
Axxon PSIM is a software platform for creating comprehensive security systems of any scale
Axxon PSIM
PHYSICAL SECURITY INTEGRATION PLATFORM
Axxon PSIM
Any Scale
Unlimited number of servers, workstations, and security devices in the system
VMS at the Core
Axxon PSIM is based on a full-featured video management system
Automation
From standard event responses to complex programmable scenarios
Video Analytics
Detectors based on neural networks and standard image analysis methods
Integration
Dozens of physical security systems and open communication protocols
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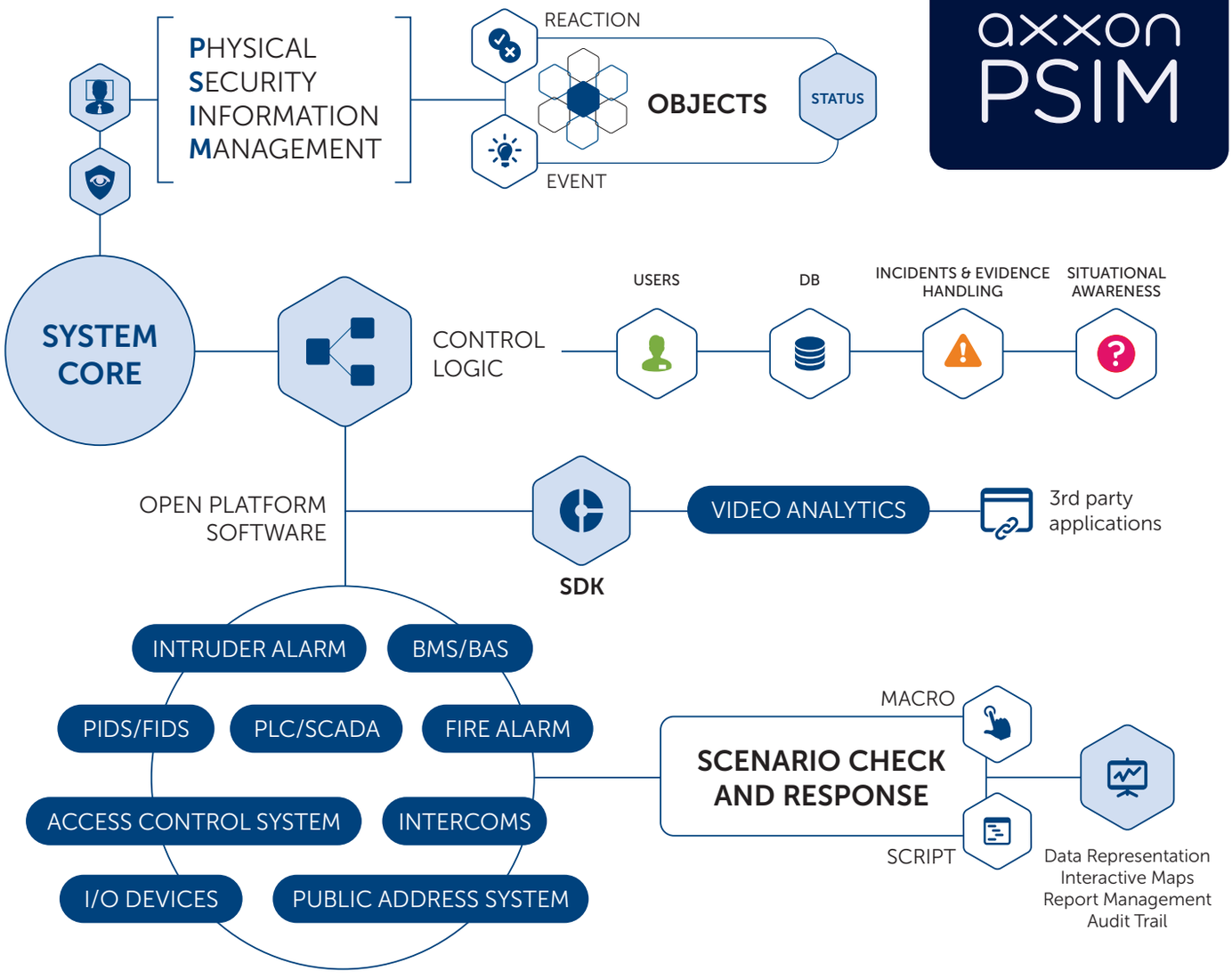
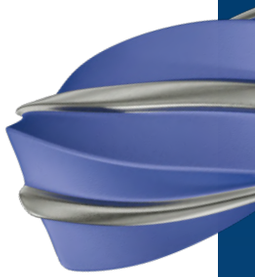
Benefit from the Security Integration Platform



- Combine equipment from different manufacturers and manage it from a single control center and local or remote workstations.
- Integrate third-party software and equipment using standard protocols.
- Minimize the financial costs of equipping the facility by reducing the hardware and software needed and connecting existing equipment to the system.
- Implement new features that are not available with standalone systems.
- Reduce the amount of information that the operator has to process, with a more intuitive interface.
- Improve situational analysis based on information from different sources.
- Automate decision making for standard situations.
- Significantly reduce the likelihood of operator mistakes.
- Better protect the system from external interference.



About AxxonSoft

AxxonSoft is a software development company that offers video management software (VMS), a physical security information management platform (PSIM), cloud solutions (VSaaS), and in-house-designed customizable AI video analytics. AxxonSoft software provides best-in-class integration and customization capacity for building intelligent video surveillance and integrated security systems of any scale and for diverse industries.

Global Presence

Based in Cork, Ireland, AxxonSoft has over 30 offices worldwide, which helps ensure the company's visibility, 24/7 support, and quick response times for its partners and clients in every corner of the globe. More than 20,000 customers in 140+ countries rely on AxxonSoft to safeguard critical operations, protect people and assets, and boost business efficiency using video intelligence.

Integrated Approach

We believe that intelligent technology can deliver great value to business and society through extracting actionable data from video and making decisions based on that data in combination with information from other sources. That is why we see the unification of standalone systems and seamlessly integrated AI video analytics as our key competitive advantages. And why we have always taken an integrated approach, forging strong partnerships with IT market leaders and being among the first VMS developers to support advanced video camera capabilities and interoperability standards, such as ONVIF Profile G, T, and M.

