



## **User's Guide**

Eocortex

Version 2.8

[www.eocortex.com](http://www.eocortex.com)

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## Introduction

This guide describes the configuration process for the Eocortex software suite designed for intelligent analysis, processing, archiving and display of video data, and one point to manage cameras in a video surveillance system based on TCP/IP.

The guide may contain screenshots of previous versions of Eocortex. In this case, it is supposed that the functionality described in these screenshots have not changed in the current version of Eocortex.

After the release and publication of the next version of Eocortex software the manual can be supplemented with changes not included in the version of the manual included in the Eocortex software installation package. To receive up-to-date documentation, please check the publication date of the Eocortex User's Guide at [www.eocortex.com](http://www.eocortex.com) and, if the newer version is available, download it from the [Support / Documentation](#) page

The documentation kit also includes the **Eocortex Administrator's Guide** describing the process of configuration within Eocortex software.

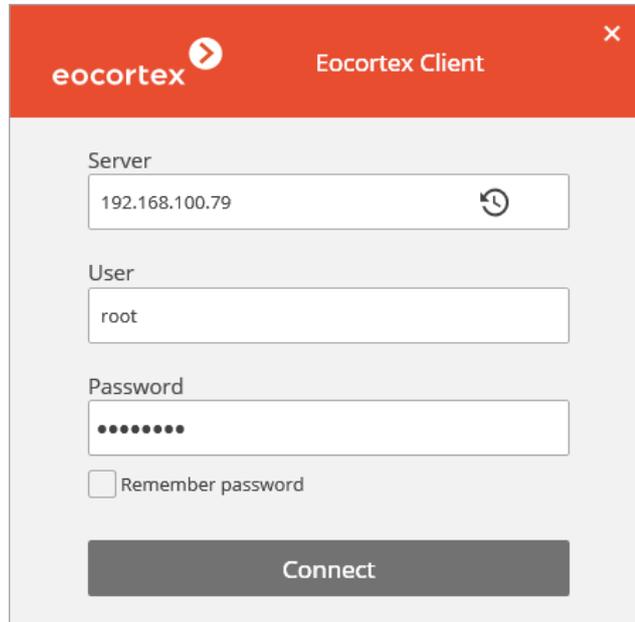
## 1. Eocortex Client (Windows)

**Eocortex Client** is used for work in the Eocortex video surveillance system.

### 1.1. Launch and Login

Run the application from the **Start Menu / All applications / Eocortex / Eocortex** ; or using a **Eocortex** shortcut on the **Desktop**.

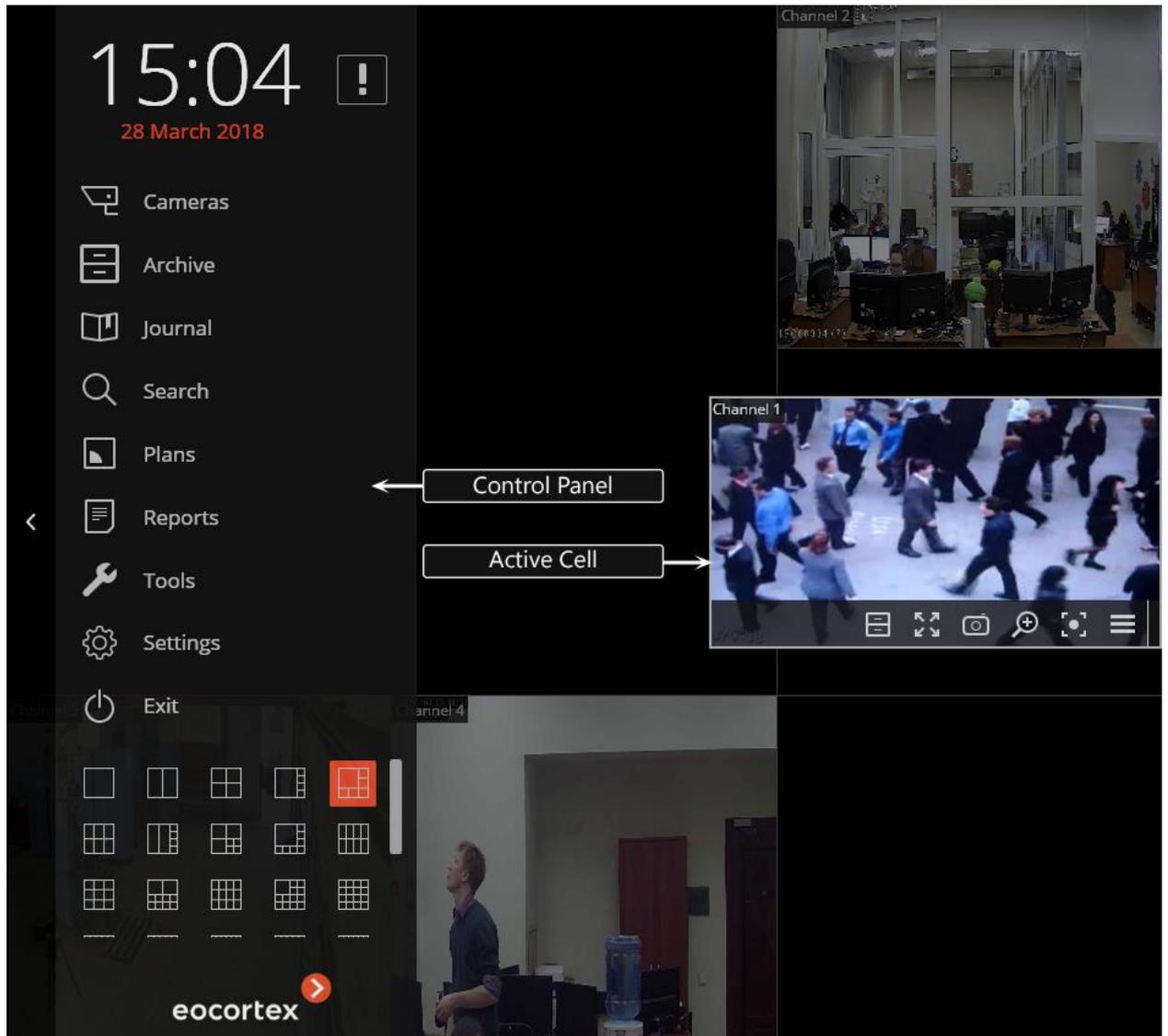
The login window will open.



Enter the Eocortex **User name** and **password**, **Server Address**, then click the **Login** button. Upon successful login the **Eocortex Client Main window** (see below) will open.

-  Contact the Eocortex system administrator for user name and password, server address and account.
-  The application automatically stores the user name and the server address entered upon the last login. The fields will be filled with the saved values upon the subsequent login. The address of the servers to which the connections were made, can also be selected using the drop-down list.
-  The opened login window when turning on the computer means that Eocortex client starts automatically.
-  When using **Eocortex Standalone** click **View** button in the start screen to run **Eocortex Client**.

### 1.2. Eocortex Client Main Window



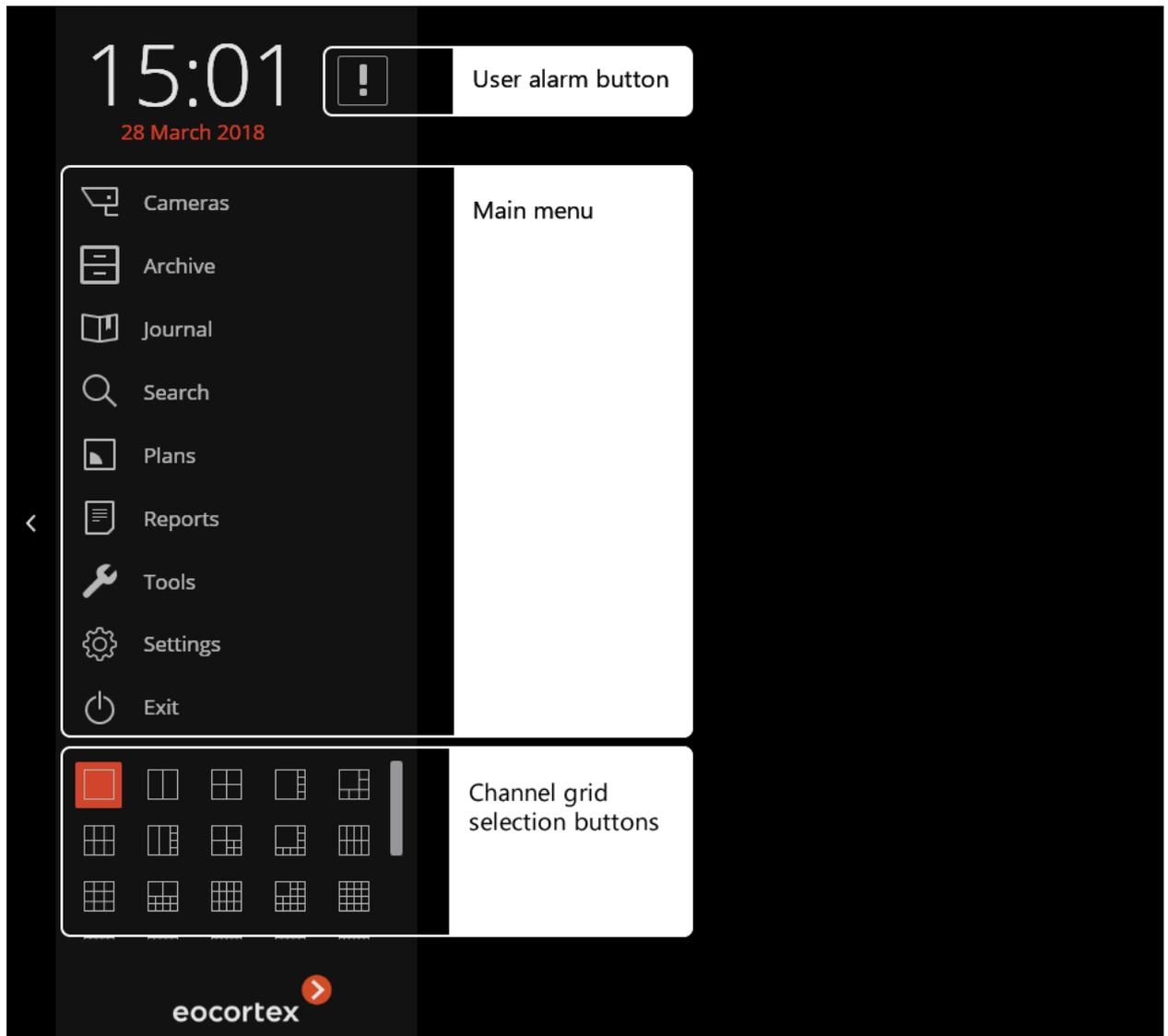
Eocortex Client main window consists of the **Workplace** (with the channel grid) and the **Control Panel**. The **active cell** in the channel grid is framed.

### 1.2.1. Control panel

To open the Control panel, click the **Menu button** located on the left edge of the window.



To hide the **Control Panel**, click the Control Panel hide button or any of the cells in the **Workspace**.



At the top of the **Control Panel** playback-mode selection buttons are available:

- **Surveillance** — viewing video from the cameras in the channel grid in real time.
- **Archive** — simultaneous viewing of archive in the channel grid.

The **Alarm** button that enables / disables the **user alarm** is placed to the right of a clock.

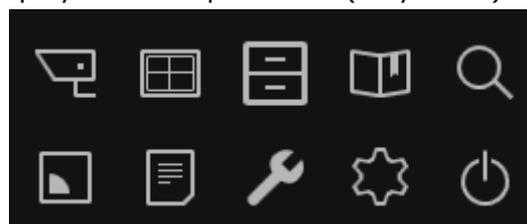
---

 Channels for which the user alarm is turned on; actions that are executed when the user alarm; **Alarm** button display - configured by the system administrator.

---

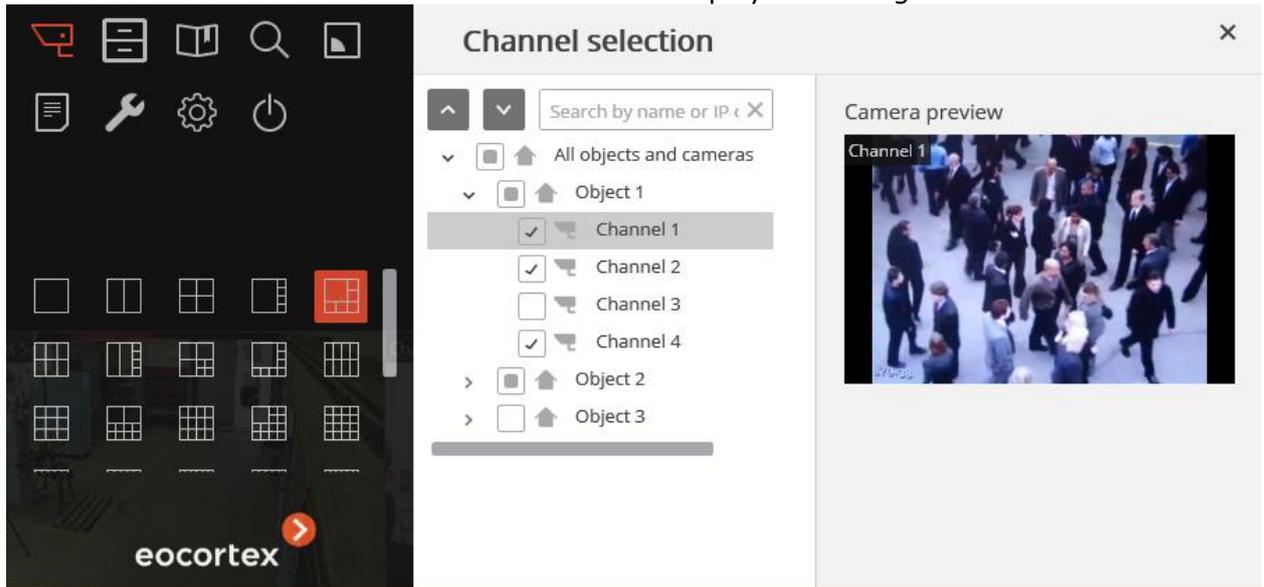
The **channel grid selection buttons** are located at the bottom of the **Control Panel**. **Main Menu** is located in the center of the **Control Panel** (under the clock).

If the height of the window does not allow to display all the items of the **Main Menu** vertically, then they are displayed in compact view (only icons):



The **Main Menu** items are described below:

**Camera** item allows to select the cameras to be displayed in the grid cells.



Use   to show/hide the list of cameras and security objects.

Use   to select or deselect all cameras.

The **Searching cameras** field allows you to quickly find and select cameras and security objects containing the entered text.

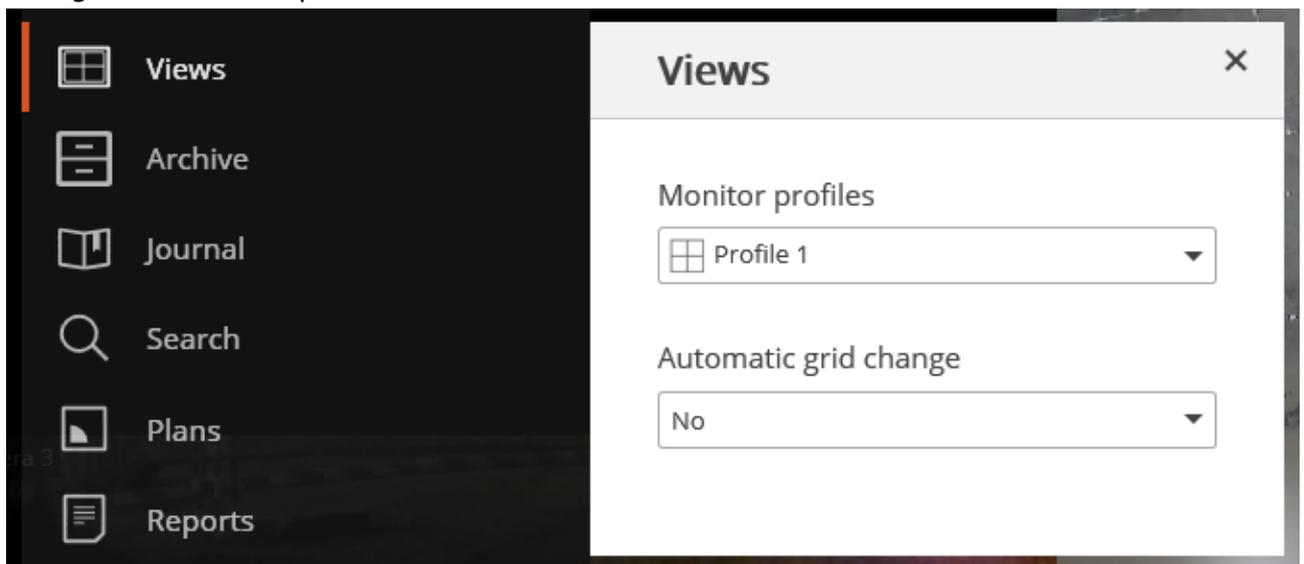
s

Street  
Shop

When you click **Open in the current grid**, the selected cameras are added to the current channel grid.

When you click **Open in the optimal grid**, the grid allowing you to add all selected cameras with a minimal number of empty cells is automatically opened.

**Views** lets you to choose one of the pre-configured screen layouts, or turn on the automatic change of the screen profiles.



To enable the automatic screen profiles change, select an appropriate value in the field with the **Automatic grid change** list.

The profiles and lists setting of the automatic screen grid change is performed by the system administrator. If none of the profile is set in the system, the **Views** item is not displayed in Main Menu.

The field with the **Monitor Profiles** list does not display the profiles that use cameras or grids unavailable at this workplace; and the field with the **Automatic grid change** list does not display the lists in which all profile contain cameras unavailable at the workplace (if at least one profile from the list consists of the available cameras, such list will be displayed, but the types with unavailable cameras will be skipped during service). The list of available channels and grids is set by the administrator in the **Application Settings**, in **Available Channels** and **Available Grids** sections.

If you select **Log** the [Events log](#) is opened (page 49).

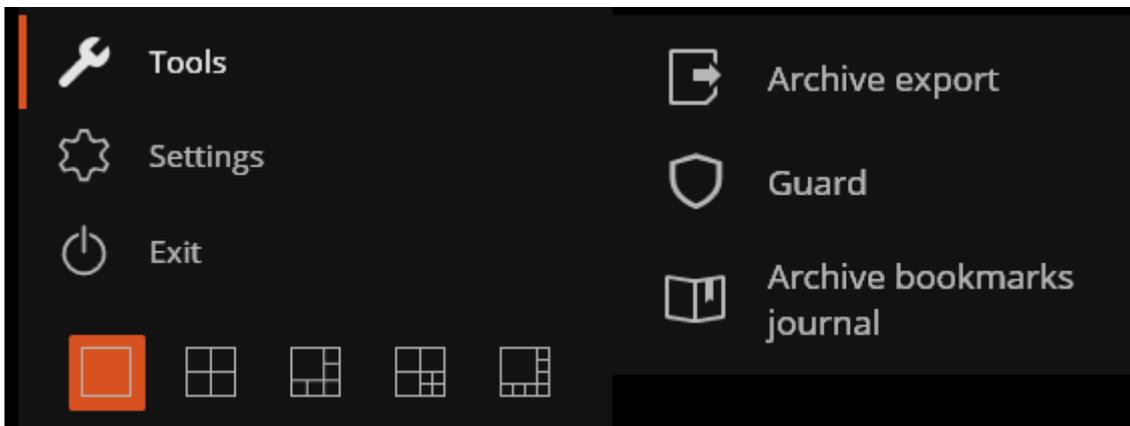
If you select **Search** the [Archive search](#) is opened (page 31)

If you select **Plans** the [Object plans](#) is opened (page 53).

If you select **Modules** a submenu allowing to open a page of one of the following intelligent modules appears: [License plates recognition](#) (page 69) or [Faces recognition](#) (page 78).

If you select **Reports** the **Reports** page appears, allowing you to draw up the reports accessible to the current user appears. The reports are described in the sections describing the relevant [Intelligent Modules](#) (page 66).

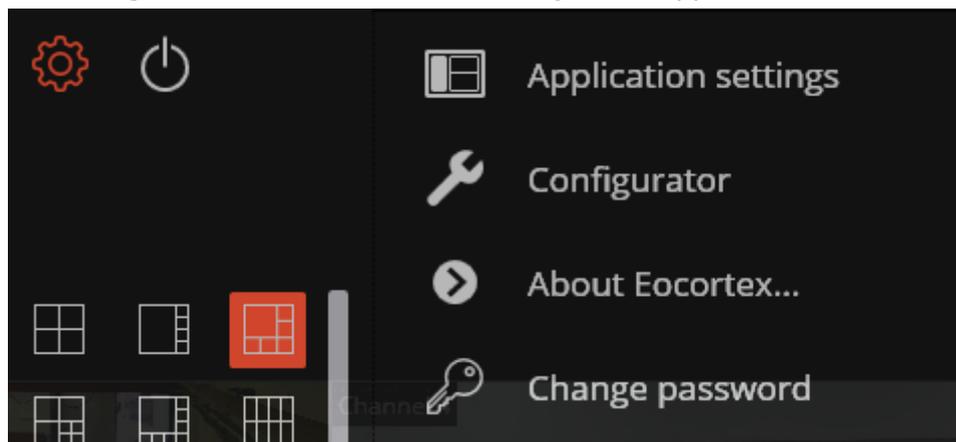
If you select **Tools** a submenu with the following items appears:



**Archive export** — opens the [Archive export](#) (page 27).

**Guard** — opens the [Guard mode](#) settings (page 24).

If you select **Settings** a submenu with the following items appears:



**Application Settings** - opens the **Current workplace settings**.

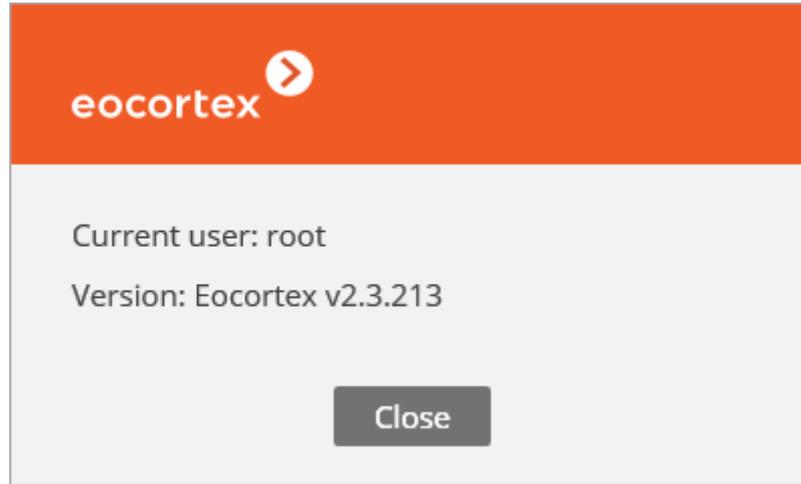
**Configurator** — launches **Eocortex Configurator**.



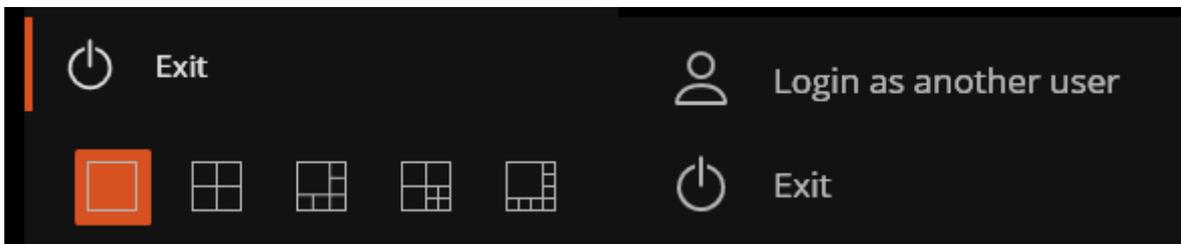
Description of **Current Workspace settings** page and **Eocortex Configurator** application is provided in **Eocortex Administrator Guide**.

Eocortex current documentation can be downloaded from the website [www.eocortex.com](http://www.eocortex.com) page [Support / Documentation](#).

**About the Program ...** - Opens the information window **About the Program...**



If you select **Exit** a submenu with the following items appears:



**Switch User** - allows you to change the Eocortex Client user; this allows you to close the main window and open the login window.

**Exit** - closes the application.

### 1.2.2. Channel grid

Channel Grid is designed to display in cells the video streams derived from cameras - both in real time and from an archive. In addition to video, the audio playback and PTZ control functions are also available from the camera (including from the archive).

Grids selection is made using **channel grid selection buttons** on the **Main panel** (page [8](#)).



**Eocortex Client** comes with 22 channel grids, however, not more than 10 grids can be accessed from a separate workspace. Available grids are defined by the system administrator in the current workspace settings.

A separate camera is displayed in each grid cell. At the same time, the same camera can be displayed in several grid cells.

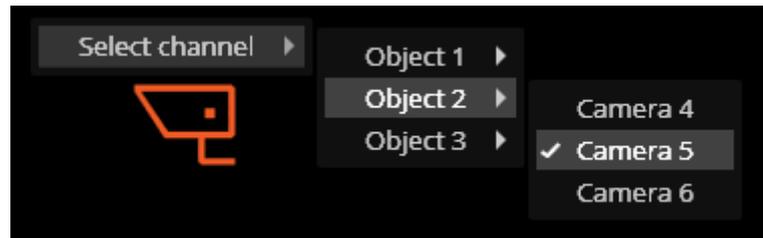
The cameras can be dragged from one grid cell to another, holding down the left mouse button. If the grid cell where the camera was moved, is already used busy, the cameras are interchanged.

One of the grid cells can be active. The **active cell** is framed.

To activate the cell you need to click the mouse inside it.

You can select the channels displayed in a grid cell, using one of the following ways:

- Select available profile - open the **Control Panel** and select **View** in the **Main menu**, and then in the appeared window, select the required profile in the field with the **Monitor Profiles**.
- **Select the cameras displayed in the grid** - open in the **Main Menu** and select the **Cameras** item, and then select the cameras in the appeared window.
- **Select the camera in an empty cell** - click in an empty cell, and then use the **Select channel** list.

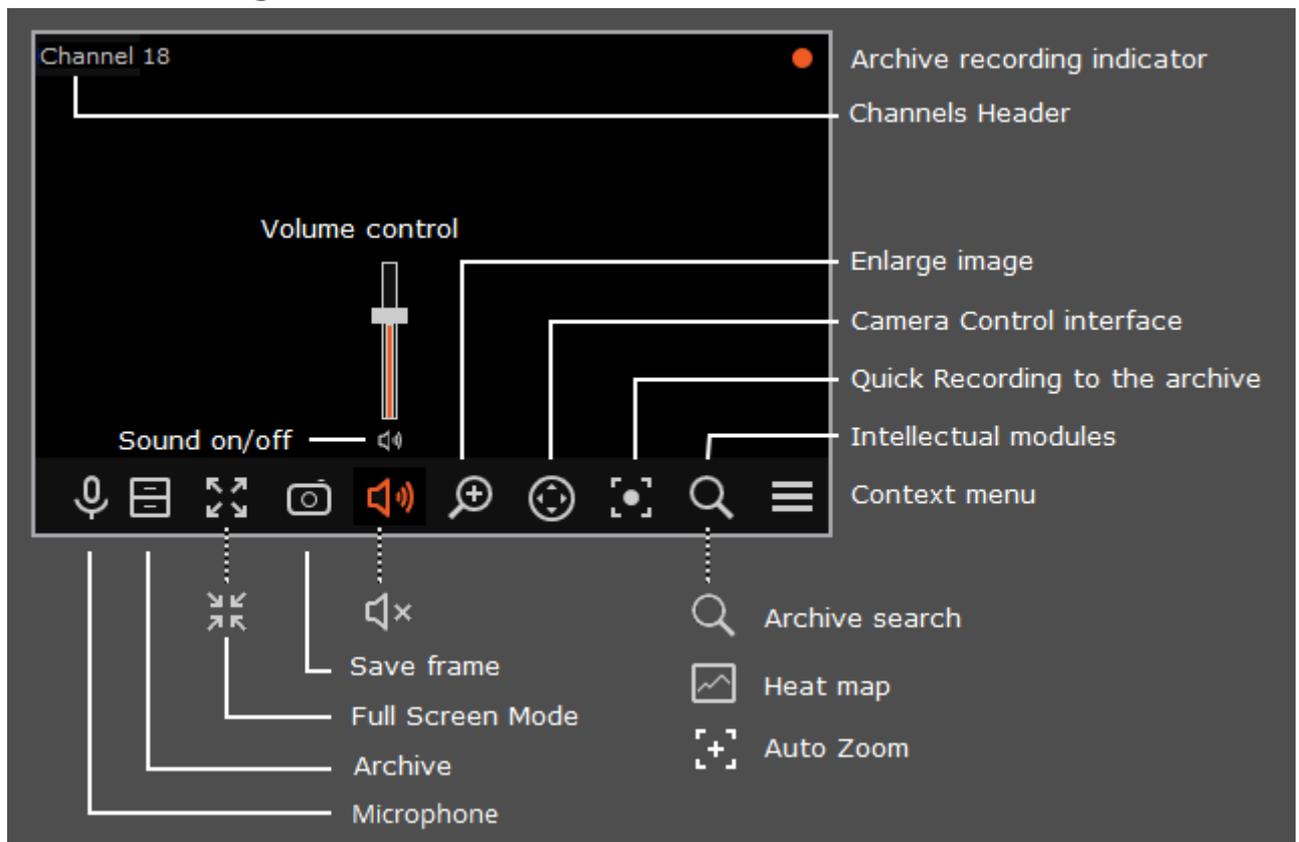


- Select the camera in the active cell using the context menu - Call the Context menu (see below) and click Select channel.

The following informational messages may be displayed in the cell instead of the camera image in the real time mode.

- **Waiting...** - attempting to connect to the camera or the server.
- **No connection** - not connected to the camera or the server.

### 1.2.3. Channel grid cell



To display the controls in a grid cell, you need to click inside the cell.



All commands from the icons in the grid cell, can also be called from the context menu.



Some of the icons appear only when the function is set for the camera, and the current user has access to this function. The system administrator sets the cameras options and access rights.

**Recording to the archive indicator** is displayed during the video recording to the archive. **Microphone** - allows to transmit sound from the client workspace microphone to the camera speaker. Click on the microphone icon to transmit the sound. The microphone can operate in two modes:

- **Hold** - the microphone works while the button is held;
- **Switching on/off** - by clicking the microphone is activated / deactivated.



The microphone mode is set by the system administrator in the current workspace settings.

---

**Archive** — switches the cell to [View the separate camera archive](#) (page 17).

**Full-screen mode** — expands the cell full-screen; in full-screen mode - returns to the grid mode.

---



The transition between the grid mode and full screen mode is also performed by double-clicking in a grid cell.

---

Save frame — [Saves the frame \(frame fragment\)](#) (page 26).

**Volume control** — allows to adjust the sound volume, translated from the camera, and to enable or disable audio playback. Click on the speaker icon to display the volume control. If the design or the camera settings not allowed to broadcast the sound, as in the off playback the icon



is displayed.

**Zoom image** — performs the [Image zoom](#) (page 26).

Camera control interface — shows / hides the [PTZ control](#) (page 20).

**Quick recording to the archive** — switches the video recording from a camera to the archive for 15 minutes.

**Intelligent Modules** — shows / hides the intelligent module interface. The icons for the following modules are displayed:

- [Archive Search](#)
  - [Heat Map](#)
  - [Auto Zoom](#)
- 



No more than two intelligent modules icons may be displayed at the same time. If all three of these modules are used for the camera, only **Archive search** and **Heat map** icons will be displayed.

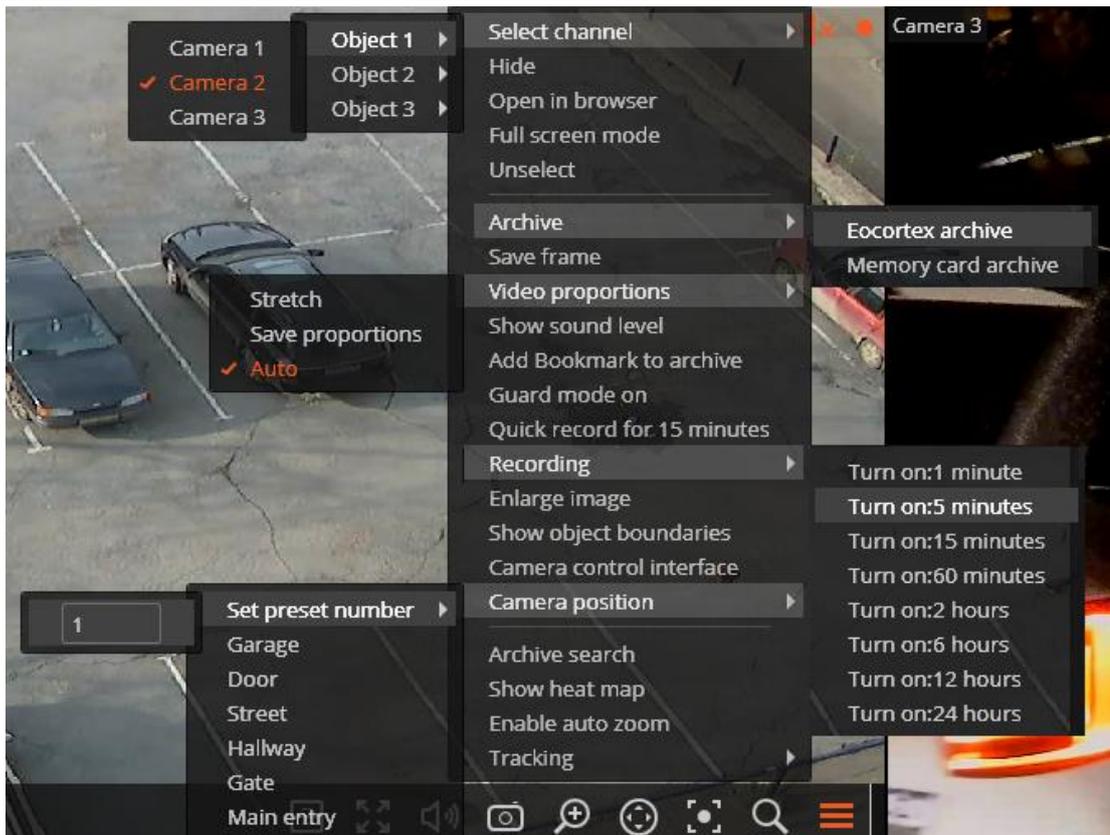
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The **context menu** can be accessed in two ways:

- by clicking  in the lower right corner of the cell;
- by right-clicking anywhere in the cell.



The number of menu items may be different from below, depending on the settings of camera, archive and client workstation.



Cell context menu:

**Select channel** — allows selecting one of the available cameras to be displayed in a cell grid.

**Hide** — hides the camera (frees the cell.)

**Open in browser** - opens the camera web interface in browser.

**Full screen mode / Exit Full screen mode** - cell reversal full screen / return to grid mode.



The transition between the grid mode and full screen mode is also performed by double-clicking in a grid cell.

**Unselect** — removes selection from the cell (makes it inactive).

**Archive** — switches the cell to [View the separate camera archive](#) (page 17).

The access to the following archive types is possible:

- **Eocortex Archive** — the archive on Eocortex server.
- **Memory card archive** — the archive on the camera memory card.

**Save frame** — [Saves the frame \(frame fragment\)](#) (page 26).

**Video proportions** — allows selecting frame proportions.

**Show sound level** — displays the volume control element at the bottom of the cell.

**Guard mode on** — enables the [Guard mode](#) for the camera (page 24).

**Quick record for 15 minutes** — enables the compulsory video recording from the camera to the archive for 15 minutes

**Recording** — enables the compulsory video recording from the camera to the archive for the time interval selected in the submenu.

---

 If the compulsory recording is enabled the recording to the archive will be continuous during the specified time, no matter what recording settings are set by the system administrator for this camera.

When the compulsory recording ends the recording to the archive will be in the mode set by the system administrator for this camera.

---

 When the compulsory recording is enabled the **Switch off the recording to the archive** will be displayed (**remaining recording time: XX min.**).

 Turn off recording (Remaining record time : 120 min.)

Select this option to disable the compulsory recording.

---

 If **Quick Recording to the archive for 15 minutes** and **Recording to the archive** are unavailable then the archive recording for this camera is already permanent or impossible.

---

**Enlarge image** — performs the [Image zoom](#) (page 26).

**Show objects boundaries** — enables the display of colored rectangular frames for moving objects (when using the software motion detector) and for detected faces (using face detection module).

**Set alarm cell** - the cameras in the **Alarm** condition will be displayed in the alarm cells.

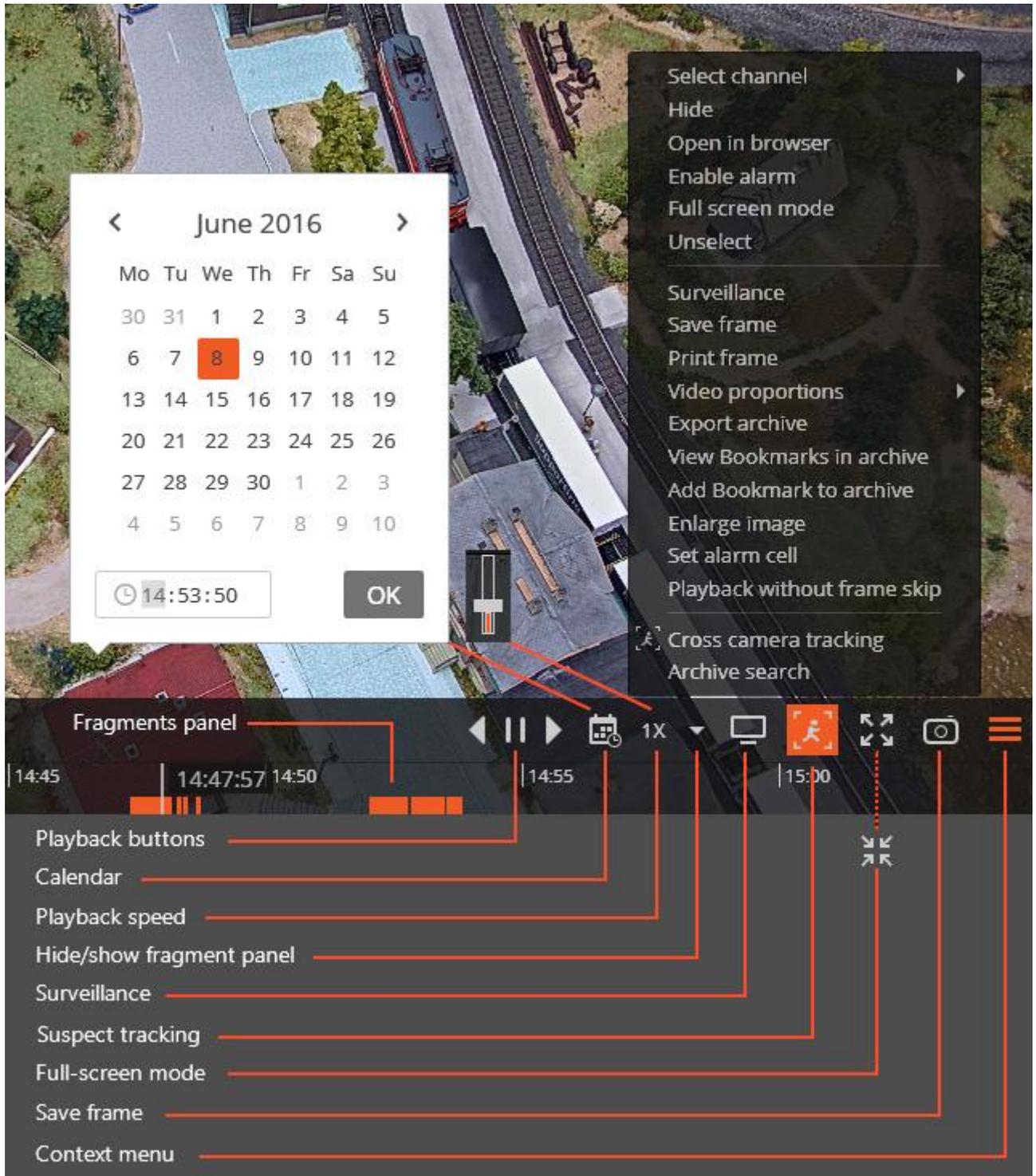
**Camera control interface** — shows the [PTZ control](#) (page 21).

**Camera position** — [Camera presetting](#) is performed (page 23).

 The items associated with the intelligent modules connected for this camera are placed in the bottom of the menu. The description of these items is given in the sections describing the relevant intelligent modules.

**1.3. Viewing the single camera archive**

To open the camera archive (from the real time view mode) click  in the active cell or select **Eocortex Archive** in the context menu — the cell will switch to the archive view mode.



The controls available in the cell in a single camera archive view mode are described below:

**Fragments panel** - is a time scale with the indication of video fragments stored in the archive for this camera. The vertical bar indicates the archive part displayed at the moment. To go to the desired fragment, click on the relevant place on the panel. To move forward or backward, click the panel, hold the left mouse button and move the scale as required. Time scale can be changed by rotating the mouse wheel. You can also use **Calendar** to go to an archive fragment.

