



Productivity and Safety through
Mine-Spec digital applications

IMPACT

proximity
awareness



Asset & Personnel interaction monitoring

Long detection range

Multiple alert options

Data logging for incident reports

Applications

**PROXIMITY AWARENESS
INCIDENT LOGGING
COLLISION RISK REDUCTION
ACCESS CONTROL**

The IMPACT technology suite is designed to lead mining communications and digital infrastructure into the future. The IMPACT Wi-Fi Proximity Awareness system has been developed with the support of numerous hard rock and coal mining companies, ensuring it functions reliably within the harsh environments encountered in underground mining.

IMPACT Wi-Fi Proximity Awareness is a cost-effective method of alerting vehicle operators to other vehicles and personnel in their vicinity, reducing the risk of collision and thus improving the safety of all personnel. The system identifies people and other vehicles in their vicinity to allow a proximity-appropriate response from the vehicle operator.

The Proximity Awareness system uses the IMPACT Vehicle Intelligence Platform (VIP) to actively monitor Wi-Fi RFID tags mounted on mobile assets, creating a zone of awareness around the vehicle or moving asset.

A second smaller zone can be established using an MST Exciter to initiate an additional response from the tags.

This smaller zone is used to provide:

- Higher Level Alerts: Another zone or alert can be set up which can raise higher levels of alarm.
- Reverse Tracking: By detecting tags fixed at certain locations, the location of the vehicle can be accurately determined. An example being; identifying exactly which draw point or ore pass as vehicle is located at.

IMPACT Wi-Fi Proximity Awareness is a simple yet effective way to increase safety and awareness in any underground mine.

Features and Benefits

ACTIVE RFID TAGS

- State-of-the-art Wi-Fi signals propagate in underground roadways and importantly can travel 20m – 40m around corners.

LOGGING AND AUDITING

- Provides “black box” functionality to facilitate the investigation of incidents.
- Ability to connect to server and upload logged events.

CONTINUOUS SELF DIAGNOSTICS

- System uses built-in feedback tags to continuously self-check critical system components.

DESIGNED TO LEVERAGE EXISTING MST EQUIPMENT

- Proximity Detection is one Personality of the IMPACT Vehicle Intelligence Platform. Once this hardware is installed, it can also be used for vehicle diagnostics, payload monitoring and other productivity enhancing applications.
- The tags are the same as used with the IMPACT tracking and tagging system.
- The MST Exciter can be also used for Reverse Tracking applications for highly accurate location requirements.

IMPACT Proximity awareness system with configurable alarms and event logging

The IMPACT Proximity Awareness system is designed to significantly reduce the risk of vehicle/person and vehicle/vehicle collisions by providing an early warning indication to vehicle operators of the number of vehicles and personnel present in the vicinity. At the heart of the system is the powerful Vehicle Intelligence Platform (VIP) unit which controls the detection zone and reads tag signals, as well as being a wireless bridge that can connect to IMPACT WLAN networks if required.

The system was designed through extensive consultation with vehicle operators and mine safety personnel to provide the highest level of safety and reliability, while taking special account of operator comfort and rugged mine conditions. The zone breach alarm gives operators a low-level, non-invasive alert when a person or another vehicle is within the pre-set zone of a vehicle.

Detected tags can be silenced either individually or simultaneously, by simply touching the rugged, in-cab screen.

The system uses state-of-the-art Wi-Fi RFID tags which are proven to propagate well underground. The Wi-Fi signals propagate efficiently around underground corners, allowing operators to “see around” corners so they are not compromised by someone suddenly entering their roadway. In contrast, traditional UHF/VHF systems have significant limitations in this area.

The Proximity Awareness system is suited to both heavy and light vehicles. As a stand alone system it provides increased safety while at the same time it can be further enabled for other IP applications such as in-cab VoIP, vehicle load monitoring, operational data and tracking information by integration in to a mine’s underground LAN.

