



P&H MINING EQUIPMENT
A Joy Global Inc. Company

P&H Mining Equipment

P&H Response to Surface Mining Association for Research & Technology (SMART) Scope of Vision

SMART Summit Meeting

Vancouver, BC, Canada

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SMART Scope of Vision



The Surface Mining Association for Research & Technology (SMART) Scope of Vision focuses on the following five general areas:

1. Communication Networking
2. Hardware Platform & Operating System Software
3. Third Party Software Applications
4. Data Accessibility
5. Data Ownership



- The current and future trend will be that mines will own the communications network, overall infrastructure and everything flowing through these systems. In this regard, mines want OEMs/OTMs to “de-couple” components from systems to minimize obsolescence and upgrade costs as the base communications technology evolves.

- P&H Response:
 - o Mine customers own the communications network and operational data.
 - o P&H will continue to work with mines to interface P&H equipment and products into the mine network.
 - o The P&H Centurion system can be de-coupled from third party systems.

Hardware Platform & Operating System Software



- In many mining operations today, multiple operator displays are installed on one piece of equipment. The inefficiencies and issues that result can be overcome via the use of a single and common operator interface that can run applications from multiple suppliers. Either the suppliers or the mines will provide such an “off the shelf” component that uses open standards for communications and operating system to permit such a capability.

- P&H Response:
 - o The P&H Centurion control system utilizes “off the shelf” components packaged for mining duty, open standards protocol, and its interface platform is standardized on an MS Windows-based operating system.
 - o Third party systems can interface into P&H Centurion.
 - o P&H requires that when P&H Centurion interfaces are developed with third party OTMs that P&H IP is protected and equipment performance and safety is not compromised. P&H will not take responsibility for the performance of any third party hardware or software.
 - o P&H asks that mines agree on one standard or provide a choice. P&H also asks that the mines advise OEMs in a timely manner as development plans and costs must be considered.

Third Party Software Applications



- In parallel to the above, software applications would be provided by the OEMs/OTMs or the mines to run on a mine-selected display. For this to be viable, OEMs/OTMs need to provide clearly defined and published (with recognition of the intellectual property aspects for all their applications and algorithms) data formats and types, interfaces and resource (i.e. hardware & software) requirements.

- P&H Response:
 - o P&H supports this vision as long as P&H IP is protected.
 - o P&H will continue to allow third party systems to interface with the P&H Centurion control system.
 - o P&H requires that when P&H Centurion interfaces are developed with third party OTMs, P&H IP is protected and equipment performance and safety is not compromised.
 - o P&H will not take responsibility for the performance of any third party hardware or software.
 - o Integration of third party software applications will generate associated development costs that need to be considered.



- To meet the requirement by the mines for FULL control and selectivity of data access at any level, the OEMs/OTMs need to provide clearly defined and published (with recognition of the intellectual property aspects for all their applications and algorithms) data formats & types (“data dictionary”), interfaces & resource (i.e. hardware & software) requirements. In addition, the mines require read-only access to all and any raw data that is created in real-time. To ensure optimal system performance, the mines will manage & control the communications throughput and bandwidth to permit the required data access by all parties.

- P&H Response:
 - o P&H supports providing read-only access to all data in real time except P&H IP related data and information.
 - o P&H will not provide access to algorithms, data tags, process data (such as motor model files), or configuration logic or data.

Data Ownership



- The mines will own all and any data and information created by the equipment (fixed or mobile) that is owned by the mine operator. In addition, the mine operator has the right to analyze the data and information as required including providing any generated data and information to a 3rd party supplier to integrate and use as part of a specific application. The mines are insistent that the raw data and information - regardless of manipulation or processing - always remains the sole property of the mine operator. However, the mines are aware of the intellectual property rights of the OEMs/OTMs to the various applications and algorithms that generate the data and information.

- P&H Response:
 - o P&H can agree to this given a complete common understanding of what the mine is calling data and information.
 - o P&H concerns are in the areas of IP protection, equipment performance and safety, and risks associated with compromising competitive position.
 - o P&H requests that the SMART organization provide a guideline outlining the specific data that mine customers require. A common agreement on data ownership can then be finalized.