TRASSIR®

Airports

Typical issues in the airports

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Ensuring safety and security inside the terminals and on runaway:

- Anti-terrorist protection;
- Detection of the people wanted by the police;
- Preventing terrorist attacks (detection of abandoned objects).

Ensuring compliance with measures for prevention of spread of COVID19:

- Detection of passengers that are not using face masks inside the terminal;
- Control of compliance with social distancing.

Improving tenants` performance

- Prevent cases of thefts or frauds made by the employees in the shops;
- Acquire statistics about visitors profile and economic performance in the shops;
- Detect and prevent queues, empty shelves, absence of employees.

Improve travellers` experience

- Control airport staff performance;
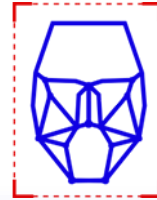- Detect absence of free taxis or trolleys.

Ensuring safety and security inside the terminals and on runaway

Left Object Detector

- Detects abandoned and forgotten things in the areas monitored by the cameras;
- Recognizes the class of the abandoned object (suitcase, backpack, box, bag, duffle bag, etc);
- Detects the owner of the abandoned object in the area.

Face Recognition

- Detects people wanted by the authorities (e.g. criminals, terrorists);
- Sends automatic alarms to security when such people are detected.
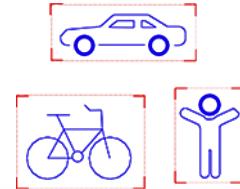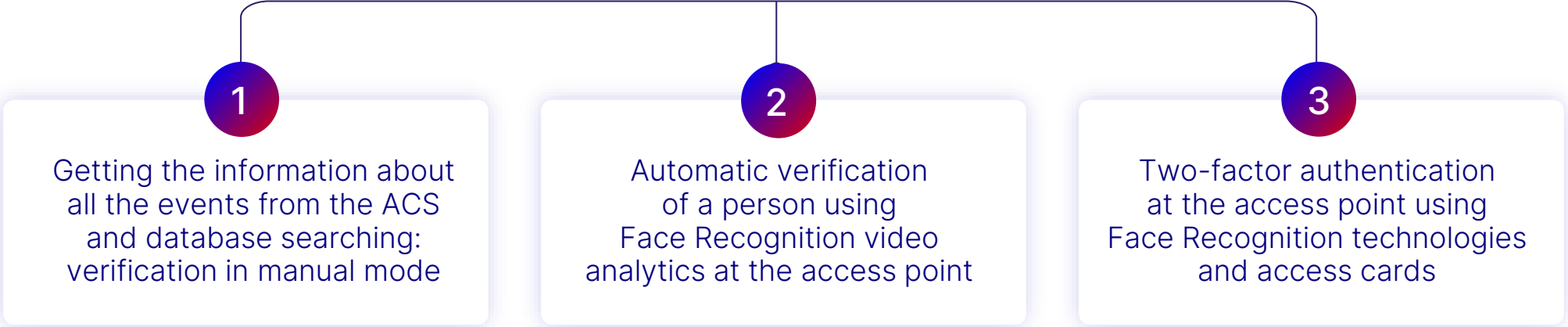
Neuro Detector

- Allows to detect intrusion into a protected area by a stranger, a car or a bicycle with the advanced filters for no false positives;
- Can be used for perimetral protection of the runaway zone.

Ensuring safety and security inside the terminals and on runaway

TRASSIR

TRASSIR AND ACCESS CONTROL SYSTEM (ACS) INTEGRATION
Provides you with the additional advantages to ensure the security

