Building a Common Vision for Open Mobile Mining Equipment

Presented by
Tim Skinner,
Founding and Past Chair, GMSG
President, Smart Systems Group
Mandate: Global mining collaboration on solutions to common industry problems, needs and technology through standards, guidelines and best practices.

Key Roles
• Centre of facilitation
• Drive/Support Stds & Guidelines
• Bridge to Standards Organizations
• Knowledge Hub
• Library Existing Stds & Practices

Industry Partners: 5; Corporate Members: 60; Industry R&D Associates: 12 Participants: 500;
Partner Organizations (5)
Suncor, BHP Billiton, SMART Systems, Desert Falcon Consulting
Collaborative Industry R&D Associates

Mine Safety Roundtable Group
Working Groups

8 Active Working Groups
- Data Access & Usage
- Situation Awareness
- Technology & Connectivity
- Underground Mining
- Operational Safety & Risk Management
- Industrial Comminution Efficiency
- Collision Avoidance
- Integrated Operations Centers

5 Pending Working Groups
- Occupational Standards & Skills/Training
- Mine Planning & Engineering
- Mining Education
- Maintenance Reliability
- Industry Operational and Data Model
Mining Evolution from Iron to Intelligence

Drive to maximize Availability, Utilization, and Productivity via Automation, Efficiency, and Optimization + Key Technologies

1993 1997

Unleashed a wave of intelligent computing applications
Incompatible Islands of Equipment Systems & Technology

- High Cost & Time
- Vendor Barriers
- Data Access Restriction
- Operator Impact
- Safety
- Stifling performance, Opportunities & Innovation

Unsustainable - Mine Operators future at risk
Status Quo multiple devices, systems & technologies

Operator

Fleet Management

Tire Status

Equipment Status

Alarms

Proprietary Hub

Tire Sensor Computer

Various OEM Computers

Mobile Equipment Monitor

Onboard Sensors

GPS

UHF, Meshnet

Proprietary Repeaters

Bluetooth

OEM Laptops

WiFi, WiMAX

Hot-spots (e.g. Lube station)
Convergence in the Cab - a better hardware architecture
The Legacy GMSG Working Group
Mobile Mining Equipment Onboard Data Access

Mine Operator/Owner requires unfettered read only access to onboard real time data.

This is, consistently, both surface and underground mine operators highest priority objective/issue.

Mine owner/operators utilizing GMSG to address this as an industry issue with “One Voice”
Real Time Equipment Data Access is prohibited (variably) by OEM, due to:
  ✓ Proprietary Systems
  ✓ Business Agenda
  ✓ Intellectual Property

There has been a disconnect between the mine operator/owner and OEM
The Legacy GMSG Working Group
Mobile Mining Equipment Onboard Data Access

Real Time Read Only Data is needed by the Mine Operator/Owner for advanced automation and integration for:

- Increase Availability, Utilization, Productivity
- Reduce Operating Costs,
- Safety,
- Asset Health,
- Energy Reduction,
- Innovation – Mine Operator, OEM, OTM, 3rd party, R&D

Real Time → Future Time → Autonomy

Standards and the Regulator

- Have no interest in: Algorithms, supervisory and control data and proprietary data that may be sensitive for competitive reasons.
High Value Integrated Operations Data Need
The Legacy GMSG Working Group
Mobile Mining Equipment Onboard Data Access

Status:
• Achievements: OTMs, network, data ownership, system & technology industry awareness
• OEMs are recognizing the industry progress, need, and mutual benefit

Current Objective/Mission:
The working group will focus on determining and facilitating agreement on the real time equipment data that both Mine Operator and OEM agree should be openly accessible for use by all parties, and draft industry principles and access standard for the supply of onboard data by end of 2015.
Activity:

- Working group has reconfigured its participation and activity
- OSI agreed to take an mining industry agnostic lead and facilitation
- Emphasis has been on getting mine operator and OEM to the table, which has been successful:
  - OEM: Caterpillar, Komatsu, Hitachi, Liebherr, Sandvik, Atlas Copco, Joy Global
  - Operator: Teck, Barrick, BHP, Rio Tinto, Anglo American, Newmont, FMI, GoldCorp, Peabody, Gibraltar
- Successful first work shop in February SME Denver Conference
  - Identification of agreed data sets, both open and closed due to OEM IP
  - Outcomes were documents and distributed to participants for next steps
- Next Steps
  - 2nd workshop at Montreal CIM conference, UG, align data and equipment
  - 3rd session in Australia coincide with AUSIMM event
  - 4th and final session for South America in Q4
Future Vision – Onboard Value of a Converged Experience - one integrated system, many “apps”
Future Vision - Integrated Onboard System Architecture

Central Platform

- Ethernet LAN
- 8Port Managed Switch
- VGA, Power
- RS232
- Canbus 1
- Onboard Systems Telemetry - Statex
- Payload Monitor - PLM
- Onboard Systems - VHMS
- Future Monitoring & Control
- Onboard Application Appliance

Open RADIO

Collision Avoidance

Tire Monitoring

Operator Fatigue
Future Vision – Integrated Operations and Centers

TOTAL SYSTEMS THINKING
Autonomous Mining - Not Yet

- Complex Process
- Limited Technology Architecture
- Operational Constraints & Risks
- Immature
Information and to get involved

Contact: Heather Ednie, Managing Director
hednie@cim.org
514.984.8775

www.globalminingstandards.org
Questions

Please wait for the microphone before asking your questions

State your name & company
THANK YOU