



Metro infrastructure
advanced security system

Today's challenges

The main aims of security system implementation on the Metro infrastructure are:

- > provide stable and safe functioning of the Metro infrastructure
- > increase transport safety, passengers and staff security from the typical incidents of a transport enterprise with a high risk level, and also against acts of unlawful interference



Focus on

The goals of metro security system

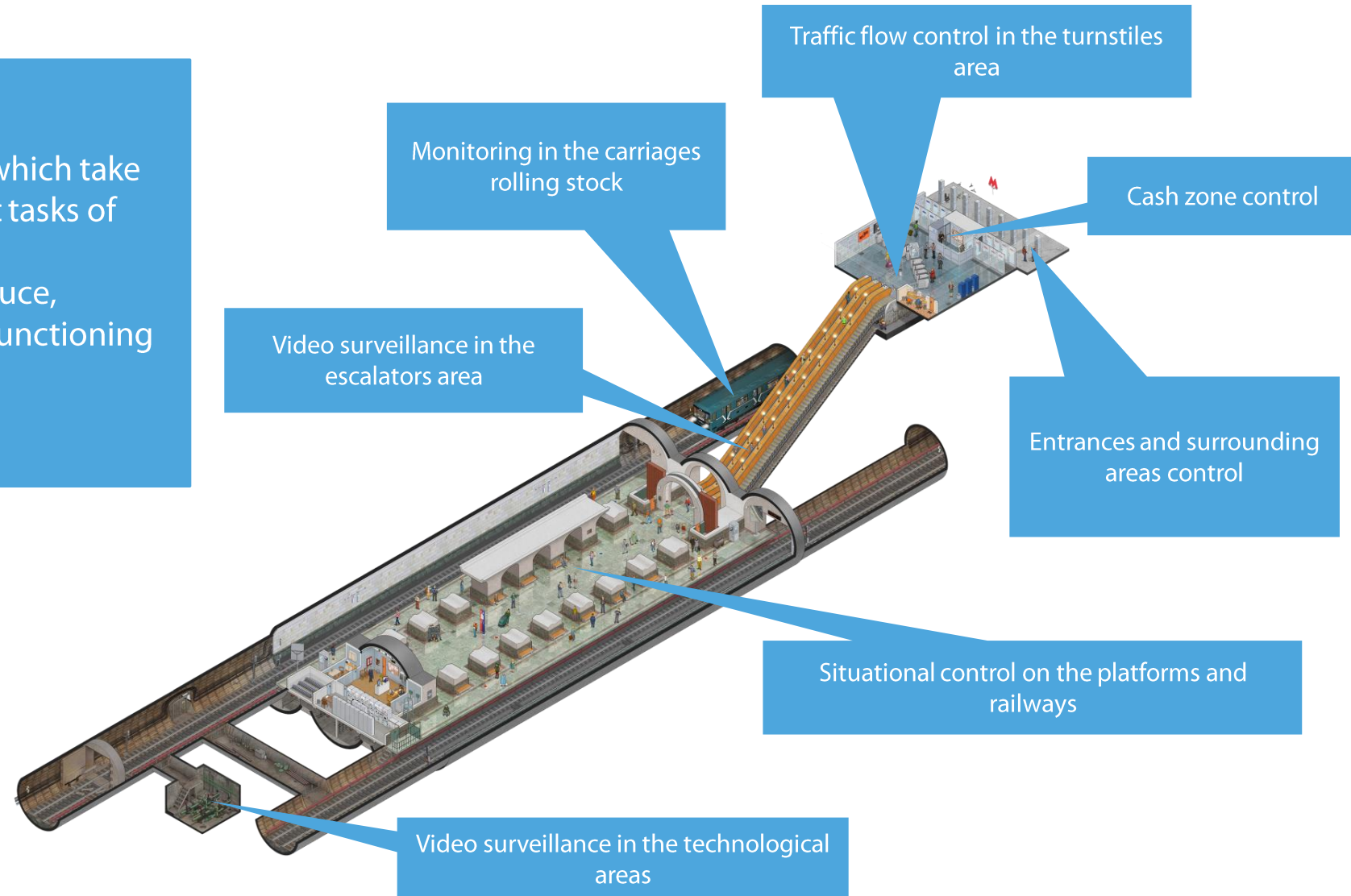
- > to maintain law and order on the Metro territory
- > momentary identification of potentially dangerous situations
- > to improve the efficiency of work and interaction of internal Metro services and specialized agencies
- > to inform citizens about the occurred incidents and to facilitate prompt mitigation

Performed by

- > routine processes of monitoring, accounting and control automation
- > integration of fire alarm, burglar alarm, and access control systems in united security solution
- > timely detection of the events leading to the incidents occurrence
- > initiation of action protocols to help to minimize damage upon occurrence of incidents
- > evidential base formation for investigating potential incidents

Basic control areas

ISS develops customized solutions which take account of the needs and to specific tasks of the infrastructure, property, citizens protection, prevention and risks reduce, thereby ensuring a stable and safe functioning of the Metro infrastructure



