



# IMPACT

The **FUTURE** of mining communications

**Network Infrastructure**



Productivity & Safety through  
Mine-Spec digital applications

- RFID Tracking
- Remote monitoring & equipment control
- Handheld device data transfer
- IP Telephony
- Remote video, fixed & mobile



# IMPACT

## Network Infrastructure

The ImPact technology suite is designed to lead mining communications and digital network infrastructure into the future. The ImPact infrastructure has been specifically developed for the mining industry to operate within the harsh environments encountered in all types of mining from underground to surface operations.

The product range, which comprises of network hardware and application software, is the result of deep understanding of mining communication challenges and advanced engineering design, combined with the latest wireless (802.11) technology. The underground network is the heart of a scalable, high-speed data and communications system. It is able to cope with time-sensitive, high-bandwidth applications, enabling functionality such as Voice over Internet Protocol (VoIP), video streaming, remote PLC programming, mobile data acquisition, real-time vehicle diagnostics and asset /

personnel tracking. The ImPact system delivers improved capabilities for current and future mine requirements through higher reliability, bandwidth, data quality, system capacity and support for open standards. It also elegantly addresses the challenge of power distribution in an underground environment.

The ImPact system provides a quantum leap forward from traditional technologies.

### Features and Benefits

#### For Operations

<b>Low power design</b>	<i>Simple installation &amp; maintenance means lower costs. Greater run time when on battery back-up.</i>
<b>“Plug and Play” system with field connectable composite cable.</b>	<i>Faster deployment with lower maintenance costs and improved system up time.</i>
<b>Multi function device with tag reading ability</b>	<i>Reduced cost through all-in-one device.</i>
<b>Power over Ethernet (PoE) Support capability</b>	<i>Quick &amp; easy node extensions. Other peripherals can be directly connected (Video cameras, Refuge bays, PLCs) no need to run additional power cables.</i>
<b>Operates on touch voltage</b>	<i>Eliminates the need for expensive high voltage armoured cable.</i>
<b>Portable wireless network elements</b>	<i>Allows for temporary network extensions into working faces and mines rescue.</i>
<b>Mobile device data downloads</b>	<i>Enables handheld devices (PDAs, tablets etc) to transfer data wirelessly whilst underground.</i>

#### For IT Professionals

<b>Redundancy through routing of multiple return paths</b>	<i>Greater reliability and uptime.</i>
<b>Managed Ethernet Network supporting QoS, SNMP &amp; VLANs</b>	<i>Allows defined services to be prioritised, and the switches to be managed.</i>
<b>Gigabit Backbone</b>	<i>Multi service capabilities today and a safe investment for future technologies.</i>

#### Applications

- Secure VoIP Communications
- Remote IP Video
- Wireless Data Transfer
- Remote Facilities Management
- Traffic Management Systems
- Tag Reading
- Personnel & Asset Tracking
- Vehicle Diagnostics
- Proximity Detection

