MINING

FS Systems provides end-to-end fire & electronic security solutions including Fire Protection, Access Control and Video Surveillance. We unlock business value for our key focus industry - Mining - through best product, people & processes.

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Digital Visitor Management system provides a seamless and effective visitor management process.

ENTERPRISE ACCESS CONTROL & WORKFORCE MANAGEMENT

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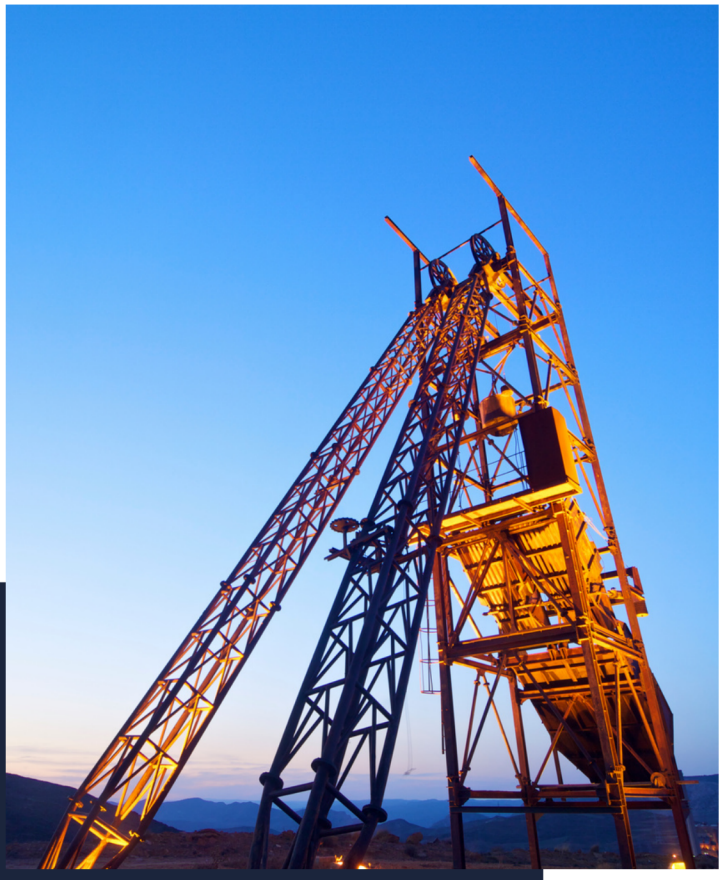

VIDEO SURVEILLANCE

Gain coverage across vast mining sites with an intuitive and integrated video surveillance system that empowers you.

CRITICAL COMMUNICATIONS

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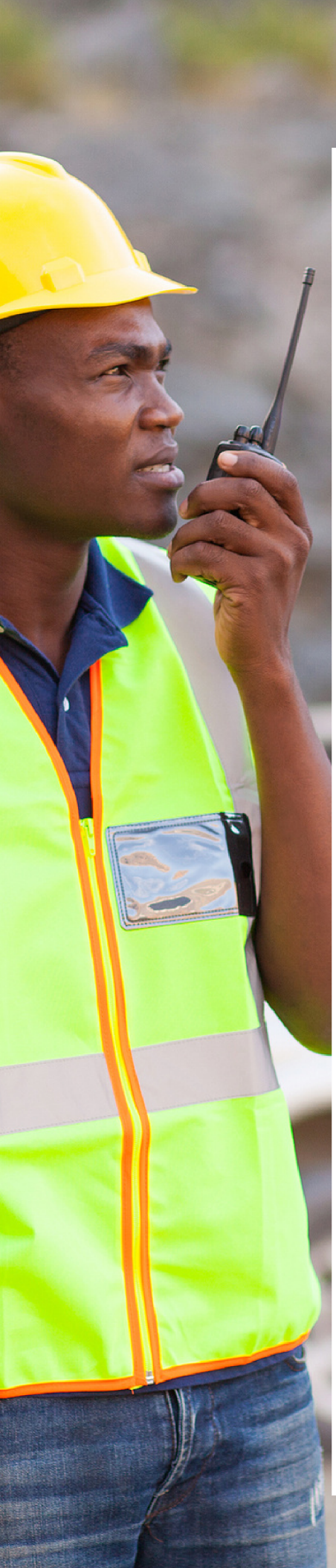
Ensure a comprehensive defense against threats with specialized integrations.

FIRE & LIFE SAFETY

Fire solutions are custom engineered to minimize the spread of fire and limit the damage to affected areas and risk to human life.



VISITOR MANAGEMENT

Current visitor management systems lack efficiency and integration, leading to challenges in handling visitor documentation, inductions, and access card issuance. The process of sending and receiving forms from visitors is cumbersome, and the manual logging of these forms by the Security Office is prone to errors.

Coordinating the delivery of induction materials and site procedures to visitors in a timely manner is a challenge.

Implementing a digital Visitor Management system removes manual processing, creates a seamless and effective visitor management process, and ensures that site procedures are accurately communicated to visitors according to their profiles and host preferences.

Pre-Registration of Visitors

Remove manual paperwork and processes and ensure efficient, time saving, electronic and accurate Visitor Registration. A pre-configured email is sent to the visitor based on type of visit / area / reason for visit that will take them through the correct procedures. An authorisation request is sent to HOD to approve and languages can be customised.

Data Captured on the Edge

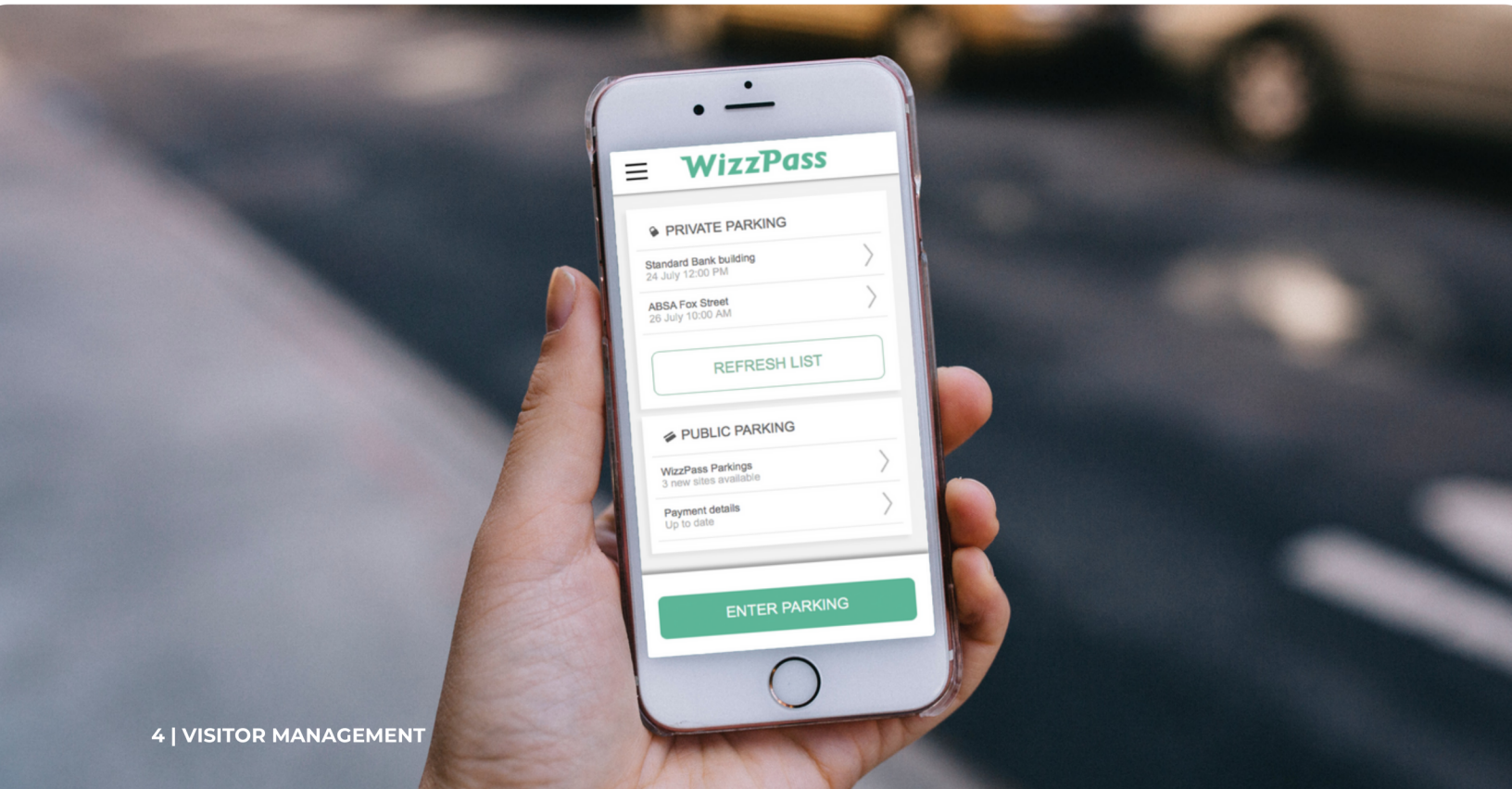
Take advantage of digital user-based capturing instead of reliance on visitors to complete and bring paperwork when arriving on site. This information can include Health and Safety information; Medical Information and Competencies which can be completed prior to the visitor arrival.

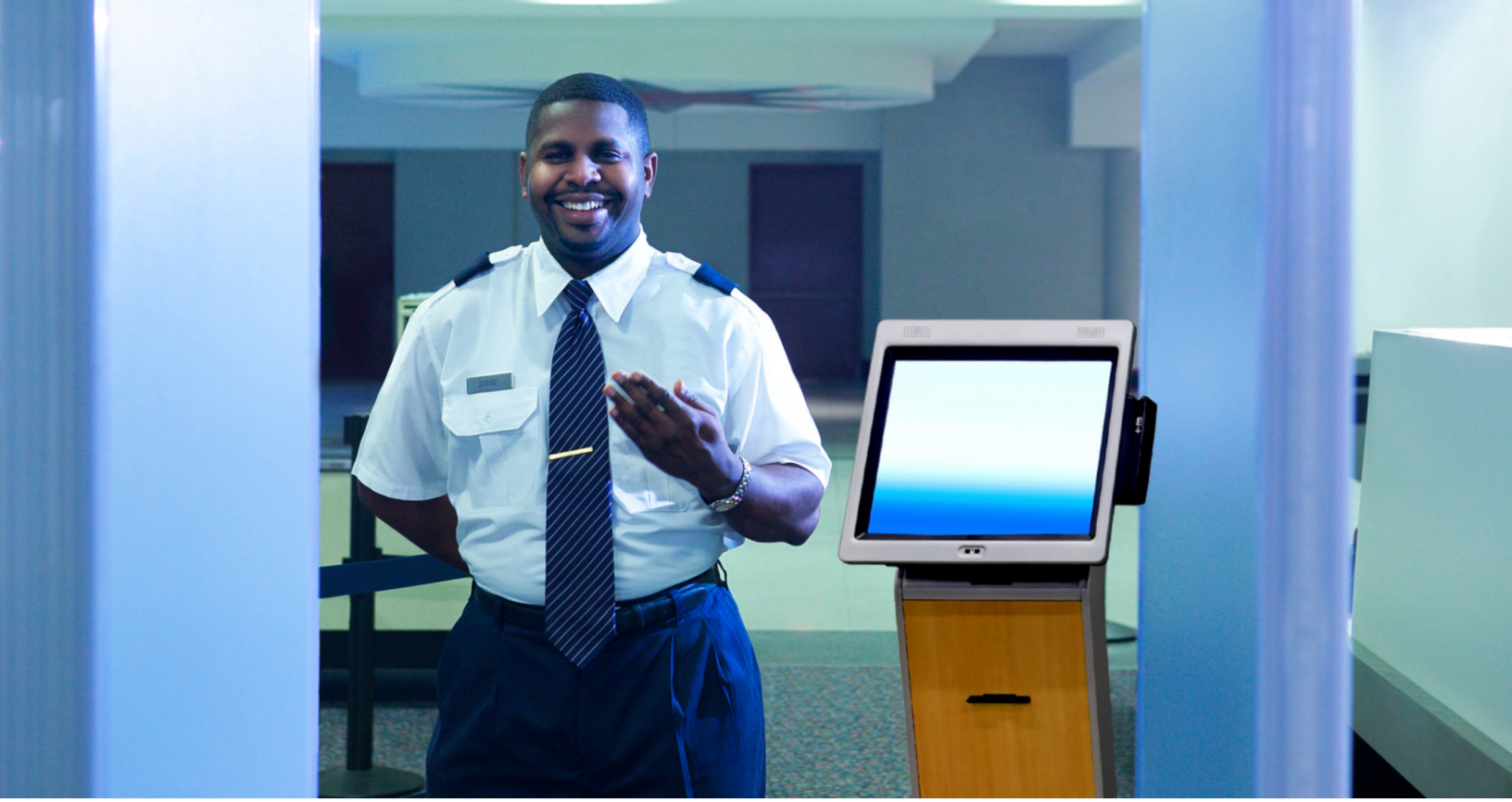
Remote Induction

Customised induction material can be designed according to building / location visited to speed up the process of visitors and contractors getting on site. The visitor will not be allowed to enter until they pass the online induction, giving them an opportunity to retake it beforehand. Optional questionnaires can be set up and randomised for inductions; and real-time reporting of all visitor compliance on site.

Visitor Arrival Information

Depending on access areas, visitors will have customised instructions for their visit to site including PPE needed, site procedures and steps to follow on arrival.





Credentials issued & ready prior to arrival

With a digitised system, credentials can be issued before visitors arrive on site and access cards will be ready on their arrival. Their competencies will automatically be loaded onto the Access Control system ensuring accuracy and time saved.

Arrival Kiosk

Processing time and queues can also be optimised with Arrival Kiosks, where a visitor can scan can a QR code on arrival and their information will immediately be verified if complete and the host notified. This ensures quick and easy access to site.

Security Escort

With an integrated system, ensure that visitors are escorted on site at all times according to their escorts access group.

Visitor escort access privilege allows an access member to escort visitors within the access zones assigned to the specific access group. This is according to the cardholder access schedule and the visitor will not be able to enter any access areas that are unauthorised.

ENTERPRISE ACCESS CONTROL

Access Control on mines can present various challenges due to the unique nature of the mining environment. Due to remote locations, harsh conditions and multiple entry points, addressing these challenges requires a comprehensive approach that considers the unique characteristics of the mining industry and leverages technology, training, and effective management strategies to ensure secure access control while maintaining operational efficiency and safety.

Our Enterprise Access Control solutions are tailored to a mining specific environment and are integrated to secure all mining operations as well as workforce automation, ensuring a comprehensive security approach.

Credential Management

A mining operation faces security vulnerabilities, including cloning of access cards, relay attacks, and multiple access points, which compromise the overall security and accuracy of access control systems.

To address these challenges, the implementation of DESFire EV3 cards is proposed. These cards incorporate advanced security features such as AES128 encryption, secure channel-based file transfer, and proximity checks. These measures are designed to safeguard card data from potential attacks, ensuring a robust and secure access control system.

The solution enhances security and accuracy by preventing unauthorized access attempts. In cases where an employee forgets their badge, the main operations center can issue a temporary badge after verifying their identity and credentials. This temporary badge replicates the employee's access rights for the day, while the employee's regular card is temporarily deactivated. This approach ensures that operational efficiency is maintained without compromising security.

Additionally, the implementation of DESFire EV3 cards addresses the root cause of the problem, as it eliminates the vulnerability inherent in unencrypted 125 kHz RFID formats commonly used in access control.

ID Card Issuing

Challenges related to the frequency and cost associated with replacing damaged access cards, as well as the speed and quality of the card printing process impact both operational efficiency and overall costs, leading to a lack of uniformity and corporate cost savings.

To tackle this, the adoption of High-Definition Printing (HDP) technology is proposed. Cards produced using HDP technology offer inherent advantages in terms of durability and security compared to other card types. The process involves applying a resilient layer of HDP Film between the card image and the external environment, resulting in enhanced resistance to wear and tear. Additionally, the cards are designed to be tamper-evident, as any attempt to peel apart the layers would render the image unusable. An optional High Durable HDP Film is also available, which provides even greater abrasion resistance, potentially eliminating the need for separate lamination hardware.

The use of HDP technology contributes to corporate cost savings over the long term by decreasing the need for frequent replacements and maintenance. By investing in this advanced card production method, the mining operation can establish a reliable, secure, and efficient access card system while achieving notable financial and operational advantages.

Card or Mobile Credits

Implement a complete end-to-end cloud solution that manages digitized MIFARE product-based credentials onto mobile and wearable devices. It brings cashless payments into a new era, enhancing experiences while making operations more efficient.
Using card or mobile-base credits implements a cashless environment on site or at canteens, further driving efficiency, convenience, safety, and mobility.

Secure & Contactless Access Terminals

Experience a seamless and comprehensive biometric access control solution through the integration of secure and contactless access terminals. With this you can achieve a fully synchronized biometric system that operates without the need for external plugins or enrolment utilities.

Advanced encryption functionalities offer an array of features including multi-factor authentication, template privacy management, anti-passback, duress biometrics, dual authorization, zone counting, interlocking doors, and controlled challenges.

You not only save costs related to biometric enrolment and template management, but also eliminate the necessity for operators to invest in and manage separate systems.

This integration is designed to address the two core aspects of biometric authentication – identification and verification. For those seeking cardless access, Identification feature compares an individual's biometric template to stored data, while the Verification option caters to customers desiring heightened security through multi-factor authentication.

Sigma Lite

Designed for simple, secure access control, SIGMA Lite is a slim and powerful fingerprint reader that fits to door and window frames, server rack doors or turnstiles. This cost effective version guides users with a simple LED indicator.

Sigma Extreme

Designed for harsh environments and weather conditions, this ruggedized version provides an IK09 protection for outdoors installation at labor-intensive sites such as mines. SIGMA Extreme offers a larger fingerprint sensor with unique and patented fake fingerprint detection.

MorphoWave

IDEMIA's MorphoWave™ contactless fingerprint solution scans and verifies 4 fingerprints in less than 1 second, through a fully touchless hand wave gesture. Embedded with IDEMIA's latest advances in the use of Artificial Intelligence, these ergonomic biometric readers work efficiently with wet, dry, dirty hands or even damaged fingerprints. In addition, the card reader of MorphoWave™ natively supports MIFARE Cards.

VisionPass

Thanks to a state-of-the-art optical set combining 2D/3D/IR cameras with IDEMIA's latest advances in AI and image processing, VisionPass provides both a high level of security and real user convenience. This facial recognition device incorporates IDEMIA's latest spoof detection mechanisms and is capable of coping with face changes (change of hairstyle, glasses, helmet, etc.). It also provides a contactless access control alternative to traditional readers that improves site hygiene.

Invixium

The IXM TITAN is a flagship biometric reader and health orientated solution, which delivers simultaneous face recognition and elevated body temperature detection at the medial canthus (tear duct). The signature speed cuts down on the time shift changes take, and helps protect staff and visitors from germs spread by touching common surfaces. TITAN includes multi-factor authentication using any combination of multiple biometrics, mobile credentials, and traditional credentials.

Fibreglass Enclosures

Steel, due to its excellent heat retention properties, poses a significant drawback. Access control points often experience direct sunlight exposure, causing temperatures to rise dangerously close to the specified maximum levels. This poses a challenge when electronic products are affixed to steel hoods in industrial settings.

Introducing Fiberglass Enclosures offers a solution as fiberglass possesses a notably lower temperature coefficient than steel. Unlike steel enclosures, Fiberglass Enclosures do not conduct heat to the installed equipment which prevents overheating caused by sun exposure.

Moreover, Fiberglass stands possess comparable strength to steel, without the drawbacks of oxidation. They are also weatherproof and notably easier to drill using various types of drill bits. These enclosures can be customized with branding and are available in a range of colors.

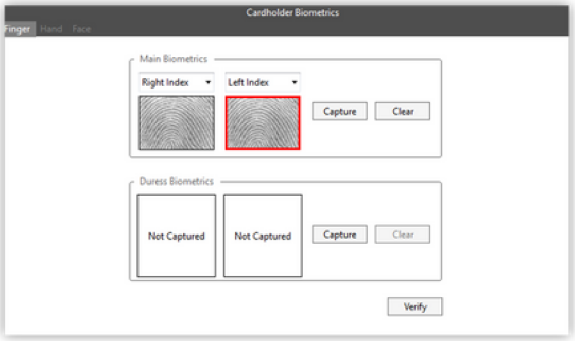
Additionally, they present a cost-effective alternative, as they are significantly cheaper to replace in case of damage.

By addressing the heat-related challenges associated with steel enclosures, this solution contributes to improved equipment performance, extended lifespan, and a more resilient and economical access control system.

Duress Biometrics

For both Finger and Wave Readers, Users can enrol their duress fingers on the Access Control system. If a duress biometric credential is presented at a reader, access is granted but an alarm is raised in Command Centre.

Users are also able to enrol Duress Codes, which will work as the above.



Site & Card Holder Display on Access

Making site access easier, more streamlined and efficient, the Cardholder Display utility displays specific cardholder information to individual cardholders once they have badged their card.

Once logged on, the cardholder screen can be configured to display information such as the access decision (Access Granted or Access Denied), photo image, the cardholder's Cards, competencies and associated expiry dates.

The utility can be configured as a user-interactive or non-interactive display.

Site Display (Non-Interactive)

The standby screen for the non-interactive display shows the lockdown status of a nominated Access Zone. A cardholder must log on to the utility by badging a valid access card at the reader and once logged on, the cardholder screen displays. In addition, the cardholder screen for the non-interactive display can also be configured to display the cardholder's Access Groups and the associated expiry dates.