Our Partners

AxxonSoft is an extremely partner-oriented company that puts its partner's needs first. We never compete with our partners, integrators and distributors, as system implementation is not our business. Moreover, functionality enhancements are often made based on partner requests according to specific project requirements. Alongside leading-edge products, we provide our partners with training, presale, project assessment, hardware calculation, marketing and sales support, and 24/7 technical support.

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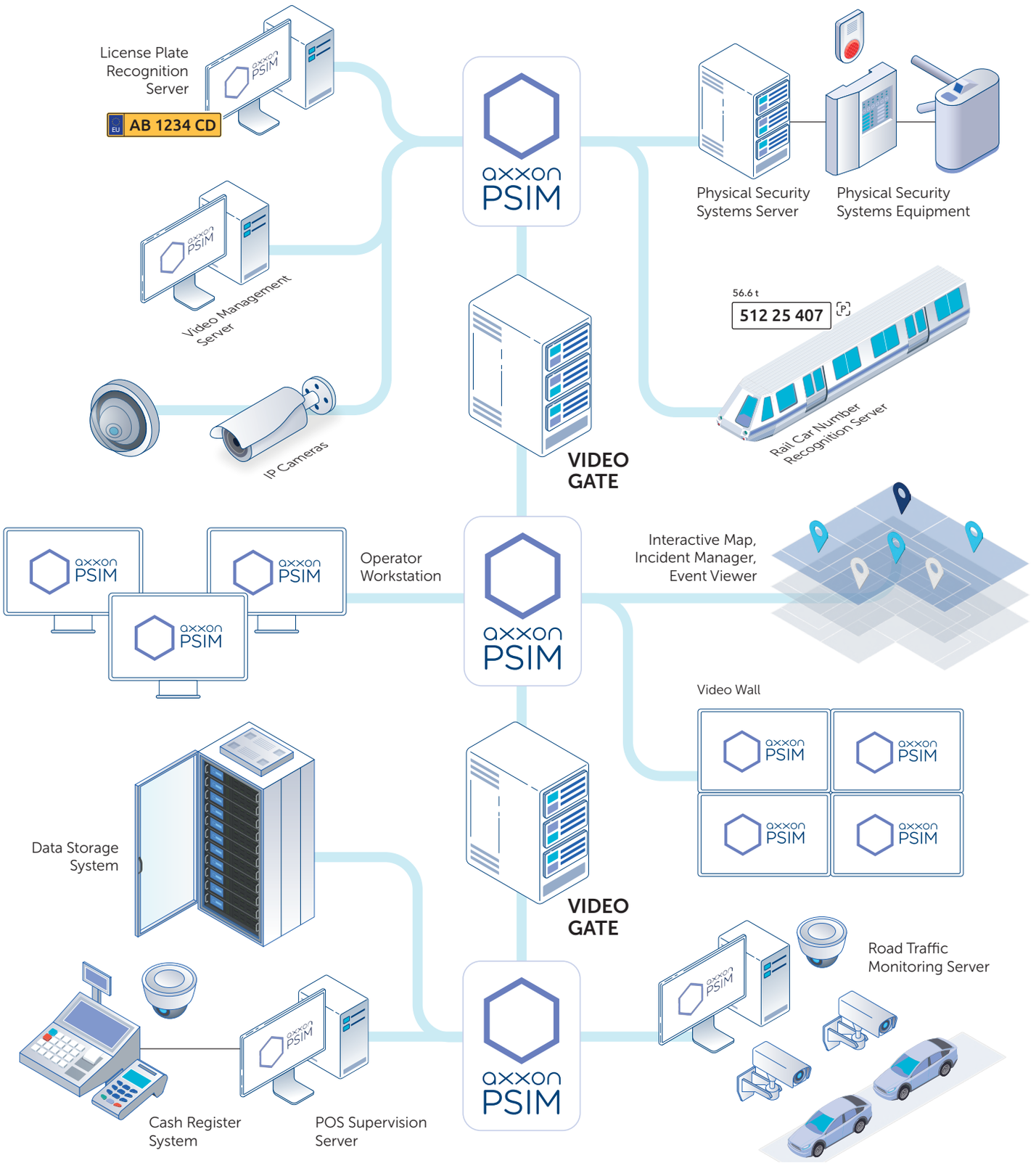
Axxon PSIM

Axxon PSIM is a software platform for creating comprehensive security solutions of any scale. It integrates all physical security systems and allows them to be managed through unified interfaces and flexibly customizable automated scripts.



Examples of solutions based on Axxon PSIM:

Video surveillance with audio recording and video analytics

Access control and working time management

Fire and intruder alarm management

License plate recognition, road traffic monitoring, traffic violation recording

Rail car and container number recognition, rolling stock monitoring

Point-of-sale/retail monitoring

Monitoring of multiple distributed sites

Distributed Architecture

A comprehensive security system based on Axxon PSIM can include an unlimited number of devices, such as cameras and sensors, and system components:

- Servers for working with equipment, data processing and storage.
- Remote Administrator Workstations for system administration and handling special functions (web server, backup storage server, etc.).
- Remote Clients used by operators.
- Video Gates that route video streams between servers and clients.

Axxon PSIM synchronizes all data, including events, commands, and configuration parameters, across all components. The system can incorporate Failover servers that take over the functions of malfunctioning servers.

Integration

Axxon PSIM integrates with IP cameras, access control systems, public address systems, fire/intruder alarms and perimeter security systems, inspection equipment, and other types of systems and devices. Support for open communication protocols makes it possible to interact with building automation systems, engineering equipment, industrial automation applications, etc.

Automation

Axxon PSIM supports four layers of automation, ranging from standard reactions to events, which can be easily activated through the graphical user interface, to scripting programming languages for creating scenarios of any complexity.

User Interfaces

Axxon PSIM provides user interfaces for a variety of tasks. Basic operator tools include:

- Video Surveillance Monitor for camera operation.
- Event Viewer that enables getting general and detailed information about events along with corresponding video footage.
- Operator Protocol and Incident Manager — interfaces for handling events by a group of operators with differentiation of rights, the ability to customize processing scenarios and get reports on operator actions.
- Interactive Map — multifunctional interface for monitoring events and device status and controlling equipment.

