

User Documentation



Description: Documentation for all the features of **Videtics Perception®** implemented in *Milestone XProtect*.

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Overview

VIDETICS is a French company that publishes **Intelligent Video Analysis (IVA) software** specializing in Deep Learning. The core business of VIDETICS consists of developing **video analysis tools by Artificial Intelligence** through software solutions specific to the world of safety and security. These tools are intended to provide humans with the most relevant elements for decision-making.

One of these tools is the **Videtics Perception®** software. Its analysis engine allows intelligent processing by Deep Learning of video streams. The objective is to generate alerts and statistical data in real-time so as to enable field agents to quickly neutralize the dangers reported by the device.

Videtics Perception® can be used standalone thanks to its web application or in combination with a Video Management System (VMS) like **Milestone XProtect**.

This user guide describes the Videtics Perception® integration in the *Milestone XProtect* software suite. It will list the different features available and how to use them.

Summary

- **Prerequisites:** everything you need to do to set up **Videtics Perception** on your PC
- **Settings:** information to complete to ensure the correct functioning of the plugins
- **Videtics Web Application:** standard solution of Videtics Perception
- **Search Plugins :**
 - **Persons:** find detected person filtered by attributes

- **Vehicles:** find detected vehicles filtered by attributes
- **Folders:** find folders and recordings added in the Web Application

Prerequisites

You should have the *Milestone XProtect* software suite (at least the Management Client and the Smart Client) installed on your PC and cameras added on a recording server.

Otherwise, you can check the following documentation.

Add hardware

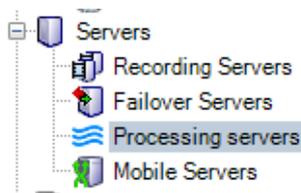
You have several options for adding hardware to each recording server in your system. If your hardware is located behind a NAT-enabled router or a firewall, you may need to specify a different port number and configure the router/firewall so it maps the port and IP addresses that the hardware uses.

◆ https://doc.milestonesys.com/latest/en-US/standard_features/sf_mc/sf_mcnodes/sf_2serversandhardware/mc_addhardware.htm

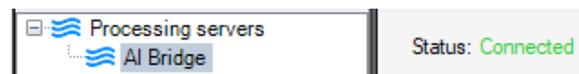
AI Bridge

To enable communication between *Perception* and *XProtect*, you have to install **Milestone AI Bridge**. Please see the [AI Bridge documentation](#) for further information.

Once installed, open the *Management Client* and check in the left menu if a "**Processing Servers**" option appears in the **Servers** section. Then, go to details and check if the AI Bridge server status is "**Connected**".



Left bar menu



Processing server details

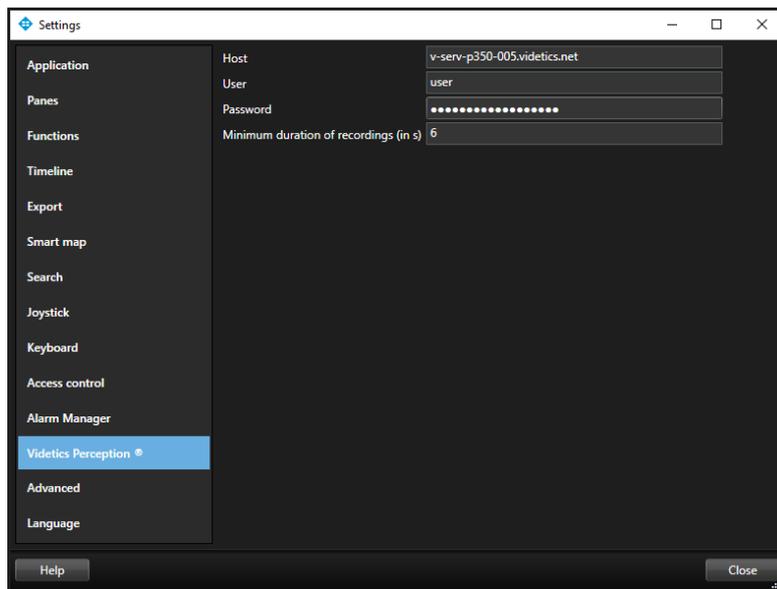
Settings

Before enjoying all the features implemented, you need to fill in some information to ensure the good working of our solution.

Videtics Perception Settings in Smart Client

On the *XProtect Smart Client* **Settings menu** , you will find the **Videtics Perception®** tab. Please fill in these 4 fields:

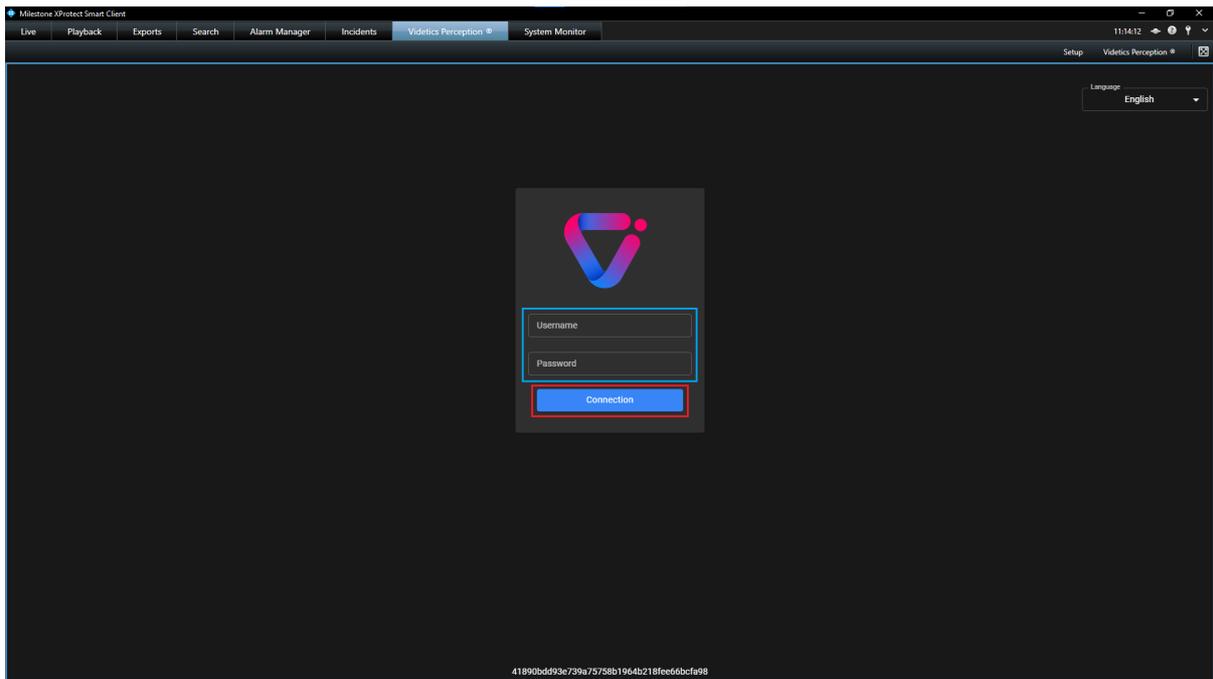
- **Host:** The alias address of the server that hosts *Perception*. The **IP address will not work**, it has to end by **.videtics.net**.
- **User:** The username you use to access the Videtics Perception application
- **Password:** Your password you use to access the Videtics Perception application
- **Minimum duration of recordings:** The minimum duration of recordings you want, even if the detection duration is shorter. (Default value: 3)



Auto-login and SSO :

After registering your credentials in the settings menu, please restart the *XProtect* Smart Client.

Thanks to these credentials, you'll be **automatically connected** to the **Videtics Perception Web Application**. If it is not the case, you will see this web page on the *Videtics Perception*® tab:



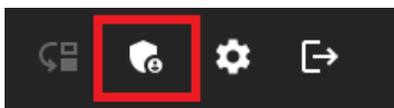
To solve this issue, try to restart the *XProtect SmartClient* or type manually the credentials you put in the Settings menu and press the "Connection" button.

Our integration in *Milestone XProtect* works with a **Single Sign-On (SSO)** system. It allows you to access all our features (Search Plugins and Web Application) **with a single authentication**. Combined with the **automatic login** explained before, that means you just have to register your credentials at the first launch of the Smart Client and you'll never have to deal with any authentication later.

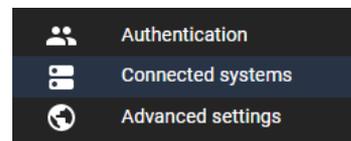
Add a Connected System in Perception

To enable the connection between Videtics Perception and Milestone XProtect, you need to add a "**Connected system**" to *Perception*.

To do that, go to the **Administration page** by clicking on the icon on the top left of your screen and select **Connected systems** on the left menu.



Administration menu icon



Connected systems menu

Then, fill out the form like the following example:

The screenshot shows a configuration window for adding a VMS system. The fields are as follows:

Field	Value
category	VMS
system	Milestone AI Bridge
name	AI Bridge
connection mode	client
protocol	HTTP
address	192.168.1.2
port	4000
username	basic
password
automatic camera synchronization	<input checked="" type="checkbox"/>
enabled	<input checked="" type="checkbox"/>

- Replace the *address* field with the IP address of your *XProtect* server,
- If you use a custom *AIBridge* port, enter it (instead of 4000) in the *port* field,
- Replace username and password fields with your *XProtect* credentials,
- Read [Cameras synchronization](#) section and check the *automatic camera synchronization* field if you want to enable this feature,
- Take care to check the *enabled* box.

Once added, it will appear in the connected system list on the left. If you click on it, you can edit its settings:

The screenshot shows a configuration window for an AI Bridge system. On the left, there is a sidebar with a button labeled "AI Bridge". The main area contains the following fields and options:

- category:** VMS
- system:** Milestone AI Bridge
- name:** AI Bridge
- connection mode:** client
- protocol:** HTTP
- address:** 192.168.1.2
- port:** 4000
- username:** basic
- password:** [masked with dots]
- automatic camera synchronization
- enabled

A blue "Save" button is located at the bottom right of the configuration area.