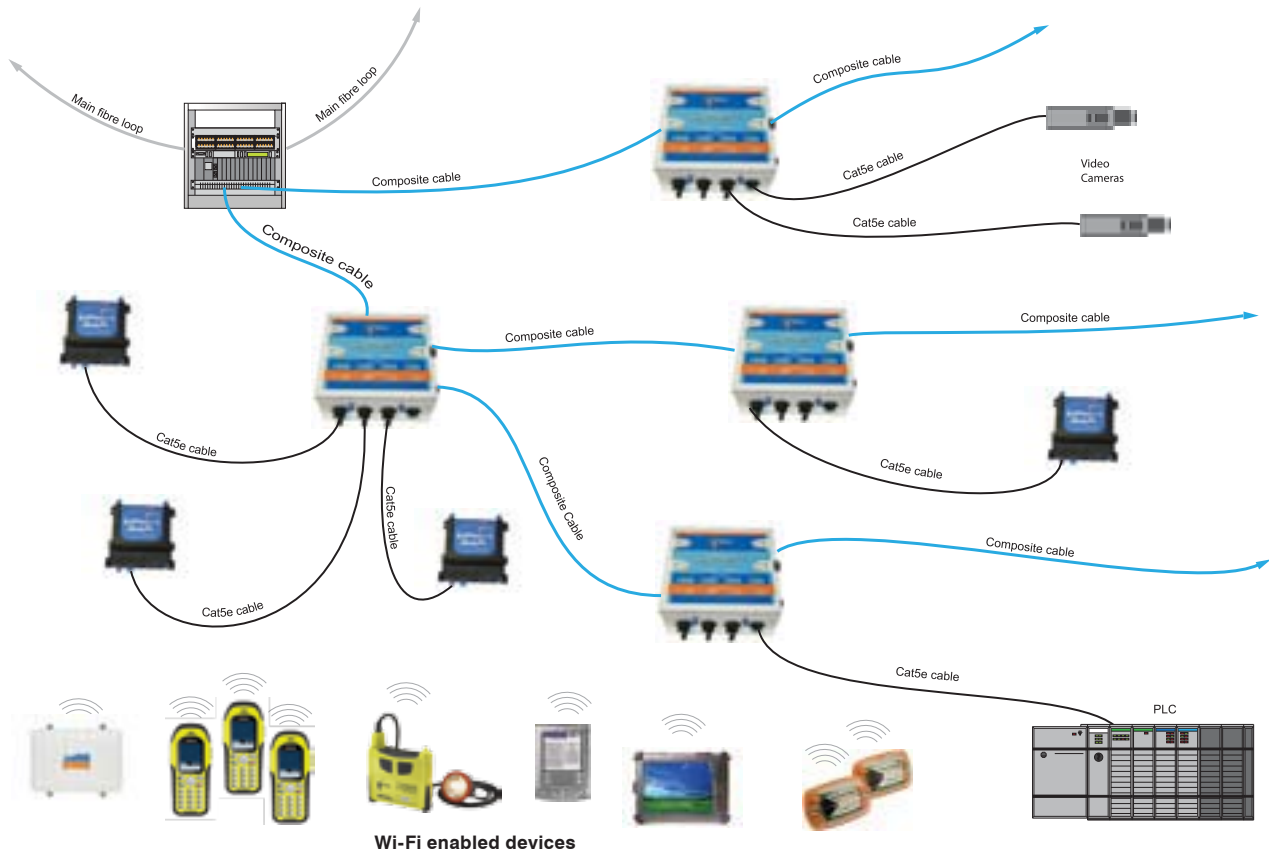


# Typical ImPact installation for SCADA, tracking, voice and video applications

The ImPact product range is designed to form the foundation of, or extend, a robust, multi-service underground network. The innovative Wireless Network Switches (WNS) and PoE wireless access points can be combined with existing underground network nodes to take the network easily and inexpensively into working areas of the mine. The devices support industry standards, but pack more capability into a single enclosure than devices designed for conventional enterprise networks.

Traditional surface enterprise networks have a star topology which requires power at every network node, which is not a cost effective solution underground. The challenge of limited power availability underground is overcome using a composite

cable, which acts as a power distribution system, as well as carrying the optic fibre data cores. The devices operate as low as 10V allowing their usage at the end of long cable runs without the need to inject power. As well as being 802.11-compliant Wi-Fi hotspots, the devices have built-in tag-reading capabilities and can support two separate Wi-Fi radio cards which allows monitoring of travel direction. They interface seamlessly with MST's Active Wi-Fi tags, built in to our ICCL Cap Lamps or stand-alone on personnel, vehicles and other assets. The Wireless Network Switches can support two separate Wi-Fi radio cards, which allows monitoring of travel direction.



## Wireless Network Switch

- Operates from 10 – 50 Volts DC
- Contains up to 2 wireless access points (Mine Site Technologies or third party)
- 4 x Fibre optic Gigabit Ethernet switch ports
- 4 x rugged 10/100 ports supplying Power over Ethernet (PoE)
- Support for VLANs, SNMP & Quality of Service (QoS) management
- Voltage and Current monitoring of all power rails
- Internal 48V step up converter (for third party access points) and PoE outlets
- IP66 Rugged stainless steel housing



## Wireless Access Point

- Easily deployable wireless access point
- Receives power & data via a single Cat 5e cable
- IP66 Rugged housing
- Mounted directly on to the side or roof / back of the mine
- Cat 5e cables able to be cut and terminated underground
- Semi-skilled labour installation
- Low power consumption



## BreadCrumb LX

- Self-configuring operation for fast and easy deployment
- Open system IEEE 802.11 a/b/g compatibility
- High bandwidth availability for data, voice and video
- Security encryption ensures security & privacy



## Composite Cable

- Composite fibre and power cable
- 4 fibres as standard available in multi mode or single mode
- Pre terminated (no underground termination required)



## Network Services

- Hosted application service
- Proactive network monitoring
- Monthly uptime reports
- Telephone support

# IMPACT

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## Vehicle Intelligence Platform

- View vehicle diagnostics in real-time
  - Payload data in real-time
  - Acquire vehicle location data
- Report productivity information with greater accuracy
- Integrate with leading manufacturers' equipment (Such as Caterpillar etc)
  - Compliments your existing Mine Site Technologies Ethernet system



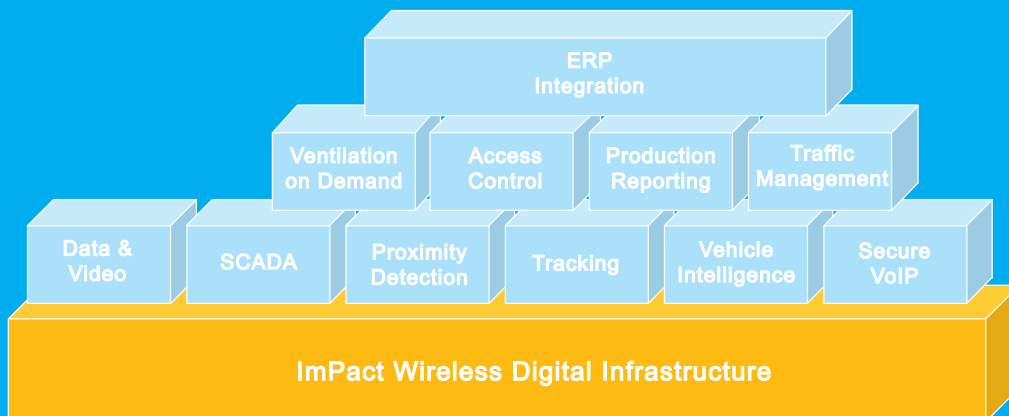
## Asset Tracking

- Locate and track personnel and asset movement in real time
  - Quickly identify and locate all personnel in crisis situations
    - Manage mine assets more effectively
    - Identify bottlenecks and efficiency deficits faster
      - Control area access
      - View vehicle location data
- Increase control of personnel / vehicle interactions



## Proximity Detection

- Reduce risks in personnel / vehicle interactions
  - Minimise communications to control room
  - Notify operators instantly in-cab



## Mine Site Technologies Pty Limited

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Photo of Atlas Copco Equipment, Joy Mining & Komatsu. MST-WNS0309