Axxon PSIM also supports remote access via mobile apps and offers dedicated interfaces for specific tasks such as POS supervision. An integrator can build custom operator interfaces from ready blocks to create best-fit solutions for the customer needs.

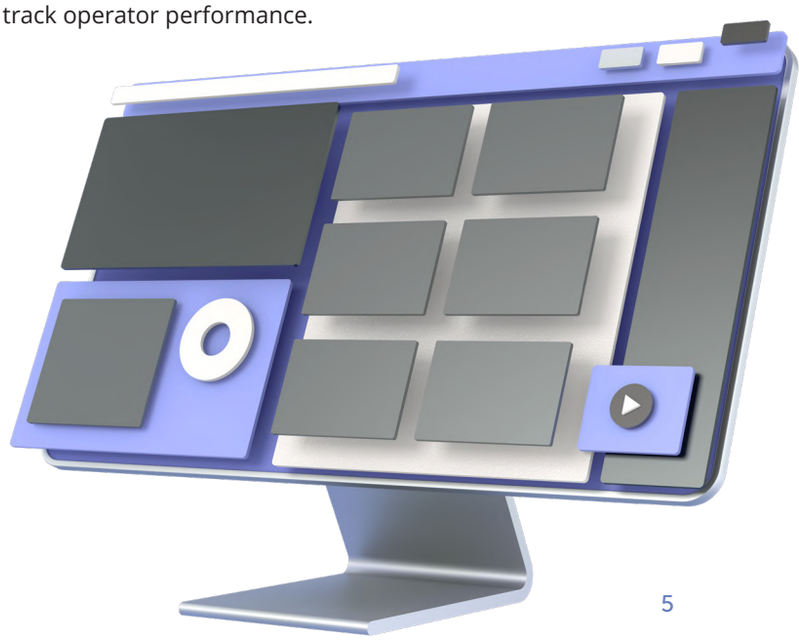
Incident Manager

Incident Manager is a universal tool for handling any events, such as triggering a video detector or alarm sensor, or receiving specified events from the integrated systems. It helps organize an efficient and reliable incident management system that fully corresponds to the specifics of the protected site.

For each type of event, a step-by-step processing logic can be configured, with the option to add comments and automatically initiate a predefined scenario at each step. Every next step can be selected based on the operator's actions. Due to its step-by-step approach, Incident Manager helps the operator handle any alarm in even the most stressful situation.

When an event occurs, the operator receives complete information about it, can view related videos and locate the event source on the map. A time limit can be defined, after which an unprocessed event will be transferred to another operator.

Operator rights for processing, transferring, and tracking events can be flexibly configured, allowing for the creation of a hierarchical structure. Based on events and operator actions, the system generates reports that can be used to track operator performance.



Video Management and Audio Monitoring

Axxon PSIM is based on a video management system (VMS) with all the advantages of a distributed architecture: unlimited number of cameras, servers and workstations, local and remote monitoring and administration. VMS interaction with other integrated systems can be flexibly customized.

Video Analytics

Axxon PSIM video detectors utilize both classical and neural network methods for video analysis. The basic set includes motion detector, and service detectors that register camera tampering and malfunctions.

Situational video analytics is based on an object tracker that records metadata about object movement in the scene and triggers alarms on specified events — line crossings or movement within a zone, including entry, exit, appearance, disappearance of objects, etc. Additional object parameters such as perspective-aware size and color can be configured to reduce false alarms. A neural tracker is used for accurate detection of objects of a specific type, and a neural counter counts such objects in a specified area.

Also available: fire and smoke detectors, pose detector recognizing squatting person, man down, raised arms, etc., and personal protective equipment detector for helmets, jackets, pants, gloves, and shoes. In addition, Axxon PSIM can receive events and metadata (scene description) from smart cameras and third-party video analytics modules.

Video analytics for transportation and retail are described in the POS PSIM and Auto PSIM sections on pages 10–13.

Intelligent Search in Video Footage

Object tracker or neural tracker analyzes the video stream during recording, and metadata is stored in the database. The user sets search criteria similar to the settings of situational video analytics detectors, for example: line crossing and object type. The system processes the stored metadata and quickly finds all video recordings matching the request.

Equipment Support

Axxon PSIM supports more than 10,000 models of IP and locally connected devices:

- IP-cameras: fixed and PTZ, thermal imaging, and fisheye cameras.
- Video recorders of various types.
- Encoders/decoders, communication panels, network loudspeakers, input/output (I/O) modules, PTZ device control modules.
- Control panels, security control keyboards, joysticks.

Axxon PSIM supports ONVIF (Profile S, G, T, C), RTSP, SIP, and proprietary protocols of equipment manufacturers, as well as all common codecs, including intelligent: H.264+, H.265+, and others.

Video Wall Management

The Display Manager interface allows you to flexibly customize camera layouts and manage layouts on the screens of other computers. This makes it possible to create a video wall based on one or more monitoring workstations without the use of dedicated video wall controllers.

Backup Storage

This module backs up video recordings for long-term storage. It supports recording of video archive to local or network disks and USB drives, with or without audio, as well as loop recording to connected data carriers and frame rate reduction during copying. Backup frequency and archive retention time are customizable.