After creating this connected system, *Videtics Perception* will automatically register an application on the AI Bridge Processing server. That allows alerts to be sent from Perception and cameras synchronization between XProtect and Perception.

Videtics Perception Web Application

The standard user solution of Videtics Perception is a **web application**, accessible on browser (Google Chrome, Mozilla Firefox, Chromium, ...). We integrated this application **directly into the XProtect Smart Client**. You will find it by clicking on the "*Videtics Perception®*" tab :



Features

Plenty of features are available on the Web Application, we will quickly describe a few of them here:

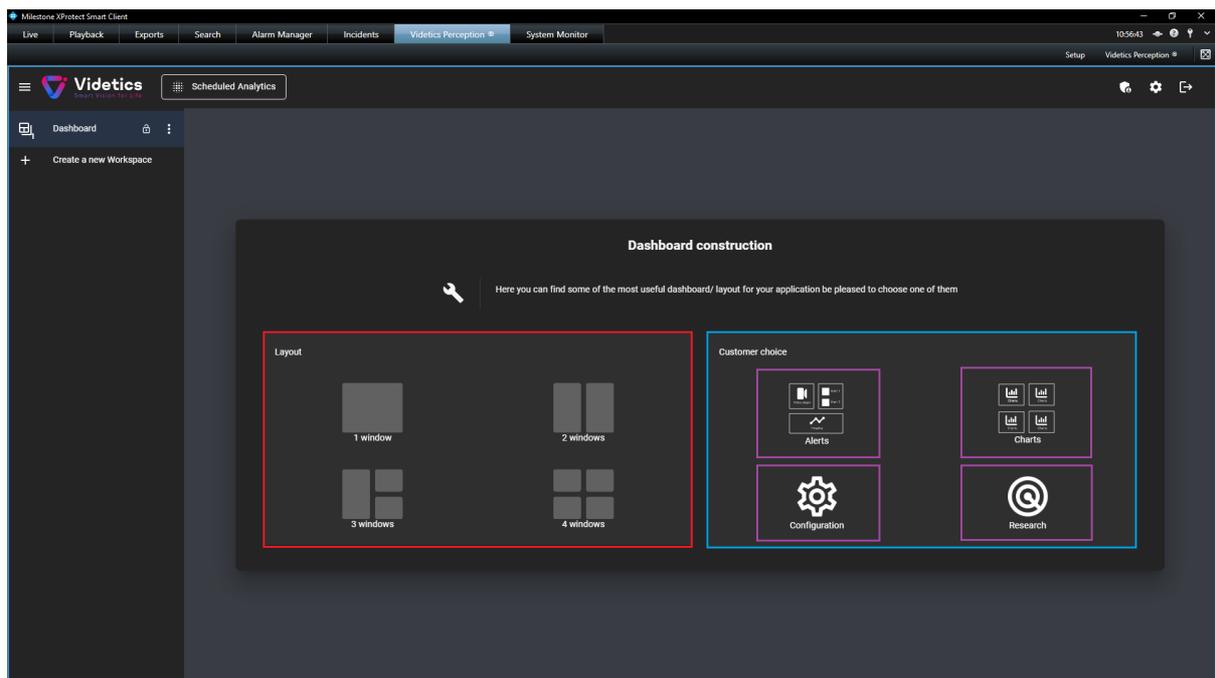
- **Configuration**
- **Alerts**
- **Statistics**
- **A posteriori Research**
- **Heatmap**



IMPORTANT: The description of the features presented here is **very succinct**. Please refer to the **official Web application documentation** to understand the complete usage and potential of our software.

[a] Home Page

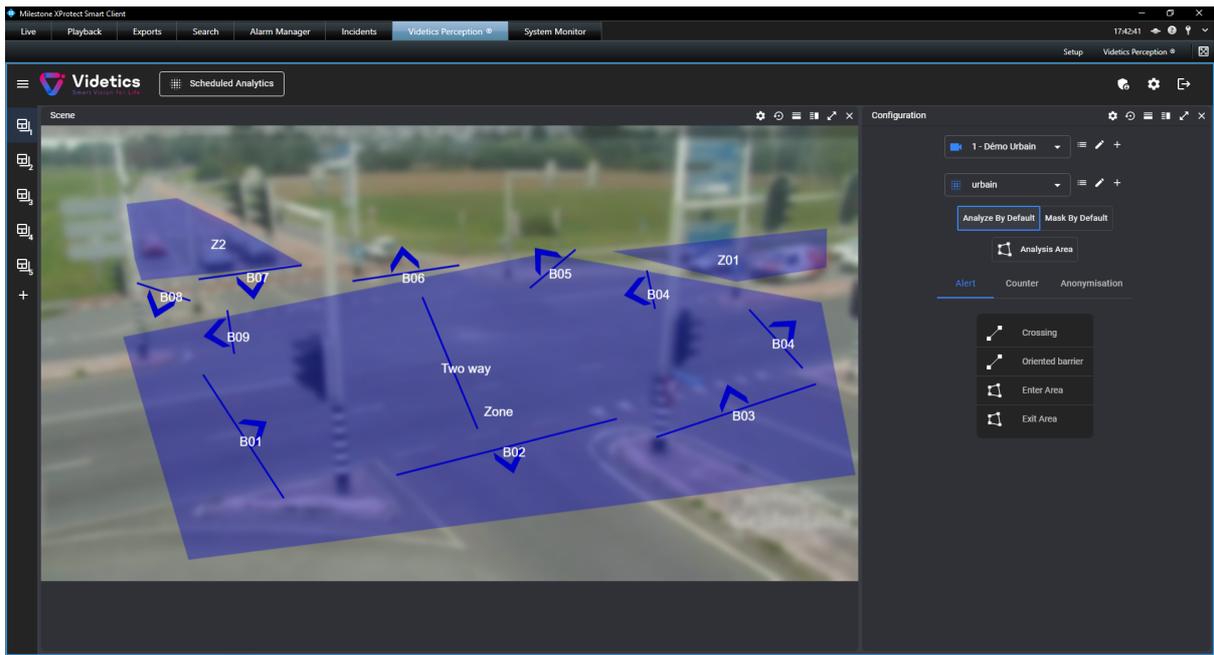
On the Home Page, you can select your dashboard. Go for an **empty layout** or choose a **pre-build one** (**Configuration, Alerts, Charts, Research**):



Home page

[b] Configuration

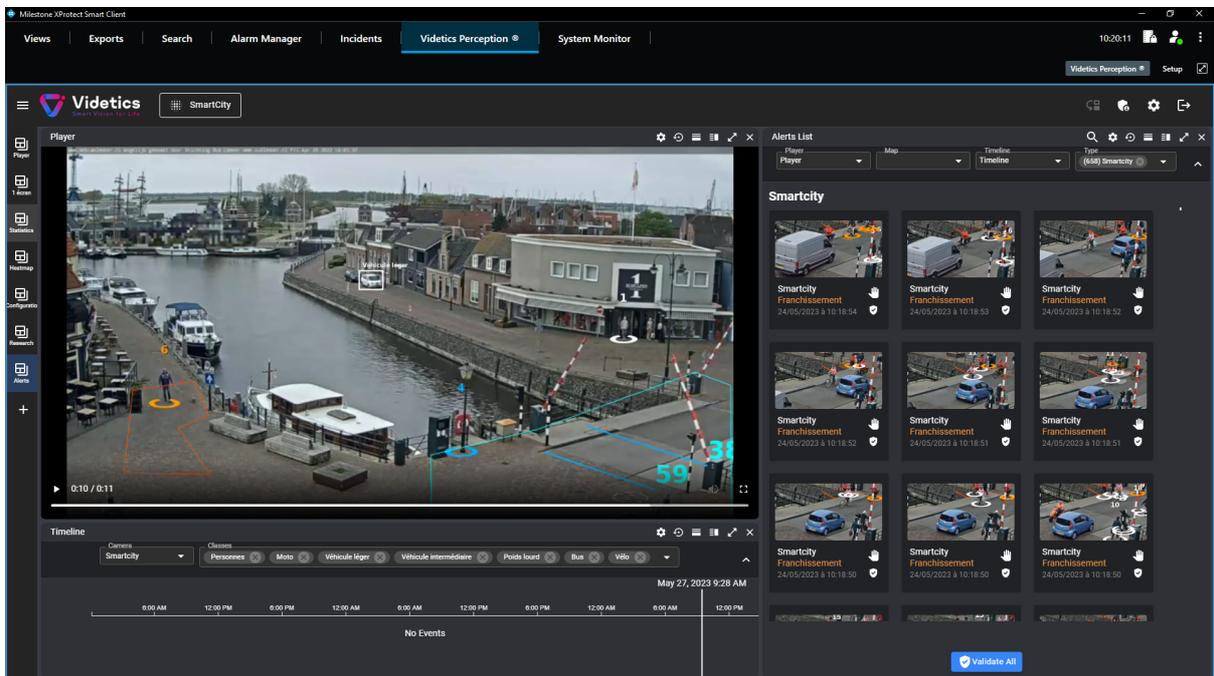
You can **create, modify or move barriers and zones** for **counting or alerting**. Here is an example of what you can do :



Configuration dashboard

[c] Alerts

If you create alert zones or barriers during configuration, these analytics markers will trigger alerts. You can see a recap of all triggered alerts on the Alerts premade dashboard.



