



SMART MAY 2011

**Mining Industry Technology
Standards for Mobile Mining
Equipment**

Organizational Evolution



The Problem

Islands of Technology



- High Cost
- Long Time Frames
- Vendor Barriers
- Data Access
- Operator Impact
- Stifling Mines Capability, Opportunities, & Innovation
- Tail wagging the Dog

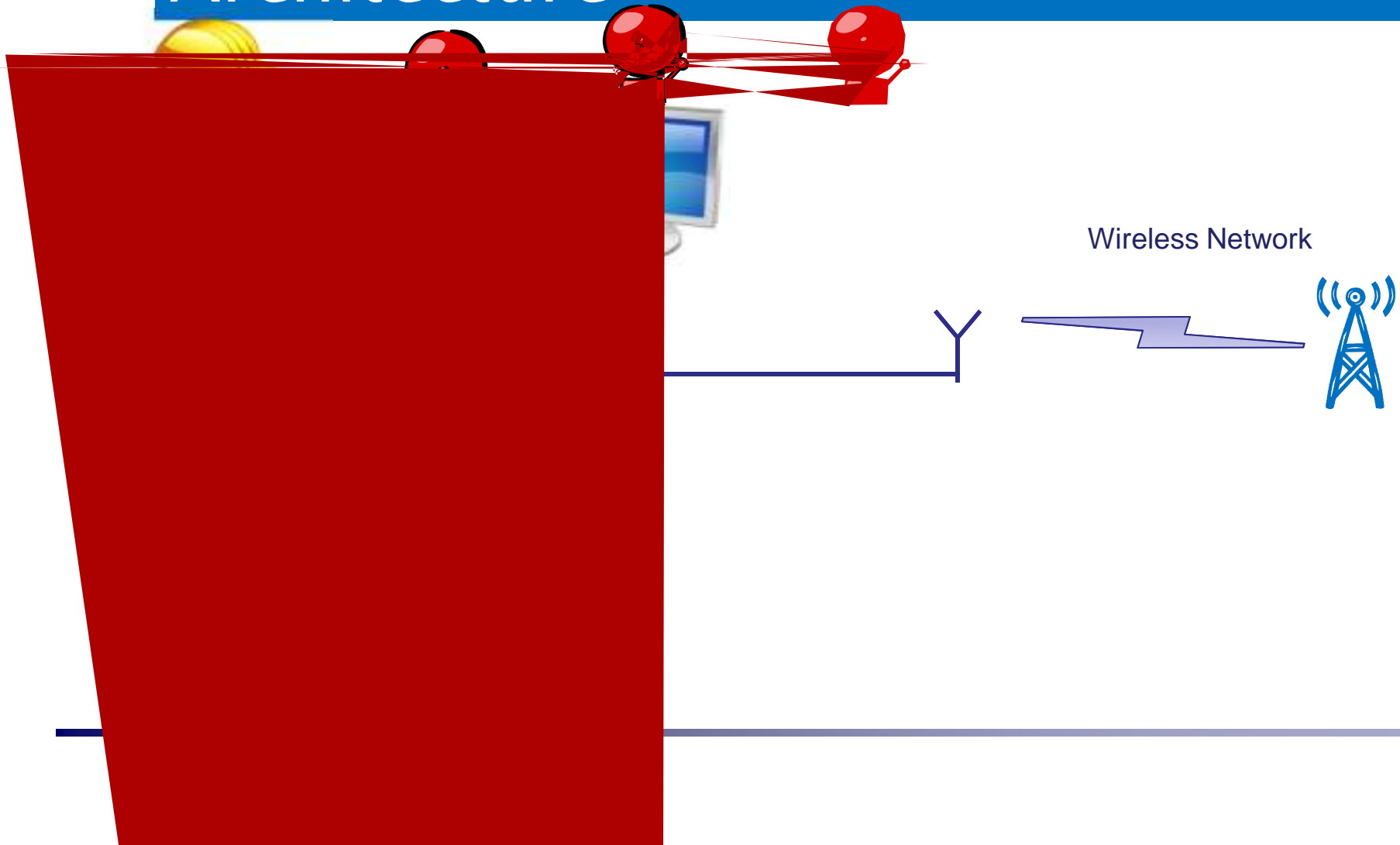


Unsustainable - Mine Operators future at greater risk



The Problem

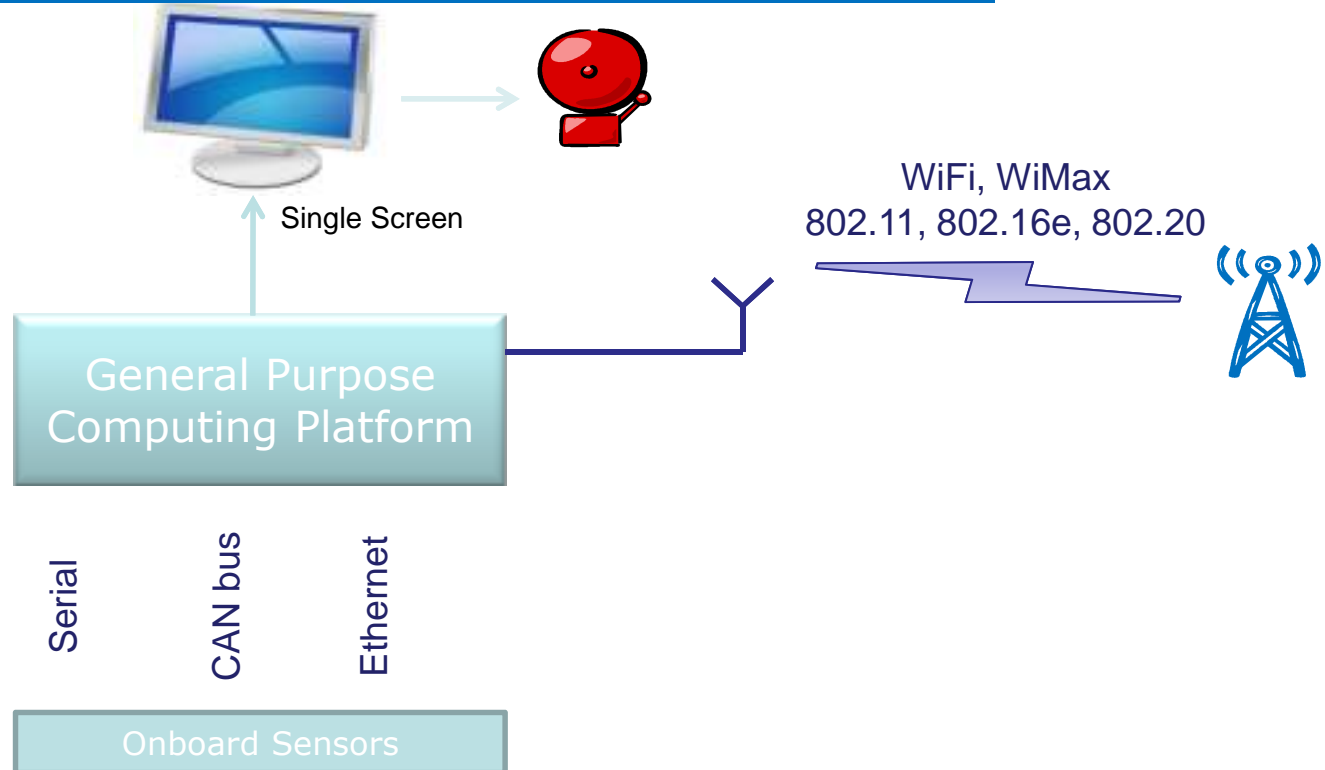
Proprietary Multi-box System Architecture





