Moxa E1211 Output Controller Integration App-note

Contents

1. Introduction

This document details the integration of the Moxa E1211 Output Controller with CathexisVision software. The Moxa IO Controller can be used in a variety of environments. Functionally, this integration enables CathexisVision to read data on the state of the Moxa E1211 Output and to control the Output, storing event information in a metadatabase.

1.1 Requirements

- CathexisVision 2020.4 and later
- Win 10-64bit and later, Win Server 2008 R2 and later.
- Minimum 4GB of RAM required

1.2 Model and Firmware

- This model (E1211) was tested with Firmware V3.0 Build17111512

Note: For more information regarding the regular operation of a Moxa device, please consult the relevant Moxa documentation.

1.3 License requirements

The Cathexis Moxa E1211 Output Controller integration license requirements are as follows:

License Code	License Description
CMXA-2000	Moxa I/O Device

Note: in this integration, individual devices will require a license for each device.

A NOTE ON CAMERA CHANNELS

The CathexisVision software packages have **limits on camera channels**. A multi-head camera is physically a single device (camera) but it requires a camera channel for each one of the internal cameras. The same applies to an encoder: a 16-channel encoder will account for 16 camera channels on the CathexisVision software, even though it is a single device.

1.4 Integration Components

All CathexisVision integrations have two component levels: **Device** and **Object**.

Device   The device is CathexisVision software's interface, which handles all the interaction between CathexisVision and the integrated hardware. When an integration is added to the CathexisVision system, a device is added. The messages received from the device are called Device Events.

Objects   Objects are the individual pieces of hardware that comprise the integration. There can be multiple "object types" under the objects group.

USEFUL LINKS

*To view **tutorial videos** on CathexisVision setup, visit https://cathexisvideo.com/resources/videos*

*Find answers to Cathexis **Frequently Asked Questions**: https://cathexis.crisp.help/en/?1557129162258*

2. Device Addition and Configuration

This section will detail the procedure for setting up the two systems to effectively communicate with each other.

2.1 CathexisVision Specific Moxa Setup (Set up the Moxa device)

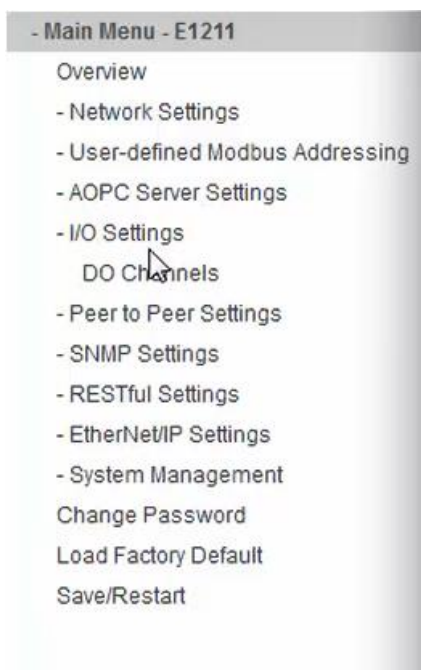There are some steps to take in the Moxa device's setup before the device can be added to CathexisVision.

2.1.1 Setting up the Moxa Device

1. Open a web browser and navigate to the IP address of the Moxa device (**Note**: the IP address in the example was used for testing purposes).

192.168.7.71

MOXA ioLogik Remote I/O Server

Password : ••••••

Submit

2. Enter the password to log in.

3. Outputs can be set as either a **Pulse** or a **Digital Ouput**. To do this, select **I/O Settings** and then **DO Channels** on the menu on the left.

- Main Menu - E1211
  Overview
  - Network Settings
  - User-defined Modbus Addressing
  - AOPC Server Settings
  - I/O Settings
    DO Channels
  - Peer to Peer Settings
  - SNMP Settings
  - RESTful Settings
  - EtherNet/IP Settings
  - System Management
  Change Password
  Load Factory Default
  Save/Restart

4. Select the output to be changed.

DO Channel	Mode	Status	ON Width	OFF Width
DO-00	DO	OFF	--	--
DO-01	DO	OFF	--	--
DO-02	DO	OFF	--	--
DO-03	DO	OFF	--	--
DO-04	Pulse Output	STOP	1000.0 ms	1000.0 ms
DO-05	DO	OFF	--	--
DO-06	DO	OFF	--	--
DO-07	DO	OFF	--	--
DO-08	DO	OFF	--	--
DO-09	DO	OFF	--	--
DO-10	DO	OFF	--	--
DO-11	DO	OFF	--	--
DO-12	DO	OFF	--	--
DO-13	DO	OFF	--	--
DO-14	DO	OFF	--	--
DO-15	DO	OFF	--	--

5. In the window that opens, select either **DO** (Digital Output) or **Pulse Output** from the **Current Setting** drop-down menu. If **Pulse Output** has been selected, check **Pulse Start** on the right-hand side to enable this setting. Then click Submit to apply the change.

DO Channel 3 Settings

Mode	DO Status	ON Width*	OFF Width*	Pulse Count	Pulse Start

[1. Current Setting]
DO — OFF
DO
Pulse Output
OFF
[3. Safe Status Setting]
HOLD LAST
[4. Power On Delay] 0 Sec(Max:65535)
Apply to all DO channels
[5. Alias Name]
Alias name of channel
DO-03
Alias name of "OFF" status
OFF
Alias name of "ON" status
ON

Submit Close

*NOTE: Pulse width unit = 1 ms, range = 1-65535.

WARNING: Be sure to Save/Restart your settings.

2.2 Devices Section (Add a New Device in CathexisVision)

Integrations are added on a server-by-server basis. They are managed in the Integration Devices panel, under the Setup Tab of the servers to which they are added.

To get to the Integration Panel, follow this path:

2.2.1 The Integration Devices Panel
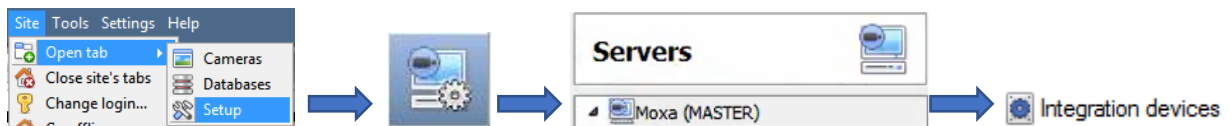
2.2.1 Device Addition

1. Once in the Integration Devices panel, click on New device. This will open the addition dialogue.

2. Select the **Moxa IO** device driver from the list.
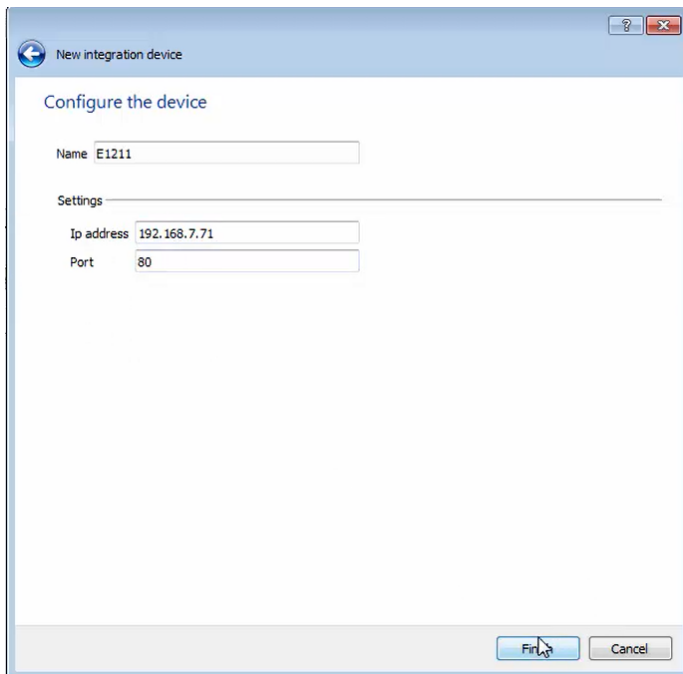
3. Give the device a descriptive **name**.