SecurOS functionalities



Surrounding areas

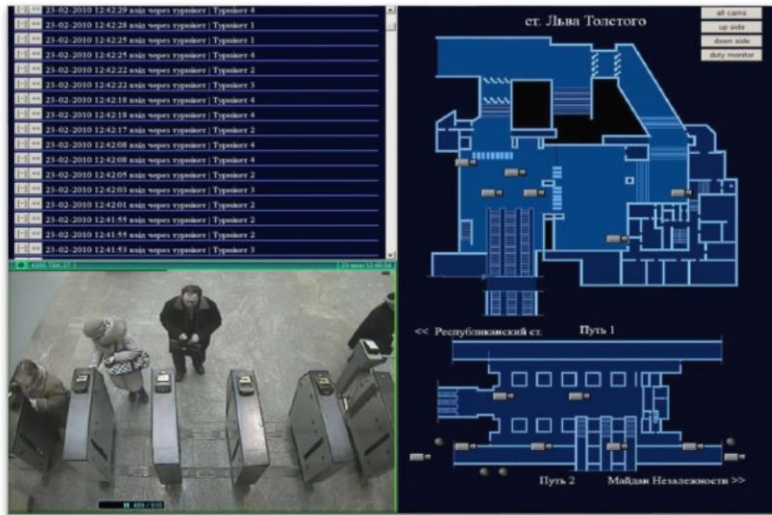
- > detection of the territories misuse, for example, unauthorized trading, cases of begging, "spontaneous" parking
- > the identification of misconduct that constitutes a menace to passengers and infrastructure, for example, acts of vandalism
- > operative conditions control, for example, passage detection in off-hours



Cash zones

- > overflow detection in the tickets halls
- > obtaining the necessary data for evaluating the performance of cashiers, and resolve possible conflict situations with passengers

SecurOS functionalities

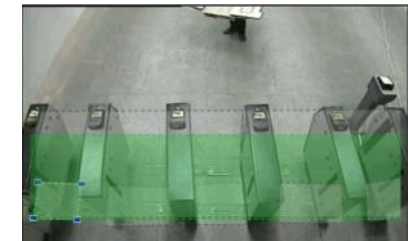


The station entrances, passengers service area

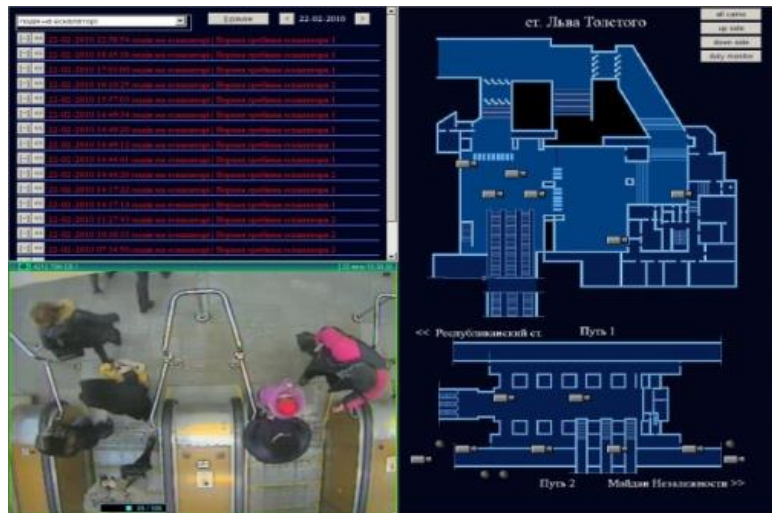
- > control of unauthorized break in / entry over the barrier
- > people detection according the search databases
- > overflow detection in the turnstile area
- > bulky luggage detection



counting the
number of
passes



bulky items
detector

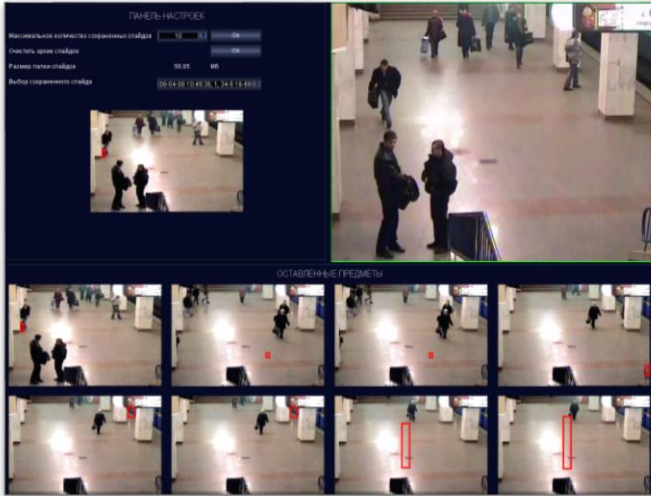


Escalators area

- > passengers counting (the statistics for monitoring the load on specific hub)
- > real-time incidents detection

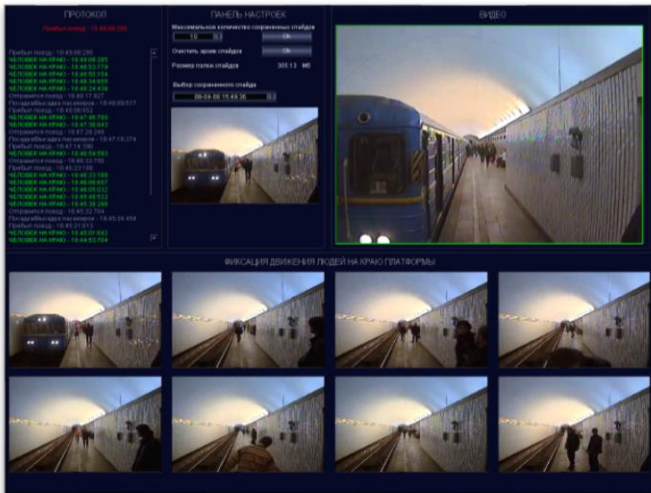
detection of person delay / stop

SecurOS functionalities



Platforms

- > abandoned objects detection
- > detection of certain kinds of people motion or passengers flow, their non-standard, suspicious behavior
- > integration with emergency communication terminals, technological sensors, etc.