**Playback buttons** are used to start forward and backward playback, as well as to stop it.

**Calendar** allows going to a particular place in the archive by specifying the exact date and time.

**Playback speed** — opens the controller allowing you to set the archive playback speed — from x0.1 to x120.



For frame-by-frame playback, move the mouse pointer to the cell and scroll the mouse wheel (down — forwards, up — backwards).



Frames encoded in H.264 may freeze during playing, since only the reference frames are displayed. This is due to the specifics of H.264 codec, because the decoding of intermediate frames requires the whole chain, starting with the last reference frame; when playing backwards it can lead to unnecessary consumption of computer resources.

---

**Hide/show fragment panel** — hides or shows the fragment panel in the cell.

**Surveillance** — switches the cell in the real time video viewing mode.

**Suspect tracking** — transition to [Suspect tracking](#) mode.



**Suspect tracking** is only available for cameras for which the Suspect search is enabled.

---

**Full-screen mode** — expands the cell full-screen; in full-screen mode - returns to the grid mode.



The transition between the grid mode and full screen mode is also performed by double-clicking in a grid cell.

---

**Save frame** — [Saves the frame \(frame fragment\)](#) (page 26).

**Volume control** — allows adjusting the sound volume, translated from the archive, and enabling or disabling audio playback. Click the speaker icon to display

the volume control. If the sound recording is not set for the archive, then the icon  is displayed as in case of the disabled playback. This icon is displayed only when the sound recording to the archive is set for the camera.

The **context menu** can be accessed in two ways:

- by clicking  in the lower right corner of the cell;
- by right-clicking anywhere in the cell.



The number of menu items may be different from below, depending on the settings of camera, archive and client workstation.

---

Select camera — selects one of the cameras available for display in the grid cell.

**Hide camera** — hides the camera (frees the cell.)

**Open in browser** - opens the camera web interface in browser.

**Full-screen mode** — expands the cell full-screen; in full-screen mode - returns to the grid mode.

**Remove selection** — removes selection from the cell (makes it inactive).

**Surveillance** — switches the cell in the real time video viewing mode.

**Save frame** — [Saves the frame \(frame fragment\)](#) (page 27).

**Print frame** — [Prints the frame \(frame fragment\)](#) (page 27).

**Video proportions** — allows selecting frame proportions.

**Volume control** — displays the volume control element at the bottom of the cell.

**Export archive** — [Exports the archive](#) (page 27).

**View bookmarks in the archive** — displays the [Tabs in the archive](#) (page 30).

**Add bookmark to the archive** — adds tab to the archive.

**Enlarge image** — performs the [Image zoom](#) (page 26).

**Play without frame skipping** — disables the frames skipping in accelerated archive playback.



The items associated with the intelligent modules connected for this camera are placed in the bottom of the menu. The description of these items is given in the sections describing the relevant intelligent modules.

## 1.4. Simultaneous archive viewing from multiple cameras

**Simultaneous archive viewing mode** allows simultaneously view the videos from the archive from all the cameras in the grid — in this case the video corresponding to the same point in time will be displayed in all cells.

To switch to **Simultaneous archive viewing mode**, expand the **Control Panel** and select the **Archive** item in the **Main menu**.

The **Fragment panel** is located at the bottom of the screen — it is a timeline indicating video clip fragments stored in the archive for each camera in the grid. The vertical bar indicates the archive part displayed at the moment. To go to the desired fragment, click on the relevant place on the panel. To move forward or backward, click the panel, hold the left mouse button

and move the scale as required. Time scale can be changed by rotating the mouse wheel. You can also use **Calendar** to go to an archive fragment.



If any camera has no stored archive for the current (selected) time period, you will see the **No frames** message.

---

A common control unit for all cells is located in the lower right corner of the window, above the fragment panel. It includes the following elements:

**Playback buttons** are used to start forward and backward playback, as well as to stop it.

**Calendar** allows going to a particular place in the archive by specifying the exact date and time.

**Playback speed** — opens the controller allowing you to set the archive playback speed — from x0.1 to x120.

---



For frame-by-frame playback, move the mouse pointer to the cell and scroll the mouse wheel (down — forwards, up — backwards).

---



Frames encoded in H.264 may freeze during playing, since only the reference frames are displayed. This is due to the specifics of H.264 codec, because the decoding of intermediate frames requires the whole chain, starting with the last reference frame; when playing backwards it can lead to unnecessary consumption of computer resources.

---

**Hide/show fragment panel** — hides or shows the fragment panel.

In the simultaneous mode, one of the cells can be made active — to do this, click inside the cell. In the active cell of this mode available the same control elements, as in the single camera archive viewing mode.

## 1.5. PTZ Camera Management

You can use one or more of the following methods of PTZ camera management, depending on the camera model, including management the camera motion in different directions, zoom in /out, focus, service functions, as well as presetting the camera.

### 1.5.1. PTZ Camera Control

Click on the icon , in the active cell or select **Camera Control Interface** in the context menu to enable the interactive camera management mode.

 If the **Camera Control Interface** is unavailable this means that this camera model is not controllable or camera management functions are disabled by the system administrator.

Use the management interface to manage the camera: virtual joystick and icons on the PTZ panel.



 The controls may differ depending on the available camera features. The following elements of the PTZ camera management interface were implemented in Eocortex : virtual joystick, zoom in / out, focus control (+/-/AF), transition to the "home" position, infra-red light control, wiper control.

Re-click on the icon , in the active cell or select the **Camera Control interface** in the active menu to hide the camera management interface.

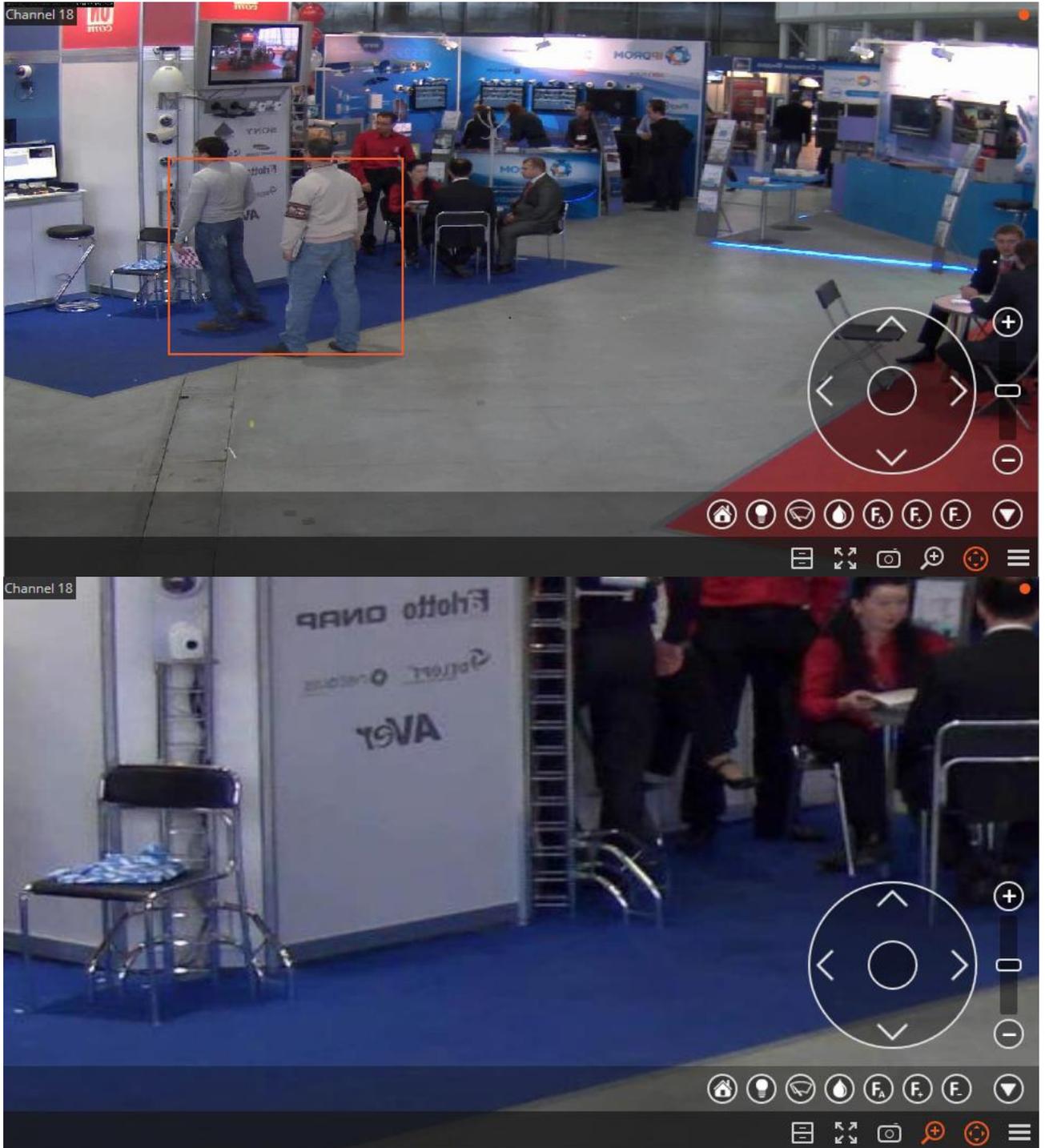
### 1.5.2. AreaZoom

AreaZoom allows to mark the frame part and zoom it using the PTZ-mechanism of the camera itself.

 This feature is not available for all camera models.

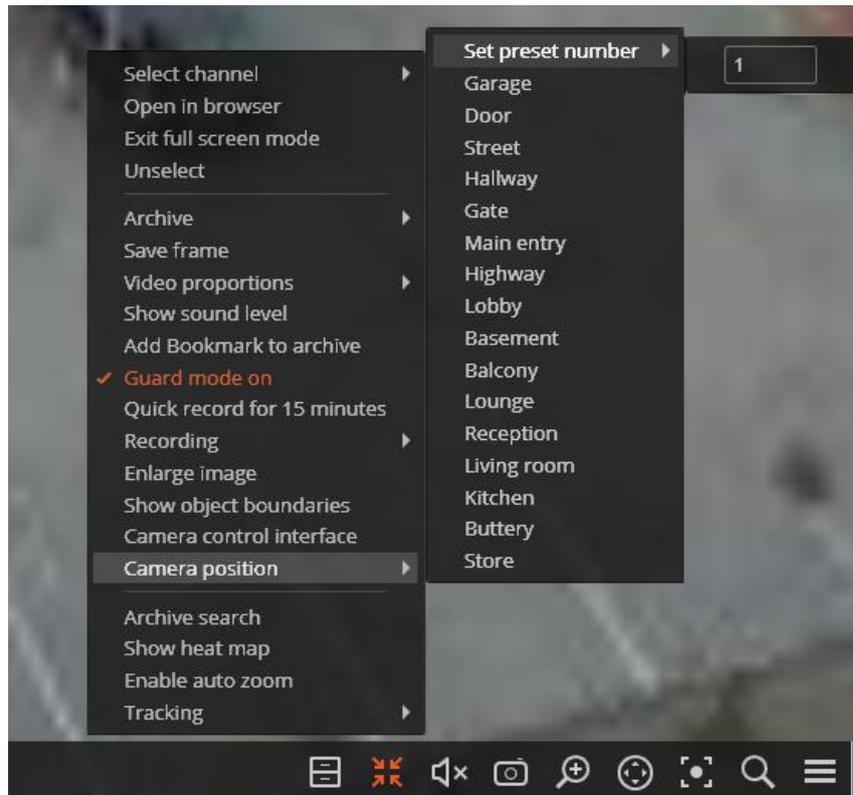
To use **AreaZoom** switch to the camera interactive management mode (click on the icon  in the active cell, or select the **Camera Control Interface** in the context menu). Then holding the left mouse button, select the area of the frame that you want to zoom- the

camera will zoom the marked frame part and, if necessary, will rotate so that the center of the marked rectangle was located on the center of the frame.



### 1.5.3. Camera Preset

To set the camera to one of the presets, in the cell context menu select **Camera position**; further, in the submenu select one of the positions, or enter the preset number in **Set a preset number**.



 The presets are set on the camera itself by the system administrator.

 Some cameras allow you to set for presets not numbers but names (text values).

### 1.6. Alarm

**Alarm** — is the channel state to which it switches in cases for which the alarm generation was set by the system administrator.

Upon channel transition to the alarm mode:

- audible signal sounds (if configured by the administrator);
- if the camera is displayed a small alarm indicator blinks in the upper right corner of the cell;
- if the camera is not displayed a general (major) alarm indicator blinks in the bottom right corner of the cell;
- if the alarm monitor is used at the workspace, the camera is displayed on the alarm monitor.
- if the alarm cells are used on the workspace the camera is displayed in one of these cells.



The audible signal and alarm monitor is set by the system administrator in the current workspace settings.



The user has to click in the camera cell in which the alarm occurred within 1 minute to check that he /she noticed the alarm signal and controls the situation — otherwise the alarm will be considered as missed.

The missed alarms can be viewed by clicking on the general alarm indicator in the lower right corner of the screen — this will open the [Events log](#).

### 1.6.1. Auto generate alarm

To generate an alarm automatically in response to the certain events, CCTV administrator should add **Alarm generation** action to the corresponding scenario (in **Eocortex Configurator**).

### 1.6.2. User alarm

To enable /disable the user alarm for multiple channels at once, click  on the control panel to the right of the clock.



The  button display of is enabled by the system administrator in the current workspace settings.

### 1.6.3. Guard mode

In the **Guard mode** the user is notified (in **Eocortex Client**) concerning the alarm on camera channel.

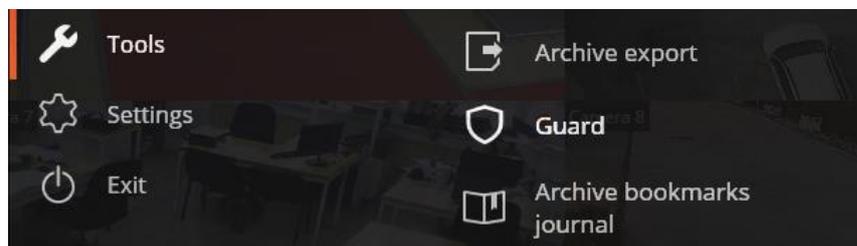
When the camera is in the **Guard mode**, indicator  is displayed in the upper right corner of the cell.

The following are the methods for enabling the **Guard mode** on the camera channel.

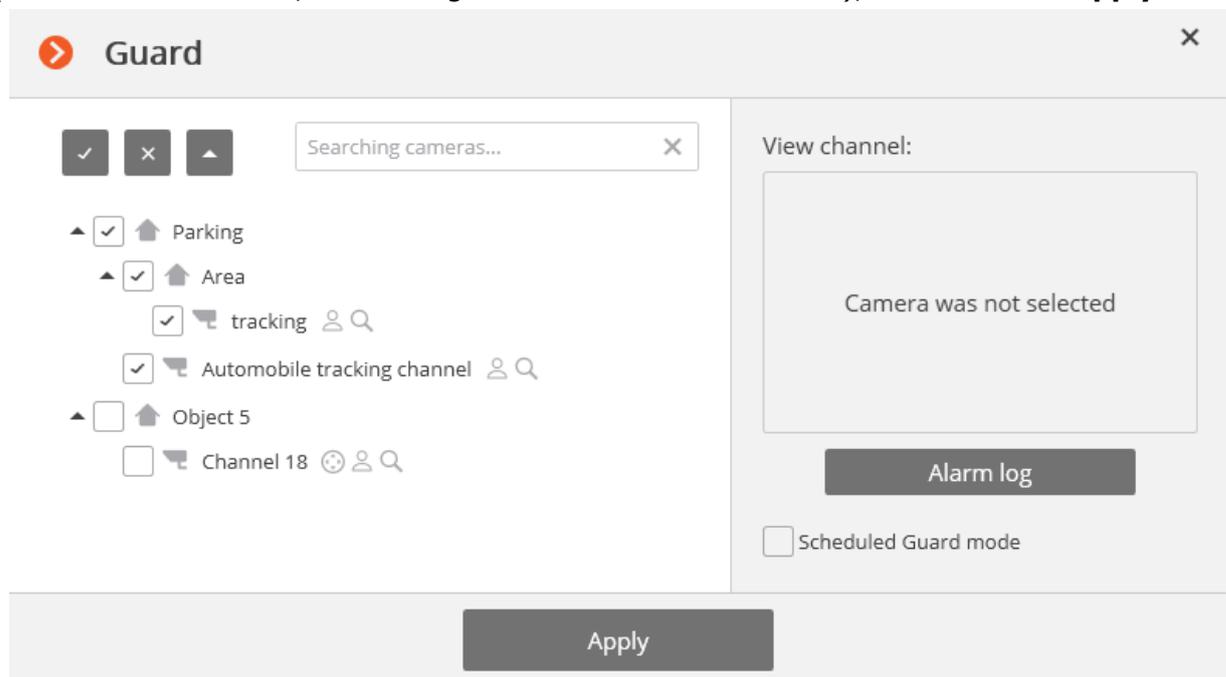
**Method 1:** Select **Enable guard mode** in the context menu.



**Method 2:** Open the **Control Panel** and select **Tools** in the **Main Menu**; then select **Guard** in the submenu.



In the appeared window check the cameras for which guard mode shall be enabled (uncheck the channels, for which guard mode shall be disabled), and then click **Apply**.



Use   to show/hide the list of cameras and security objects.

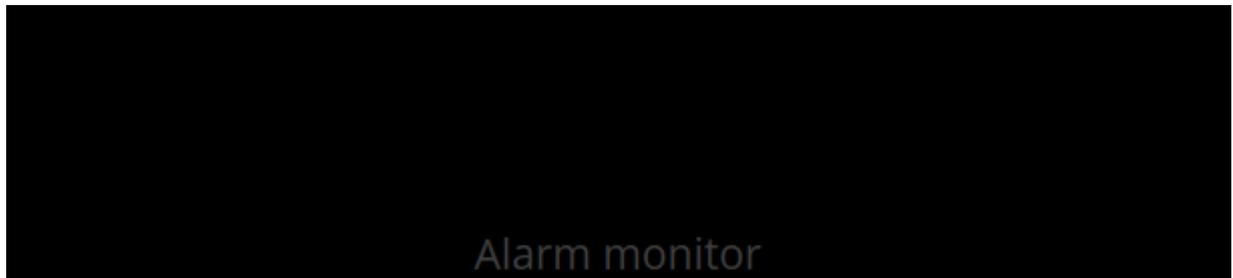
Use   to select or deselect all cameras.

The **Searching cameras** field allows quickly find and select cameras and security objects containing the entered text.

#### 1.6.4. Alarm monitor

**Alarm monitor** is a monitor displaying the cameras in the Alarm mode.

Upon camera displaying on the alarm monitor the **alarm must be accepted** within 1 minute. To do this click in the camera cell in which the alarm occurred, otherwise the alarm will be considered as missed.



#### 1.6.5. Alarm cell

**Alarm cell** is a cell on the "usual" video surveillance monitor, displaying the camera, where the alarm occurred.

If the camera is displayed in the alarm mode the **alarm must be accepted** within 1 minute. To do this click in the camera cell in which the alarm occurred, otherwise the alarm will be considered as missed.

#### 1.7. Zoom image

Click on  in the active cell to switch to the frame zooming mode. Alternatively, press middle mouse button (wheel), or open the context menu and select **Zoom image**.

You can also use mouse wheel to zoom in and zoom out. To zoom in a frame fragment, select a rectangle in the frame using your mouse.

You can move the image in zooming mode by clicking and holding it with the mouse.

To return from the zooming mode to normal viewing, click on  again in the active cell. Alternatively, press middle mouse button (wheel) or disable **Zoom image** option in the context menu.

#### 1.8. Save frame (frame fragment)

Click  in the active cell or open the context menu and select **Save frame** to save the frame on the disk. Further, in the appeared window select the location to save the frame (if necessary you can change the file name in the **File Name** field and select the image format - JPG, PNG or BMP), and click **Save**.

---

 The camera name and the frame time will be saved in the upper left corner of the frame.

---

 If you want to save the frame fragment zoomed in, zoom the image before saving.

---

### 1.9. Print frame (frame fragment)

To print frame open the context menu in the active cell and select **Print frame**. Then in the appeared window select the printer, adjust the print settings, if necessary, then press **Print**.



The camera name and the frame time will be displayed in the upper left corner of the frame.



If you want to print the frame fragment zoomed in, zoom the image before printing.

---

### 1.10. Archive export

**Eocortex** allows to export your video archive to the files of the following formats:

**MCM** (Eocortex Media) is an internal Eocortex format. Viewing of these files is possible only with the help of the special **Eocortex Player** application provided as part of the installation package. The advantage of exporting to **MCM** format is the speed of export which is several times faster than the export to **AVI**. This advantage is due to the fact that no frame conversion is performed. The speed of export depends primarily on the drive performance. It is possible to export the archives of several cameras to one file with the ability to view them simultaneously later.

**AVI** is a widely-used format. The files of this format can be played in the majority of video players. **AVI** is a video container with full video stream recoding for adding timestamps to the frames. The timestamps are completely accurate. The export speed is slow (50-70 fps) and depends primarily on the processor performance.

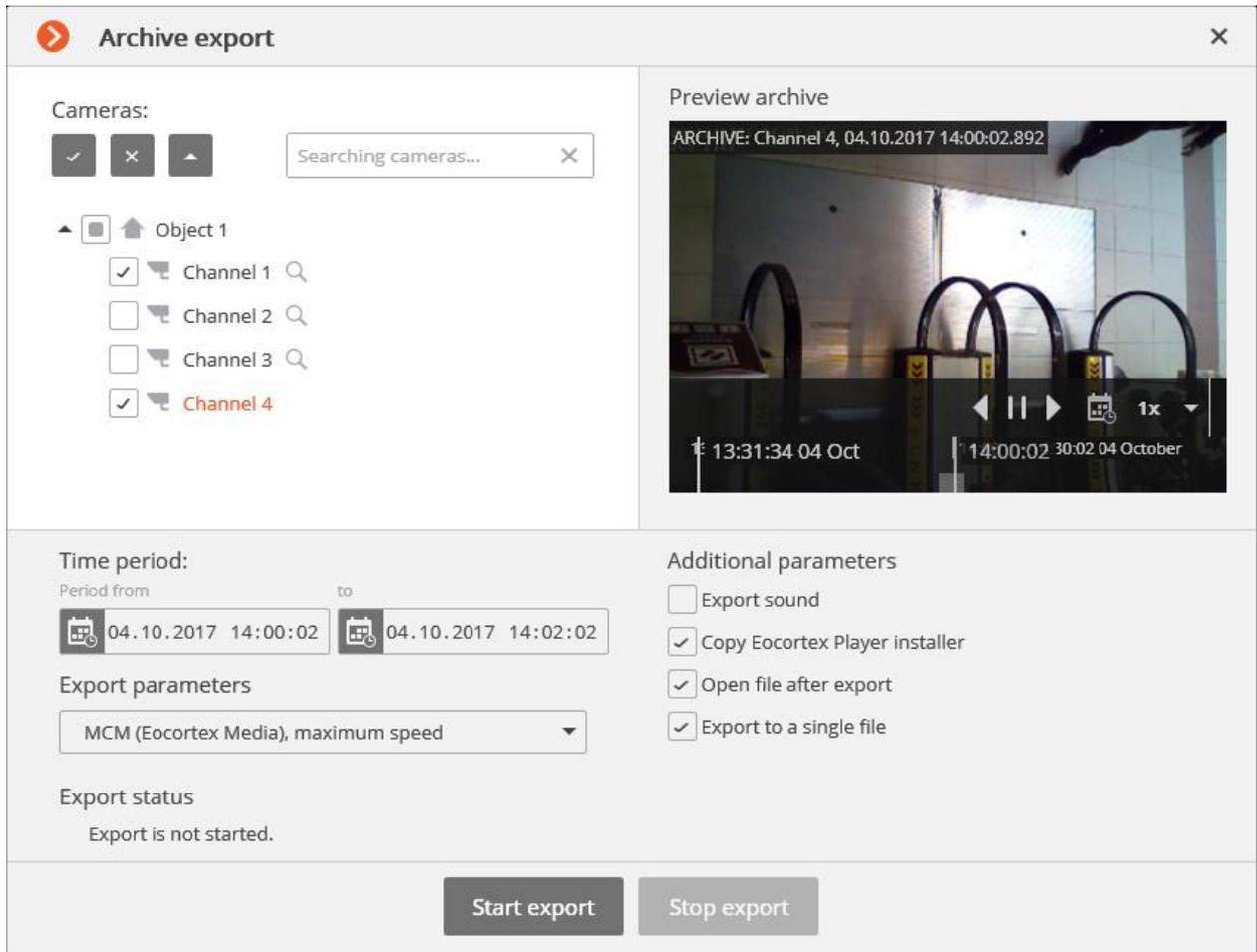
**MP4 without timestamps:** export to **MP4** video container without video stream recoding. The speed of export is comparable with the export to **MCM** (700-800 fps). No timestamps are added. The speed of export depends on the drive performance.

**MP4:** export to **MP4** video container with video stream recoding for adding timestamps to frames. The timestamps may not be accurate (error margin is 1-2 seconds). The export speed is significantly slower than the one without recoding, but it is faster than export to **AVI** (300-400 fps). The export speed depends primarily on the processor performance.

To export a clip, choose **Control panel** (page 8) and select Settings in the Main menu, and then **Archive export** — the **Archive export** window will open (see below.)

Also, the **Archive Export** window can be accessed by selecting **Archive Export** in the cell context menu.

### 1.10.1. Export to MCM



To export to MCM, select **MCM** in the **Export parameters** field of the **Archive export** window.

In the cameras tree, select the cameras to be exported. If you open the **Archive export** window from the camera cell context menu, this camera will be automatically selected (you can change this selection prior to export.)

In the Period **from** and **to** fields, specify the start and end date and time of the exported fragment.

Other export parameters:

**Export sound** — if checked, audio from the camera recorded to the archive is also exported.

**Copy Eocortex Player installer** — if checked, then the **Eocortex Player** installer will be exported together with the archive (file name — **Eocortex Player Installer.exe**, size — 29 MB.) Use this parameter if there is no **Eocortex Player** installed on the computer you want to view MCM files on.

**Open file after export** — if checked, **Eocortex Player** playing the newly exported file will be launched after export.

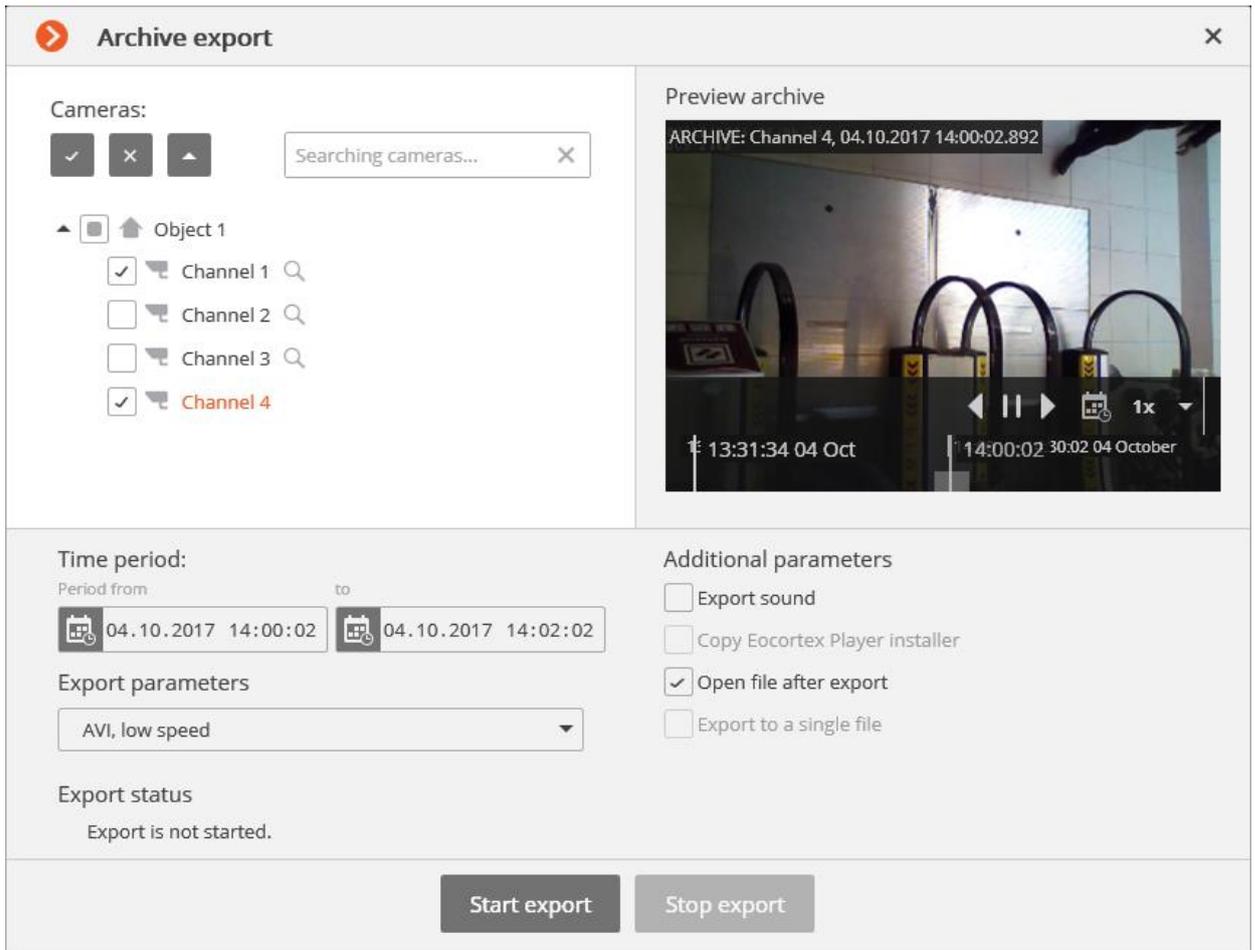
**Export to a single file** — if checked, the archive from all selected cameras will be exported to a single file that can be synchronously viewed in **Eocortex Player**. Otherwise the archive for each camera will be exported to a separate file.

When finished, click **Start export**; select the folder to store the exported files; if necessary — change the archive name in the **File Name** box; click **Save**.

The export progress will be displayed on the **Export status** panel.

To abort the export, click **Stop export**.

### 1.10.2. Export to AVI



To export to AVI, select AVI in the **Export parameters** field of the **Archive export** window.

In the cameras tree, select the cameras to be exported. If you open the **Archive export** window from the camera cell context menu, this camera will be automatically selected (you can change this selection prior to export.)

In the Period **from** and **to** fields, specify the start and end date and time of the exported fragment.

Other export parameters:

**Export sound** — if checked, audio from the camera recorded to the archive is also exported.

**Open file after export** — if checked, **Windows Media Player** playing the newly exported file will be launched after export.

When finished, click **Start export**; select the folder to store the exported files; if necessary — change the archive name in the **File Name** box; click **Save**.

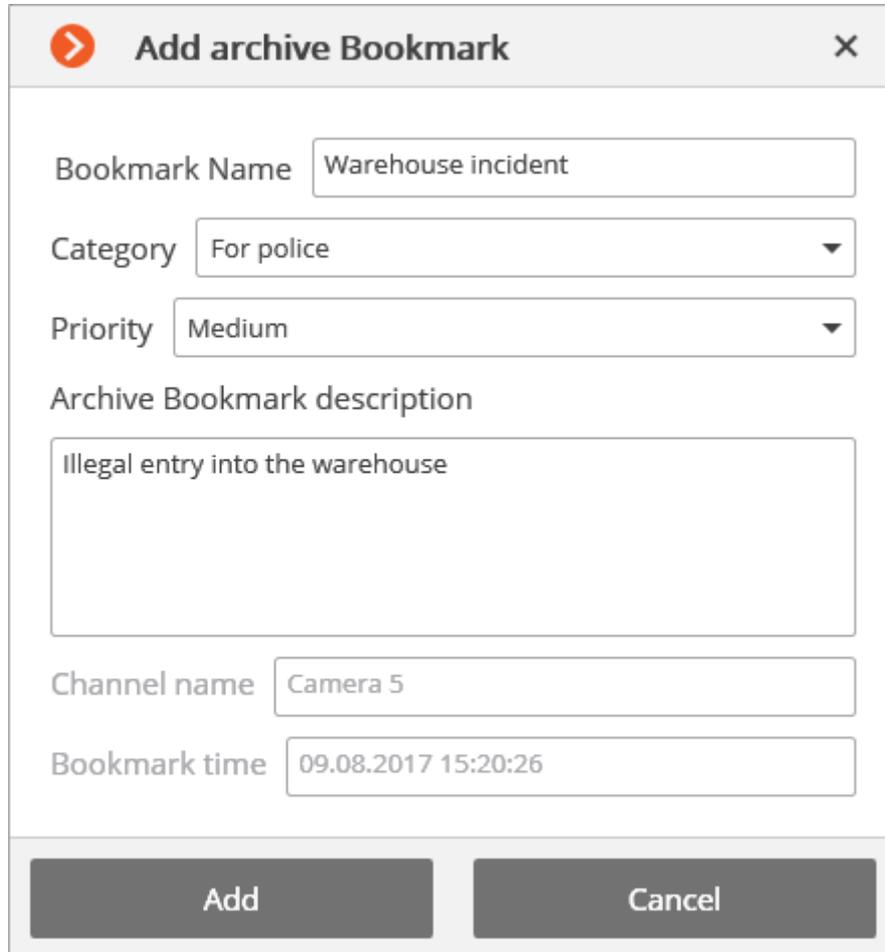
The export progress will be displayed on the **Export status** panel.

To abort the export, click **Stop export**.

### 1.11. Bookmarks in the archive

**Eocortex** allows you to add tabs in the archive. Subsequently, by the bookmarks, you can go to the marked location in the archive.

To add a bookmark, in the archive playback mode, open the cell context menu and choose **Add bookmark to the archive**. The **Add archive Bookmark** window opens, in which the **Bookmark Name**, **Category** and **Priority** should be specified and, if necessary, the **Archive Bookmark description**; then click the **Add** (or, to cancel the action, click the **Cancel**).



The screenshot shows a dialog box titled "Add archive Bookmark" with a close button (X) in the top right corner. The dialog contains the following fields and values:

- Bookmark Name:** Warehouse incident
- Category:** For police (dropdown menu)
- Priority:** Medium (dropdown menu)
- Archive Bookmark description:** Illegal entry into the warehouse (text area)
- Channel name:** Camera 5
- Bookmark time:** 09.08.2017 15:20:26

At the bottom of the dialog, there are two buttons: "Add" and "Cancel".

To view the added tabs, in the archive playback mode, open the cell context menu and choose **View bookmarks in the archive**. The [Events log](#) will open, with the **Archive bookmark** filtered by the current camera and event.

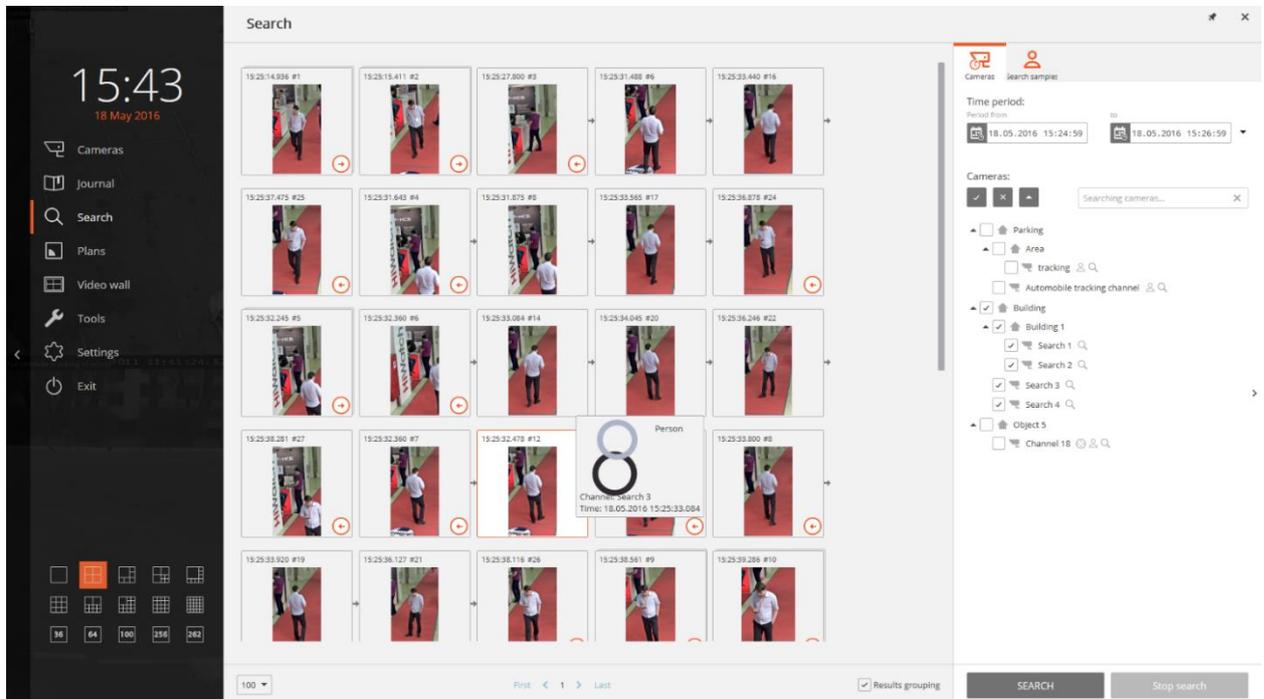
Because the tabs are the events of the **Archive bookmark**, they also may be viewed by setting the appropriate filters in the Events log (filter **Events/ User actions / Actions/ Archive bookmark**).

## 1.12. Suspect Search

**Suspect Search** module allows to search for the object in the archive by different parameters (filters).

To open the search window, open Control panel (page 8) and select **Suspect Search** in the **Main menu**.

Also the **Suspect Search** page may be opened by clicking  in the active cell, or selecting the **Archive search** in the context menu. .



The **Search results panel** is in the left side of the page - during the search it will display the links to the found video fragments meeting the criteria specified using the filters.



The results of the last search in the **Search results panel** are stored even when closing the **Search** page up to a new search or before the closing of Eocortex client.

The search criteria are specified in the **Filters panel** on the right of the page. The arrow clicking on which allows to **Hide / Show Filter panel** is located in the right center of the window.

Two following buttons are available in the upper right corner of the page:

**Detach the window** — opens the **Search** page in a separate window.

**Hide page** — closes the **Search** page (the page also closes when selecting other **Main menu** items).

Before starting the search on the **Filters Panel** in the **Cameras** tab set the time interval and select the cameras in whose archive the search will be made.



The list will display only those cameras for which the **Suspect search, Face detection** or **Tracking** is enabled.

Upon first opening the **Search** page the filters panel displays only the **Cameras** tab. After selecting the cameras, the other tabs will appear depending on the intelligent features configured on these cameras.

After setting all the necessary search parameters click **Search** at the bottom of the **Filter panel**.



If none of the filters is set in addition to selecting cameras and time interval, the search will result in all fragments found by software motion detector on the selected cameras.

The screenshot displays the search results interface. On the left is a navigation sidebar with options like 'Cameras', 'Journal', 'Search', 'Plans', 'Video wall', 'Tools', 'Settings', and 'Exit'. The main area shows a grid of video fragments, each with a timestamp and camera ID. A 'Person' object is highlighted in the center. The right sidebar contains search filters for time period, cameras, and areas. The bottom of the interface has navigation and search controls.

During search the fragments found will be displayed on the **Results panel**.

At the bottom of the **Results panel** the search results display management panel consisting of the following controls (left to right) is located:

The drop-down list allows choosing the **Number of results per page**.

Page Navigation: First, Previous, Current, Next, Last.

**Results Grouping** — upon enabling this check box the fragments will be grouped if they are found in the archive of one camera, follow one another by time and meet the same search criteria.

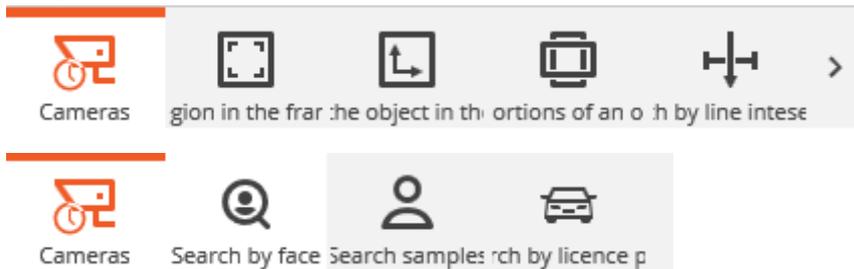
The fragments groups are marked with ; to maximize the group click on the icon - the associated fragments will be connected by arrows. . To minimize the fragments back into a group click .

Click to the fragment will call the [Simultaneous archive view by multiple cameras](#) (page 19) for the relevant time moment — the channel grid will display camera in the archive of which the fragment was found.



Working with fragments can be started since their placement in the **Results panel**, ie, before the end of the search procedure. In this case, the search will be interrupted upon transition to the archive. Moreover, the search can be interrupted by pressing the **Stop search** at the bottom of the filter panel.

Depending on what kind of intelligence functions are set in the selected cameras the filter tabs will be displayed at the top of the **filter panel**. The filters **Area**, **Size**, **Proportions** and **Crossing** are displayed if only one channel was selected.



The filters with the set criteria are highlighted. The **Reset filter** is at the bottom of each filter tab, and by pressing it all criteria set for the filter are reset.