Alerts dashboard

[d] Statistics

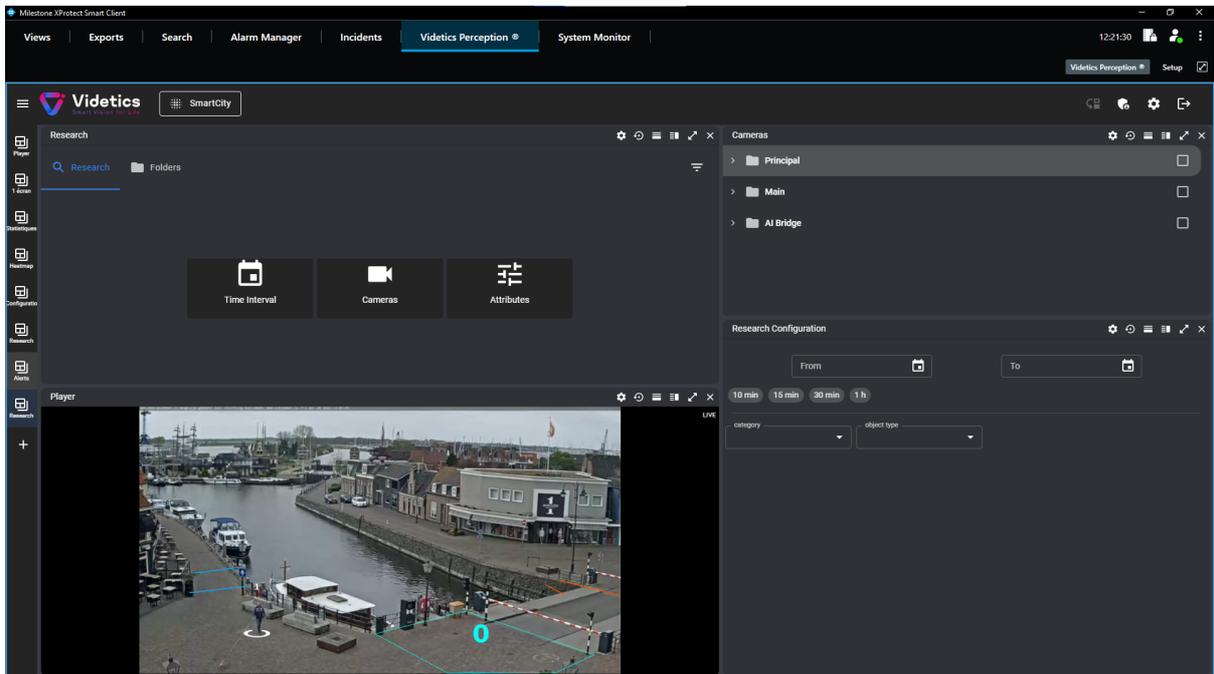
You can visualize the collected data aggregated in the form of counters, line graphs or bar graphs. You can filter the data by cameras, analytics (barriers, zones), time range, classes, ...



Statistics dashboard

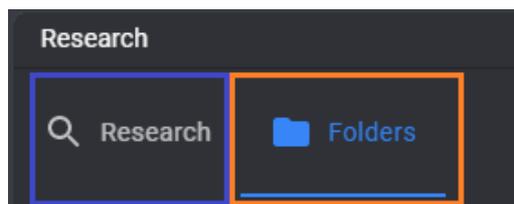
[e] A posteriori research

When you select the Research premade dashboard, you will see this default interface:



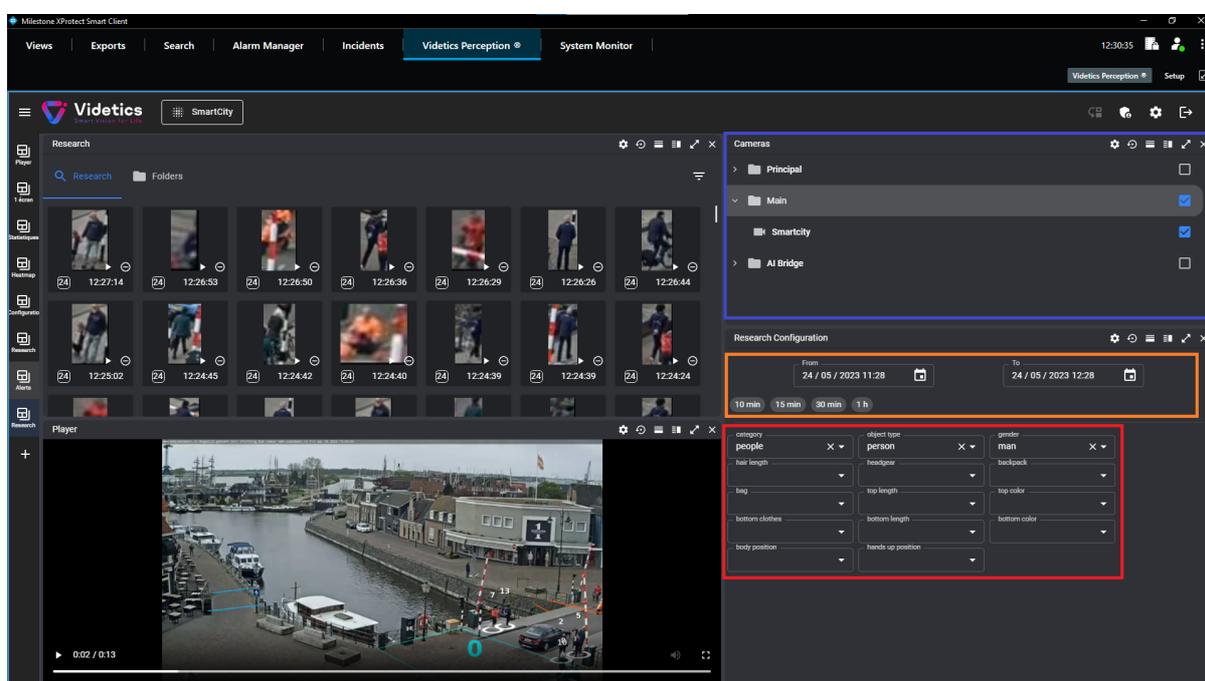
Default interface

You have 2 tabs in this dashboard: the **Research** one and the **Folders** one.



1) Person and vehicles

The dashboard feature allows you to perform retrospective research on detected persons or vehicles. With this feature, you can filter results by **cameras**, **time interval (begin date and end date)**, and various **attributes**.



Cameras, time interval and attributes selection

For persons, these attributes include **gender**, **bag**, **backpack**, **hair length**, **headgear**, **bottom clothes** (type, length, colour), and **top clothes** (length, colour), **body position**, **hands position**.

category people X ▾	object type person X ▾	gender ▾
hair length ▾	headgear ▾	backpack ▾
bag ▾	top length ▾	top color ▾
bottom clothes ▾	bottom length ▾	bottom color ▾
body position ▾	hands up position ▾	

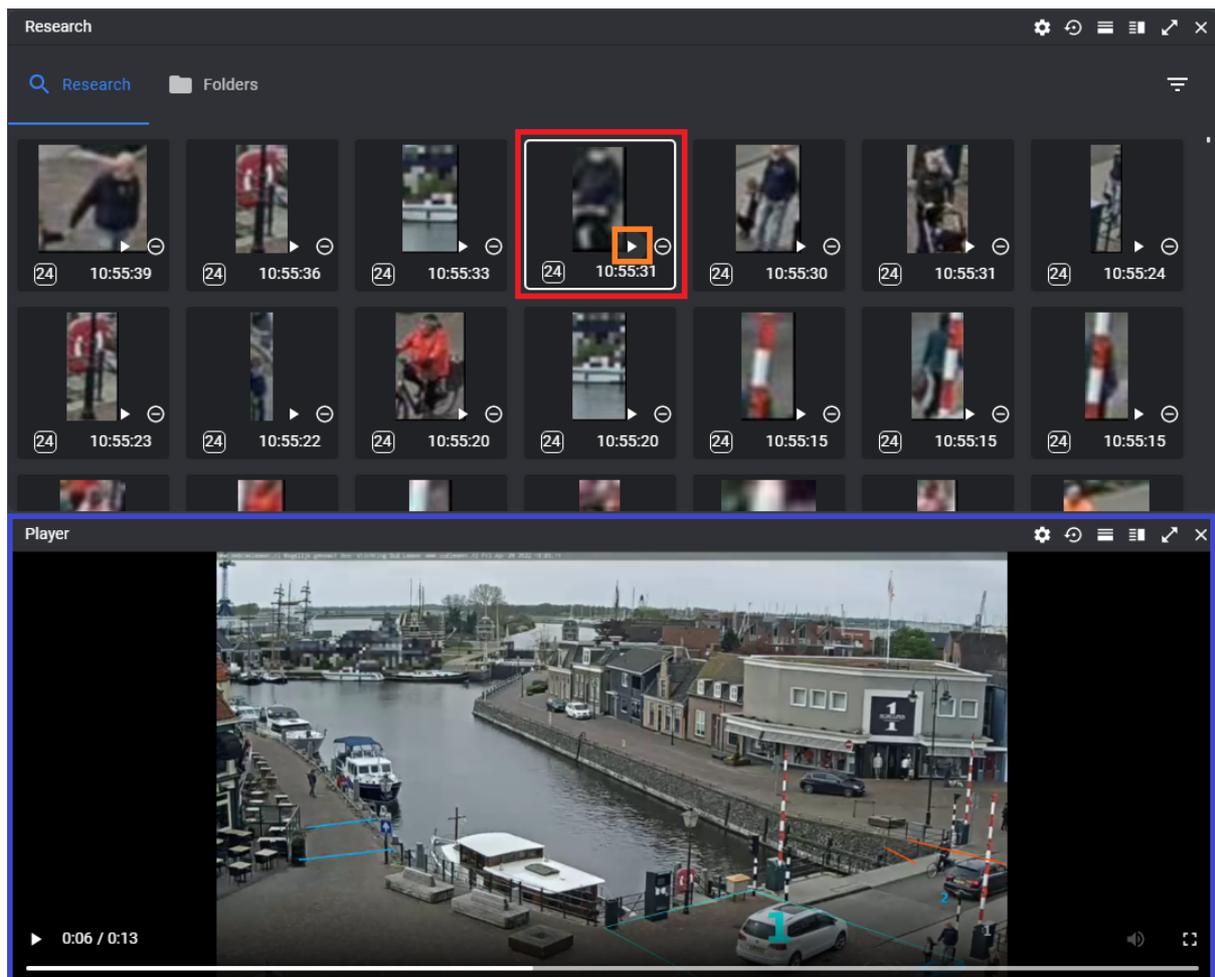
Person research filters

For vehicles, attributes include **category, colour, vehicle make and type.**

category vehicles X ▾	object type ▾	vehicle color ▾
vehicle make ▾	vehicle type ▾	

Vehicle research filters

All detections that correspond to the filters you've selected will be listed as **thumbnails** on the central part of the dashboard, allowing you to quickly and easily locate the detections you're interested in. Additionally, by **clicking on a thumbnail**, you can **replay a short video** of the detection, giving you a more detailed view of the event. With this powerful feature, you can easily review and analyze detections after the fact, making it an invaluable tool for enhancing your investigation process.