Railways

- > detection of emergency shutdowns
- > abandoned / missing objects and the appearance in the certain area detection
- > overstep the limit line detection
- > integration with fire alarms, specialized sensors and detectors

SecurOS functionalities



The rolling stock

- > detection of unauthorized actions, including acts of vandalism, cases of begging and trade
- > identifying situations and people behavior constituting a threat to others
- > abandoned / missing objects detection

The system provides

- > video and audio monitoring, integration with a complex of the specialized sensors inside the carriage
- > data record (while movement) to local storage (industrial video servers) located in carriages
- > archives export in the Metro processing center (in the wireless zones)
- > direct video situational monitoring in the train carriages - to a driver



SecurOS functionalities

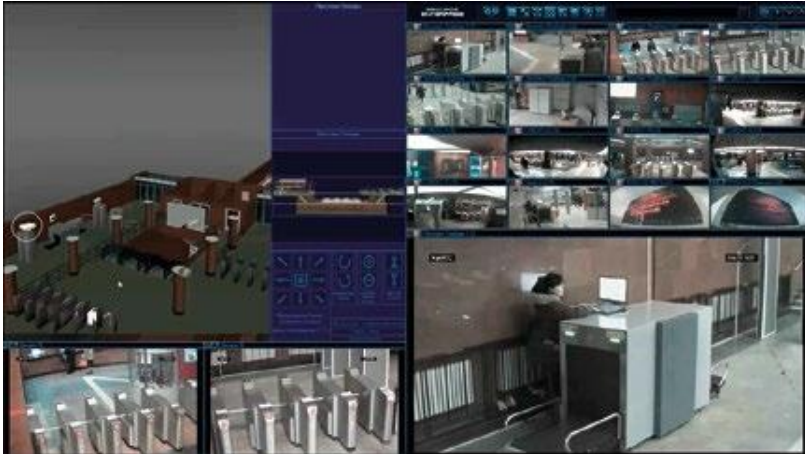


Technical and office space

- > unauthorized passage / entrance
- > abandoned objects detection
- > technological operations control
- > integration with fire alarm system to detect smoke / fire, specialized sensors and detectors to control the chemical composition of air, executive devices, etc.

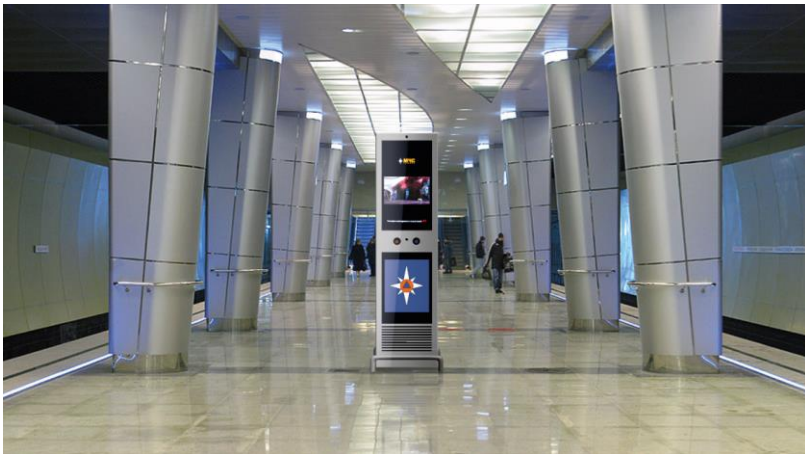


Passengers security



SecurOS provides the integration and full-function use of the various specialized hardware-software complexes:

- > emergency call terminals
- > complexes «passenger - station operator» / «passenger - engine driver»
- > video and audio alerts systems
- > radiation and chemical control detectors



In addition to providing 2-way communication («passenger – the operator»), the information from the integrated subsystems is processed by SecurOS. Based on these data and information received from CCTV systems and video analytics modules, protocols of action for different Metropolitan services are generated automatically. Its usage enables to take timely and appropriate measures to minimize damage upon incidents occurrence.

The solution's main components

1. SecurOS Video Management Platform

Provides a single situational video monitoring, video record, interaction and management of the distributed security complex

2. Multifunctional operators workstations, MCC, facilities of collective representation SecurOS IVS VideoWall

Allow to raise work efficiency of internal and external operational services

3. Face capture and recognition system SecurOS Face

Enables to record and identify the people faces, providing timely detection of persons according the search database

4. Situational awareness video analytics

Enable to detect automatically a number of incident, for example:

- > abandoned objects
- > passage into a prohibited zone
- > crowd, etc.

5. Детекторы сервисной видеоаналитики

Enable to detect automatically a number of incident, for example:

- > defocusing
- > blinding
- > loss of signal , etc.

