SMART

Surface Mining Association
for Research & Technology

*OEM OTM Technology Standards
Mining Industry Summit*

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Connectivity and Technology Standards
for the Surface Mining Industry

Mining Companies'
Issues, Position Statement, & Needs

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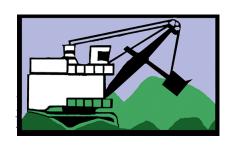Queen's University, Kingston, Ontario, Canada

Queen's
UNIVERSITY

The Issues – Motivation

- Closed, proprietary, information systems threaten the effective adoption and utilisation of OEM and OTM product offerings:

  - *The expanding use of computing and network technology systems in the mining industry on large mining equipment and for mine control systems has been beneficial for productivity improvements, <u>but</u> has also created other problems.*

  - *Most of these problems stem from... technology solutions that are <u>proprietary, incompatible and difficult and unnecessarily costly to implement, integrate, use and support at the operational level.</u>*

SMART One Voice Letter, Fall 2005

SMART's Connectivity and Technology Standards Vision Statement (2005):

I. Major mining equipment should be configured by the OEM/OTM to be a natural extension of the mine operators Local Area Network.

II. Hardware technology should be designed to be "plug & play" regardless of its intrinsic proprietary nature.

III. Third-party applications can be readily integrated and cohabitate with, OEM software and application architecture.

IV. In all cases, data generated by an application is the sole property of the owner/operators while respecting the confidential nature thereof.

V. Accessibility to the data will be freely provided without the need for additional interface programming.

Scope of the Vision: I

- **<u>Communication Networking:</u>** 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;

Scope of the Vision: II

- <u>Hardware Platform and operating system software</u>: 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.

Scope of the Vision: III

- <u>Third party software applications</u>: 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.

Scope of the Vision: IV

- <u>Data accessibility:</u> 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.

Scope of the Vision: V

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.
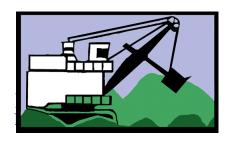
The Issues are REAL

- As feedback from SMART members shows...

The Issues are REAL

- Feedback from SMART members demonstrates common concerns...

The SOLUTIONS are viable and real too!

... as Peter Cunningham will demonstrate...