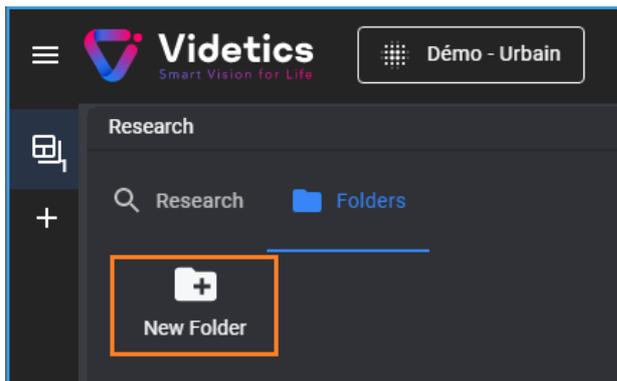
Visualize results and replay

2) Folders

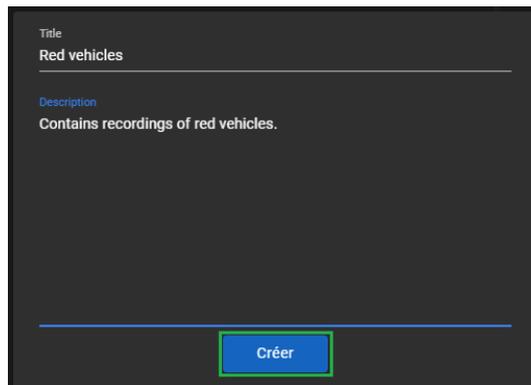
After a search, you can save some results in folders and consult them later. This feature has the same purpose as **bookmarks**.

The usage flow is as follows :

- Create a new folder by clicking on the *"New Folder" icon*, fill the *"Title"* and *"Description"* fields and press the *"Create" button*,

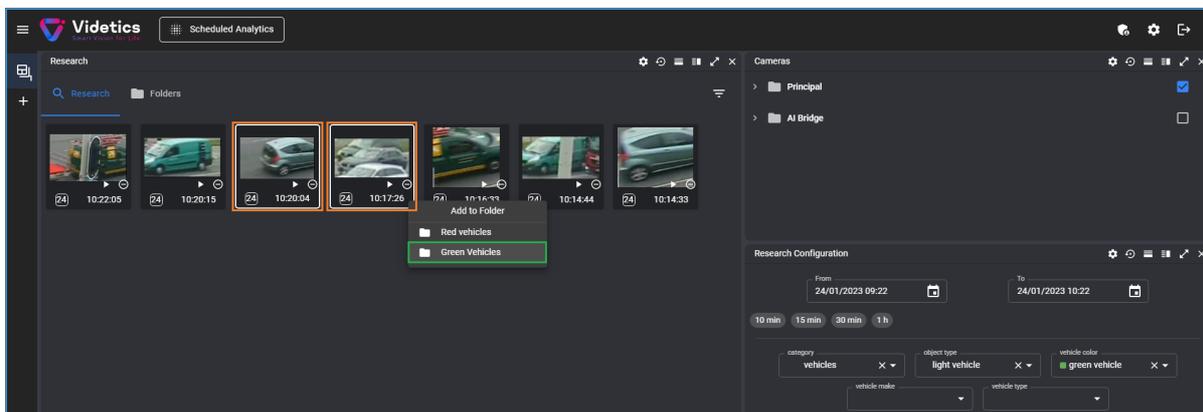


Add new folder



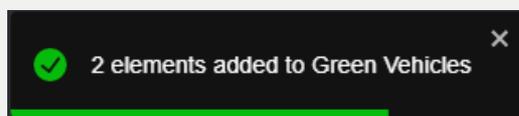
Folder creation

- Select some research results (CTRL + Left-Click to select several results), right-click on an item and select the folder you want,

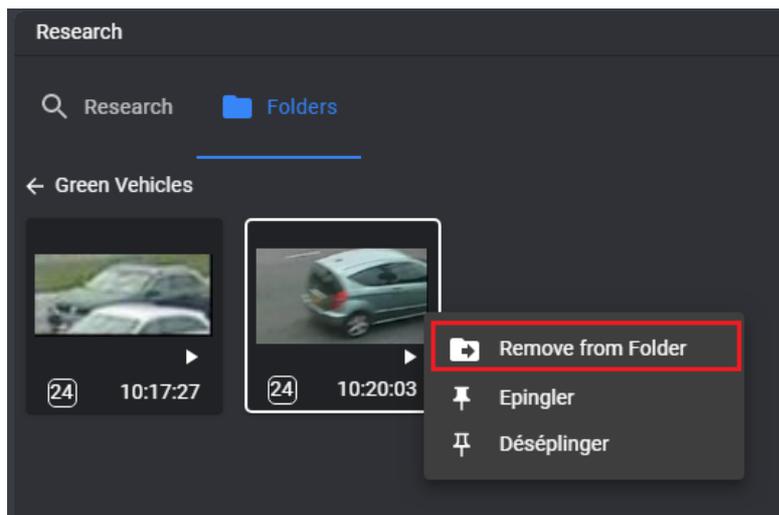


Folder content addition

Note: A notification will appear to confirm the addition of the elements.



- If you want, you can delete results from a folder. Select items in the same way as for adding, right-click on an item and press the "Remove from Folder" button,



Folder content deletion

Videtics Perception alerts in Alarm Manager tab

Generated alerts by *Videtics Perception* are viewable in the [Alerts dashboard](#) as explained before but you can also see them directly in the *XProtect Smart Client*.

In the *Smart Client*, alerts are separated in two parts: **events** and **alarms**. Each alert raised by *Perception* will be sent through AI Bridge and displayed in the **Alarm Manager** tab as an event.

Each event contains a **date** (when the event occurred), a **message** (the analytics event type), a **source** (the camera), and an **ID** (automatically generated). If this event triggers an alarm, it also has an "Alarm" section.

Time	Message	Source	ID	Alarm
13:29:50 01/03/2023	zoneenter	Demo Cameras - Camera 1	10182	zoneEnter AI Bridge [A] AI Bridge Demo Cameras - Camera 1 - Video stream 1
13:29:48 01/03/2023	barriercrossing	Demo Cameras - Camera 1	10181	barrierAlert AI Bridge [A] AI Bridge Demo Cameras - Camera 1 - Video stream 1

Events details

Alarms linked to events

In the *Management Client*, you can **define an alarm** that is triggered when you receive a specific type of analytics event. That means for each event received, a corresponding alarm will be raised (with a notification on the Alarm Manager tab).



Alarm notifications

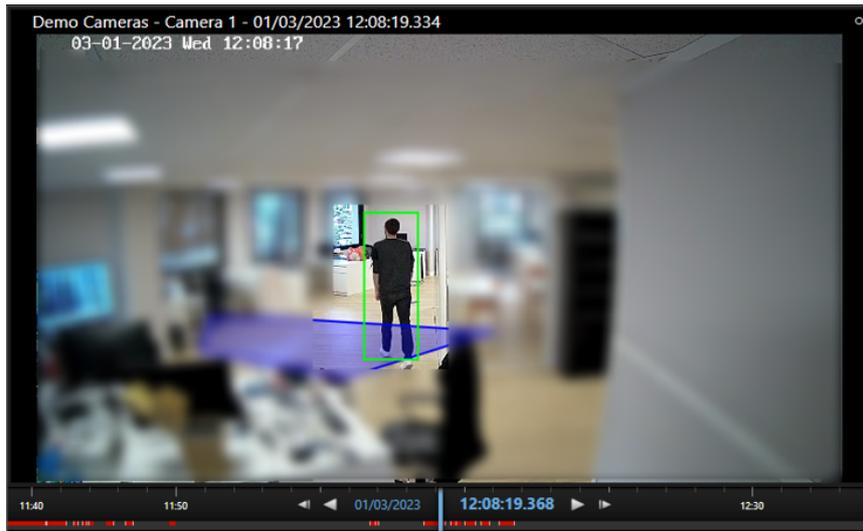
Each alarm has a **date**, a **priority level**, a state level, a message, an **alarm**, an **ID** (automatically generated), and is related to a **camera**.

Time	Priority Level	State Level	Alarm	State Name	Source	Owner	ID
11:49:39 01/03/2023	1	1	Entrée en zone	New	Demo Cameras - Camera 1		29
11:49:47 01/03/2023	1	1	Entrée en zone	New	Demo Cameras - Camera 1		32

Alarms details

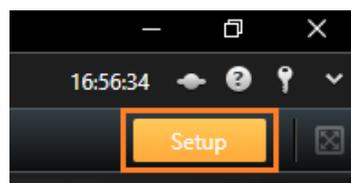
On the alarm definition, you define the **name**, sources and priority level. This name will be displayed in the **alarm** column. **Date** and **camera** are defined in the event sent by *Perception*.

You can select an alert in the list and **review** the corresponding video extract with the bounding box (in green) superposed on it.