6. Event management

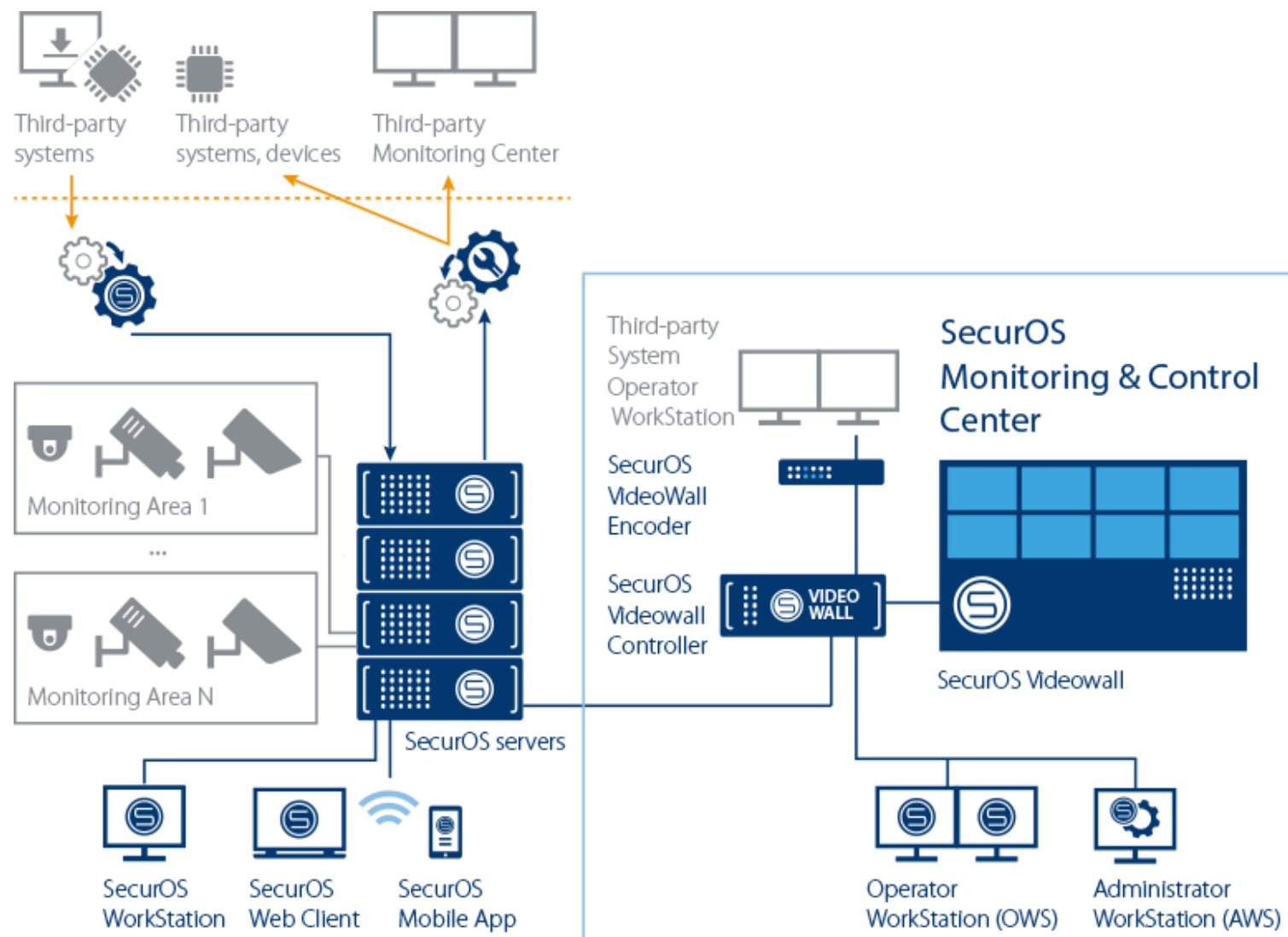
Enables to process alarms from video analytics subsystem and inform operator properly.

SecurOS – Unified security & extensibility



SECUROS

SecurOS integrates a multitude of ISS and third party systems into one integrated network and creates a unified command and control capability.



SecurOS – A complete security eco-system



Federation

Support of local or distributed security systems into a unified network with unlimited numbers of video servers, cameras, sensors, etc. Centralized monitoring and control of local sites.



Interoperability

Integrate third party systems and devices into one network



Additive / modular architecture

Scalable system topology generates ready ROI on the system – new functionalities and capabilities can generally be added with minimal software management



Event / scenario management

Program complex reactions to complex events to intelligently and dynamically react to real world events



Extensibility / customization

From multi-layer maps, custom user-based screens and permissions, to custom forms and GUI, SecurOS allows for complete customization based on user need



Business intelligence

Advanced native analytics and integration of surveillance platform with business process systems allows for proactive action

SecurOS – Technological dominance



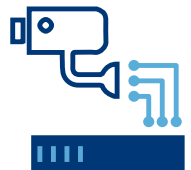
All devices, objects, cameras, systems, and even users, macros, and scripts can be individually managed and have multi-level permissions based on login.