4. Enter the **IP address** of the device.

5. Enter the **port number**.

6. Click **Finish**.

2.3 Configuration Section (Tabs)

The configuration section is divided up into several tabs. These tabs are: **Object configuration, Object properties, Device events, Object groups,** and **General.**

2.3.1 Object Configuration Tab
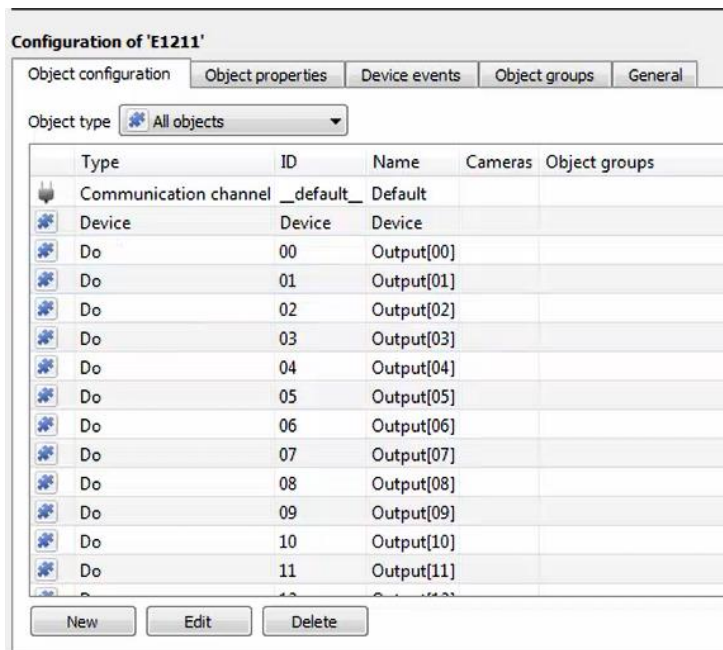
In the object configuration tab, the **individual objects** that comprise the integration can be viewed. In the example, a list of digital output devices can be seen.

2.3.1.1 Object Configuration Buttons

 To add a new object, click New.
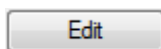
 To edit an existing object, click Edit.
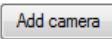
 To delete an existing object from the CathexisVision configuration, click Delete.

2.3.1.2 Link an Output to a Camera

Adding a camera to an object will mean that whenever there is an event on that object, the recording from that camera will be related to the time and date of the object event, in the Integration database.

Double-click the output object to open the **Edit Object** window.

To add a camera, click Add camera , and select the relevant camera from the drop-down menu.

To delete a camera, click .

To configure device overlays, click .

De-select **use defaults** and then select a location for the overlay to display from the drop-down menu.
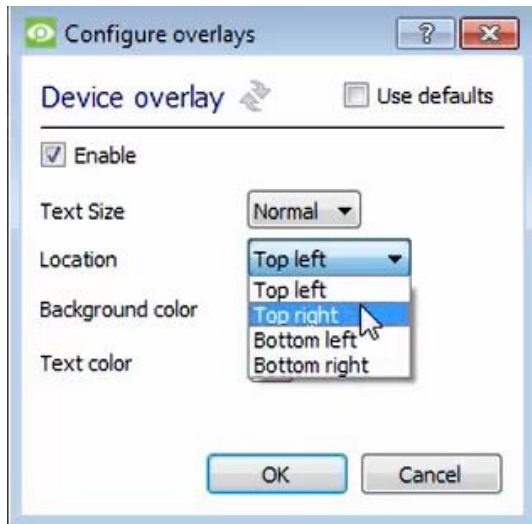
2.3.1.3 Set Access Rights
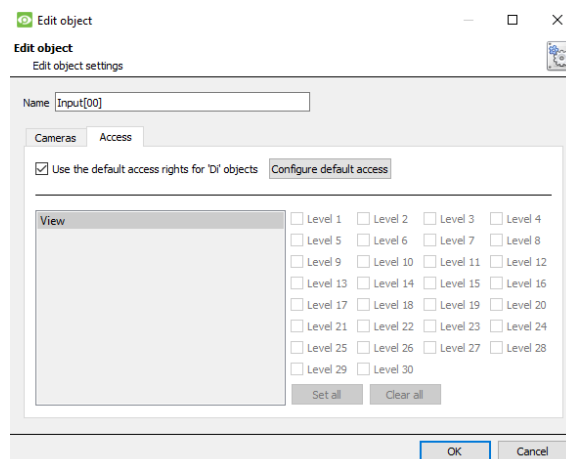
The **Access** tab allows users to set access rights for objects.

2.3.2 Objects Properties Tab
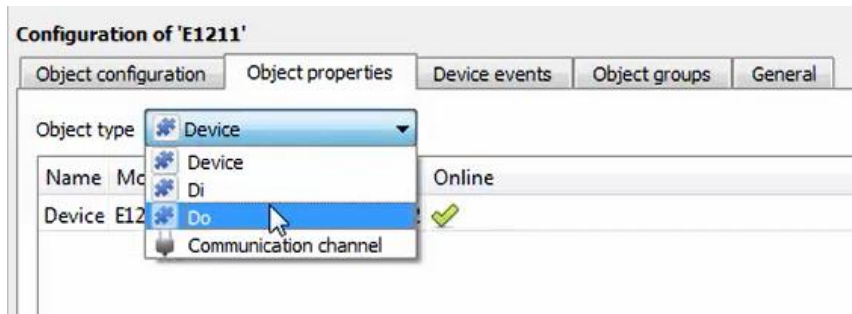
The **Object properties** tab displays the objects' properties, sorted by type.

For the Moxa E1211 device, the objects are sorted by **Device**, **DI** (digital input), **DO** (digital output), and **Communication channel**.

2.3.2.1 Object Properties Right-click Options
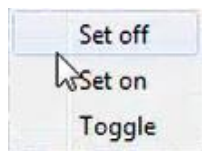
For objects in **DO** mode, there are options to **Set off**, **Set on** or **Toggle** the output.
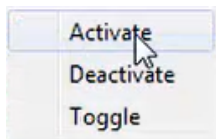
For objects in **Pulse** mode, there are options to **Activate**, **Deactivate** or **Toggle** the pulse output.

2.3.3 Device Events Tab

This tab lists all events sent from the device.

2.3.4 Groups Tab

Groups of the same type of object can be created.

Tip: Events can be triggered by an object group.
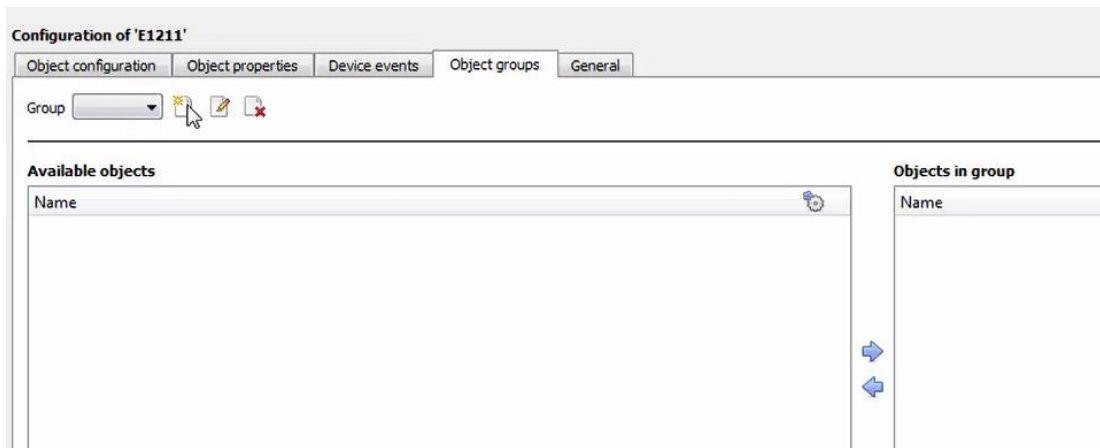
2.3.4.1 Create a Group
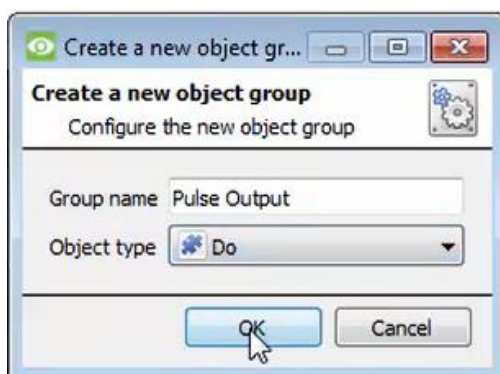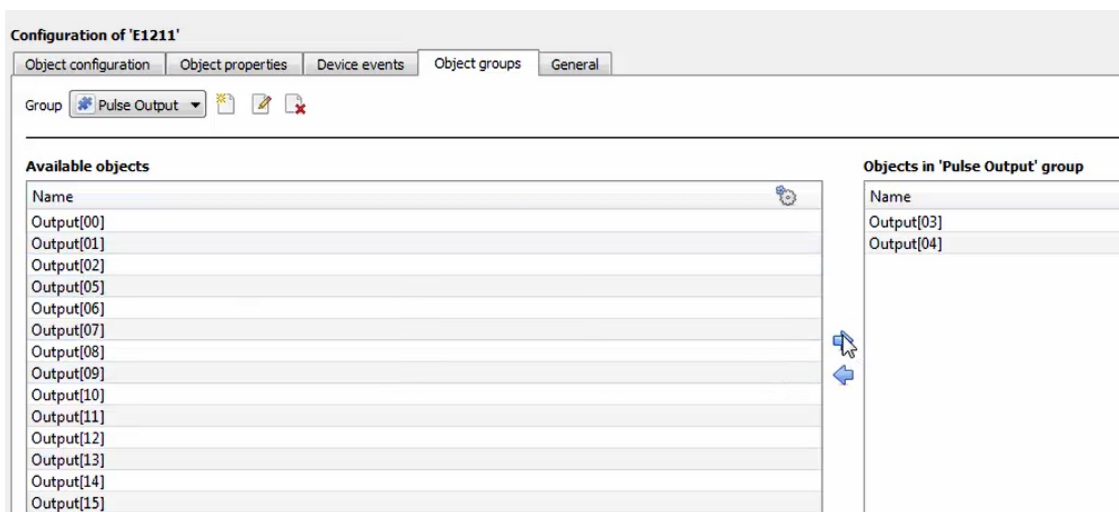
To create/edit a Moxa group, click on ▧/✎.