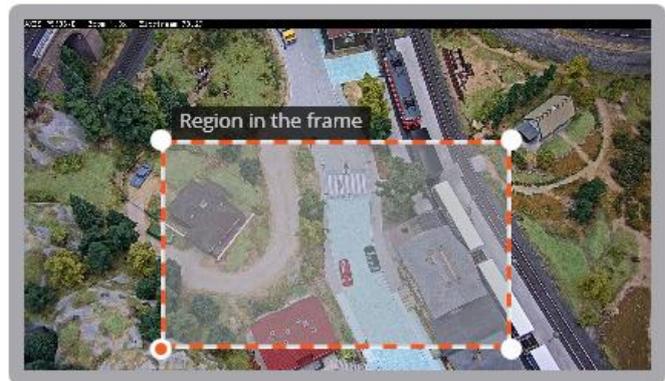
If specifying several search criteria the results satisfying all the set criteria will be displayed. Since some of the filters are not compatible with each other, by setting one of these filters, the other will be disabled. In this case, reset the blocking filter to set the blocked one. Below the description of all the filters is provided.

**1.12.1. Area of the frame**

 The search by this criteria will be performed only by the cameras with the Suspect search enabled by the system administrator.

Searches in the **frame area** set by a rectangle. To change the size and position of the area, it is necessary to change the position of its corners: to do this press and drag the rectangle's corner with the mouse.

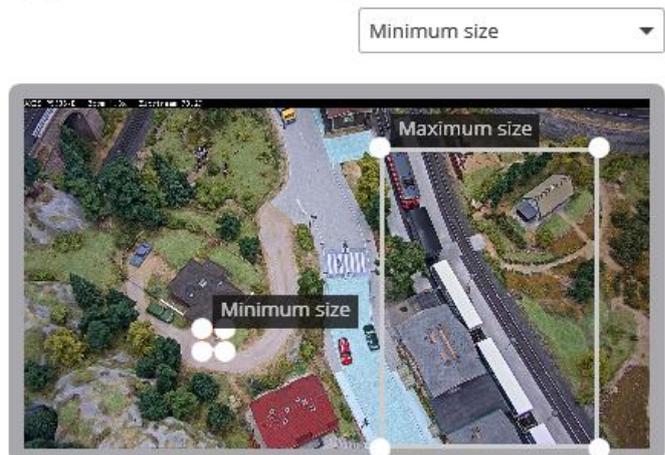
Area of the frame  
Specify search area



**1.12.2. Object size**

**Searches by the size** of the moving object out of the specified sizes. The restrictions are set by rectangles that can be placed in any part of the frame. Changing the rectangles size are made by changing the position of their corners: to do this press and drag the rectangle's corner with the mouse.

The size of the object in the frame  
Specify the minimum and the maximum object size within the frame



### 1.12.3. Object proportions

**Searches for objects with certain proportions:** vertical, horizontal or square.

#### Object proportions

Select sought-for object proportions



### 1.12.4. Search by line crossing

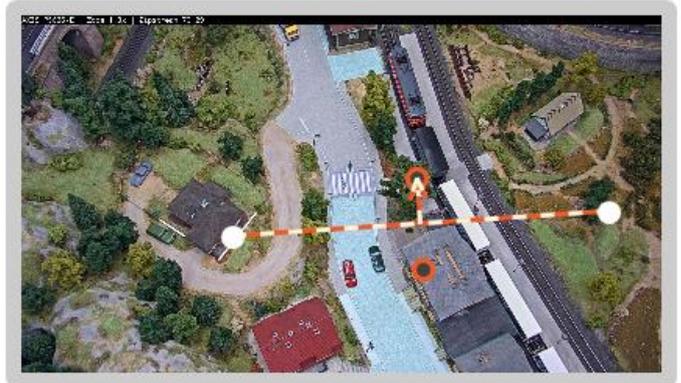
**Searches for objects crossing the definite line.**

To change the size and position of the line, change the position of its ends by dragging them with the mouse. To specify the direction of the desired objects, turn on / off the arrow: To do this, click on the round mark, close to the line center from the relevant side.

#### Search by the line intersection



Specify the direction and the intersection line



### 1.12.5. Search by faces

**Searches faces** detected in the frame.

#### Search by face



### 1.12.6. Search by sample

**Searches by samples** specified in the search parameters.

By default, the **search for any person is made**. Additionally, any number of samples may be added - thus the search for objects corresponding to any (even one) of the added samples with a checked box .

The button , placed in the upper right corner of the sample serves to delete the sample added.

When searching for people the settings affecting the search speed and accuracy are available.

#### Search samples

Select the type of object for the search



The speed and accuracy of the search is only available for people search



To add a sample click the add button (**Click to add the sample**). Clicking this button opens the **Adding sample** panel in which the sample is set. After setting the sample press **Add**, at the bottom of the **Adding sample** panel.

The added samples can be of three types: **Person**, **Optional** or **From file**.

Below is a description of methods for setting different samples.



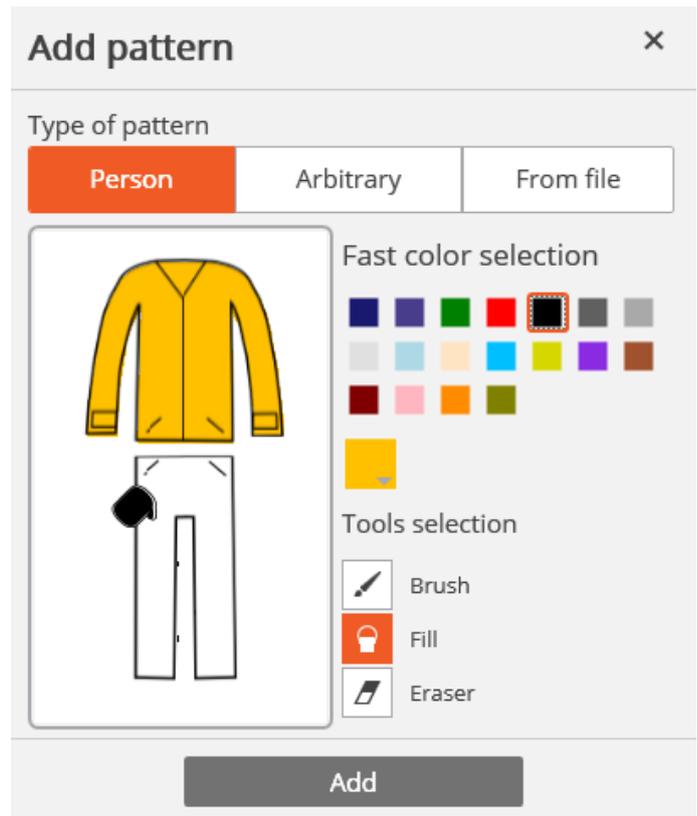
### 1.12.6.1. Setting the person color sample for search

To add the person color sample select the type of the added sample - Person; then separately fill the top and bottom part of the figure; and then click **Add**.

The following tools are available for filling the figure:

- **Brush** — allows to entirely fill the upper or lower part of the figure by clicking on it.
- **Filling** — allows to fill the figure using a round brush. To paint, hold the left mouse button. The brush size is adjusted by the mouse wheel.
- **Rubber** — allows to erase the filling using round rubber. To erase, hold the left mouse button. The rubber size is adjusted by the mouse wheel.

Use the **Filling** to fill the human figure.



To select the tool color use the palette **Quick color selection** with predefined colors, or open the standard Windows color selection dialog by clicking on 



The search subsystem by color pattern does not consider the color of hats, shoes and gloves, and does not search by complex color patterns. In case of searching for a person with patterned clothes, the primary (predominant) color of clothing must be selected.

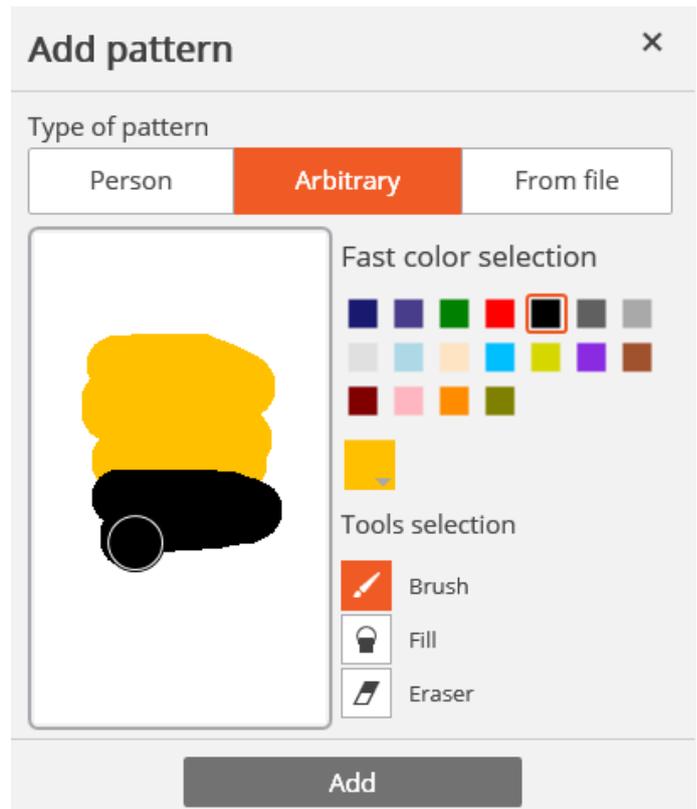
### 1.12.6.2. *Setting a custom color sample for search*

To set the custom color sample choose the type of the added sample — **Custom**; then schematically draw a sample; then click **Add**.

The following tools are available for drawing:

- **Brush** — allows to fill the entire drawing area by clicking on it.
- **Filling** — allows to fill the sample using a round brush. To draw, hold the left mouse button. The brush size is adjusted by the mouse wheel.
- **Rubber** — allows to erase the sample filled area using round rubber. To erase, hold the left mouse button. The rubber size is adjusted by the mouse wheel.

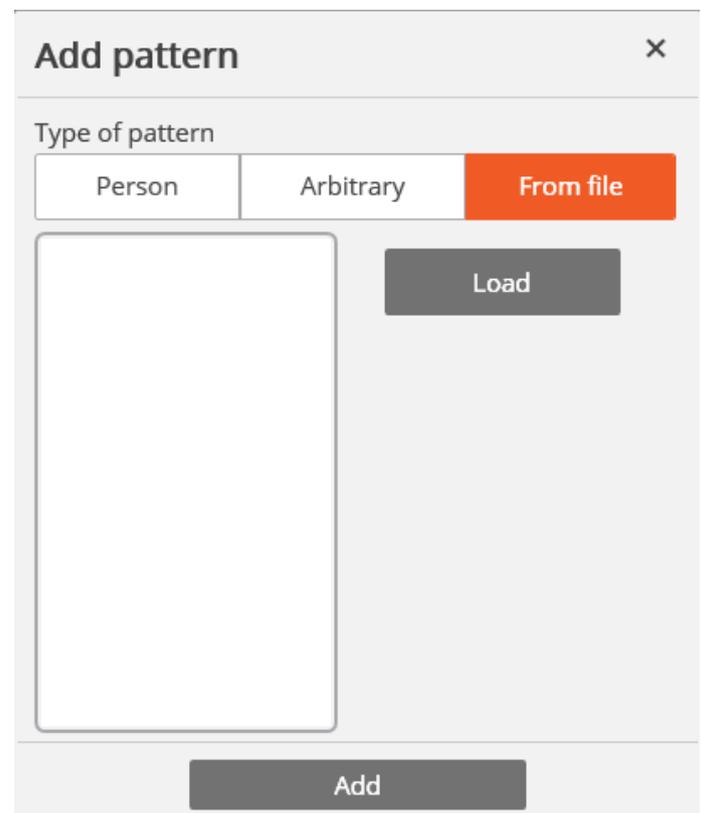
Use the **brush** to draw a custom sample.



because the subsystem of search by color sample does not search by a complex color ornament, if you want to search for an object with a textured drawing, choose the main color of the object.

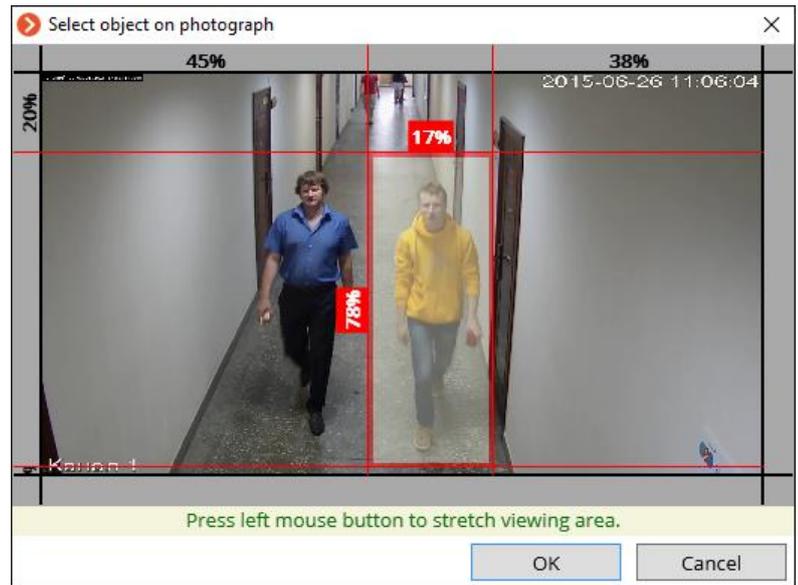
### 1.12.6.3. *Downloading a sample to search from file*

To add a sample from file, select the type of sample to be added **From File** and click the **Download** button.

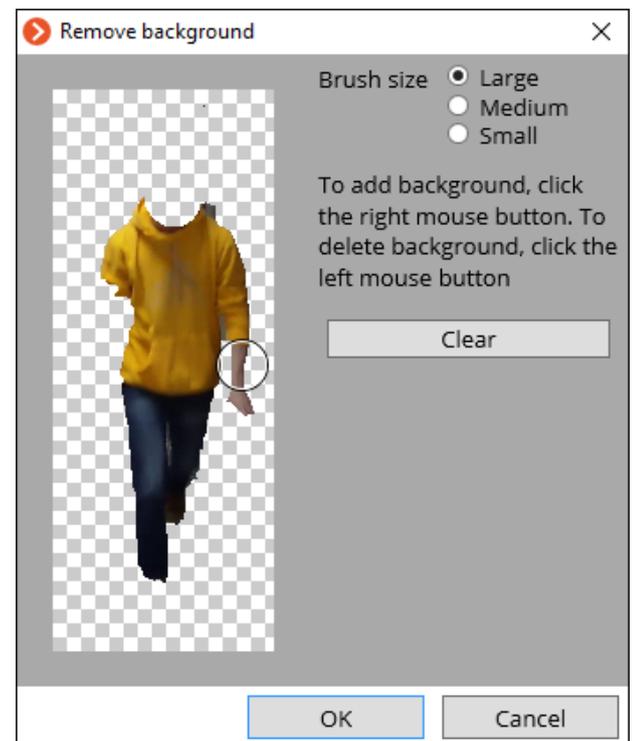


In the appeared window select the file with sample and press **Open**.

In the window with the image highlight the frame part with the searched object and press OK.



In the window with the frame fragment, delete the unnecessary parts of the image using a mouse (only the searched object shall remain) and click **OK**.



Click **Add** in the Sample adding window — the sample will be added to the set samples panel.

### 1.12.7. Vehicle search

Searches for vehicles with recognized license plates by the specified parameters.

At least one parameter must be specified for search.

If multiple parameters are set the system will search for objects that simultaneously meet all the specified parameters.

#### Vehicle search

Specify vehicle details

Number plate	
Groups <span style="float: right;">▼</span>	
Colour	
Model	
Owner information	
Last name	
First name	
Patronymic	
Additional information	
Direction <span style="float: right;">▼</span>	
Additional information	

### 1.13. Cross-camera tracking

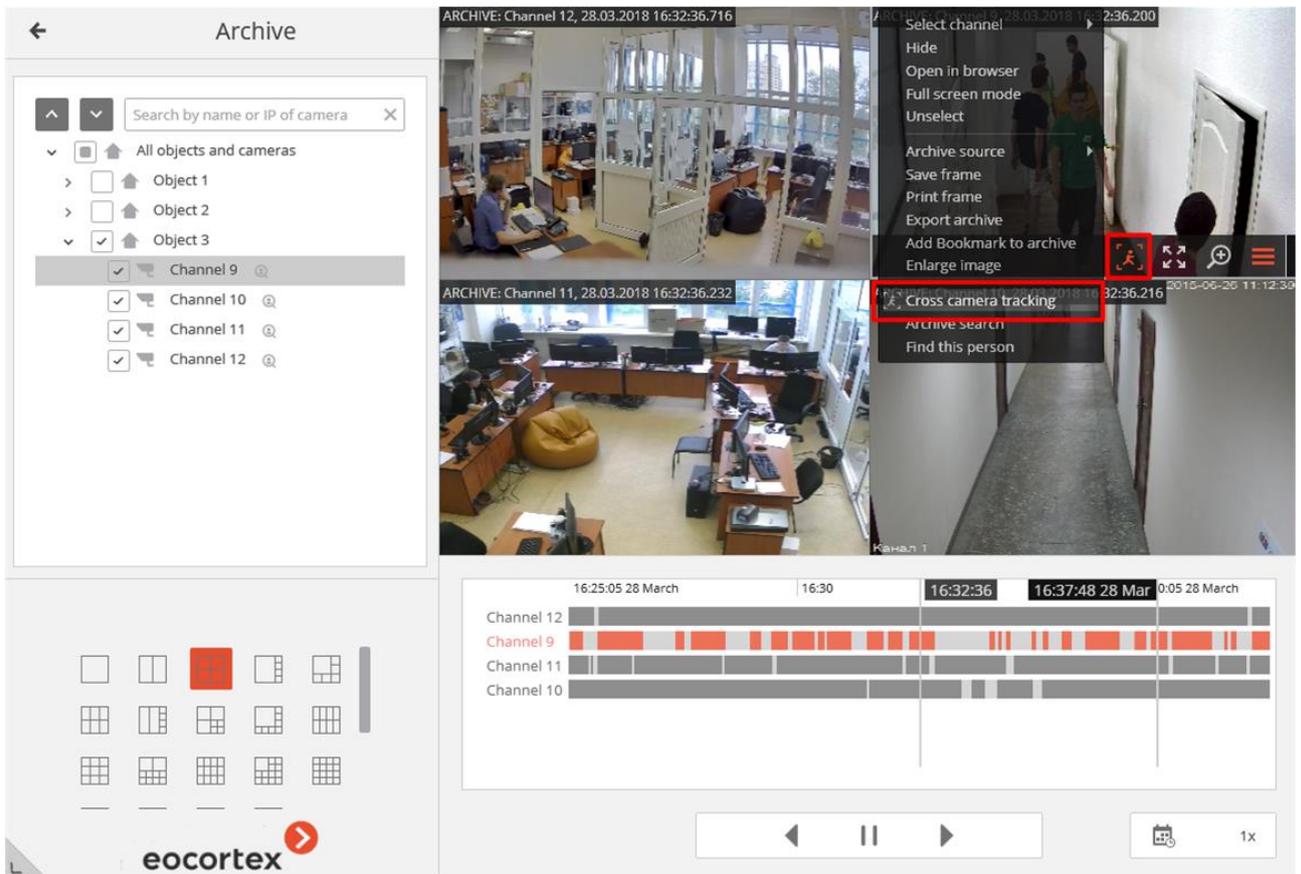
**Cross-camera tracking** allows to sequentially track the movement of a person going through different cameras of video surveillance system.

 **Cross-camera tracking** will be performed only on those channels, on which the **Indexing of the moving objects by signs** was enabled by the system administrator.

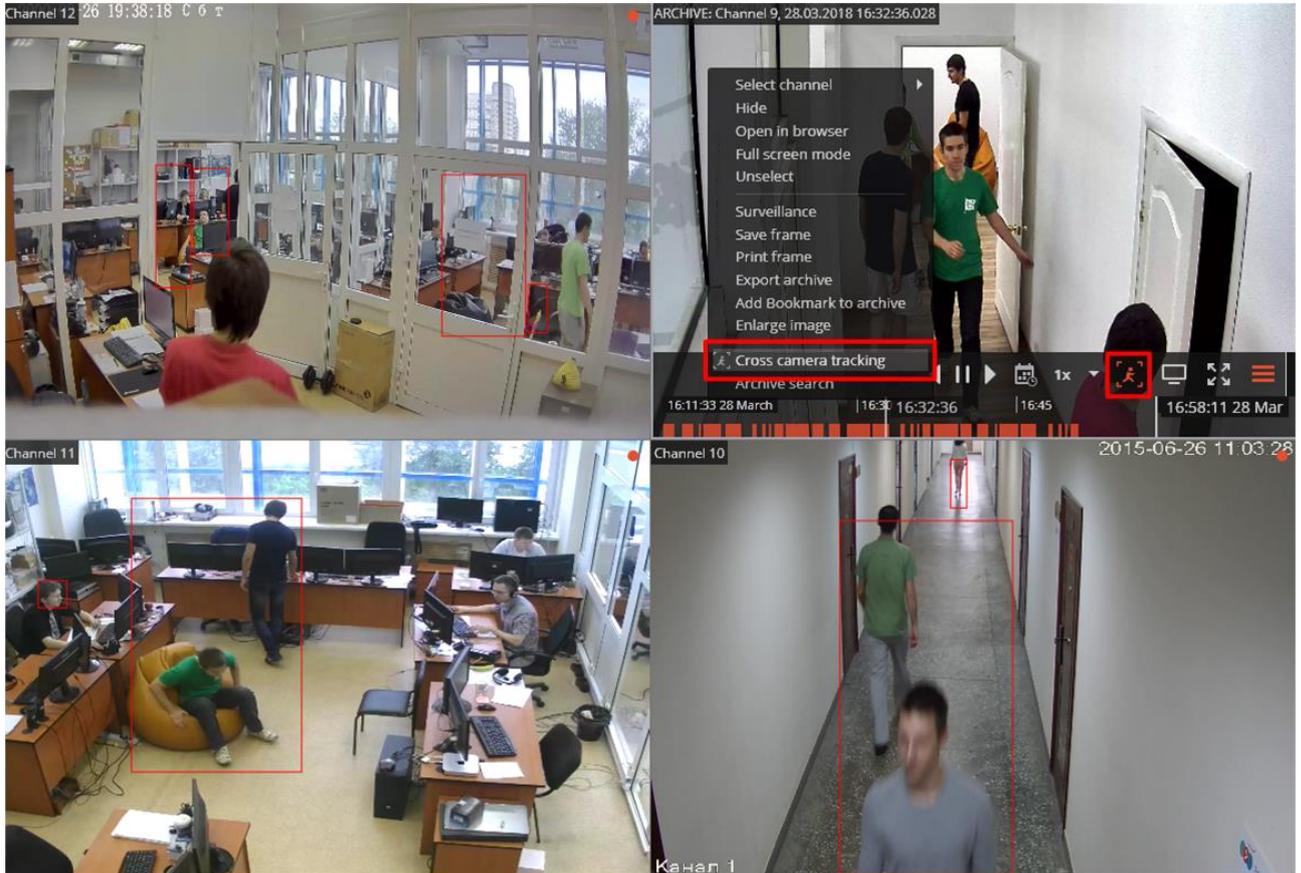
**Cross-camera tracking** can be enabled in three ways:

In [simultaneous archive viewing mode](#) (to switch to this mode, select **Archive** item in the **Main menu**), select a cell and click on , or select **Cross-camera tracking** in the cell's context menu;





In [individual camera archive viewing mode](#), select a cell and click on , or select **Cross-camera tracking** in the cell's context menu;



In [Archive search](#) mode, select a fragment, open the context menu with the right mouse button and choose **Cross-camera tracking**.

The figures of people will be boxed by frames.

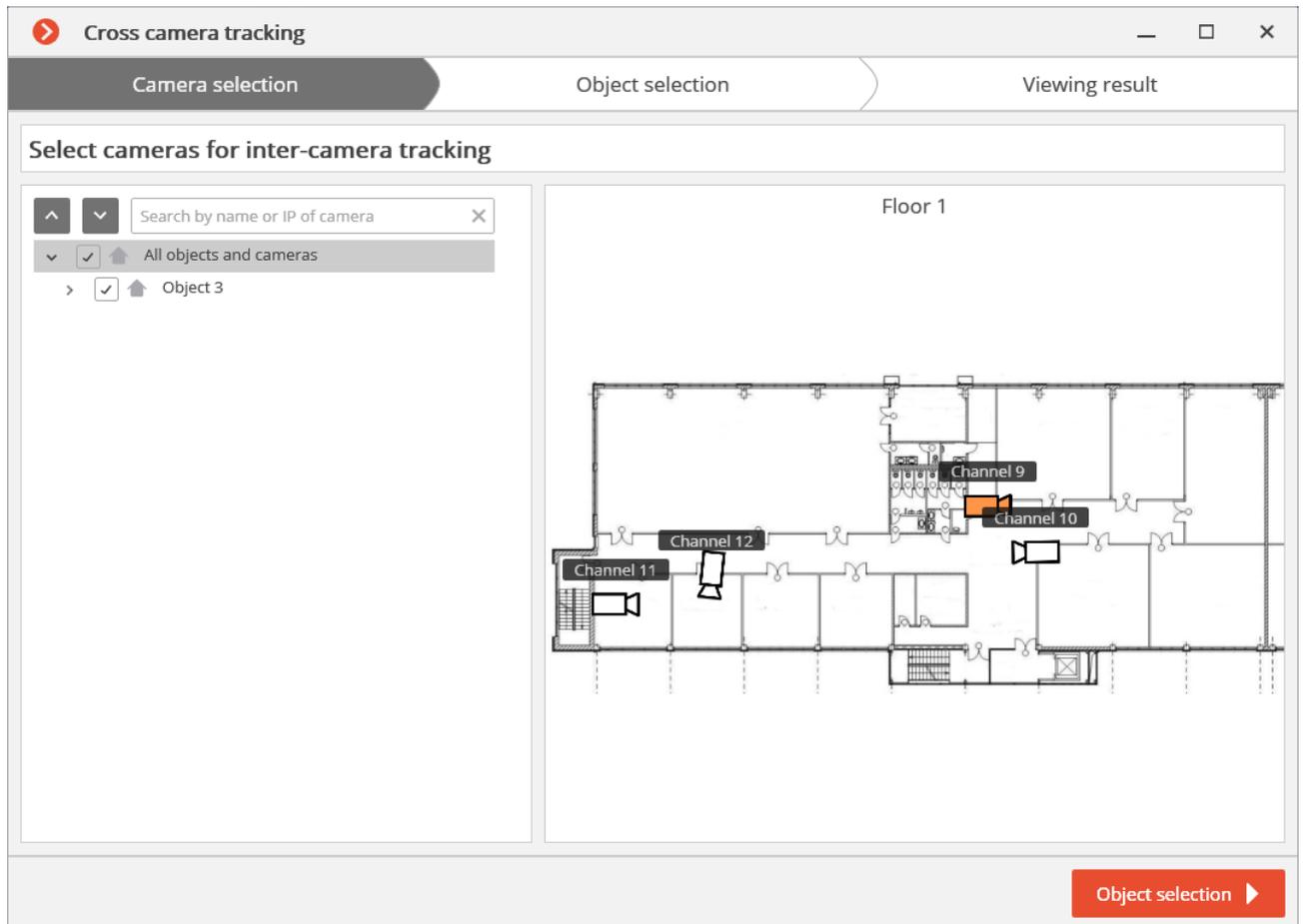


If the figure of a person is absent or not boxed in the frame, or if there are no figures of people at all, you can go to the previous or to the next frames with people using  and  buttons.

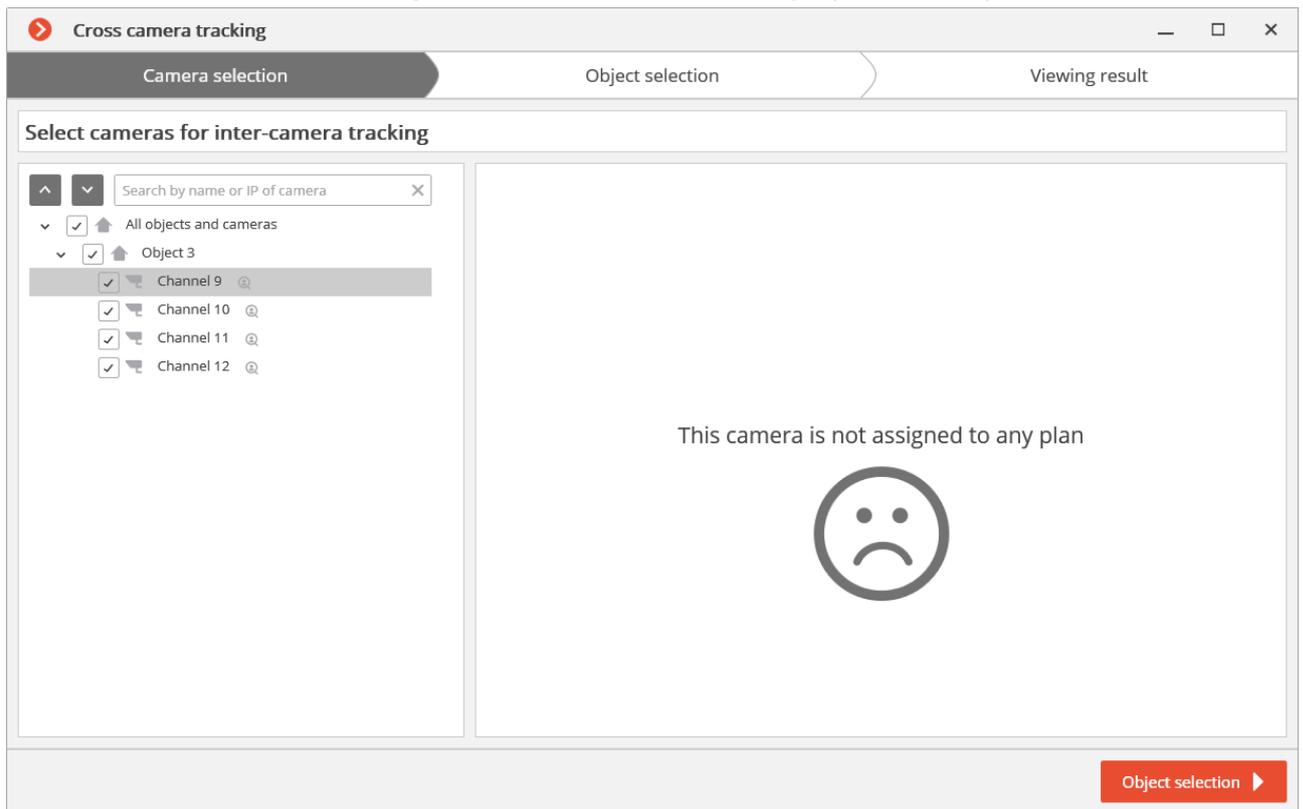
To look for fragments with a sought person, use  button located in the lower part of the frame with this person. This will open Cross-camera tracking master window.

On **Camera selection** tab, select the cameras to perform the search on.

If the camera is present on a site plan, on the right side of the page the plan will be shown on the camera highlighted on it.



If the camera is not located on any plan, as well as when the plans are not used, a corresponding warning will be displayed on the right side. The search will be performed on this camera, but the route fragments found will not be displayed on the plans.



After selecting the cameras, go to **Object Selection** tab by pressing the button with the same name or clicking on the tab's header. This tab will show fragments with the sought

object within  $\pm 2$  minutes from the first fragment. It is required to tick only those fragments where the sought person is shown, because similar-looking people may also be in the list).

**Cross camera tracking**

Camera selection      **Object selection**      Viewing result

Object of tracking

Channel 9  
Wednesday, March 28, 2018 4:32:36 PM

Objects confirmed: 6

Watch

Channel 10      Channel 10      Channel 10      Channel 10

Channel 10      Channel 10      Channel 10      Channel 10

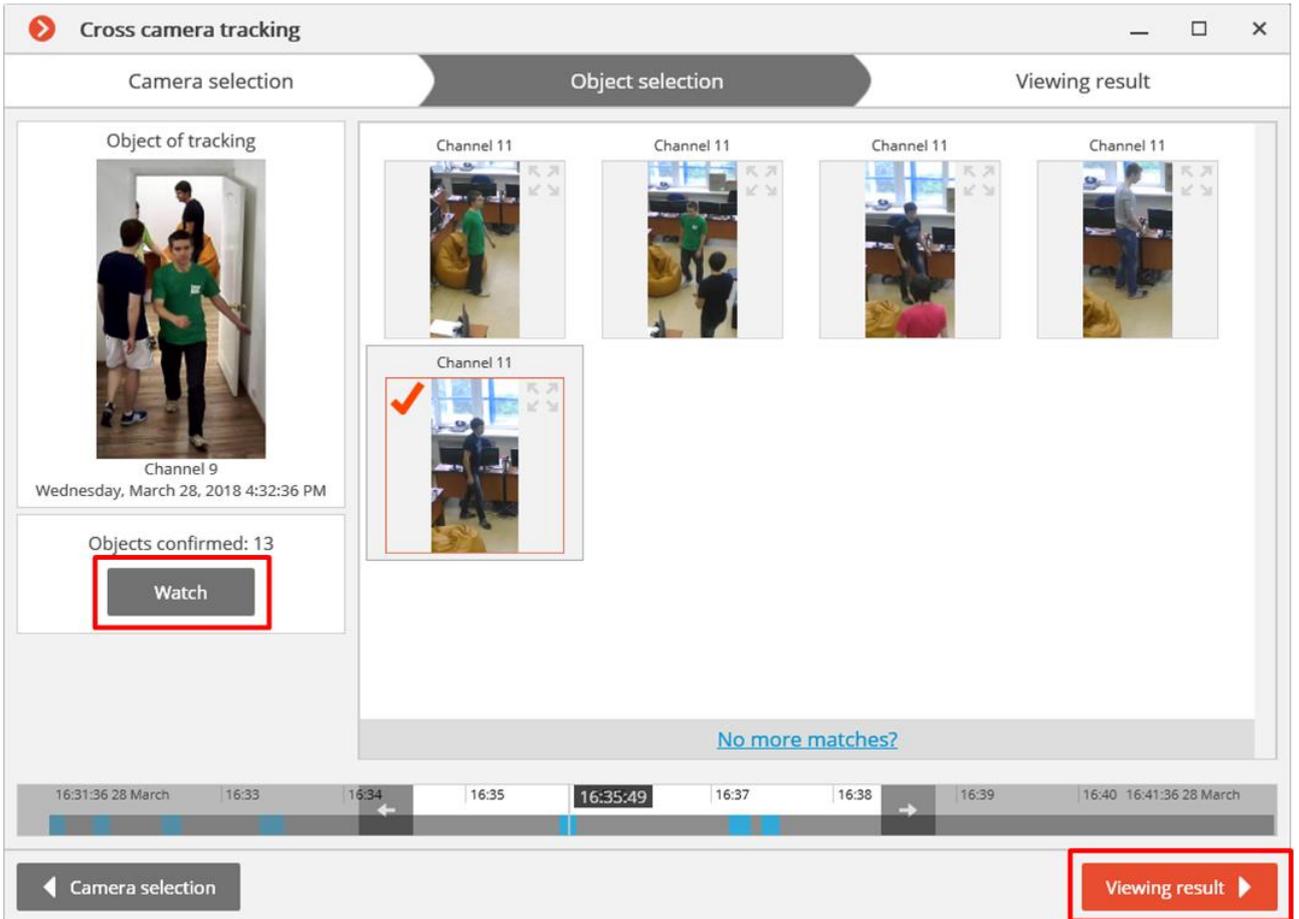
Channel 11      Channel 11      Channel 10      Channel 12

16:27:36 28 March    16:29    16:30    16:31    16:32    16:33    16:33:22    6:34    16:35    16:36    16:37:36 28 March

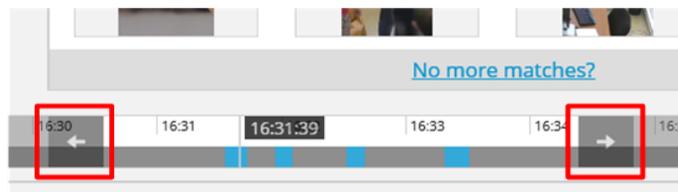
Camera selection      Viewing result

After ticking all the fragments with the sought person, you can click on **No more matches?** link in the lower part of the page. The more precise search will be performed based on the

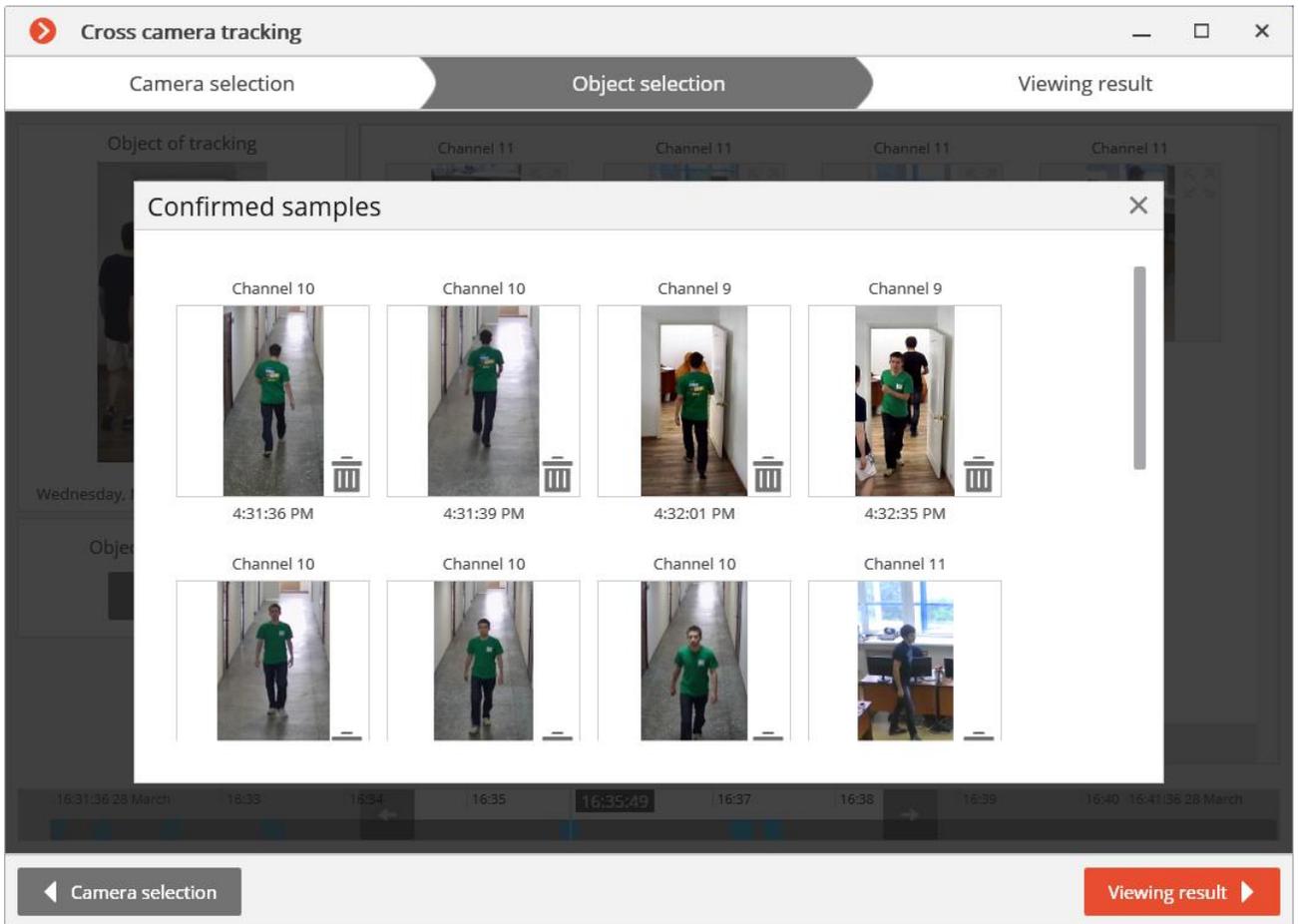
ticked samples within the current timeframe. If such samples are found, they will be displayed on the object selection page.



To change search interval, use arrow buttons on the timeline.



To view all the confirmed samples, use **View** button.



After selecting samples, go to **View result** tab pressing the button with the same name or clicking on the tab header. The video fragments with the sought object will be sequentially displayed on this tab.

The screenshot displays the 'Cross camera tracking' application window. The interface is divided into three tabs: 'Camera selection', 'Object selection', and 'Viewing result', with 'Viewing result' currently active. The main video player shows a man in a green shirt walking down a hallway, with a timestamp of '2015-06-26 11:13:29' and 'Канал 1' in the bottom left. Above the video, it says 'ARCHIVE: Channel 10, 28.03.2018 16:33:25.997'. To the right of the video is a floor plan map showing camera locations for Channel 9, Channel 10, Channel 11, and Channel 12. A red line indicates the object's trajectory across the map. Below the map is a smaller 'Floor 1' map. A timeline at the bottom shows a range from 16:01:32 28 March to 17:01:32 28 March, with a current position at 16:33:25. Playback controls (play, pause, stop) and a '1x' speed button are visible. At the bottom left is an 'Object selection' button, and at the bottom right is a red 'Videoclip export' button.

The conventional trajectory of the sought object will be displayed for cameras placed on the plans.

You can export a video to **\*.avi** or **\*.mcm** format by pressing a **Videoclip export** button.

## 1.14. Events log

The Events log is used to view system and user events.