Each object can be controlled manually or automated using scripts and macros



Security system efficiency active monitoring



Security system resources optimization



Continuity and redundancy capability with failover



Operating under insufficient capacity of data channels



Resilient data storage



High level of cyber-security

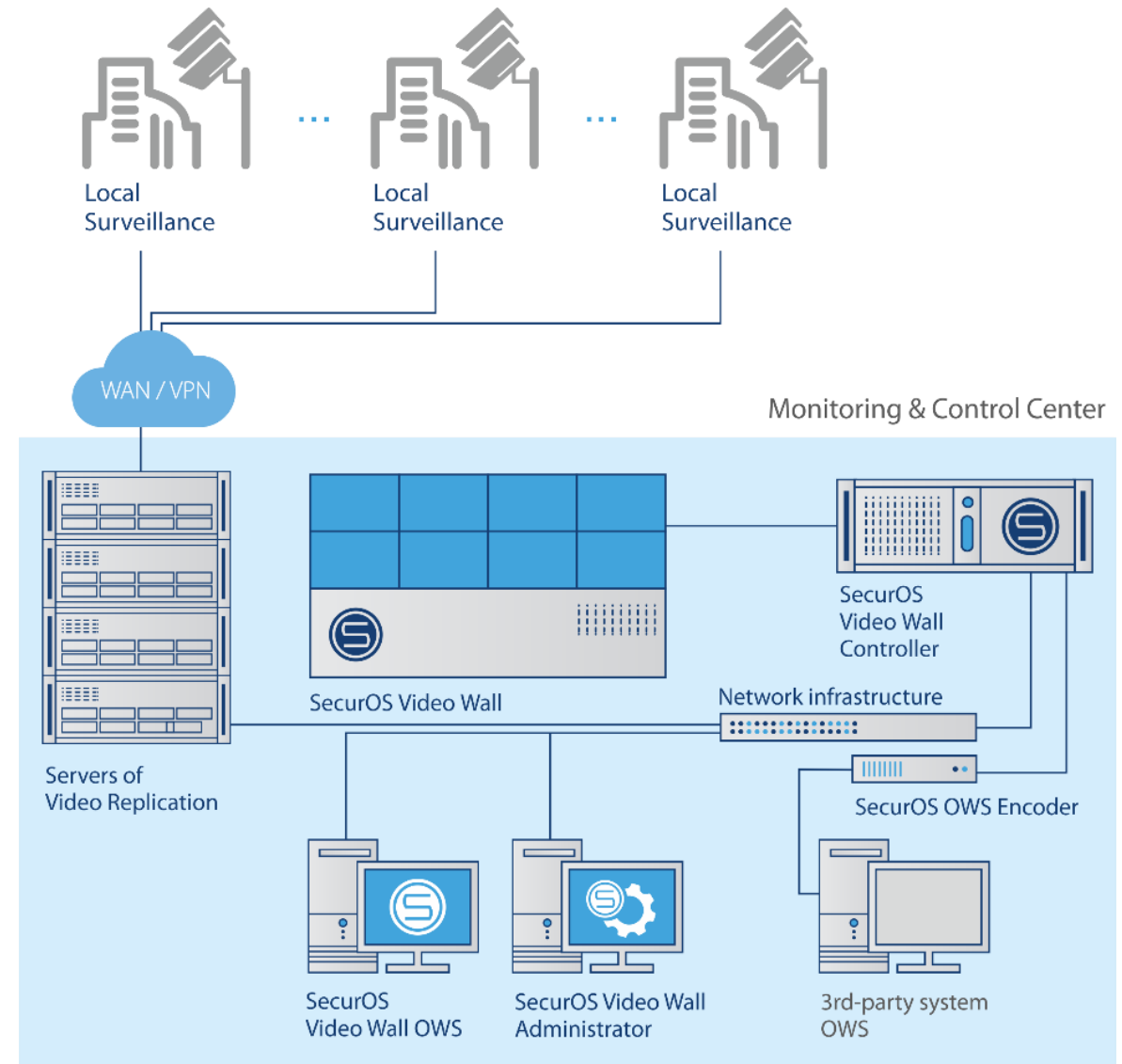


Full compliance with standards and requirements

Monitoring and Control Center> SecurOS MCC

ISS software-hardware based solution for Command & Control rooms designed for effective control of geographically-distributed Metro facilities and provides uninterrupted operation of the integrated dispatch service, including situational monitoring and management of CCTV remote security services.

Allows to assess the situation on the Metro facilities, receive the information about events and incidents in real time and thereby to initiate the response processes of internal Metro security services, and the specialized security agencies.



VideoWall > SecurOS IVS VideoWall

Designed to provide effective operation of the joint supervisory service, including situational monitoring and management of CCTV remote security services.