3 types of integration

1
Getting the information about all the events from the ACS and database searching: verification in manual mode

2
Automatic verification of a person using Face Recognition video analytics at the access point

3
Two-factor authentication at the access point using Face Recognition technologies and access cards

Face Recognition
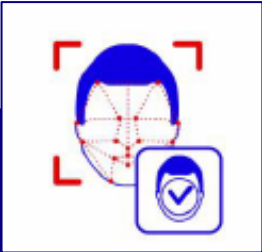
TRASSIR

TRASSIR Face Recognition 2.0 –
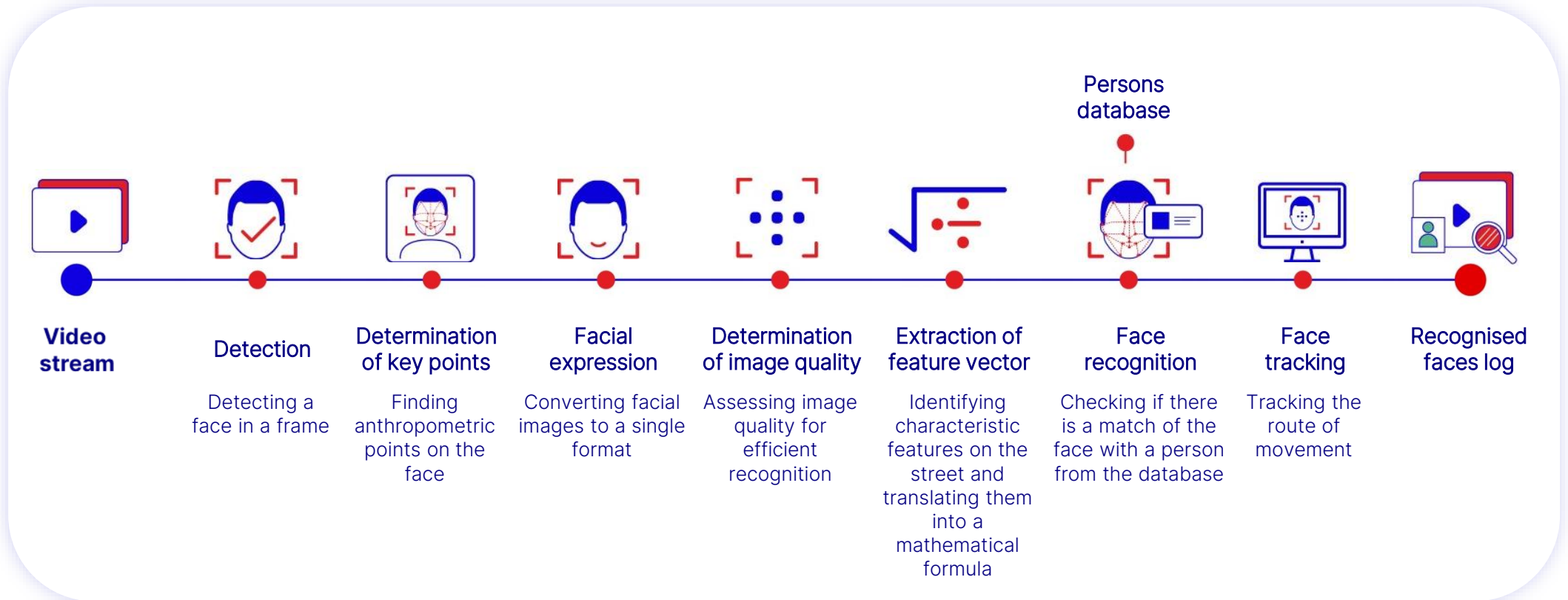a new and improved version of the
Face Recognition smart video
analytics module for facial
recognition and people search based
on a pre-configured database.

Highly efficient and reliable, provides
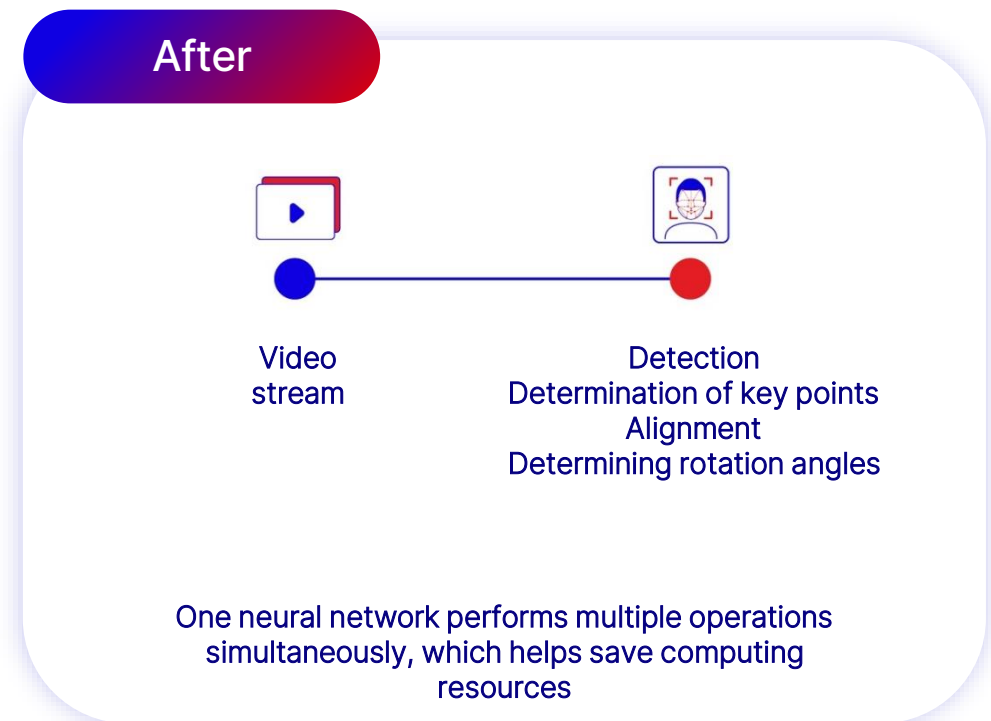accurate recognition in a variety of
scenarios.