(**Note**: Once a group has been created, the object type of the group cannot be edited.)

Give the group a descriptive **Group name.**

Click on the drop-down menu to select the **Object type.**

A list of available objects will be displayed. To add or remove these objects to the group, select them and click on ➡/⬅. **Note**: multiple objects may be selected at a time.

2.3.5 General tab
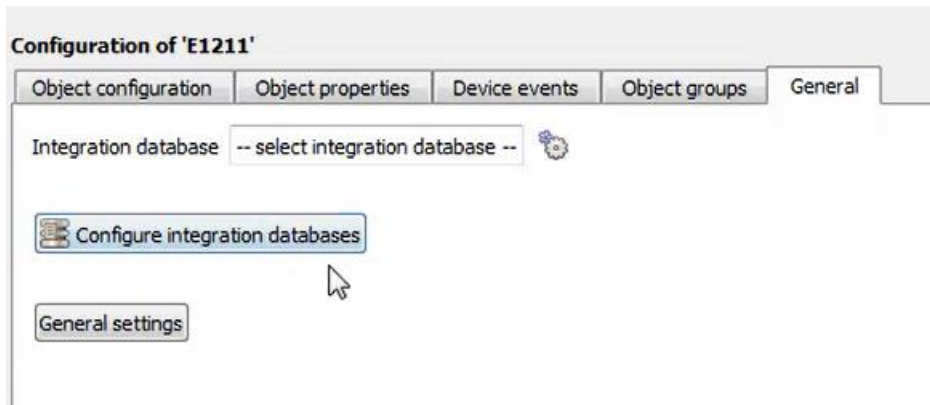
In the **General tab**, an integration database can be created.

Note: Each integrated device needs to be attached to an Integration database. Without setting up/adding a database here, the integration will not function properly within the CathexisVision system.

2.3.5.1 Configure a new database
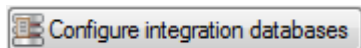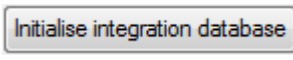
   To create a new database, click on this button.

Initialise the Integration Database
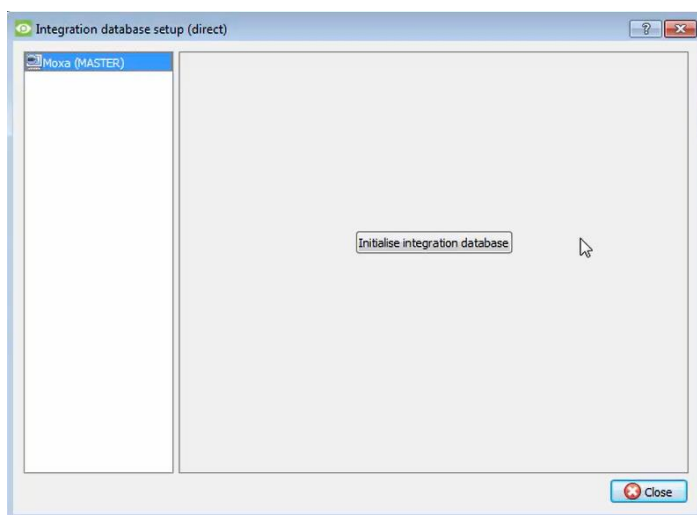
The first time an integration database is added, this feature will need to be initialised. This will add a broad database, into which all integrated devices' databases will be added.

Select the unit the database will be added to from the list on the left.

Click .
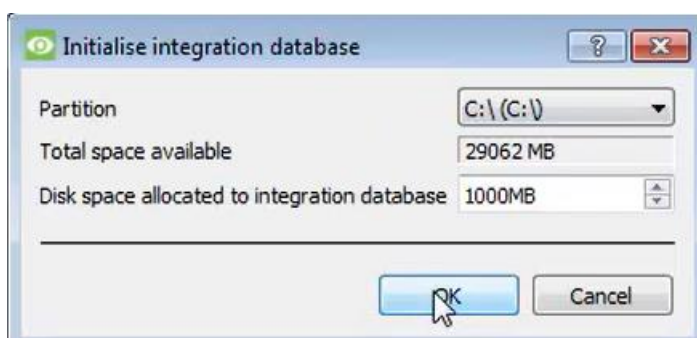
The user needs to choose the partition the database will be formed on, and select how much space will be allocated to it.

Add a New Devices Database

After initialisation, the database can be added to the integration. In the Integration Devices panel, select General. Click [Configure integration databases]. Click on the [New] button at the bottom of the **Integration database setup** window.
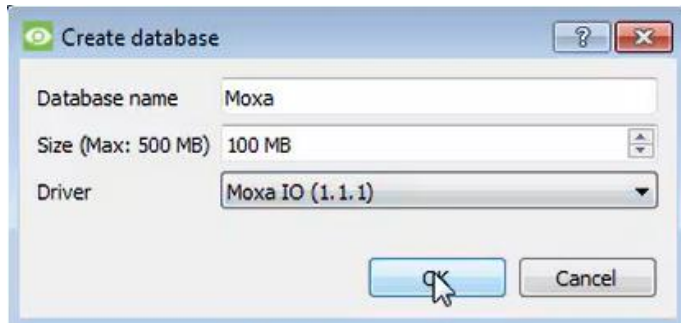
Give the Integration database a descriptive **Database Name**.

Allocate a **Size** to the new device database.

Choose the device **Driver.**

Click **OK** to create the database.