SecurOS IVS VideoWall is a hardware-software based solution consists of:

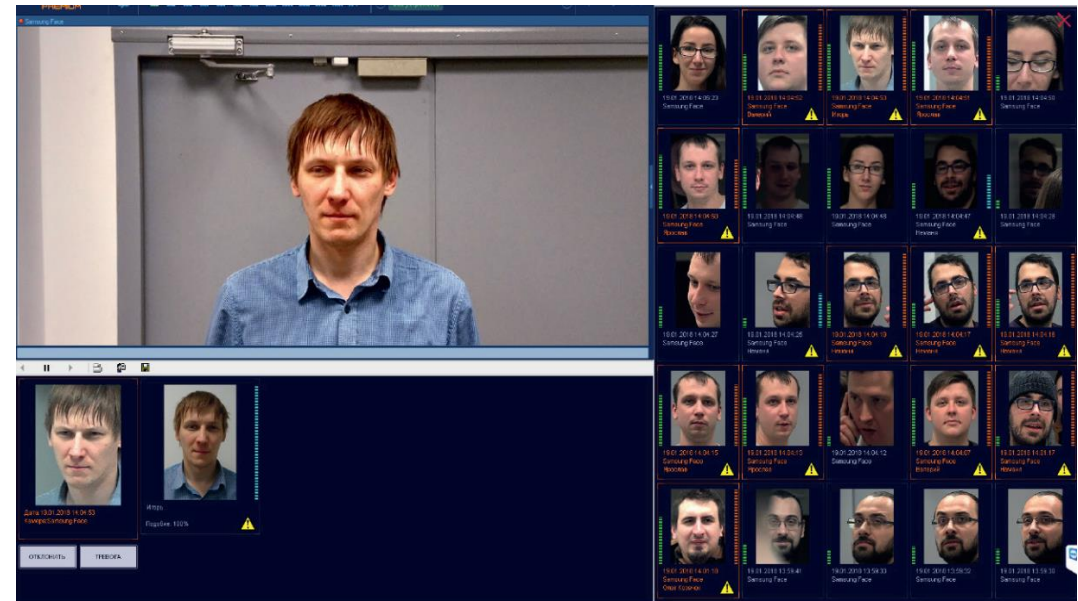
- > Professional LED panels mounted in specially designed floor bracket
- > **SecurOS IVS VideoWall Controller** which uses high density graphic cards. One SecurOS IVS VideoWall Controller supports up to 16 LED panels by grouping them into a unified display platform
- > SecurOS software component to easily manage content for the display platform



Face Capture & Recognition > SecurOS Face

SecurOS FACE provides Face Capture & Recognition with a high accuracy level in a wide variety of challenging conditions and as such, is ranked among the most accurate of all Face Recognition systems in the marketplace.

The reason for such a high level of accuracy has to do with the background of ISS in image analytics technology, and the related expertise with advanced algorithms, which then identifies and matches an individual's specific features with relentless attention to every detail.



Situational Awareness Video Analytics > SecurOS Tracking Kit III

SecurOS Tracking Kit III detectors provide significant reduction of operator's load: no need for constant monitoring of all control areas and exclusion of human factor influence