Target Technology

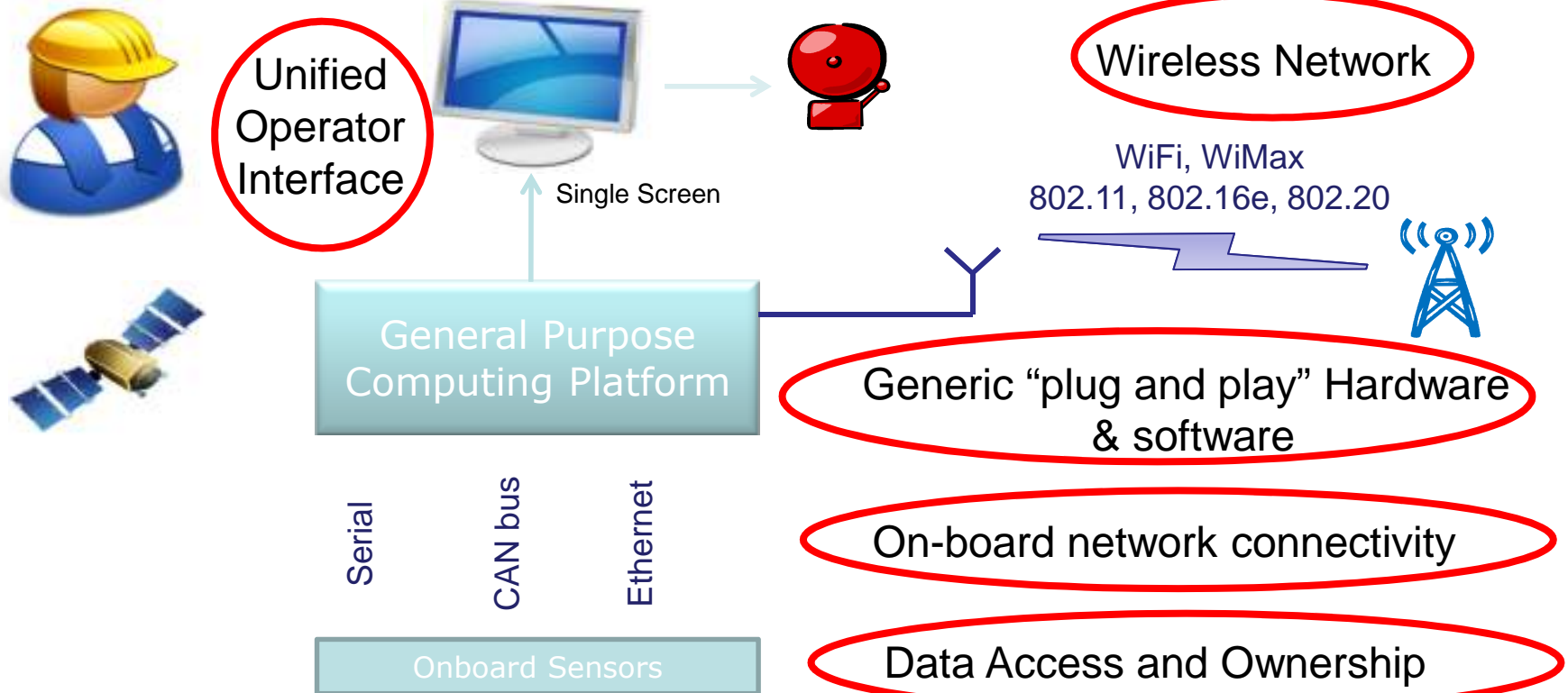
Open Systems Architecture





SMART Target Technology Standards

Open Systems Architecture



Other Industries have already gone thru this !!



Standards “One Voice” History

- 2000: Started amongst a few mining operators sharing the same pain
- 2005: Formally Organized: charter and plan for OEMs and OTMs:
Aligned with SMART
- 2005-09: Engaged OEM, OTM; Developed baseline standards and document, Industry communication; continue OEM and OTM engagement
- Results: OTMs onboard, OEMs marginal
- 2010: Industry summit at CIM national – SMART, OEMs, OTMs
 - Achieved agreement in principle
 - Questionable sincerity with several key players
 - Continued issues – data ownership and access
 - Need organizational development, substance, and impact



Why Change From Smart?