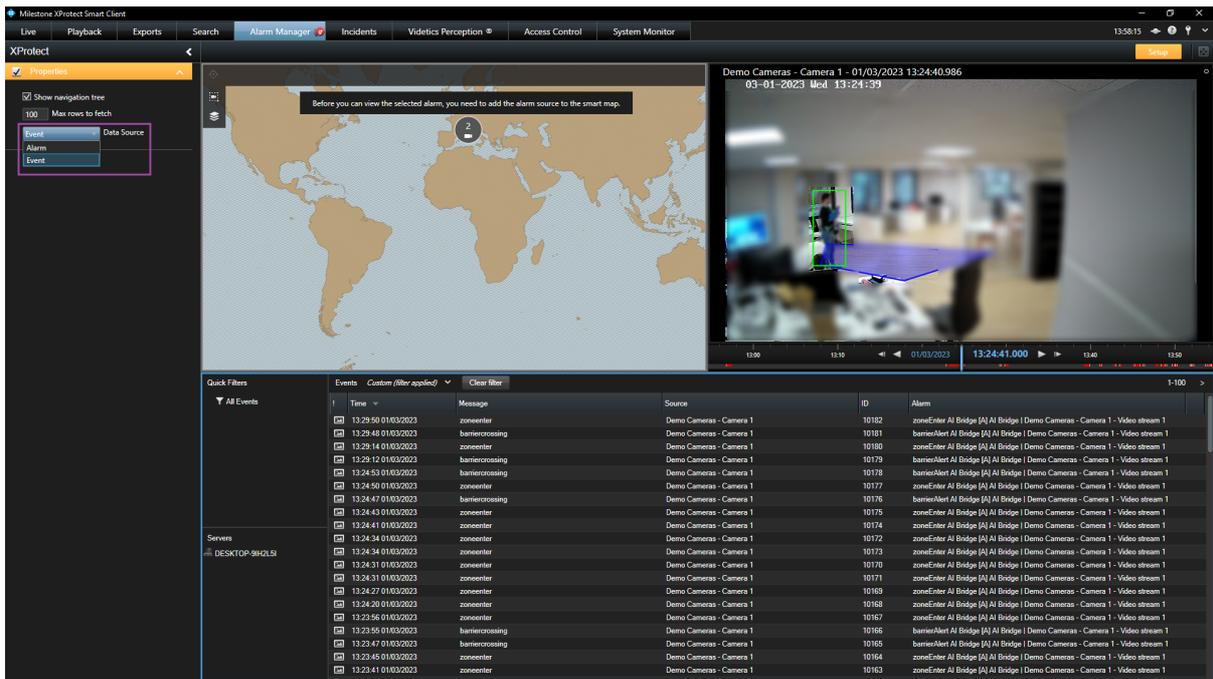
Display configuration

You can configure which kind of alerts is displayed by clicking on the **Setup** button (on the top left).

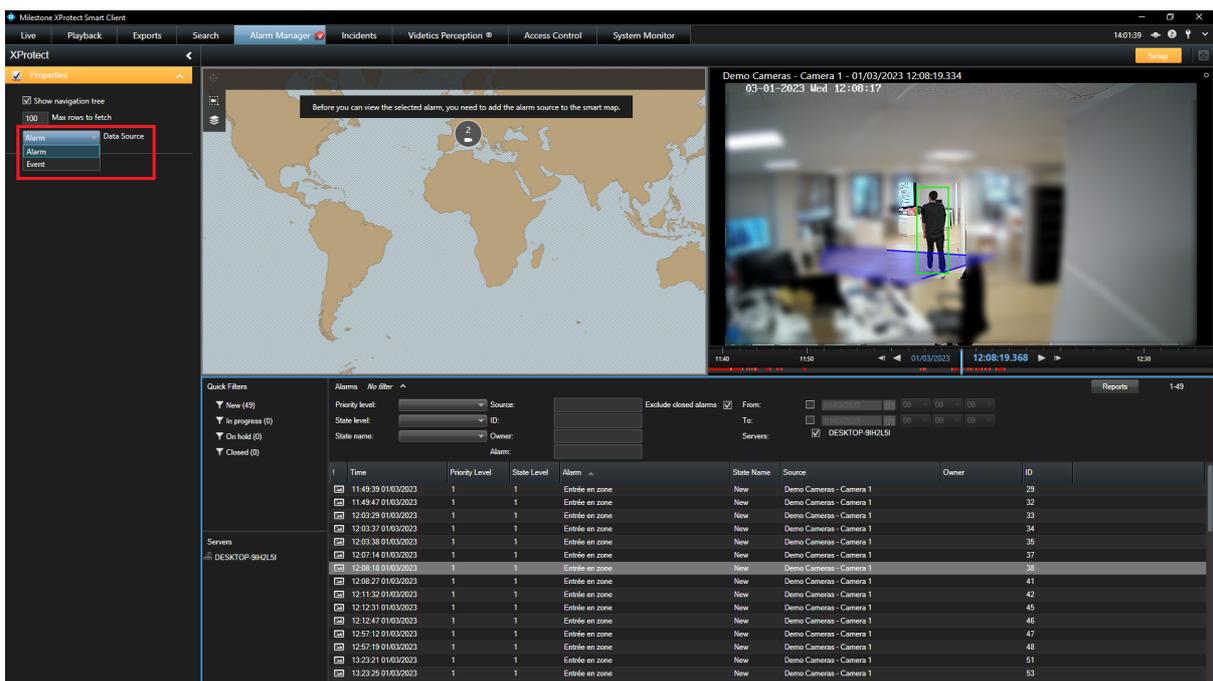


Setup button to open *Alarm Manager* configuration

To display the events, select **Event** as Data Source:



To display the alarms, select **Alarm** as Data Source:



Cameras synchronization

The goal of this feature is to import **registered and enabled cameras** in the *XProtect Recording Server* into *Videtics Perception* to allow you to configure them for AI analysis.

You have **2 options** to choose from:

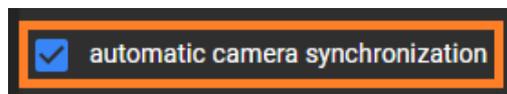
1. **Automatic synchronization:** With this option, the 2 systems will be synchronized every 5 seconds, ensuring that you always have the same cameras in both systems without any manual intervention required.
2. **Manual synchronization:** With this option, you can manually select the cameras you want to add to *Perception* by clicking on a **button** that displays all cameras not synchronized. This gives you more control over the synchronization process but requires manual effort on your part. It can be useful if you have a large fleet of cameras in *XProtect* and you want to configure analysis on only a few of them.



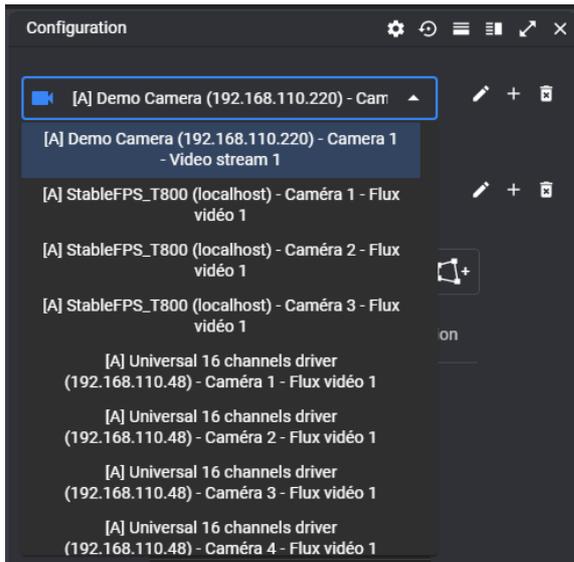
Please note that both options will enable you to import your VMS cameras into *Perception*, but you can choose the one that best suits your needs based on your preferences and workflow.

You can choose or change between these 2 options on the [connected system page in the Perception Web Application](#). Simply check or uncheck the *automatic camera synchronization* option:

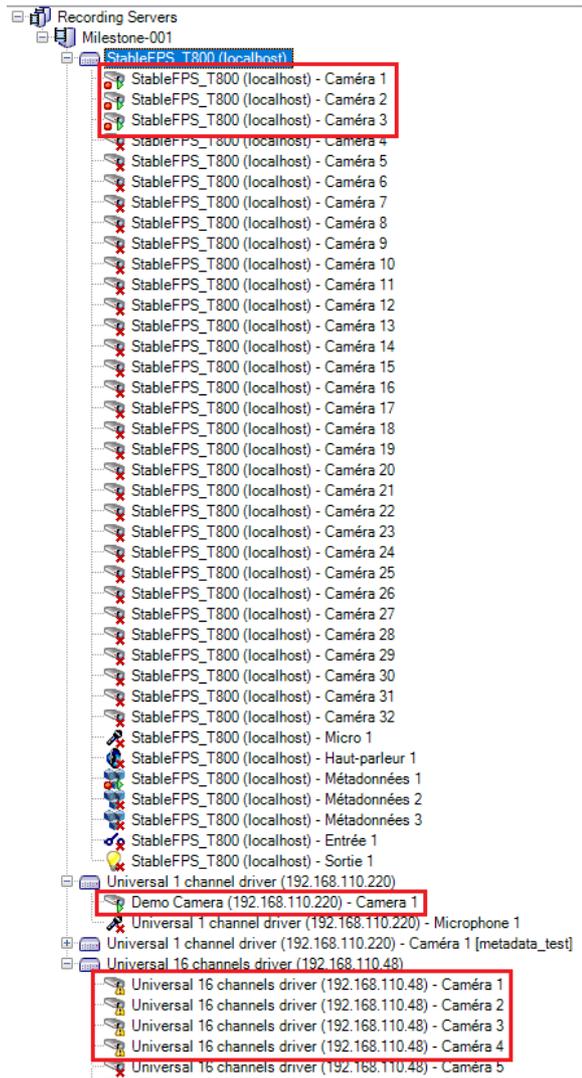
- **check** it to enable **automatic synchronization**
- **don't check** it to enable **manual synchronization**



As you can see below, with automatic synchronization enabled, the configurable cameras on the *Configuration* dashboard are the same as in the *XProtect Management Client*. Note also that all imported cameras have a "[A]" at the beginning of their name to specify that they were **created automatically** and not with the usual form (it will be the case no matter which synchronization option you choose).