Crowd Detector



Object Left Behind Detector



Intrusion Detector



Wrong Direction Detector



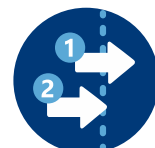
Line Crossing Detector



Loitering Detector



Running Detector



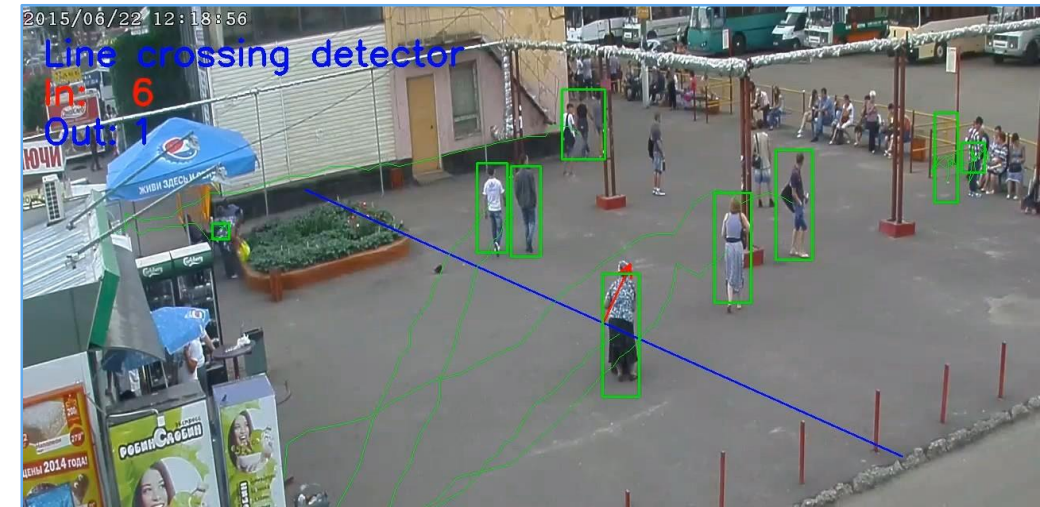
Object Counter



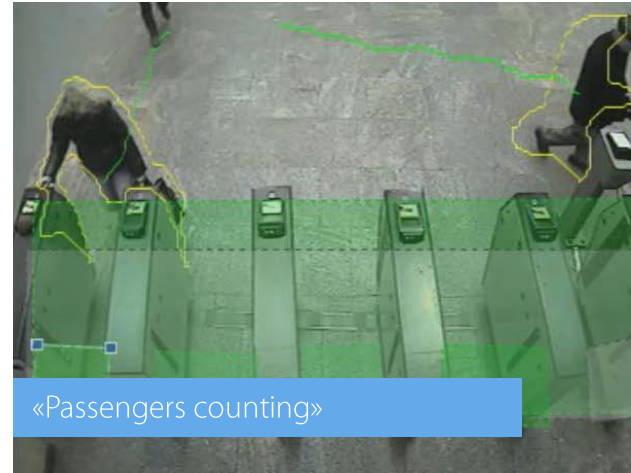
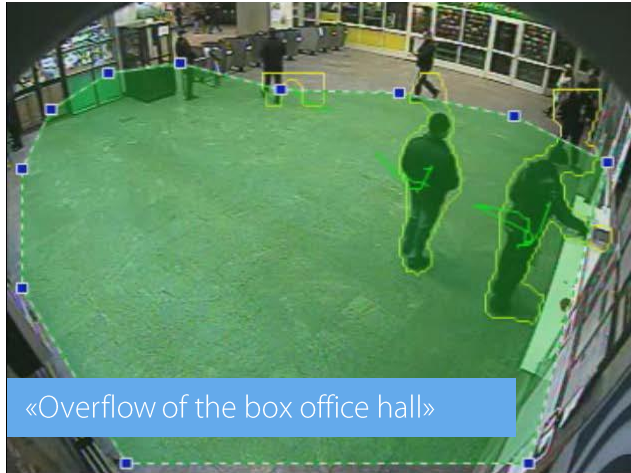
Smoke Detector



Dwell Time Detector



Situational Awareness Video Analytics > SecurOS Tracking Kit III

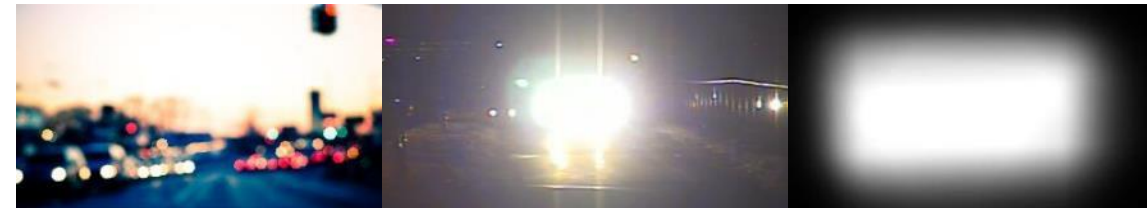
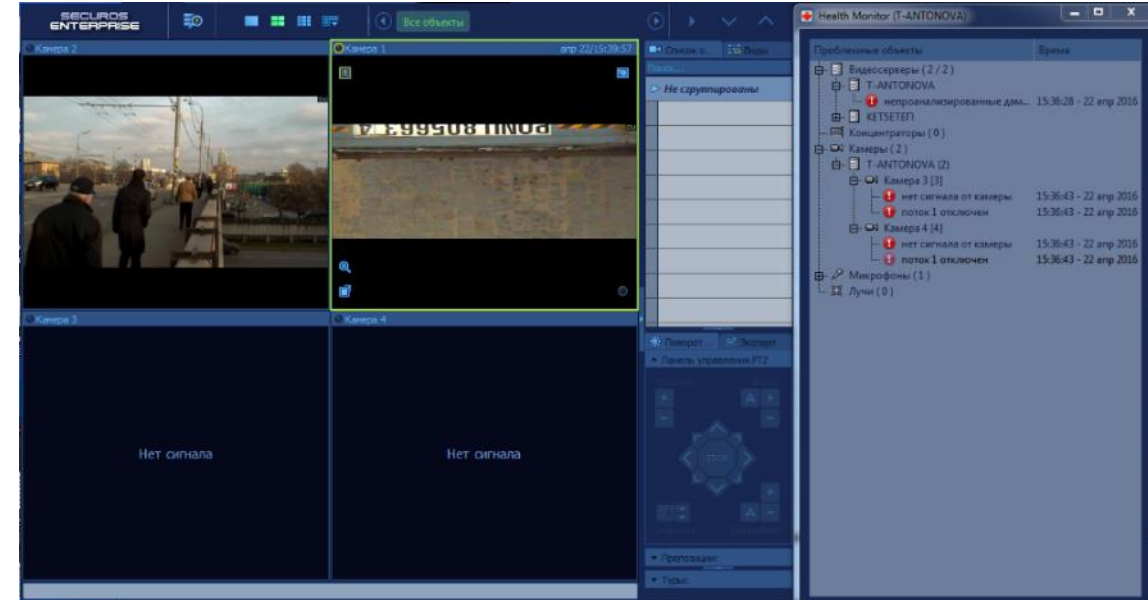


The detection of each incident (from one or more basic detectors) is programmed by the logic event processing (individually or in combination) or by means of additional setup (time interval, etc.) and programming tools.