To open the **Events log**, open the **Control panel** (page 8) and select **Log** in the **Main menu**.

The screenshot shows the 'Journal' window with a table of events on the left and filter panels on the right. The table has columns for Date, Time, Type, and Event description. The right panel includes tabs for Mode, Cameras, Types, Events, and Initiators, a search bar, and a list of filters for Server, User actions, and Actions. Below the filters are 'Apply filter' and 'Export' buttons, and a video preview window showing a person in a hallway.

Date	Time	Type	Event description
09.06.2016	12:45:23	🔔	Channel 9. Line intersection: "Line intersection". Movin...
09.06.2016	12:45:22	👤	Channel 10. Bookmark added into archive: exit Emily, infor...
09.06.2016	12:45:00	🔔	Channel 9. Line intersection: "Line intersection". Movin...
09.06.2016	12:44:50	🔔	Channel 9. Line intersection: "Line intersection". Movin...
09.06.2016	12:44:35	🔔	Channel 9. Line intersection: "Line intersection". Movin...
09.06.2016	12:44:32	👤	Channel 11. Lengthy presence: "Alarm in the zone". Movin...
09.06.2016	12:44:31	🔔	Channel 11. Lengthy presence: "Alarm in the zone". Movin...
09.06.2016	12:44:24	🔔	Channel 11. Lengthy presence: "Alarm in the zone". Movin...
09.06.2016	12:44:17	🔔	Channel 11. Lengthy presence: "Alarm in the zone". Movin...
09.06.2016	12:43:38	🔔	Channel 11. Lengthy presence: "Alarm in the zone". Movin...
09.06.2016	12:43:09	🔔	Channel 11. Lengthy presence: "Alarm in the zone". Movin...
09.06.2016	12:43:03	🔔	Channel 9. Line intersection: "Line intersection". Movin...
09.06.2016	12:42:56	🔔	Channel 9. Line intersection: "Line intersection". Movin...
09.06.2016	12:42:15	🔔	Channel 11. Lengthy presence: "Alarm in the zone". Movin...

The window displays the **Events log** (at the left), and **Filter panels** (at the right).

The **Filters panel** consists of the filters tabs, **Apply filter** and **Export** buttons, and the preview window.

The Events log displays the **Date**, **Time**, **Type** and **Event description** (as an icon) for each event.

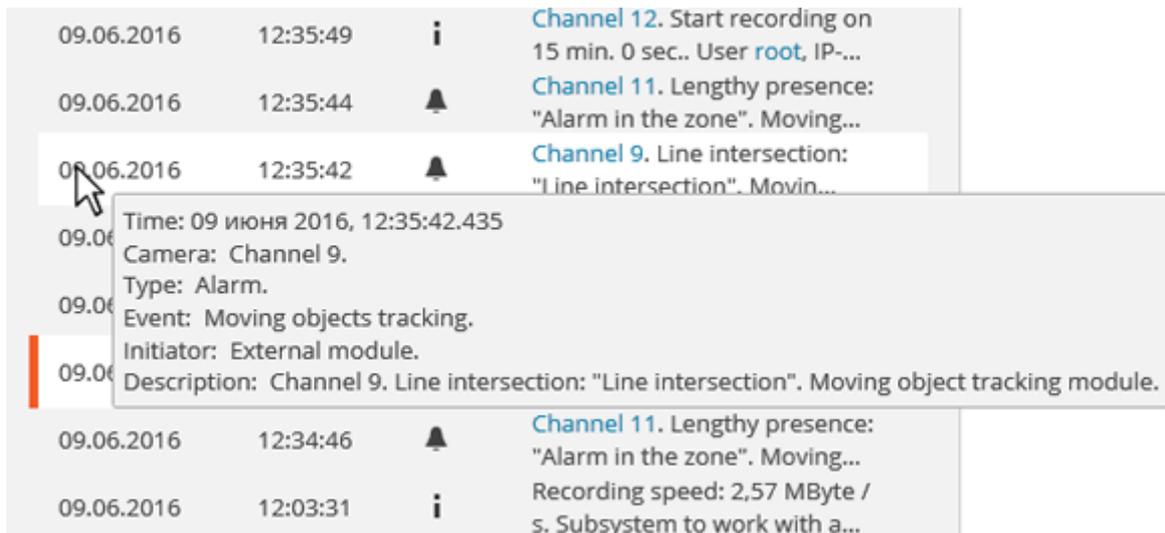
The **Event description** includes, in addition to the event name, various attributes associated with the event. The composition of the attributes depends on the event: for example,

the camera name is displayed for the events linked to the camera; for the events characterizing the users' actions - the user name, IP-address, and the computer name, etc.

Upon selection of an event linked to the camera, and the archive availability at the date / time of event, the preview window will display the frame from the archive. The viewing can be controlled in the same way as in the archive viewing.

Upon double-clicking the event linked to the channel the **Log** window closes, and the switch to **Simultaneous archive viewing from multiple cameras** (page 19) occurs to the point in time relevant to the event — in this case the channel grid will display the camera containing that fragment.

The pop-up tip with detailed information about the event appears upon mouseover to the event.



Upon right-clicking on the event the context menu with the following items will be displayed:

- **Switch to the frame** (only for events linked to the cameras)
- Filter only by this event
- Exclude the event from the filter
- **Filer only by this channel** (only for events linked to the cameras)
- **Exclude channel from the filter** (only for events linked to the cameras)

After selecting the context menu items adding / excluding filters, click **Apply filter** to apply a new filter.

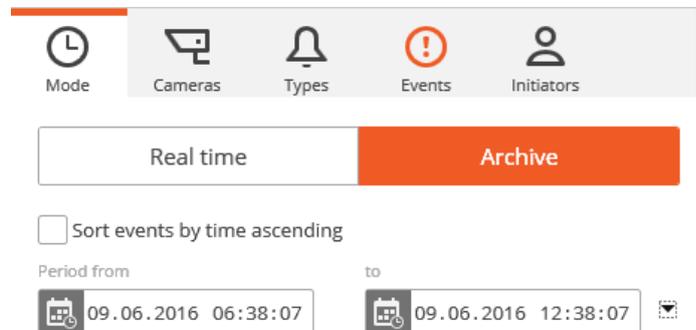
The following filters are available on the filters panel allowing to set the events display options in the log. Click **Apply filter** after making changes to filter settings.

The Mode filter sets the events display mode.

**Real time** — displays the events in real time . Sorting is performed in reverse chronological order: the new events - at the top, the older - at the bottom.

Initially, only 150 latest events are displayed and added the new ones , generated during the view.

If none of the events is selected, the new events are automatically displayed at the top of the list .



If any event is selected in the **Events log**, the number of new events is displayed in the



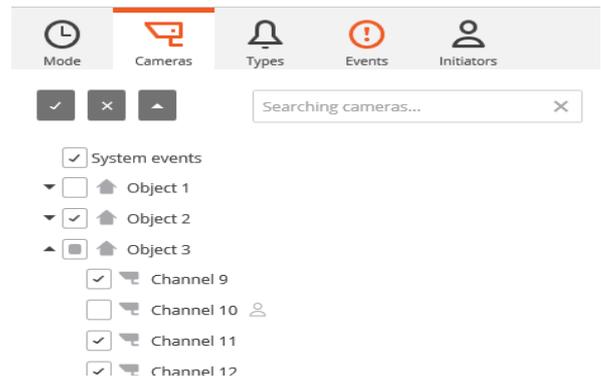
**Events log** header, near  , and to display new events click it.

If the system stores more than 15 event, to display the previous 150 events, press **More events...** at the bottom of the log.

If 10,000 events are already displayed in the log, upon further displaying the old events the new ones will be hidden. You can return to the last events by clicking **More events ...** at the top of the log.

**Archive** — displays the archived events within a given time period; you can also specify the order of time sorting in this mode.

- The **Cameras** filter allows to filter the events associated with selected cameras, as well as the system events (not associated with cameras).

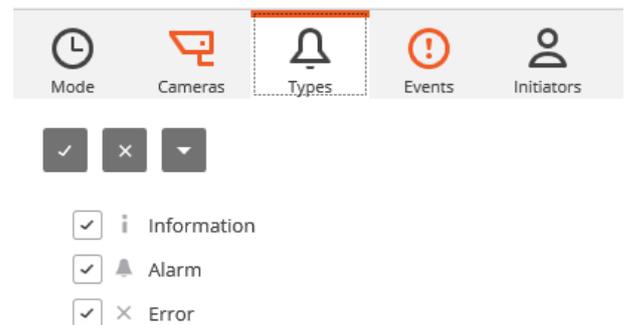


•

•

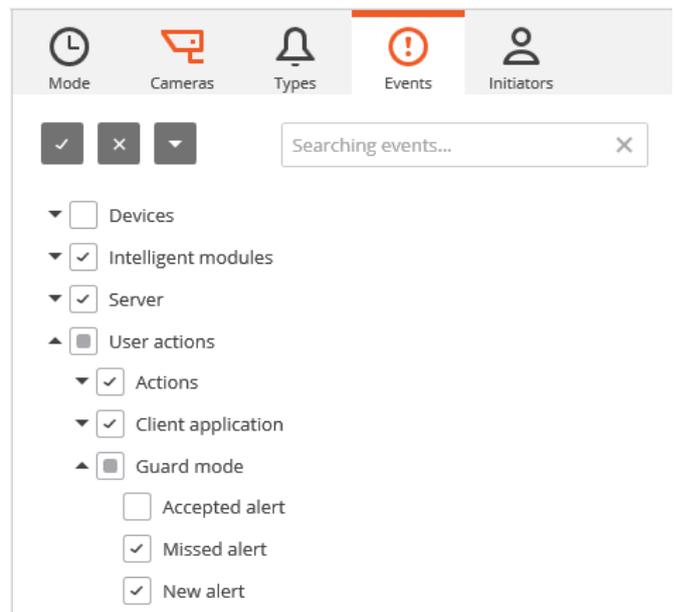
•

- The **Types** filter allows to filter the events by types: **Information**, **Alarm** and **Error**.

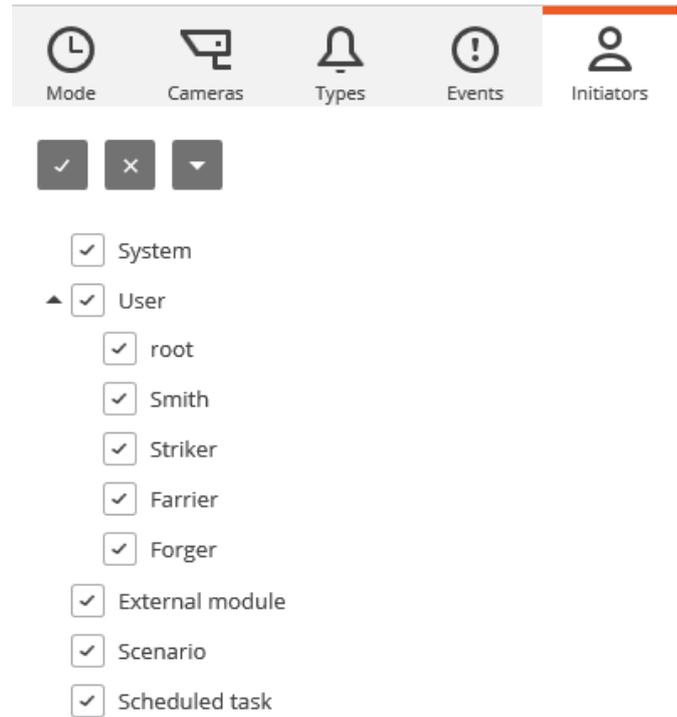


•

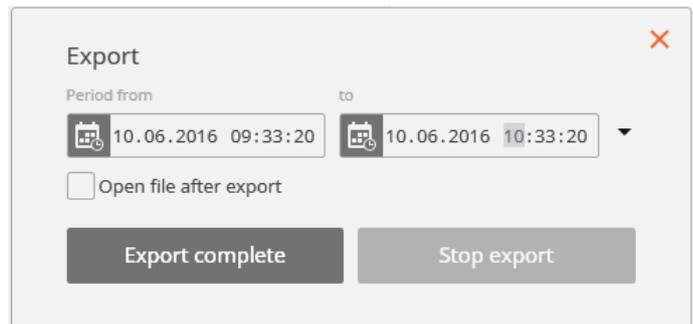
- The **Events** filter allows to filter the events by groups and names.



- The **Initiators** filter allows to filter the events depending on their initiator.



- To export the events log click **Export** on the **Filters panel**.
- In the appeared **Export** window set the time interval over which the events will be uploaded; if required - check the box **Open file upon export completion**; then click **Start Export**.



Then, in the appeared window, select the folder in which the log file will be saved; in the **File type** drop-down list specify the saved file format - CSV (text) or XLS (Microsoft Excel); if necessary, change the file name in the relevant field; click **Save**.

Wait until the export end, and then close the **Export** window.

The events set by the current filters will be exported to the file.

Below is an example of an Excel event log export file.

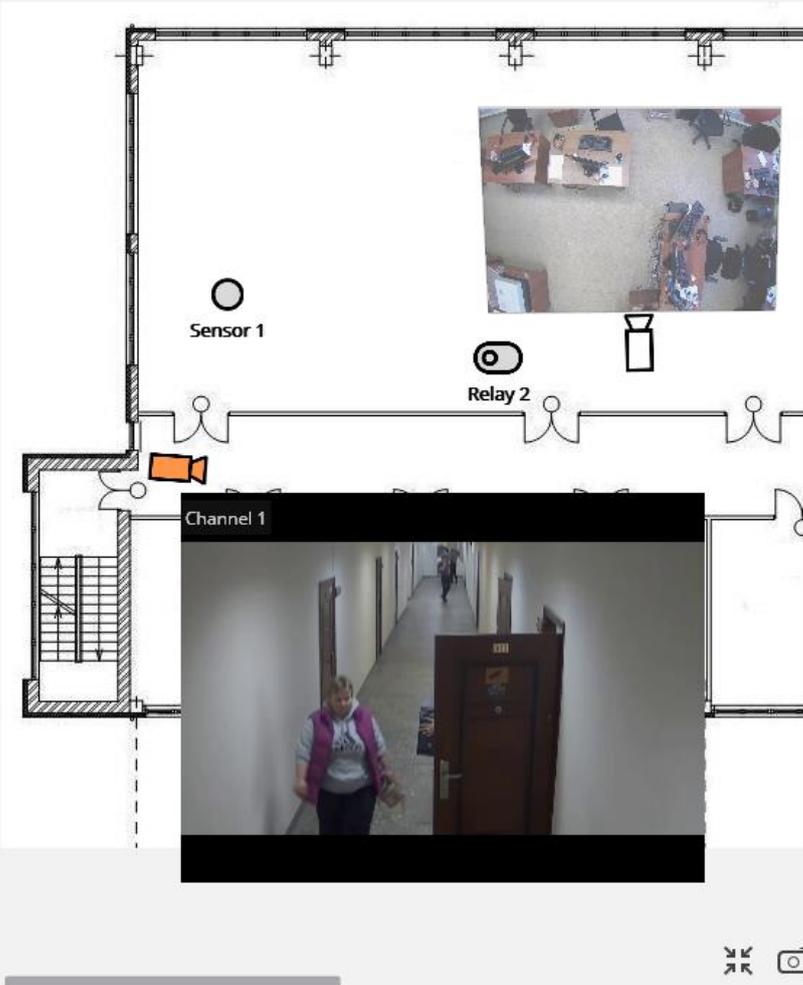
Time	Channel	Category	Event	Initiator	Description
6/9/16 12:36:04 PM		Information	Simultaneous archive viewing	User	Simultaneous archive viewing. User root, IP-address 192.168.100.145, computer...
6/9/16 12:35:49 PM	Channel 12	Information	Recording started	User	Channel 12. Start recording on 15 min. 0 sec.. User root, IP-address 192.168.100...
6/9/16 12:35:44 PM	Channel 11	Alarm	Moving objects tracking	External module	Channel 11. Lengthy presence: "Alarm in the zone". Moving object tracking mc...
6/9/16 12:35:42 PM	Channel 9	Alarm	Moving objects tracking	External module	Channel 9. Line intersection: "Line intersection". Moving object tracking modu...
6/9/16 12:35:32 PM		Information	Monitoring	User	Monitoring. User root, IP-address 192.168.100.145, computer petrovich.
6/9/16 12:35:31 PM		Information	Successful authentication	User	Successful authentication. User root, IP-address 192.168.100.145, computer pe...
6/9/16 12:34:27 PM	Channel 10	Information	Established connection with camera	System	Channel 10. Established connection with the camera: main stream.
6/9/16 12:34:26 PM	Channel 12	Information	Established connection with camera	System	Channel 12. Established connection with the camera: main stream.
6/9/16 12:34:25 PM	Channel 9	Information	Established connection with camera	System	Channel 9. Established connection with the camera: main stream.
6/9/16 12:34:15 PM		Information	General configuration application	System	Application of the general configuration from IP-address 127.0.0.1. Server 1 (15...
6/9/16 12:26:05 PM	Channel 1	Alarm	No connected camera	System	Channel 1. No connection: main stream on 15 sec.
6/9/16 12:25:50 PM	Channel 1	Error	Lost connection with camera	System	Channel 1. Camera connection failure main stream.

### 1.15. Object plans

Eocortex allows to use the object plans with cameras, sensors and relays. In addition, the images from cameras including data of the separate intelligent modules (the heat maps in current version) can be superimposed on plans.

To open the **Object plans**, open **Control panel** (page 8) and select **Plans** in the **Main Menu**.

**Plans**



Choose a plan

- Floor 1
- Floor 0

Additional plan display settings

Frame from camera

To the right of the **Plans** page is the **Settings panel** which may be hidden / displayed by clicking  at the right edge of the page. You can select the Plan on the settings panel, and specify the additional display options in the section **Additionally display on plan**. The list of additional options depends on the settings set by the system administrator.

- **Frame from camera** — displays the frame overlaid on the camera field of view.
- **Heat map** — displays the **Heat map** (page 75) module data.

To fit the image on the plan to the current window size click on  in the lower right corner.

To save the image on the plan in JPEG, PNG or BMP format, click on  in the lower right corner.



### 1.17.1. Interface

➤ **Workstation settings**

- Interface
- Video
- Sound settings
- Scheduled Guard mode
- User alarm channels
- Monitors
- Network settings
- Available channels
- Available grids
- PTZ Cameras control panel
- Intercoms

**Monitor**

Window mode

Hide channels grid

Display Alarm button

Display button "Enable alarm in the channel" ⓘ

Show self-diagnosis notifications

**Context (pop-up) menu:**

Allow video proportions change from context menu

Prohibit Open in browser option in client mode

Enable alarm cells ⓘ

**Language selection**

English (United States) ▼

Save Settings

Reset settings

**Window mode** — if checked, **Eocortex Client** will run in the window mode; otherwise — fullscreen.

**Hide channels grid** — if checked, the lines separating channel cells will not be displayed; otherwise they will be separated by thin lines.

**Display Alarm button** — if checked, the **Eocortex Client** toolbar will contain the **Alarm** button; otherwise the button will not be displayed.

**Display button "Enable alarm in the channel"** — if checked, the item **Enable alarm in the channel** will be displayed in the context menu of the channel cells.

**Show self-diagnosis notifications** — if checked, the system notifications about possible problems (including recommendations for their elimination) will be displayed.

**Allow video proportions change from context menu** — if checked, you will be able to choose video proportions in the cell context menu; otherwise this function will not be available.

**Prohibit Open in browser option in client mode** — if checked, users of **Eocortex Client** on this computer will not be able to open cameras in browser from the context menu; otherwise the context menu will include the **Open in browser** option.

**Enable alarm cells** — if checked, the **Set alarm cell** item will be displayed in the context menu of the channel cells.

**Language selection** — allows selecting one of the interface languages available for **Eocortex Client**.

### 1.17.2. Video

**Video proportions** — you can select how images are scaled in cells:

- **Stretch** — the image will be stretched in a cell;
- **Save proportions** — the image will be displayed with the proportions specified by the camera;
- **Auto** — the program automatically determines whether to stretch the image or keep proportions.

**Preferred video stream for display** — allows you to select which streams will be displayed on the screen and how:

- **Auto** — in the multiscreen mode all channels that use two streams will display an alternate one; in the uniscreen mode only the main stream will be displayed.
- **Main** — the main stream will be displayed for all channels in all modes.
- **Alternate** — the alternate stream will be displayed for all channels that support two streams in all modes.
- **Average** — in both modes each channel that uses two streams will display the stream, which resolution is closest to the resolution of the current cell.

**Show info about codec, resolution, bitrate, frequency and IP-address** — if checked, the appropriate information for the displayed stream will be located in the upper left corner.

**Show debug info** — if checked, the debug information for each channel will be displayed in the upper left corner.

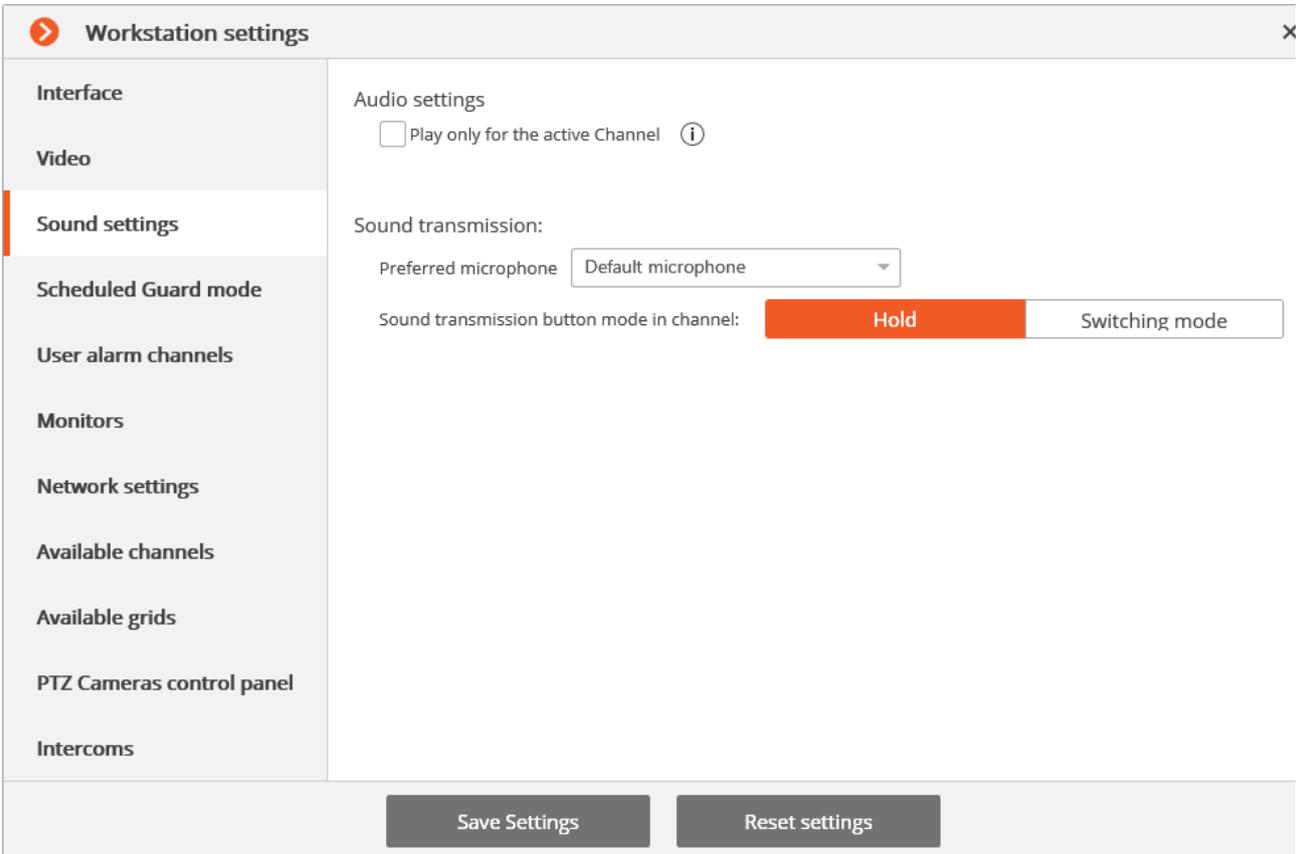
**Font size, Horizontal alignment, Vertical alignment** — the display options in the cell of the text blocks with the name of the camera and additional information.

**Use high quality** — if checked, the image will be sharper but the CPU and RAM load will increase.

**Allow H.264 decoding on video card** — if checked, H.264 video will be decoded on video card of the client computer; otherwise it will use CPU. Only the channels with this option enabled will be decoded on video card.

**Enable display speed limitation (only for MJPEG)** — if checked, the image will adhere to the specified maximum frame rate. This limitation may be useful to reduce the CPU and RAM load on the client computer.

### 1.17.3. Sound



The screenshot shows a 'Workstation settings' dialog box with a sidebar on the left containing the following menu items: Interface, Video, Sound settings (highlighted with an orange bar), Scheduled Guard mode, User alarm channels, Monitors, Network settings, Available channels, Available grids, PTZ Cameras control panel, and Intercoms. The main content area is titled 'Audio settings' and includes a checkbox for 'Play only for the active Channel' (unchecked) with an information icon. Below this is the 'Sound transmission:' section, which includes a 'Preferred microphone' dropdown menu currently set to 'Default microphone'. At the bottom of this section is a 'Sound transmission button mode in channel:' control with two buttons: 'Hold' (highlighted in orange) and 'Switching mode'. At the bottom of the dialog box are two buttons: 'Save Settings' and 'Reset settings'.

**Play only for the active Channel** — if checked, the sound will be played only for the active (currently selected) channel; otherwise the sound will be played for all the displayed channels.

The **Sound transmission** setting group allows selecting the microphone and screen button operation modes for the channels that support sound transmission to the camera.

### 1.17.4. Scheduled Guard mode



**Scheduled Guard** is the mode, in which a user is notified (in Eocortex Client) if the alarm is generated.

If you want an alarm to generate in response to a specific event in the system, configure the appropriate scenario in **Eocortex Configurator**.

**Display only on the alarm monitor** — if checked, visual and audible alerts will be displayed only on the alarm monitor; otherwise they will also be displayed on the monitors used for observation.

**Use optimized grid on alarm monitor** — if checked, the grid on the alarm monitor shall be selected dynamically, depending on the number of channels, on which the alarm has been triggered; if unchecked, the channel grid, selected by the user, shall be used.

**Allow full-screen mode in the alarm monitor** — if checked, you can expand the channels to full-screen mode on the alarm monitor; if unchecked, it shall be prohibited.

**Set the limit of an alarm display period on the alarm monitor** — if checked, in the box on the right you can specify how long will the alarm be displayed; otherwise, the alarm will be displayed until the operator's response. In either case, an alert will be aborted if the operator responds to it.

**Automatically accept the alarm** — if checked, you can specify in the box on the right, how long the alarm will be accepted automatically, if the operator does not respond to it; otherwise, the alarm will be displayed in accordance with the setting **Set the limit of an alarm display period on the alarm monitor**.

**Disable alarm** — if checked, the alarm state of any of the Scheduled Guard channels will not be indicated in the lower right corner of the screen by an exclamation mark.

**Alarm in Guard mode** — if checked, the alarm state of any of the Guard channels will be indicated by an audio file. Only WAV files (\*.wav) are supported. To select a file, click **Select**. To listen to the selected file, click **Listen**.

**Enable scheduled Guard mode** — if checked, you can schedule Guard modes for the channels.

To enable the Guard mode, select the camera in the list, click it and set up a schedule under the list.

Use   to show/hide the list of cameras and security objects.

Use   to select or deselect all cameras.

The **Searching cameras** field allows you to quickly find and select cameras and security objects containing the entered text.

Enable scheduled Guard mode

- ▼   Object 3
- ▼   Object 6
- ▲   Object 8
  - ▲   Office
  - Entry
  - Hall 🔍
  - ▲   Street
    - Yard

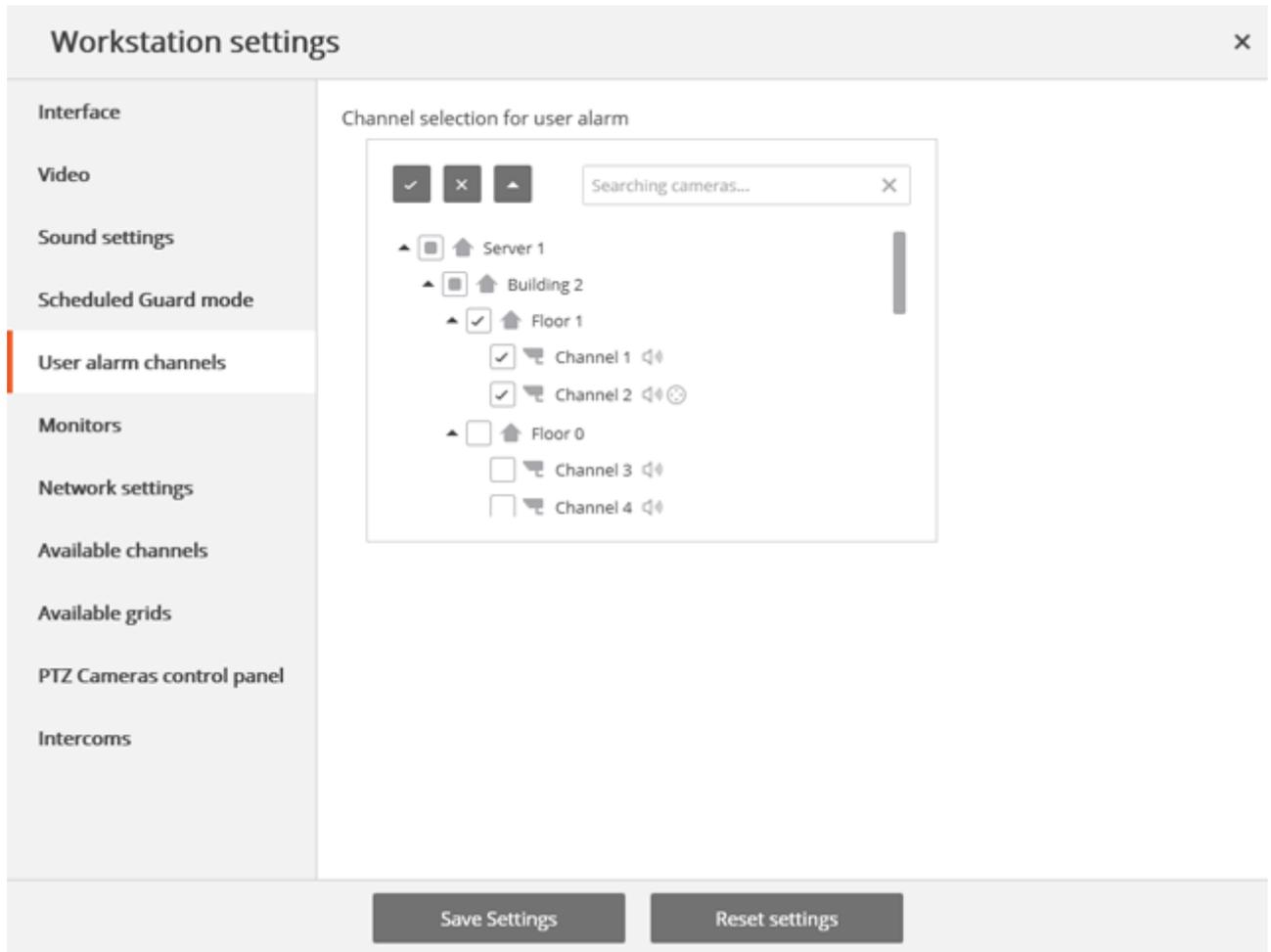
In order to configure the protection on schedule regime on the channel, it is necessary to put a tick at the channel and click on its name

Use one schedule for all days of the week

	00:00	02:00	04:00	06:00	08:00	10:00	12:00	14:00	16:00	18:00	20:00	22:00
Monday	Active				Inactive				Active			
Tuesday	Active				Inactive				Active			
Wednesday	Active				Inactive				Active			
Thursday	Active				Inactive				Active			
Friday	Active				Inactive				Active			
Saturday	Active											
Sunday	Active											

Blue periods mark when the channel should be in the Guard mode. Left-click the schedule to set a mark and right-click to remove it. If **Use one schedule for all days of the week** is selected, the schedule will be the same for the whole week.

### 1.17.5. User alarm



**User alarm** is an alarm that is generated in Eocortex Client if the operator presses the **Alarm** button located on the **Control panel** near the clock. Action to be performed in this case is set in Configurator on page **1. Cameras** in the **Scenarios** settings group.

To set cameras to generate **User alarm** after the **Alarm** button is pressed, select these cameras in the list.

Use   to show/hide the list of cameras and security objects.

Use   to select or deselect all cameras.

The **Searching cameras** field allows you to quickly find and select cameras and security objects containing the entered text.

### 1.17.6. Monitors

**Workstation settings**

Interface

Video

Sound settings

Scheduled Guard mode

User alarm channels

**Monitors**

Network settings

Available channels

Available grids

PTZ Cameras control panel

Intercoms

Monitors settings:

 Generic PnP Monitor **Use as an alarm monitor**

**Show monitors' numbers**

**Save Settings** **Reset settings**

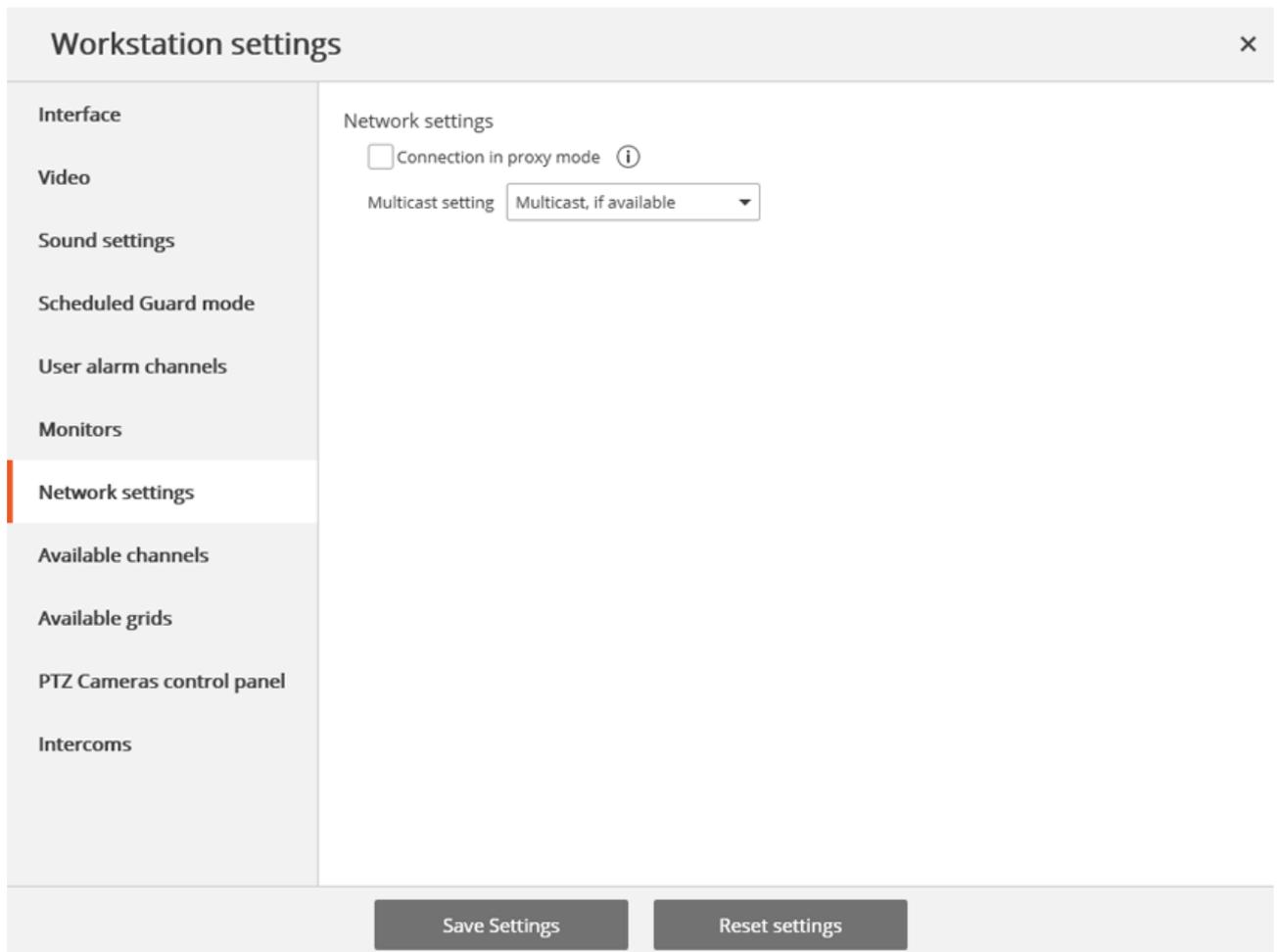
This tab displays all monitors connected to the computer.

Select monitors if you want **Eocortex Client** to use them.

If multiple monitors are connected, you can enable the **Use as an alarm monitor** option for one of them — in this case **Alarm** channels will be displayed on this monitor.

When clicking **Show monitors numbers** button on the monitors, their numbers are displayed.

### 1.17.7. Network



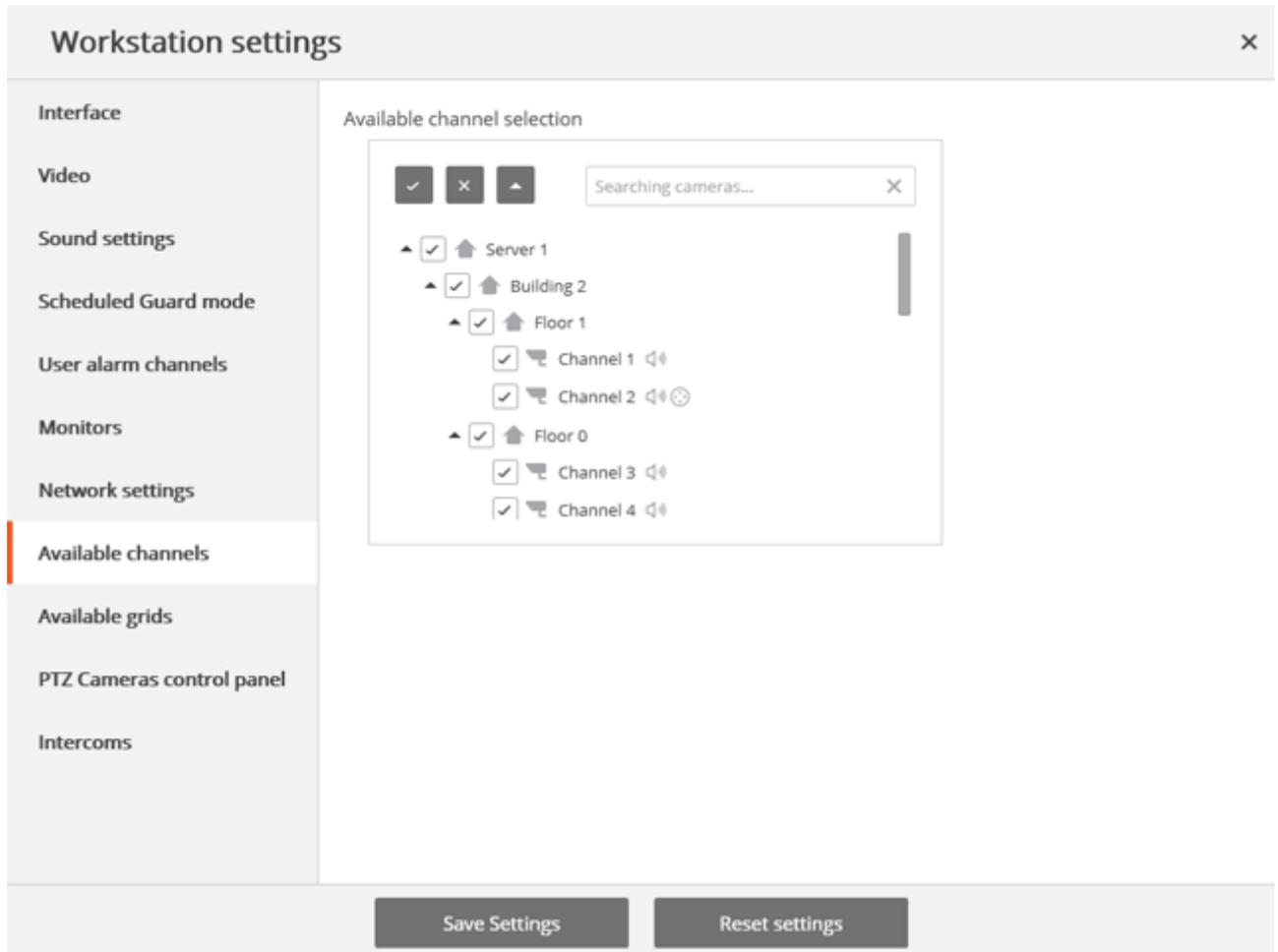
**Connection in proxy mode** — this option is used when the system includes several video servers: if checked, Eocortex Client will receive all real-time video streams and historical records by connecting to only one Eocortex server (this server, in turn, will receive data from other servers and send it to Eocortex Client); otherwise Eocortex Client will connect directly to those servers, which channels are displayed (i.e., simultaneous connection to multiple servers is possible.)