Cameras configurable in *Perception*

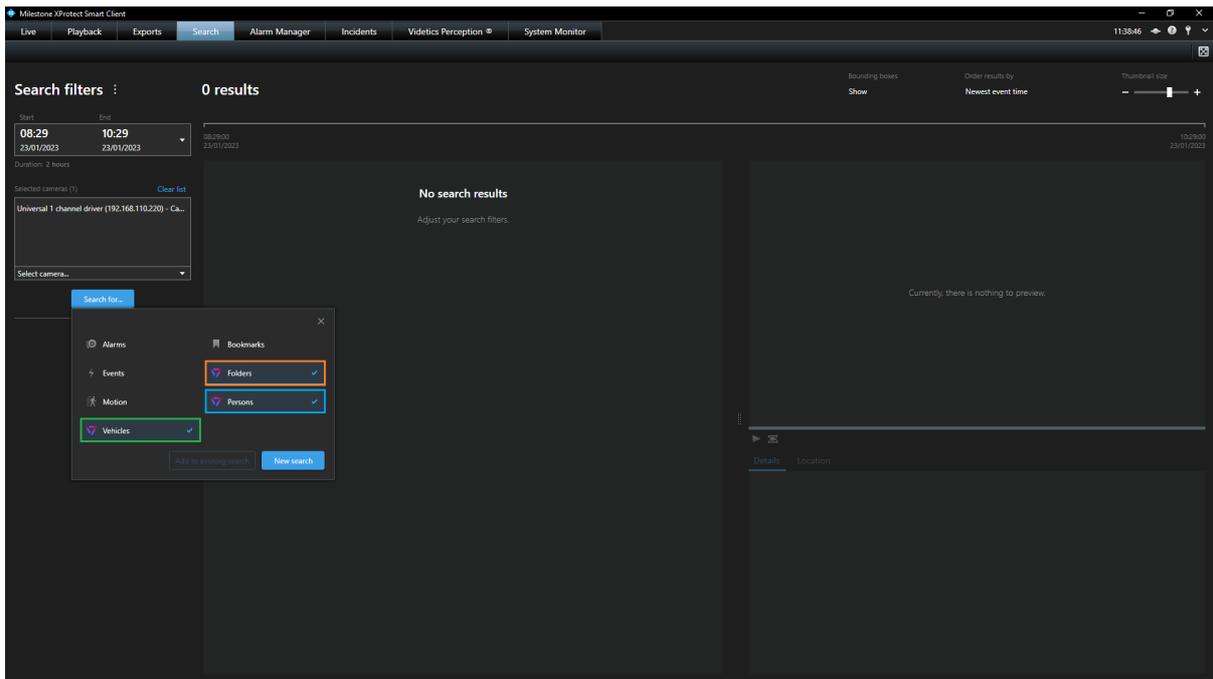


Cameras registered in *XProtect*

Search Plugins

The "**Research**" feature in *Videtics Perception* described above is also integrated directly into the Smart Client. There are 3 different plugins findable in the "Search" tab:

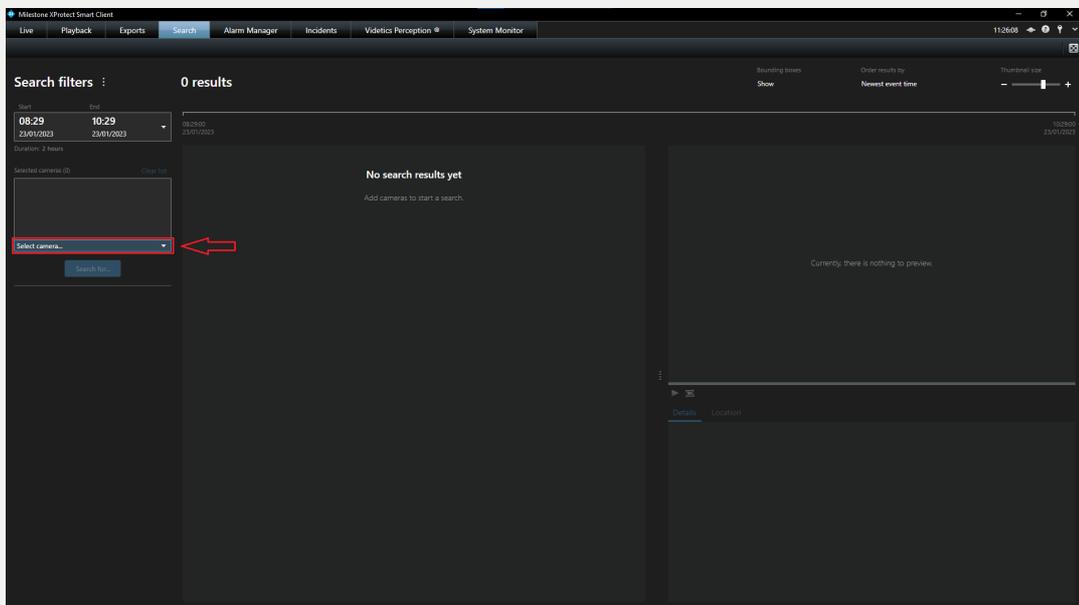
- **Persons** search plugin
- **Vehicles** search plugin
- **Folders** plugin



Search tab containing the 3 Videtics search plugins



Note: To enable the "Search for..." button, you first have to select one or several cameras:

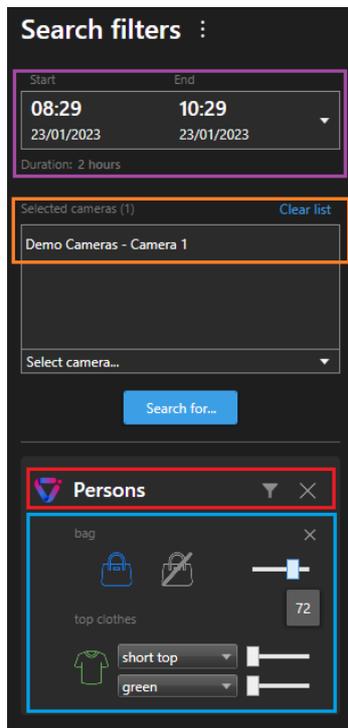


The research will depend on 3 parameters: **timespan**, **cameras** and **filters**. So, you have to:

- Define a **timespan** by selecting a begin timestamp and an end timestamp,
- Select **one or several cameras**,

- Select a search plugin (Persons or Vehicles) and one or several attributes.

Let's see an example :

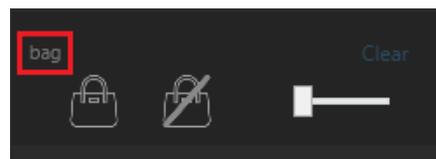


With this selection, you will retrieve the recordings of the "*Demo Cameras - Camera 1*" between 8:29 AM and 10:29 AM on 23/01/2023. These recordings will contain persons detected with a bag and a short green top, with a minimum confidence of 72% on the bag detection.

Note: The search can work even if you don't select any attribute. You will retrieve all the recordings with people detected on the selected cameras during the selected timespan, without any filtering on attributes.

How to select an attribute

For every filter, the attribute name is displayed on the top left of the filter layout.



There are 2 types of selection interfaces: **switch filter** and **lists filter**.

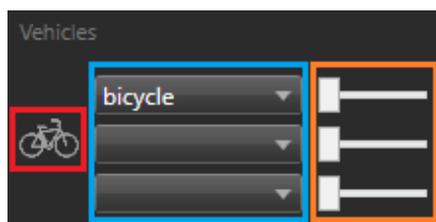
Switch filter

- This kind of filter offers you only **2 options**: all the detected persons are classified in one of these 2 categories. You cannot choose both, because selecting both is equivalent to selecting nothing.
- To select the category to filter with, **click on the corresponding icon**. It will become coloured, which means the filter is selected.
- It has always the same design: **2 icons** and a **confidence slider**. Take for example the **bag filter**. In the first case, the research will keep only people **with** a bag. In the second case, the filter will keep only people **without** a bag.

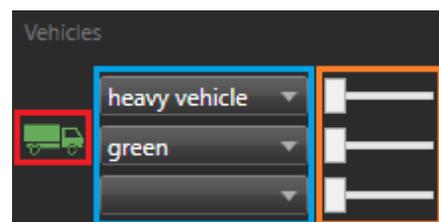


Lists filter

- This kind of filter offers you a **list of choices** for each attribute. A "lists filter" can regroup several attributes. In other words, we can say that it combines several attributes to form a single filter.
- To enable the filter, **select an item** from a list. It will fill the content of the dropdown list, which means the filter is selected.
- For each attribute, the design is a **dropdown list** (also called combo box), a **confidence slider** and an **icon** that changes depending on the list's selected items (design and colour).

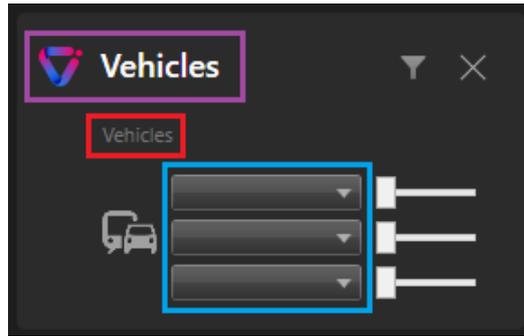


Type: bicycle

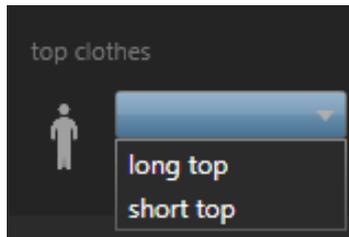


Type: heavy vehicle and Color: green

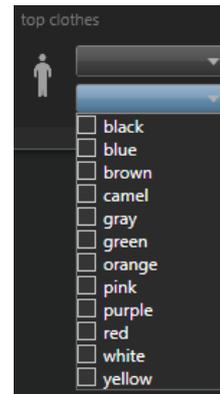
- For example, the **vehicles search plugin** contains only **one filter** with **3 lists**: type, colour and brand.