Site Display (Interactive)

The standby screen for the interactive display is the Welcome screen. Once a cardholder is logged in, the screen displays a series of tabs. Cardholder information can be accessed by navigating through the tabs, using either a touchscreen or mouse. The cardholder screen can be configured to display the Competency expiry messages.

Mobile Credentials

Using Mobile Credentials drives efficiency and cost savings. A security access app transforms your mobile device into an access card, using Bluetooth® wireless technology*, as well as a secure on-phone Digital ID.

A Digital ID reduces the instances of lost, stolen or defaced IDs as individual cards are easily misplaced or forgotten but mobile phones are almost always carried on a person and much less easily lost or misplaced.

It is relatively obvious to thieves what an ID card is, however a Digital ID within an app may not be obvious and they are unlikely to have access to unlock the phone in the first instance, so the ability to use a stolen credential is much less.

Perimeter Monitoring

With vast perimeter areas and often remote sites, perimeter security is vitally important to mining organisations both in terms of protecting and securing staff, resources and equipment and also fulfilling their 'Duty of Care' to the public by ensuring they cannot access potentially hazardous areas.

Gallagher's Trophy electric fence systems actively deter would-be intruders and trespassers and detect attackers. The system consists of a grid of electrically pulsed, high tensile, wires that can be constructed inside a new or existing perimeter fence.

Gallagher perimeter systems are nonlethal and meet international safety standards. The perimeter fence system can be divided into zones which are individually monitored so that in the event of an attack, security staff can pin-point which zone is affected and respond appropriately.

Through high level integration Gallagher's perimeter security system can be configured, controlled and monitored within Gallagher Command Centre. All alarms from the perimeter are logged in Command Centre and staff can respond accordingly. Integration with imaging systems means attacks on the fence can be viewed and recorded providing an audit trail of events and seamless site security. Multiple remote sites can be monitored and protected at a central point using the Gallagher system.

> “With vast areas, it’s challenging to monitor a mine’s perimeter and still reduce the time spent on false alarms.”

Intruder Systems

A networked perimeter solution incorporates sensors that continuously measure and report on wire tension and monitor fence structure vibration or movement. Sensors can be used with or without an energized pulse to detect intrusion without the intruder being aware. When a fence sensor is triggered an alarm will activate for that zone, allowing guards to immediately focus their attention where it’s most needed.

The VibraSensor Z20 heightens perimeter security through intelligent detection of vibration or movement of the fence structure.

Even slight movements or sounds will not go undetected as the alarms are sounded when disturbance meets predefined criteria. Events are easily located as sensors are uniquely identified.

Parameters on individualized sensors account for differences within the structure and localized sensitivities.

Physical Barriers - Workforce Flow

The use of mechanical components does not provide automatic record generation of access events or attempts, nor do they provide any form of notification of unauthorized access attempts to security personnel.

Integration of these components with an access control system allows event information to be recorded and shared automatically, and therefore contributes towards a sites integrated security infrastructure.

The complex nature and diversity in assets that need to be secured will require physical locking solutions in certain locations as an alternative to access control readers.

Speed Gates

Speedgates are ideal for entrances requiring a secure and aesthetic solution, while catering for high numbers of pedestrian traffic flows. A speedgate makes for an effective access control point, letting you monitor admittance, manage crowds, and keep track of employee movements into and out of the building, without hampering the flow of traffic.

The speedgate range offers a number of stainless steel cabinet configurations as well as three different lane widths, the largest allowing for wheelchair and delivery access.

All access control, ticketing and time and attendance systems are compatible with this range of speedgates, and the solution is designed and developed from project conception to on-site installation.

Man Traps

A man trap, or a security booth, is a security device that monitors and controls two interlocking doors. Interlocking doors are doors that can never be open simultaneously. Either one of the doors can be unlocked and opened, as long as the other door is locked and closed. Between these interlocking doors is a small, secure space, which only admits one person at a time.

These access control booths effectively separate a non-secured area from a secured area. Man traps are ideal in high value or critical security areas, like vaults, sensitive data processing areas, security control rooms and critical or hazardous zones. Automatic and manual man traps are available depending on the application.

Turnstiles

Security turnstiles act as a physical barrier to prevent unauthorized people from entering a space. The arms in a turnstile entry system can rotate or remain fixed, depending on the type of turnstile barrier gate.

When an authorized user presents a valid credential to a turnstile gate with card reader system, the arms of the pedestrian turnstile will rotate to allow one person through the barrier. After entry, the turnstile gate will lock until the next authorized person presents credentials.

Turnstile gate arms can be designed to rotate in one direction or in both directions to control both entry and exit. Some controlled access turnstiles, such as a speed gate turnstile or a glass swing turnstile, can feature doors rather than arms, but the basis of operation is the same: only one person with accepted credentials will be granted access at a time.

Single security turnstiles can be deployed to control access to a space or may be installed in multiple lanes to make access convenient for large crowds i.e., during shift changes and minimize delays. Multiple lanes (Dual Turnstiles) are generally used in high pedestrian traffic locations.

Turnstile entry systems are controlled electronically. When sensors or readers recognize valid credentials, the electronic turnstile locking mechanism is released to allow access.

Depending on the sites need, turnstile gates and door devices can be customised to several different sizes, shapes, finishes and configurations. They can also be interfaced with any access control device and/or biometric reader system thanks to customized brackets and mounting options.

Container Access Control

A Turnstile Container is the solution to an immediate or short-term need for secure access on site.

This versatile setup functions as both a security checkpoint and can be integrated with a physical barrier for site security, and a convenient access point. Not only does it facilitate the smooth exit of people and vehicles, but it also efficiently identifies access card holders and breath alcohol testing can be set up for staff prior to entry.

This self-contained turnstile gate system ensures meticulous access control, allowing security personnel to personally verify staff, scan their access cards, and conduct BAC testing as needed.

Body & Baggage X-Ray Scanners

Advanced people screening systems are used for non-invasive detection of all types of objects or dangerous threats concealed in-or-on a human body.

X-Ray Full Body Scanners are a state-of-the-art low-transmission X-ray body scanner, featuring a second X-ray generator for detecting even smallest contraband inside the body. Perfect for gold and weapons detection. Depending on the application and screening needed, the following options are available:

High Footfall People Screening

This full body X-ray scanner is a compact scanning technology with advanced, high-resolution imaging performance and advanced detection capabilities.

The inspected person in the scanner remains stationary and the body scanner provides the industries fastest image acquisition time of 3 seconds.

This new revolutionary X-ray inspection system is rugged, fast, and non-contact. The unique pass-through design and proven automatic threat detection algorithms facilitate the rapid, non-intrusive inspection of people attempting to conceal contraband items on or inside their bodies.

Dual-View Screening

This smart X-ray scanner system is designed to obtain projection two X-ray images of a person.

It is most effective when searching for weakly contrast swallowed objects, as well as objects hidden in the natural cavities of the body. It is the only available patented TRUE DUAL VIEW X-ray Screening System configured with two independent X-ray generators and detector arrays.

The scanner is used where a detailed examination of the human body is required, and increased security measures are in place.

Metal Detectors

Stringent security standards on a mine prompt the need for walkthrough metal detectors expressly designed for high level applications, that feature a combination of advanced target detection and state of the art personal object discrimination.

An Enhanced Walk-Through Multi-Zone Metal Detector provides significant increase in throughput, resulting in substantial reductions in passenger wait times, cutting edge discrimination technology allows personal effects to be ignored, creating rapid transit flow.

It offers peace of mind with more stringent security levels while maintaining an improved flow rate, improved zone detection allowing pinpoint accuracy of alarm indication and the double light bar design gives more visible zone indication from multiple screener positions.

The Metal Detector gives a quick, accurate analysis of all parts of the body of people in transit, from the shoe level to the crossbar and accurate detection of threat objects composed of magnetic, non-magnetic and mixed alloys.

Specialised Security Doors

Doors are available in a range of standard sizes and additionally, can be manufactured to suit specific environmental and threat-related requirements. This can include fire doors, and specialist security doors including ballistic and blast protection doors.

Standardization of specific physical security barrier types, by application and manufacturer can lead to improved installation success, enhanced longevity of installations, benefit from extended manufacturer warranties, and improved management of critical spares stock keeping requirements.

Physical Barriers - Vehicle Management

Vehicle Access Barriers encompass a variety of solutions including Boom Gates, Security Spike Barriers, Bollards, and Blockers.

These solutions can be used as stand-alone physical and visual deterrents and as complimentary components for areas where threat and risks associated with individual entry points are elevated.

Manual vehicle barriers are ideal for controlling access into areas with low to medium security needs whilst automated barriers are better suited for medium risk areas that receive a high volume of traffic. These can be use for both Light and Heavy Motor Vehicle access.

Modular Traffic Island

A Modular Traffic Island with accessories made from recycled rubber is environmentally friendly, an easy installation, and durable enough for indoor and outdoor installations.

Used for mounting Card Capture Units, Access Control Readers, Biometric Readers or any other systems that are used to open Boom Gates, Sliding Gates, Spike Barriers, Road Blockers, Speed Gates or any physical automated and non-automated access equipment.

The Island can be installed onto concrete / paving / asphalt / dirt roads; and is durable enough to make it a permanent installation or to make it a temporary installation. The rubber curb cannot damage motor vehicle rims and the entire island is 100% recyclable.

Automatic Vehicle Barriers

Automatic industrial vehicle barriers with Swiftdrive are suited for applications requiring high volume access and used extensively in applications such as mining. The barrier works in severe operating conditions and offers a high-speed operation with low power consumption. The vehicle barrier offers seamless precise speed control with dynamic braking and slow stop, intelligent collision detection and mid cycle auto-reverse. It is highly reliable, highly efficient and has a high power-to-volume ratio. No proximity sensors or microswitches required for positioning and the integrated OPTIC LED light strip provides maximum visibility, safety and aesthetics.

Light Motor Vehicles

Employees entering the site in their personal vehicles must go through one of the available boom gate entrances. Access is granted after successful authentication of credentials and negative BAC level.

Site exit is carried out via one of the available boom gates which are triggered after the employee successfully badges out via the card reader. For selected staff and on a pilot basis, License Plate Recognition and/or UHF tags might be enforced to automatically grant access.

Heavy Duty Vehicles

When integrated with access control, mine management can ensure that only authorized personnel are able to operate a Heavy-Duty Vehicle. Combining driver and vehicle identification further enhances security by accurately tracking who is operating which vehicle. Driver-based automatic vehicle identification (AVI) ensures that a vehicle can never leave or access a secured area unless occupied by an authorized driver.

Traditionally, drivers have to stop and present their access cards to gain access to site, causing traffic congestion around the gates. However, current solutions allow vehicles to activate gates up to 10m in advance at speeds up to 200 km/h. This eliminates the need for vehicles to stop, ensuring a smooth traffic flow. Such a feature is especially beneficial for mining sites, where stopping and starting heavy machinery can be disruptive.

Implementing the UHF tags allow Heavy Duty Vehicles to enter authorised access areas without having to stop, and also provides a cost-effective solution for a large number of applications including identification, tracking and maintenance in demanding industrial environments.

Busses

A wireless access point is installed where the bus will be stationary for embarking and disembarking of passengers. A Reader is installed in the bus entrance and configured in the Access Control software by creating a door and an access zone.

Only persons with access will be granted access and be displayed on the terminal screen for the driver to acknowledge.

Executives

UHF Windshield Tags are used as vehicle identification tags for Executives and Management. Offering cost-effective, long-range identification for security and parking applications, vehicles can be identified from up to 15 meters.

The UHF Windshield Tag doesn't contain a battery and is maintenance free, offering secure and convenient access for vehicles that should not stop at access points.

License Plate Camera

Traditionally, drivers have to stop and present their access cards to gain access to site, causing traffic congestion around the gates. However, current solutions allow vehicles to activate gates up to 10m in advance at speeds up to 200 km/h. This eliminates the need for vehicles to stop, ensuring a smooth traffic flow. Such a feature is especially beneficial for mining sites, where stopping and starting heavy machinery can be disruptive.

The ANPR Lumo is an all-in-one license plate camera, including embedded software, analyzer and IR illuminator. Typical applications include vehicle access control, free flow applications at parking facilities or other situations in which it not desirable to issue RFID tags. If vehicles need to be granted access temporarily or incidentally, the license plate camera is the perfect solution.

Container & Vehicle X-Ray Scanners

Drive-Through Portal (DTP) Container & Vehicle X-Ray Scanners are the ideal security portal solution for accurate, non-intrusive drive-through cargo and vehicles, buses, minivans and car inspection.

The DTP Series is engineered in single or dual-view versions, can be equipped with dual-energy Imaging technology to enhance inspection and material discrimination capabilities.

With limited infrastructure, DTP systems provide state of the art technology for inspection of conventional containers and cargo mounted on trucks, as well as passenger cars and minivans. Utilizing DTP systems, contraband, dangerous materials, and other threats including explosives and weapons are quickly and accurately detected.

Multi-View System for Cargo and Vehicle Inspection

The system's unique combination of multi-energy X-ray technologies provides multiple views of passenger vehicle, cargo and vehicle inspection, helping operators detect more threats and contraband. This systems provides full inspection of passenger cars, vans, buses and heavy trucks.

Three imaging sources significantly improve the detection capabilities and eliminate "the blind zones" of an inspected vehicle: low-energy allows to obtain detailed screening of cabin and high-energy provides a high penetration for dense materials.

Drive-through Cargo and Vehicle Inspection

Lowest dose to vehicle drivers than competing systems; high-throughput cargo and vehicle screening with steel penetration of not less 320 mm for threat and contraband detection; small exclusion zone and operation footprint; easy-to-use operator controls and image analysis software.

The dual-energy X-ray inspection system screens loaded vehicles (container or general cargo), to detect illegal drugs, weapons, explosives and other prohibited and dangerous objects. A dual-energy technology with automatic colour coding and material discrimination allows distinguishing organic, nonorganic materials and metals, and helps to highlight all dangerous and prohibited items and objects hidden inside the vehicles.

Highly Relocatable Drive-Through Cargo and Vehicle Inspection

High-throughput cargo and vehicle screening for threat and contraband detection; drive-through/dual energy x-ray imaging at vehicle speeds of up to 10 km/h.

An easily relocatable, autonomous system, which can be quickly delivered to the needed position using container truck only. It has an integrated unloading mechanism so no crane is required.

This system provides X-ray imaging in lateral projection and is designed for full inspection of loaded vehicles (container or general cargo). A dual energy technology with automatic colour coding and material discrimination allows distinguishing organic, non-organic materials and metals, and helps to highlight all dangerous and prohibited items and objects hidden inside the vehicles.

Rugged Mobile Reader

A custom rugged Mobile Reader is designed to suit the Mining environment and ideal for random credential verification, Emergency Mustering and attendance verification. It allows for faster processing of multiple people at vehicle access points and provides access control in areas without adding physical infrastructure (cabling, brackets, readers, etc.). This solution also removes the use of paper registers and can be used in harsh weather environments.

Car Park Management

Car Park Management allows a site to manage car park access, car park space allocation and occupancy, and ensures the best utilization of your car parking resource.

Allowing for various allocation modes depending on site processes and procedures, it supports self-allocation, Administrator allocation, system automated allocation or assigning based on Access Groups. Users can be informed of allocation via email or SMS, and a range of expiry operations are available. Once the user presents their credential at the terminal located at the car park entrance. Their allocated car park space is displayed on screen along with the date/time that access will expire. This increases security and prevents queues forming at the car park entrance. An alarm can be raised after a specified time if the user has not exited the car park.

Vehicle Management - Vehicle Ignition Control – Immobilizer

Digitise vehicle management through the use of a smart immobilizer integrated into your access control system.

With an integrated RFID reader, radio and secure electronics housed inside a cylinder core, communication with your electronic access control system is via a compatible Aperio Communications Hub. An LED provides instant status visualisation and the online cylinder offers several smart credential handling options to enable emergency access in case of a communications failure with the access control.

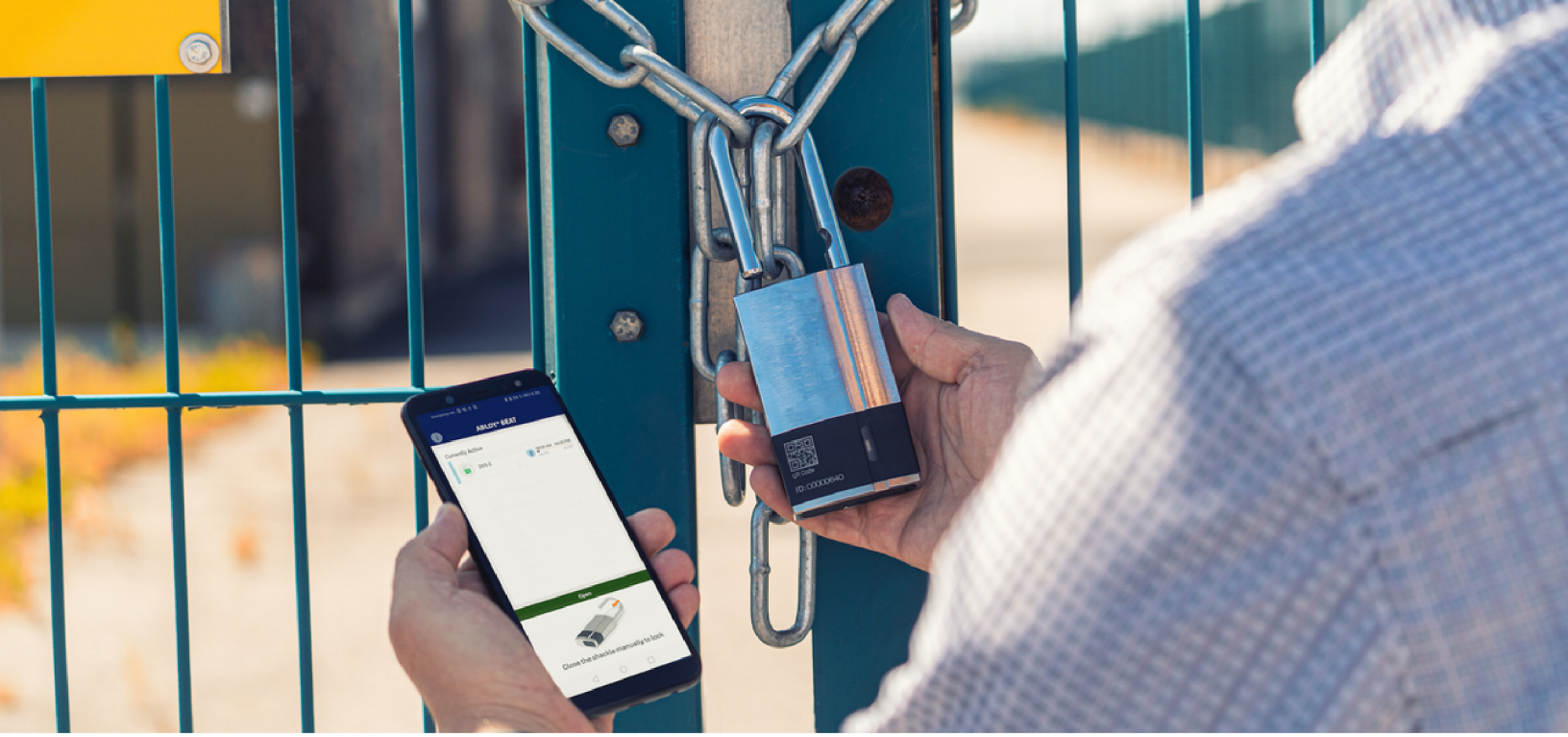
Up to 1,000 recently presented valid credentials can be cached automatically for up to 30 days, for user convenience and so the vehicle may be started without security administrator intervention. Alternatively, the access control system can load, modify and delete credentials to the units for the same purpose with time limitation or permanently.

Vehicle Ignition Control - Intelligent Key Start

Digitize vehicle ignition by integrating it with your Workforce Management software, to create intelligent key starting.

Employees operating company vehicles and equipment can access the key cabinet via biometric, badge or pin. Key validity is automatically uploaded via a Wall PD or by the administration office.
After protocols are followed for site entry, the employee conducts a pre-shift inspection of the vehicle. Once the cab is accessed with valid credentials and keys, the vehicle electronics are activated. The vehicle is returned at shift end to the workshop or parking bay, and the employee updates the key at the Wall PD and returns the key to the cabinet.

An anti-pass back and over-time/out-of-schedule feature can be activated for additional security and procedural compliance.



Locking Solutions

Secure locking of entry and exit points in a mining environment is of high importance for the safety and security of both personnel and assets. Mines are inherently hazardous environments, and controlling access is crucial to prevent unauthorized individuals from entering areas they shouldn't. Moreover, secure locking mechanisms ensure that everyone on site can quickly exit in case of emergencies, minimizing the risk of injury or loss of life.

Safeguarding entry and exit points help protect valuable equipment and resources from theft or vandalism, ensuring the smooth and efficient operation of the mine. Overall, secure locking mechanisms are vital for maintaining a safe, controlled, and productive working environment.

Electromechanical Locks

Electromechanical locks for high-security applications come in various types, each offering unique features and levels of security for effective control of assets.

Magnetic Locks are highly reliable and suitable for high-security areas, as they can withstand substantial force and are difficult to pick.

Electric Strike Locks are installed within the door frame and offer secure access control in combination with other access systems.

Electric Bolt Locks are robust and suitable for areas where a deadbolt-style locking mechanism is needed.

Electromagnetic Shear Locks are tamper-resistant and offer a high level of security.

Electromechanical Deadbolts provide a strong physical barrier and can be integrated into other access control systems.