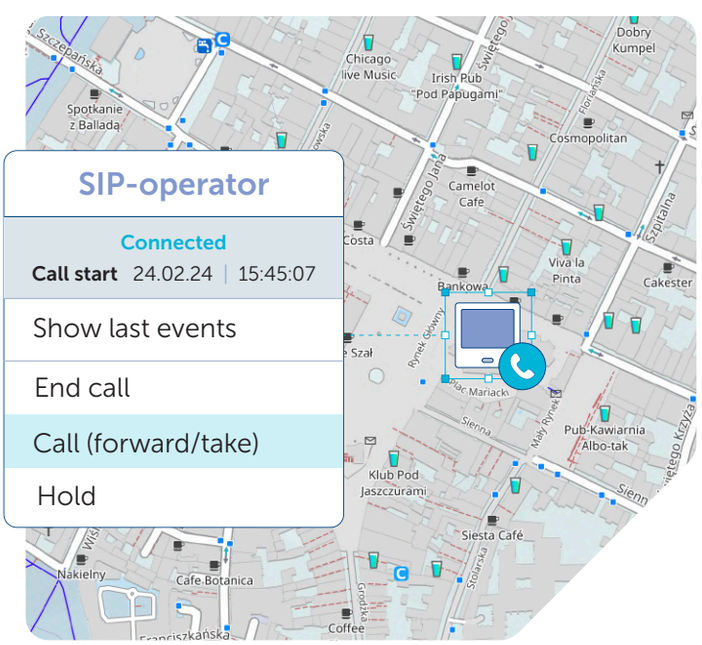
Video Gate

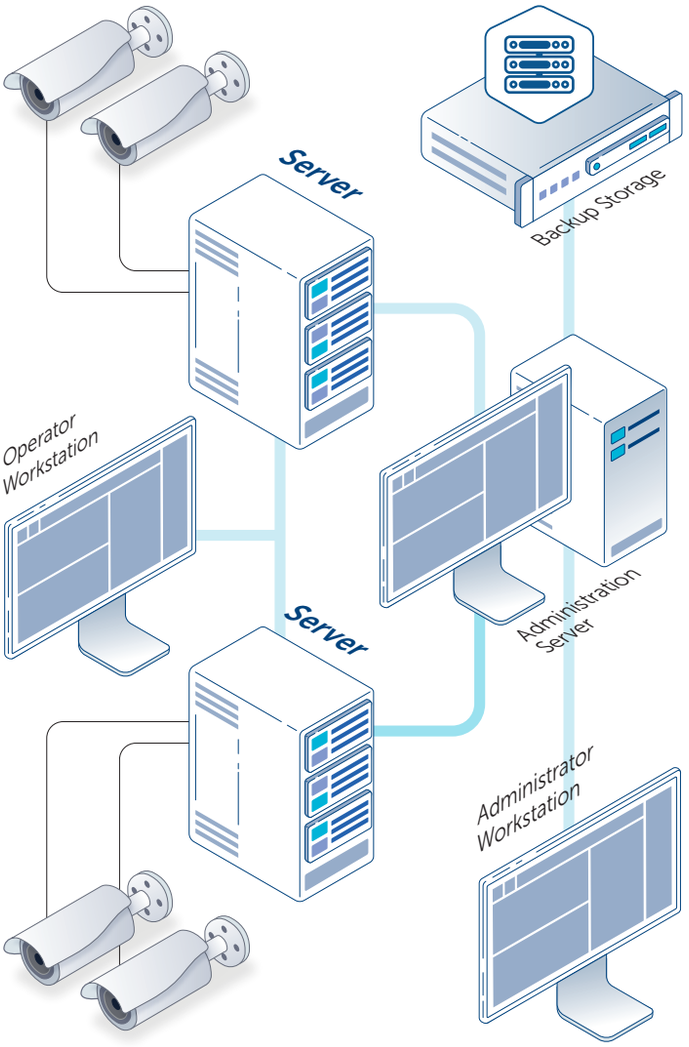
Video Gate is a software module that is usually installed on a dedicated computer and routes video streams between servers and clients located in different subnets. It reduces the network load when several clients request the same video stream from the server. It also increases system security: Administrator Workstations do not have access to administer servers located in another subnet.

Video Gate can record video into its own storage, reduce the frame rate, and change the compression level of broadcast video streams (recompression is performed on the server). Video Gate can receive video streams from a server, another Video Gate, and from the Backup Storage.

ONVIF Server and RTSP Server

Axxon PSIM can transmit video to third-party ONVIF clients and RTSP players. Transmission of audio, live video, video recordings, and metadata is supported.





Working with Sound and Intercoms

The audio subsystem complements the video subsystem, providing the operator with a more complete picture of the events taking place, and solves a number of other tasks. The following capabilities are supported:

- Receiving audio streams from IP devices.
- Recording and playback of audio in sync with video or separately.
- Connection of microphones and intercoms.
- Switching microphones and speakers of any devices in any order.
- Integration of sound notification systems.
- Sound recording when the volume threshold is exceeded or at the operator's command.

SIP Server

The SIP Server is used to connect SIP-based intercom devices to Axxon PSIM. It supports audio and video calls with recording; group calls, call forwarding, and call holding/resuming are supported as well. Operators use the SIP Panel interface for communications. Each device and SIP Panel is assigned a number to call, and address books containing a list of available numbers can be set up on the SIP Panels.

ACFA PSIM

ACFA PSIM is a subsystem for managing access control systems, fire and intruder alarms, and perimeter protection systems. It includes integration and service modules, dedicated user interfaces and supports dozens of physical security systems.

Access Control, Time and Attendance

ACFA PSIM provides interfaces for managing all integrated access control systems, including creating employees (cardholders) and departments, customizing time zones and access levels. It supports passport scanning and access card issuance, as well as user identification at the entrance by card and video image based on comparing the face captured by the video camera with the cardholder's photo from the database, which is performed using the Event Manager window.

The Time and Attendance module helps monitor work discipline. It allows flexible configuration of work schedules, taking into account days off, holidays, justification documents, and overtime; it also generates reports.

In total, more than 20 types of access control and time and attendance reports are available, which can be centrally obtained via the web interface, printed, and exported in various formats.

Arrival–leaving Report
Period: 08.02.2024

Full name, position	Arrival	Leaving
Luciano Hessel Tech Writer	09:12:55	18:45:15
Linwood Conatser Tech Consulting	08:59:03	**21:31:08**
Courtney Pestone Product Manager	09:05:48	17:59:23
Tommie Kastner Support Engineer	09:00:21	18:02:43

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Equipment Operation

The Interactive Map and Event Viewer interfaces are used to display and control the status of devices. According to specified permissions, operators can monitor events from devices, view video from linked cameras, configure and manage equipment, including arming/disarming alarm groups, controlling actuators, etc. For a number of systems, auto-configuration is available, which involves reading the equipment configuration and automatic creation of the object tree in Axxon PSIM.

Multi-Factor Identification and Vehicle Access Control

ACFA PSIM supports long-range identification readers for organizing vehicle access, breathalyzers, biometric readers for fingerprint recognition, palm vein scanning, and iris identification. It also supports devices for body temperature measurement and mask-wearing control, as well as cameras with built-in license plate recognition.