**Multicast setting** — allows selecting a broadcasting mode for this computer.

- **Multicast, if available** — channels with all broadcasting modes will be received.
- **Multicast only** — only **multicast** channels will be received.
- **Unicast only** — only **unicast** (default) channels will be received.

For information on activating the **multicast** mode.

### 1.17.8. Available channels



The **Available channels** tab indicates channels available for display on this computer — select the required cameras in the list.

Use   to show/hide the list of cameras and security objects.

Use   to select or deselect all cameras.

The **Searching cameras** field allows you to quickly find and select cameras and security objects containing the entered text.

### 1.17.9. Available grids

The screenshot shows a 'Workstation settings' window with a sidebar on the left containing the following menu items: Interface, Video, Sound settings, Scheduled Guard mode, User alarm channels, Monitors, Network settings, Available channels, Available grids (highlighted), PTZ Cameras control panel, and Intercoms. The main area is titled 'Available grid selection' and contains a list of grid options:

- 1 channel
- 2 channels
- 4 channels
- 5 channels
- 6 channels
- 6 channels
- 7 channels
- 8 channels
- 8 channels
- 9 channels
- 10 channels

At the bottom right of the list area, it says 'Selected grids: 10'. Below the list is a button labeled 'Select grid by default'. At the bottom of the dialog are two buttons: 'Save Settings' and 'Reset settings'.

The **Available grids** tab indicates grids available for usage on this computer — select the required grids in the list.

### 1.17.10. PTZ Cameras control panel

The screenshot shows a 'Workstation settings' dialog box with a sidebar on the left and a main content area on the right. The sidebar contains the following menu items: Interface, Video, Sound settings, Scheduled Guard mode, User alarm channels, Monitors, Network settings, Available channels, Available grids, **PTZ Cameras control panel** (highlighted with an orange bar), and Intercoms. The main content area is titled 'PTZ control settings' and includes a 'Selected joystick/board:' dropdown menu with a 'Refresh' button. Below this is an 'Axis settings...' button. Underneath is the 'Action settings:' section, which is a table with two columns: 'Action' and 'Runtime environment'. The table lists various actions and their corresponding 'Assign hot keys...' buttons. At the bottom of the dialog are 'Save Settings' and 'Reset settings' buttons.

Action	Runtime environment
Camera left	Assign hot keys...
Camera up	Assign hot keys...
Camera right	Assign hot keys...
Camera down	Assign hot keys...
Image Zoom In	Assign hot keys...
Image Zoom Out	Assign hot keys...
Distant Focus	Assign hot keys...
Near Focus	Assign hot keys...
Auto Focus	Assign hot keys...
Switch to archive/real time	Assign hot keys...
Play archive forward	Assign hot keys...

On the **PTZ Cameras control panel** tab you can configure the remote control or joystick parameters.

## 2. Intelligent modules

### 2.1. Sabotage detection

Sabotage detection module activates:

- camera defocusing;
- camera turnaway;
- camera illumination;
- camera overlap.



This module will only work on the cameras on which it has been enabled by the video surveillance system administrator.

Upon occurrence of one of the situations the alarm message **Sabotage detected** will be displayed in the camera cell. Below are the sabotage examples.

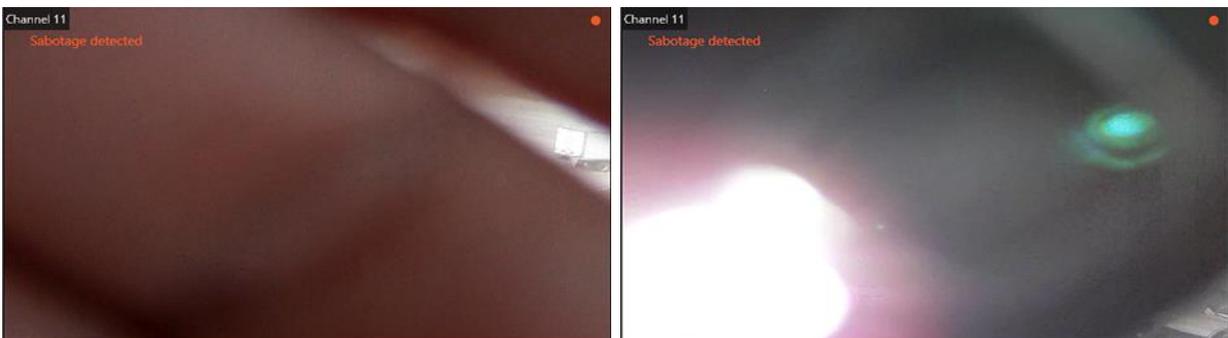
Camera reverse:



Defocusing:



Overlap and flash:



All the module events are recorded in the [Events log](#).

### 2.2. Tracking module

Tracking module allows implementing the following features:

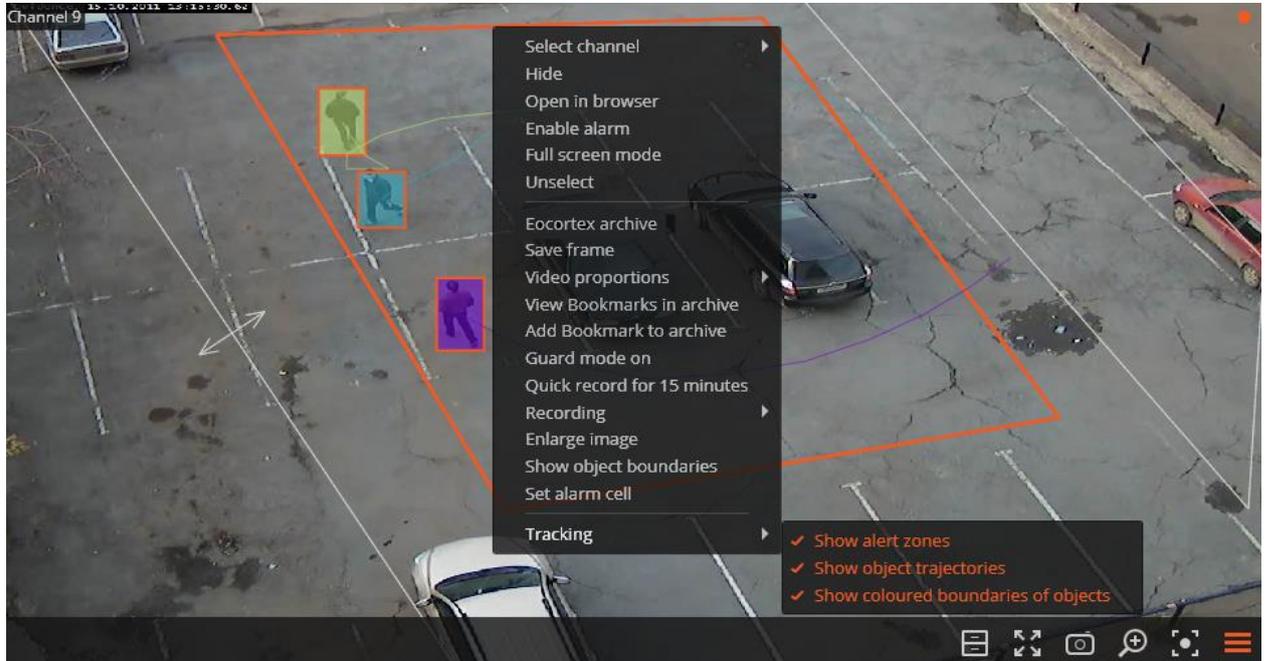
- Tracking of moving objects in the camera's field of view.
- Generate an alarm for the following events:
- intersection of a set line by an object;

- entry into a set area;
- prolonged stay in a set area.



This module will only work on the cameras on which it has been enabled by the video surveillance system administrator.

During real-time viewing the object's intersection of the reference line or the object's entering the control zone will be displayed on the screen - the object itself will be enclosed in an orange frame, the reference line or the zone will be highlighted in orange.



For tracking convenience it is also possible to:

- display the zones and lines;
- track the objects' trajectories;
- display the colored frames of the objects.

To do this select the relevant items in **Tracking** section of the cell context menu.

All the module events are recorded in the [Events log](#).

### 2.3. People counting

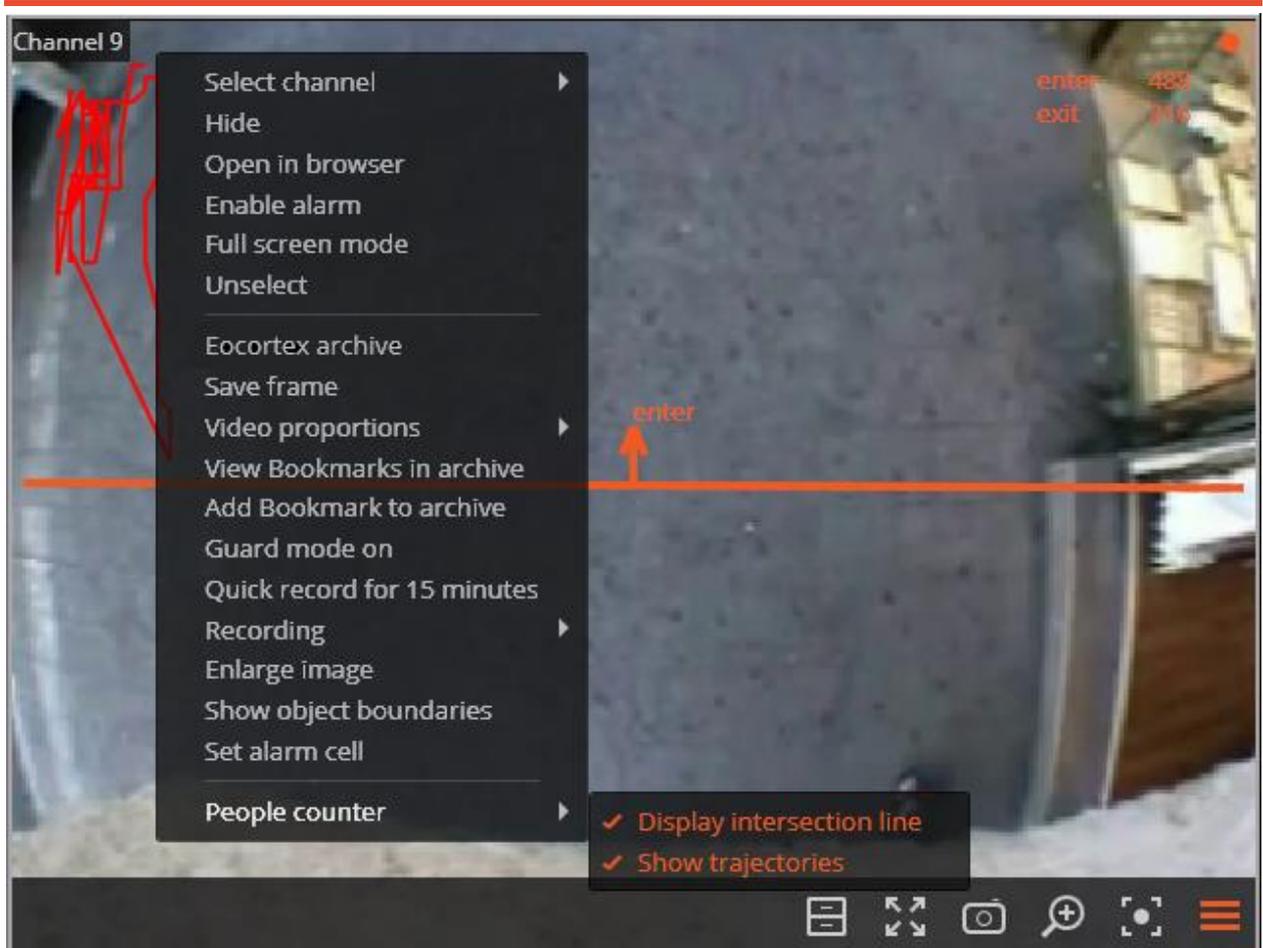
The People counting module has the following features:

- Counting the number of entering and exiting visitors in real time — either through one or several (if multiple cameras are used) entrances/exits.
- Creating reports on entered, left and present visitors — over various periods of time (from hours to years) for one or several cameras overseeing one area from different locations.
- Automatic and manual export of reports in CSV (supported, inter alia, by Microsoft Excel.)
- Counting of people in moving groups: i.e. few people moving as a group will be counted with a minimum error.

The People counting module uses two mutually exclusive calculation methods: The method of counting separately moving people and the method of counting people moving in groups. The exact method to be used on a particular channel is determined when configuring this channel in Eocortex Configurator.



This module will only work on the cameras on which it has been enabled by the video surveillance system administrator.



During the real-time viewing the number of people incoming and outgoing since the last launch of Eocortex Client will be displayed in the upper left corner of the camera cell.

Also, for the tracking convenience it is possible to:

- enable the display of intersection line;
- set the trajectory display (depending on the camera settings this feature may be unavailable).

To do this select the relevant items in **People counting** section of the cell context menu.

To generate the reports open [Control panel](#) and select **Reports** in the **Main menu**.

In the **Select report** field, set the **People counting** option.

Set the **Time period** for which the report will be generated.

Set the **Plotting step** selecting one of the following values: **Minute, Hour, Day, Week, Month**.

Select the **Cameras** by which the report will be generated. When selecting several cameras the report will reflect the total value by all selected cells.

To build the report click **Build** (to abort the report generating process click **Cancel**).

To save the report on disk click **Export**; in the appeared window select the folder to save the report; if necessary - change the **File name** and select the **File type (CSV, Excel or JPEG)**; press **Save**.

Click **Print** to print the report; select the printer in the appeared window; if necessary, adjust the print settings; press **Print**.

## 2.4. License plates recognition

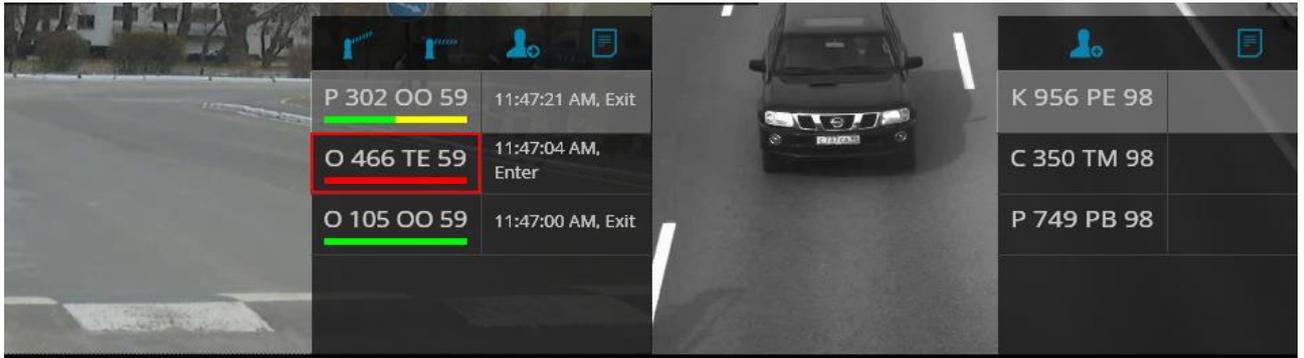
The **license plates recognition module** has the following features:

- Recognition of license plates of moving cars and archiving of information about the time and date of recognition, the license plate, as well as the reference to the corresponding video frame.
- Real-time interception of recognized license plates listed in a database.
- Support of the embedded database of license plates: adding and editing license plates, additional information (color, owner, etc.) on vehicles.
- License plate groups, including groups for interception and automatic barrier opening; one license plate can be assigned to one or more groups.
- Search of recognized license plates in the archive by time, date and details from a database.
- Export of the list of recognized license plates in Microsoft Excel or CSV formats.
- Barrier control.



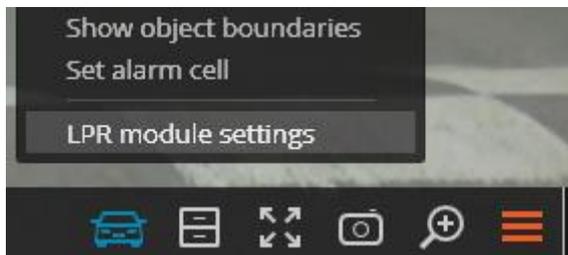
The module is designed to detect license plates on moving vehicles: if a vehicle is not moving a license plate is not recognized with high accuracy.

### 2.4.1. Live view

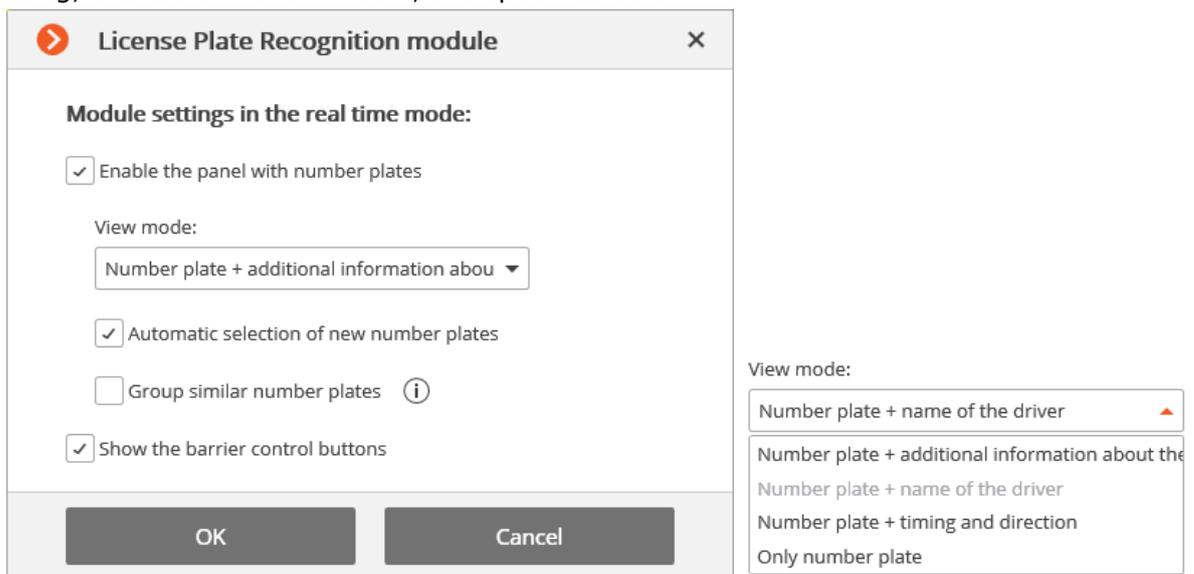


#### 2.4.1.1. Display settings

In live view mode, you can turn on the display of the recognized license plates as well as the interface control of the barrier. To do this, select the cell and click  icon, or select **LPR module settings** in the context menu —module settings window will be opened.



Setting, available in this window, are specified below:



**Enable the panel with number plates** - enables display of the panel (on the right side of the cell ) with a list of recognized license plates.

**View mode** allows to configure the displayed information.

If **Automatic selection of the new number plates** is checked, the last recognized license plate shall be highlighted in the recognized license plates list.

If **Group similar number plates** is checked, only one entry will be in the list for those license plates, which have been recognized several times in 5 minutes.

If **Show the barrier control buttons** is checked, **Open / Close barrier**  buttons will be displayed at the top of the panel: when clicking these buttons, commands are sent for closing and opening of the barrier. As most of the barriers are closed automatically, closing button may remain unused. This option is available when the barrier control mode is enabled on the channel.

### 2.4.1.2. Recognized license plates panel

There are the buttons at the top of the panel for the addition of the license plate into the database  and switching to the reports page . And there are also **Open / Close barrier**   buttons if this option is enabled.

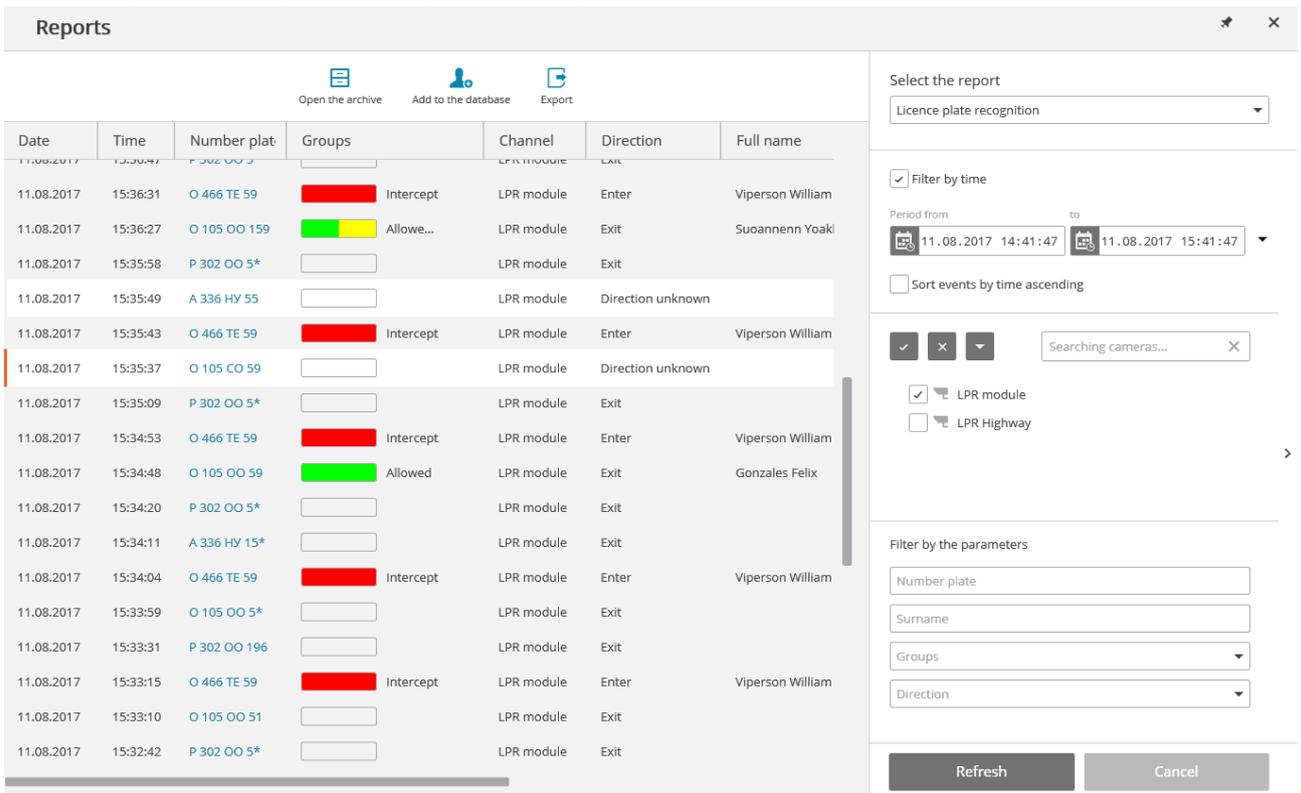
List of recognized license plates is displayed below in descending time order.

If a license plate is a member of one or more groups, a bar with the colors, assigned to these groups, is placed below it.

Double-clicking on the row in the list allows to open the archive window with the moment of recognition of this license plate.

### 2.4.2. License plate recognition report

**License plate recognition report** displays the recognized license plates.



Date	Time	Number plat	Groups	Channel	Direction	Full name
11.08.2017	15:36:47	P 302 OO 5*		LPR module	Exit	
11.08.2017	15:36:31	O 466 TE 59	Intercept	LPR module	Enter	Viperson William
11.08.2017	15:36:27	O 105 OO 159	Allowe...	LPR module	Exit	Suoannenn Yoaki
11.08.2017	15:35:58	P 302 OO 5*		LPR module	Exit	
11.08.2017	15:35:49	A 336 HY 55		LPR module	Direction unknown	
11.08.2017	15:35:43	O 466 TE 59	Intercept	LPR module	Enter	Viperson William
11.08.2017	15:35:37	O 105 CO 59		LPR module	Direction unknown	
11.08.2017	15:35:09	P 302 OO 5*		LPR module	Exit	
11.08.2017	15:34:53	O 466 TE 59	Intercept	LPR module	Enter	Viperson William
11.08.2017	15:34:48	O 105 OO 59	Allowed	LPR module	Exit	Gonzales Felix
11.08.2017	15:34:20	P 302 OO 5*		LPR module	Exit	
11.08.2017	15:34:11	A 336 HY 15*		LPR module	Exit	
11.08.2017	15:34:04	O 466 TE 59	Intercept	LPR module	Enter	Viperson William
11.08.2017	15:33:59	O 105 OO 5*		LPR module	Exit	
11.08.2017	15:33:31	P 302 OO 196		LPR module	Exit	
11.08.2017	15:33:15	O 466 TE 59	Intercept	LPR module	Enter	Viperson William
11.08.2017	15:33:10	O 105 OO 51		LPR module	Exit	
11.08.2017	15:32:42	P 302 OO 5*		LPR module	Exit	

This report is a table, in which each row contains the recognized license plate, date and time of recognition, camera name, as well as other info from the database, bound with license plate (if this license plate exists in the database).

Using the mouse, you can change the order and width of the columns.

The following buttons are located at the top of the report:

**Open the archive** button opens this license plate recognition moment on archive view page (may also switch to the archive view page by double clicking on the row).

By clicking **Edit in the database / Add to database** button, window for addition/editing of the person's data in database is opened. This allows to change the information about the person, as well as add new license plate samples.

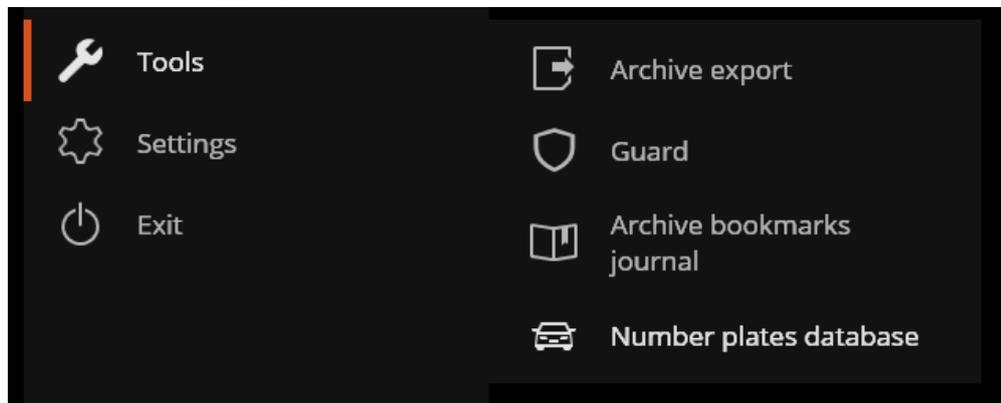
By clicking on the **Export** button, window, providing export of recognized license plates to a CSV file is opened.

By default, recognized license plates are displayed in descending time order. The list and order of the displayed recognized license plates in the report may be changed, using filter panel, located on the right. This list may be filtered by time, cameras, groups and other parameters. When filtering by time, you may also change the chronological order of the items.

### 2.4.3. License plates database

License plates database contains the following information: license number; group in which this entry is included; model and color of the vehicle; owner's name; additional information.

To open the license plates database, expand the [Control panel](#), select **Tools** in the **Main menu**, and then — the appropriate item in the submenu.



Number plates database						
Number plat	Groups	Model	Colour	Full name	Additional information	
P3020059				Smith John		
O466TE59				Viperson William		
O1050059				Gonzales Felix		
O10500159				Suoannenn Yoakhim		
B336VO91				Zweistein Albert		
P30200138				Bounjolley Melissa		
P30200177				Cronberg Sabrina		
P30200197	<input type="text"/>			Michael Lebraen		

The following buttons are located at the top of the page:

**Search** button opens the license plate search form.

**Delete the number plate** button deletes the selected entry from the database.

**Add / Edit the number plate** button opens the form for addition/editing of the entry.

To specify the groups, to which the license plate belongs, open the **Groups** drop-down list and check the corresponding groups.

**Database export** button is used to save a CSV-file, containing the following data structure:

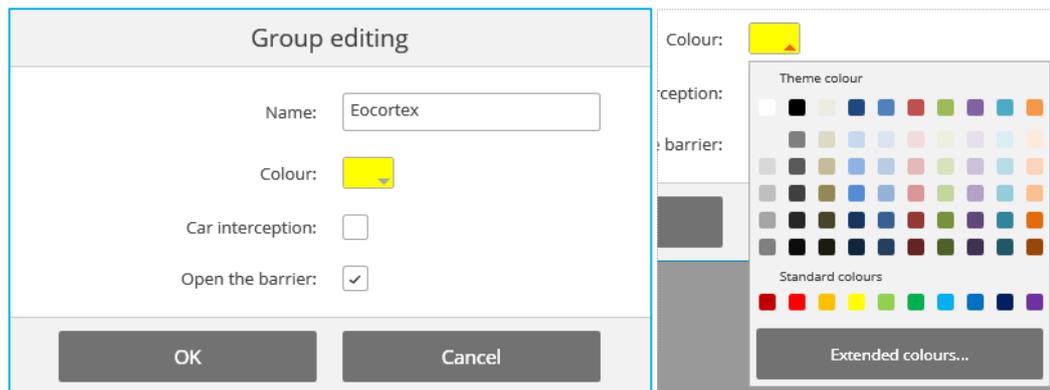
```
A1234BC;;Surname1;Name1;Patrname1;;;AddInfo1;Model1;Color1;Group1,Group2;
5678DEF;;Surname2;Name2;Patrname2;;;AddInfo2;Model2;Color2;Group3,Group4;
```

**Database import** button is used to load the data from a CSV-file, having above-mentioned structure.

**Groups** button opens the form for groups editing.

Name	Colour	Open the barrier	Interception of number plates
Allowed	<span style="color: green;">■</span>		
Intercept	<span style="color: red;">■</span>		✓
Eocortex	<span style="color: yellow;">■</span>	✓	

Buttons for the addition, editing and deleting of the groups are located at the top of this form. Each group should have a unique name.



You may also assign a color to the group: in this case, license plate of this group shall be marked with this color in the report and list of recognized license plates.

**Car interception** and **Open the barrier** options may be used to configure the automatic actions.

## 2.5. Crowd monitoring

The **Crowd monitoring** module allows to detect the crowds in the frame.

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 When configuring the module you have to specify the frame area to be monitored, as well as two quantitative criteria (levels) — attention is required and allowable maximum levels. If the number of people in specified frame areas exceeds one of these levels, an appropriate alarm event will be generated.

---

 This module will only work on the cameras on which it has been enabled by the video surveillance system administrator.

Besides generating system events the module allows you to construct a graph showing the number of people on a timeline.

---

 The number of people is estimated analytically, on the basis of special-purpose algorithms, so the estimate will be different from the actual one — degree of error may amount up to 30%. One of the factors that affect the estimate is the speed of movement of people in the frame: if people move fast enough — the estimated amount will be higher than the actual; if people in the frame move very slowly or stand still — the estimated amount will be lower than the actual.

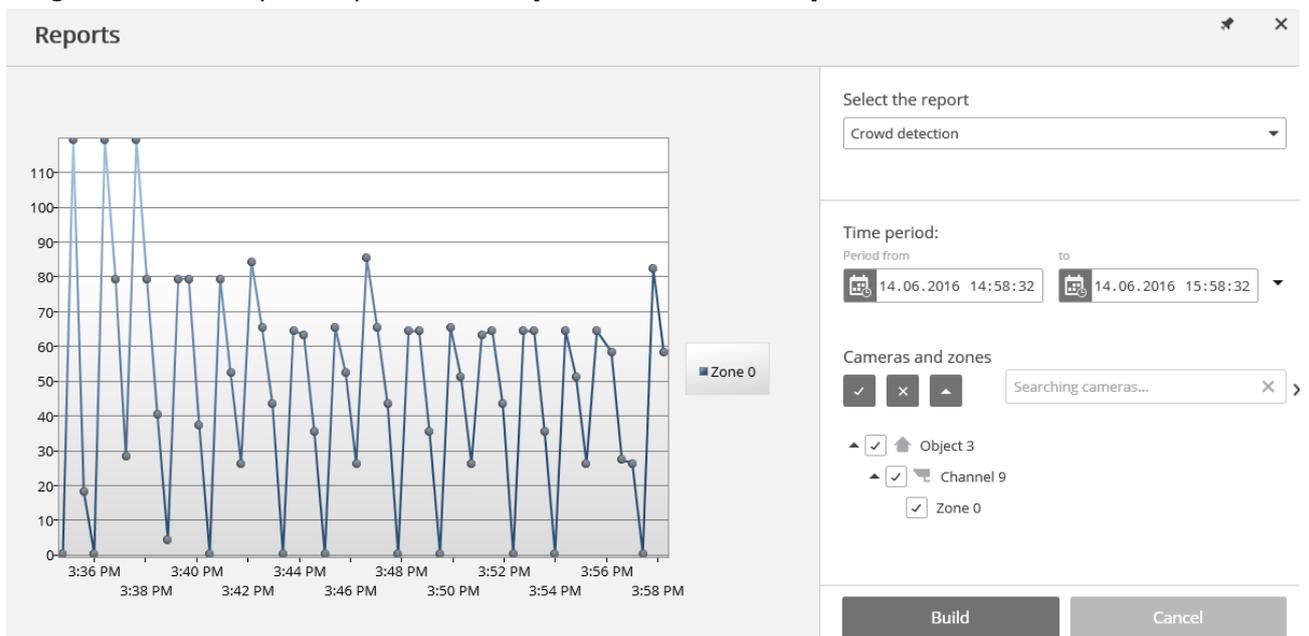
---

During real-time viewing the camera cell in which the crowd counting is performed will display the area in which the name and the estimated number of people in it will be indicated. In case of exceeding the maximum number of people in the area, the frame and the name will become red, and an exclamation mark will appear before the name. The system administrator may set the additional actions in response to the acceptable level exceeding: for example, the alarm generation.

To enable the display of areas select **Show crowd detecting areas** in the cell context menu. All the module events are recorded in the [Events log](#).



To generate the reports open **Control panel** and select **Reports** in the **Main menu**.



In the **Select report** field, set the **People counting** option.

Set the **Time interval** for which the report will be generated. The field with the list allows to set the interval prior to the current time, for which the report must be generated, by selecting one of the values: **Minute, Hour, Day, Week, Month**.

Select the **Cameras and areas** by which the report will be generated.

To generate the report click **Generate** (to abort the report generating process click **Cancel**).

## 2.6. Heat map

The **heat map module** is designed to visualize the traffic density in various areas of the frame. A heat map is formed by summing up the time during which a movement was observed in a certain point — as a result the areas where objects stay more often and for the longest time are highlighted.

A color scale is used to visualize the traffic density: areas are overlaid with transparent color stains according to the traffic density in a video image. For example, if you use a four-color scale, red color denotes high density areas, blue — low density; green and yellow colors are transient.

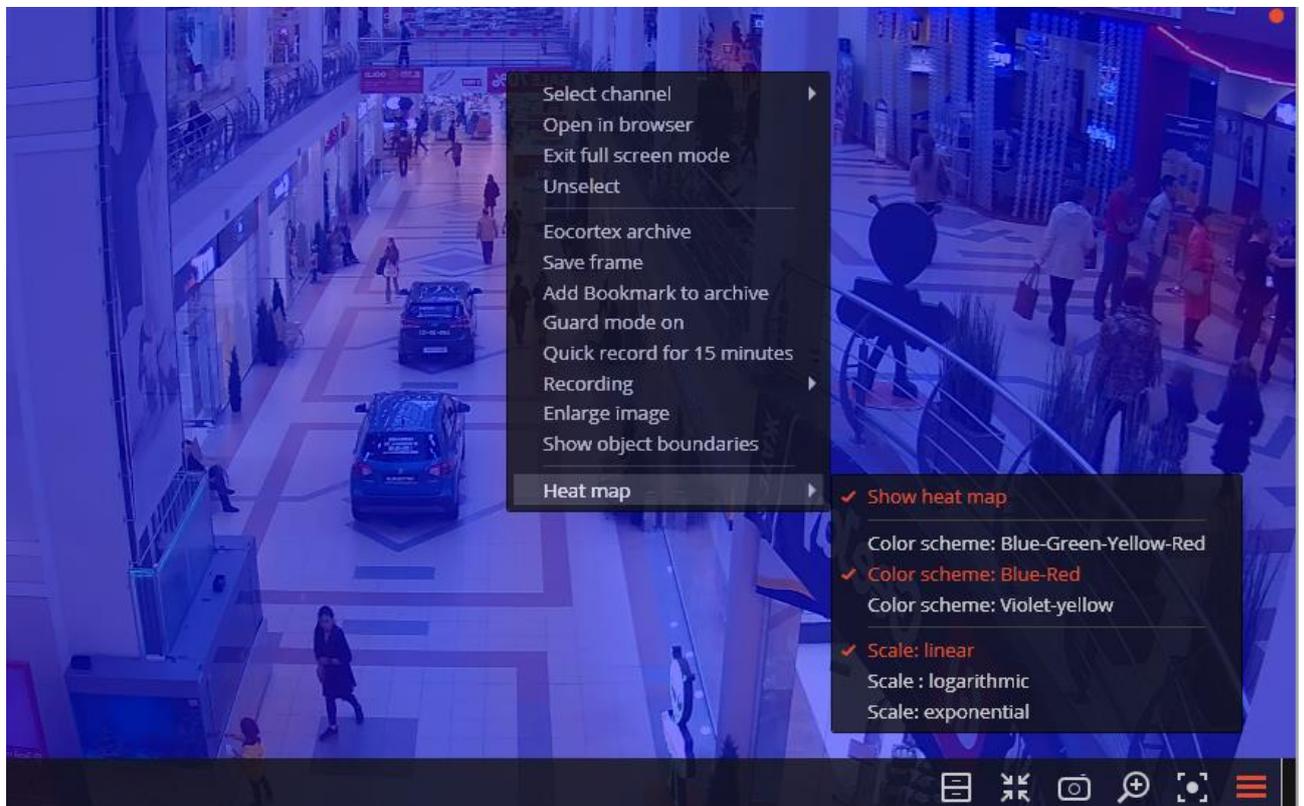
The **heat map module** can be used to determine the popularity of different places (racks, cabinets) in a store, preferred routes for people or vehicles, as well as to analyze visit statistics of various objects.

There are three options for using heat maps: real-time mode, scheduled report and camera field of view overlaid on an object plan. In the real-time mode only areas with movement for the last 10 seconds are displayed in the frame. The scheduled report sets the interval of time used to analyze traffic density in the frame. Camera field of view overlaid allows creating a heat map not only in the frame but also on an object plan.



This module will only work on the cameras on which it has been enabled by the video surveillance system administrator.

In order to enable **Heat map** in the cell, select **Heat map** item in the context menu, then in the open submenu select **Show heat map**. Also, in this menu you can choose a scale and a color scheme of the Heat Map.



To create reports, open the Control Panel and select **Reports** in the **Main Menu**.

In **Select report** field, select the **Heat map** option.

Set the **Time interval** for which the report will be generated. Also, in the field with the list you can indicate an interval before the current time for which a report shall be generated. To do that, you will need to select one of the following: **Minute, Hour, Day, Week, Month**.

Choose **Transparency, Scale, and Value Calculation Mode**.

Select **Cameras and zones** for which the report will be created.

Additionally, the following parameters are available to report generation:

**Hours** – the hours during which the motion in the frame will be taken into consideration.

**Week days** – the days of the week during which the motion in the frame will be taken into consideration.

The weekdays can be selected by ticking boxes in the pop-up menu.

**Color scheme** – type of color scheme for filling the heat map.

**Transparency** of the heat map superimposed over the camera image.

**Scale** – toggles the color scale to non-linear **Header** which displays the following in the upper left corner of the heat map: camera name, interval, weekdays and hours used for creating a heat map.

**Value calculation mode** determines how the maximum density value will be determined in each point on the heat map.

**Header** is the text displayed in the lower right corner of the heat map.

**Legend** displays a legend in the lower right corner of the heat map which matches the scale colors with the levels of movement density.

To generate a report, click **Build**. To abort, click **Cancel**.

After generating the report, the **Show heat map for given time** scale will appear. It allows to review the reports for the shorter periods of time within the generated report.

To save the report to a disc, press **Export to JPEG**.

In the opened window choose a location where to save the report and press **Save**.

**Save on the map** button allows to upload the file with heat map images superimposed on the corresponding cameras' fields of view on the plan to a disc.

## 2.7. Auto Zoom

The Auto Zoom function displays a separate enlarged area with moving objects.



This module will only work on the cameras on which it has been enabled by the video surveillance system administrator.



Auto zoom functions only when the frame resolution from the camera exceeds the cell size. If the resolution from the camera is less than or equal to the cell size, the separate area will not be zoomed.

To enable **Auto zoom** during real-time viewing select **Enable auto zoom** in the cell context menu.

Thereafter, in real time mode when fixing the motion in the frame the zoomed area with the objects detected by motion detection software will be displayed.

The image will be scaled in such a way that all currently moving frames were included in the frame.

The following method may be helpful:

One and the same channel that uses **Auto zoom** is located in Eocortex Client in neighboring grid cells. The **Enable Auto zoom** is activated only for a single cell. Thus, it is possible to simultaneously display both the entire frame and the zoomed area with moving objects.

The figure below shows such example: In the left frame Enable Auto zoom is enabled, in the right it is disabled.



## 2.8. Face recognition

**Eocortex** allows to use several modules that perform face recognition using a database: **Face Recognition (Complete)**, **Face Recognition (Light)** and **Face Recognition (Basic)**.