High-Security Cylinder Locks feature advanced keying systems, such as restricted keyways or patented key control, to prevent unauthorized key duplication.

Security Doors

To deters breach attempts and secure assets, Security Doors meet the highest demands for safety, security and convenience.

Security Doors offer maximum protection of people, property and assets within any building, . A comprehensive range of pre-engineered security doorsets are available specifically designed for either internal or external use. These can also include Cleanroom, Acoustic, Blast and Ballistic, Fire and Personnel doors.

Intelligent Key Systems

Key management systems enable the securing, control, and auditing of key handling giving effective control of assets.

The mining industry contains a range of potential risks and dangers both in open pit and underground operations. It requires the highest security and safety systems to help ensure the well being of its employees, to prevent theft of raw material and equipment and keeping unauthorised people off premises. This is done by controlling access to doors, to different gates, mine entry and exit points and controlled explosion areas with restricted access hence improved security, liability and a safe working environment.

While allowing freedom of access to enable smooth daily operations, extremely strict control of keys and access rights play a vital role in critical locations. Access rights must be strictly monitored to avoid any potential danger to the equipment or to the premises along with assuring the safety of the employees. Patented ABLOY® high security products are designed and manufactured for extensive use in the most severe environments. They combine high security features with highly restricted key control along with user friendly software to help control and administer your daily key system operations.

To ensure safety during repairs and maintenance, energy sources are normally isolated and machines are shut off and rendered inoperable. These machines have to be secured so that they can not be started up again until the repairs and maintenance are completed.

ABLOY® padlocks assure that the energy source of these machines are locked and eliminate the threat of someone inadvertently turning the power back on until the maintenance work is securely carried out.

Be able to manage your keys and personnel access rights from a central location. The convenience of remote management and high-level security throughout your business anytime and from anywhere.

With the PROTEC² CLIQ, you have one key only. The electronic key makes it easy to modify access rights for each user and need. If a key gets lost, the key can't be revalidated which reduces security risk without rekeying. The key is also able to open both mechanical and electronic locks, so there is no need to change your entire system to electronic.

The browser-based Web Manager adds remote management capability and transparency to key movement and access rights management with a full audit trail.
The mobile app and keys add the convenience of a smartphone solution with access rights updatable wirelessly, anywhere at any time via a mobile app and Bluetooth key.

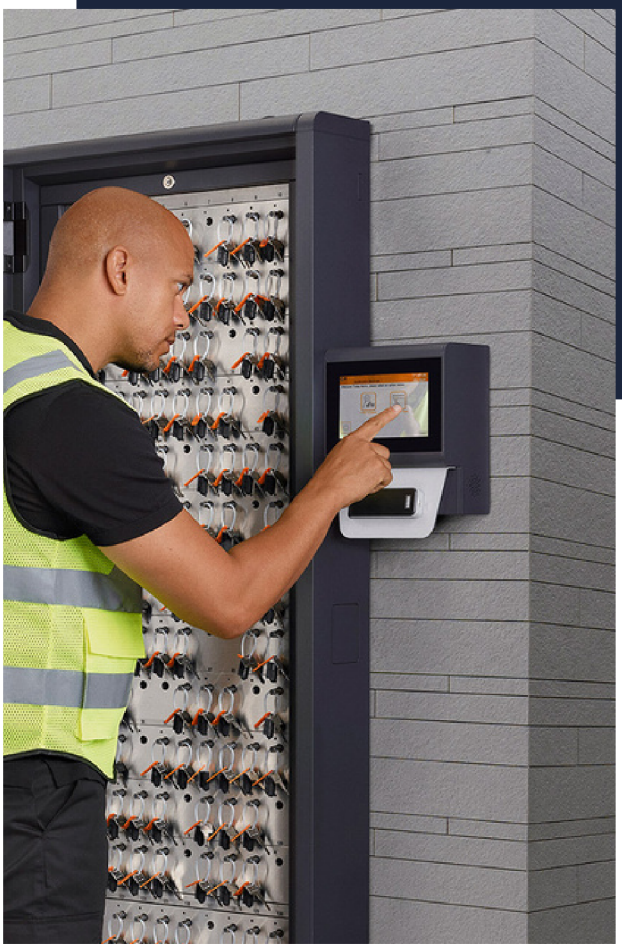
Key Cabinets

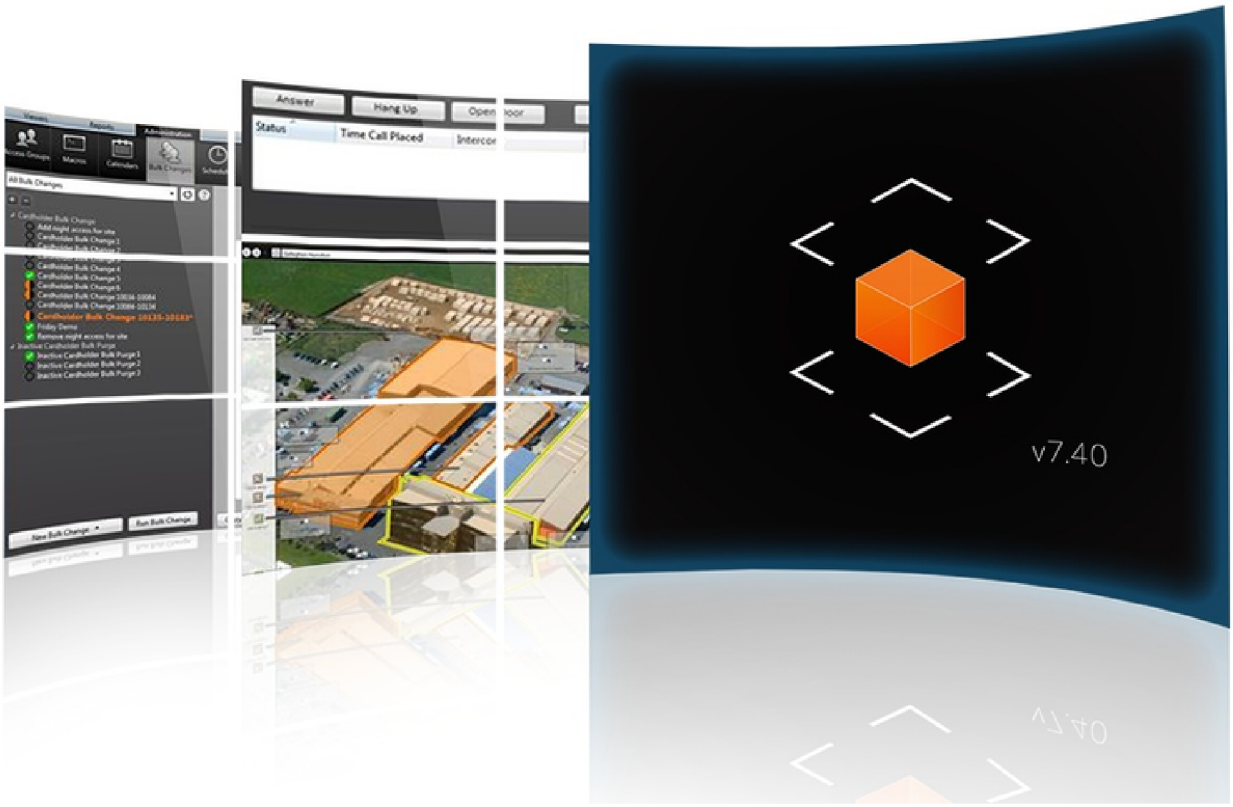
Mining sites possess unique challenges and risks in the areas of safety and security. Keys and asset control policies are critical in the mining environment. It is heavily regulated and operators must be 100% compliant to ensure high security and safety level, minimising consequences and mitigate vulnerability which could lead to significant penalties and costs for the business. Intelligent key management solutions and electronic key management systems secure, manage and audit the use of every key, ensuing that only authorised staff are allowed access to the custom key cabinets and only then, to designated keys.

The high-security key management system provides a full audit trail of who removed the key, when it was taken and when it was returned keeping your staff accountable at all times.

Beyond securing and managing access to keys, solutions can generate unique workflows that support important processes of the business – require a secondary authorisation for master keys, pair key sets to guarantee the lockout of hazardous systems during maintenance, or set curfews which automatically send notifications to administrators, managers or users.

Some of the features of an electronic and intelligent key cabinet system include Exception Reporting, Service & Maintenance Requests, Fault Logging, Asset Return Assurance, Lockout-Tagout (LOTO), Reason Logging, Faulty Item Exchange, Multiple Authorisations, Email Notifications and Seamless Integration.





System Operation

At the heart of your Access Control system there needs to be a powerful software that provides a central management platform designed to give you complete site control.

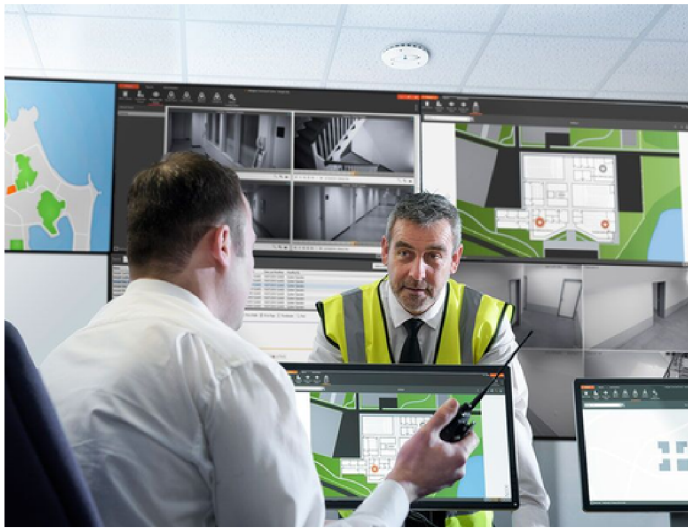
Gallagher Command Centre provides centralized site visibility and monitoring, ensuring situational awareness for all buildings and the perimeter on both local and remote sites.
Command Centre is fully configurable to meet the unique needs of your site, from perimeter solutions, intelligent access control and building management right through to critical sites with some of the highest security requirements.

Information is displayed in real-time, allowing a quick and accurate response to security threats, while data visualization and reporting enables you to make operational decisions with greater precision.

Alarms & Events

Monitor and acknowledge alarm activations anywhere on your site with ease, including access control events, perimeter breaches and building management system alerts.
Set entry and exit delays for intruder alarm zones, program perimeter security fencing alarms, and use schedules to automate access and alarm state changes.

Command Centre's seamless integration with complementary third-party video systems provides you with a visual and audible record of events associated with an alarm. You can view video as a live stream or use pre-event, during event and post-event footage as reliable evidence if required.



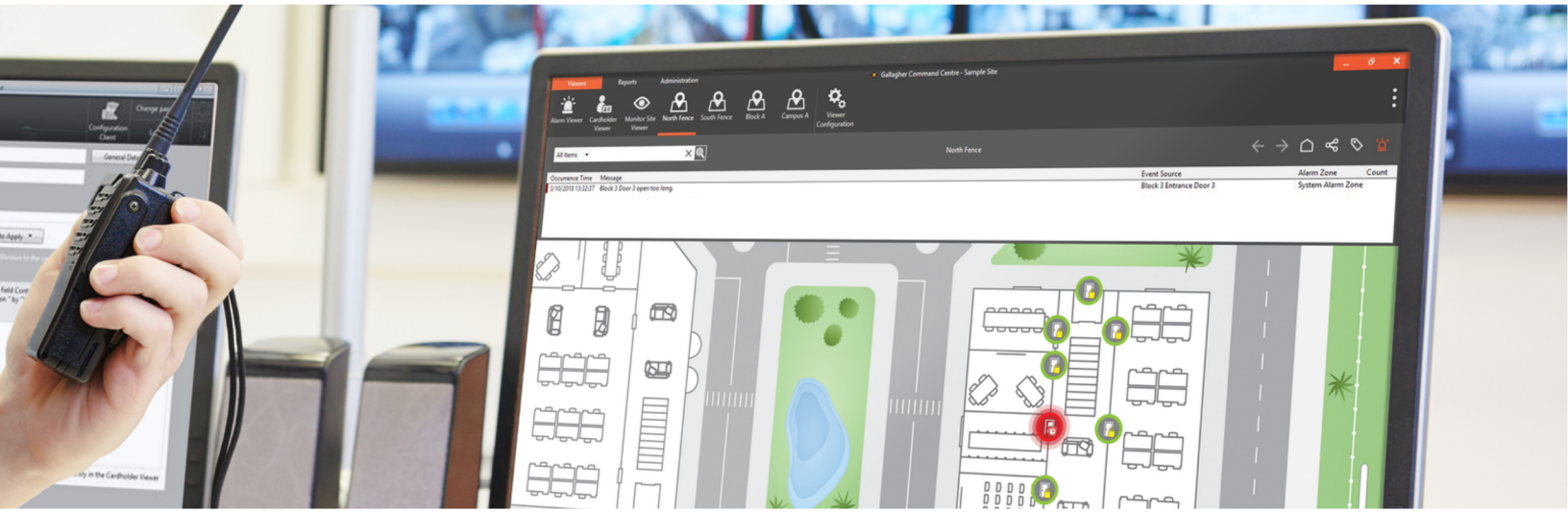
Site Plans for Operator Efficiency

Operators need situational awareness of the entire area their system covers, whether one or multiple sites, without information overload. During an alarm activation or other security event, operators need to be able to focus in on specific areas quickly and easily from one screen, and be presented with relevant information and actions at the right time.

Sensitive items or assets such as key safes or high security clearance rooms need to be recorded on site plans, but their visibility needs to be restricted to certain operators.

Gallaghers Site Plan feature provides centralized site management visibility and situational awareness for all site buildings and perimeter, whether local or remote. This provides a powerful solution for total site control, with a single screen interface that is intuitive and simple to use.

In the case of multiple alarm activations, prioritization and color coding of alarms makes it easy for operators to respond appropriately. Visual representation and ability to drill down into more detailed layers provides more meaning and allows operators to make better decisions to contain or respond to a situation.



WORKFORCE AUTOMATION

Investing in technology that improves Workforce Automation in the mining industry offers numerous benefits, including improved safety, increased productivity, cost savings, and the ability to address and resolve daily workforce challenges quickly. Integration of these technologies will ultimately enhance a mining operations overall efficiency and sustainability.

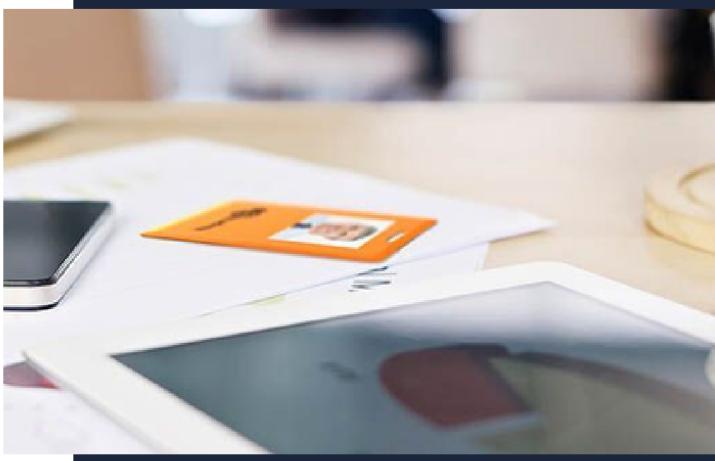
Action on Access

The Action on Access solution allows an operator to configure a set of sophisticated access rules. These rules can be used to automate when, where, and why a cardholder can access an area.

By presenting a card or mobile credential at a nominated reader, access can be enabled or disabled (card, competency, or access group membership) immediately or in the future. This provides the ability to set up sophisticated access rules using simple actions.

This solution controls when, where, and why a cardholder can access an area, based on previous movements. It also provides a useful way to manage temporary worker and contractor entry and time on site. Rules can include:

- Enforcing payment prior to exit
- View induction material before entry
- Conducting regular safety tests
- Specify billable hours for contractors
- Duty of care: Employee check-in



Anti Pass Back & Anti-Tailgating

Gallagher Command Centre provides comprehensive methods for managing people movement including anti-passback which controls entry processes and anti-tailgating which controls exit processes.

With anti-passback, a card used to access a zone may not be used for re-entry to the same zone unless it has been used to exit from that zone. The purpose for this feature is to stop a person already in the zone from passing their card back to a second person to allow the second person to enter the same zone on the one card.

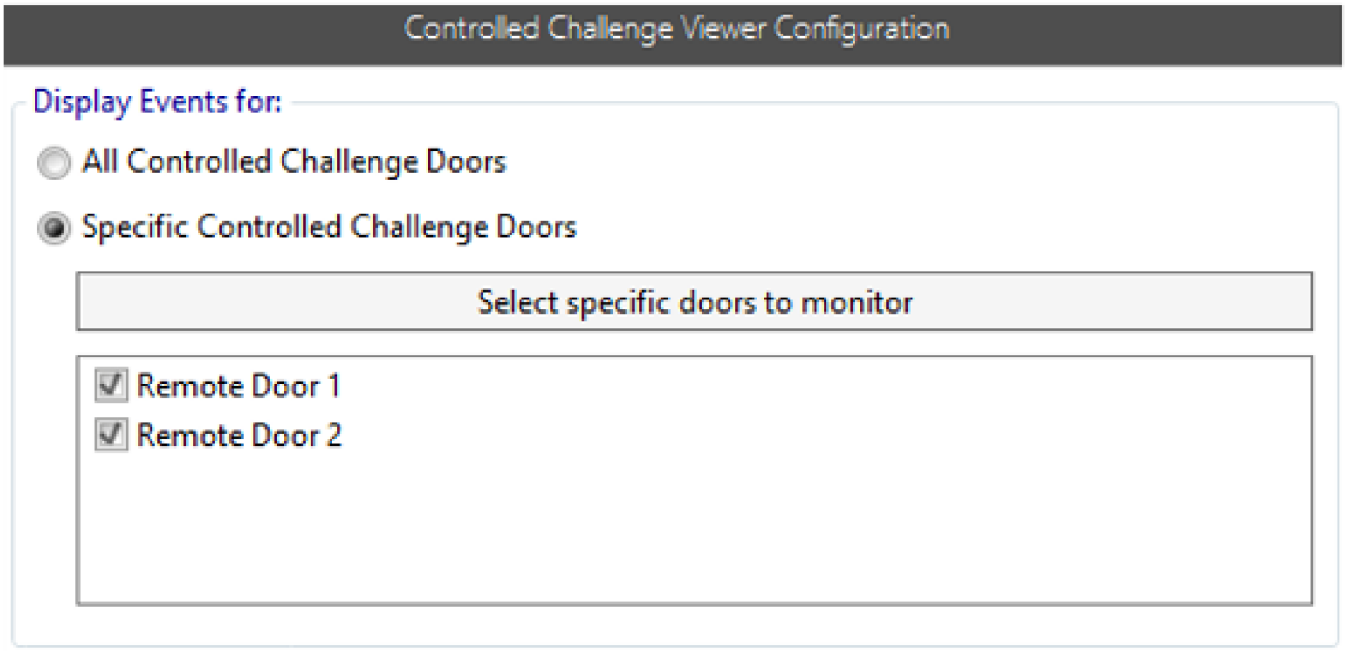
With anti-tailgating, a card cannot be used to exit a zone unless it is recorded as being present in the zone.

Dual Authorisation

For sites that require a more secure and granular solution for specified doors, for example, a high security area, Dual Authorisation is used.

Flexibly enforce either the same or different Cardholders to use particular credentials at a reader when dual access is required, increasing security at the door.

Optionally restrict the first and second access authorizations by Card Type (Card, Biometric or Mobile Credentials) and/or Access Group and enforce these to come from the same or different cardholders.



Controlled Challenge

Need to double check a cardholder's identity at a door?

A Challenge allows you to confirm and control the identity of a person passing through a nominated door via visual comparison of a cardholder image against a live or video image.

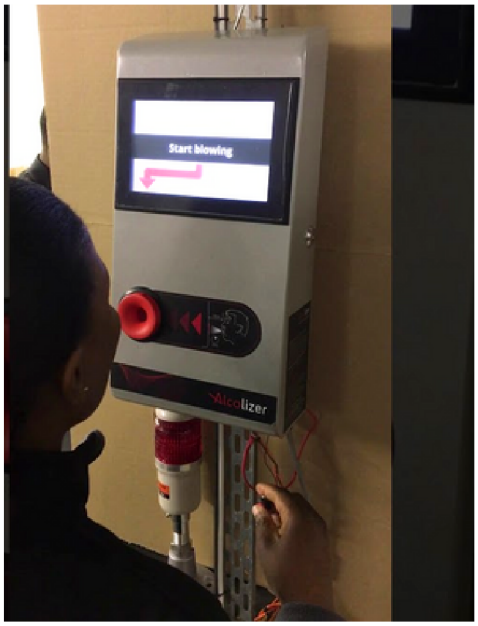
View-only Challenge - presenting information about cardholder's badging at the door for an operator to see on a view-only basis.

Controlled Challenge – requires the operator to grant or deny access based on the verified identity of the cardholder.

Contract Tracing

If an individual was deemed a health risk (i.e. has tested positive or is suspected of having a contagious condition) and has entered your site, using the Contract Tracing report, an Operator will be able to identify other cardholders who might have an elevated risk of infection.

This information can be used to proactively identify those cardholders who need notification about the potential exposure.



Breathalyzer & Pedestrian Entry

The sobriety of staff needs to be ensured to prevent disruptions in production that lead to substantial costs as well as harm of injury to people on duty. Manually selecting access points for monitoring can leave gaps in security coverage, and the possibility of employees aiding one another to bypass the system further complicates matters.