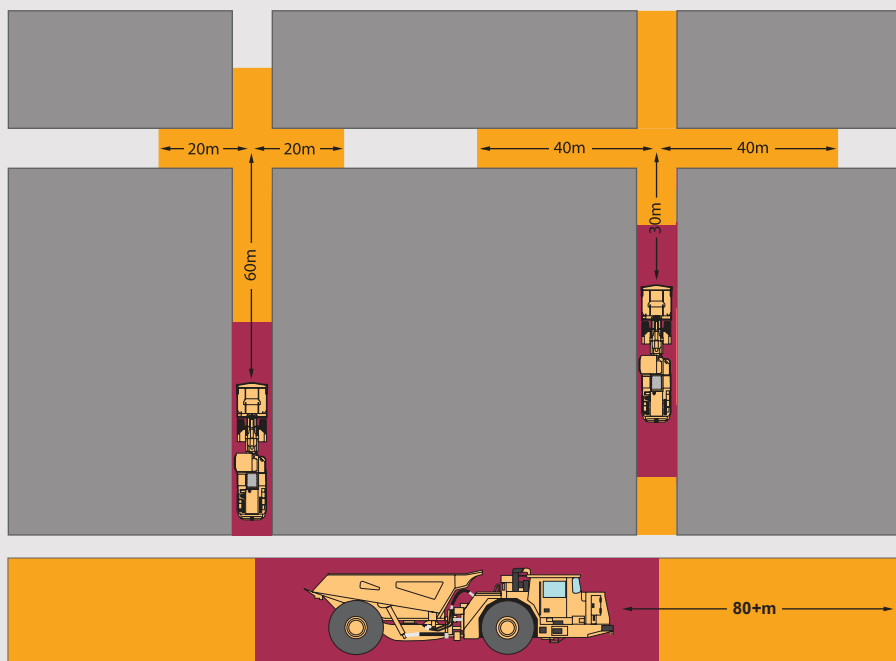


Fig1. IMPACT Wi-Fi Proximity Awareness with Exciter

IMPACT VIP UNIT

- Controls all proximity alarms in fail safe configuration
- Continuous self diagnosis, checks system, connections and Wi-Fi integrity
- Capable of running several personalities including Asset Tracking and Vehicle Intelligence
- Local logging of recent events for incident investigation
- Wi-Fi connectivity bridges wired Ethernet devices to the network



ACTIVE RFID TAGS

- Tags are incorporated into lamp ensuring that personnel are always carrying tag
- Integrated PED text pager and optional UHF/VHF radio
- Lightweight Li-ion battery
- Self contained tag with replaceable battery



RUGGED TOUCH SCREEN

- Provides information at a glance to reduce distractions
- Shows number and identity of personnel and vehicles in vicinity split by zone
- Allows for one touch acknowledgement of a single tag or all tags together
- Adjustable alarm volume accommodates operator without compromising safety



EXCITER (OPTIONAL FEATURE)

- Add on to VIP unit
- Creates precise and reliable zone definition
- Can also be used for accurate reverse tracking applications
- Rugged, built for the toughest conditions





NETWORK INFRASTRUCTURE

- Takes your LAN underground cost effectively
- Forms the foundation of the IMPACT portfolio
- Enables remote monitoring and control of equipment
- Allows easy and modular design of underground networks
- Facilitates wireless data communications and VoIP
- Reads Wi-Fi tags to support location aware application
- Rugged IP66 housing designed for the mine environment



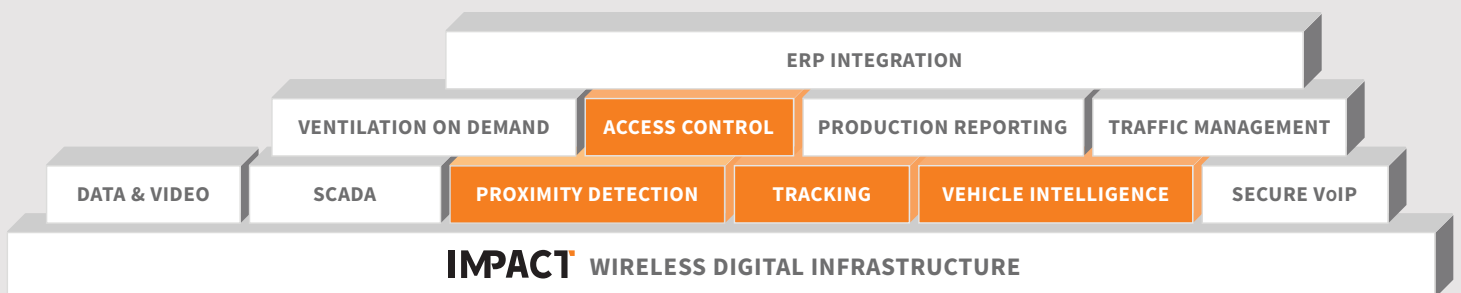
VEHICLE INTELLIGENCE PLATFORM

- 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



MST offices and support centers are strategically located in the world's primary mining regions.

www.mstglobal.com
solutions@mstglobal.com

Australia

Sydney
Level 5, 113 Wicks Road
North Ryde
Sydney NSW 2113
Tel: +61 (0)2 9491 6500

United States

Denver
13301 W 43rd Drive
Golden, Denver
Colorado 80403
Tel: +1 303 951 0570

Chile

Santiago
Vitacura 2771, Of 503
Las Condes,
Santiago 7550134
Tel: +56 9 7772 3819

Russia

Moscow
Office 318a
Lesnaya, 43
Moscow 127055
Tel: +7 (499) 978 72 11

South Africa

Centurion
Unit 1, Oxford Office Park
3 Bauhinia St
Gauteng 0046
Tel: +27 (0) 12 345 6100

China

Hangzhou
Building 5
1413 Moganshan Road
Hangzhou 310011
Tel: +86 571 8580 3320 Ext 206