Note: When configuring the Moxa Output Controller, the user can **select the database already created** for the Moxa Input Controller.
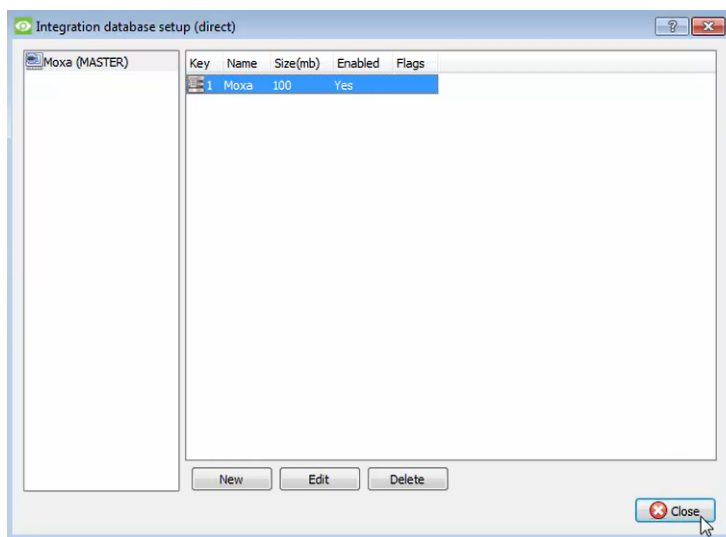
2.3.5.2 Select the Moxa Integration database

In the General tab, select this icon: 🔩   Integration database [-- select integration database --] 🔩
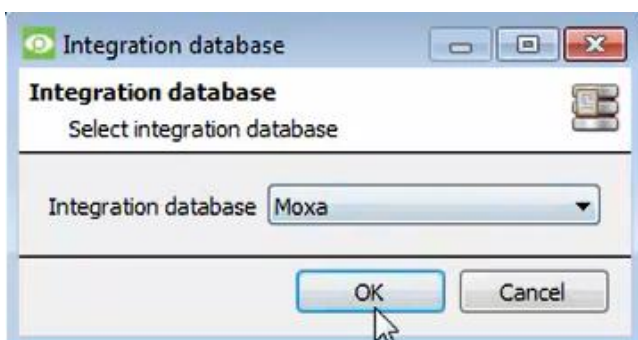
In the dialogue that appears, the user can select the integration database.

Note: Make sure that outputs are linked to cameras (see **Configuration Section** above).

3. Camera Tab Overlay Setup

Once all the relevant settings have been configured, the output controller overlay can be pulled through over the appropriate camera feed.

Note: Cameras must have already been added to objects, and overlays must have already been configured.

3.1 Video Feed Options Panel

To bring up the overlay, click the arrow to the left of the screen, to pop out the Video feed options panel. The Video feed options panel will present options specific to the settings configured for that video feed.

3.1.1 Select the Overlay
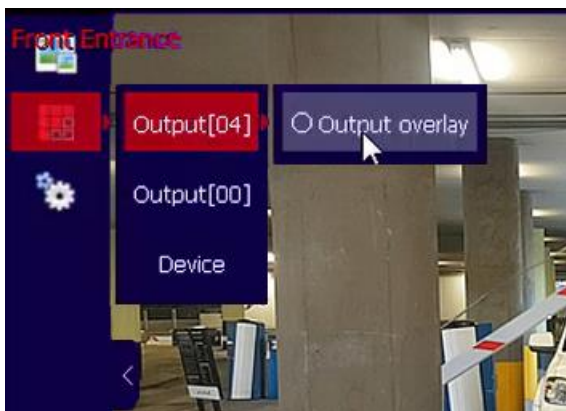
Clicking this icon will bring up the overlay options for this video feed.

Select the overlay and it will appear over the video feed, as shown above.

4. Database

The database tab allows for navigation of the databased entries. It has built-in filters, and the ability to navigate by timestamp. If a database entry has an associated recording, the user can launch this recording from within the database tab.

4.1 Navigate to the Database
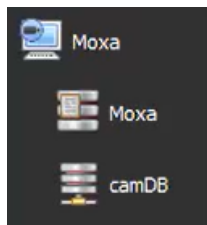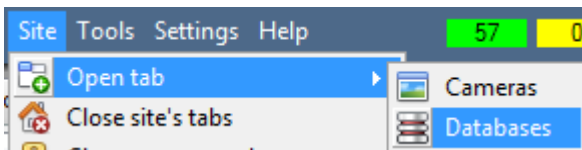
Follow the path shown to the left to view the information stored in the integration database.

Once in the databases tab, select the relevant integration database. The databases are ordered under the NVRs that they are attached to.
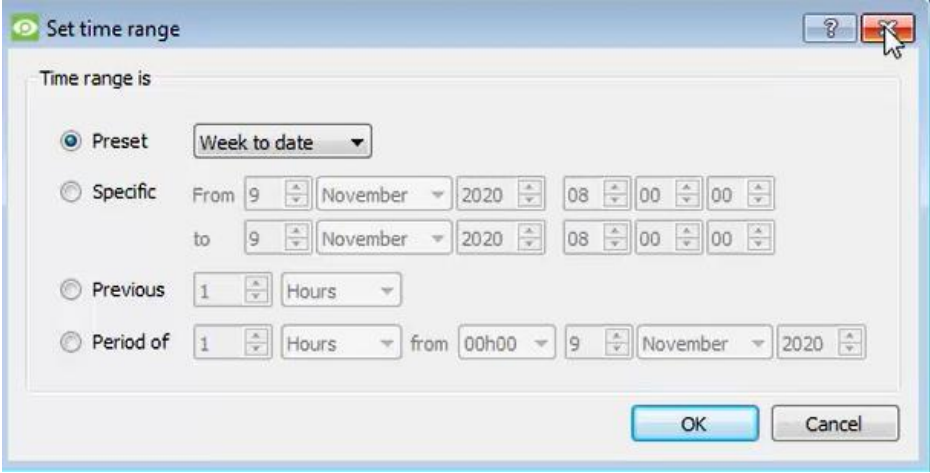

Most integrations will have a different database presentation and unique filters, due to the different parameters sent to CathexisVision by the integrated device.

On the left is an image of the Moxa database.

4.2 Database Interface

① **View**	Users may change the way that the database is presented. The **Moxa** database has the following view options:
② **Sorted By**	Events can be sorted based on the parameter of **Time**.
③ **Easy Search**	The EasySearch option allows users to quickly search the database within one of the following options:
④ **Filter**	Filter offers an advanced manner of sorting information in the Integration Database table. The following options are available within the Filters dialogue: To **enable** filters check this box: To **add** a new filter click on . The filter icon will change to when filters are active. To **delete** an added filter click on . The options in this integration are **Time, Device name, Name, State,** and **Counter.** A **Time range,** within which the search will be conducted, may also be set. To set a **Time range**, click on the blue hyperlinked text which specifies time (e.g. *in the Week to date*).

	This will bring up the following dialogue box, where the time range can be defined:
	Note: Multiple filters may be run simultaneously, and the same parameter be used to filter more than once.
	To change a filter click on the blue hyperlinked text. (For example, click on *Time* to change the filter from Time to any of the other available options.)
⑤ **Export**	Generate metadatabase reports in PDF or CSV format. See below.
⑥ **Manage Reports**	Generate scheduled metadatabase reports. See below.
⑦ **Go to Time**	This navigates to a specific point in time, down to the second. To navigate to a timestamp, set the time using the time and date boxes, and then click on the ➡ icon.

4.2.1 Scheduled Metadatabase Reports

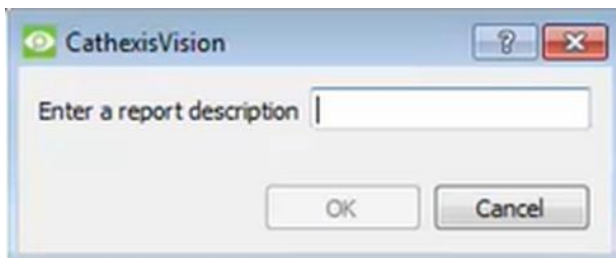Click the icon to open the scheduled report window.
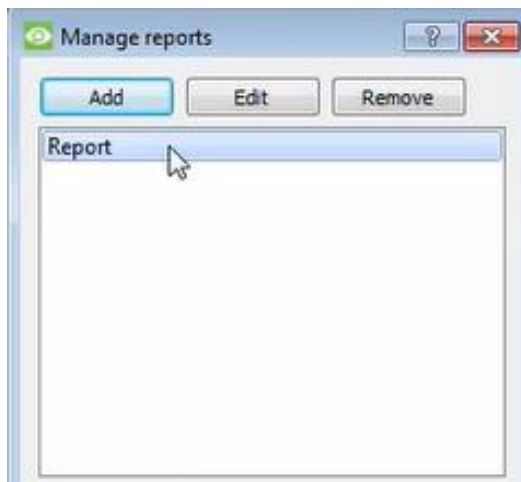
All created reports will be listed here.