Introducing the Alcolizer on site offers a robust solution to address these concerns. All cardholders are required to undergo a Breath Alcohol Concentration (BAC) test at the Alcolizer unit. Access is granted or denied based on the test outcome. Additionally, random cardholder selections for BAC testing at the Alcolizer unit can be used. This approach not only removes the potential for human error in selection but also curbs the spread of information among employees trying to manipulate the system.

Ultimately, the solution not only safeguards productivity but also cultivates a safer and more secure work environment, reducing the potential for accidents, errors, and operational disruptions stemming from impaired staff.

Breathalyzer & Vehicle Entry

Introducing a handheld Alcolizer that is designed and made for demanding conditions. The Alcolizer delivers outstanding performance in rugged and remote environments. Integrated with a gooseneck at critical access points, drivers can perform a breathalyser without need to get out of the vehicle. This eliminates bottlenecks at entrances and provides a smoother operational flow.

Drug Testing

For quick Drug Testing on site, the LE5 Drug Tester technology incorporates state-of-the-art liner Detector Arrays and a patented Optical Filtering System to deliver accurate and fast drug test results from just 90 seconds.

Results are clearly defined and displayed so the user is not required to interpret the presence of a line like other test devices.

Random Selection

Random selection can be used to select personnel for checks, avoid biases, whilst complying with health and safety requirements.

Randomly select cardholders for checks, whether it be drug and alcohol testing, vehicle or cardholder spot checks. Random Selection ensures unbiased selection that can be configured to meet most health and safety requirements. The Random Selection Admin viewer provides Operators with flexibility to manage the percentage based chance of selection, the times in which selection can occur and associated access groups of a Random Selection Item.

Competency Management

Ensure that competencies such as vehicle licenses, certificates, alcohol tests, site inductions, etc. are up to date when staff and visitors access specific areas.

Competency Management provides the ability to track the qualification belonging to a cardholder. It can be used to either grant or deny access based on the cardholder's qualification status. Cardholders can be assigned multiple competencies, providing the ability to tailor access to specific zones only.

Additionally, both the cardholder and their supervisor can be notified via SMS and/or email in advance of the qualification's expiry. This allows the site to organize for a recertification in advance of the expiry date, insuring against a surprise shut down due to pulling an employee out of work during a shift.

Implement, enforce and report on business policies and competencies at every point using physical security infrastructure.

Bluetooth Tags

The time it takes for employees to badge at each part of the site, often introduces queues, and can be a huge operational expense for the company.

Tag Tracking provides sites with the means to conveniently update cardholder location as they move around site. Cardholder access into an Access Zone is granted or denied when a wearable Bluetooth Tag is identified at Bluetooth enabled readers. The Last Zone Entered is updated to the Access Zone, ensuring cardholder location is identified.

Sites will utilise this feature to identify cardholder location as they move around a premises for reasons of health, safety, and convenience.

Regulated Zones

Setting up Regulated Zones enables better health and safety management. Regulated Zones provide automatic management of cardholders in a zone, sending warnings and or reports of excessive time on site with respect to Health & Safety guidelines.

This can also be used to govern shifts on site and avoid fatigue by managing:

- Shift Duration - cardholder time-on-site within a single shift (period of time)
- Inter-shift duration - cardholder minimum break period between shifts
- Consecutive shift duration - cardholder accumulated time-on-site across multiple shifts.

An event is raised when a cardholder has been inside the Regulated Zone for a period of time greater than the configured shift duration. An operator can configure Notifications for email and/or SMS messages.

Fatigue Management

Controls introduced to manage fatigue on a site can assist in the prevention of fatigue related incidents reducing the risk to people and/or company property. Any incident inevitably costs companies time and money in both repairs and lost productivity. Regulated Zones is an added control for the management of your workers fatigue and prevention of these types of incidents.

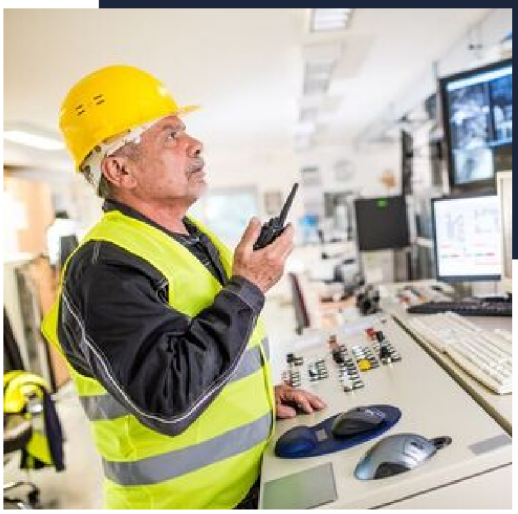
For instant intervention, the relevant cardholder can have their access removed to restrict their movements.

Exposure Management

Monitoring the exposure time of workers to harmful substances is a vital control for risk mitigation for workers required to operate in these types of areas.

Where there is a potential for exposure to hazardous substances the Regulated Zone functionality provides a method of defining and controlling the workers exposure through monitoring the cardholder's time in the designated area.

Defining specific rules for certain locations within a site means alarms can be proactively raised when a worker has exceeded a certain time (in an individual visit or cumulative). To prevent exceeding the permissible exposure levels of a worker their access can then optionally be disabled for the hazardous area until a sufficient absence has been realised by the system.



Dynamic Exit Zoning

Several mine sites carry busloads of workers to and from work areas each shift. There might be a bus trip of 30 minutes or longer from the pickup location.
For operational efficiency and time saving, Dynamic Exit Zoning can be used to accurately capture and identify cardholders as they enter site.

The Cardholder will need to badge when they enter and exit the bus. The bus itself will register all zone changes using its Nedap tag where there are entry controls at primary entry points.

The advantage that this feature provides is that it takes away the need for cardholders to badge at a hardwired reader at their work location once they exit the bus. This is ideal for sites where cardholders are being taken into a large geographic work area via a gateway (equipped with tag reading technology such as Nedap) where there is no guarantee there will be a hardwired card reader at the precise location where the bus will stop.

Tag Boards

Tag boards allow operators to actively monitor cardholders within a zone in real-time as they enter or leave an area, providing support to Health & Safety operations with instant visualization of zone occupancy. This fundamental Health & Safety procedure is carried out by using the Tag boards feature coupled with the mobile readers, which enables via prompt communication with the main operations centre, to quickly identify any missing person (s) and hence initiate proper response.

Tag Board functionality has been extended to specifically monitor contractors/visitors or specific groups to a site within the configured zones. The Tag Board tile shows the total number of people and the specific individuals who are in a particular area, where the area can be made up of one or more zones.

By setting up electronic 'tagging' stations and implementing long-range tracking of personnel, control room operators can track how many people are in different locations underground and identify the area where each worker is located. This data can then be integrated into firing procedures to ensure that explosives are only triggered once all personnel are accounted for and safely in designated areas. Additionally, tagging portals provide workers with personal information and photo ID images, reassuring them that the system has accurately recorded their location as they move around during their shift.

Know all your employees are accounted for at all times in a range of evacuation situations. Any number of Areas can be configured for different site views e.g., to show all people in all mine shafts on site. Cardholder movements are immediately reflected in the system site-wide providing all operators with a single, real time view in the event of an emergency.

Broadcast Notifications

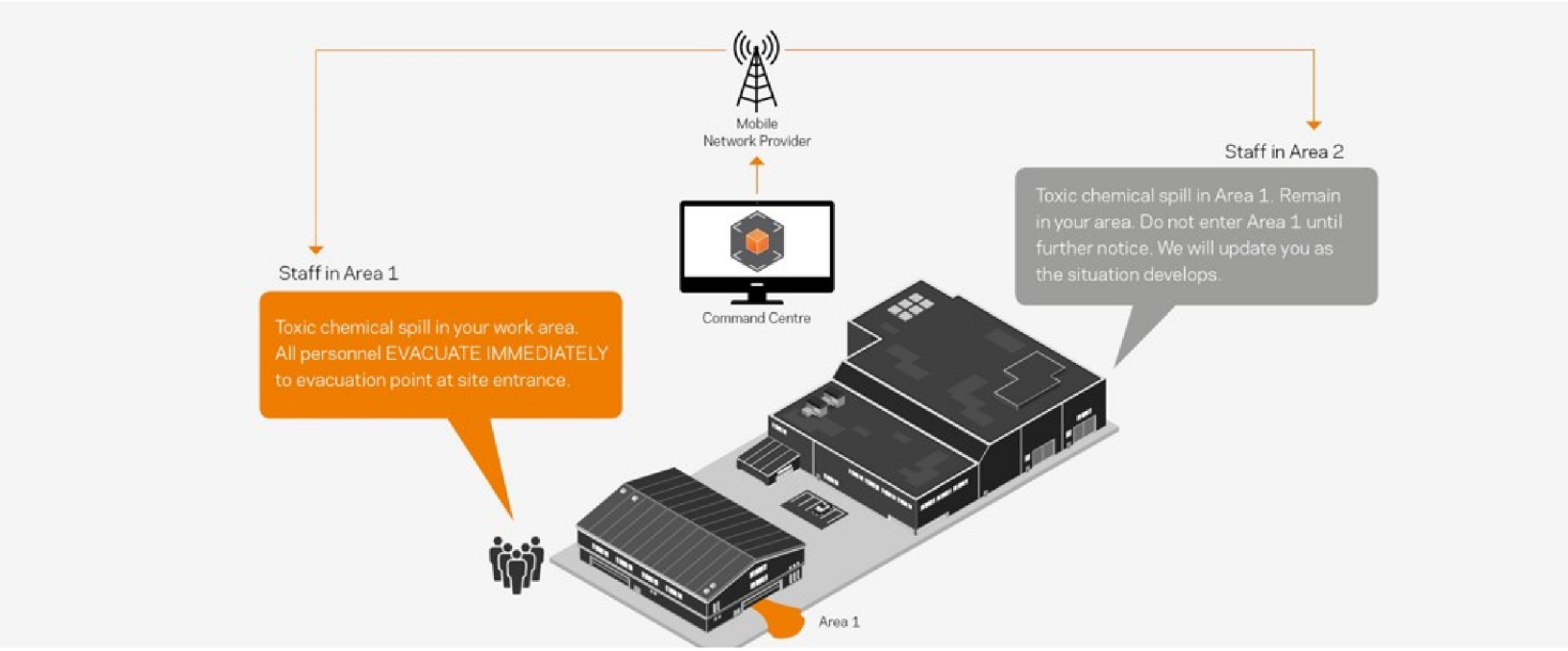
Reaching various user groups in case of an emergency and communicating instructions to a large number of users can be extremely challenging.

With the ability to reach multiple recipients quickly and accurately in an emergency, the Broadcast Notifications feature is a powerful, reliable solution for any large site.

In emergency or lockdown situations where employees could be in danger, preconfigured Broadcast Notifications and recipient lists allow security personnel to quickly send critical instructions to multiple recipients in one simple step. Broadcast Notifications can also be automatically triggered by alarms and events.

In non-emergency situations, ad-hoc Broadcast Notifications can be used to communicate hazards on site or notify specific groups of shut downs in their area.

Secure, trusted real-time alerts and important information can be sent to defined groups, or all staff, via email, text message (SMS) or the Gallagher Mobile Connect App.



Evacuation Management

If a specific area needs to be clear of personnel prior to high-risk activities, (e.g., a blast zone needs to be clear prior to explosives being detonated), then an organisation needs to have situational awareness of the number of people within various zones while in or away from the control room.

With evacuations (both real and drills), a company's evacuation procedure generally involves having to print a list of people in a zone to check off. This amounts to lost time and production costs, and potential danger to personnel.

Security information is available in real-time in Command Centre and can identify where people are on site. This ensures that you can quickly communicate important information to them, keep them away from danger and ensure the right people are in the right place in case of an emergency or breach.

Effective Workforce Management

By easily identifying where people are onsite, you can move staff to the correct areas or muster points; and lock or unlock doors to keep them safe.

Partial or total site lockdown down during threat or emergency situations allows only a selected group of staff (e.g. rescue or medical personnel) to enter and exit locked down zone/s.

Lockdown or Free Flow State

Lock or unlock access zones based on specific triggers. In the event of an emergency be prepared for which areas to lockdown or make a free flow state, for example opening up turnstiles in the event of a site evacuation procedure.

Operations & Camp Management

Camp accommodation access can be a logistical challenge to manage, as keys can easily be lost meaning locks and keys have to be replaced at high ongoing cost.

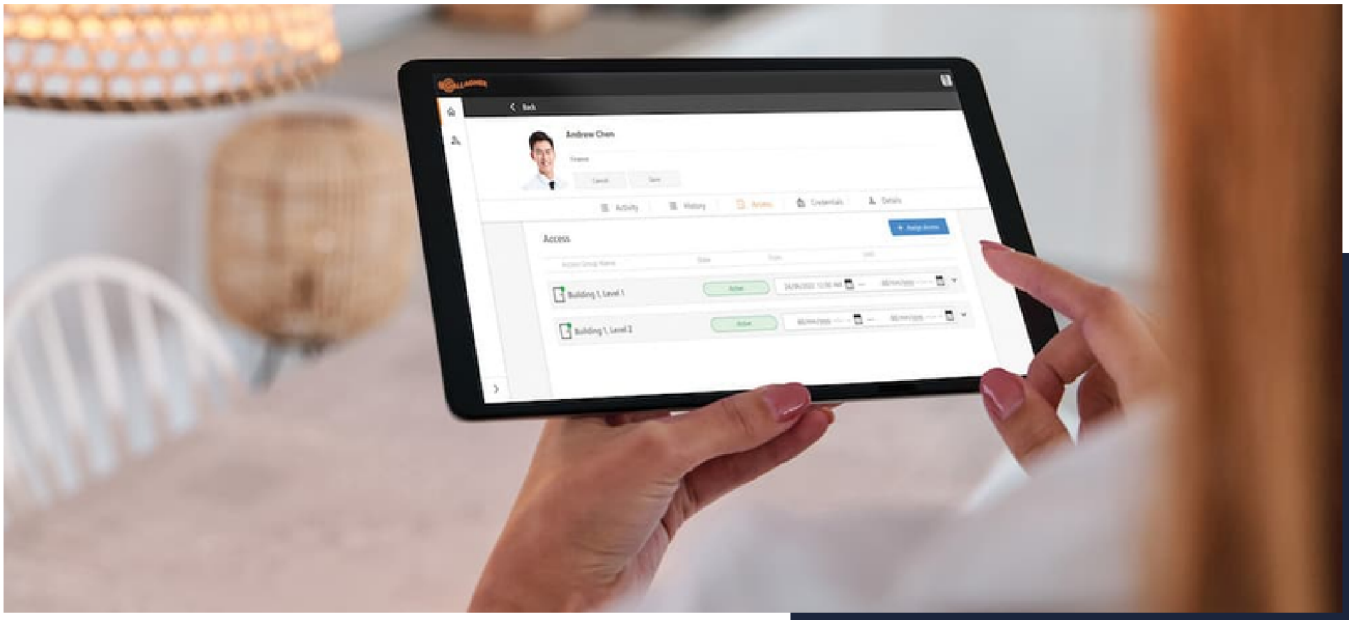
Day to day electronic campsite accommodation access is an ideal replacement for the traditional key and lock method.

Gallagher provides a cost effective electronic access control solution through a high level interface with Salto wireless, offline access control door readers. Employees are able to use their single Mifare ID access card to gain access to housing as well as other more highly secured areas within the mining environment.

Locker Management

For secure and efficient operations, Locker Management provides electronic control of existing lockers or equivalent access controlled machines like autonomous distribution equipment. The locker is unlocked for access upon presentation of a valid card at the reader.

Manage access, automate allocation, and ensure the best utilization of the resources all natively from within Command Centre. Flexible allocation times and a dynamic viewer combine to make agile locker use a reality. Can be configured from X hours to permanent. The system supports self-allocation, Administrator allocation and system automated allocation.



Cloud-Hosted Solution

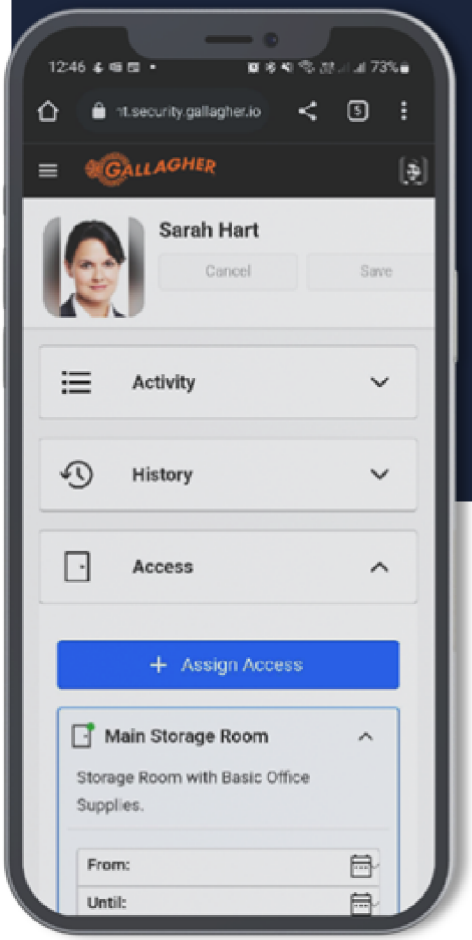
Gallagher Command Centre Web provides the flexibility and security to easily manage your site from anywhere with an internet connection, saving time and money.

Command Centre Web connects back to the sites on-premise server using the Gallagher API Gateway, allowing safe and secure access from anywhere there is an internet connection.

Traditionally, cardholder administration can only be done on site from a workstation, limiting where it can be done. Now, with Command Centre Web, cardholder management to be performed off site from a variety of internet capable devices - even after hours.

This reduces business costs by removing the need for a full workstation for those operators who only need to cardholder management functions. It also provides flexibility as operators do not need to be on site or at a workstation to provide cardholder management support.

No sensitive data is ever held in Command Centre Web, or associated cloud services. Data remains hosted on the customers own Command Centre server, and by Command Centre Web through REST API via the API Gateway, which has no persistent storage. Any updates made in Command Centre Web will be sent to the Command Centre server via the same channel.



System Integrity

In organisations of all sizes, there is a need to proactively address the ever-evolving threat of cyber-attacks, including via security systems, identifying and addressing software and hardware vulnerabilities.

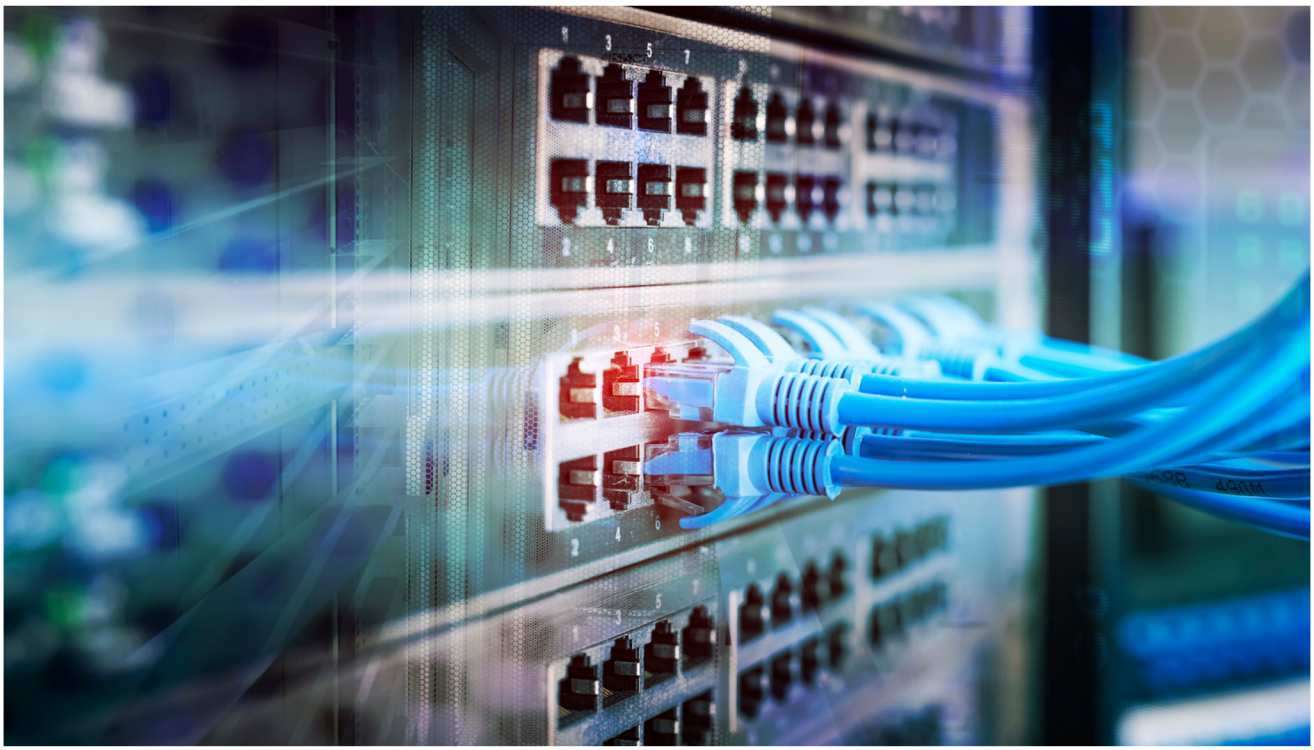
With hardened cyber protection, you can be assured that your security system has the highest possible testing and cyber security. Gallagher regularly engages with third party penetration testers to ensure cyber security is baked into the software development at every level.

Save time and create efficiencies in cyber protection with Gallagher's central management of devices, which provides the ability to update the code in all downstream Gallagher devices, without having to physically go to each individual device.