Any identifier can be used for access organization. In case of multi-factor identification, access is granted based on two or more identifiers: access card + biometric attribute, access card + license plate, biometric attribute + PIN, access card + biometric attribute + PIN, etc. Breathalyzer testing can also be used in the multi-factor access scenario.

Low-level integration with a range of systems allows for direct interaction with devices without the need for vendor software.

Event Manager is an interface for requesting operator action, such as confirming or denying access. The appearance of the window and the information that the operator will receive at the request can be flexibly customized for each type of event, which makes this interface a convenient versatile tool for managing the security system.

POS PSIM

POS PSIM is a solution for retail that combines video monitoring of cash register operations, retail video analytics, and web reports. It helps detect fraud and compliance violations and is used by security departments and commercial units of retail enterprises. Support for QR/barcode reading enables POS PSIM to track items in manufacturing and logistics applications.

POS Supervision

POS PSIM's cashier operations supervision capability is based on synchronizing the cash register information with video sequences captured by a camera pointed at the cash register. As a result, watching real-time video or recorded footage, the operator sees the picture of the customer's checkout accompanied by captions. The captions include the receipt text and cash register operations that are not indicated on the receipt, such as cash drawer opening or manual product code input. This gives the operator the full picture of what is happening at the cash operation unit, helping detect common fraud incidents, cashier errors, violations and facilitating faster resolution of disputed situations with customers.

Cashier: Cliff Marcano	Receipt: **2553**
Data	**Date/time**
46078310244520 Men's Dress Shirt Regular Fit Solid 69.51 USD*1 = 69.51 USD	29 Feb 2024 17:08:20
54490000021854 DSP Men's High Polo — Short Sleeve 55.8 USD*1 = 55.8 USD	29 Feb 2024 17:08:24
46700000560024 Hanes Men's Double Tough Ankle Socks 7.29 USD*1 = 7.29 USD	29 Feb 2024 17:08:29
Sub total: 132.6 USD	29 Feb 2024 17:08:31

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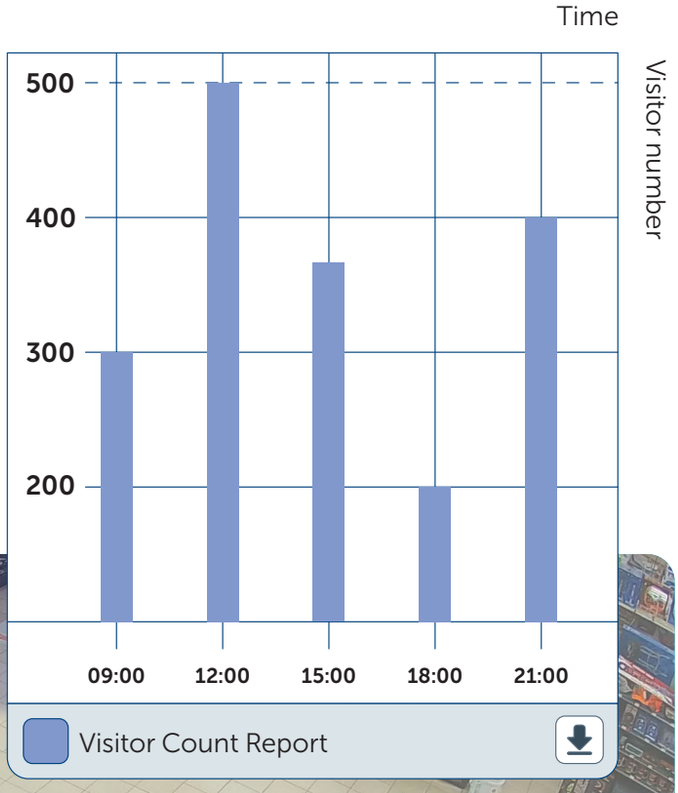
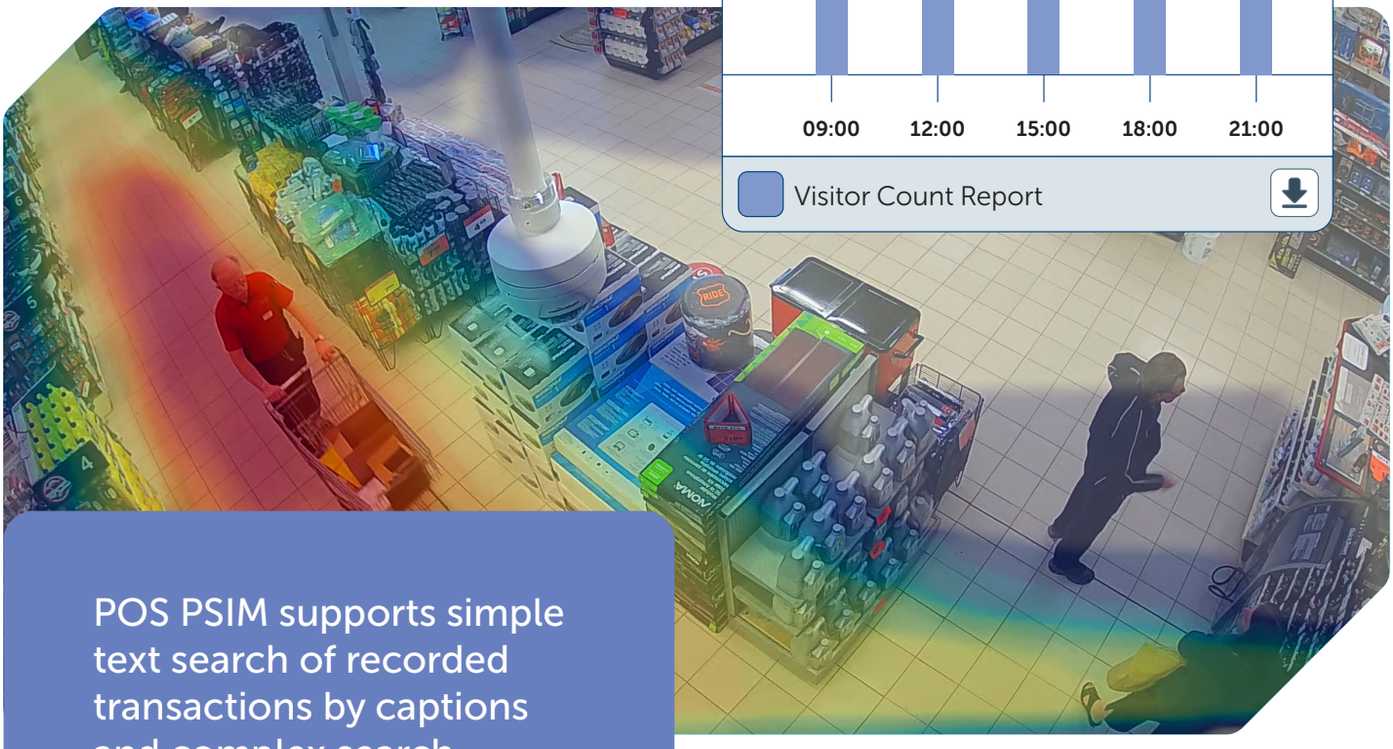
POS Reports