First, click **Add** to create a report. Then **edit** to define the reporting schedule. See below for more detail.

To create, edit, or delete a report, select the entry and click on the corresponding button.
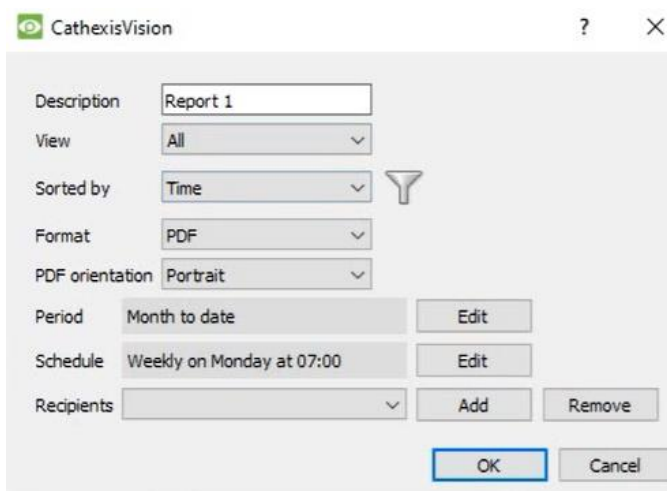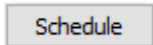
4.2.1.1 New Scheduled Report

Click **Add** and give the report a description.
Click **OK** when done.

Once the new report is listed with the other reports, select it for editing to define the reporting schedule.

Either right-click the entry and select schedule or select the entry and click the schedule button at the bottom of the screen: Schedule .

Edit the **description** if needed.
Edit **Viewing** options.
Select the **Sorted by** option.
Select the **Format**.
Select the **orientation** of the Format.
Select the **period** to be reported on.
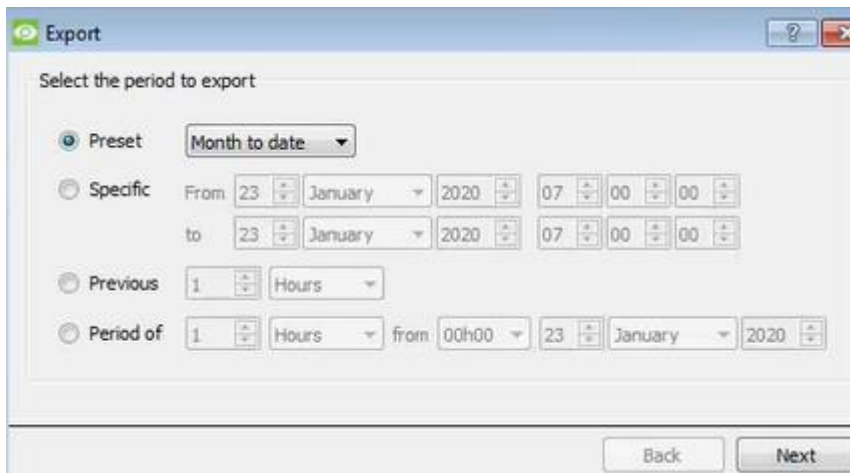Define the **Schedule** for the report.

Add/remove recipients to whom reports will be sent.

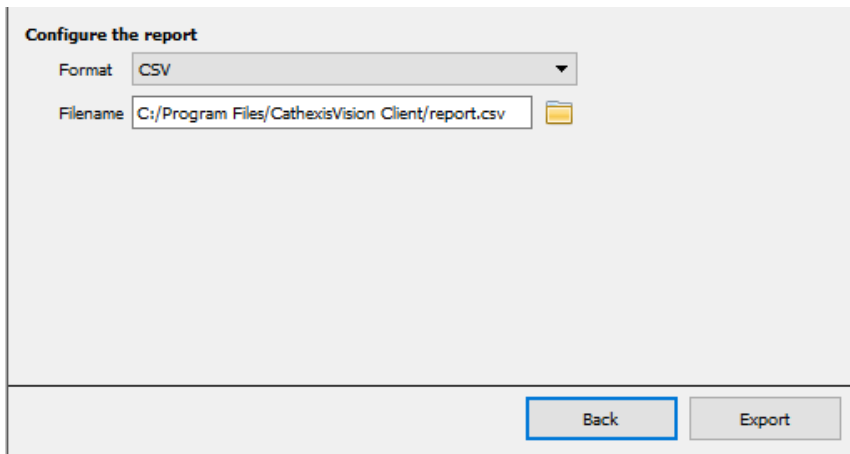|	
Add recipient:	Click **Add** and enter the email address of the recipient. Multiple recipients may be added. All will receive emails.
Remove recipient:	Select the recipient from the dropdown menu and click **Remove**.

4.2.2 Generate Metadatabase Reports

Click the [icon] icon to open the Export window.

Select the **Period** to export, and enter the required details.

Click **Next**.
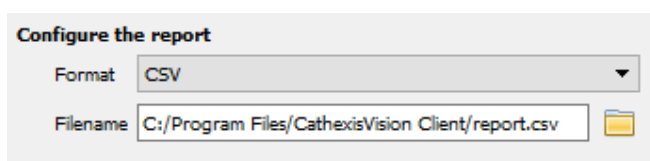
Select the **Format** to export the report in; either CSV or PDF.

See below for the two options.

4.2.2.1 Export CSV

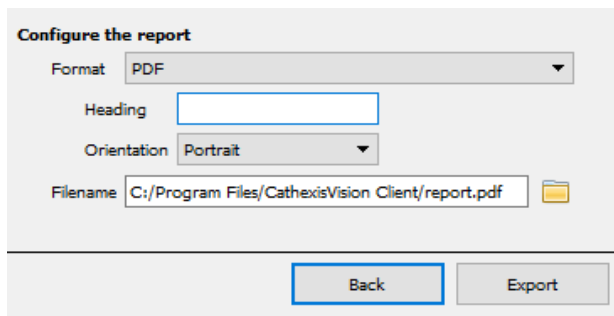Select CSV **Format**.
Edit the **Filename** by either entering it straight into text field (replacing **report.csv)**, or click the [folder icon] to choose a new save folder and filename.

4.2.2.2 Export PDF

Select PDF **Format**.

Give the PDF a **Heading**.

Select either Landscape or Portrait **Orientation** of the PDF.

Edit the **Filename** by either entering it straight into text field (replacing **report.csv**),

or click the 📁 to choose a new save folder and filename.

4.2.3 Metadata

Time	2020-11-09 09:01:31
Device name	Unnamed device(E1211)
Name	Output[04]
Index	04
Type	Pulse
State	Active
Counter	0

The right-hand side of the database displays metadata about the event entry.

4.2.4 Viewing an Entry's Associated Recording

If cameras are attached to device objects in the Integration setup, and if there are available recordings for those cameras, then each Integration database entry will have a corresponding recording.