Customers can ensure they are protected against loss of personal contact details and access data, and the resulting damage to their reputation. Gallagher security solutions store personal data fields on a secure and encrypted SQL database, only accessible using a random system-generated alpha-numeric code.

System Hardening Guide

Whilst designing an Access Control system and throughout deployment, there needs to be an understanding of the security consequences of various deployment options. Gallagher have written a comprehensive hardening guide to ensure that good IT policy and practice is implemented in terms of network routers and firewalls, control of privileges, access and security updates in the Windows environment, and a strong password policy is enforced at application level.



Security Health Check

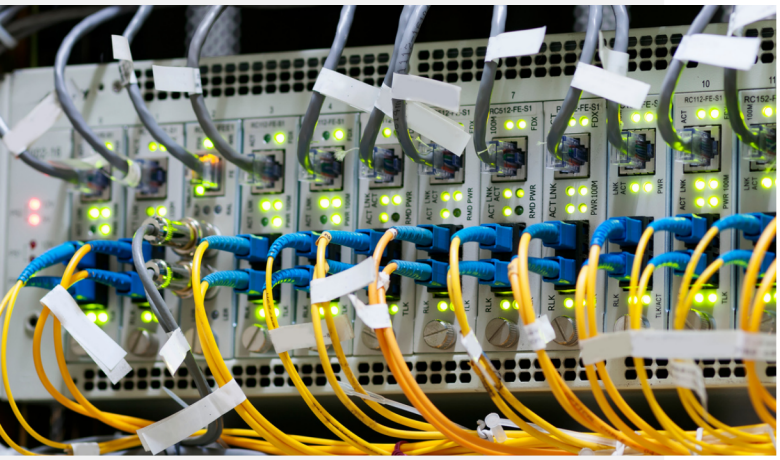
Presently, organisations often lack the necessary awareness and comprehension of both existing and emerging vulnerabilities within their security systems, along with a clear understanding of the potential consequences these vulnerabilities could entail. Furthermore, conducting annual security system audits through third-party services proves to be costly and time-intensive.

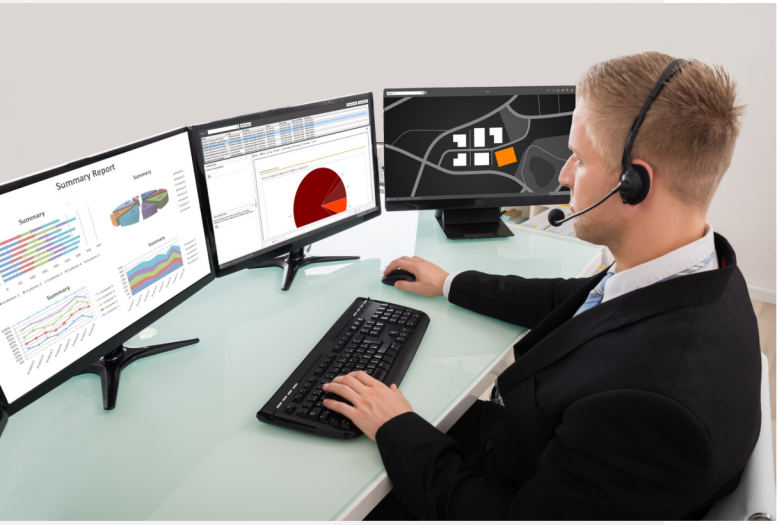
Organisations struggle to effectively communicate identified security vulnerabilities, their relative importance, and corresponding priorities to management or key decision-makers. Errors stemming from system configuration can introduce security risks, while the prominent cyber risk primarily results from configuration, implementation, and human error.

Gallagher offers a solution to these challenges through its complimentary Security Health Check (SHC) utility.

This tool empowers customers to conduct an on-demand evaluation of their Command Centre system's status. Using the results of this evaluation, Gallagher generates a concise and comprehensible summary report. This report not only rates the severity of identified threats but also provides tailored recommendations for proactive risk mitigation measures.

The introduction of automated auditing for Command Centre configuration presents the opportunity to identify and rectify issues pre-emptively, preventing them from escalating into more significant and complex problems. This approach enables organisations to bolster the security and effectiveness of their systems while efficiently communicating vulnerabilities and enhancing decision-making processes.





Controller Offline

With the offline controller capability, system integrity is maintained even during loss of connection with primary servers.

If a Gallagher controller is offline from the server and associated operator workstations, the controller will continue to operate providing access control for the connected doors in accordance with the current controller stored configuration. Events are stored in controller memory and will automatically upload to the server on restoration of the controller to server connection.

BACNet

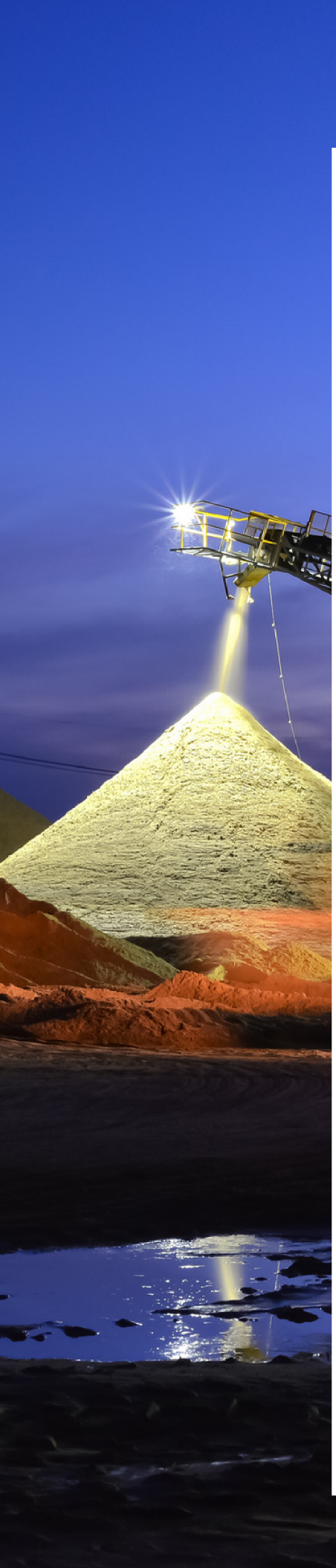
In the context of mining, establishing robust communication between an Access Control and building management system through the implementation of the BACnet protocol presents a valuable opportunity to optimize site operations. By leveraging this protocol, you can effectively monitor and manage critical aspects such as HVAC (heating, ventilation, and air conditioning), air quality, and other building systems. This integration offers time and cost savings by centralizing control and oversight. The ability to promptly detect generator malfunctions, refrigeration breakdowns, filtration pressure anomalies, fuel control system overflow, and mechanical faults provides a window for proactive response, preventing issues from escalating into more complex and expensive challenges.

Reporting

Command Centre's advanced reporting features allow you to identify where hardware is operating well and make informed decisions about where to focus your resources. For example, sections of perimeter fencing where breach attempts are most often detected may require more security presence. Reliable door, zone and perimeter status reporting removes the need for manual inspections, while integration with imaging systems provides you with a visual and audible record of events, which can be relied upon as evidence if required. Command Centre gives you the ability to configure reports that run on a repeating schedule, or in response to ad hoc events such as a fire alarm. This easily customized, accurate and timely reporting functionality reduces both administration time and cost for your business.

Templates

Retrieve and report on a variety of stored information including events, cardholders and their access, cardholders and their location, historical card states, site items or exception reporting. Configure reports to run on a repeating schedule or in response to events such as a fire alarm.



TIME & ATTENDANCE

The mining industry faces significant concerns related to working hours, encompassing both qualitative and quantitative aspects. Inadequate scheduling, excessive work hours, extended overtime, and insufficient training contribute to employee fatigue and consequent human errors.

These issues lead to economic and social ramifications, including diminished productivity, heightened accident rates, increased instances of occupational diseases, absenteeism, resignations, and elevated workers' compensation claims. To counterbalance these challenges, the mining sector seeks effective working-time arrangements to curtail these negative outcomes and foster enhanced operational, financial, and labor relations advantages.

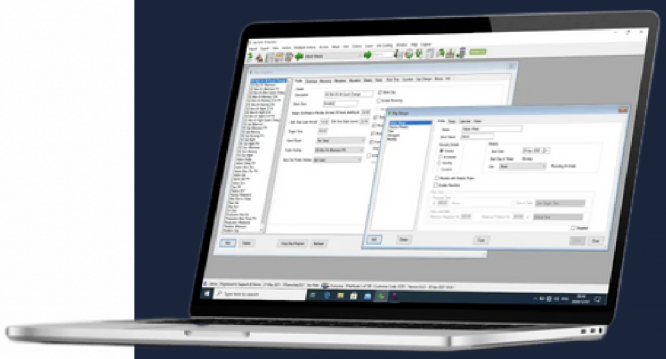
Addressing these concerns necessitates a strategic approach to working-time management in mining operations. To ensure the well-being of employees, extended workdays should be accompanied by concerted efforts to establish and uphold safe and healthful working conditions. Additionally, given the unpredictability of potential outcomes stemming from prolonged work shifts, it's crucial to periodically assess each miner's condition. Integrating working-time data into accident and incident reports proves instrumental in this.

To mitigate risks such as time theft, bolster real-time monitoring, enhance data reporting precision, and facilitate streamlined payroll management, the implementation of a comprehensive time and attendance system is recommended. This system would empower the mining industry to effectively manage and regulate working hours, thereby contributing to a safer, more productive, and efficient work environment while optimizing labor-related processes.

Workflow Management

With an integrated time and attendance systems you are able to manage your organization's workflow and supervisor hierarchy. Enforce task-based workflow for Pre-Authorized Overtime, Authorized Overtime, Manual Adjustments and Manual Clocking, captured by users.

Automate escalation of tasks unattended for a specific time frame, notifying the users' supervisor. Notify the Manager automatically of alerts including late arrival, short time and absenteeism.



Job Costing

Capture and calculate job hours and costs including each job's activity. With a time and attendance system, you can assign specific rates for each activity, per job or per job hours. You are then able to use Job Costing clocking transactions for T&A calculations.

Mobile Clocking

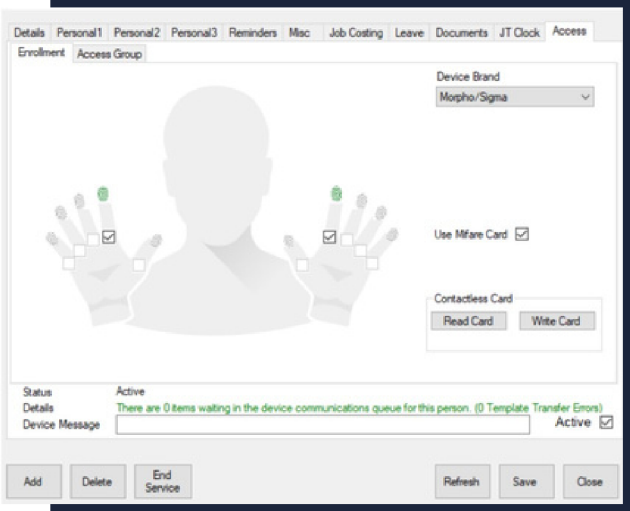
Clock teams or individuals on the move through real-time clocking. Make use of Geofencing, specific areas for specific times, photo and GPS information for each clocking. The system will handle offline transaction until connectivity is restored.

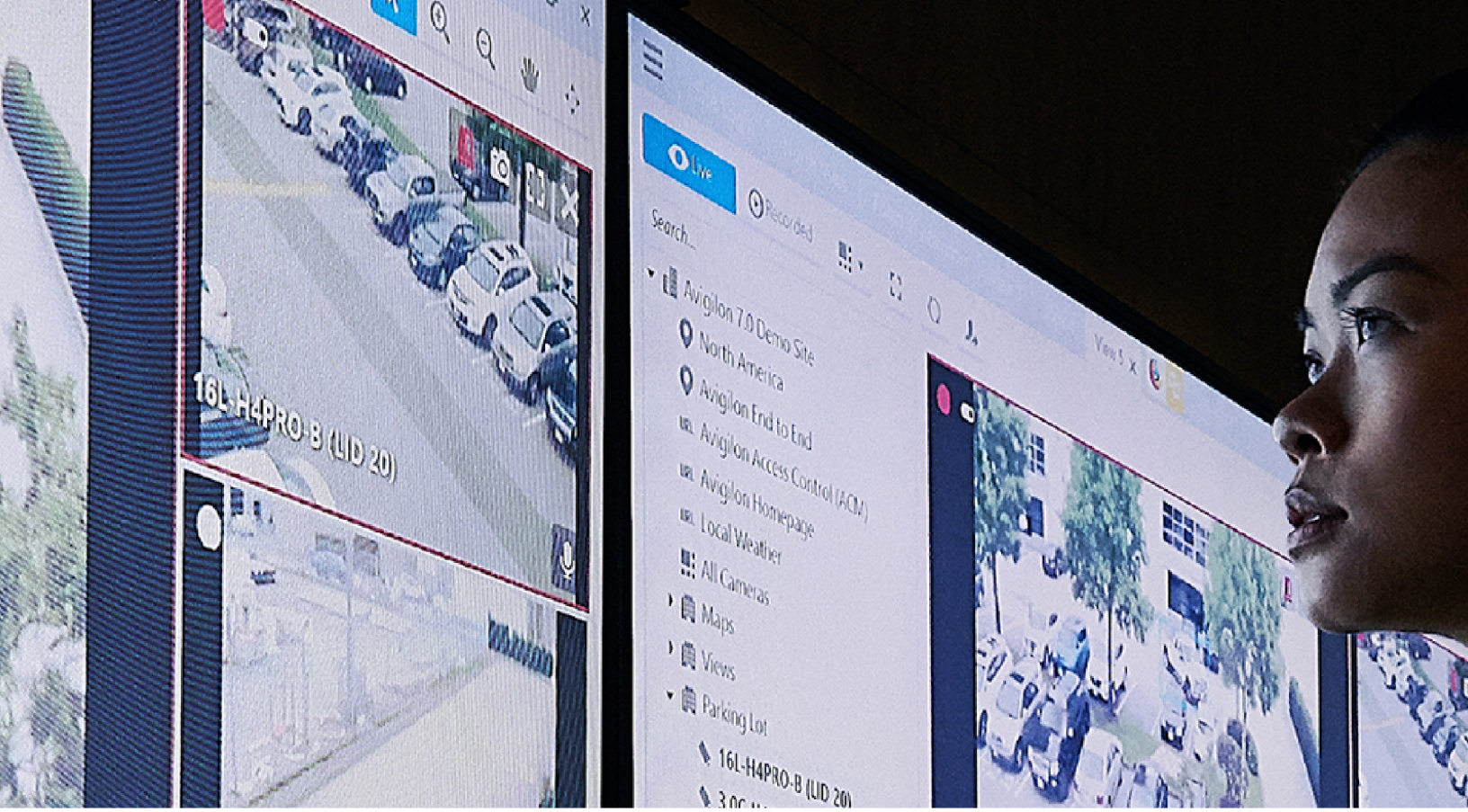
Payroll Integration

Effortlessly integrate with your payroll and HR systems, and automatically import customizable employee information and their leave.

Access Control Integration

Easily manage Time and Attendance in conjunction with everyday site access. Direct integration to multiple brands/types of biometric devices.
The integration of these systems provides a comprehensive time and workforce management solution which automatically imports the Time & Attendance transactions, directly from the access control database. In such cases, the access control software maintains complete control over all of its hardware, with no interference from Time and Attendance.





VIDEO SURVEILLANCE

In the dynamic landscape of the mining industry, the need for swift investigations and rapid response times has become paramount. To stay ahead, proactive detection has emerged as a strategic imperative. Avigilon offers a comprehensive fixed video security ecosystem tailored to the distinct security and incident response workflow requirements of mining operations. Our solution addresses both mission-critical and business-critical applications, empowering your company with a robust defense mechanism that safeguards your facility, assets, and personnel.

With a video security ecosystem, you gain coverage across vast mining sites and an intuitive video management software that empowers you to manage security permissions effectively for your workforce, including employees and contractors.

AI-Powered Solutions: Harness the power of cutting-edge artificial intelligence (AI) technologies to swiftly detect events and expedite search operations. This enables you to focus on precise verification and proactive response strategies.

Centralized Monitoring: Seamlessly oversee and perform system-wide updates from a single location, even executing remote firmware upgrades to maintain system security and optimal performance.

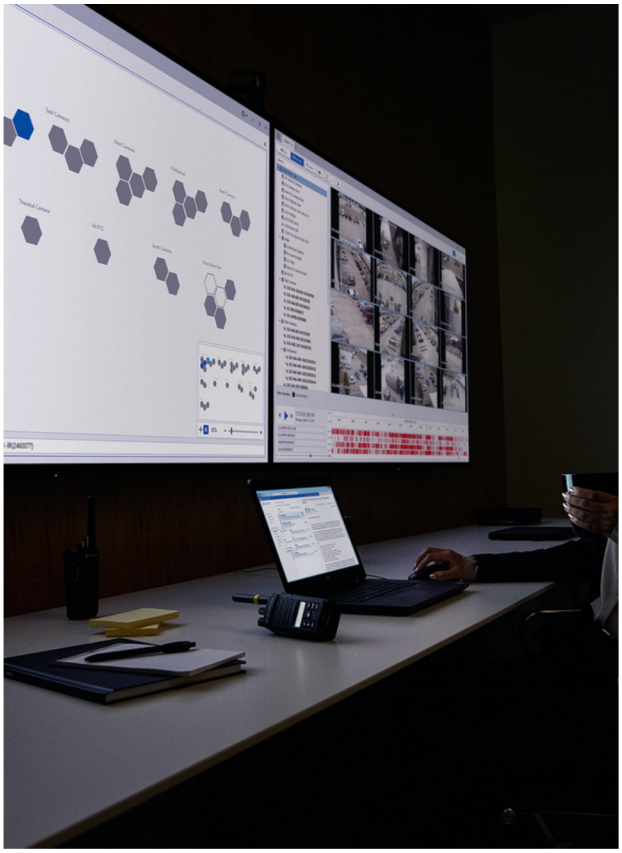
Efficient Bandwidth Management: Utilize Avigilon's High Definition Stream Management (HDSM)™ and HDSM SmartCodec™ technologies to streamline bandwidth usage and storage requirements without compromising image quality.

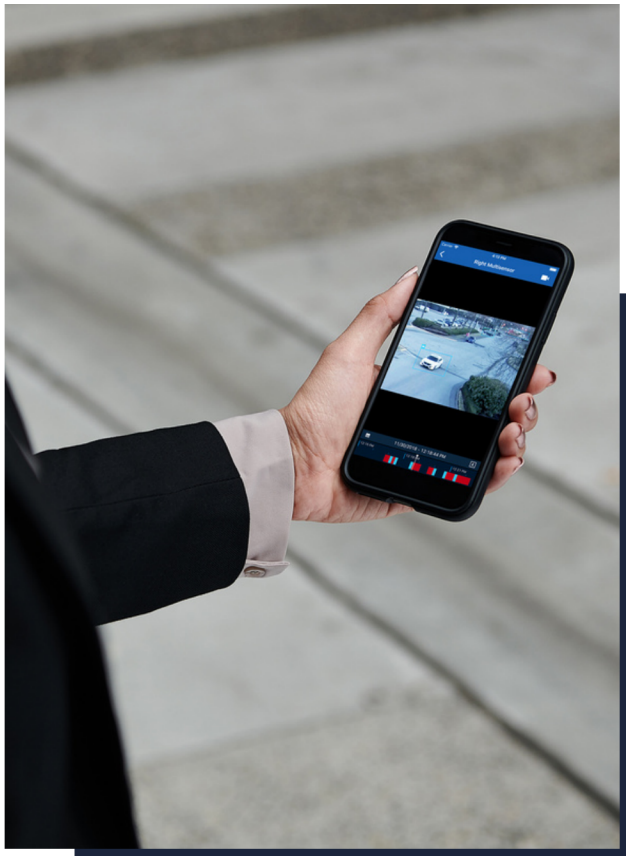
Easy Integration: Avigilon's solutions are constructed on an open platform, allowing you to capitalize on prior investments in third-party systems that adhere to ONVIF® compliance.

In the ever-evolving mining landscape, where security and operational excellence are inseparable, a video security ecosystem emerges as the pivotal tool to fortify your operations. Gain an operational advantage through intelligent video security that empowers proactive decision-making and ensures the safety and resilience of your mining enterprise.

Video Management Software

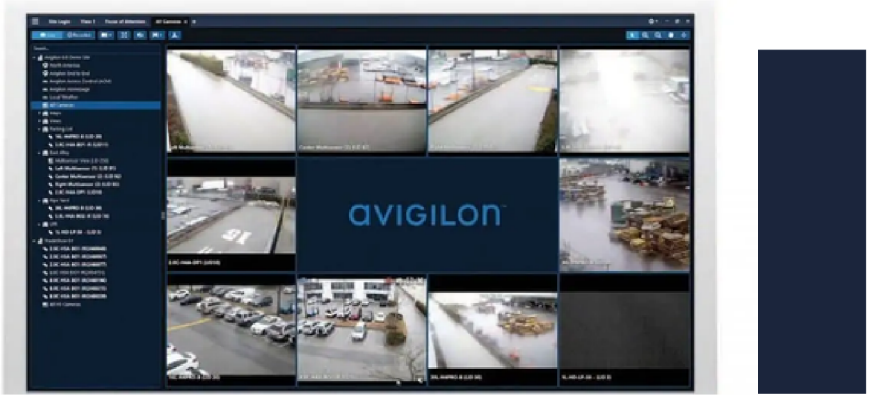
Avigilon Control Center (ACC) 7 is the latest and most advanced version of Avigilon's Video Management Software (VMS). ACC 7 provides an easy-to-use, AI enabled user interface designed to bring the right information at the right time to ensure timely actions are taken and also help ensure critical events do not go unnoticed.