The Web Report System provides access to centralized statistics of the cashier operations supervision from any store of the retail chain. It can be used as part of an integrated monitoring center and individually to provide remote access to required statistics for managers, security department heads, and retail chain top management. The system allows for viewing reports on cashier operations, including related footage and the receipts, as well as printing the reports out or emailing them.

The report by potential violations allows you to quickly view sequences of events that may correspond to cashier errors and fraud. These include, for example, canceling all items in a receipt and then adding items to the same receipt, voiding a receipt, double scanning, and reloading the cash register.





POS PSIM supports simple text search of recorded transactions by captions and complex search queries, such as search by total amount of a receipt in a specified range, receipts with canceled items, search by number of items in a receipt, search by weight and cost of goods, and many others.

Retail Video Analytics

Video detectors determine the number of people in queues and count visitors to the store or a selected area of the sales floor. The data can be obtained in real time or in reports. This makes it possible to quickly take necessary measures, such as opening an additional cash register, and optimize the work schedule of staff, as well as analyze the efficiency of store operations.

The Heat Map tool creates a graphical representation of movement in the camera's field of view, such as foot traffic: it shows the areas where people prefer to stay and the less frequented areas in different colors. The data collected can also be displayed in the form of a graph or table. The Heat Map enables you to draw conclusions about the attractiveness of different areas of the retail space, such as promo stands, showcases, shelves, product placement areas, etc. It also helps identify bottlenecks and efficiently manage staff allocation.

Auto PSIM

Auto PSIM is a solution for transportation and logistics. It helps public and commercial enterprises monitor road traffic, manage vehicle fleets and rolling stock. It is also applied for law enforcement, traffic statistics collection, and vehicle access control.

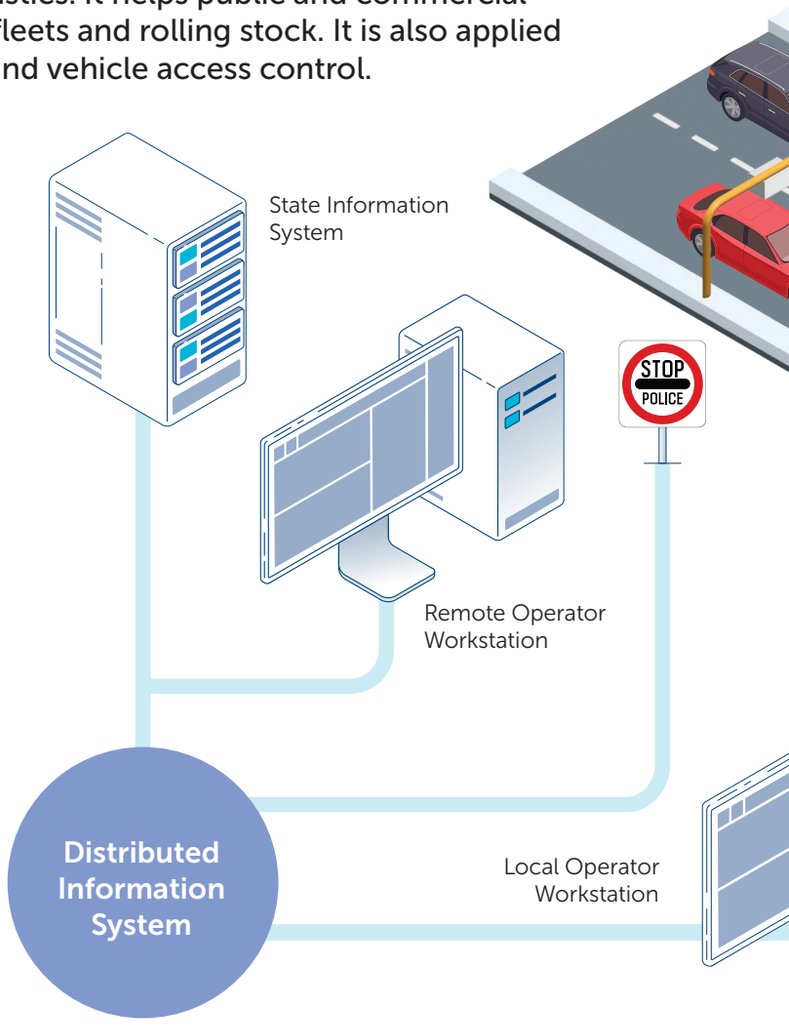
License Plate Recognition and Vehicle Search

Auto PSIM recognizes the license plates of vehicles and stores the plate number, video recording, vehicle image, date, time, location of capture, and other data. It supports the identification of vehicle types, makes, models, and speeds. This creates a database of all vehicles passing through control zones, with the ability to add comments to each license plate.

The recognized license plate can be compared in real time with internal and external databases, such as federal and regional wanted lists. If a match is found, an alert window is displayed with the vehicle's license plate and associated information, such as make and color.

Vehicles in the accumulated database can be searched by license plate and other data, such as make and model. Centralized search can be performed across multiple remote databases at different control points. This allows determining where and when a specific vehicle appeared and in which direction it traveled.