Very successful mine operators forum for knowledge sharing

- Informal
- No Structure
- No barrier to entry – no cost, no commitment
- No time - meets twice a year
- Any structured activity is separately organized and operated
- All volunteers – day job and life priorities inhibit commitment and progress
- Dependent on key individuals – not necessarily self sustaining
- OEMs skeptical on mine operators sincerity and staying power; Smart does not have matter
- Does not include all stakeholders – OEMs, OTMs, Consultants,
- Too important
- Requires a continuous campaign, drive, and evolution
- Requires an operating structure



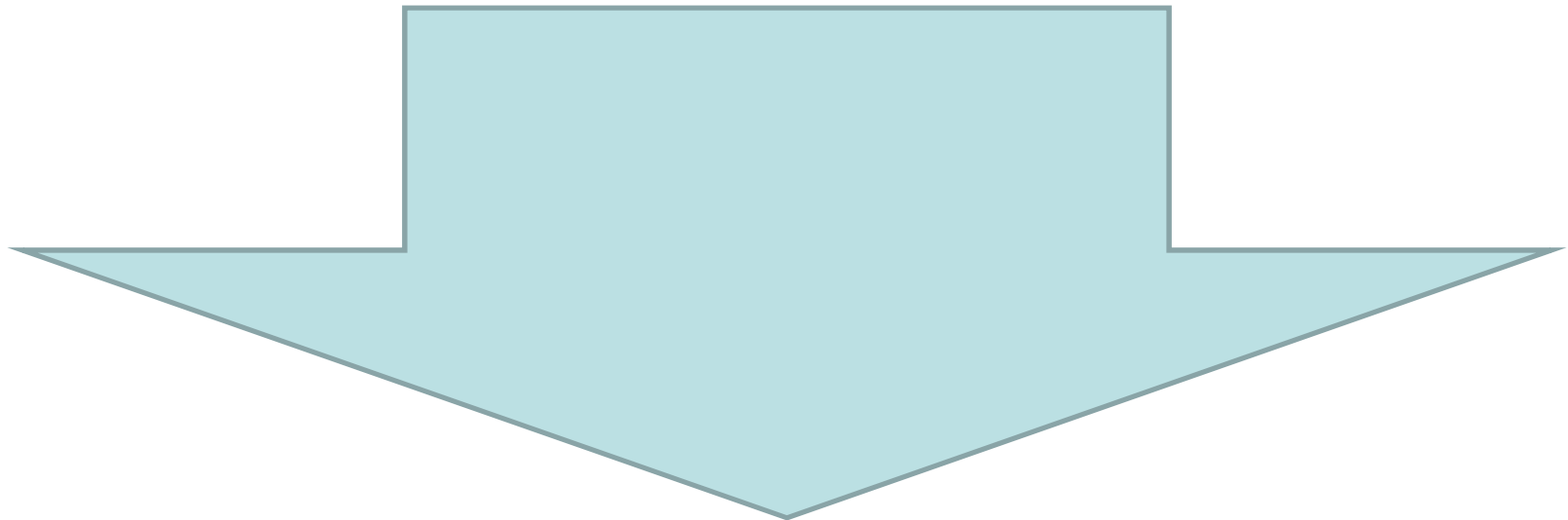
CIM Re-Organization?