Some of the most important baseline features of the VMS are:

- Resilient enterprise server management offering centralized system administration of NVRs, cameras, Clients, etc.
- Patented HDSM bandwidth management and remote viewing,
- Multi-megapixel recording and display of multiple image sources,
- Protected export of video evidence,
- Multiple failover/redundancy possibilities as per required site configuration,
- Advanced user management,
- Smart alarm management and event notification by email,
- Available on IOS and Android for access via smartphones, and
- Third-party system integration.



The ACC software comes embedded on the Avigilon NVRs and do not therefore require a separate server instance for installation. The video management software also brings unique advantages such as:

24/7 Awareness

Superior situational awareness - secure, scalable and easy to use, Avigilon's video management systems provide an enterprise-grade, AI-enabled solution, equipped with integrated machine learning capabilities.

Prevent information overload - focus on what matters most with AI video analytics that alert operators to security events that need immediate attention, when and where they happen. Proactive security powered by AI - using perimeter and behavior data to detect, identify and classify anomalies involving vehicles, people of interest and objects in real-time.

Intuitive video management - extend visibility across any number of sites and locations, with the ability to customize video views to see the most relevant footage.

Find what you're looking for faster

When every minute counts, video management software with advanced search technology speeds your investigations without sacrificing any level of detail.

Accelerated video search - search vast amounts of recorded video in minutes with appearance and image detection powered by machine learning capabilities.

Expanded object classification - intuitive video management software differentiates between people, objects and vehicle types to help security teams identify potential security threats.

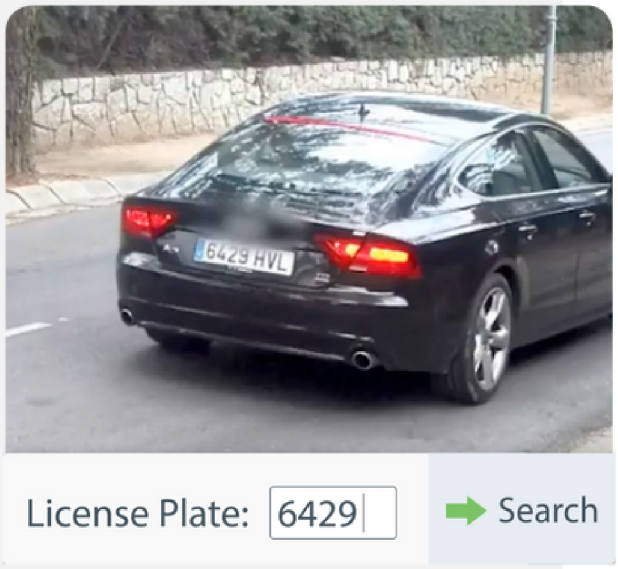
AI-powered notifications - improve response time with rule-based notifications that help security teams efficiently prioritize events by level of importance.

Flexible video management software

Avigilon gives you the flexibility to deploy an advanced video management system that fits your unique security needs.

Powerful on-premise VMS appliances - gain an end-to-end video analytics solution by integrating with Avigilon's Unity Video, cameras and Network Video Recorders (NVRs).

Always secure, accessible and up to date - receive automatic software updates, with end-to-end encrypted data and secure remote access from anywhere in the world.



Facial Recognition

Enrich fixed video feeds with the ability to efficiently detect faces. Create, edit and control watch lists to always have timely and accurate searches.

AI-powered facial recognition technology helps organizations accelerate response times by identifying people of interest. People of interest are identified based on one or more secure watch lists managed by authorized users at the organization. Populate watch lists easily by either uploading images or finding a face from recorded video.

A set of configurable controls are available to support the management of the various watch lists. Avigilon cameras will search the configured face watch lists for potential matches. If a match is found, operators can be notified either using the FoA interface or through ACC alarms using armed panels or the alarm view. ACC will display the video image that triggered the alarm along with the reference image from the watch list, enabling operators to verify the match and act quickly.

License Plate Recognition

Enable security operators to search and quickly find specific captured license plate videos for verification and investigation.

This feature automatically reads license plate information from vehicles, linking it to both live and recorded video. Operators can create and import multiple vehicle license plate watch lists for instant alarm notification when a license plate match is detected, or search and quickly find specific captured license plate video for verification and investigation.

Watch List Creation and Alerts

Watch List Alerting is a key safeguard for mining facilities. Whether it is a visitor with a history of disruption or abuse or a former employee who left on bad terms, it is imperative to be alerted to that individual's presence as soon as possible.

Avigilon Control Center software's appearance alerts feature detects threats earlier, notifying staff when people or vehicles appear in video footage. Watch list entries can be configured for facial matching as well as license plate recognition. Through the appearance alerts capability, people of interest are identified based on a secure, controlled watch list. The watch list is created and maintained by authorized users.

Avigilon Appearance Search

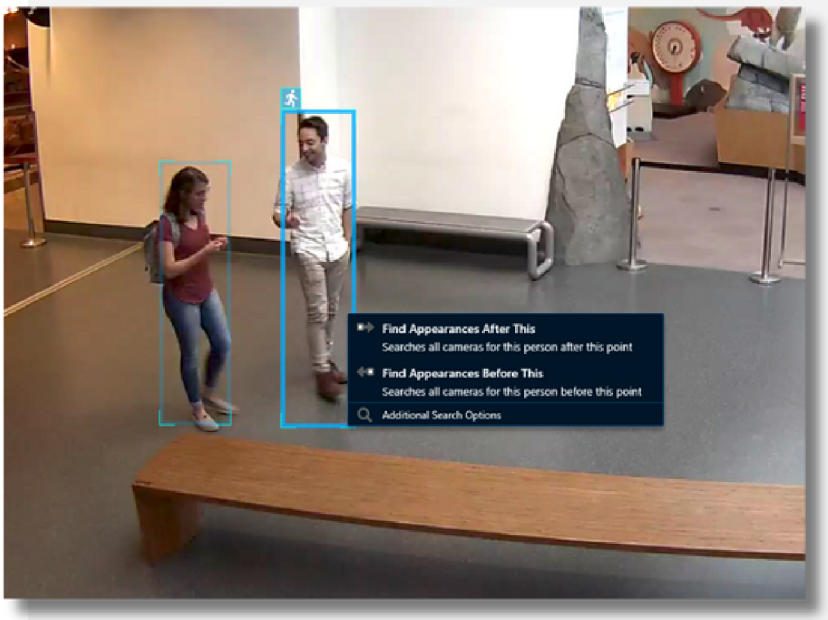
Quickly locate a person or vehicle over vast amounts of recorded video with ease.

Avigilon Appearance Search™ technology reviews hours of video in minutes to find a person or vehicle based on appearance characteristics. This saves time for staff members, reduces response times, and reduces the potential for human error.

Criteria for finding people include: clothing color, gender, hair color, and age category, with categories for adults and children.
Criteria for vehicles include: color, model, and type of vehicle. Available vehicle type categories include: car, bus, truck, motorcycle, and bicycle.

Whether searching for a specific individual or an unknown person based on a partial description, staff can narrow results down to relevant video. Equipped with this technology, personnel can zero in on a person or vehicle of interest and follow their activities as long as they are in the building.

After locating relevant video, staff can play and bookmark it, building a narrative related to persons of interest. If needed, staff can export and share video, images, search results, or bookmarked narratives from ACC software.

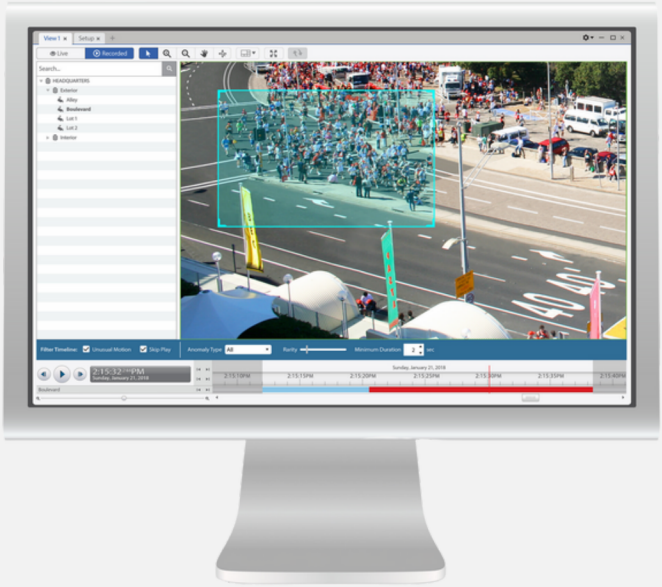


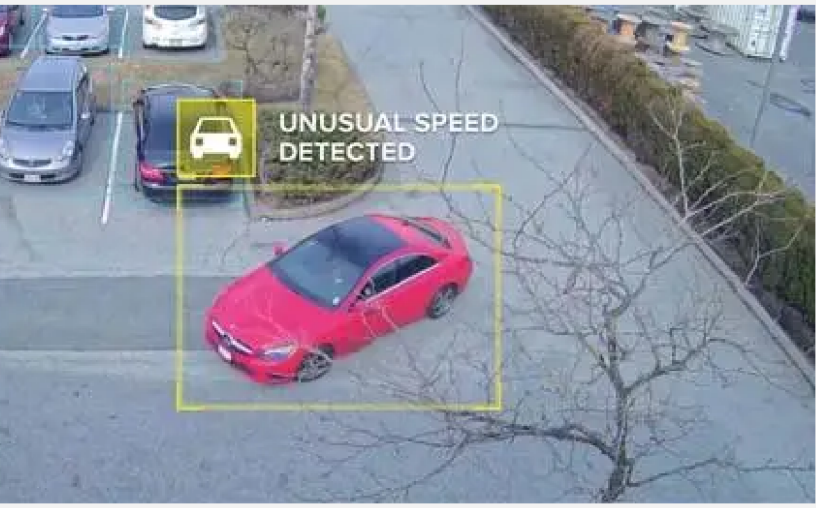
Focus of Attention

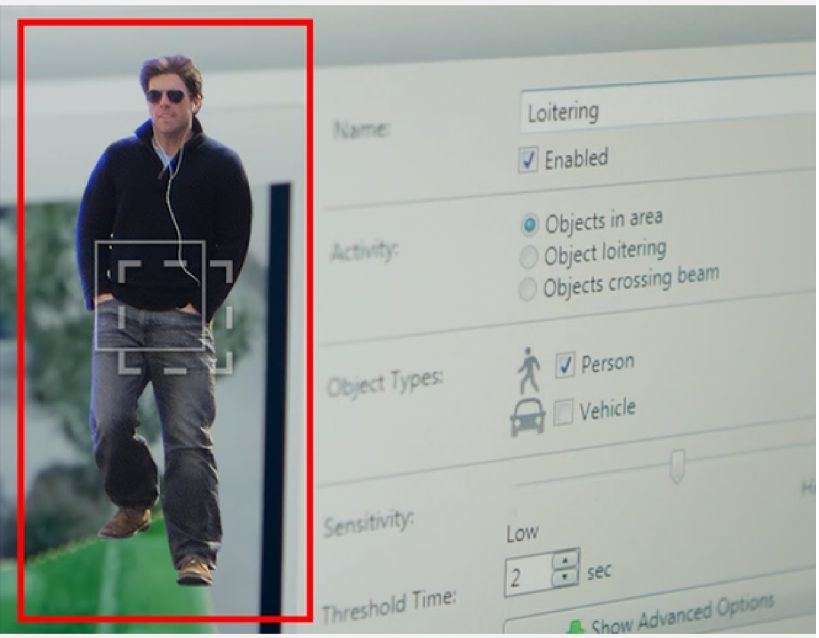
Bring the user a more intuitive way to consume information about potential security events.

With a flood of video footage from parking areas, entryways, corridors, and common areas, security staff and safety officers cannot watch and analyze video from every camera. ACC's interface uses AI analysis to filter out camera feeds showing routine activity and direct your staff's focus to areas where their evaluation of events is crucial.

The ACC interface uses color-coded camera tags to direct staff members' attention to the most pressing ongoing events. Each camera's detection status is displayed on the "Overview" screen of ACC, providing staff members with a clear picture of the state of events across sites. When a camera reports an event, staff can select it in the interface to actively view video from it. Events use a specific color to let staff know what a camera detected, helping them determine what camera video feeds to actively view.







Unusual Motion Detection

With hourly personnel and shift-based workforces, mining facilities operate based on rigidly timed schedules. Well-defined traffic patterns develop in all areas of a site or building.

Knowing what to expect helps to identify irregular activity, and may offer insight into developing threats or hazards.

With ACC software's Unusual Motion Detection (UMD) technology, artificial intelligence takes on the mind-numbing task of monitoring areas for abnormal activity. UMD filters out video feeds of routine footage, focusing staff on potential threats or abnormal activity. This feature uses recorded video to establish a typical motion pattern in an area without user input. UMD then alerts staff members if it detects motion that does not fit that pattern. Pattern recognition develops over a period of up to two weeks and, once established, flags areas based on abnormal movement. ACC software logs events based on detected movement anomalies, and tags video of an event for later reference.

Staff can search for events based on type, as well as event rarity and duration.

Unusual Activity Detection

The Unusual Activity Detection algorithm continuously learns and adapts to the camera's field of view and flags people or vehicles behaving unusually. This is separate than the self-learning of the camera and analyses unusual events performed by detected people or vehicles.

Self-Learning

Artificial intelligence can enhance your team's surveillance capabilities by reviewing hours of video input to "learn" what to expect and identify pattern disruptions that may indicate a developing threat or hazard.

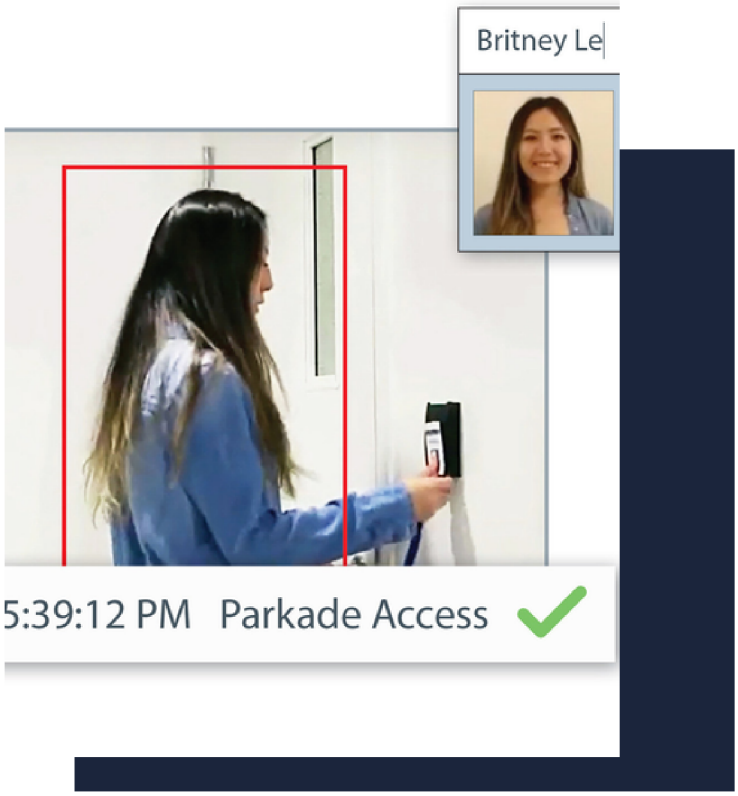
The self-learning feature supports Avigilon video analytics, better recognizing people and vehicle movement patterns over time without user input to provide more accurate alerts. Video analytics review past motion detection events to build up patterns that indicate whether a person or vehicle is in motion. Video analytics use those patterns to filter out background movement.

In addition to reducing false alarms, self-learning analytics simplify searching archived video. Video analytics highlight videos with moving people or vehicles, filtering out video of unimportant background movement.

Teach by Example

Though Avigilon video analytics learns patterns without input, staff can help speed the learning process and improve object classification using the Teach By Example function.

With this function, staff apply markers to recorded video of a moving person or vehicle so that video analytics can compare that footage with live video. As more markers are added in different environmental conditions, video analytics becomes increasingly accurate in classifying people or objects in motion.



Identity Search

To effectively control access to high security areas, your staff needs to be able to verify the identity of cardholders and quickly locate any imposters. Linking facility access attempts with recorded video makes it easy for staff to determine if a badge has been stolen or if an abnormal access attempt represents a developing threat.

Identity Search combines the facility protection capabilities of ACM with video analytics included with ACC software. Using a person's name or badge ID, staff can retrieve a record of a person's movements within the facilities based on what doors they attempted to open. Staff can refine results by changing what doors to include results for and setting a date range for access events.

Video Infrastructure

Simplify asset management, streamline video security servers and experience high-performance recording with Avigilon Video Infrastructure solutions.

Avigilon's video infrastructure and NVR camera security solutions provide high-quality and reliable performance, with scalable storage and preconfigured software for efficient deployment. Minimize server maintenance and optimize business needs with cloud-connected health monitoring.

Network Video Recorder

The Avigilon Network Video Recorders deliver unparalleled, high performance recording, throughput, data availability, and protection for your Avigilon video security system.

Featuring the densest storage capacity Avigilon has to offer on a single NVR, security teams can scale up to petabytes of storage at a single location, with up to 432 TB in storage per NVR.

All NVR models come optimized with RAID technology, hot swappable drives, and a five-year Avigilon warranty, with dedicated support to increase system uptime and availability.

AI Appliance

The AI Appliance enhances the security of your site by incorporating Avigilon Next-Generation Video Analytics on non-analytic cameras.

The AI Appliance comes in two models to support up to 60 cameras for site scalability and performance. With its Next-Generation Video Analytic capabilities, the AI Appliance can support expanded object detection classification, Unusual Activity Detection (UAD), Facial Recognition technology, Avigilon Appearance Search technology, and COVID-19 response technologies.

The Avigilon Rugged Appliance is purpose-built to meet the challenges that are commonly faced in mining and critical infrastructure applications. As a rugged device, it incorporates a fan-less design, solid-state storage and an 8-port PoE switch, all packaged in a heavy-duty enclosure. As a result, it is designed to provide a reliable solution that is suited for harsh environmental conditions such as extreme temperatures, without requiring the addition of expensive heating or air conditioning systems.

Cameras

No matter the size of your organization, our on-premise video security solutions give you complete control over your video data, coupled with robust cybersecurity to ensure your site is always protected.

As your organization grows, your situational awareness needs to grow with it. Avigilon on-premise video security can support anywhere from one to 10,000+ cameras per site.

The fixed camera portfolio includes cameras and technologies for any application, from 1–61 MP resolution in fixed, moving and multisensor options, to infrared (IR) and LightCatcher™ technology to help you see more in dark environments, to a 360-degree view for broad coverage with fewer cameras.

Depending on the location, function and image details requirements, various camera models are available.

Bullet and Box IP Security Cameras - See Far and Wide

Utilise custom deployments that meet the unique monitoring needs of your site. Instantly be alerted of potentially critical events and easily see what's happening, even at a great distance.

See your site with greater clarity at longer distances with Avigilon's high-definition indoor and outdoor bullet security cameras and achieve a high level of imaging detail with multiple lens options with our box security cameras.

H6SL Bullet Camera
Proactively protect your sites and gain superior situational awareness with the H6SL Bullet camera. Versatility meets high-performance in this analytics-enabled camera. See your site with clarity in low-light with adaptive IR options and sharp imaging of up to 5 MP. Take on the harsh elements of the outdoors with the H6SL Bullet's sturdy exterior.

H5A Thermal
Secure sites that have poor visibility with long-range perimeter protection from the H5A Thermal camera. Detect people and vehicles in complete darkness, smoke, mist, foliage and more with the camera's powerful heat-sensing technology. Keep people safe and prevent operational disruptions with optional radiometric capabilities to detect hot spots and overheating equipment.

H5 Pro
The H5 Pro camera is Avigilons' most powerful and highest resolution camera yet. It captures stunning image detail up to 10K (61 MP) over vast areas, providing maximum scene coverage, while minimizing bandwidth and storage consumption through patented High Definition Stream Management (HDSM) 2.0 technology.

H5A Box
Accelerate your response times with the H5A Box camera from the H5A camera line, featuring Next-Generation Video Analytics. Using AI, the camera can detect up to 50 people or vehicles in a scene, even if they are stationary, providing you with greater accuracy for perimeter protection and in crowded environments.

H5A Bullet
Accelerate your response times with the H5A Bullet camera from the flagship H5A camera line, featuring Next-Generation Video Analytics. Using AI, the camera can detect up to 50 people or vehicles in a scene, even if they are stationary, providing you with greater accuracy for perimeter protection and in crowded environments.

PTZ IP security cameras

Monitor large sites with a single pan, tilt and zoom security camera that lets you get the level of detail required for investigations.

Take control of an incident anytime, anywhere with HD indoor and outdoor PTZ IP camera systems that make it possible for you to proactively detect for critical events and verify evidentiary details.

H5A PTZ
Monitor large areas with ease with the H5A-PTZ camera. It combines 360-degree views, up to 36 – 40x zoom and Next-Generation Video Analytics so you never miss a moment. Available in 2, 4 and 8 MP resolutions, this camera delivers high-quality image detail, making it an ideal solution for critical infrastructure, parking lots and more.

H5A IR PTZ
Empowering you to see more in the dark, the H5A IR PTZ offers an automated IR illumination range of up to 300 meters and the ability to look 20 degrees above the horizon. Available in 2, 4 and 8 MP, the H5A IR PTZ delivers 360-degree views, up to 40x zoom and high-resolution imaging for superior visibility of vast sites in the most challenging lighting.

