Public Forum on Underground Mine Rescue Equipment & Technology

Washington, DC

March 13, 2006

NL Technologies

CONNECTIVITY THAT SHINES

Introduction

- Next generation technology for communications, tracking & more
- Commercially available & operating in European coal operations
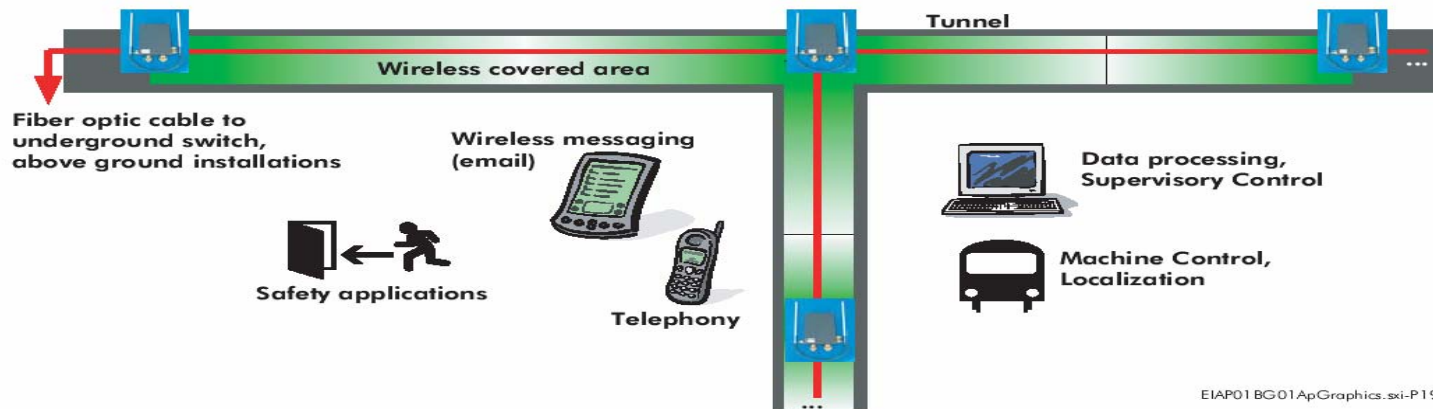- MSHA approvals pending

Areas of Business

- Northern Light® Cap Lamp Systems
  - Radio, PED, Canary
- Northern Light Digital™ safety & productivity applications
  - VoIP
  - Two-way Messaging
  - Tracking
  - Ventilation Management
    - Gas Detection & Airflow

Northern Light Digital Network

- Industrial-standard Ethernet with WLAN overlay
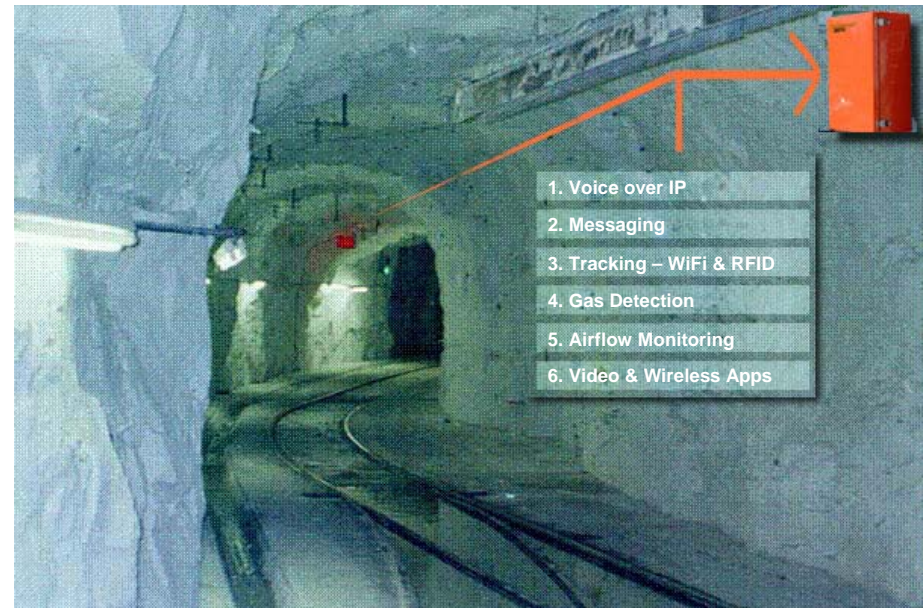- Open standard
- Commercially available
- Mine-Proven

Northern Light Digital Network

- Redundancy
  - Ring topology
  - Fibre switch-over
  - Wireless bridging
- Portable repeaters heal network in emergencies
- Interoperability

1. Voice over IP
2. Messaging
3. Tracking – WiFi & RFID
4. Gas Detection
5. Airflow Monitoring
6. Video & Wireless Apps

![NLT - NL Technologies]

Northern Light Digital Network

- Access Node Standard
  - Programmable PC
  - Power Supply
  - Back-up Battery
  - Access Point
- Optional
  - RFID Reader
  - Controller