Auto PSIM also finds escort vehicles and helps detect surveillance by identifying license plates that have been captured near a specified license plate, that is, before and after it within a certain time.



Recording Traffic Violations

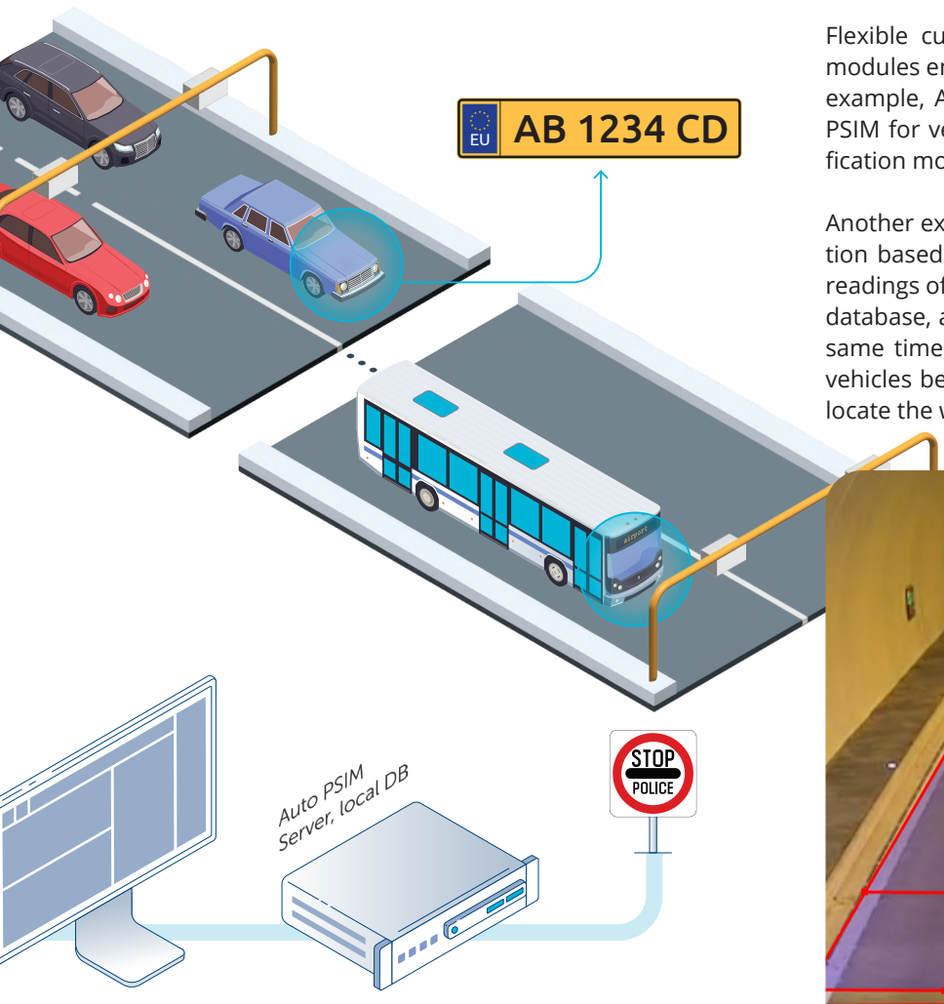
Auto PSIM automatically detects traffic violations in real time, notifies the operator, and stores the data necessary to provide evidence for further action. Types of violations include speeding, running a red light, driving over the stop line on a red light, stopping at a crosswalk on a red light, exceeding the parking time, and wrong-way driving.

Stopped Vehicle Detection

This detector recognizes congestion and idle/stalled vehicles in specified areas, detects dissolved congestion and the beginning of movement of the idle/stalled vehicle. It notifies about these events in real time and records them in the database.

Traffic Statistics Collection and Web Reports

Auto PSIM collects traffic statistics and provides reports by vehicle types and vehicle type groups: total number of vehicles; average vehicle speed; number of violations, vehicle stops, and traffic jams; average road congestion. The report by recognized license plates contains a list of vehicle plate numbers recognized within a specified timeframe and includes date and time, place, vehicle speed, still frame/video, and additional information.



Railroad Solution

Auto PSIM recognizes UIC-standard rail car numbers, including flat and tank cars, as well as single-line 8-digit numbers on car bodies and chassis. It determines the direction of rail car movement, automatically measures tank car level using thermal imaging cameras, counts the cars in the train, and stores the obtained data linked to video recordings in the database.

You can get a report for each rail car, containing the time of passing the checkpoint, name of checkpoint, related data and still frames. This ensures reliable control of rolling stock turnover on the selected route or on the company's territory, for example, at refineries.

Automatic Container Code Recognition

Auto PSIM recognizes standard ISO 6346 (BIC), MOCO, and ILU codes (both horizontal and vertical) and dimension codes. It stores the recognized container codes in the database and links them to video footage. This solution is designed for application in port, airport, and railroad logistics and freight customs control. It helps track the movement of containers and perform container search.

Custom Solutions

Flexible customization of interaction between Axxon PSIM modules enables you to create solutions for various tasks. For example, Auto PSIM can be used in combination with ACFA PSIM for vehicle access control, including multi-factor identification mode.

Another example is a video control system for a weighing station based on POS PSIM and Auto PSIM. POS PSIM receives readings of automobile or railroad scales, records them in the database, and overlays them on the video as captions. At the same time, Auto PSIM registers the numbers of rail cars or vehicles being weighed. These numbers can be used later to locate the weighing video and view the scale readings.

Comprehensive Security System Monitoring Module

This module is designed for centralized monitoring of large distributed systems. It processes alarm messages from remote protected sites and monitors the technical condition of the equipment. The module can utilize low bandwidth communication channels.

Decoding

- Communication channel
- SFA
- Hardware
- Detections
- Videosystem software
- ACS
- Size of archives
- Temperature in alarm area
- Cameras
- Temperature sensors
- Temperature in warning area

Equipment and Software Health Monitoring

The Comprehensive Monitoring Module receives, records, and displays information on the status of distributed security system components: operability of video cameras, video subsystem software and hard disks; availability of communication channel; size of video storage; operability of access control and alarm systems; technical parameters of servers; signals from uninterruptible power supplies. Real-time monitoring helps quickly eliminate malfunctions and maintain a high level of security at all protected sites.