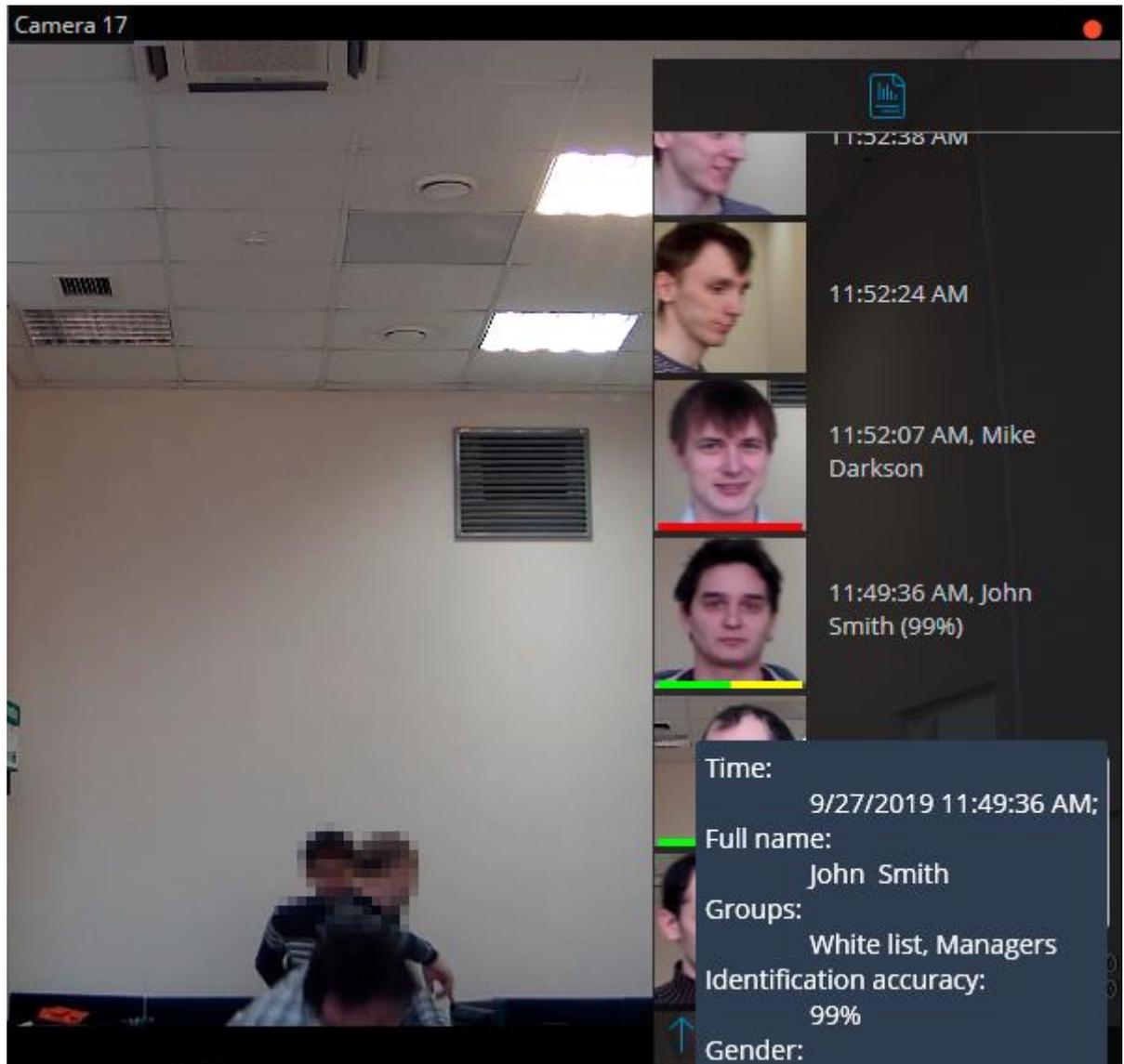
However, it is not possible to use several face recognition modules on one camera at the same time.

The modules ensure high recognition accuracy and can be used together with access control systems at the facilities with high security requirements, for example, at banks or restricted access facilities. Another important use of the modules can be automatic identification of the hotel guests, restaurant customers, and the visitors of other similar enterprises.



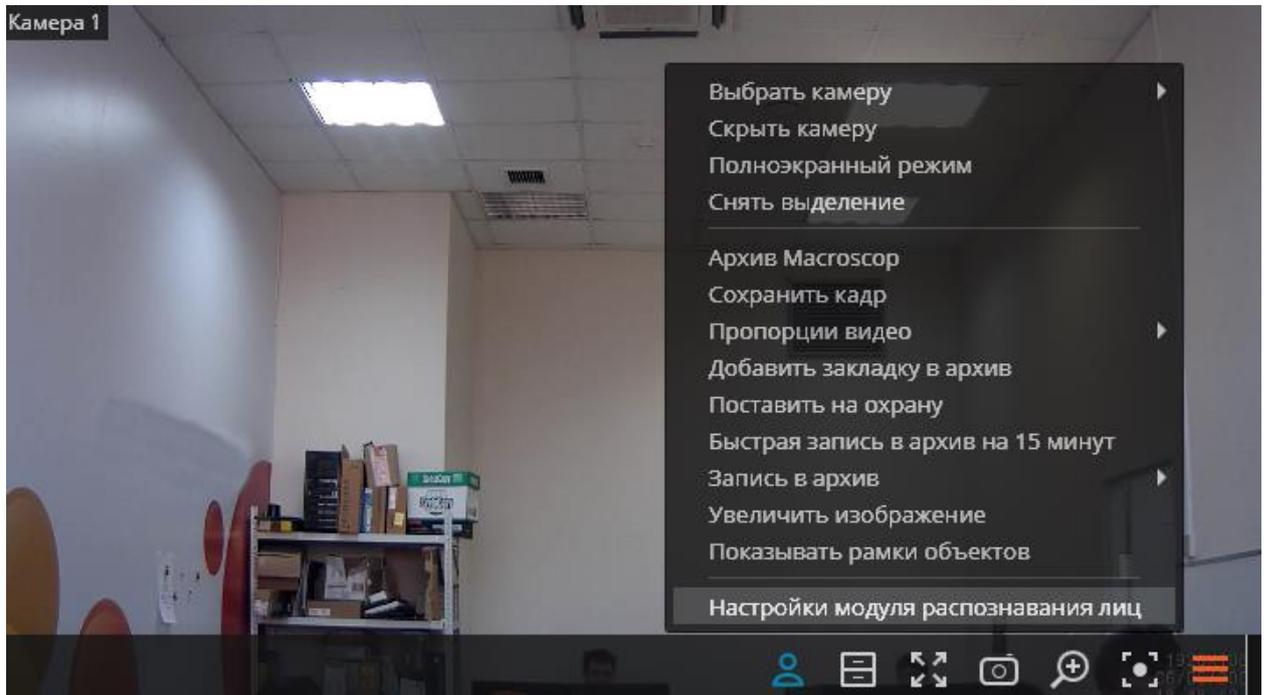
This module will only work on the cameras on which it has been enabled by the video surveillance system administrator.

### 2.8.1. Live view

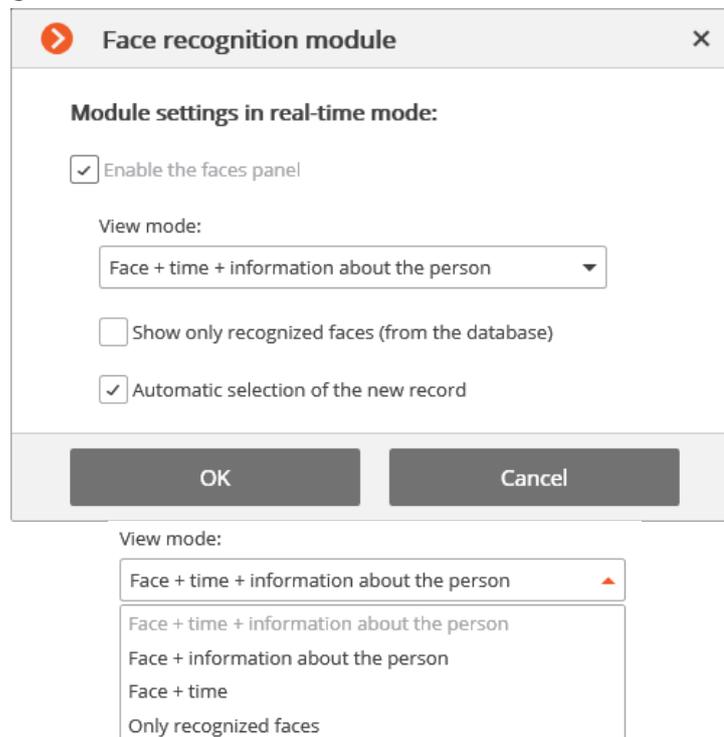


### 2.8.1.1. Display settings

In the live view displaying of the recognized faces may be activated. To enable this option, select the cell and click  icon, or select **Face recognition module settings** in the context menu — the module settings window will be opened.



The following settings are available in this window:



**Enable the faces panel** enables displaying (on the right side of the cell) of the panel with a list of recognized faces.

**View mode** allows to configure the displayed information.

If **Show only recognized faces (from the database)** is checked, only those faces which exist in the database will be displayed in the recognized faces list.

If **Automatic selection of the new record** is checked, the last recognized face will be highlighted in the recognized faces list.

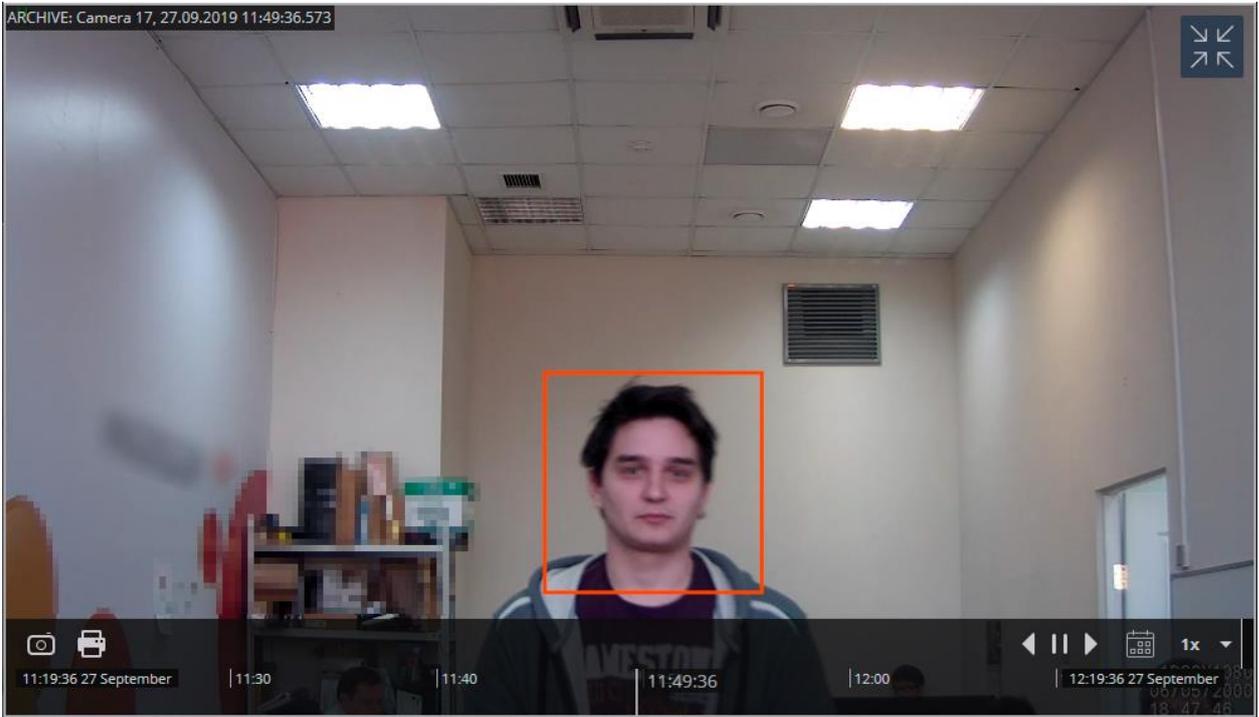
### 2.8.1.2. Recognized faces panel

There are the buttons at the top of the panel for addition of a face into the database  and switching to reports page .

Below there is the list of recognized faces in descending time order.

If the face belongs to one or more groups, a bar with the colors, assigned to these groups, shall be placed below it.

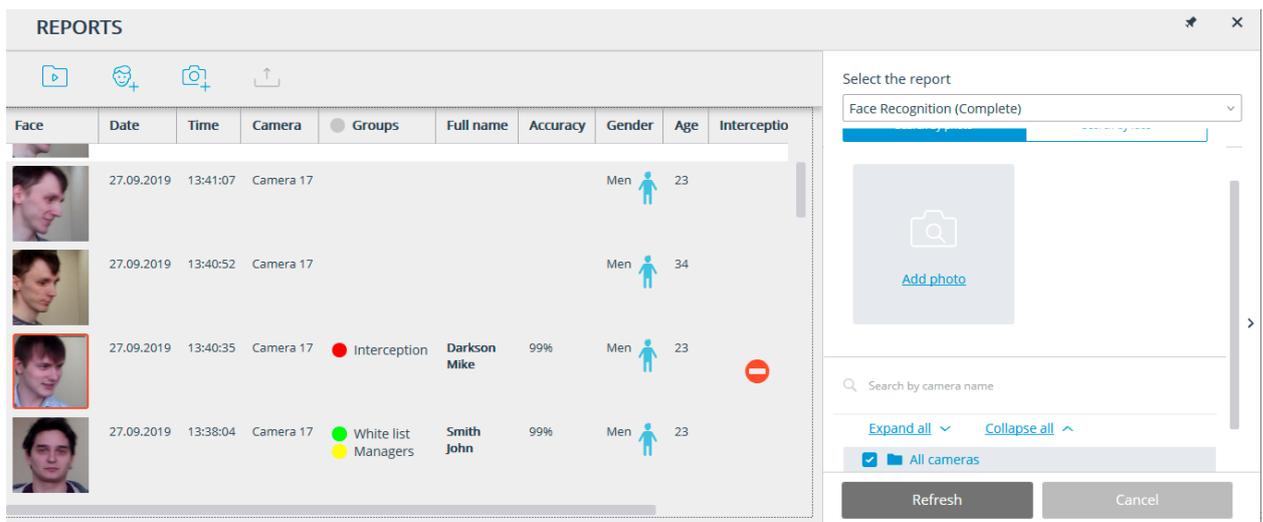
Double-clicking on the row in the list opens the archive window with the moment of recognition of this face.



### 2.8.2. Face recognition report

**Face recognition** report displays the recognized faces.

The reports of all the modules are similar, with some differences in the interfaces and features.



The screenshot shows a window titled 'REPORTS' with a table of face recognition results and a filter panel on the right. The table has columns for Face, Date, Time, Camera, Groups, and Full name. The filter panel includes a dropdown for 'Select the report' (set to 'Face Recognition (Light)'), a 'Filter by time' button, a 'Search for people from database' button, a 'Groups' dropdown, and input fields for 'Last name', 'First name', and 'Patronymic'. There is also a search box for 'Search by camera name', 'Expand all' and 'Collapse all' buttons, and a checked checkbox for 'All cameras'. 'Refresh' and 'Cancel' buttons are at the bottom of the filter panel.

Face	Date	Time	Camera	Groups	Full name
	27.09.2019	14:28:37	Camera 17	White list	Smith John
	27.09.2019	14:26:06	Camera 17	White list	Miller Erikh
	27.09.2019	14:23:33	Camera 17		Walter Anrew
	27.09.2019	14:23:32	Camera 17	Interception	Walter Anrew
	27.09.2019	14:23:17	Camera 17		Walter Anrew

This report is a table, in which each row contains the recognized face, date and time of recognition, camera name, as well as the person's data in the database (if this face exists in the database): his name, groups, additional info.

Using the mouse, you can change the order and width of the columns.

At the top of the report there are the following buttons:



**Open the archive** button opens this face recognition moment on archive view page (may also provide switching to the archive view page by double clicking on the row).



**Edit in the database**,  **Add to the database** and  **Change in the database** buttons open the window of editing a person in the face database, allowing to modify personal information, add a new person to the database and add new image samples, correspondingly.

By clicking on  **Export** button, window, providing export of the recognized faces to a CSV file shall be opened.

By default, the recognized faces are displayed in a descending time order. The list and order of the displayed recognized faces in the report may be changed using the filter panel, located on the right. This list may be filtered by time, cameras, groups and person's names. When filtering by time, also may change the chronological order of items.

### 2.8.3. Face database

The **Face database** contains the following information: full name of person; group to which the person belongs; samples of the person's face, and other data.

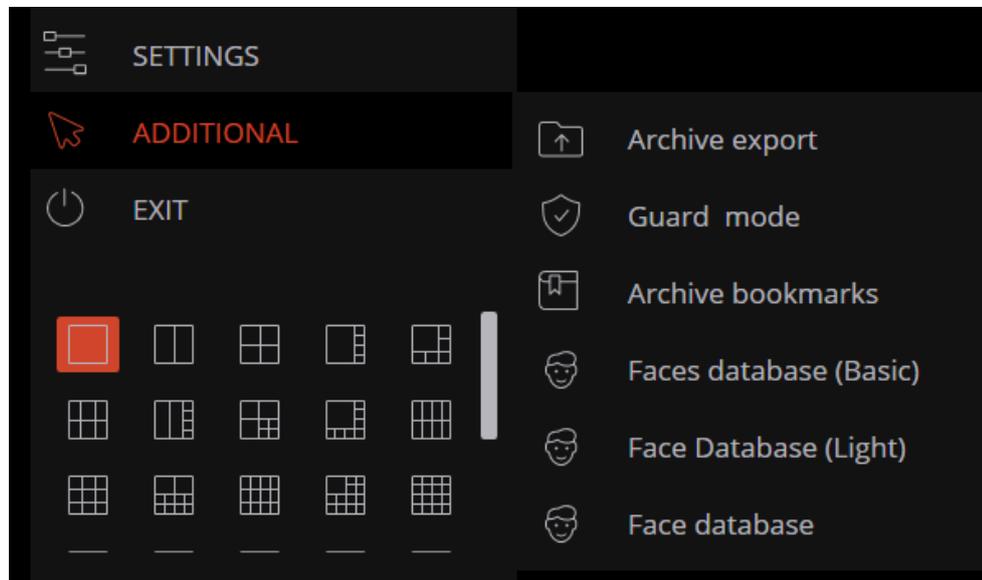
It is possible to add to the database the faces found by the face recognition module as well as to upload image files with faces.

The ways of adding faces found by the face recognition module are described below.

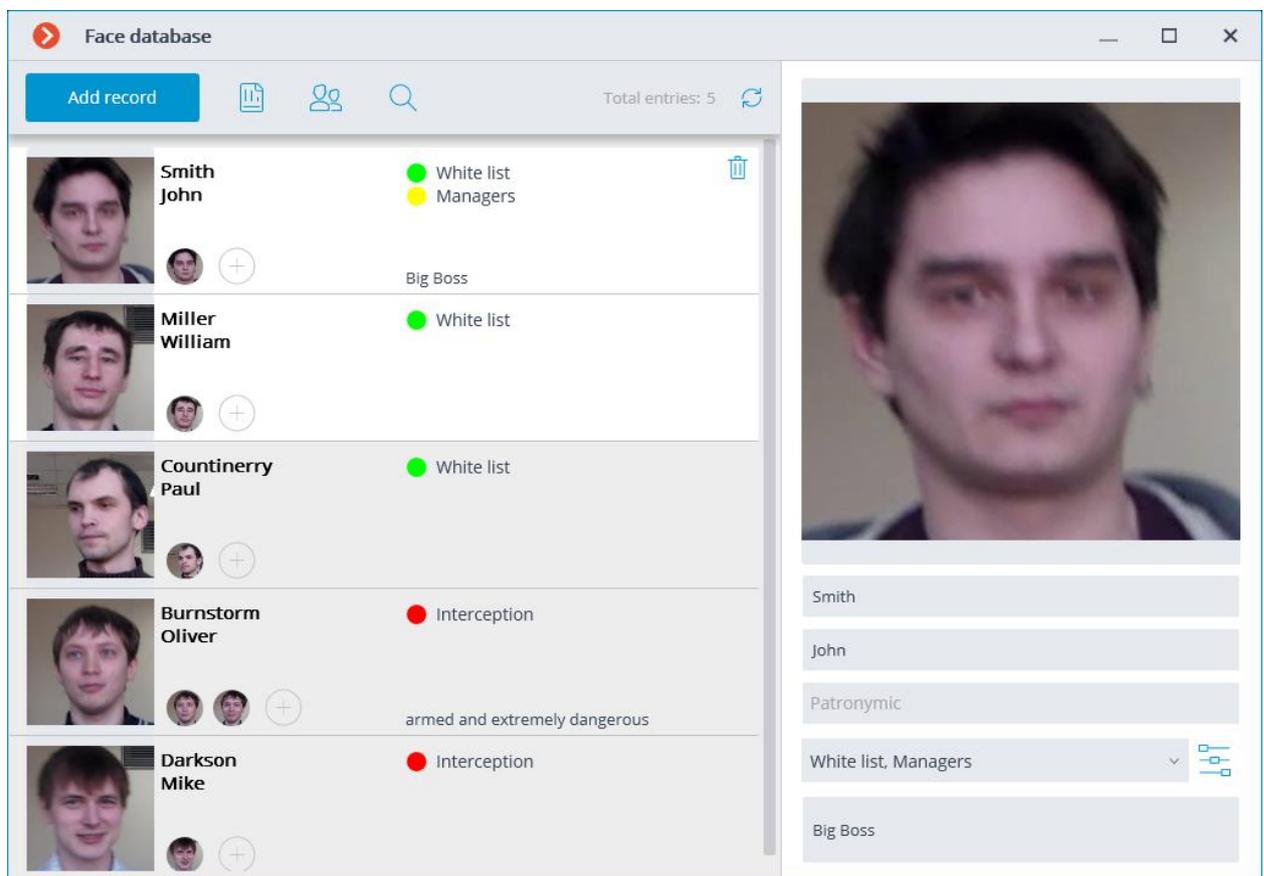
- In the **Face Recognition** report, select a face and press the **Create entry in face database** button. The face database window will open in the mode of adding a new face.
- In the **Face Recognition** report, select a face and press the  **Change in the database** button. The face database will open, allowing to select the corresponding entry.

- In the camera cell, select a face in the panel of recognized faces, then press the  **Add to the database** button. The face database window will open in the mode of adding a new face.

The face database window can be opened from the window of the report regarding the recognized faces, from the camera cell when adding a recognized face, and from the main menu of the application.



The face databases of all the modules are similar, with some minor differences in the interfaces and features.



There are the following buttons at the top of the page:

- **Add record** button opens the **File Explorer** for adding a new face image to the database.
-  **Reports** button opens the **Face Recognition** report.
-  **Groups** button opens the form for editing groups.
-  **Search** button opens the person search form.
-  **Refresh list** button allows loading the entries from the face database on the server again. This feature is useful, in particular, in the situation when several users are working with the face database simultaneously; it permits to see recent modifications made by other users.

Each face database entry contains the following information: sample face images; surname, given name, patronymic of a person whose face images are in the entry; additional textual information about this person; groups the entry belongs to.

Each entry may contain up to 5 photos. When this limit is reached, the photo adding button will be unavailable.

No more than 3 groups are displayed in the list for each entry. If the entry is included into more than 3 groups, the full list of groups can be viewed by hovering the mouse pointer over the list of groups or by pressing the button with the ellipsis.

The entry deletion button is located in the upper right corner of a highlighted entry.

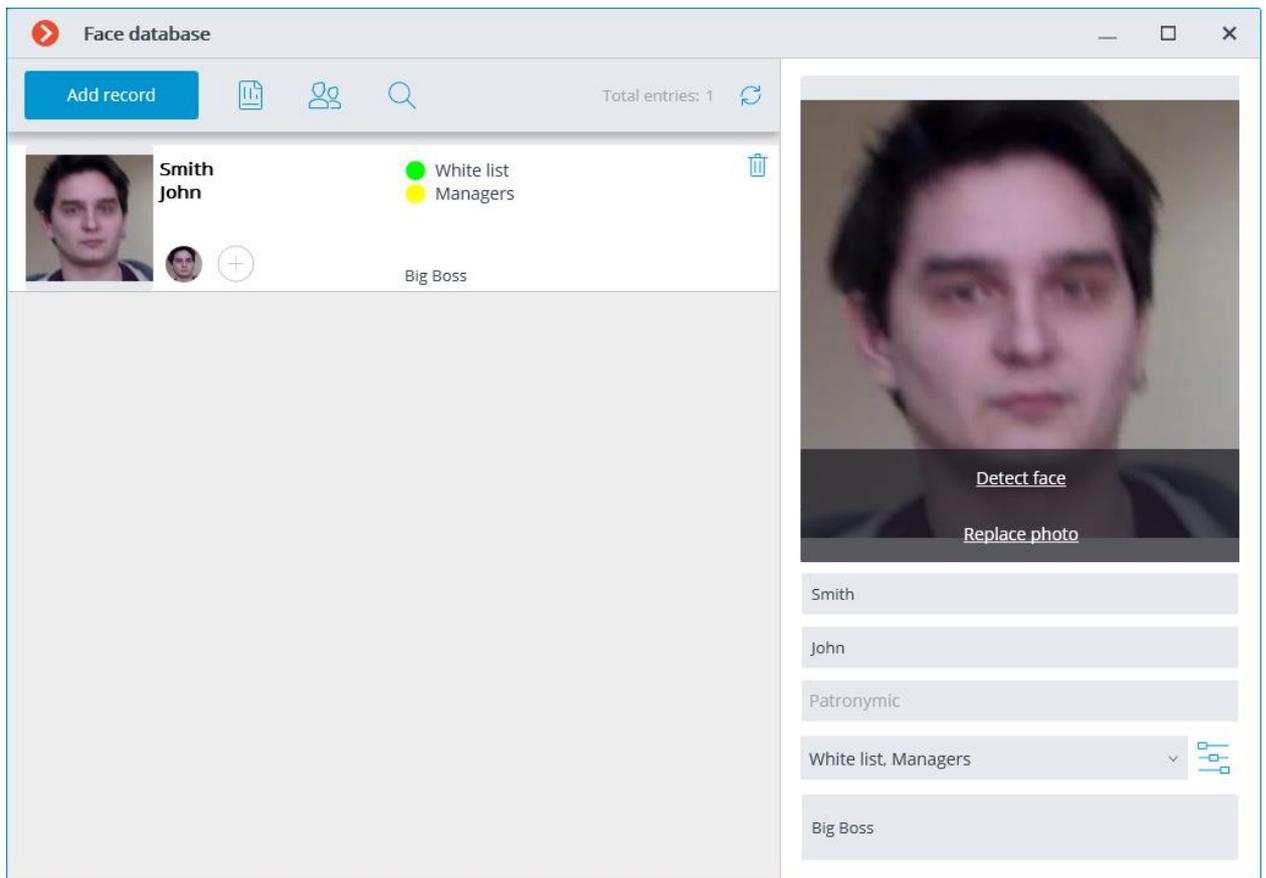
The panel for editing a highlighted entry can be found to the right of the list. The face sample is displayed in the upper part of the panel. The text fields with a surname, a given name, a patronymic and the additional information about a person are located below, together with the field with the list that allows selecting the groups. To the right of the list

there is the  button that opens the list of groups to be edited.

Saving the changes made in the database using the editing panel is performed when highlighting another entry in the list or when closing the face database window.

By default, the editing panel displays the first (the leftmost) face sample. To display another sample, it is required to click on the thumbnail of the sample in the database entry.

Hovering the mouse pointer over the face sample in the editing panel displays the **Detect face** and **Replace photo** links in the lower part of the image; the sample deletion button appears in the upper right corner.



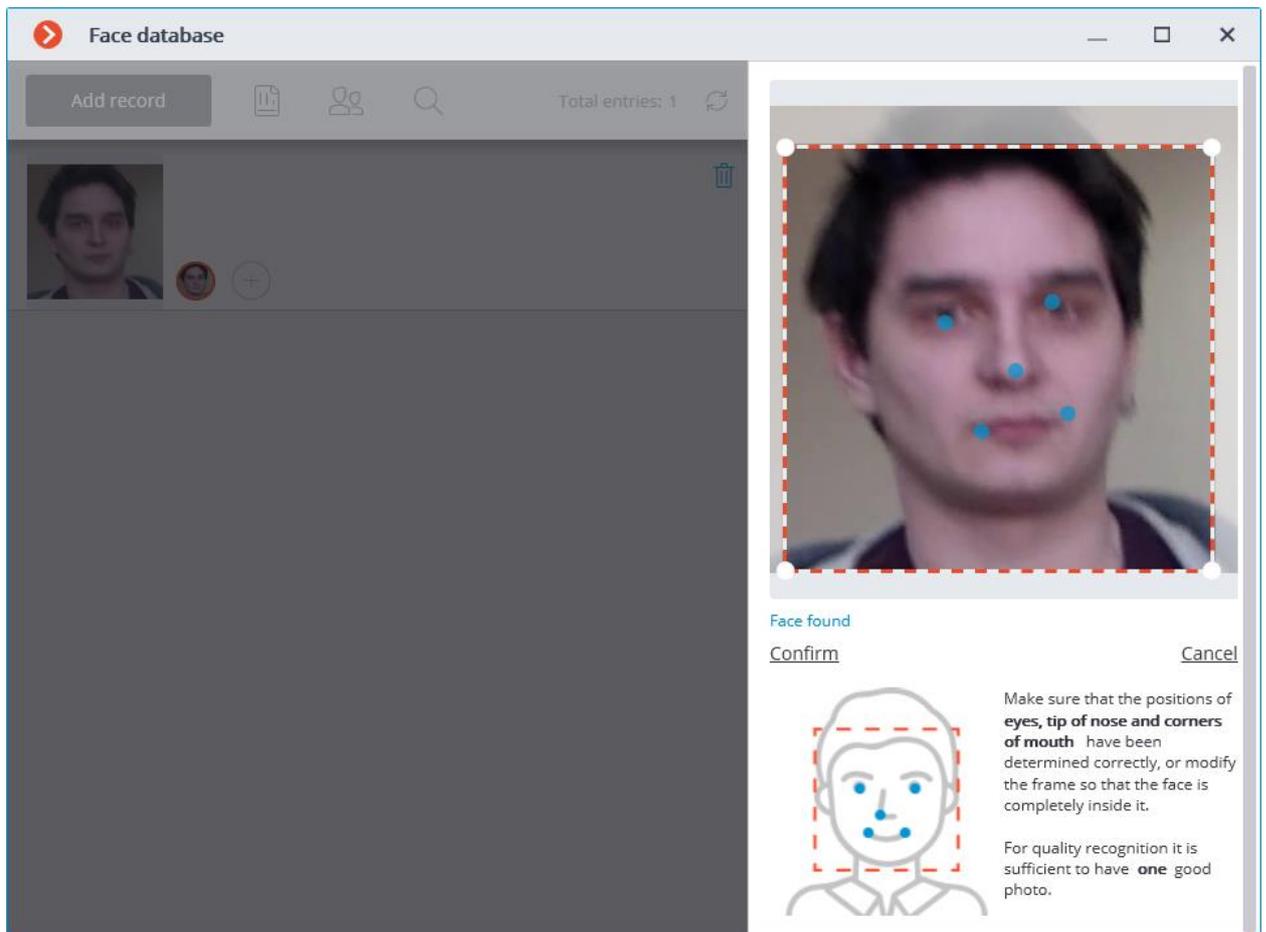
- **Detect face** launches the search for special points of a face.
- **Replace photo** opens the File Explorer for selecting an image file with the replacement face sample. The current sample will be deleted.

The face sample is deleted without confirmation, immediately after the delete button is pressed.

The sample deletion button is shown only for the entries that contain several samples.

The image of a face to be added from a file must not occupy more than one-third of the frame.

When adding a new face or when performing the **Determine Face** operation, the module attempts to find a face in the frame, highlight it with a frame and show the position of the eyes, tip of the nose and corners of the mouth.



If all the key points of the face are marked correctly, it is required to click on the **Confirm** link.

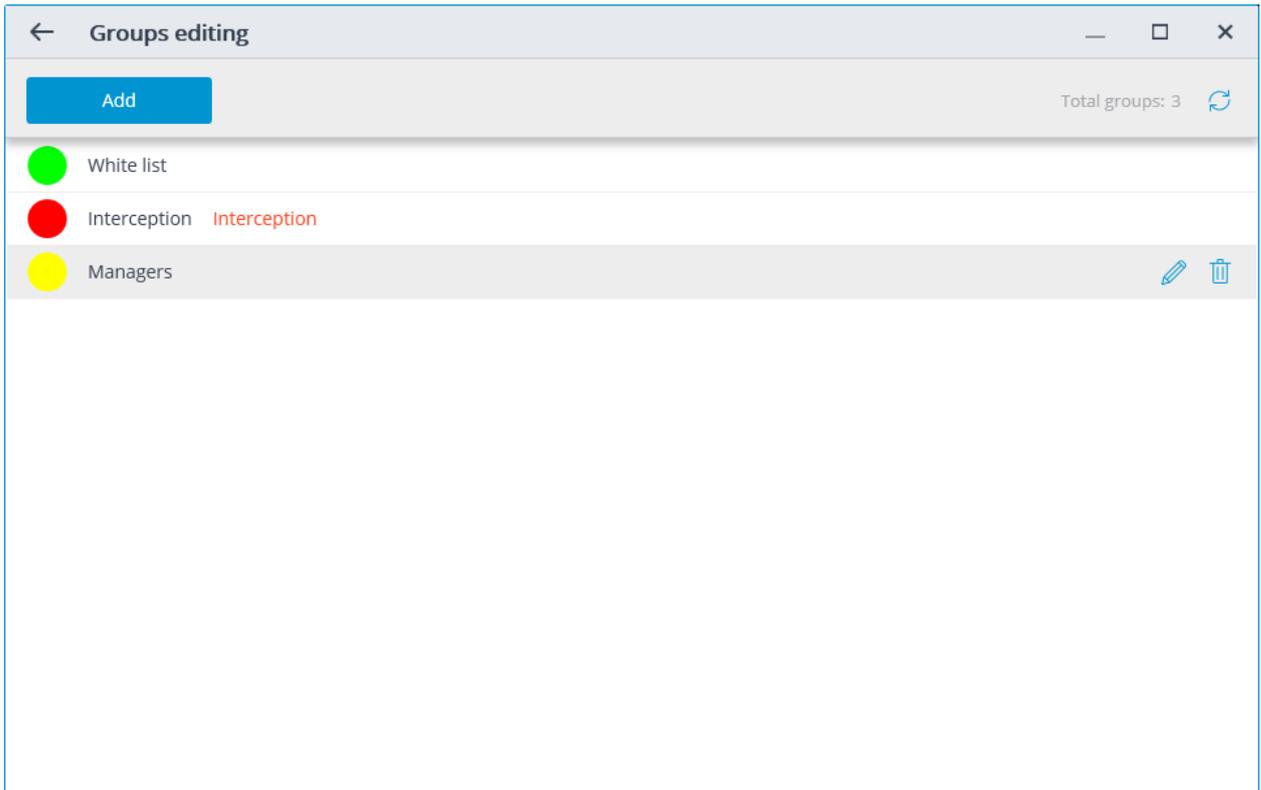
If the key points have not been found or are marked incorrectly, it is required to manually modify the position of the frame to ensure that it fully embraces the face and that the shoulders are also included. After that, the module will attempt to determine the key points again. If the modification of the frame does not help and the key points are not determined or are determined erroneously, it is required to cancel the loading of the image.

If there are several faces in the frame, the module will find one of them; if necessary, you can select a required face manually using a frame.

If the **Confirm** button is not pressed after finding the key points, the photo will be marked in the list by a red frame. It means that it is required to find the key points on the face and confirm them, or replace the image.

The unconfirmed samples are not entered into the database. The samples that are not compliant with the specified requirements are not entered either.

Editing the list of groups:



Each group must have a unique name.

You may also assign a color to the group: in this case, face of this group will be marked with this color in report and list of recognized faces.

You may also enable the **Face interception** option for the group, which may be used to configure the automatic actions.

## 2.9. Abandoned objects search

This intelligent module is designed to detect abandoned objects — if an object is left in the frame for over the specified period of time, the operator receives a corresponding alarm and the object itself is "highlighted" on the screen.

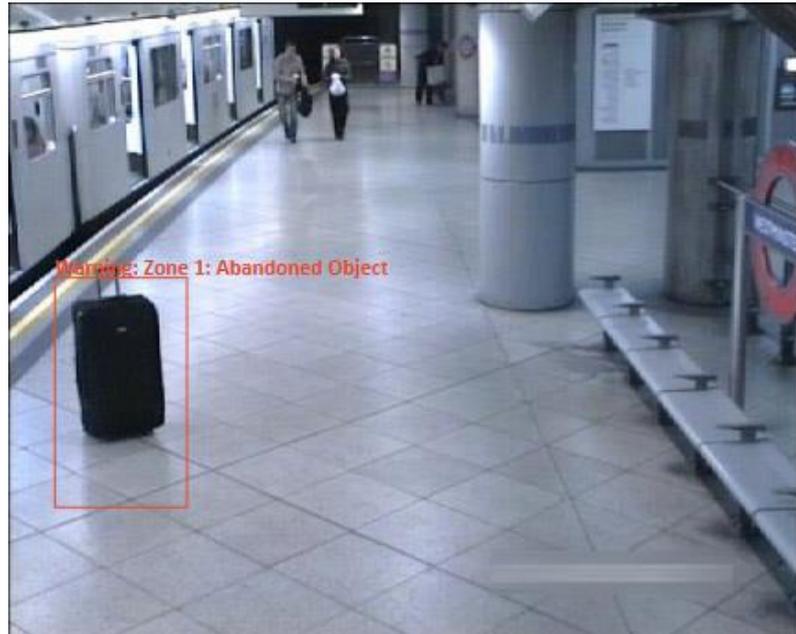


This module will only work on the cameras on which it has been enabled by the video surveillance system administrator.

To enable the display of abandoned objects select **Show abandoned objects** in the cell context menu, the abandoned objects will be color framed with **Alarm!** header upon the

expiration of time, set by the administrator.

**Area name: Abandoned item.**



The operator must click inside the frame to **react on the event**, and the frame will disappear.

All the module events are recorded in the [Events log](#).

## 2.10. People counting in queue module

The module is designed to count people in queues.



This module will only work on the cameras on which it has been enabled by the video surveillance system administrator.

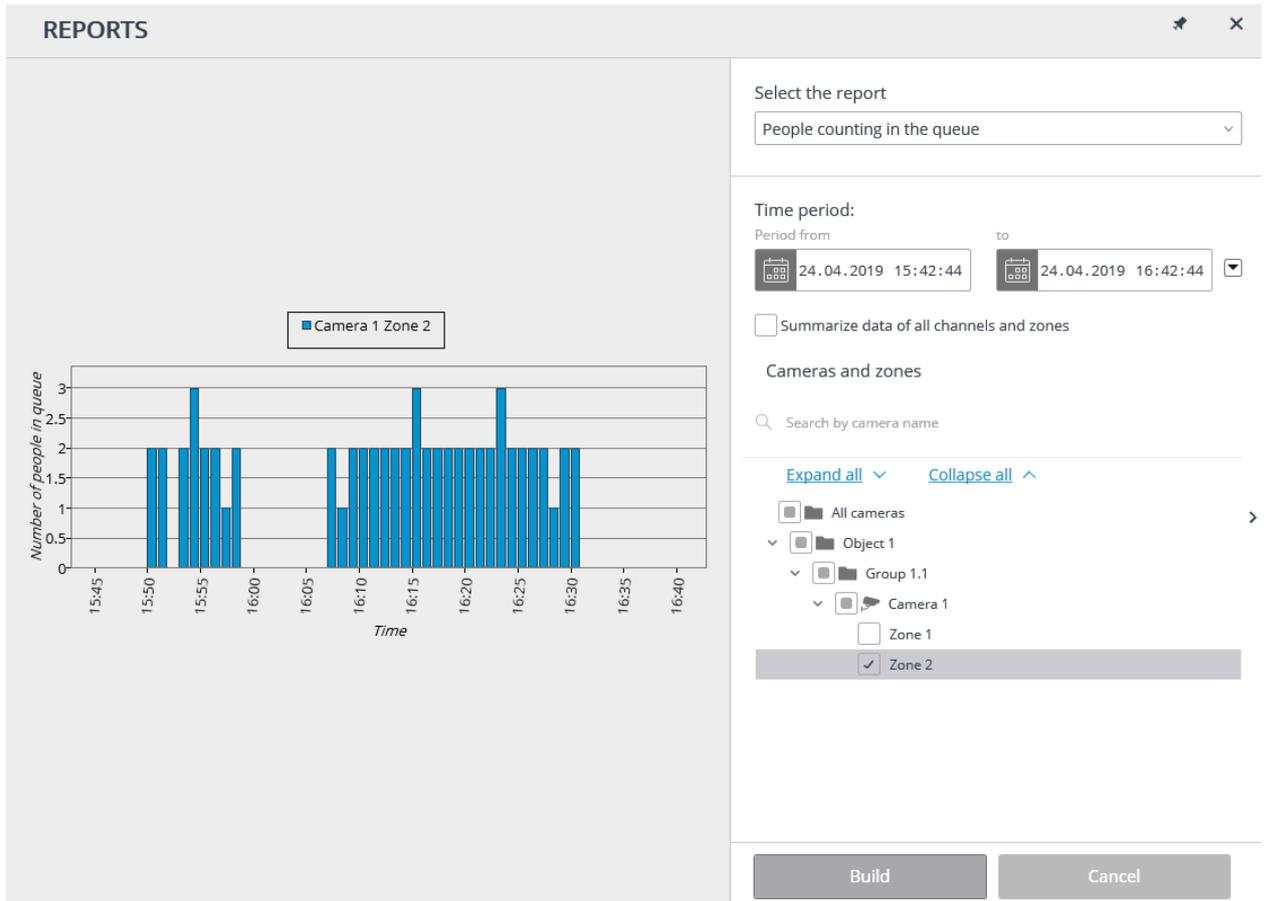
---

Select **Show queues** in the cell context menu to enable the queues displaying, after the camera real-time viewing the counting area limits and the number of people in the queue

for each area will be displayed in the frame. In case of exceedance of a threshold value, the legend will turn red.