To view a databased event's recording, double click it. A floating replay window will appear, from which content can be reviewed and archived.
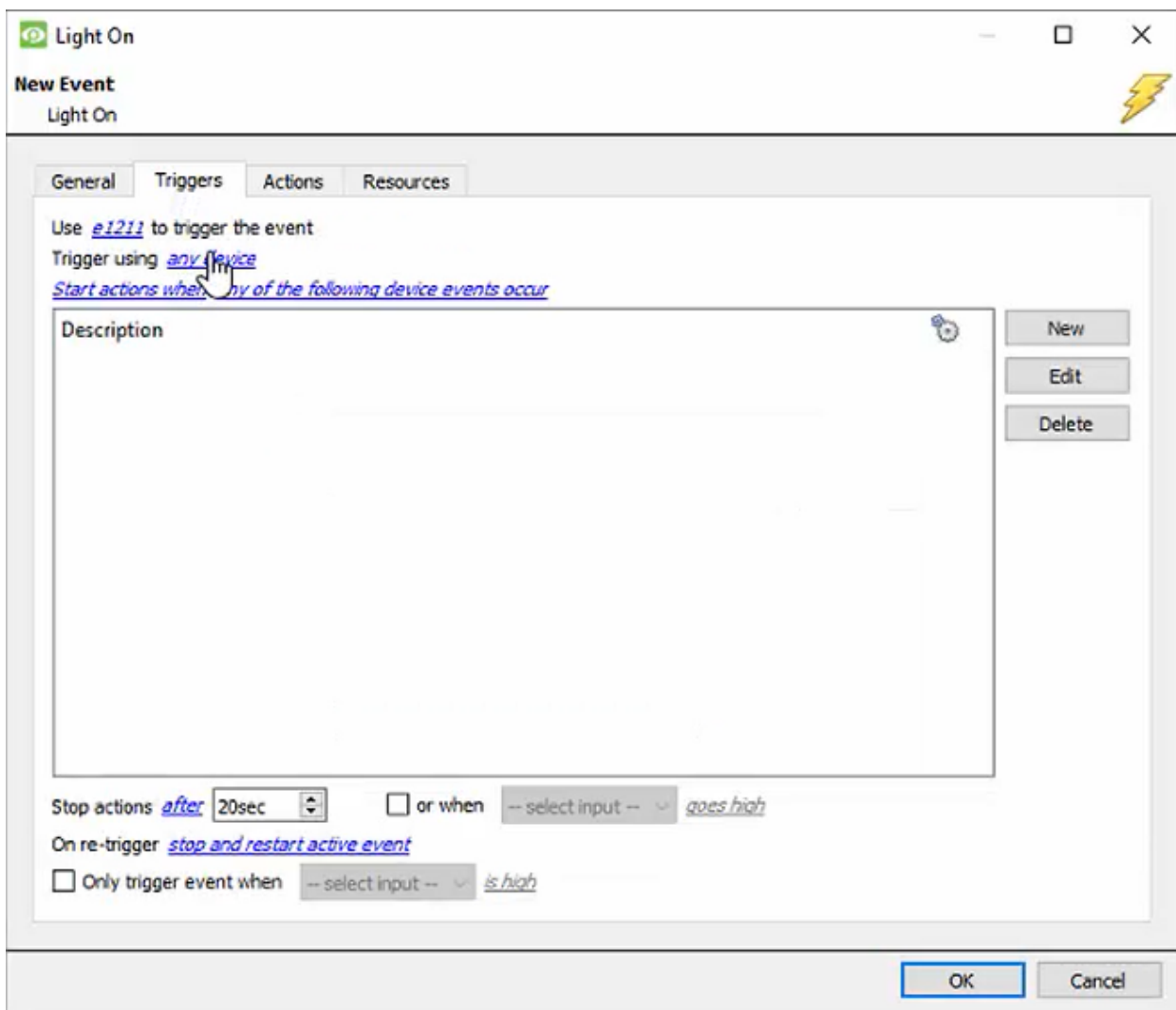
5. Events

A CathexisVision Event has a trigger, which causes an action. Set integrated devices to act as triggers, or as actions. This document details the Moxa-specific aspects of Events. There is a comprehensive guide to CathexisVision Events in the main setup manual.

Most of the data that CathexisVision receives from a device is presented in the Events interface. This is done in order to give the user a full range of options.

5.1 Event Window

Events in CathexisVision are set up via the Event Window, which has four tabs.

In the **General Tab**, an event is given a name, description, schedule and priority. In the **Triggers Tab** the trigger/s for the event is defined. In the **Actions Tab** the action/s which the event takes is defined. In the **Resources Tab** the various site resources which can be used as part of an event are defined.

5.2 Creating an Event

To create an event using the Moxa Output Controller device, enter the Events management area:

Once in Events, click on **New**. This will open up the **New Event** window.

5.2.1 While/When and Any/All

When triggering on an object, there is the option to trigger **while/when** a trigger is active. Define whether **all/any** of the triggers need to be active to start an event.
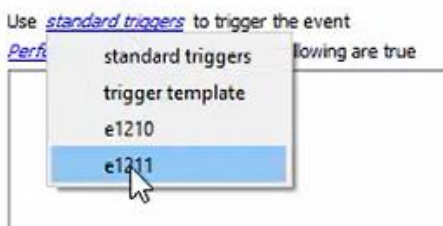
To change these settings, click on blue hyperlinks.
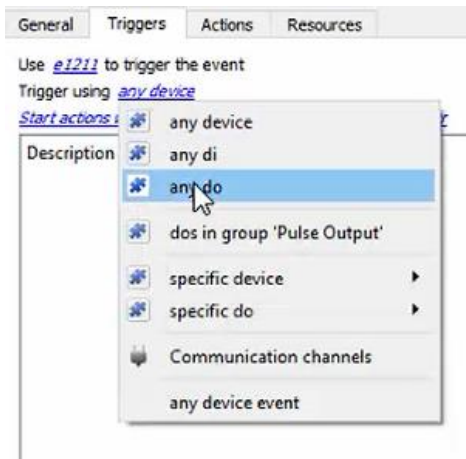
5.3 Triggers

A trigger is the user-defined input that tells the event to start. The trigger causes the subsequent action (which the user will also define).

5.3.1 Set the device as the trigger

To define which device will be used to trigger the event, click on the hyperlink after "use". To set it as the Moxa device, click on the hyperlink, and select the device name from the dropdown menu.

5.3.2 Trigger Types (Trigger Using)

It is useful to think of this as a **master trigger type**.

The **Moxa Output Controller** is a **digital output only device.** Therefore, **select any DO** (digital input) for this option.

Note for group triggers: For this event to be databased under the name of a specific object and not the name of the triggering group, the user will need to modify the Description field in the **General tab** of the Event setup. Click on the 🔵 to see a list of available descriptions.

5.3.3 Define the Trigger

After selecting a master trigger type, add a trigger to the event. Click on ☐ New ☐ in the Triggers tab. This will bring up the following dialogue box for the various trigger types:
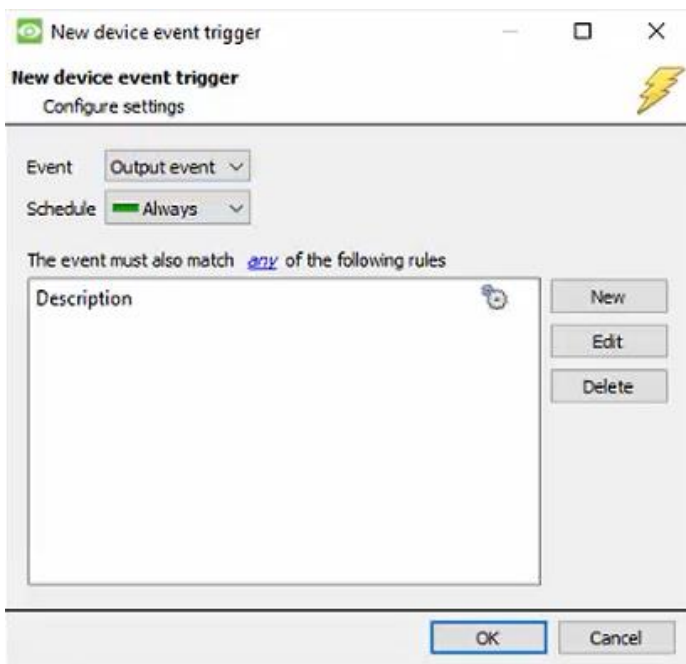
For example, within the *any device event* option, choose the type of device Event that will be the trigger.

Choose from the drop-down menu. The Moxa Output Controller integration offers **Output** device events**.**

Note: Multiple constraints (**Device Event Triggers**) can be set. If constraints are not defined, every single device event will trigger this event.

To add/edit/delete a **Device Event Trigger** (a constraint) use the **New, Edit,** and **Delete** buttons on the right-hand side.

Choose if *any*, or *all* constraints need to be fulfilled to set off a trigger.

To configure a **New device event rule**, click on [New] in the **New device event trigger** window.

To change the constraint, click on the first hyperlink. This will bring up the full list of available rules.

To modify the way this rule will be treated, click on the second hyperlink (*equals* in the example). This will display the options for rules.

Note: When all available options are known to CathexisVision, a drop-down menu is displayed. When these variables are not pre-defined, the user will need to fill them in.

5.4 Actions

Having defined the triggers that will initiate an event, the user will need to define Actions.

5.4.1 Adding an Action

To add an action, click [New] in the **Actions** tab.

A list of available actions will appear.

5.5 Resources tab

In the Resources tab, users can select the cameras, audio input, and audio output to be used.

6. Map Editor

This section details how users can set up CathexisVision Map Editor to use with the Moxa E1211 integration.

