



## Underground Mining Prioritization Workshop | September 2022

These outcomes are from the Underground Mining Prioritization Workshop held on September 1, 2022. Participants discussed priority focus areas. Some of the key points discussed included:

- Autonomous mining and electrification
- Technologies and communication
- Training and leveraging from other industries

### Priority Focus Areas in Underground Mining

#### Autonomous Mining and Electrification

- Autonomous equipment (beyond traditional load-haul) and safety (e.g., around traffic and pedestrians, inspections).
- How will mine planning for automation and autonomy evolve?
- What does an automated underground mine look like? How will the underground mining process evolve because of automation and the use of autonomous systems?
- What are the regulations around the autonomy area? E.g., regional variances and global alignment.
- Third party interactions with OEMs around autonomy and how to standardize systems and controls between them (e.g., liability).
- Mixed autonomous systems (i.e., multiple vendors).
- Electrification because regulations around diesel particulate matter (DPM) is being stricter.
- ESG drivers (e.g., electrification, autonomy).

#### Technologies and Communication

- Interfaces between technologies and communication layer.
- Collision avoidance challenges vary with technology and mine type.
- Development a personal communications technology is driven by public safety.
- New technologies for continuous mining of hard rock.
- What is the role of IoT in underground mining?
- There are different priorities to identify for different types of operations (e.g., mine size, design, OEMs – long-term vs short-term solutions).
- Communications reliability and challenges that stakeholders deal with.

#### Training and Leveraging from Other Industries

- Leverage and learn from other industries (e.g., on-road).
- Training as new technology is integrated with traditional mining approaches.

Note that this document captures some key discussions among a small cross-section of industry participants during a priorities roundtable held on September 1, 2022. It is intended to be one of many inputs into the working group and is not intended as industry guidance or a formal report.