All the module events are recorded in the [Events log](#). To generate the reports open **Control panel** and select **Reports** in the **Main menu**.



In the **Select report** field, set the **People counting in queue** option.

Set the **Time interval** for which the report will be generated. The field with the list allows to set the interval

prior to the current time, for which the report must be generated, by selecting one of the values: **Minute, Hour, Day, Week, Month**.

Select the **Cameras and areas** by which the report will be generated.

To generate the report click **Generate** (to abort the report generating process click **Cancel**).

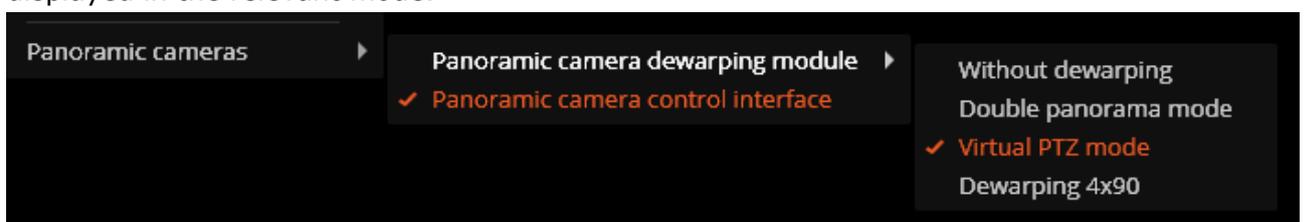
### 2.11. Fisheye cameras dewarping module

The Fisheye cameras dewarping module is designed to dewarp images from fisheye cameras both in real-time viewing mode, and in the archive playback.

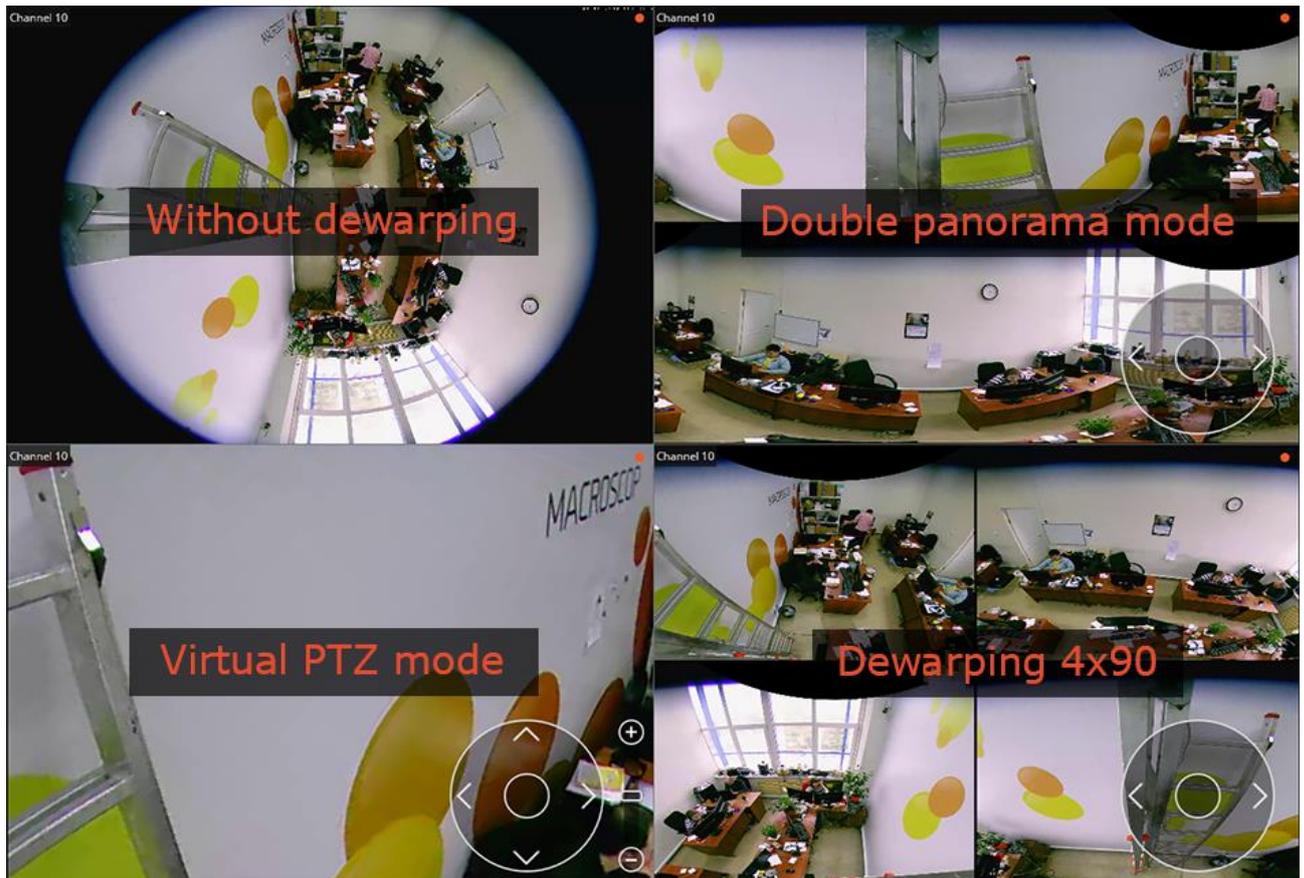


This module will only work on the cameras on which it has been enabled by the video surveillance system administrator.

To dewarp the image from the fisheye camera select **Fisheye cameras** in the cell context menu, and then select one of the modes in **Panoramic cameras: Without dewarping, Double panorama mode, Virtual PTZ mode** or **Dewarping 4x90**; the cell will be displayed in the relevant mode.



Below is the description for each of the modes.



**Without dewarping** — the cell image is read out without conversion: as it was received from camera.

**Double panorama mode** — the image in the cell is divided in two panorama, 180° each. The panorama rotates to the right and to the left using a virtual joystick that is displayed in the lower right part of the cell (use mouse to control the virtual joystick); or by using the PTZ control panel (joystick) that is connected to the computer.

**Virtual PTZ mode** — the image in the cell is dewrapped so that to simulate PTZ operation. It is controlled using a virtual joystick that is displayed in the lower right part of the cell (use mouse to control the virtual joystick); or by using the PTZ control panel (joystick) that is connected to the computer.

**Dewarping 4x90** — the image in the cell is divided in four sectors, 90° each. The image rotates to the right and to the left using a virtual joystick that is displayed in the lower right part of the cell (use mouse to control the virtual joystick); or by using the PTZ control panel (joystick) that is connected to the computer.

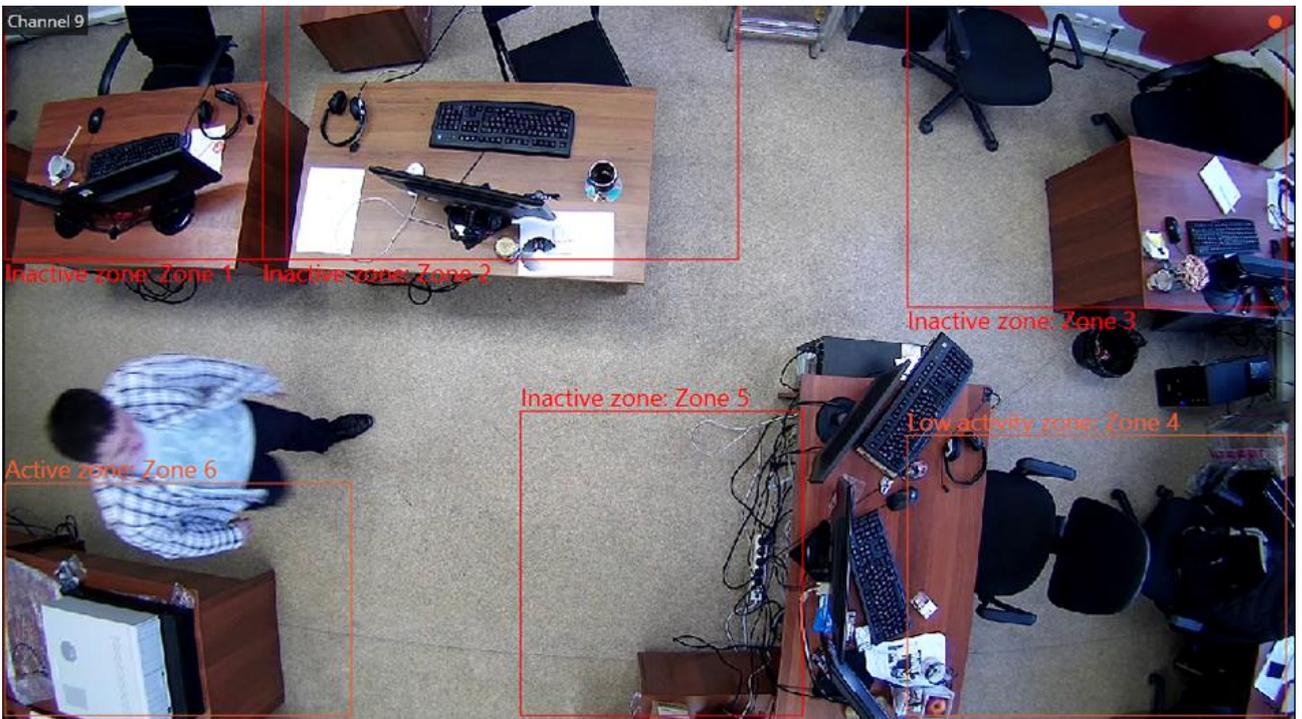
## 2.12. Personnel monitoring

**Personnel monitoring Module** allows monitoring staff activity time at workstations. By activity is meant fixing movement in the working zone, including minor movements.



This module will only work on the cameras on which it has been enabled by the video surveillance system administrator.

Select **Show activity areas** in the cell context menu to display the information on the personnel activity, after the camera real-time viewing the areas limits will be displayed in the frame, and the area number and status will be displayed in the header of each area. The status can take one of three values: **Active area**, **Low-activity area** and **Inactive area**. For inactive area the header and the limits will change from orange to red.



All the module events are recorded in the [Events log](#).

To generate the reports open **Control panel** and select **Reports** in the **Main menu**.

In the Select a report field, set the Personnel activity option.

Set the Time interval for which the report will be generated. The field with the list allows to set the interval

prior to the current time, for which the report must be generated, by selecting one of the values: Minute, Hour, Day, Week, Month.

Select the **Cameras and areas** by which the report will be generated.

To generate the report click **Generate** (to abort the report generating process click **Cancel**).

To save the report on disk click **Export**; in the appeared window select the folder to save the frame; if necessary - change the **File name** and select the **File type (CSV, Excel or JPEG)**; press **Save**.

### 2.13. Loud sound detection

Loud sound detection module allows responding to the excessive sound level registered by a camera microphone.



This module will only work on the cameras on which it has been enabled by the video surveillance system administrator.

Select Display sound detector in the cell context menu to enable the sound level detector, the indicator will be displayed in the lower left corner of the cell.



The indicator displays the current sound level, and the maximum level set by the system administrator.

All the module events are recorded in the [Events log](#).

### 2.14. Smoke and fire detection

The module is designed to detect smoke and open flames in the frame.



This module will only work on the cameras on which it has been enabled by the video surveillance system administrator.

To enable the information about the smoke and / or fire select **Show smoke** and / or **Show fire** in the cell context menu. In case of smoke or fire detection the relevant area of the frame will be color framed with **Possible Smoke** or **Possible Fire** header.

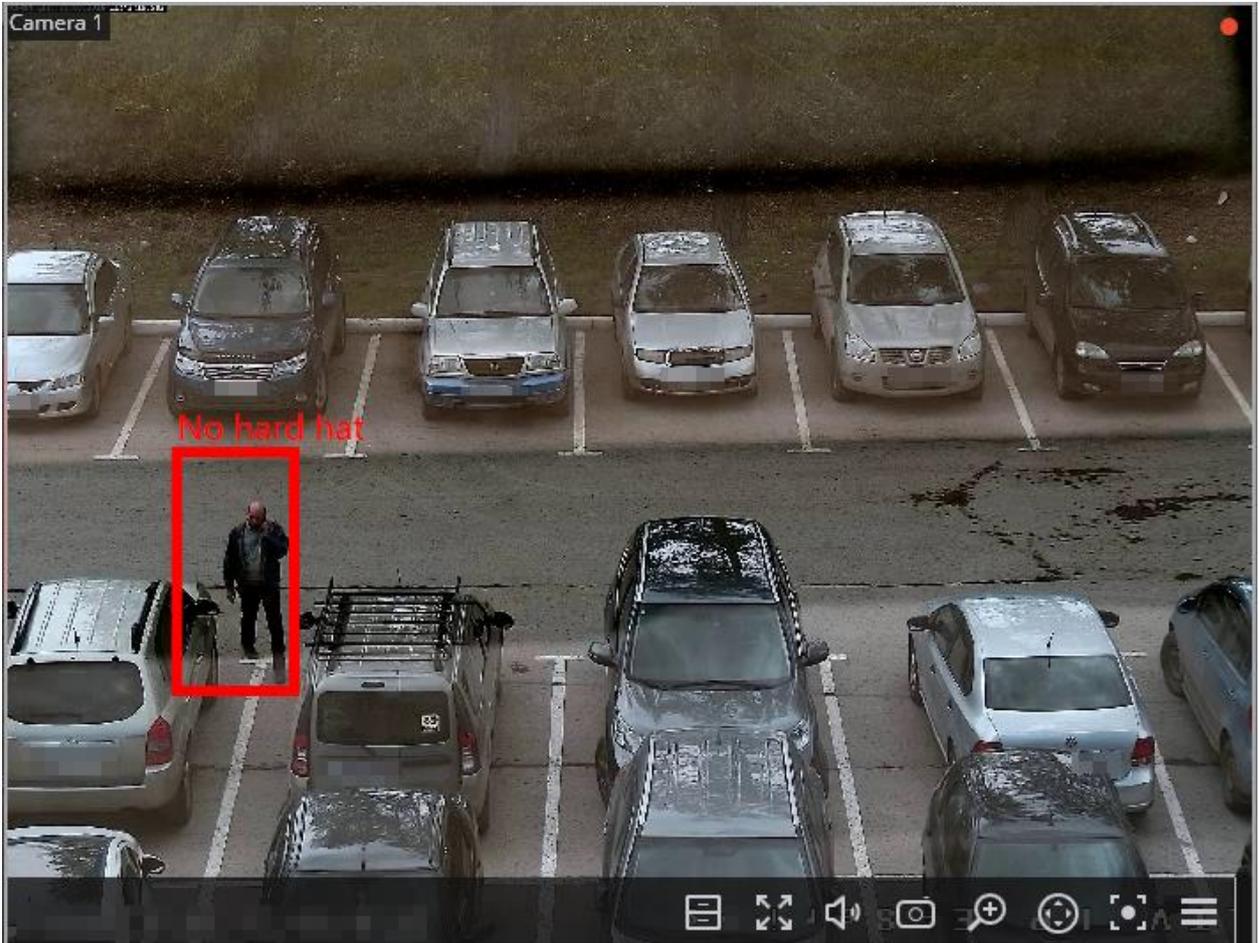


All the module events are recorded in the [Events log](#).

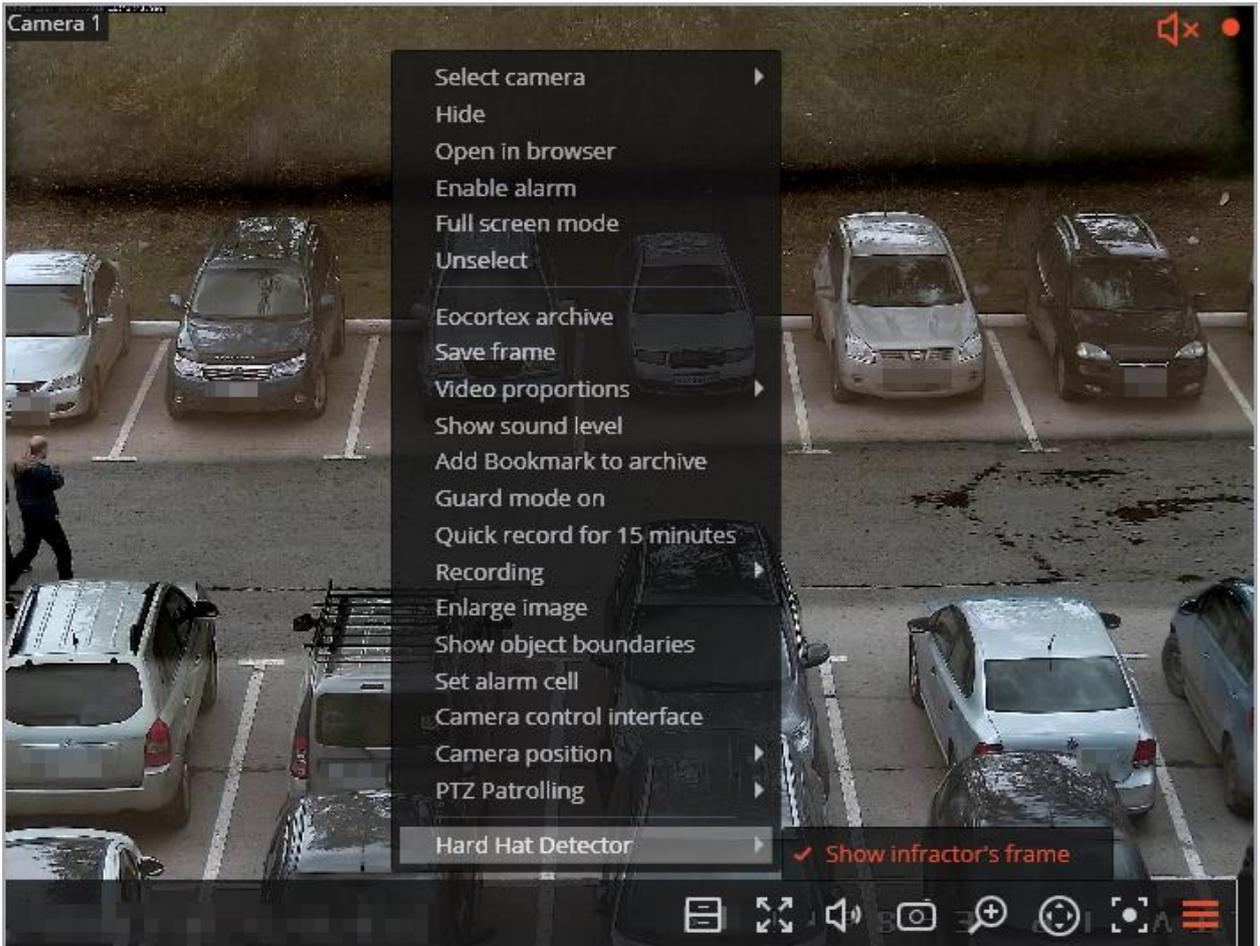
### 2.15. Hard Hat detector

The **Hard Hat detector** module is intended for detecting people not wearing hard hats. When such persons are detected in real time, the module frames them and registers the event in the log.

 This module will only work on the cameras on which it has been enabled by the video surveillance system administrator.



To show a frame around the people not wearing hard hats, select the **Show Infractor's Frame** subitem in the **Hard Hat Detector** item of the cell's context menu.



All the module events are recorded in the [Events log](#).

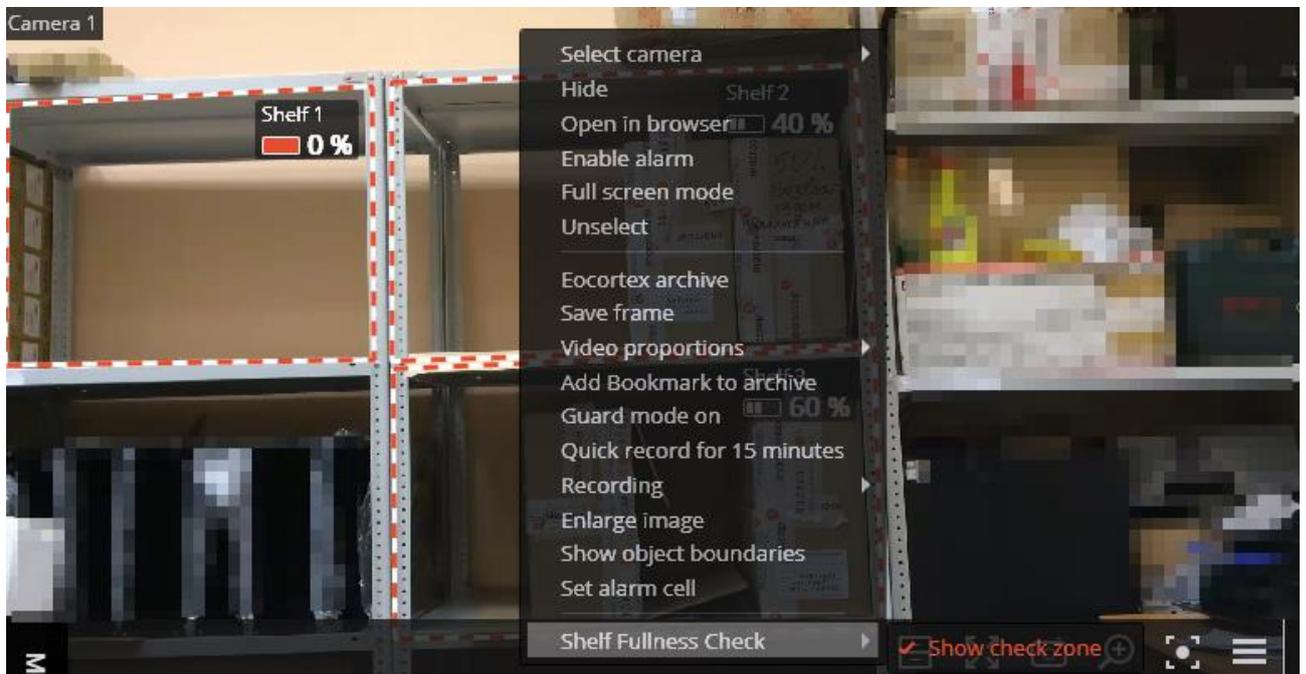
## 2.16. Shelf Fullness Check

The **Shelf Fullness Check** module is designed for monitoring the fullness of shelves in a store in order to fill them with merchandize in time.

 This module will only work on the cameras on which it has been enabled by the video surveillance system administrator.



In order to display outlines, names and current fullness indicators, it is required to select **Show Check Zone** subitem in the **Shelf Fullness Check** item of the cell's context menu.



All the module events are recorded in the [Events log](#).

To create a report, it is required to select the **Reports** item in the main menu, then, in the upper right corner of the opened page, select the **Shelf Fullness Check** report, set the

time interval, select the cameras on which the report will be based, and press the **Build** button.

The screenshot displays the 'REPORTS' interface. On the left, two bar charts show the time when fullness is lower than 40% for 'Camera 1, Shelf 1' and 'Camera 1, Shelf 2'. The y-axis is labeled 'minutes'.

Time Interval	Minutes
09:00 - 09:30	15
09:30 - 10:00	35

Time Interval	Minutes
09:00 - 09:30	4.5
09:30 - 10:00	9

On the right, the configuration panel includes:

- Select the report:** Shelf Fullness Check
- Time period:** Period from 01.07.2019 09:00:00 to 01.07.2019 10:00:00. Note: Chart will be built with 1 hour step, starting from minute 00 of each hour.
- Cameras and shelves:** Search by cameras and shelves. Includes expand/collapse controls and a tree view:
  - All cameras
  - Object 1
    - Group 1.1
      - Camera 1
        - Shelf 1 (checked)
        - Shelf 2 (checked)
        - Shelf 3 (unchecked)

- Buttons:** Export, Build, Cancel

In order to save the report on the drive, press the **Export** button; select a location where the report will be stored in the opened window; change **File name** (if required), then press **Save**.

## 2.17. Unique Visitor Counting

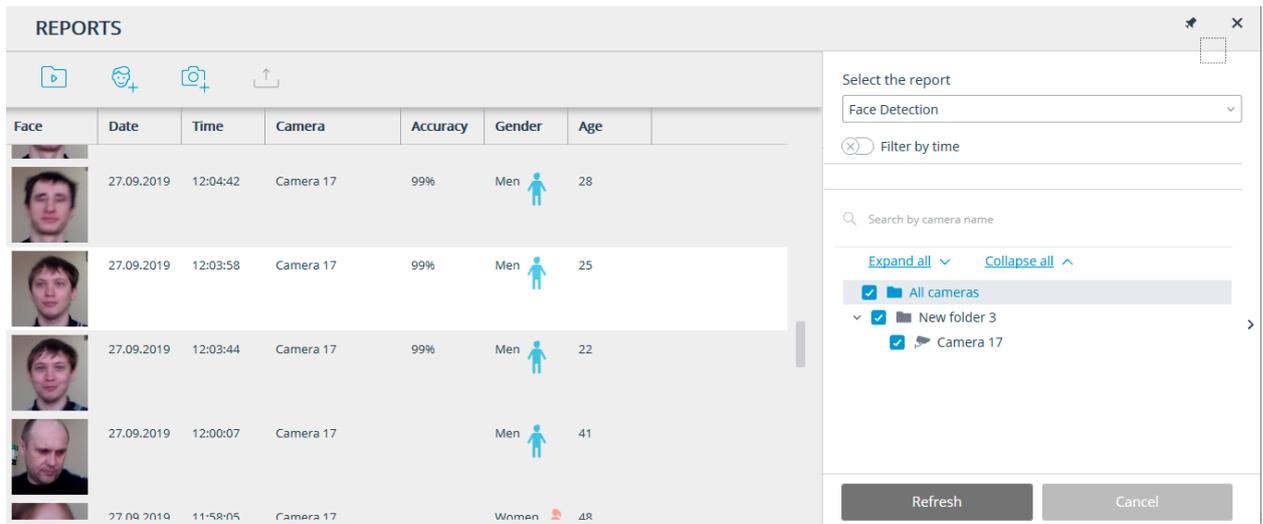
The **Unique Visitor Counting** module is intended for generating unique visitor counting reports based on the detection and recognition of faces. It offers a capability of excluding the persons belonging to certain groups from the counting, which is useful, for example, to avoid counting employees.



This module will only work on the cameras on which it has been enabled by the video surveillance system administrator.

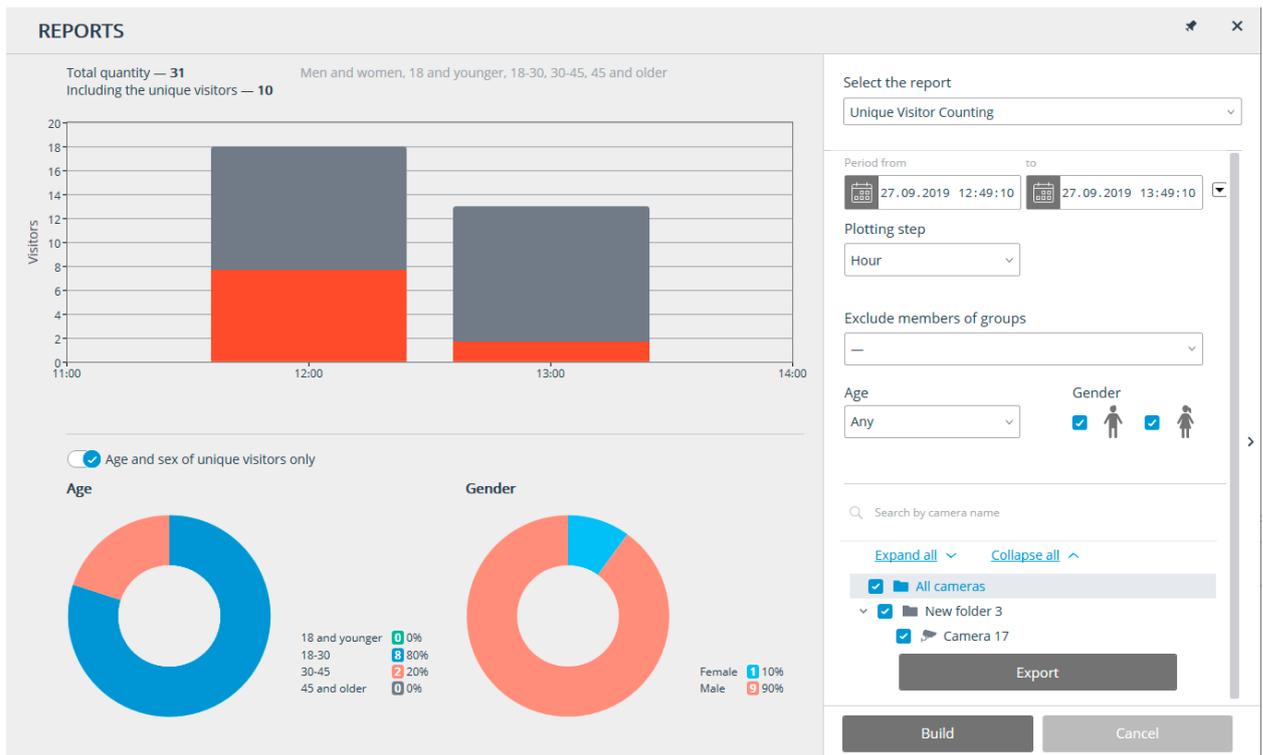
## Face Detection Report

The **Face Detection** report shows the brief information regarding the detected faces: time of detection, sex and age (without showing a name, even if the face is in the database):



## Unique Visitor Counting Report

In the **Unique Visitor Counting** report, the infographics of the unique visitors is displayed, containing three graphs: by number of visitors, by age and by gender.



Apart from the period of time and the step of the graph, it is possible to indicate sex and age of the people to be included into the report. Additionally, it is possible to set the groups from the database whose members will not be taken into consideration when generating the report; thus, it is possible to exclude employees from the counting.

The graph of the number of visitors shows the unique visitors and all the visitors at the same time.

The diagrams of the age and sex are generated for the unique visitors by default.

For the age and sex data to be displayed for all visitors, it is required to toggle the corresponding switch. At that, it will not be necessary to generate a new report to update the information.

## Face Database

It is possible to use the face database to exclude certain persons from the count (e.g. employees). Since this database is similar to the ones employed in the face recognition modules, the procedure of using it can be found in the [face recognition documentation](#).

### 3. Eocortex Web-client

Eocortex web client allows to view live video and video surveillance archive in the web browsers, which support HTML5 technology. The following features are available:

- viewing of one or more cameras in a live view;
- playback of the archive of the certain camera;
- listening to the sound from the certain camera;
- control (PTZ) of the certain camera;
- snapshot - both in a live view, and in an archive playback;
- view the zoomed frame area - both in a live view, and in an archive playback.

#### 3.1. Start

To start a web client, type in the address bar of the browser the following

`http://<IP_address_or_URL_of_server>:<port>`

or for the secured connection

`https://<IP_address_or_URL_of_server>:<SSL_port>`

Examples:

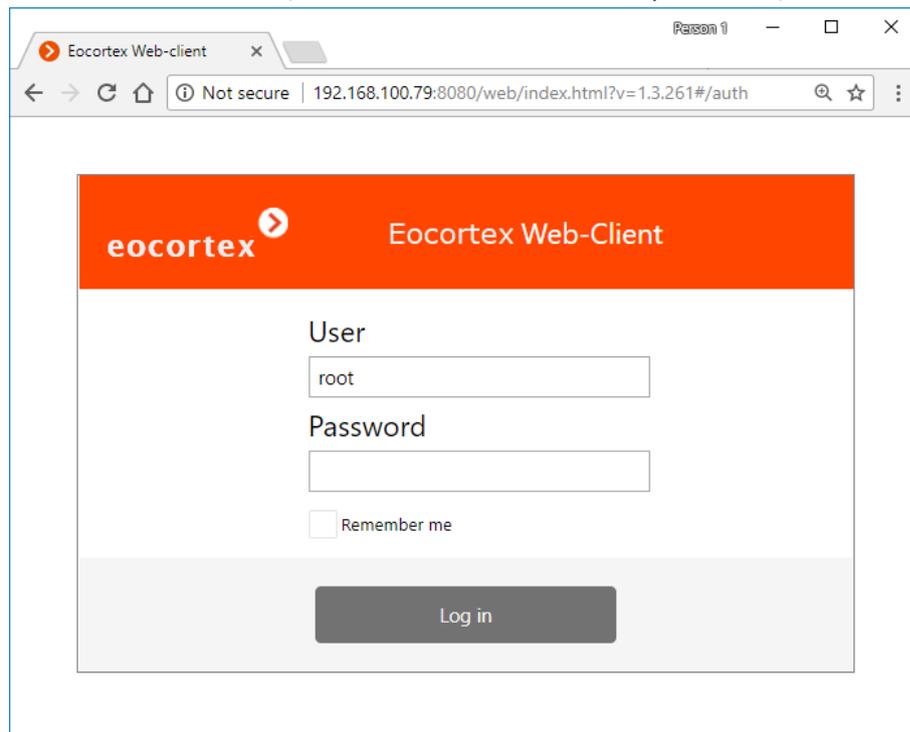
`http://192.168.1.100:8080`

`http://server.company.com:9090`

`https://192.168.1.100:18080`

`https://server.company.com:18080`

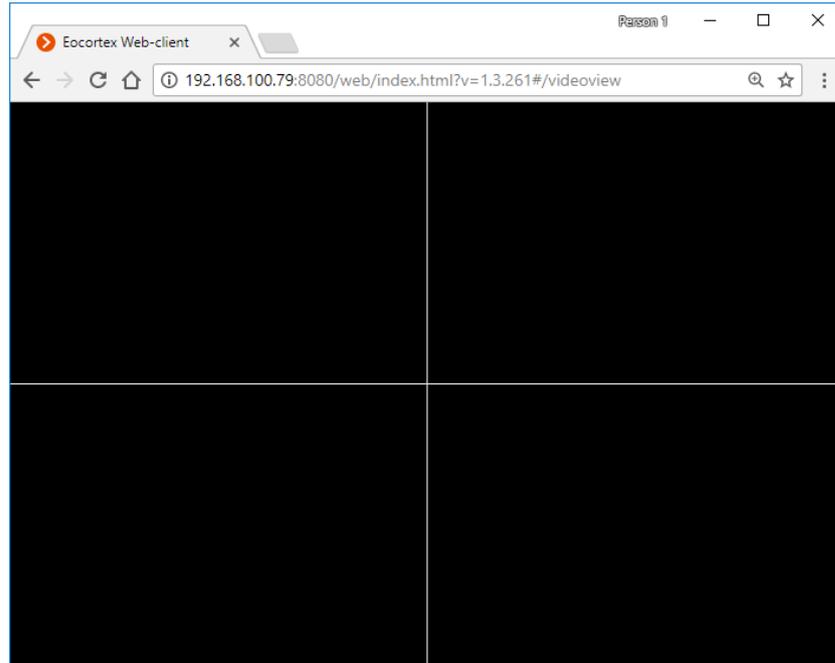
In the opened authorization form, enter the user name and password, then click **Connect**.



The screenshot shows a web browser window titled "Eocortex Web-client". The address bar displays "192.168.100.79:8080/web/index.html?v=1.3.261#/auth". The page content features an orange header with the "eocortex" logo and the text "Eocortex Web-Client". Below the header is a login form with the following elements:

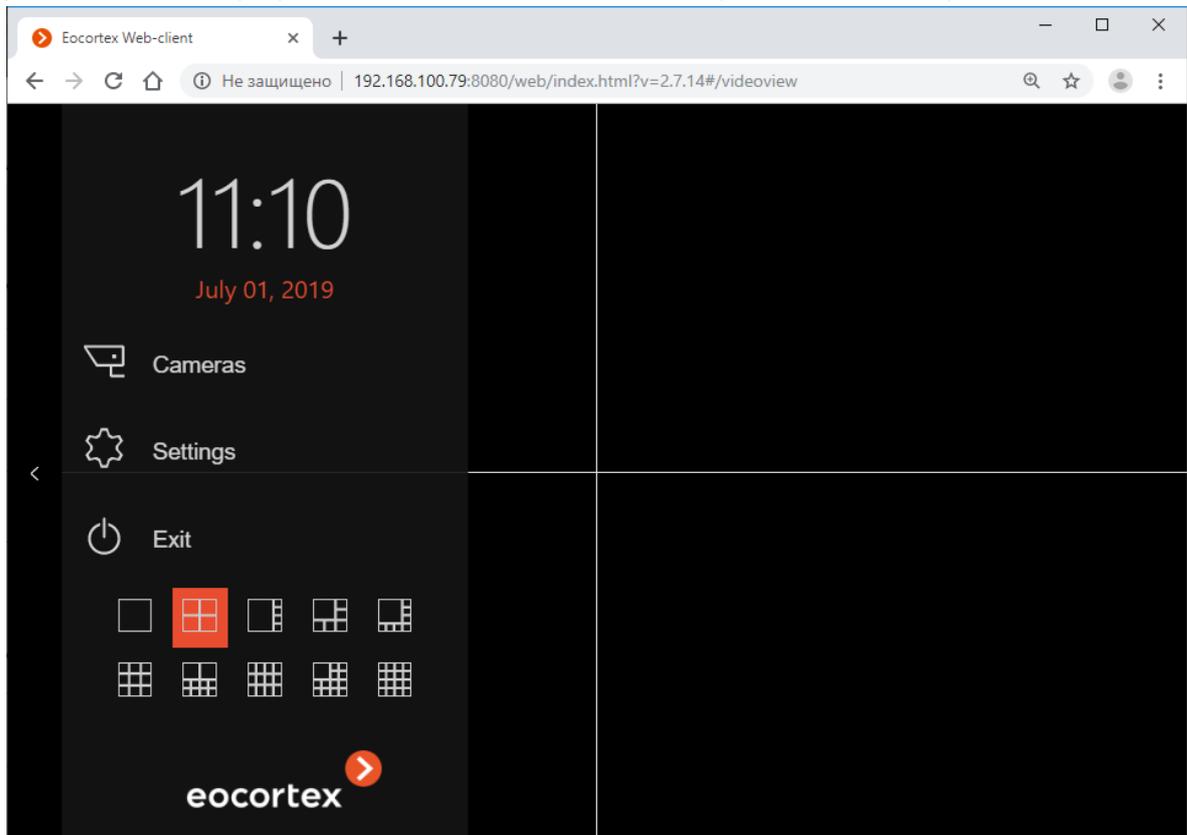
- A "User" label above a text input field containing the text "root".
- A "Password" label above an empty password input field.
- A checkbox labeled "Remember me" which is currently unchecked.
- A dark grey "Log in" button at the bottom of the form.

In the course of first starting, a blank page (without display from the cameras) will be opened.

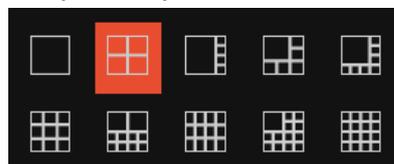


### 3.2. Control panel

The controls in the **Eocortex Web Client** are similar to the controls in **Eocortex Client** application. Clicking by the left border of the window opens the control panel.

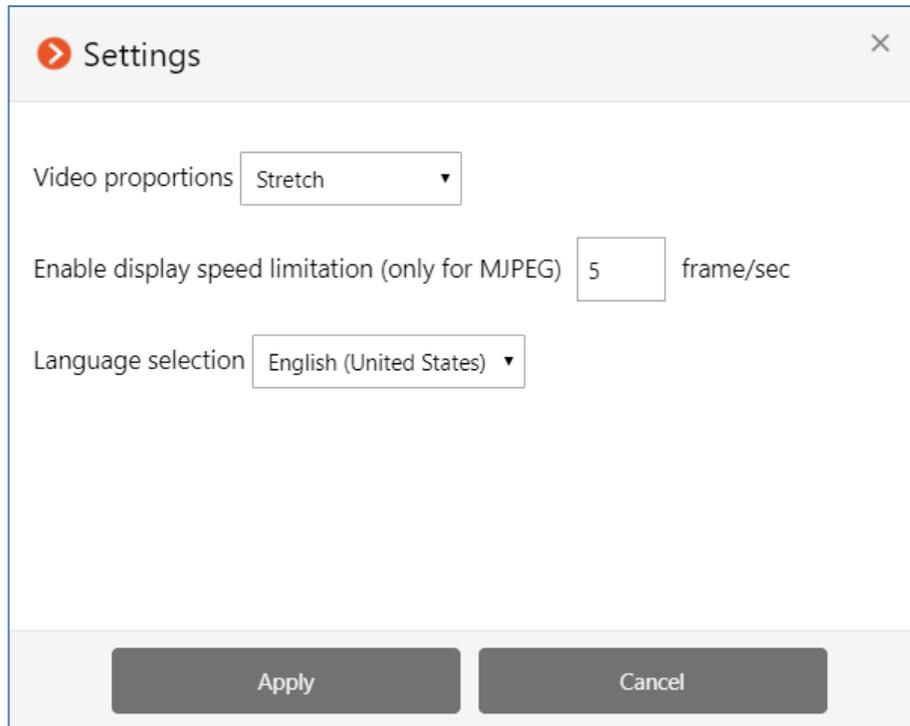


At the bottom of the control panel, you may select the on-screen grid of the channels.