Coal
Society

Metals
Society

Oilsands
Society

SIMT

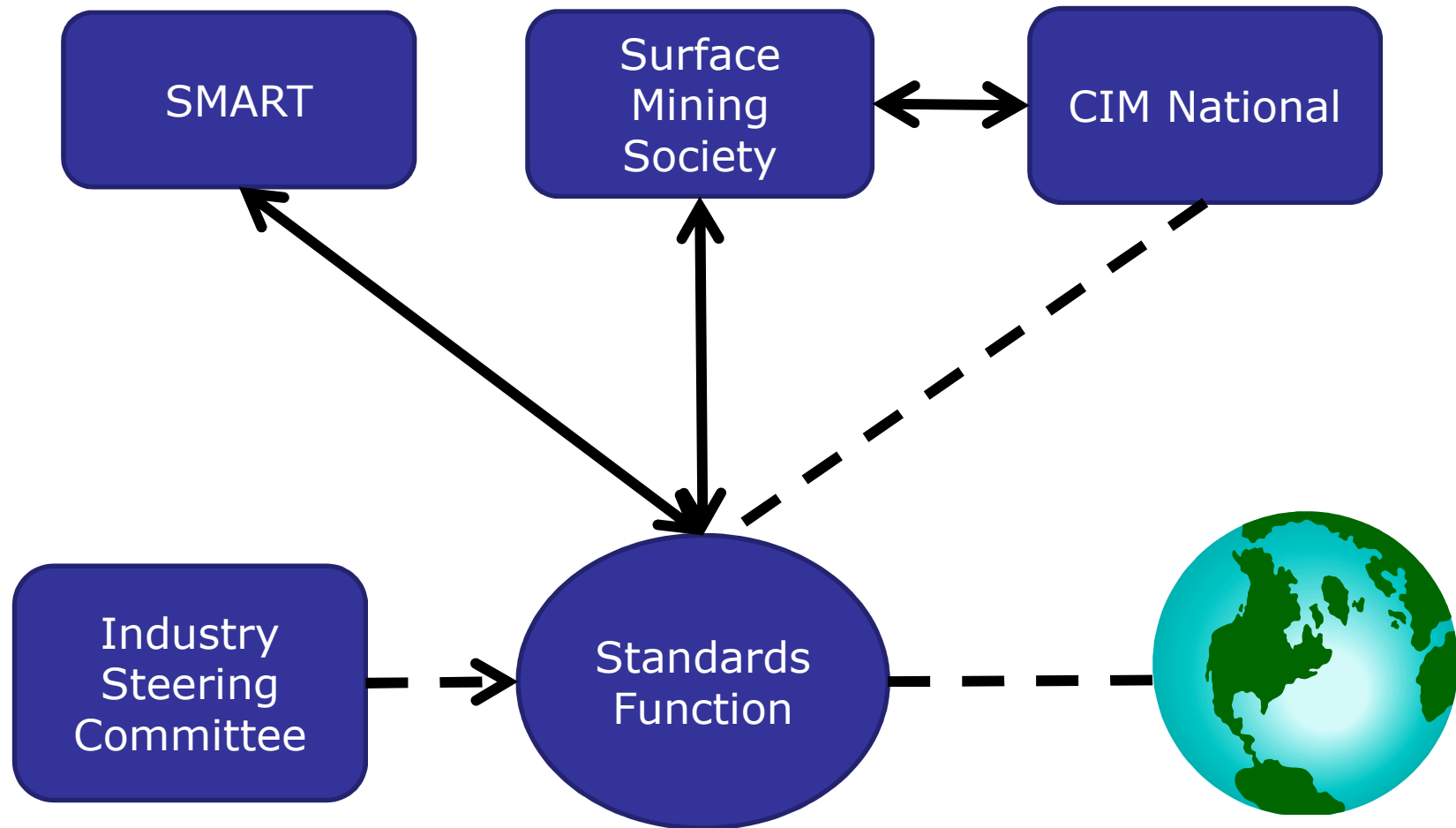


Surface
Mining
Society

Underground
Society

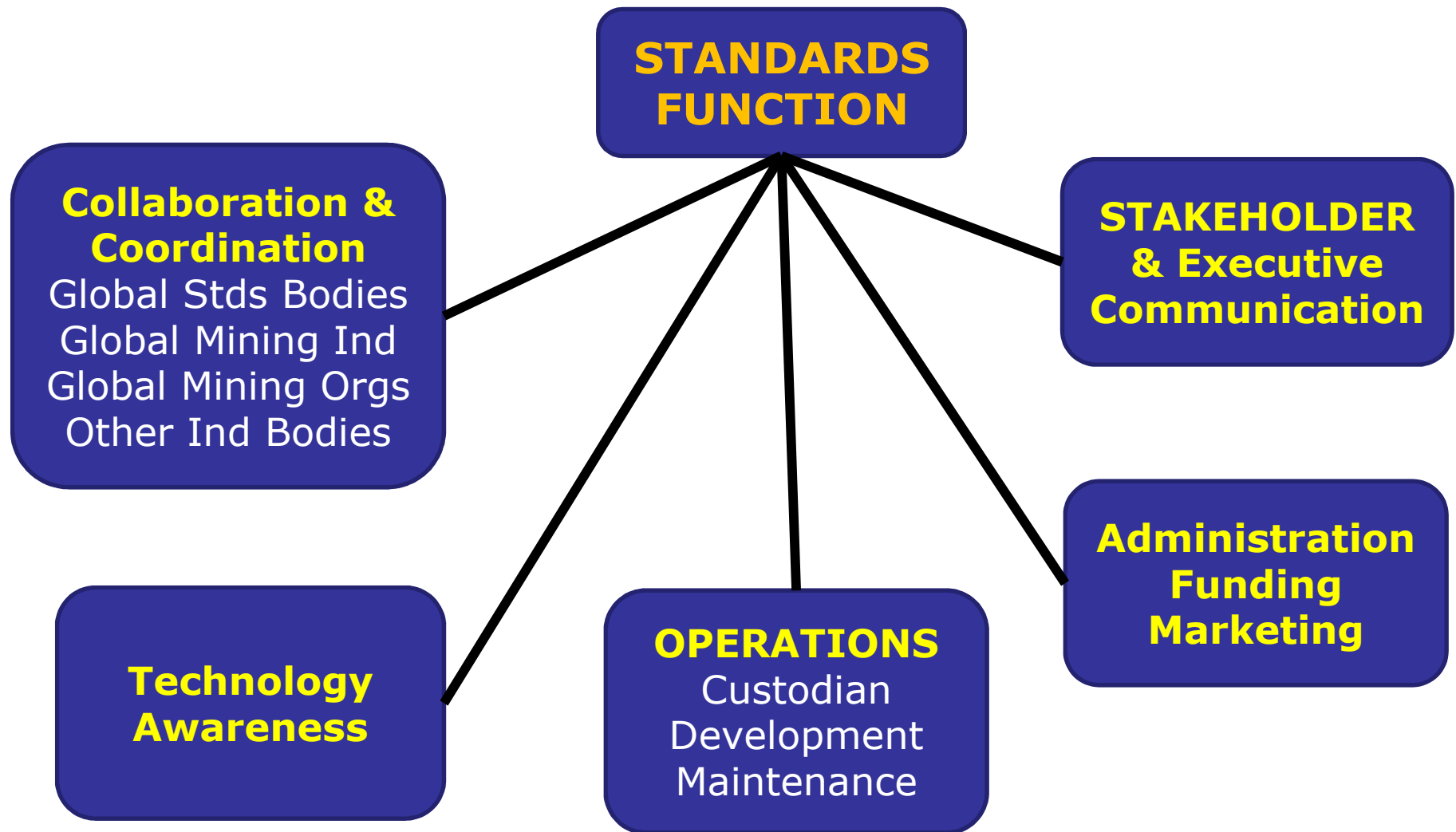


What will be the Organization





Roles & Responsibilities





3 Year Program

Dedicated Resource – Budget \$150K

Funding – How do we pay for this?

CMIC/Grants - \$25K

Society Fees - \$25K

Industry Corporate Sponsorship -\$100K

+

CIM Administrative Support - \$25K

+

Society Seed Money - \$25K



Is There Another Organization?

CMIC ?

Global Standards Body?

SMART?

Existing Mining Body?

Other?



Mine Operator On-board Data Requirements

Gathered Equipment Data Detail

Shovels
BE495

Excavator
Hitachi

Trucks
Cat793

Drills
BE49R

Analog Measures

Voltages
Speeds - Tach, RPMs
Torques
Amps
Pressures
Flows
Levels
Positions-Throttle
Current

Calc Measures

Weights
Hours
Direction
Speeds
Derate %
Loads
Rates
Payloads
Angles
TKPH
GPS position
Time
Date

Contact Values

Switches
Buttons
Positions
On/Off
Start/Stop
Limits
Encoders
Relays
Gear
Lockouts
Brakes
Status
Signals

Health/Conditions

Events
Faults

Info

Op Name
Part
location



Next Steps

- ✓ SMART & CIM organization approval
 - ✓ Establish Surface Mining Society structure
 - ✓ SMART approval of data requirements
 - ✓ Communicate to summit participants
 - ✓ Plan next summit
 - ✓ What about research?
 - ✓ What about time and mining definitions?
 - ✓ Other?
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