H5A Rugged PTZ
Built to last in the extremes, the H5A Rugged PTZ provides you with continuous reliability even in the harshest outdoor environments. It combines high-resolution imaging, 360-degree views and up to a powerful 36x zoom with an extremely strong and durable design that is backed by industry-leading protection ratings and standards.

Panoramic IP Security Cameras

Be covered from every angle with panoramic security cameras that provide up to 360-degree views from a single vantage point.

Blind spots are a challenge for wide areas. Obtain complete situational awareness with up to 360-degree panoramic security cameras that can proactively alert you of critical events through the power of AI.

H5A Multisensor
Secure your sites with superior 180, 270 or 360-degree views, so you're covered from all angles. Combining Next-Generation Video Analytics with three or four adjustable sensors provides you with one powerful solution. The Avigilon H5A Multisensor camera can monitor virtually any area in all lighting conditions to protect building corners, parking lots, intersections and more.

H5A Fisheye
The Avigilon H5A Fisheye Camera provides you with 360-degree coverage from a single vantage point, bringing superior situational awareness with zero blind spots and a simple install. Leverage the camera's high-resolution video and Next-Generation Video Analytics to proactively detect and alert you of critical events and enhance the security of your site.

H5A Dual Head
The Avigilon H5A Dual Head camera is a low-profile, dual-sensor security camera that increases your visibility of blind spots and hard to secure places such as hallways, stairwells, corner intersections and entry and exit points. Respond swiftly to critical events with built-in IR illumination and Next-Generation Video Analytics.

Specialty IP security cameras

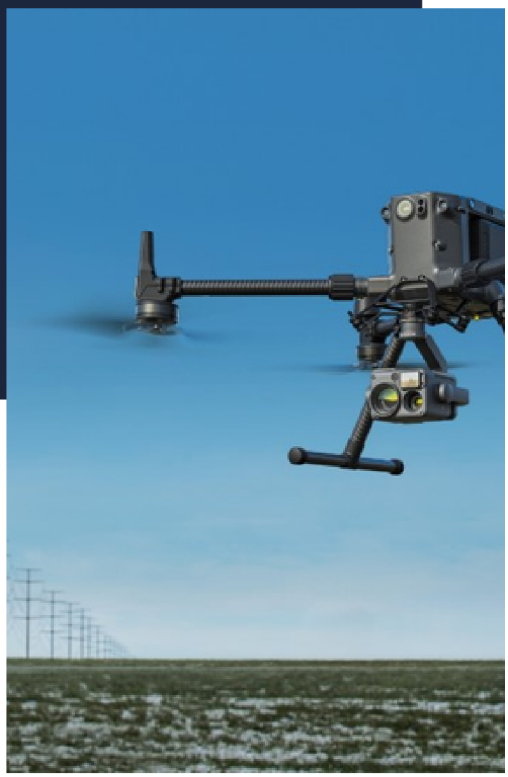
Meet the security and safety needs of unique sites and applications with specially designed fixed IP cameras and sensors.

H4 License Plate Capture (LPC) Camera
Accurately identify license plate characters on vehicles going up to 100 km/h (62 mph) from a range of distances with the H4 LPC.

The H4 LPC camera can capture license plates on vehicles going up to 100 km/h (62 mph) in the most challenging lighting conditions. Using IR illumination and visible light filtering, the H4 LPC camera enables Avigilon License Plate Recognition (LPR) analytics to accurately identify license plate characters from a range of distances.

H5A Corner Camera, Stainless Steel
The H5A Corner security camera is an anti-ligature, no-grip and vandal-resistant solution that can handle the harshest attempts to destroy, detach, attach to or disable it. The stainless steel model provides an ideal solution for areas that require a camera with a wide field of view and a tough exterior that can protect against water and corrosion.

H5A Modular Camera
Protect tight spaces and areas that require an unobtrusive monitoring solution with our smallest camera yet. Its distributed design allows it to be installed in almost any environment. The Right Angle imager module can be installed behind false walls and ceilings for discreet applications.



Drone Surveillance

Are you searching for a game-changing solution that combines unparalleled aerial imaging capabilities with unmatched efficiency?

This innovative payload brings together a high-resolution 20 MP zoom camera, a thermal camera, and a laser rangefinder, all in one compact unit. With these integrated sensors, it empowers professionals in industries such as mining to capture highly detailed and precise data from the sky.

Enhance your visual inspection capabilities with the 20 MP zoom camera. From inspecting infrastructure and buildings to monitoring open areas, this drone delivers sharp and detailed visuals, allowing you to identify even the smallest details from a safe distance. Gain unparalleled situational awareness and make informed decisions with confidence.

Unleash the power of thermal imaging for enhanced inspection and analysis. The thermal camera provides precise temperature measurements and reveals hidden heat signatures. This enables professionals to identify potential issues, such as energy inefficiencies or structural anomalies, that may not be visible to the naked eye. Expand your capabilities and improve the accuracy of your inspections with thermal imaging.

Accurate measurements made easy with the integrated laser rangefinder. The laser rangefinder enables precise distance measurements, enhancing your mapping and surveying workflows. With its reliable and accurate measurements, you can confidently generate detailed 3D models, volumetric calculations, and accurate mapping data.

Body Worn Cameras

Body-worn cameras provide an invaluable first-person perspective. And now, these insights aren't just after the fact; equipped with multiple ways to connect, the VB400 gives you crucial insights when you need them most.

The VB400 body camera is designed to make it easy for your team to capture high-quality, first-person video. Body-worn cameras have become almost as important as two-way radios.

To improve accountability, discourage frivolous lawsuits and maintain the trust of the community, it's critical that your security capture video records of their interactions with citizens and people on site. The VB400 is a high-performance ruggedized camera that offers multiple options for connection and customization.

Both WiFi- and Bluetooth-enabled, the VB400 is optimized to perform when it matters most. The VB400 seamlessly fits around your existing workflows. All configuration and maintenance can be done ahead of time with our easy-to-use backend software, VideoManager – so your workers can grab their cameras and get to work with minimal training and disruption.

In the field, features including dual microphones, a wide-angle lens and intuitive buttons ensure that every interaction can be captured in high-definition from start to finish. All footage is stored and encrypted on the VB400 until it is redocked, at which point it is offloaded securely and automatically.

Your body-worn cameras should fit around your organization's routine operations – which means accommodating a variety of shift patterns, environments, and uniforms.

Use Peer-Assisted Recording to ensure every angle is being documented, stream over Wi-Fi to the Video Management System (VMS) that handles your fixed CCTV cameras, and use built-in GPS to keep track of your team's locations.

COMMUNICATIONS

Communications are crucial in mining operations as they contribute significantly to the safety of people, enable efficient coordination and operations, and ensure compliance with regulatory requirements. They also facilitate remote monitoring and control of equipment and provide a lifeline for communication in challenging underground environments.

Radio Communication

Two-way radio communication is the backbone of the Safe Mining site. Motorola technology immediately links users across facilities, allowing them to stay fully informed about developing situations - in real time, with voice, text, and data.

As part of a Safe Mining solution, you are able to compound the benefits of a the Motorola network by integrating it with video, access control, incident management, records management, and dispatch.

Enhance safety with rapid emergency detection and response.

Activate emergency mode through connected alarms or authorized manual initiation and ensure security by limiting network access to designated radios, deterring unauthorized eavesdropping. Lost or stolen radios can be remotely disabled until recovery. Boost efficiency and productivity with streamlined communication options like text messaging and work order ticketing.

Pairing with Motorola radios provides an integrated communications solution, seamlessly sharing information across sites and applications.

MOTOTRBO™ Professional Two-Way Radios

Operations-critical radio products, designed for professional and commercial communications. The comprehensive MOTOTRBO radio portfolio includes rugged portables, sophisticated mobiles and robust, versatile infrastructure.

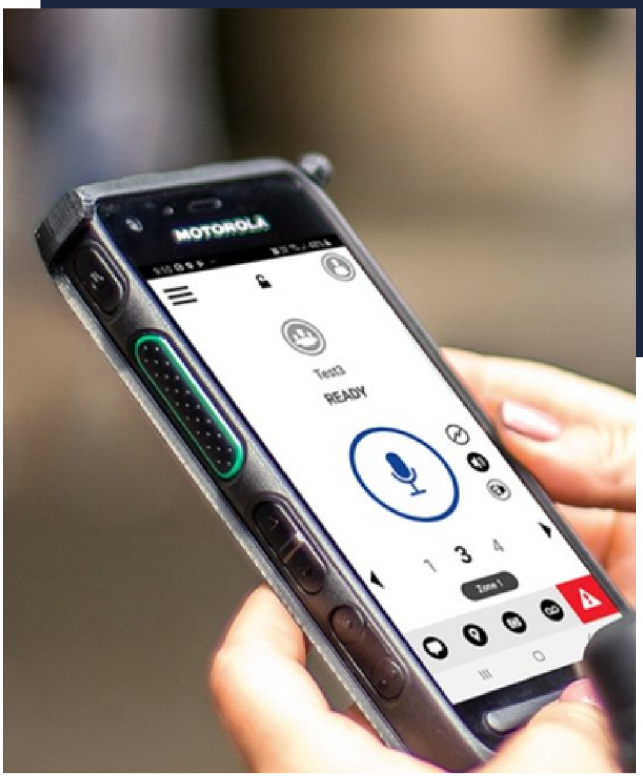
Devices as tough as the job – the two-way radios are engineered to work flawlessly in the toughest conditions. They can withstand being dropped on concrete, temperature shocks, blowing dust and wind driven rain.

The devices are designed to the highest specifications both inside and out. With outstanding range, battery life, and responsiveness, your team can collaborate more effectively and work more efficiently.

Portables - Connect your entire operation with MOTOTRBO™ digital portable radios.
Mobiles - Keep your teams connected with MOTOTRBO™ digital mobile radios.

MOTOTRBO™ systems are designed to scale with your organization, so you can grow as large as you like.

Wave PTX



Motorola Solutions' WAVE PTX broadband push-to-talk (PTT) application expands the range of devices and users who can communicate.

With WAVE PTX, staff members with access to a connected smart device can communicate instantly. This increases your capacity to coordinate operations, direct incident response, and disseminate vital information with maximum effect.

WAVE PTX enables instant private and group communication on phones, tablets, and purpose-built devices through the cloud. With WAVE PTX, staff can communicate via PTT calls, and can share videos, images, documents, and text messages. Communications through the WAVE PTX are secured using AES-256 encryption.

The WAVE PTX mobile app enables a smartphone or tablet to function as a full-featured PTT handset, with the added advantage of sharing details via text, photo, video, or file attachments. With Streaming Video, staff can push live video to individuals, groups, and dispatchers, clarifying events and adding visual context to PTT conversations. Video quality adapts to network conditions, providing the highest quality available without jeopardizing picture fluidity.

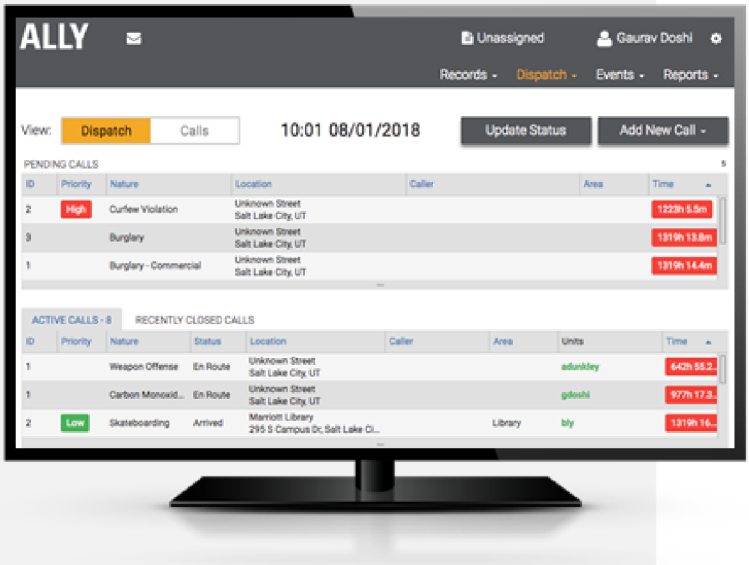
Radio Alert

Radio Alert proactively notifies staff members of unusual activity, potential threats, and possible hazards by sending voice and text alarms from Avigilon ACC software to MOTOTRBO radios.

A range of events can be configured to trigger Radio Alert messages, including video analytics events, license plate watch list matches, unauthorized attempts to access a site, sensor events, and custom flags. The resulting message informs recipients of what event triggered the alert, and where that event took place.

Radio Alert messages inform staff of suspicious activity without needing to monitor activity on a computer screen. Security personnel can patrol the premises, and investigate any alerts they receive on their MOTOTRBO radios. Other members of staff can also receive alarm notifications, automatically communicating potential security information to them so they can take appropriate actions. The connection also accepts messages from MOTOTRBO radios, enabling staff to acknowledge that they have received an alert.

If a match is found on a Watch List, the ACC software alerts the user, and the alert is passed to MOTOTRBO radios via Radio Alert. Similarly, ACC software can alert staff if it detects any license plates that match a watch list entry. When used together with Appearance Search, staff can search for where a flagged individual appears in camera video to track and identify their last known location.



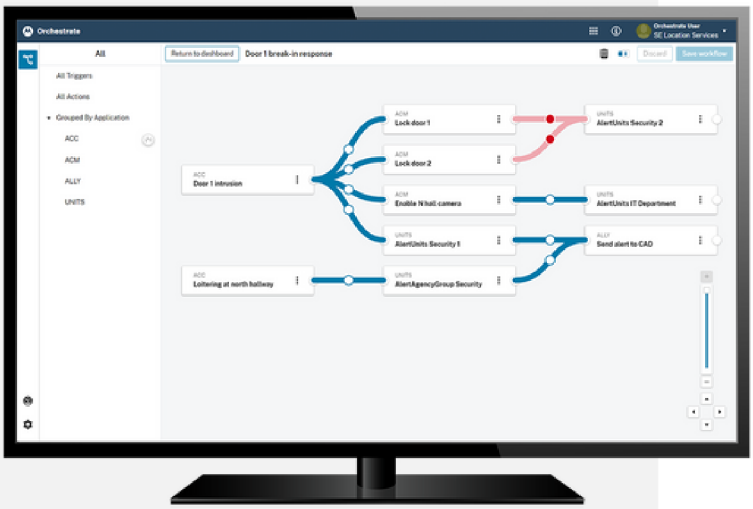
Incident Management

Ally is a cloud-based incident and records management software product that collects security data in a single database. The Incidents page includes standard forms, using pre-set fields to create complete and consistent records. With customization options for certain fields, Ally Incident forms can be changed to collect specific information your staff and decision-makers need.

Ally and ACC video software integration streamlines incident management, significantly saving security officers time and reducing errors when coordinating their response to an event. Ally links with Avigilon Control Center, automatically opening and partially populating a call for service based on analytic alerts from cameras, access control equipment, and other connected sensors. Staff can escalate a call to an incident with a single click.

Keyword searching, master files, and reporting capabilities retrieve information quickly, and help draw connections between incidents and individuals. Searching the database locates files quickly, bringing up relevant files and records. Staff can link master files for names, vehicles, and premises records to incident records, creating a connected narrative of events and people involved in them. In addition, staff can generate a variety of reports, such as Daily Activity Reports, and summarize the data in their system.

Fully accessible from any internet-enabled device, Ally can share information across workstations, smartphones, and MOTOTRBO™ and WAVE PTX™ two-way radios. Because Ally is a Software-as-a-Service (SaaS) product, it enables customers to access their data from any device with an Internet connection without the hassle of maintaining servers or updating software.



Decision Management

Creating and automating workflows for a comprehensive incident response and business communication solution is complicated. Orchestrate simplifies it.

Orchestrate is a cloud-based platform that connects across voice, data, video, software, and analytics, helping administrators to control their integrated technology ecosystem more effectively. Using its intuitive, drag-and-drop user interface, administrators can create rule-based, automated workflows to enhance efficiency, shorten response times, and improve overall safety.

Triggers arising from sensors and software lead to appropriate Actions, which may take the form of alerts or direct response – such as locking or unlocking a door.

INTEGRATED SECURITY

Integrating security systems is paramount in ensuring a comprehensive defense against threats.

Specialized integration allows surveillance cameras, access control systems, visitor management, time and attendance and radio systems to work seamlessly together, enabling real-time threat detection and swift responses.

This centralized approach enhances safety and protection for mining, minimizing vulnerabilities and streamlining operations.

Halo Smart Sensor

The HALO smart sensor notifies you of vape, smoke, chemicals, abnormal noise levels and more in real-time. Quickly detect instances of fighting or prohibited smoking. It fully integrates with Avigilon Video Management Software, to alert you of potentially critical events in privacy concern areas where video security solutions are not permitted.

Designed with privacy in mind, the HALO Smart Sensor allows you to monitor and protect areas that cannot be covered by video security solutions.

A single HALO Smart Sensor can help you detect vape, THC, chemicals, gas, aggression, calls for help and gunshots, as well as monitor air quality and alert you of vandalism and trespassing in real-time. Foster a safer and cleaner environment with this smart sensor that lets you monitor areas where cameras cannot be implemented, such as washrooms.

Control Room Designs

At the heart of your security system should be Control Room that is designed specifically to meet your business needs. We offer design and deliver complete control room and visualization solutions for mission critical environments by leveraging class leading technologies.

Covering everything from concept through to detail design for all aspects of mission critical rooms and adjacent environments, the design sees the integration of various business disciplines, systems and workflows to ensure a smooth implementation.
Control room lighting design is an integral aspect of a control room. Proper lighting design is therefore essential to ensure operator alertness and effectiveness.
The elevated noise levels need to be mitigated by good acoustic design to minimise the potential for distraction.

Whilst ensuring the ergonomics and functionality of the solution adds value to the operational requirements, the audio visual and technology solutions are integrated into the client networks and operating systems.

Gold Room Security

We custom design electronic access control and security procedures for Gold Rooms, that can provide the best possible results in terms of operational efficiency and impenetrable security.

Door locking systems from Assa Abloy are used for robustness and versatile functionality. This includes Electro-Mechanical Lock cases, Door Closers & the Cliq Intelligent Key system.

Once installed the high-security door locks meet the stringent site requirements for emergency evacuation and fire safety. The solution consists of unsurpassed security and life-safety mechanisms to provide staff and management with peace of mind as well as the essential support to ensure well-functioning Gold Room doorway system. By combining the strengths of the industry-leading door and hardware mechanisms the security at the doors will be electrified and provide secure access control.

Gallagher system controllers are used, and this includes a security system in the Vault.

Gallagher offers the most robust integrated access control solutions that covers security and business requirements. The system efficiently and reliably manages the multiple access points of the Gold Room to control risk, improve business efficiency, ensure business continuity and increase profitability.

Biometric Readers provide unrivaled accuracy in fingerprint reading and identification on site. The specific solutions are designed to operate in harsh conditions like a mining site, resisting rain and dust. A ruggedized biometric reader is designed for secure access control in challenging and manually labor-intensive environments, exactly like this. The reader is IK09 rated to withstand strong impacts (including its large capacitive touchscreen) and resistance to vandalism or sabotage.

The Video Surveillance system on site is expanded by additional critical cameras and a cutting-edge Video Intercom system; and audio communication is enabled via intercom.

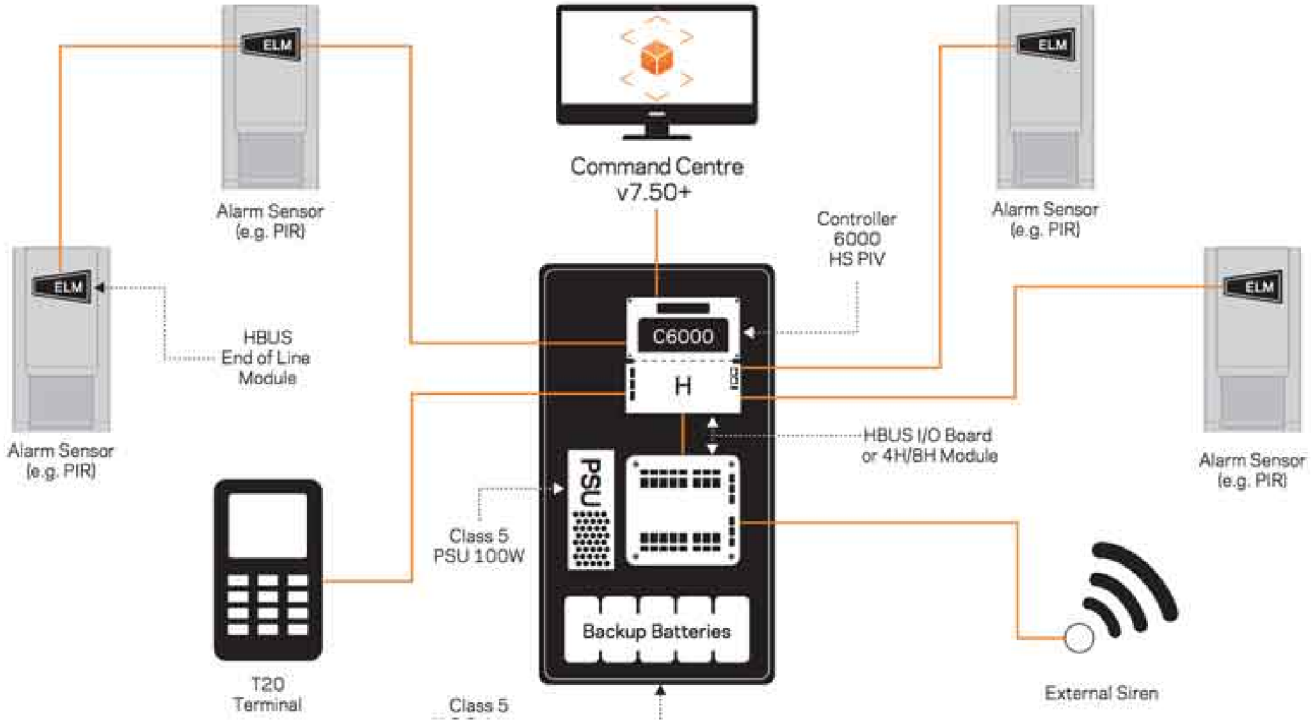
A walkthrough Metal Detector includes some of the most unique detection and functionality available in the industry. The profiling feature will ensure maximum scanning accuracy without compromising operational requirements. A smart metal detector with profiling capabilities is used.