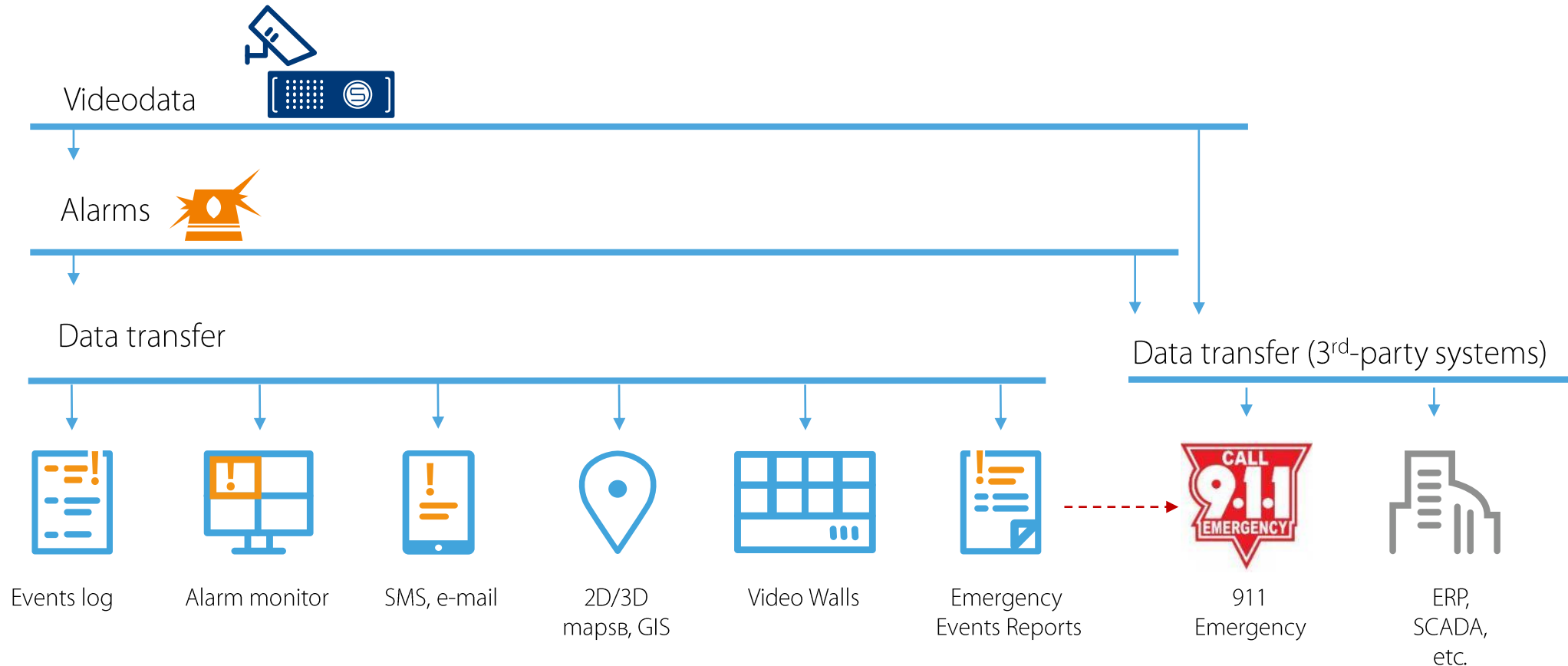
Service Video Analytics > SecurOS Camera Health

Used to verify operation of the CCTV cameras and the video stream according to the technical requirements of the system and is implemented on the basis of the service detectors

- > **Loss of signal** from the camera logs communication blackout between server and camera
- > **Defocusing** responses in case of the image sharpness loss
- > **Blinding** registers light beam directed at the lens
- > **Camera shielding** reacts to the darkening of the image in cases of closure of lens, failure of the lighting device
- > **Changes the field of view** registers unauthorized rotates of the camera



Event Management



ISS advanced integration capabilities allow to develop integrated solutions based on video management platform, including a number of additional subsystems (video analytics, event processing, GIS, "911", etc.) and hardware (terminals "Citizen-Police", acoustic, chemical and radiation sensors, systems, Fire Alarm, etc.).

REFERENCES | Metro in Sao Paulo, Brazil



- SecurOS Enterprise video management system
- SecurOS Face - Face recognition
- Video data from more than 1000 cameras operating at 50 stations of 3 metro lines, is transmitted in monitoring and control center where 50 operator workstations are set up
- Distributed architectural solution for local monitoring and centralized management of abnormal situations.

Daily traffic is over 3 million passengers

REFERENCES | Metro in Kazan, Russia



ISS security system provides situational control of all stations of Kazan underground. Video data is exported into the united monitoring center.

The system consists of:

- video servers SecurOS IVS
- Bosch cameras
- SecurOS WorkStation
- information displays integrated in SecurOS

In the future it is planned to organize video and metadata transmission to the Situation center of Ministry of emergency situations.

REFERENCES | Metro in Kiev, Ukraine



Pilot project.

Objective: maximum automation of processes of obtaining data about the emergency event / incident for immediate response by the appropriate operational bodies

The system consists of:

- SecurOS Enterprise video management system
- SecurOS situational video analytics – special customization for the project
- The event processing system
- SecurOS Monitoring and Control Center, SecurOS Work Stations
- Bosch cameras

REFERENCES | The train station of TaiYuan City, Shanxi Province, China



Purpose of implementation: conducting investigative and search activity

1 days results of the security system operation:

- identified 11 suspects in crimes previously committed
- solved 5 crimes
- 10 suspects involved to justice

The system consists of:

- Video servers SecurOS IVS
- SecurOS Face - Face recognition
- SecurOS Work Stations

REFERENCES | Paveletsky railroad station, Moscow, Russia



Integrated security system comprising:

- video surveillance based on SecurOS
- SecurOS situational awareness and service video analytics detectors
- integration with the upper level system RZD – incidents data transfer for immediate response



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