- These lists are **single-selectable** or **multi-selectable** :

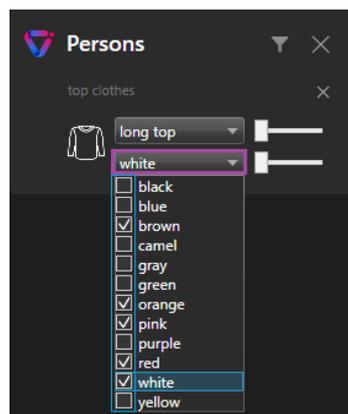


Single selection



Multiple selection

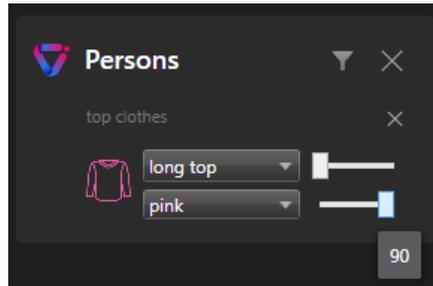
- For multi-selectable lists, you have a **checkbox next to each item**, you can check several items but **only one will be displayed as content** of the combo box.



Confidence slider

AI algorithms provide a **confidence score** (between 1% and 100%) for each detection on each attribute. You can filter the search results by adjusting the minimum confidence score you want. The **slider** next to each selection filter represents this minimal confidence score (in %).

In the following example, the research will return all detections of a person with a long pink top with a confidence score of at least 90% on the colour:

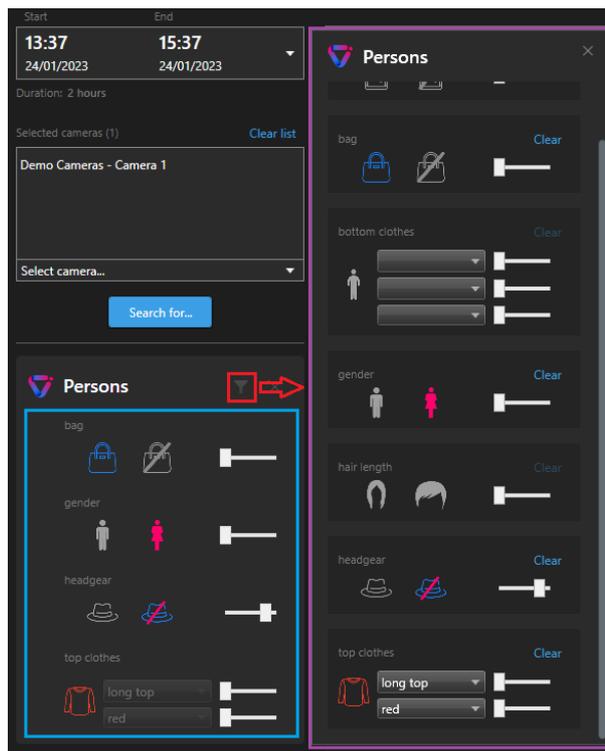


In other terms, **the higher the minimum confidence score, the smaller the number of results will be, but the more these results will match your search.** This feature allows you to refine your search and keep only the more relevant recordings.

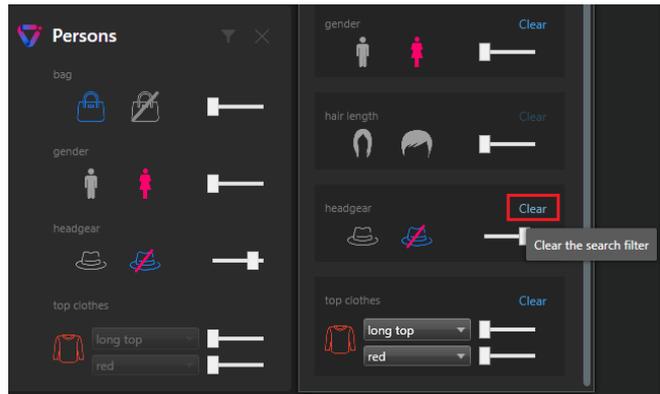
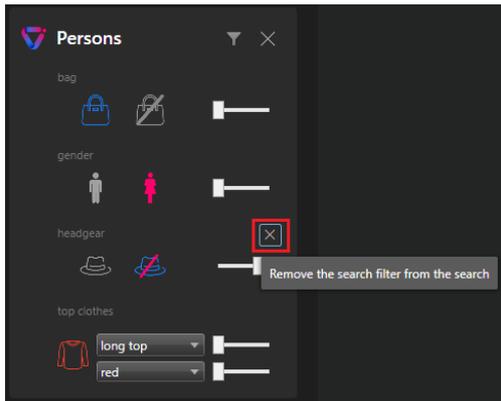
Filters selected

After selecting an attribute as a search filter (click on an icon or select an item from a list), the filter will be created on the **bottom left corner** of your screen. In this part of the interface, you will find all the selected filters.

You can modify your selection directly in this part or re-open **all the filters list** by clicking on the **filter button**.



To **delete** a selected filter from the search, you can do it with the **cross button** or the **"Clear" button**:



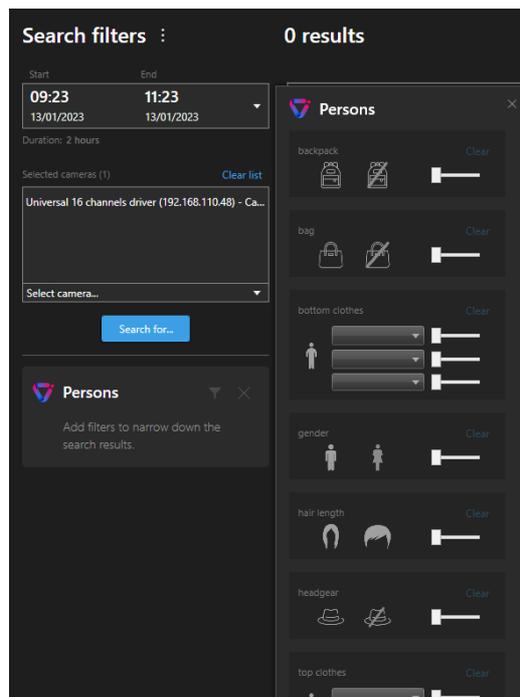
Note: If you have any questions about the process to investigate and filter recordings, please refer to the Milestone official documentation:

Search and export video evidence

◆ https://doc.milestonesys.com/latest/en-US/portal/hm/chapter-page-sc-search.htm?tocpath=XProtect%20Smart%20Client%7CSearch%20and%20export%20video%20evidence%7C___0

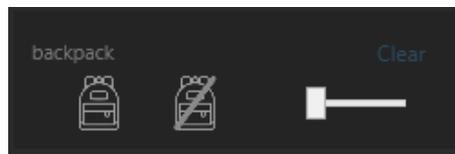
Persons filter

When you select the "Persons" filter on the filters list, you will see this default interface:



As explained before, you can filter recordings by detected attributes. Here is the exhaustive list of attributes for person detection and how it looks in the interface.

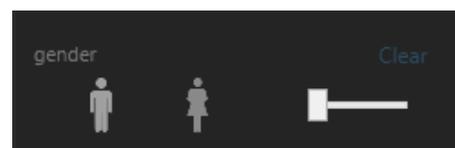
- **Backpack:** with backpack or without backpack



- **Bag:** with bag or without bag



- **Gender:** man or woman



- **Hair length:** short hair or long hair

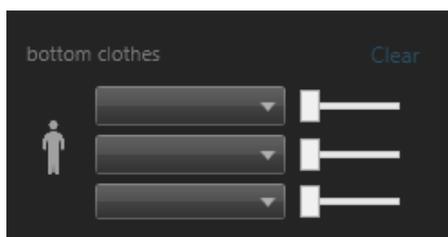


- **Headgear:** with headgear or without headgear



- **Bottom clothes (combine 3 attributes):**

- **Type:** skirt or trousers
- **Length:** long or short
- **Colour (multi-selectable):** black, blue, brown, camel, gray, green, orange, pink, purple, red, white, yellow



- **Top clothes (combine 2 attributes):**

- **Length:** long or short
- **Colour (multi-selectable):** black, blue, brown, camel, gray, green, orange, pink, purple, red, white, yellow

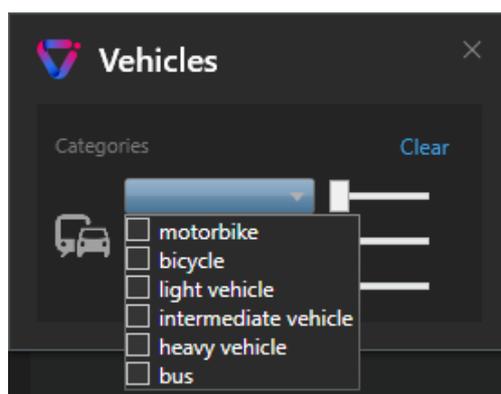


Note: The colour parameter on the "top clothes" and "bottom clothes" filters are **multi-selectable**. That means you can select several colours for the same research.