6.1 Add Moxa Integration to Resources

The Moxa E1211 integration will need to be added to Resources.
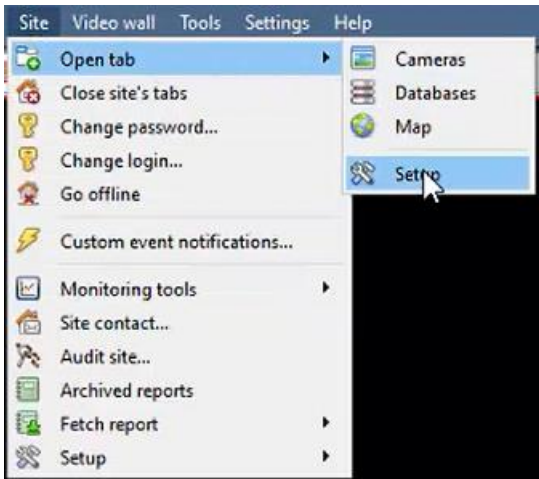
Follow the path shown to the left. Site / Open tab / Setup

Click the **Configure Resources** icon:
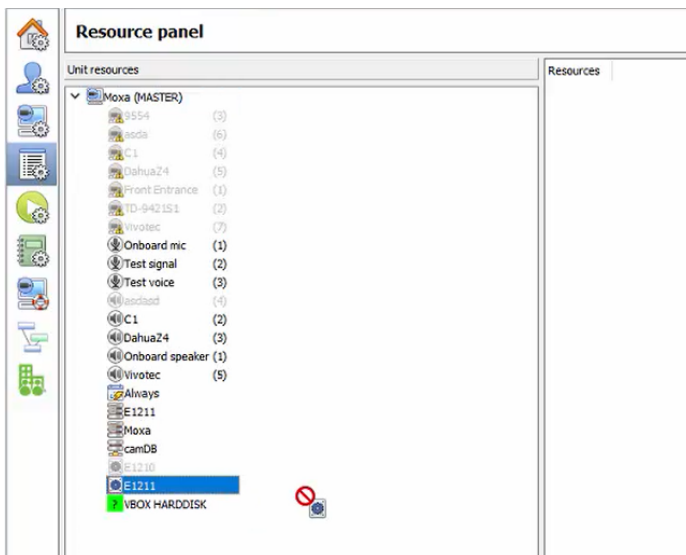
In the site's Resource panel, a list of resources will be displayed.

Select the **Moxa integration device**. Drag and drop it under **Resources** on the right.

The Moxa E1211 device will now be listed under Resources.

The Moxa E1211 integration device will now be listed as a Resource in the Camera tab.

6.2 Configure Map Editor

Open **Map Editor**.
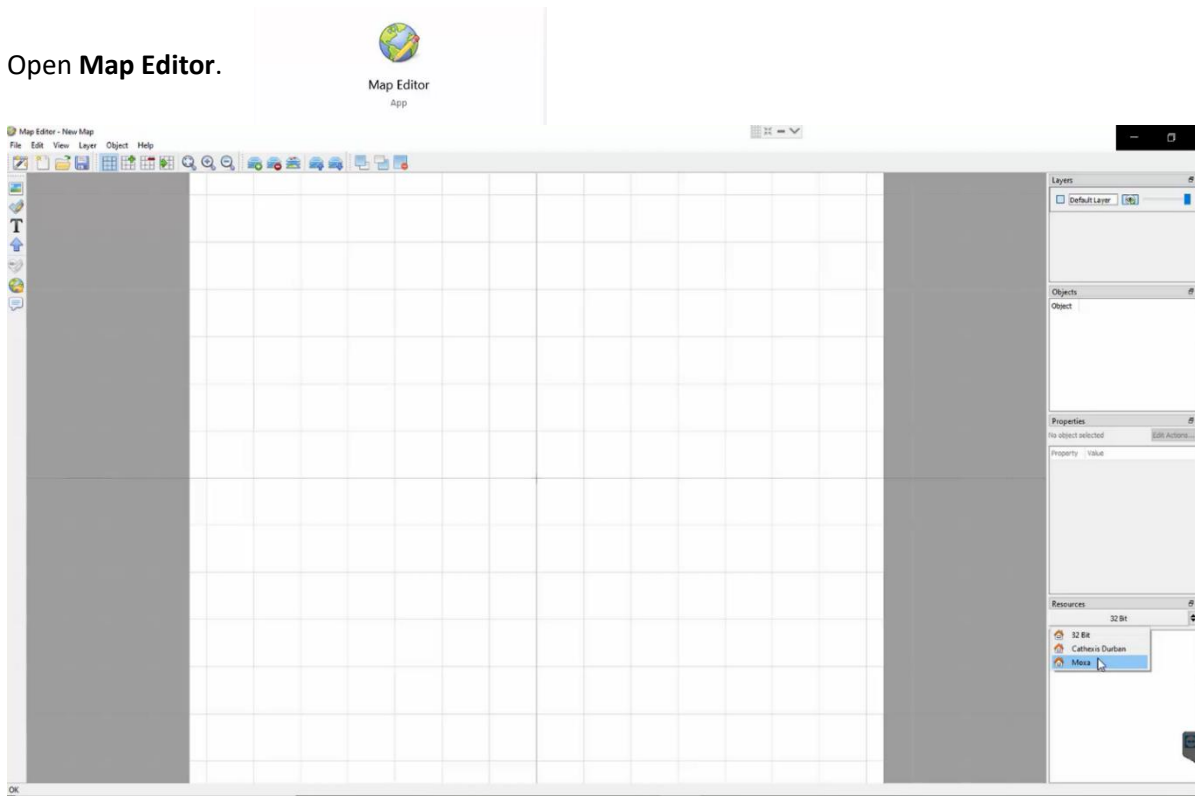
On the right, click on the Moxa server. The E1211 Moxa integration device will then be listed as a resource.

6.2.1 Add an output

Drag and drop the E1211 integration onto the map interface.

Choose an output from the drop-down menu.
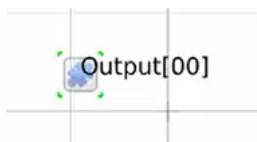
The output will now be visible on the map interface.

6.2.2 Add a polygon

On the options bar on the left, click the **Add polygon** icon:
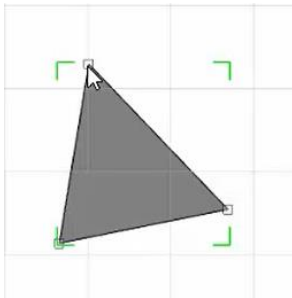
Draw a polygon on the map interface.
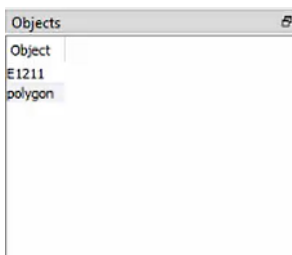
The polygon will now be listed under **Objects** on the right.

6.2.3 Edit Output

On the map interface, right-click on the output.

Select **Edit actions**.

6.2.3.1 On Left Click
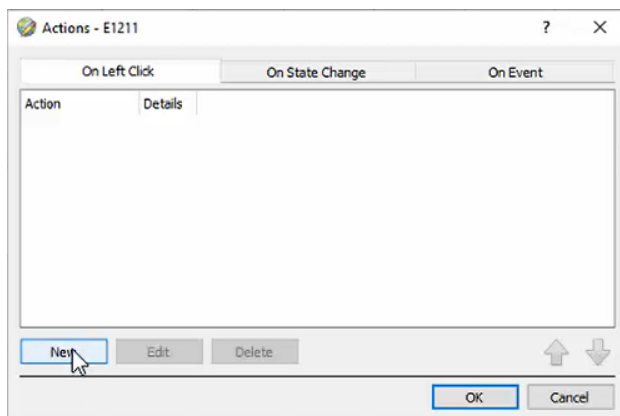
In the **On Left Click** tab in the window that appears, select **New**.
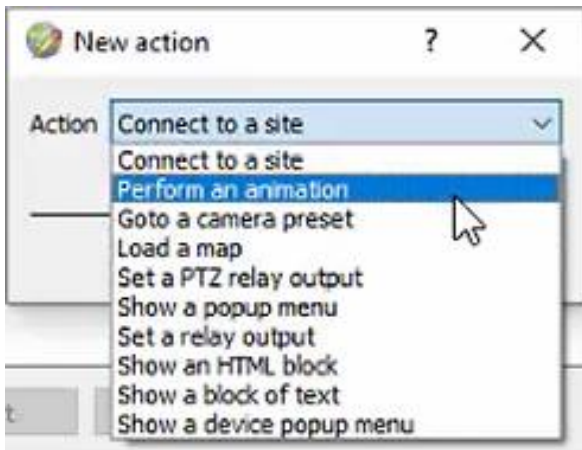
The user can choose an action from the drop-down list.