**Exit** is a return to authorization form.

**Settings** opens the settings form, in which you may set the default frame proportions, limit the display frequency for the MJPEG-encoded channels, and select the interface language.

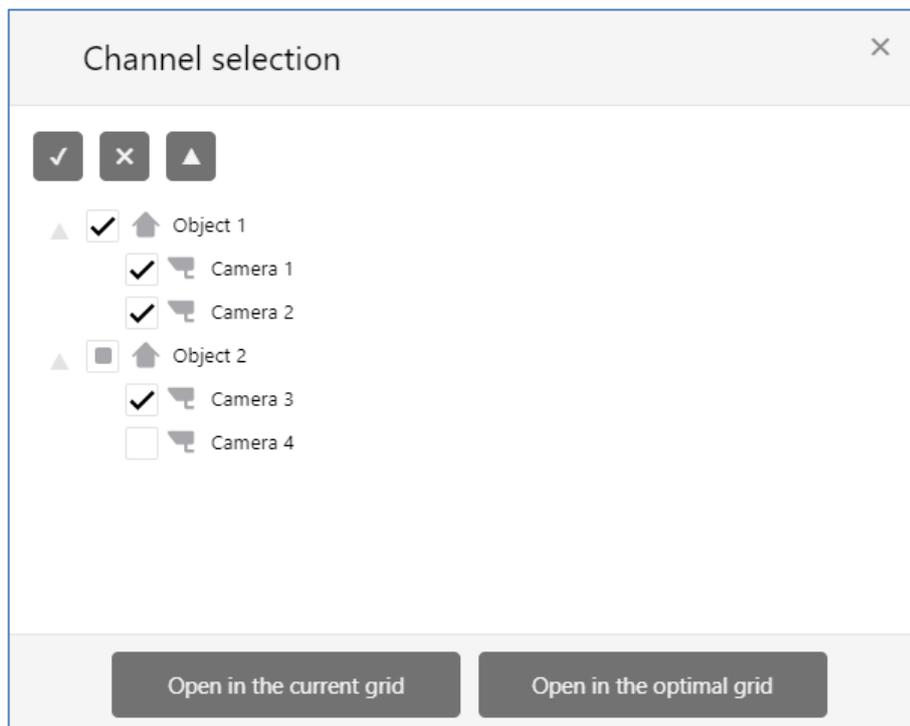


The screenshot shows a dialog box titled "Settings" with a close button (X) in the top right corner. The dialog contains three settings:

- "Video proportions" is a dropdown menu currently set to "Stretch".
- "Enable display speed limitation (only for MJPEG)" is a numeric input field containing the value "5", followed by the text "frame/sec".
- "Language selection" is a dropdown menu currently set to "English (United States)".

At the bottom of the dialog, there are two buttons: "Apply" and "Cancel".

**Camera** opens the selection form of displayed cameras.



The screenshot shows a dialog box titled "Channel selection" with a close button (X) in the top right corner. The dialog contains a list of camera channels with checkboxes and expand/collapse icons:

- At the top left, there are three icons: a checkmark, an 'X', and an upward-pointing triangle.
- Under "Object 1" (indicated by an upward-pointing triangle and a checked checkbox):
  - "Camera 1" (checked checkbox)
  - "Camera 2" (checked checkbox)
- Under "Object 2" (indicated by a downward-pointing triangle and an unchecked checkbox):
  - "Camera 3" (checked checkbox)
  - "Camera 4" (unchecked checkbox)

At the bottom of the dialog, there are two buttons: "Open in the current grid" and "Open in the optimal grid".

### 3.3. Cell of on-screen grid of channels

In the cells of the on-screen grid a live video from selected cameras is broadcast. One of the cells may be active. The active cell is highlighted with a frame. To activate the cell, click inside it.

To call the context menu of the channel, right-click in the cell of that channel, or click on  icon in the active cell.

 Composition of the context menu items and buttons of the active cell depends on the channel settings.



Description of the context menu items and buttons is specified below:

**Select camera** allows to select the camera which will be displayed in the cell.

**Hide camera** hides the camera (frees the cell).

**Full-screen mode**  expands the cell to the entire browser window.

 The change between the grid mode and full-screen mode is also performed by double-clicking in the grid cell.

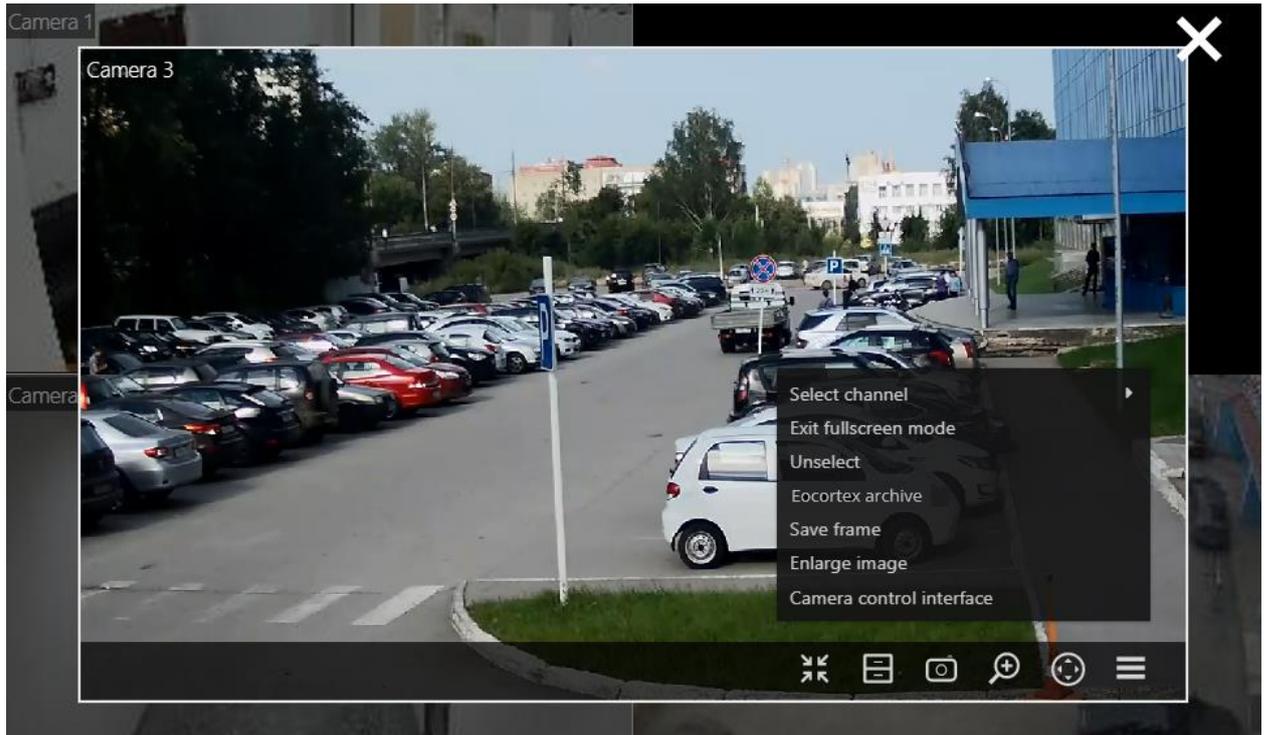
**Remove selection** removes the selection from the cell (makes the cell inactive).

**Snapshot**  saves the current frame to disk. When this menu item is selected (or after clicking on the icon), the window for the selection of the location and name of the file to be saved is opened.

**Zoom in**  displays the enlarged area of the frame. If this menu item is selected (or after clicking on the icon), you should set a frame of zoom area, using a mouse. Multiple zoom is allowed. To return to the full frame display, press the middle mouse button.

**Camera control interface**  displays PTZ control elements.

### 3.4. Full-screen live viewing



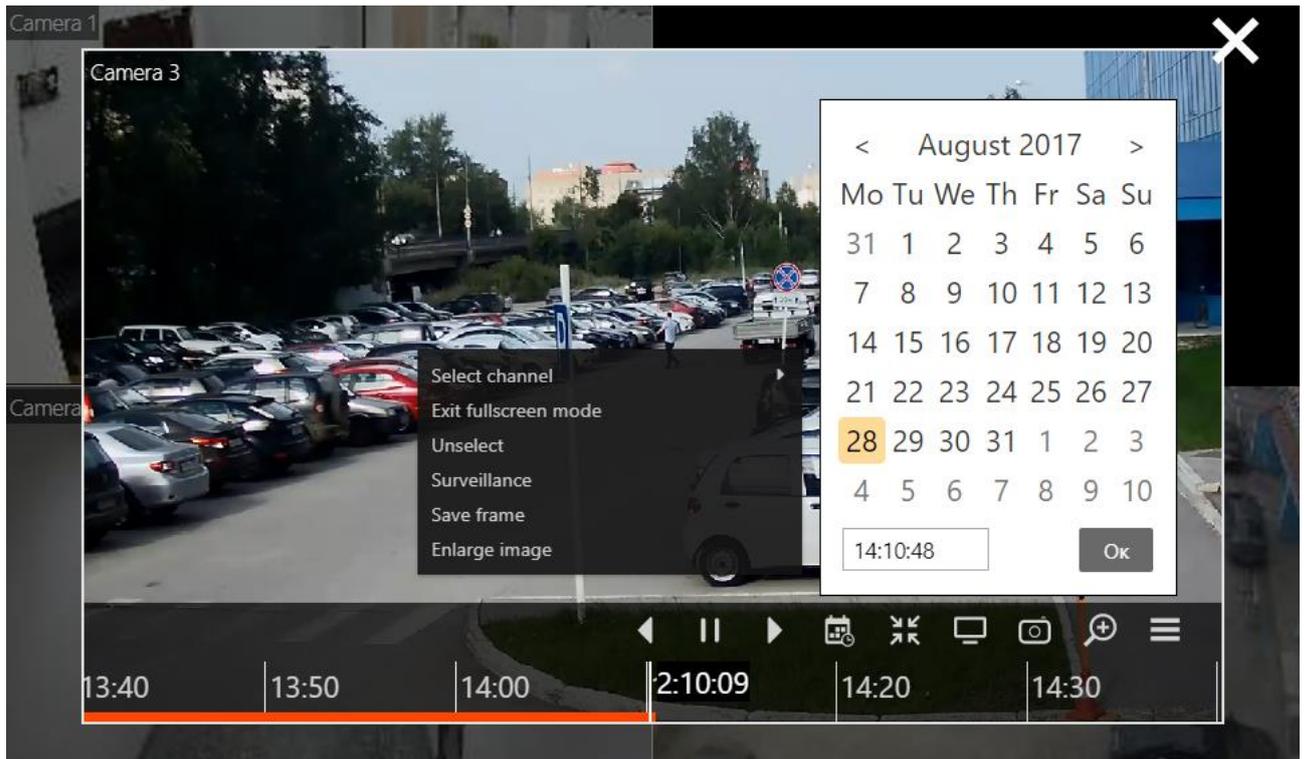
Below you shall find a context menu items and buttons which are specific to full-screen viewing:

**Exit full screen mode**  is the return to the on-screen grid of channels.

**Archive Eocortex**  is the switch to the archive playback.

**Turn on / off the sound**   is turning on / off of the audio broadcast.

### 3.5. Playback of archive



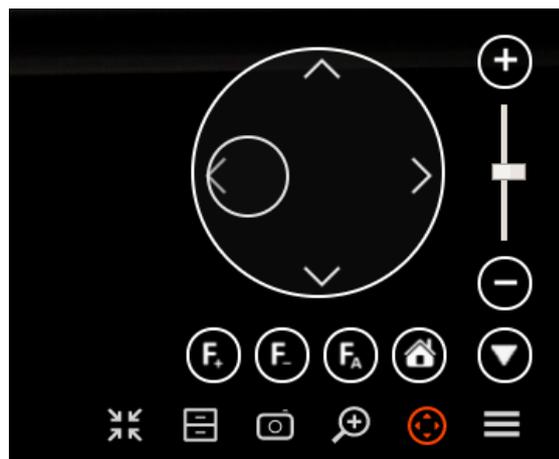
Below you may find a context menu items and buttons which are specific to the archive playback mode:

 — player buttons: backward / pause / forward.

 — calendar button for specification of date / time in the archive.

**Surveillance**  is switching to the live view mode.

### 3.6. PTZ control



PTZ controls in the **Eocortex web client** are similar to the controls in **Eocortex Client** application.

Camera rotation doing is performed by the joystick: by dragging the target with a mouse (a small circle inside a large circle).

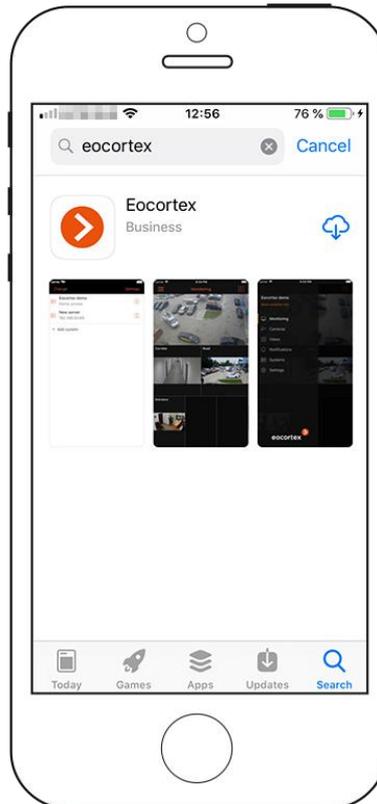
## 4. Mobile client for iOS

**Mobile client for iOS** is the iOS application designed for watching video and listening to audio in real-time mode and from the archive.

Connect to the **Eocortex** remote server to access the video. Use IP-address or URI to connect to server. Any available network connection type may be used to connect to the server. The connection must provide access to the server by its address and have adequate bandwidth.

### 4.1. Installation of Mobile client for iOS

To install **Eocortex Ultra** mobile client app on a **iOS device**, find the installation package using **eocortex** key word in the **iTunes App Store**, then download and install it.



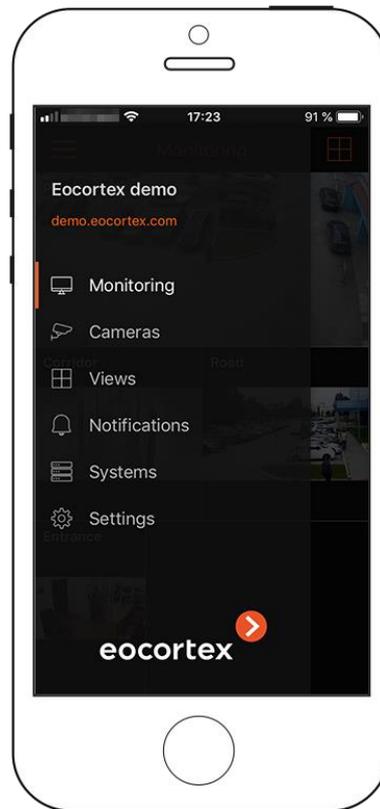
The application operates under iOS of version 8.0 and later.

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### 4.2. Use

The application is controlled by the standard iOS methods.

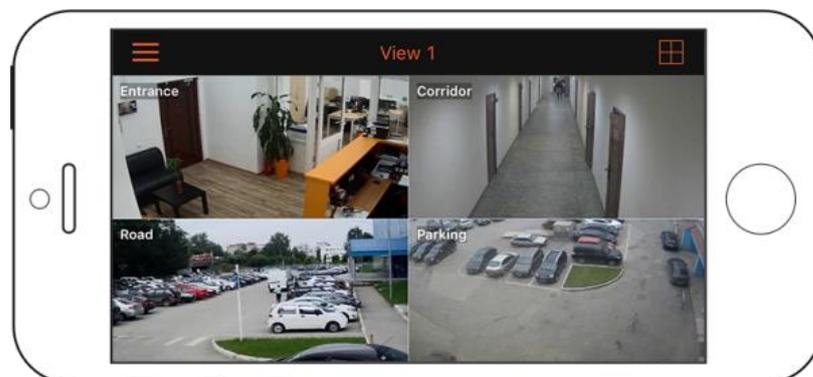
The application can operate in both portrait and landscape modes.



The app navigation screen is opened by pressing the  button and contains the following items:

- **Monitoring:** Watching real-time video in the display grid mode.
- **Cameras:** Selecting cameras for the current display grid.
- **Views:** List of available views.
- **Notifications:** List of notifications.
- **Systems:** List of CCTV systems.
- **Settings:** Settings of the current system and the application.

#### 4.2.1. Monitoring



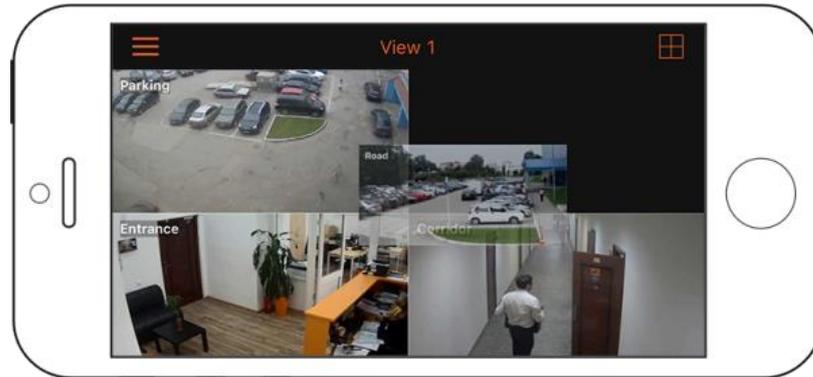
Touching the camera in a cell expands the camera view to full screen.

Pressing the camera in a cell opens the context menu allowing to select another camera in the cell or to clear the cell.

Pressing the  button in the lower part of the screen displays the view selection panel.



It is possible to drag cameras among cells.



#### 4.2.2. Full screen



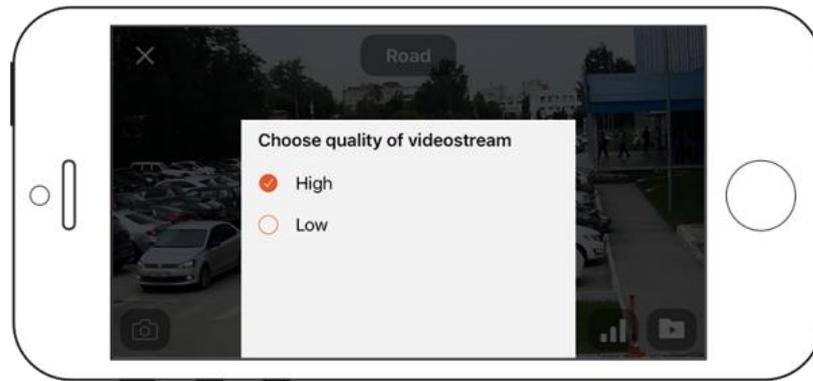
In the full screen mode, the following actions are available by pressing the corresponding screen buttons:



Saving the frame to the device's Camera Roll.



Choosing the video stream quality. The higher the quality, the larger the volume of data transmitted via the data network.



Switching to archive viewing.



Enabling virtual joystick and other camera control elements.



#### 4.2.3. Archive

To playback the camera archive, it is required to expand this camera to full screen in the

viewing mode and press the  screen button.



In the lower part of the screen, the archive fragment panel superimposed over the timeline is located. To go to a position in the archive, touch the timeline in the corresponding point.

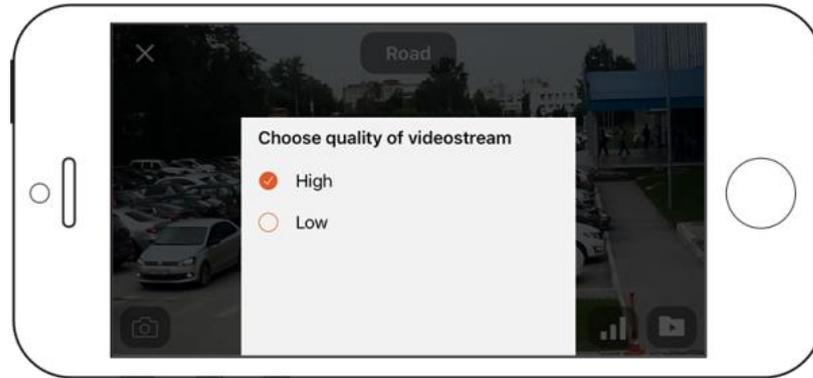
In the archive playback mode, the following actions are available by pressing the corresponding screen buttons:



Saving the frame to the device's Camera Roll.



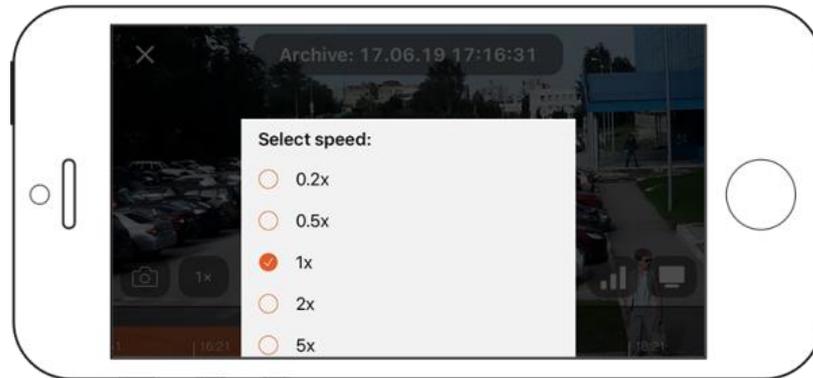
Choosing the video stream quality. The higher the quality, the larger the volume of data transmitted via the data network.



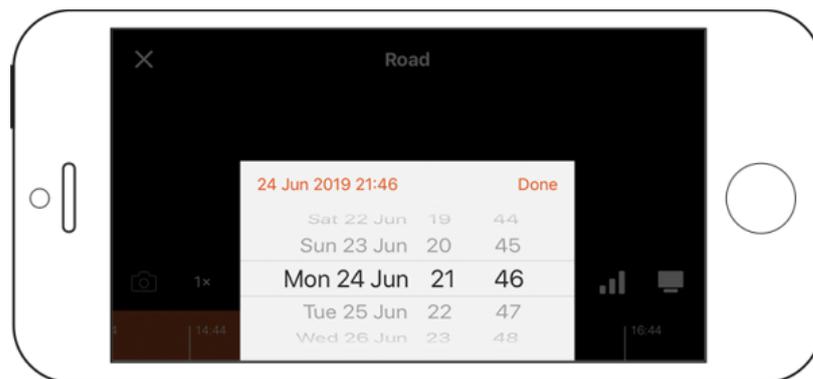
Switching to real-time video viewing.



Selecting the archive playback speed.



Positioning in the archive using calendar.

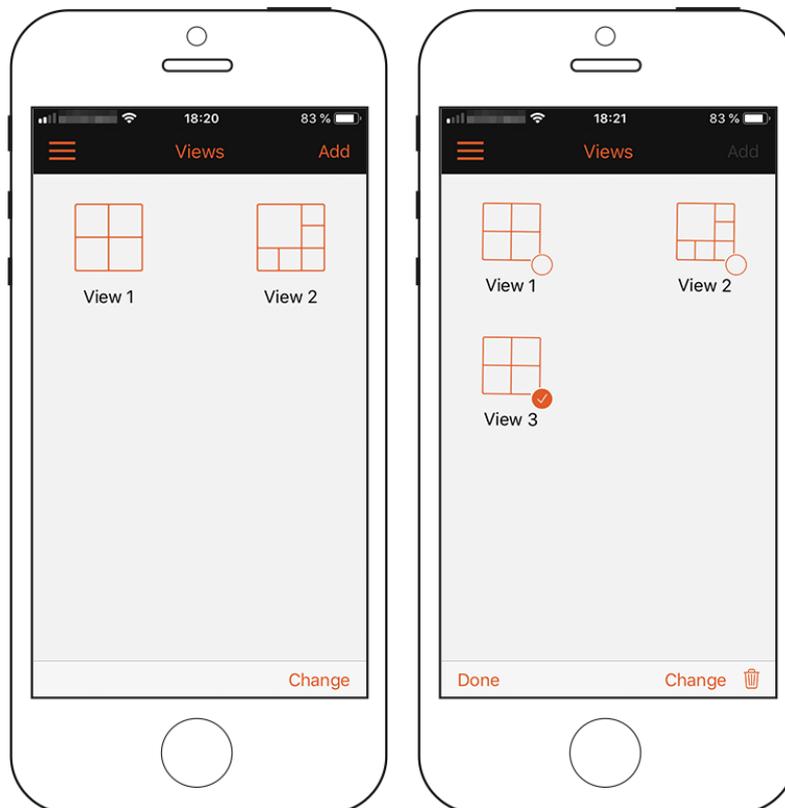


### 4.2.4. Cameras

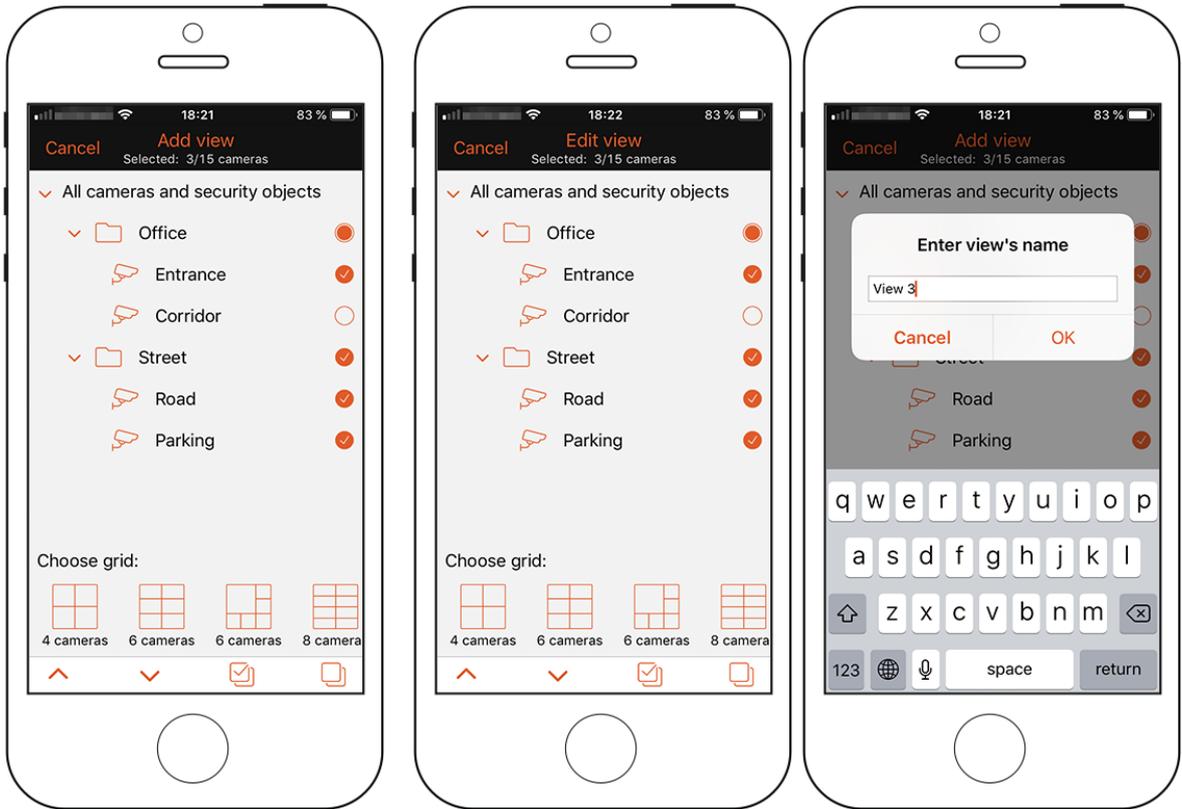


### 4.2.5. Views

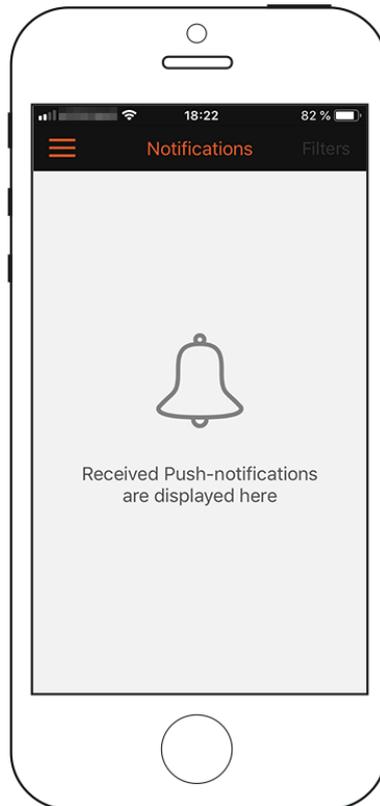
**Views** are the screen grids with the cameras located in them.



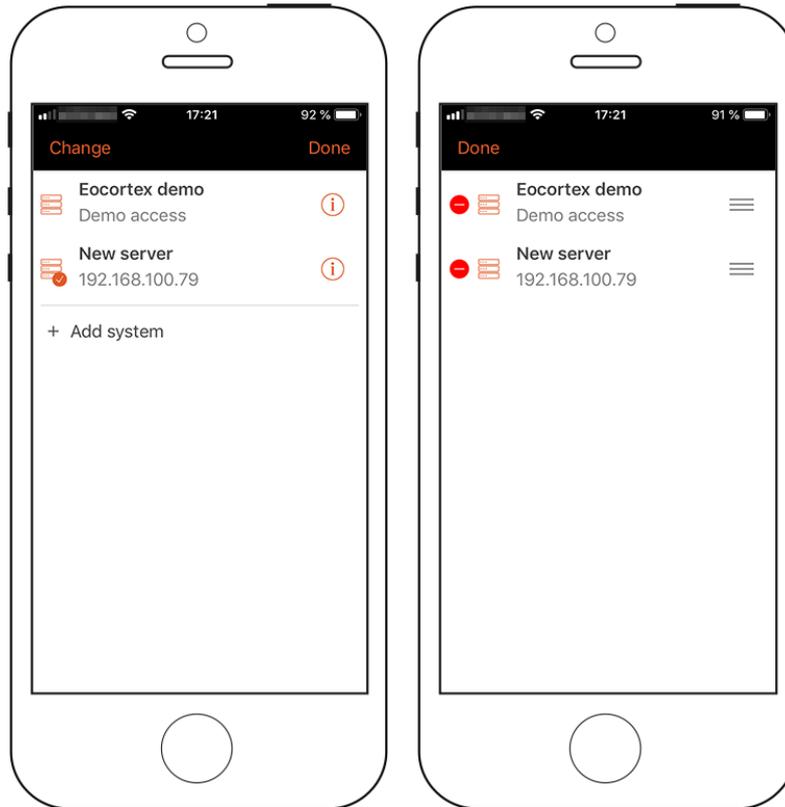
When adding and modifying a view, it is required to select the cameras, then to choose a screen grid, and, lastly, to enter the name of the view.



#### 4.2.6. Notifications



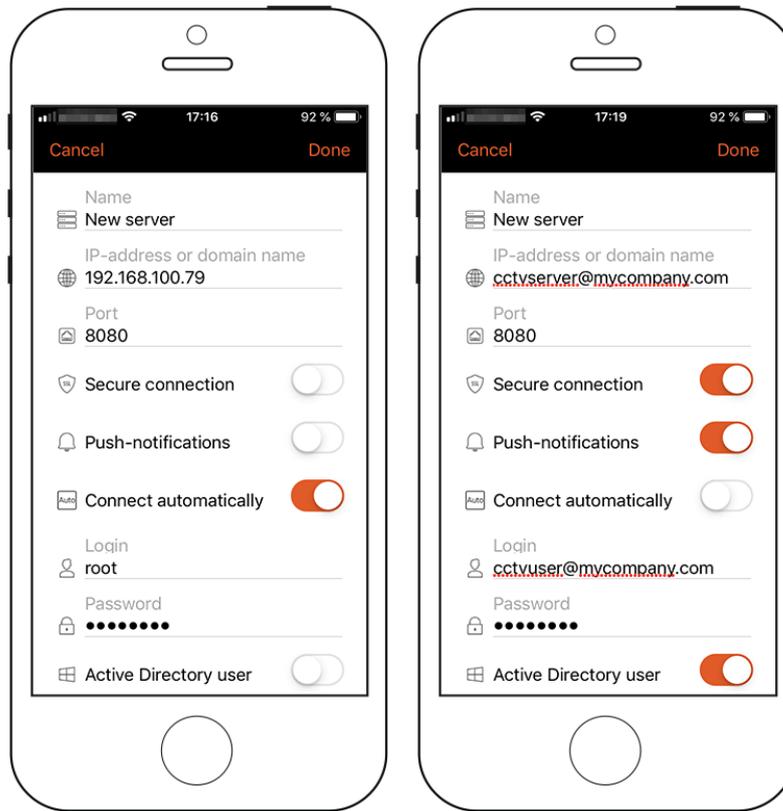
### 4.2.7. Systems



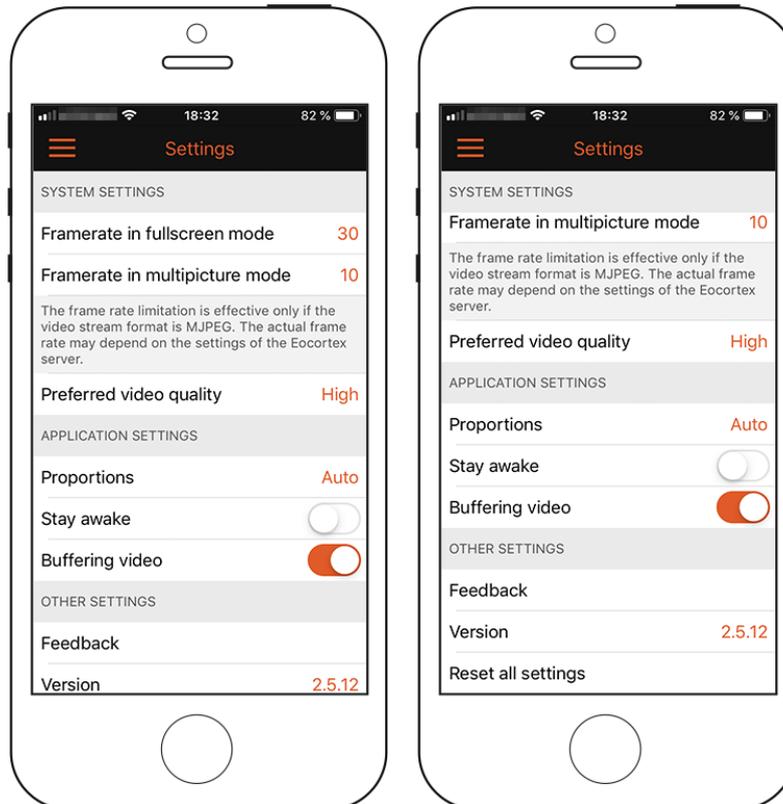
By default, the Demo Server is included into the list of the systems. A user has no access to the demo server connection parameters. However, it is possible to delete the demo server from the list of the systems.

To connect to the video surveillance system, it is required to indicate the IP address and the port, or the domain name of one of the video surveillance servers, as well as the user name and the password of the CCTV system user and several other parameters.

The connection parameters are provided by the administrator of the video surveillance system.



### 4.2.8. Settings



## 5. Mobile client for Android

**Mobile client for Android** is the Android application designed for watching video and listening to audio in real-time mode and from the archive. Connect to the **Eocortex** remote server to access the video. Use IP-address or URI to connect to server. Any available network connection type may be used to connect to the server. The connection must provide access to the server by its address and have adequate bandwidth.

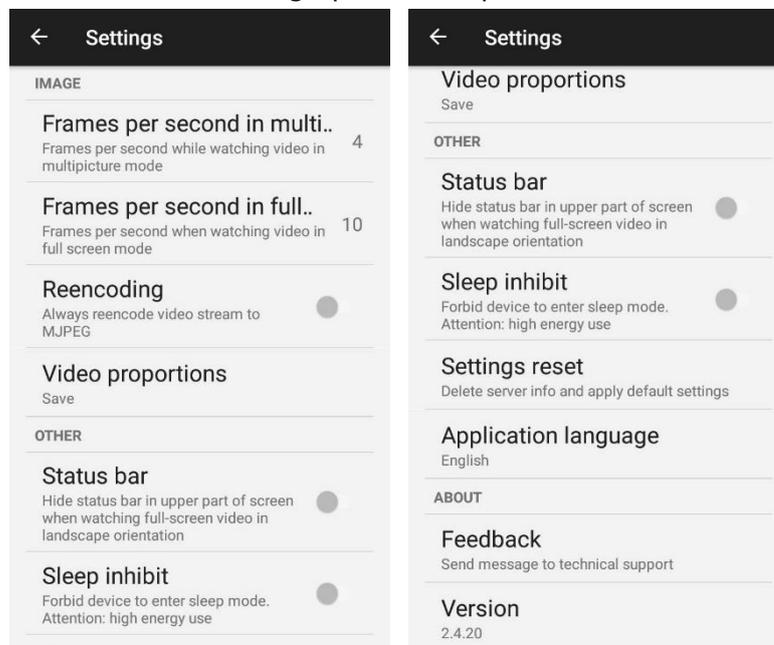
### 5.1. Installation of mobile client for Android

To install **Eocortex** mobile client app on an **Android** device, find the installation package using **Eocortex** key word in **Google Play**, then download and install it

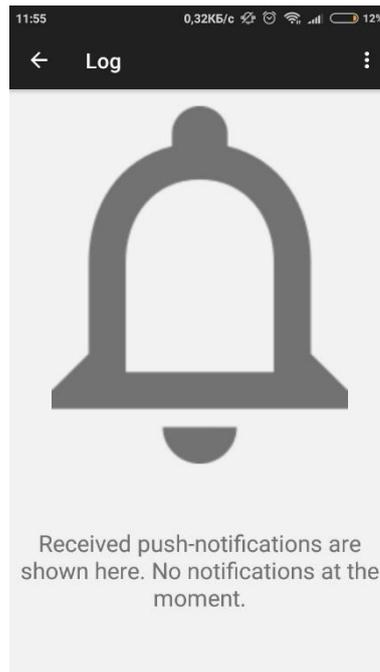
### 5.2. Operation of Android mobile client

The app can operate both in portrait and landscape mode. The control is performed using **Android** standard methods.

The **Settings** screen is used for setting up various operation modes of the app.



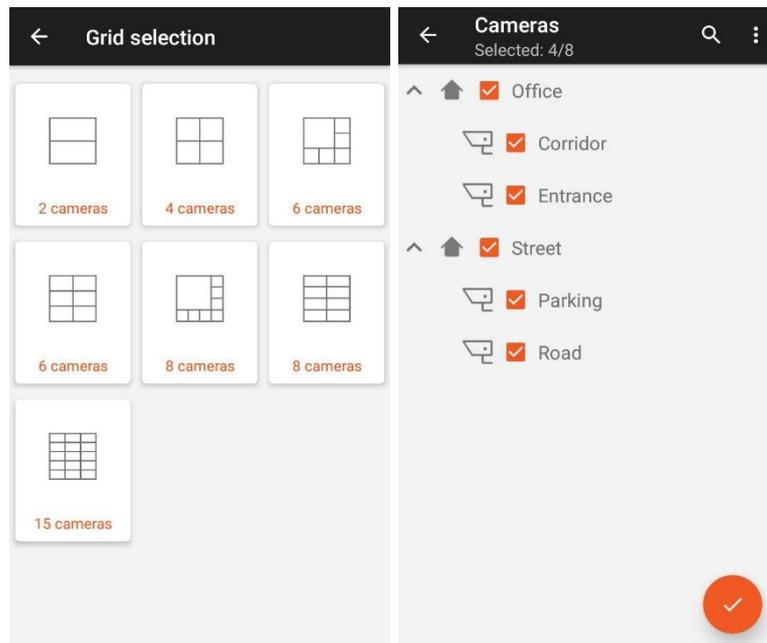
The **Log** screen displays video surveillance system notifications.



**Servers** screen is for setting up connections to **Eocortex** servers.

Two demo servers are available by default. You can also add, edit, and delete the servers.

**Views** screen is used for selecting viewing grids and channels which will be displayed in the grid's cells.



**Viewing** screen is opened only from the **Views** screen and is used for viewing both real-time and archived video. In the real-time video viewing mode, you can take screenshots, toggle between streams (if a camera broadcasts several streams), switch to archive viewing mode (if recording to archive is being performed), sound control (if sound is being received from a camera) and PTZ camera control

(if a camera can be controlled and the corresponding capability is supported by video surveillance system). Some functions may be disabled by video surveillance system administrator and rendered inaccessible for a user.

In PTZ camera control mode, a virtual joystick, return to home position and focus control buttons, optical zoom slider, and the menu of going back to preset positions (presets) are

available. To rotate the camera, move the virtual joystick target. The farther the target from the center of the circle, the higher the camera rotation speed.

To view the archive it is required, in the real-time viewing mode, to select **Archive** in the Options menu. In its turn, the following options are available in the archive viewing mode: switching to the indicated date/time, selecting playback speed, taking a screenshot, and returning to real-time viewing mode.