and drives the utmost value.

Strategic plan and working group roadmaps timeline:
GMG Chairs – Past, Current, Future

GMG achieved independence this month thanks to a large number of volunteers who are committed to global collaboration to effect positive change and speed up the pace of innovation in the mining industry. A special thanks goes to our Chairs – past, current and future – who have lead and grown GMG to what it is today – a truly global, unbiased, open, multi-stakeholder organization.

What is the ultimate purpose of GMG? Has it changed over time?
The strategic purpose of GMG is, and has been since its creation, to improve the performance (execution, activity) of the international mining industry by facilitating the collaboration of industry stakeholders to address common problems, challenges, and opportunities.
Tim Skinner, President, SMART Systems Group
GMG Chair 2012-2014

What makes GMG relevant?
Collaboration is an easy word to say yet quite difficult to do effectively. GMG is a committed ecosystem leaning into effective collaboration and working through industry challenges. The industry has insisted that GMG continues to be open and inclusive. We will continue to be your organization - lead by the industry for the industry.
Andrew Scott, National Cluster Development Manager, METS Ignited, GMG Chair 2014-2016

What motivates you as a GMG member?
GMG is a force for good as it enables us to solve industry problems through collaboration. The platform allows me to work with colleagues from other organizations, and collaboratively define areas of focus so guidelines could be generated based on best practice and innovative ways of working.
Helius Guimaraes, Digital Transformation Leader, Alcoa
GMG Chair 2016-2018

What is your greatest accomplishment from your time as Chair? What trophy does GMG want on its mantle?
The greatest accomplishment for GMG during my time as Chair was to expand our membership to internationally especially into LATAM and EMEAR, allowing all of our members to benefit from the thoughts and experiences of the mining industry. The trophy that GMG would like on its mantle would be to achieve “Most Valuable Organization” as voted by its members.
Michelle Ash, CEO, Dassault Systèmes (Geovia)
GMG Chair 2018-2021

What is your personal vision for GMG?
GMG is unique in the mining industry - it is global, inclusive, and based on collaboration amongst all of the players. These are powerful qualities when harnessed to drive excellence. There has never been a more important time in mining to be at the forefront of collaborative technical thinking to address global issues together. This thinking needs translation not only to guidelines but to other information forums. How we move forward is a shared vision and I anticipate the camaraderie, the dialogue and finally re-kindling personal connections soon.
Kalev Ruberg, VP Future and Chief Innovation Officer, Teck
GMG Chair 2021-2023
GMG Governance

GMG has reviewed and updated its Governance Manual to ensure it continues to reflect the organization’s mandate, while being consistent with policies and procedures in place.

The document outlines how GMG’s governing bodies and committees' function and clearly describes how the role and work of Working Groups and Projects is conducted to ensure that the voices of our members and volunteers are contributing to and shaping all aspects of GMG’s work and decision-making.

The road ahead

As we look forward to this new chapter in our growth, there is more work to be done to build the governance needed to support our mandate of being a multi-stakeholder, open, global and unbiased organization.

If you are interested in contributing to this effort, please contact Heather Turnbull.

GMG Structure

GMG Structure Diagram

Working Groups

Artificial Intelligence
Asset Management
Autonomous Mining
Cybersecurity
Data Access & Usage / Interoperability
The Electric Mine
Mineral Processing
Sustainability
Underground Mining

FAQs

What is the governance model of GMG?

GMG has four main governing bodies: The Executive Council administers GMG and represents its members; the Leadership Advisory Board advises the Executive Council; the Governance Committee holds GMG to high standards of practice in terms of governance policies; and the Working Group Coordination Committee ensures that projects progress and remain relevant.

Who determines GMG’s direction and priorities?

Our members with the Executive Council serving as the body responsible for acting on and implementing the direction set out by members.

Who is entitled to vote? Are all votes equal?

All GMG members are entitled to vote and each member vote has equal weight. Members vote on launching Working Groups, publishing guidelines, the election of GMG Vice-Chair, and changes to the Charter.

Who determines which new Projects or Working Groups to launch?

Anyone can propose a new Working Group or Project. New Working Groups are launched following the approval of GMG members in a vote, and new Projects are launched following consultations with members and the industry, and a vote of approval by the Working Group Steering Committee.

Have more questions? Consult the GMG Governance Manual
GMG WORKING GROUPS

**ARTIFICIAL INTELLIGENCE**
Facilitate a greater understanding of AI, identify the challenges associated with its applications in mining, and enable companies to adopt AI solutions safely and effectively.

**ASSET MANAGEMENT**
Identify and share leading practices in asset management, reliability and maintenance to improve safety, ESG, and operating performance.

**AUTONOMOUS MINING**
Identify, support and develop tools and knowledge to enable autonomous mining as a safe, innovative and productive approach.

**CYBERSECURITY**
Develop a culture of cybersecurity, foster cybersecurity awareness and provide guidance for the global industry to enable secure and resilient systems and networks.