How does face recognition work?

TRASSIR®

Persons database

Video stream

Detection
Detecting a face in a frame

Determination of key points
Finding anthropometric points on the face

Facial expression
Converting facial images to a single format

Determination of image quality
Assessing image quality for efficient recognition

Extraction of feature vector
Identifying characteristic features on the street and translating them into a mathematical formula

Face recognition
Checking if there is a match of the face with a person from the database

Face tracking
Tracking the route of movement

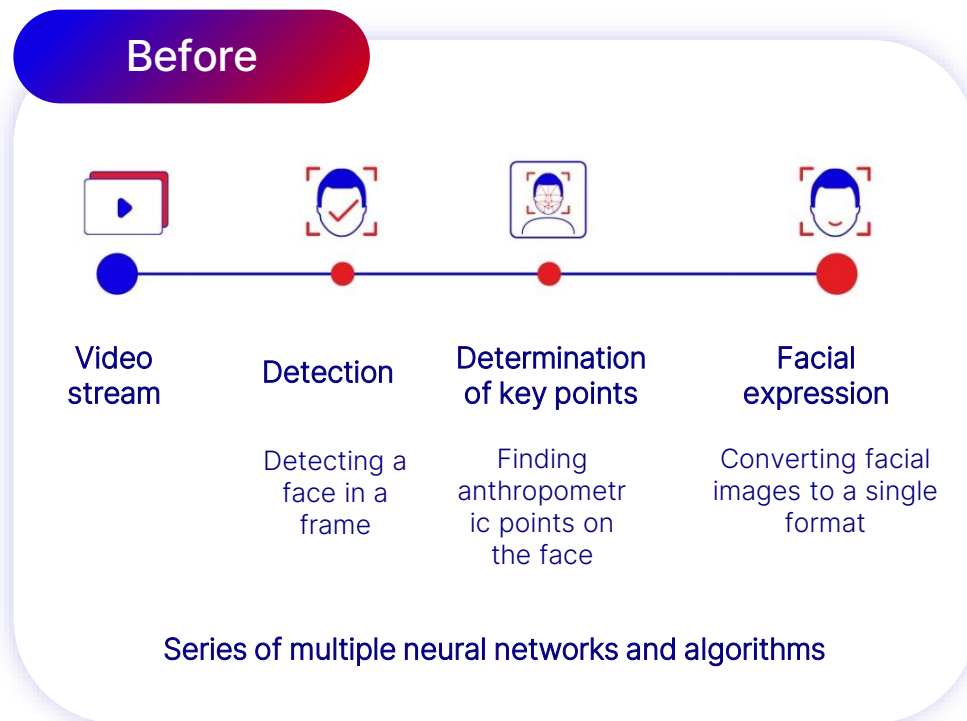**Recognised faces log**

Updated feature: unique architecture

We developed a unique architecture that allows multiple stages of face recognition to be performed simultaneously.

Before

Video stream

Detection

Detecting a face in a frame

Determination of key points

Finding anthropometric points on the face

Facial expression

Converting facial images to a single format

Series of multiple neural networks and algorithms

After

Video stream

**Detection
Determination of key points
Alignment
Determining rotation angles**

One neural network performs multiple operations simultaneously, which helps save computing resources

Updated feature: false detection filtering technology

TRASSIR®

We implemented a new false detection filtering technology based on clustering.

All faces can be divided into a plurality of groups:

→ Faces are distributed into clusters by similarity
The neural network conditionally distributes faces into 400,000 clusters grouped by similarity and determines which cluster it belongs to.

→ A 'garbage cluster' is formed
The 'garbage' cluster includes low-quality facial images and images of objects that are not faces.