To simplify the process and logic, doors and gates are configured in a uniform way, and all have the same hardware.

To enhance security and to avoid unauthorized changes, the vault is to be protected with a separate alarm system and connected to vibration and motion detection sensors.

The panel is armed and disarmed using two biometric identifications from authorized persons, programmed separately. The vault door itself is protected with a multi-stage locking system.

To support internal communication between employees, allow alerting in case of emergencies and provide evidence for incident investigations, video-enabled intercom stations with recording capabilities, remote-controlled notification lights and CCTV cameras are installed as required to provide an adequate view of the area and identify disturbance.



Perimeter Radar Systems

Mine sites are large-scale facilities prone to theft, vandalism, and terror attacks therefore securing such critical infrastructure is quite challenging. Meeting the most stringent regulations the Magos solution provides a high level of protection.

Achieve perfect detection performance for all types of threats by relying on cutting-edge radar technologies such as MIMO, digital beamforming, and an unrivaled number of channels. Magos' radars have the best in class resolution and coverage, offering supreme detection under all weather and lighting conditions even in highly challenging cluttered environments.

The solution combines the best of two technologies: Radars' supreme detection abilities and AI sophisticated algorithms that provide exact video-based object classification filtering out the nuisance alarm caused by wildlife and fauna. The resulting solution cuts down nuisance alarms to near zero without compromising threat detection capabilities.

This integration with Avigilon Video Surveillance delivers ideal perimeter protection by combining the recording capabilities of Avigilon with the precise detection capabilities of Magos. Using Avigilon, the user can get real-time alerts and visuals based on detection data sent from the Magos radar. This provides a single user interface for recording video, tracking targets, and getting alerts.

Speed Radar Systems

Enforce more than just speed with a day and night photo LiDAR solution.

This technology provides the opportunity to monitor tailgating, distracted driving, aggressive driving, misuse of HOV lanes and seat belt violations. Fully synchronizing credible distance and speed measurements with a digital camera to generate indisputable evidence using video tracking and high-resolution images of license plates. Violations can be enforced at night by using the side-mounted infrared illuminator.

FIRE & LIFE SAFETY

Mines need to minimise the risk that fire poses to both people and critical assets on site. The FS Group designs and installs mining specific fire protection systems that provide early warning and minimise the damage caused by fires, keeping people and assets safe and reducing downtime.

Without being able to reliably monitor and have early warning of fire across an entire site, the possibility of containing the fire decreases and the risk of injury, damage and downtime increases.

The FS Group understands that downtime on site causes significant financial loss, and that monitoring threats across site can be difficult. This is why we custom design and install fire protection and life safety solutions that work in extremely harsh environments and provide the earliest warning possible of fire. Allowing you to quickly investigate, control and extinguish the fire to minimise downtime, damage and prevent injury.

Fire Detection

We offer peace of mind through the system provision of early warning devices to alert duty staff and occupants in the event of a fire and ensure orderly evacuation if needed. Our systems are designed for the challenging industrial environment and range from simple yet effective point type detection to high sensitivity, fast response custom smoke, fire, flammable and poisonous gas detection systems.

Systems can be linked to an evacuation, firefighting, building management, PSIM and fire brigade systems.

Our Fire Detection solutions can comprise of the following:

- Conventional or Addressable point type, heat, smoke, flammable or noxious Gas Detectors
- Various types of warning devices, sounders and flashing lights
- Manually operated call points and emergency pull stations
- Detection devices for special risk applications, such as Optical Flame Detectors, Linear Heat Detection Systems, Long Range Optical Smoke Detectors, Conveyor Belt Ember Detection Systems, High Sensitivity Aspirating Smoke Detectors, Video Based and Combustion Detectors
- A wide range of programmable input / output modules and relays for interfacing into third party systems such as SCADA, PLC, BMS, Access Control or Video Surveillance systems
- Intrinsically Safe devices for all abovementioned applications
- State of the art, internationally recognized Fire Alarm Control Panels supporting a wide array of popular detection system and field server protocols.

Voice Evacuation

A Voice Evacuation system is designed using fire resistant materials, is fully battery backed and the speaker placement is carefully designed so as to broadcast clear messages without being overpowering.
The system is designed to give clear verbal instructions in a language(s) relevant to the site.

We can design systems and solutions compliant to various codes and standards, including explosive and intrinsically safe areas.

Fire Suppression

Our Fire Suppression systems are designed to automatically extinguish a fire in a protected space and ensure that the re-ignition of the fire is delayed long enough for the first responders to take appropriate action.

The Fire Suppression systems are designed to do one or both of the following:

1. Reduce oxygen levels in the protected space
2. Inhibit the reproduction of heat in the combustion process by method of heat exchange and inhibition of the chemical reaction

The type and design of Fire Suppression system proposed will be determined by the classification of the fire risk in the protected space, with 4 primary non-self-oxidizing risk types: Class A to Class F.

Our Fire Suppression systems are comprised of the following:

- Appropriate fire detection system as per SANS10139.
- Inclusion of a Gas Control Unit in addition to the Fire Alarm control panel to operate the Fire Suppression cylinders / containers.
- The programming of a “Double Knock” / “Coincidence” operation of at least 2 detectors in the protected space to cause the discharge of the gas.
- Computer aided design to calculate gas quantities, pipework, and nozzles to discharge the gas efficiently into the protected space.
- Suitable fire and atmospheric containment measures to provide suitable room integrity, thereby ensuring that sufficient suppression gas remains in the protected space minimizing the chances of re-ignition.

The Fire Suppression Capabilities include Modular FM200 Systems; Engineered FM200; Inergen (IG541); Novec 1230, Aerosol systems and Local application / Special risks.

The FS Group designs systems and solutions compliant to various regional and international codes and standards. Computer-generated (CAD) designs of the systems will be developed to ensure compliance with the selected Code of
Practice.

Fire Sprinklers & Water Supplies

We cover a variety of sprinkler installations including design, supply and installation of fire protection within warehouse, offices and in-racks.

These conventional sprinkler systems are hydraulically calculated and designed to FM, NFPA, ASIB or local authority standards.

We also provide the same service with regards to mines in respect of protecting conveyors, fire protection to shafts, fire protection to tank farms, fire protection to transformers and foam protection to the mentioned areas.

All fire systems are designed by our experienced draughtsman along with hydraulically calculated system to give you the most viable and cost effective protection.

When it comes to supplying your system with fire sprinkler water it is crucial that your water supplies are sized properly for your sprinkler application.

We provide designs and calculate the required fire pumps and water storage tanks for your premises. All designs can be done to FM, NFPA, ASIB or local authorities standards. Our team also fabricates, supplies and installs both pumps and tanks to your required specification.

Fuel Tank Farm Fire Detection Systems

Keep operations running by protecting mission critical infrastructure such as Fuel Tank Farms and Diesel Generator Bays from the risk of fire or explosion.
Fuel fires give off excessive amounts of heat, Infra-Red or Ultraviolet radiation, depending on the types of fuel involved. By selecting the correct device, fires can be detected at a very early stage and by using the correct integration pack, emergency shut down of the pumping systems can be initiated and the appropriate fire suppression materials can be discharged over the risk area while emergency response teams are notified of the incident.

The FS Group has developed and installed various systems as a fast and efficient detection solution to these environments, such as:

- Copper Based Digital Linear Cable Heat Sensing Systems

In confined spaces or in areas with high levels of dust, vapours and other contaminants which may render optical detection systems ineffective, the risk area can be fitted with a heat sensing cable connected to a remote controller.

- Fiber Optic Based Linear Heat Detection Systems

As an advanced option, this system provides real time data on temperature levels at intervals of 1 meter for the entire length of the cable. Not only will the system create a Fire Alarm Event should temperatures rise to predetermined levels, but the operator can monitor temperatures along the length of the entire system.

- Optical Flame Detection Systems

Fast response flame detection devices tuned to specific radiation wavelengths common to fuel fires can be installed in areas where a complete view of the tank farm and liquid bunds are available. As these devices monitor specific forms of visible and nonvisible light radiation, they are immune to broad spectrum sources such as lighting or solar radiation.

All the above systems are fully integrated into most plant SCADA systems using popular communications protocols.

Underground Water Deluge System

Keeping explosives underground in close proximity to operations poses a serious risk to the safety of miners. The FS Group has developed and installed a fully functional, quick response, electronically actuated Water Deluge system for an Underground Explosives Magazine.

The system is designed so that all sprinklers in the area will discharge water in the event of a confirmed fire event, resulting in complete saturation of the entire area.

By installing Industry leading flame and heat detection equipment configured in double knock operation, the system will provide the highest fire detection sensitivity capabilities will providing maximum immunity against false alarms.

Furthermore, the deluge system is connected via Fiber Optic components into the site wide fire detection network allowing full off site monitoring at the mine's Security and Safety Control Room.

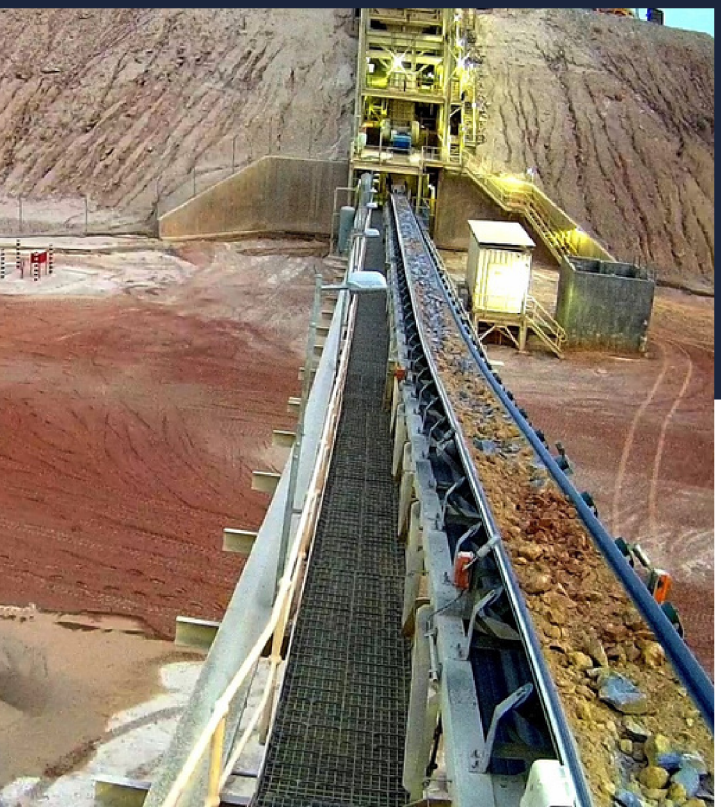
Further integration into the mine's Data Collection Systems is possible through software level integration using the Fire Control Systems' onboard MODBUS over tIP capabilities.

The system complies to best engineering practices and current regional mining regulations.

Modular E-Houses

Early Warning Smoke Detection and Automatic Gas Suppression Systems are custom built for both fixed and mobile modular e-houses for applications such as Transformer and PLC rooms.

The FS Group has custom built these systems complete with fire alarms, smoke detectors, manual actuators, audiovisual indicators, and portable fire extinguishers. This also allows interconnection with the control system of the plant with the heating, ventilation, and air conditioning system so that in case of a fire, the HVAC equipment is immediately shut down, reducing the possibility of the fire spreading faster.



Conveyor Drive Gear and Mill Gearbox Heat Monitoring

Prevent injuries and downtime on conveyor systems with early warning detection of overheating components, embers and fires.

All mines rely on powerful electric motors to drive conveyors belt systems that transport ore from the crushers to the ore processing plant where even more powerful motors are needed to turn over massive mills. Gear boxes, bearing cases and idler rollers are subject to high frictional forces which produce significant heat.

The FS Group, by using either optical heat monitoring systems, copper or fiber based Linear Heat Detection systems ensures that “hot spots” can be detected, and the right personnel notified to attend to the problem before any major failures or even fires occur.

BRAND NEW!

Join us on our exciting journey of launching new Services tailormade for the Mining industry...

Remote Support Services Centre

The FS Group is excited to announce the upcoming launch of our Remote Support Centre based in Cape Town, South Africa, which is dedicated to our mining clients across Africa.

Our mission is to deliver the same exceptional technical service remotely as we do on-site, all while saving you valuable time and resources, and enhancing the functionality of security systems on-site. This marks a significant leap towards a more streamlined, secure, and efficient mining operation, and we look forward to supporting our clients in this exciting endeavor.

The Remote Support Centre will be offering the following services:

Remote Technical Support

Our remote technical support will provide comprehensive assistance to your organisation by resolving technical issues and providing best-in-class knowledge bases to ensure you have access to the latest information. We offer priority responses within our Service Level Agreements (SLAs), providing swift resolution and minimal downtime.

Equipment Health and Uptime Monitoring

Real-time monitoring of on-site security systems and critical events. By monitoring the health of technologies and collecting data related to monitored events and updates, the process of creating a Support Ticket is automated and ensures a proactive approach to maintenance.

System Optimisation

Our Remote Support Services offer Systems Optimisation and System Upkeep on your security technologies. This includes bandwidth management, license upgrades, system versioning, cyber security audits and more. This ensures you stay up-to-date in an ever-evolving cyber threat landscape, save time and create efficiencies in cyber protection.

Remote Commissioning

We are committed to providing exceptional support through remote commissioning of security systems. Our experienced team leverages technology to ensure a seamless and efficient commissioning process, regardless of geographical distance. Through remote access, we can configure, test, and fine-tune security systems remotely, saving your time and resources.

Remote Training

By providing accessible and flexible training programs, we can empower your workforce with valuable skills and knowledge, regardless of their location. Remote training reduces the need for travel and related expenses, making it a cost-effective solution.

Reporting on Insights

Insights provide a critical understanding of your organization's security posture, enabling proactive measures to protect assets and mitigate risks. By analyzing data from security systems, we can identify patterns, anomalies, and potential vulnerabilities, allowing for swift response and strategic decision-making. Whether it's detecting unauthorized access attempts, monitoring suspicious activities, or optimizing security protocols, leveraging insights from your security system data is key to staying one step ahead of potential threats and safeguarding your assets, personnel, and sensitive information.

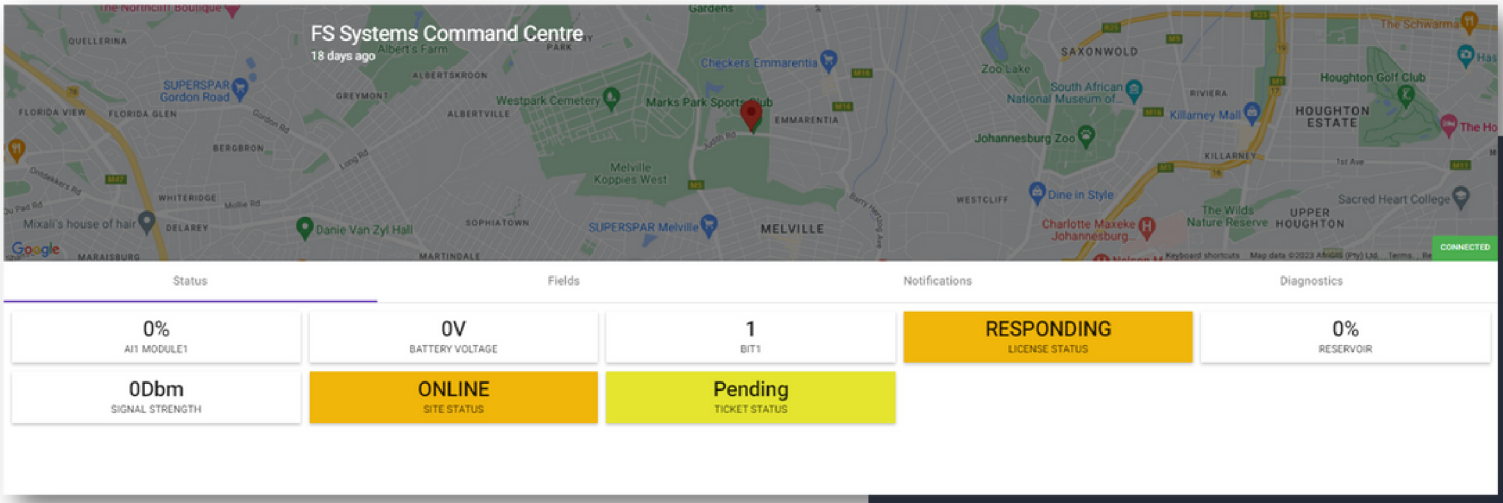
Master Data Integration and Maintenance

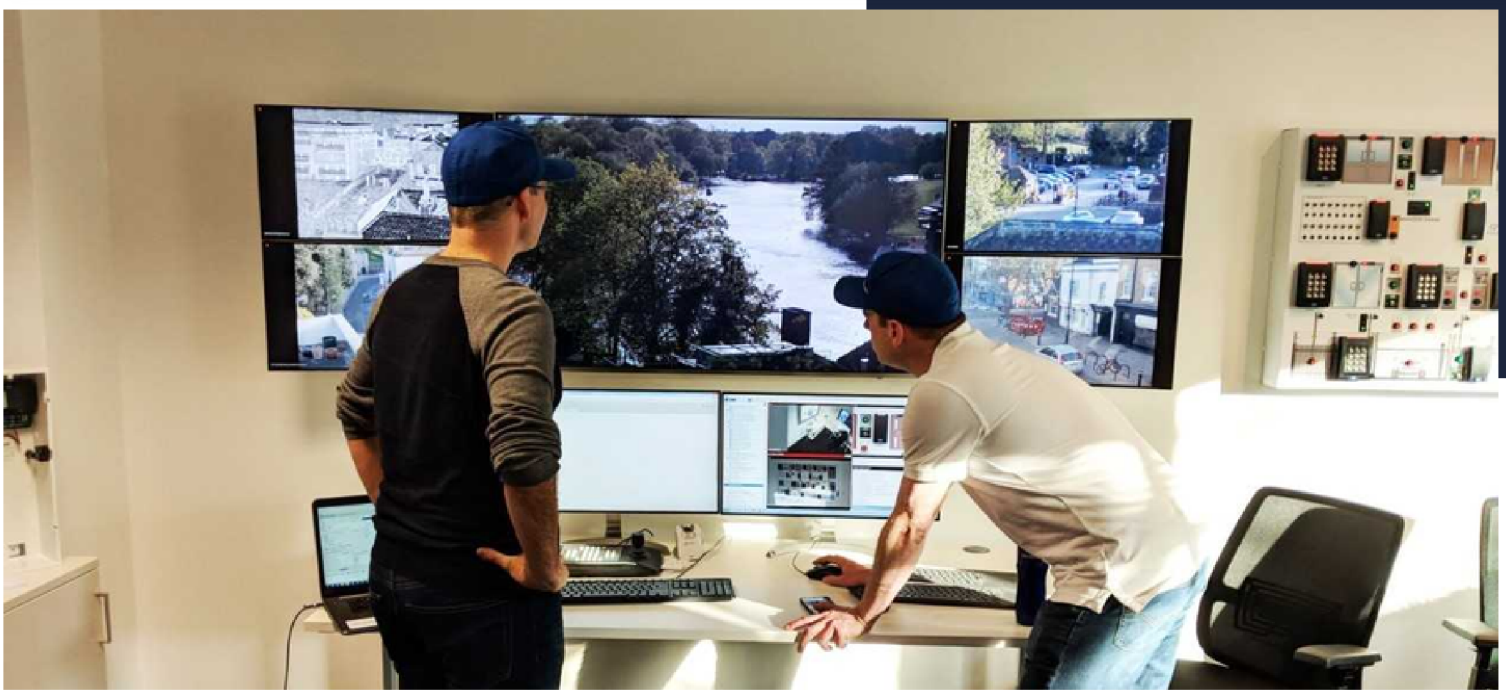
Our Remote Support Centre will remotely implement, oversee and update Master Data configurations, ensuring that your security systems are always up to date and aligned with your Master Data system. We continuously monitor data flows, troubleshoot issues, and proactively identify potential vulnerabilities, guaranteeing the highest level of protection for your organization.

Health Monitoring Platform

Our Dijital Health Monitoring Solution is a cloud-based platform that offers the ability to proactively manage and monitor multiple critical security systems across various locations remotely.

The platform enables real-time monitoring of technologies, and collects data related to monitored events and updates. This data automatically creates a Support Ticket and displays the status of each device on the platform, allowing for a proactive approach to maintenance management.





West Africa Training Centre

Coming soon is our West Africa Training Centre based in Accra, Ghana.

Saving time and travel expenses, this Training Centre will cater for both digital and hands on training on key products and skills such as Avigilon, Gallagher Security, Networking Basics, Installation Standards and more.

WE PROTECT LIVES AND ASSETS ON SITE THROUGH TECHNOLOGY

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