**DATA ACCESS & USAGE / INTEROPERABILITY**
Oversee projects enabling the free access to data across the mine cycle to enable effective and efficient use and collaborate on a common vision for interoperability.

**THE ELECTRIC MINE**
Accelerate the adoption of all-electric technologies in mining, address challenges and share information to enable safer, more efficient, productive and cost-effective mines.

**MINERAL PROCESSING**
Industry challenges relating to mineral processing. Topics include comminution efficiency, plant improvement and design, metallurgical accounting and testing procedures.

**SUSTAINABILITY**
Develop resources and foster collaboration across GMG and the industry on issues relating to operationalizing sustainability, to make it clearly measurable and integrated throughout operations.

**UNDERGROUND MINING**
Identify and address common underground mining challenges and opportunities, considering the adaptability of the mine infrastructure and new and legacy technologies.

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**Publishing Soon**
- Determining the Bond Efficiency of Industrial Grinding Circuits
- Morrell Method for Determining Comminution Circuit Specific Energy and Assessing Energy Utilization Efficiency of Existing Circuits
- Sharing Open Data Sets in Mining
- Battery Electric Vehicles in Mining v3
- Open Mining Format (OMF) v2

**New collaboration platform on the horizon**
GMG is excited to share that it has been working on the implementation of a new online collaboration platform, aiming to be rolled out in Q1 2022.

The new collaboration workspace will provide users and GMG staff with a unified and single web-based platform to communicate, network, streamline, and collaborate in all matters related to GMG Projects and Working Groups to continue powering the future of the mining industry and building relationships to take the industry to the next level.
GMG LEADERSHIP

Chair
MICHÉLLE ASH
Dassault Systèmes (Geovia)

Outgoing Chair
HELIUS GUIMARAES
Alcoa

Treasurer
KELLY MCLEAN
Petra Data Science

Secretary
MARK RICHARDS
Teck

Executive Council

Chair
MICHÉLLE ASH
Dassault Systèmes (Geovia)

Incoming Chair
KAL RUBERG
Teck

Vice-Chair Working Groups
ANDREW SCOTT
METS Ignited

Leadership Advisory Board

Chair
MICHÉLLE ASH
Dassault Systèmes (Geovia)

Outgoing Chair
HELIUS GUIMARAES
Alcoa

Treasurer
KELLY MCLEAN
Petra Data Science

Secretary
MARK RICHARDS
Teck

Aurecon
GRAEME MITCHELL, MATT ROBBINS

BHP
CHIRAG SATHE, STUART TROTT

Caterpillar
CARL HENDRICKS, MICHAEL MURPHY

Codelco
FELIPE MERINO, JULIO DIAZ

Dassault Systèmes
JEFF HAMILTON

Epiroc
ANDERS HEDQUIST, MIKAEL RAMSTROM

Glencore
TONY EGAN

Komatsu
MICHAEL LEWIS, MICHAEL RIKKOLA

METS Ignited
ADRIAN BEER

Orica
SANTIAGO BURGADA, RICHARD O’MEARA

Rio Tinto
GLENN CALLOW

Stantec
JON TREEN, CODY RYCKMAN

Teck
MARK RICHARDS

Vale
LUKE MAHONY, SIMON NICKSON

Regional Representatives

Latin America
RICARDO AGUILERA
RPM Global

LAURA MOTTOLA
BBA

Brazil
PATRICIA PROCÓPIO
MP Consulting

Southern Africa
JEAN-JACQUES VERHAEGHE
JVA Associates

Chair
MARK RICHARDS
Teck

MICHÉLLE ASH
Dassault Systèmes (Geovia)

ANDREW SCOTT
METS Ignited

LIV CARROLL
Accenture

CHIRAG SATHE
BHP

FELIPE MERINO
Codelco

LUKE MAHONY
Vale

ALEXIS SEGAL
Glencore

GLENN CALLOW
Rio Tinto

AI
MARK O’BRIEN
CITIC Pacific Mining

MOHAMMAD BABAEE
Teck

ASSET MANAGEMENT
ZOLI LUKACS
Advisor

AUTONOMOUS MINING
GRAEME MITCHELL
Aurecon

CYBERSECURITY
ROB LABBÉ
Teck

THE ELECTRIC MINE
KEVIN LUESCHOW
Caterpillar

DATA/INTEROPERABILITY
ALVARO ROZO
Uptake

MINERAL PROCESSING
AIDAN GIBLETT
Newmont

SUSTAINABILITY
Chih-Ting Lo
EELO Solutions

UNDERGROUND MINING
RUSSELL KENNETT
Rio Tinto
As GMG enters a new chapter as an organization, we want to reaffirm our commitment to continue to provide a platform for the global mining community to come together and to foster the development of guidance, resources, and education in response to some of the industry’s most pressing challenges.

Our members define GMG as an organization, and as we move forward, we remain dedicated to ensuring that our members’ ideas, priorities, and vision for the future of GMG guide our new path.

One of our core values is transparency, and GMG remains committed to continuing to keep our members informed, engaged, and involved as we advance innovation and operationalize ideas to transform the mining industry.