→ False detection is identified and discarded
After highlighting facial features, the face is checked if it falls in the 'garbage cluster'. If it falls into this cluster, it is most likely a false detection and is discarded.
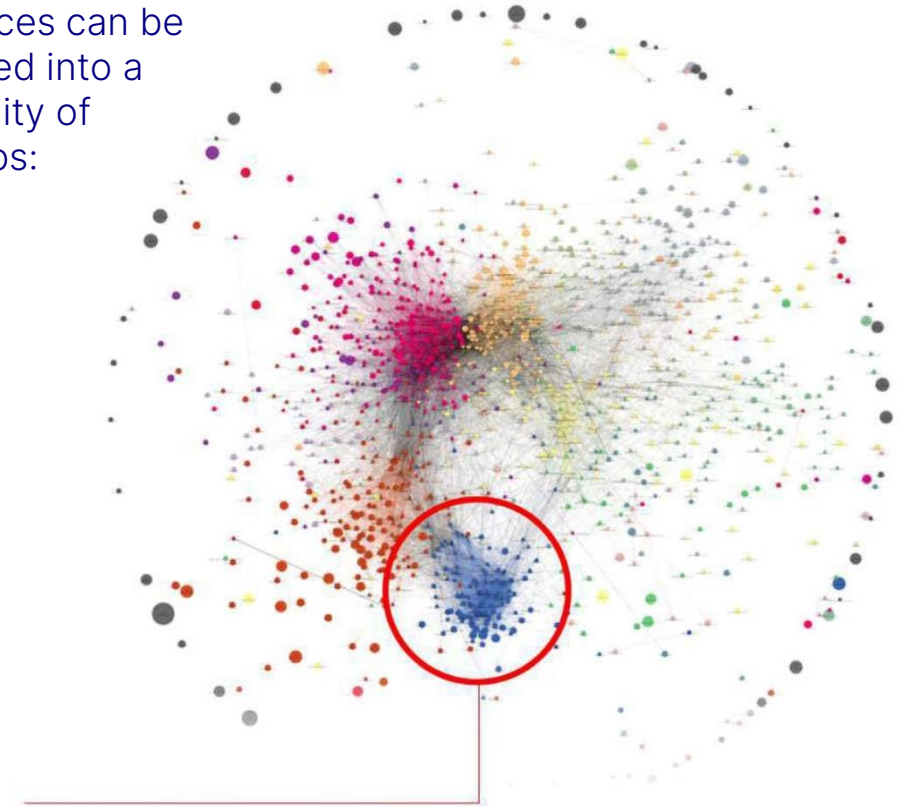
If a face falls into this group, it is most likely a false detection!

Updated features: high-precision face tracking mechanism

TRASSIR®

We introduced a new face tracking mechanism.

Before: optical tracking

➔ Low efficiency when faces overlap with each other

➔ Low efficiency with a bad angle

Now: feature vector-based tracking

➔ If a face disappeared from the frame and then reappeared, a new tracker matched it with a previously detected track and compared unique facial features.

Improving tenants` performance

TRASSIR®

1 Count number of people visiting the point of sale

2 Get all the necessary data and automatically analyse sales conversion by days/hours/weeks

3 Detect the number of people in the queue in a timely manner and the number of free shopping carts at the entrance to the store

4 Analyze customers flow within the store

5 Detect empty shelves and receive data about insufficient quantity of goods on the shelves

6 Identify the activity of visitors and define the places where people stay longer

7 Get the information about the absence of the employees at the workplace and keep records of working time of the staff

Improving tenants` performance

TRASSIR®

Face Analytics

- Counting of unique visitors and demographic audience analysis;

- Visitor return analysis;

- Tracks (motion trajectory) of the individual customers. It is also possible to monitor motion trajectory of a certain group of visitors in the outlet providing demographic statistics.

Neuro Counter

- Neuro Counter in combination with ActivePOS cash control video analytics effectively complement each other. ActivePOS detects the number of punched checks at the checkout, People Counter counts the number of visitors of the outlet. Aa a result, you receive automatically calculated sales conversion which is one of key indicators of the outlets efficiency.

- Neuro Counter video analytics based on neural networks is designed for counting the objects (people, cars, bicycles) entering the specific area;

- This intellectual video analytics allows the retailers to exclude their employees from the statistics based on the color of clothes of the staff members.

Improving tenants` performance

ActivePOS

Professional software for intelligent control of cash transactions with detectors (more than 60 scenarios):

- Fraud of cashiers and buyers (intentional damage);

- Cashier errors (unintentional damage);

- Identification of non-compliance with store service standards, and violations of the rules of settlement and cash services, determined by law.

Improving tenants` performance

Queue Detector

- Queue Detector video analytics allows you to monitor the situation with the queue length at the cash register of the shops. This solution automatically counts the number of people at the queue. If the number of people is exceed the pre-defined number that is defined in the settings the system will automatically send a notification. It allows the manager of the point of sale quickly respond to the situation and attend to customers by opening a new cash register in a timely manner;

- Queue Detector improves standards of service and increase customer loyalty by showing people the ongoing efforts to control queues;

- The module allows to receive reports about peak hours and approximate time spend in queues by customers.