The Comprehensive Monitoring Module significantly improves reliability and efficiency of distributed systems and reduces the number of false calls of service and security companies.

Monitoring Distributed Sites

The Monitoring Module receives and records alarm messages from local systems installed at distributed sites. The operator receives a notification and can view detailed information about the alarm, including associated video recordings or still frames. The time of alarm reception is logged, enabling the monitoring of operator performance.

Operators have access to real-time video feeds from the cameras and can request video recordings from the storage of remote servers. They can also remotely control alarms, access control systems, and executive devices. This includes actions such as activating a siren, locking a door, arming or disarming the site, and more.

Unique User Interface

The user interface of the Comprehensive Monitoring Module makes it possible to control an integrated security system of any scale with a minimum number of workstations. Protected sites are displayed in the form of blocks with icons, in which all alarms and equipment statuses are organized into groups. Sites can be grouped by affiliation (territorial, administrative, departmental) for centralized monitoring of multiple distributed locations, such as bank branches, retail chain stores, or gas stations in different cities.

Individual events can be configured for each site, which will be displayed in the interface in the way familiar to the operator. Distinguishing operator access rights to groups of sites protects against unauthorized interference in the operation of certain segments of the security system.

The failure of even one component of the security system means vulnerability. Therefore, monitoring the health of equipment is instrumental for any system, especially a large and distributed one.

Interaction with Auto PSIM

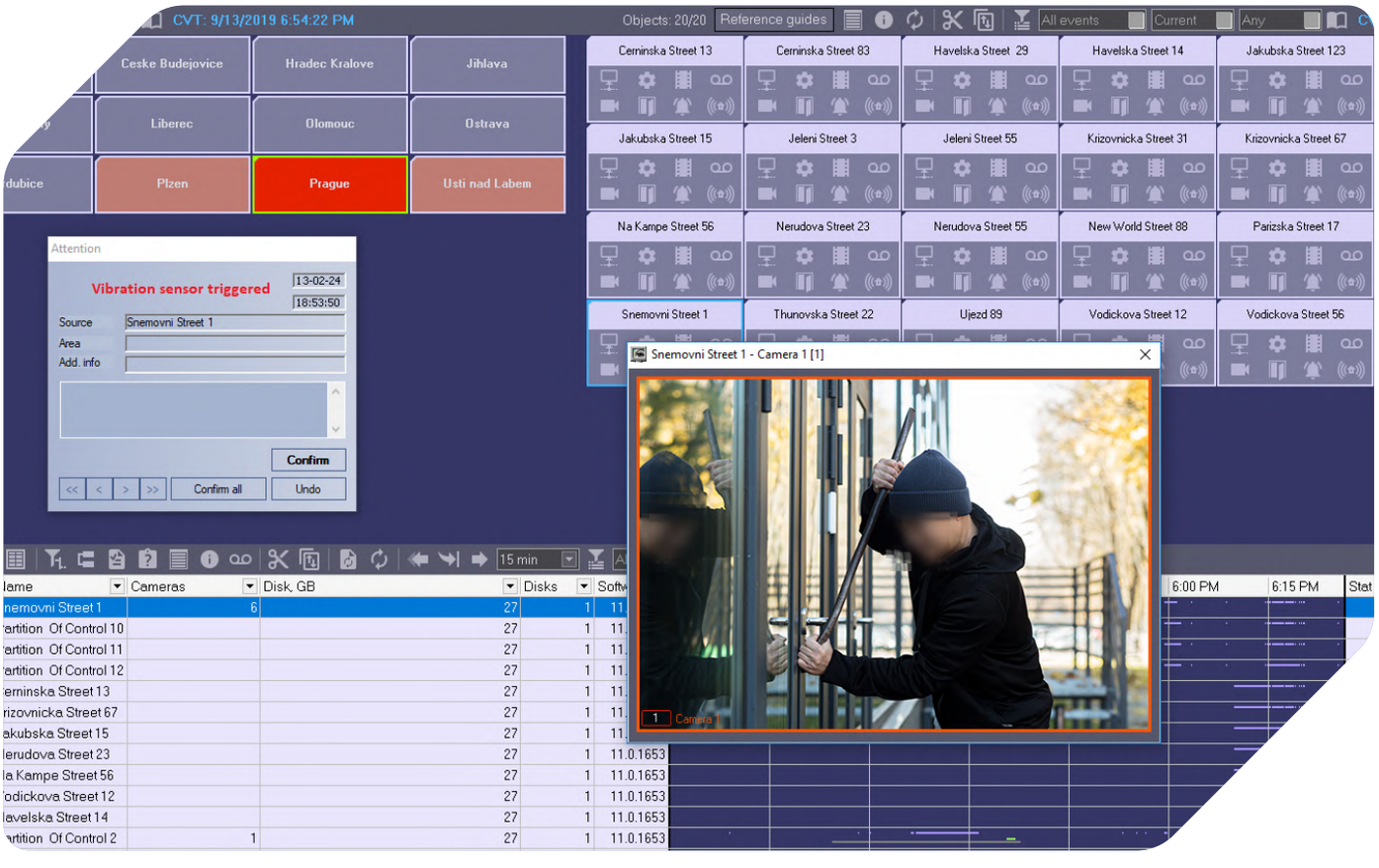
The system based on the Monitoring Module and Auto PSIM is used at gas stations and other sites that do not have a broadband connection with the monitoring center. It addresses remote control tasks, including those related to the use of a unified license plate number database:

- Matching a plate number recognized at a site with the centralized or local database.
- Notification of the operator in the monitoring center and/or at a site in case of a match.
- Centralized viewing of information on license plates recognized at the sites.
- Generating site-related reports: average vehicle dwell time, number of vehicles during a specified time, license plate list.

Reports

The reporting system generates general and detailed reports on equipment failures, alarm situations, operator actions, video and photo reports, and statistical reports on alarms and equipment malfunctions. Analyzing these reports enables you to:

- Obtain information about the impact of various types of faults on the overall system performance.
- Identify recurring issues in the equipment operation and prevent its failure by replacing components with more reliable ones.
- Strengthen the security of sites where alarm situations are more frequent.



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