Vehicles filter

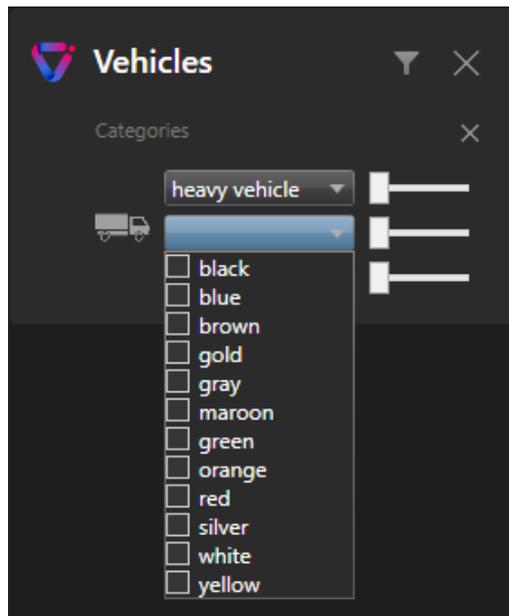
On the Vehicle plugin, you can filter recordings by **3 attributes on the same filter** :

- **Category (multi-selectable):** motorbike, bicycle, light vehicle, intermediate vehicle, heavy vehicle, bus



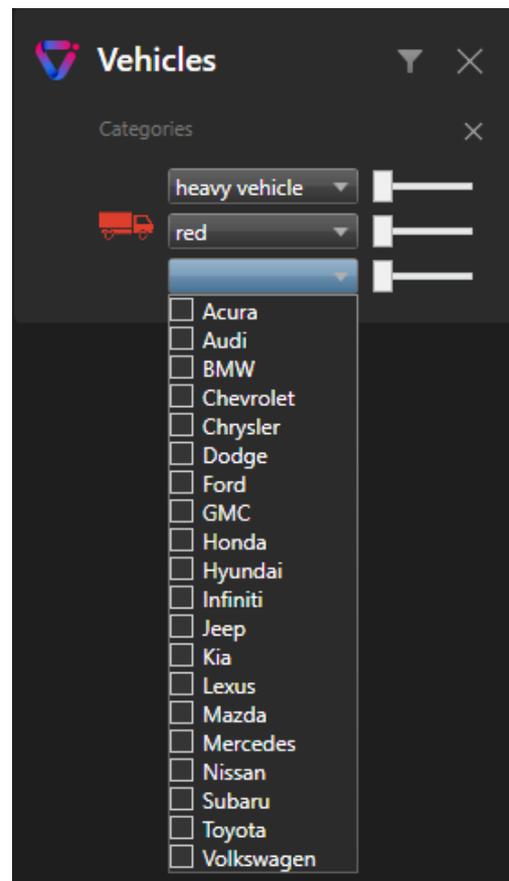
Selectable categories

- **Colour (multi-selectable):** black, blue, brown, gold, gray, maroon, green, orange, red, silver, white, yellow



Selectable colours

- **Car make (multi-selectable):** Acura, Audi, BMW, Chevrolet, Chrysler, Dodge, Ford, GMC, Honda, Hyundai, Infiniti, Jeep, Kia, Lexus, Mazda, Mercedes, Nissan, Subaru, Toyota, Volkswagen



Selectable car make

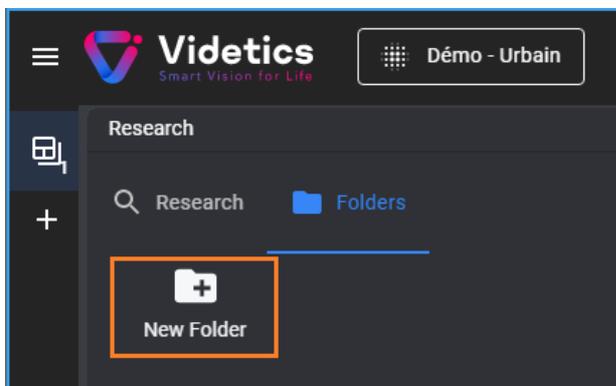
Folders

As you see in the Folders feature of *Videtics Perception*®, you can save some research results in folders. These folders are also findable in the Search tab.

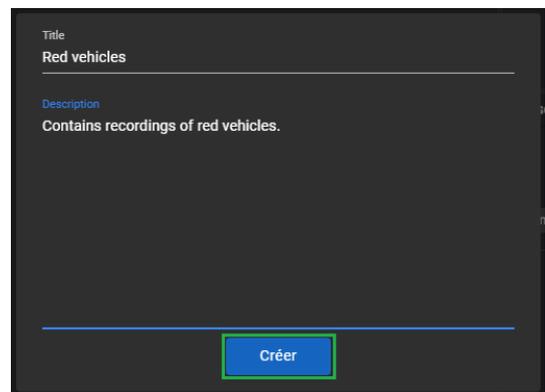
Prerequisites

To use this feature, you must have created one or several folders and added recordings to them in *Videtics Perception*®. Otherwise, nothing will appear (no folder = empty list and no content = no search results).

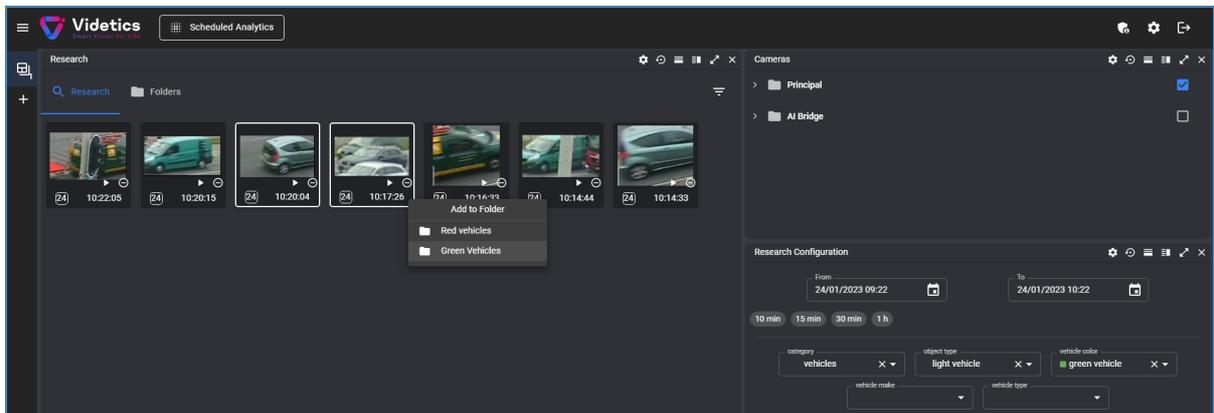
You can see below some operations on folders. Please refer to the Folders section documentation to get more details on how to use this feature.



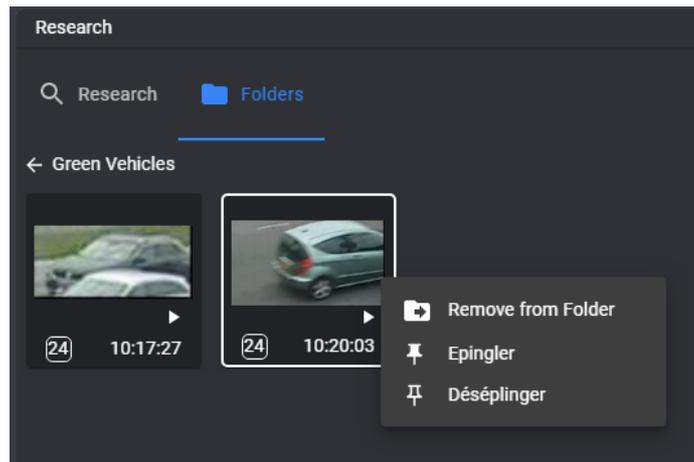
Add new folder



Folder creation



Folder content addition

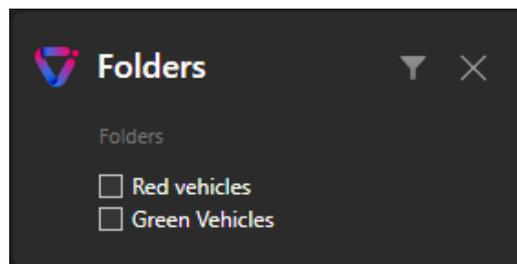


Folder content deletion

Note: You cannot do these manipulations in the *Search* tab, the folders plugin is only there to watch these recordings on the Milestone player and enjoy all the reviewing features provided by the *Smart Client*.

Workflow

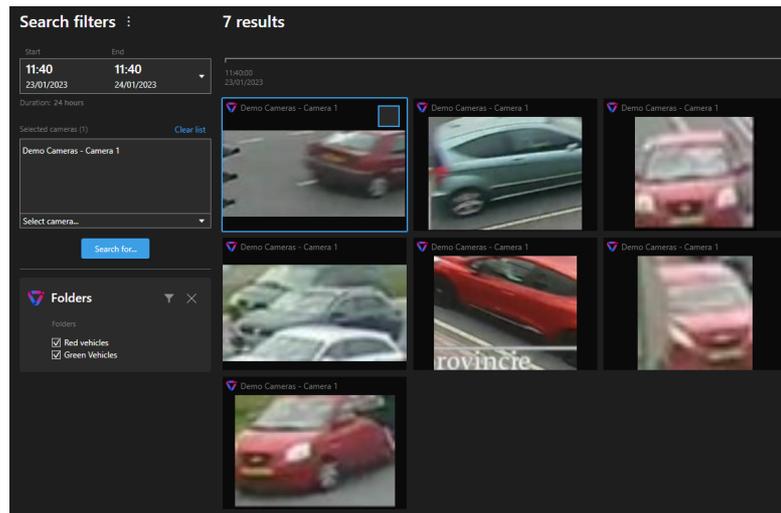
- Cameras don't matter in this filter, so select any of the cameras to be able to access the list of plugins,
- Select the "*Folders*" search plugin,
- All folders name will be displayed as a list of check-boxes,



- Check a box to display the content of the corresponding folder in the search results,



- If you check several folders, their content will be concatenated in the search results.



Warning: Cameras don't filter the folders' content but the **selected timestamps do!** You will only see the recordings that begin in the selected timespan.