Improving tenants` performance

Shelf Detector

- Shelf Detector video analytics allows you to monitor the fullness of the store shelves with goods and is used to timely forecast of demand for certain goods. It automatically informs employees of the store about the absence or insufficient quantity of goods on the shelves;

- Shelf Detector video analytics allows to quickly detect the absence or small amount of shopping carts at the entrance to the store. Thus, the customers will not leave the store without making any purchase just because they couldn't find free shopping cart for goods;

- The module has the functionality of generating reports on the status of shelves at specified intervals. Thanks to the reports, the administration of the shop can determine/predict the level of demand for certain groups of goods and track the performance of employees responsible for filling the shelves;

- Video analytics reports are available for the export to the external system.

Improving tenants` performance

TRASSIR®

Heat Map on Map

- Heat Map on Map: allows to define the places where people stay longer. This analysis can be used to detect the prime location for placing "eye stoppers" in order to attract more attention to the particular goods, promotions etc.

- Movement map: allows you to create vector map of the customers movement at the store.

- Heat Map on Map allows you to understand and analyze the activity of visitors at the store. And most importantly, the data provided by TRASSIR Heat Map On Map allows you to find the best ways to place goods on the way of the main flow of customers directing them to the most profitable trajectories of movement.

25%

17%

50%

Improve travellers` experience

TRASSIR®
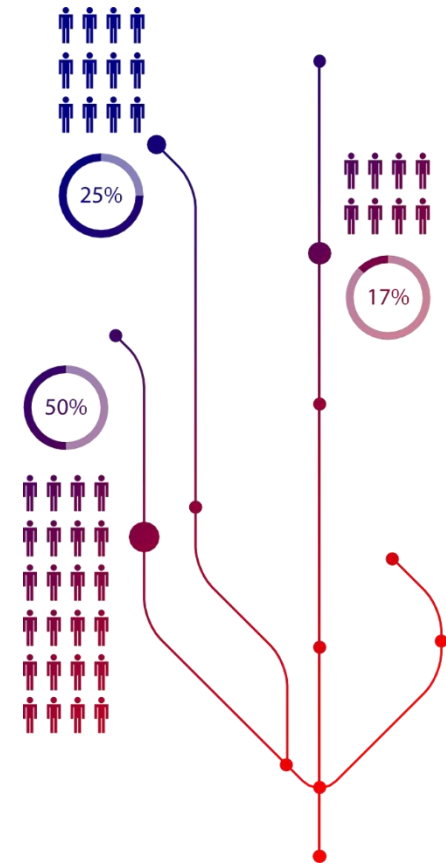
WorkPlace Detector

- Allows to set the work area and work schedule of the employee airport's, as well as the allowable time for the employee to be away from the workplace;

- Generates a notification if an employee's absence from the workplace has exceeded the allowed time;

- Allows to control working time of employees in airport's offices, shops, check in, boarding areas.

Parking

- Allows to control the number and time of stay of vehicles in the airport's parking area;

- Detect violation of traffic rules or parking in the prohibited zones;

- Creates a list of cars with the exact time and the date of entry/exit;

- The module could be used to issue parking bills to car owners;

- Can be used to detect amount of free spaces in the parking lot.

Improve

- Detect amount of travellers waiting for taxis in queues;

- Send alerts to taxi companies to send more cars at the arrival zone if there isn't enough taxis in the airport.

Success case

TRASSIR

Video Surveillance system for International Airport

Almaty International Airport is the largest airport in Kazakhstan and the busiest in all of Central Asia. There are up to 220 flights per day.

Kazakhstan, Almaty

Project objectives

The airport security is a critical field of protecting most vulnerable assets of strategic importance with the management and operating teams are facing new challenges all the time due to the inherently high counter terrorism requirements.

Surveillance in the field

To improve the airport's video surveillance system to comply \with counter-terrorism regulations.

Solution

- TRASSIR IP - a professional recording and visualization software;
- TRASSIR Face Recognition;
- TRASSIR Left Object Detector;
- TRASSIR ActiveDome – unique;
- high-speed reversing camera control modules;
- TRASSIR ActiveDome FIX - extra observation channel modules;
- TRASSIR Client network stations.

Additional

- The large number of video recorders with video analytics support within a single facility;
- Organization of five network workplaces;
- Wide analytical tools for the security of a full cycle.

Outcome

- Wide functionality with an impressive balance of price and quality;
- Economy on back - end part;
- Deployment of the pilot on the object.

Comprehensive customer security is our top priority. The technical solution indicated above is the standard solution.