Northern Light Digital Network

- AP01 Access Point

- 802.11 b/g Compatible

- EU ATEX type approved

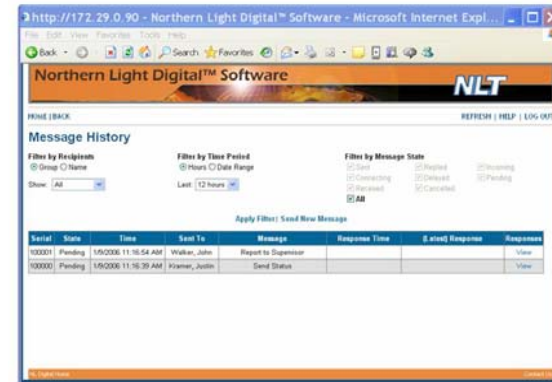- 4-port fiber switch

Northern Light Digital Mine

- Voice over IP (VoIP)
  - Industrial wireless telephone
  - Intrinsically Safe PDA
    - Voice, data, video

Northern Light Digital Mine

- Digital Messenger
    - Two-way messaging
    - Dual acknowledge
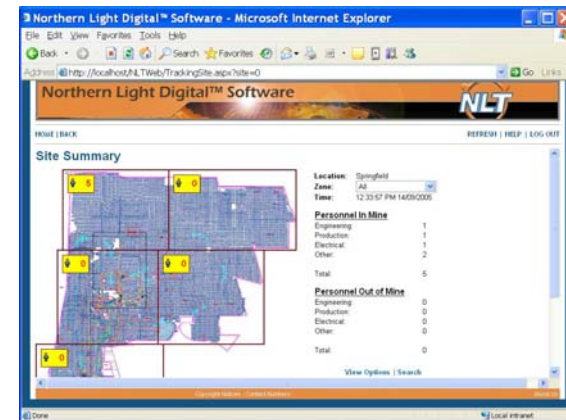   - 2-Line display on lamp
    - Emergency message feature

Northern Light Digital Mine

- # RFID Tracking
  - –Location visibility for personnel & equipment
  - –Entry control

Northern Light Digital Mine

- ## WiFi Tracking

    – Leverage WLAN investment

    – Surface or underground

    – Visibility for personnel, equipment & assets
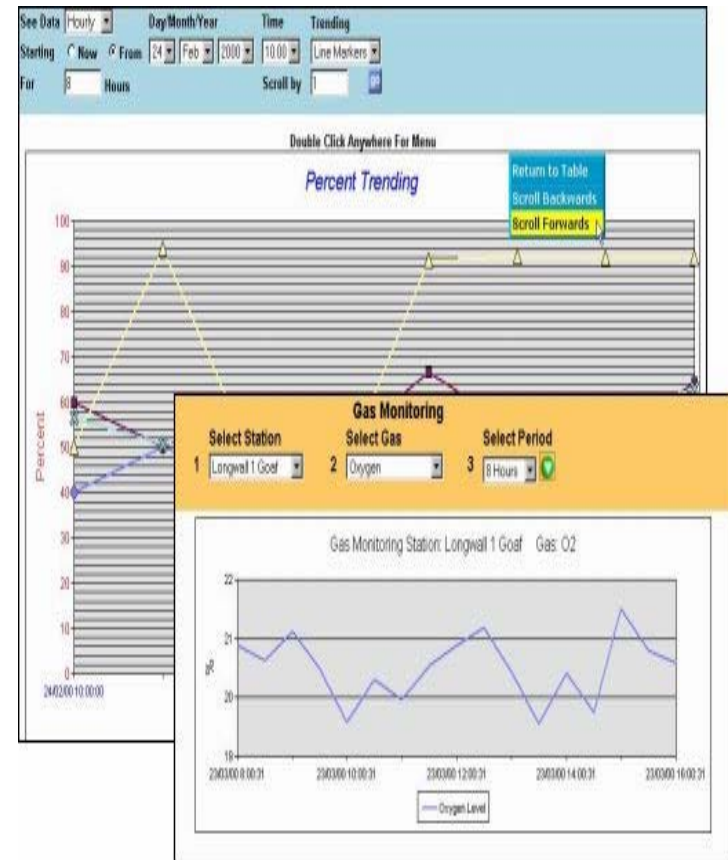
AeroScout
Enterprise Visibility Solutions

Northern Light Digital Mine

- Environmental monitoring
  - Gas & airflow detection
  - Temp, pressure
  - Alarming
- Information for early warning & preventive measures

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Northern Light Digital Mine

- Visibility in emergencies
- Real-time reporting
- Compliance reports
- Wireless access to business applications
- Coordinate maintenance personnel
- Automate?

Conclusions

- Modern communication technology based on standards is available

- International certificates are available to fast track MSHA approvals

- A unified network provides day-to-day operational benefits with visibility in the event of emergencies

- Redundancy & network healing repeaters provide maximum up-time