MST

Situational **awareness**

Empowering **safety** and **productivity**



Empowering safety and productivity

MST Global's technology suite is designed to lead mining communications and digital infrastructure into the future. The Situational 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.

Wi-Fi Situational 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 an appropriate response from the vehicle operator.

The Situational Awareness system uses the IMPACT Vehicle Intelligence Platform (VIP) to actively monitor Wi-Fi RFID tags on mobile assets and personnel, 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.
- Additional 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.

Wi-Fi Situational 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

> Situational Awareness is one application of the IMPACT VIP. 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 across the MST tracking and tagging systems.
> The MST Exciter can be also used for Reverse Tracking applications for highly accurate location requirements.

Applications

Situational awareness | Incident logging | Collision risk reduction | Access control



MST's Situational Awareness system with configurable alarms and event logging.

The Situational 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 AXON 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 Situational 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.

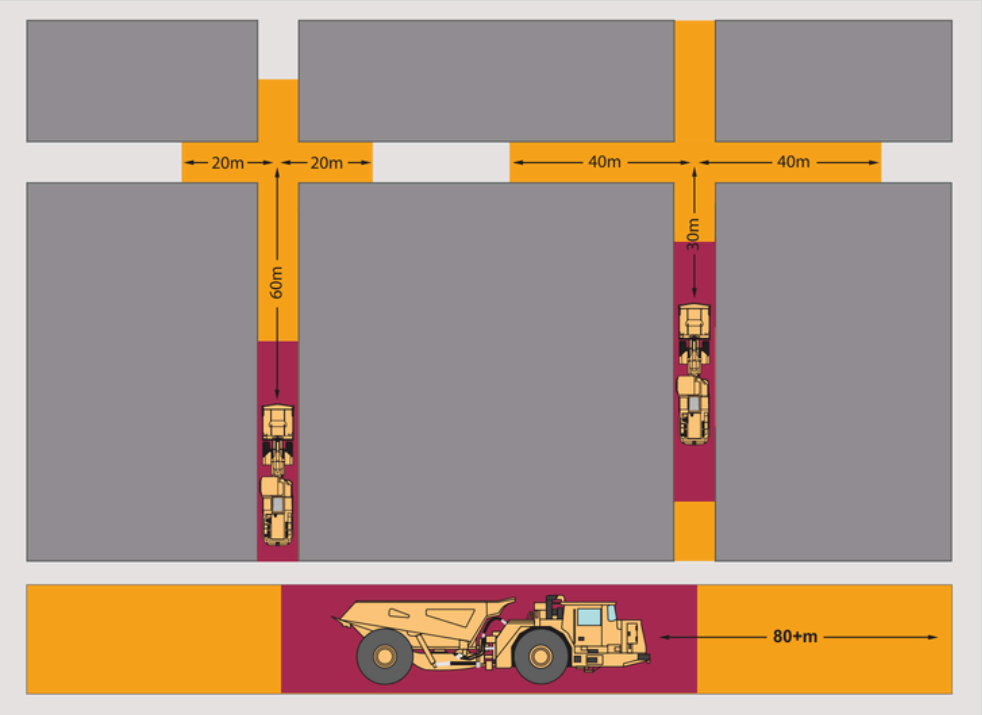


Figure 1 Proximity awareness with exciter.

MST

Situational awareness



IMPACT VIP UNIT

- Controls all situational awareness alarms in fail safe configuration
- Continuous self diagnosis, checks system, connections and Wi-Fi integrity
- Capable of running several applications including Asset Tracking and Vehicle Telemetry
- Local logging of recent events for incident investigation
- Wi-Fi connectivity bridges wired Ethernet devices to the network
- View vehicle diagnostics and payload data in real-time



ACTIVE RFID TAGS

- Tags are incorporated into lamp ensuring that personnel are always carrying a tag
- Self contained tags with replaceable battery for personnel
- and location use
- Externally powered vehicle tags



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



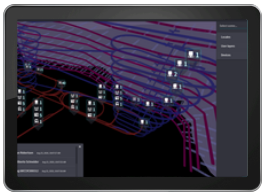
EXCITER (OPTIONAL FEATURE)

- 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 AXON suite
- Enables remote monitoring and control of equipment using AXON edge devices
- 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

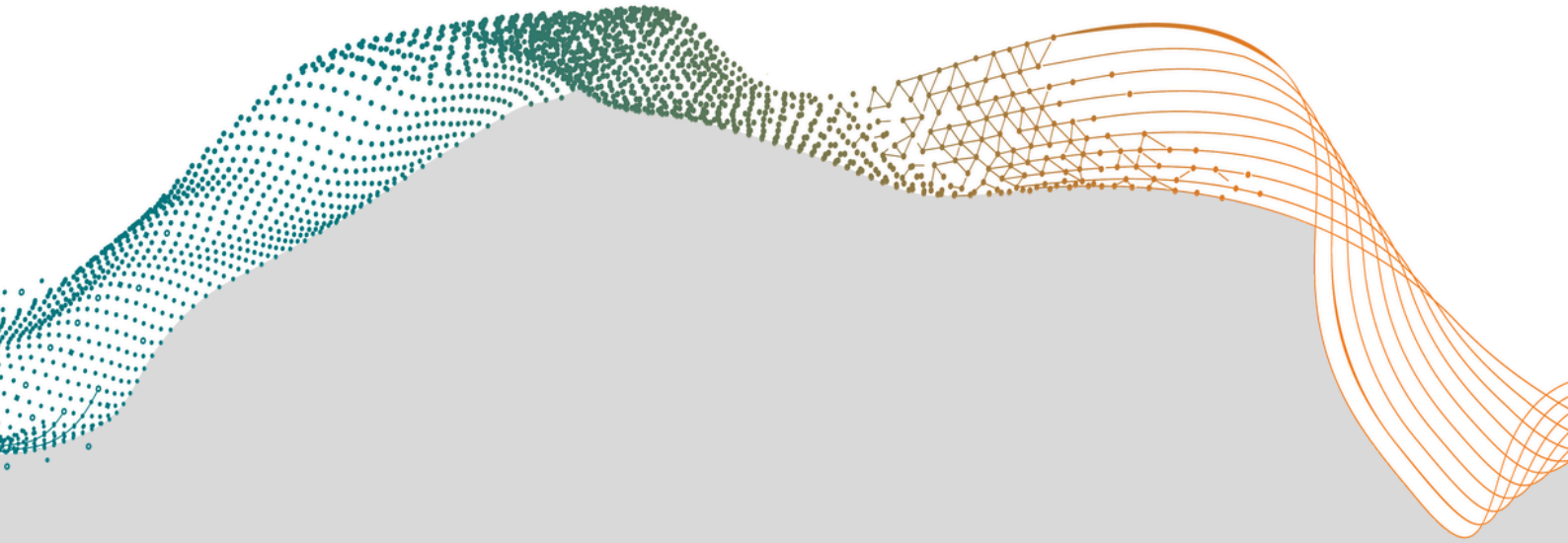


HELIX PLATFORM

- 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

Situational awareness





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