6.2.3.2 On Event
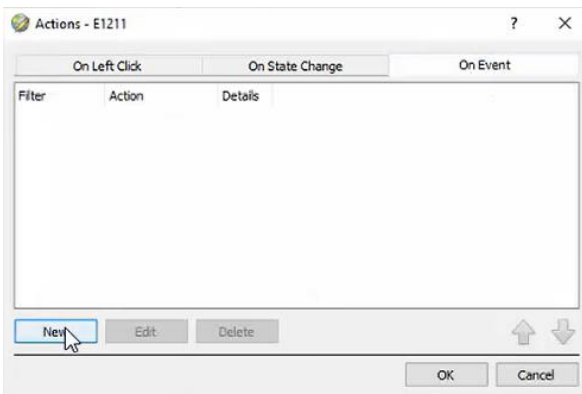
In the **On Event** tab, select **New**.
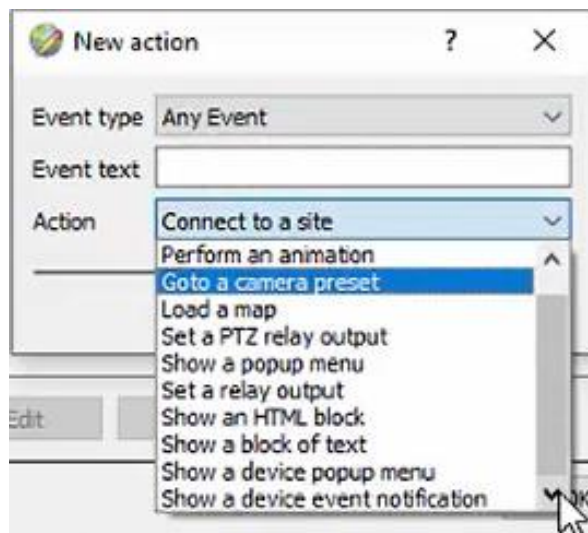
The user can choose the Event type (Any Event or Output Event) and select an action from the drop-down list.

6.2.3.3 On State Change

The following example shows how the user can set the polygon to turn green when off, and red when on.
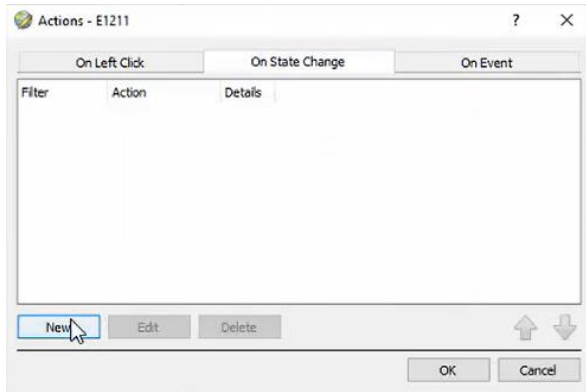
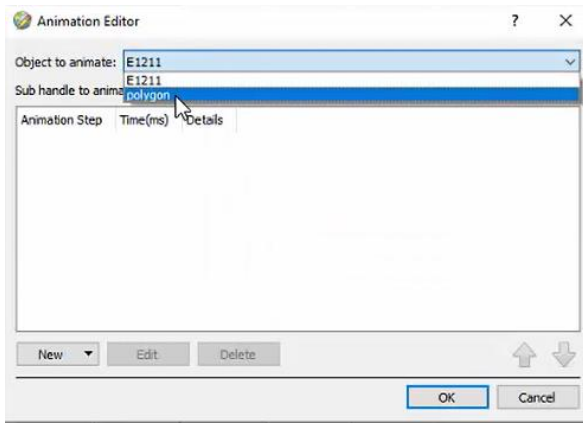In the **On State Change** tab, select **New**.
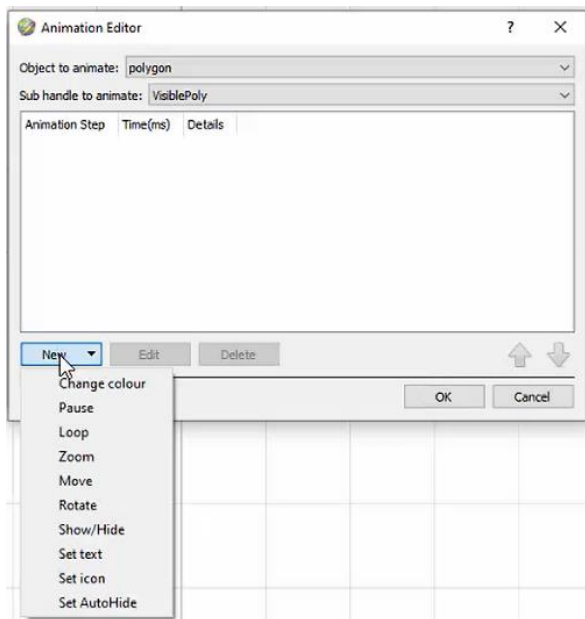
Target State - On
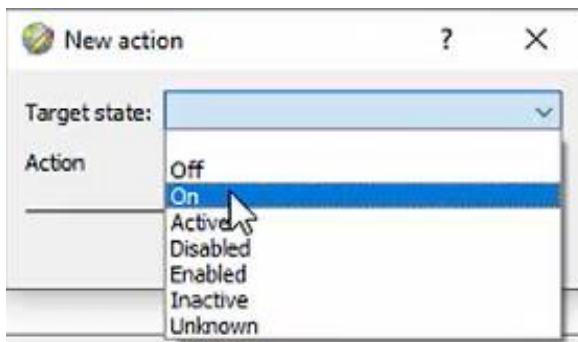
Select the **Target State** as **On**.
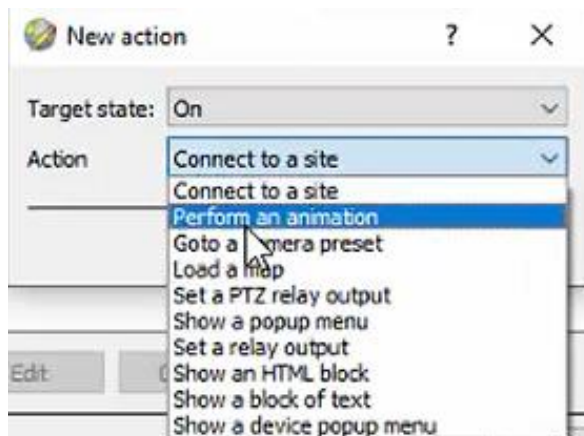
Select an Action. In this example, the user has selected **Perform an animation**.

Click OK.

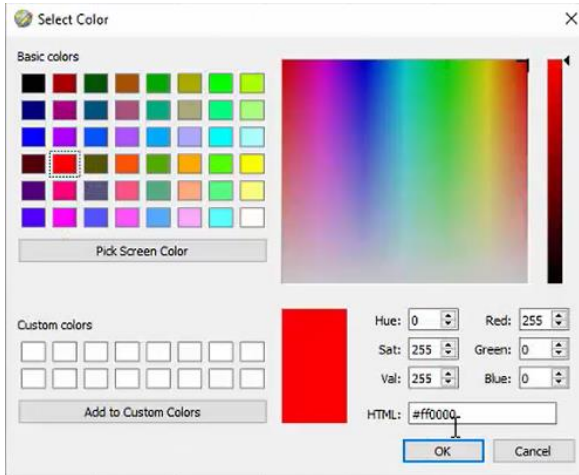In the Animation Editor window that opens,
select the polygon as the **Object to animate**.

Select **Change colour** from the drop-down list.
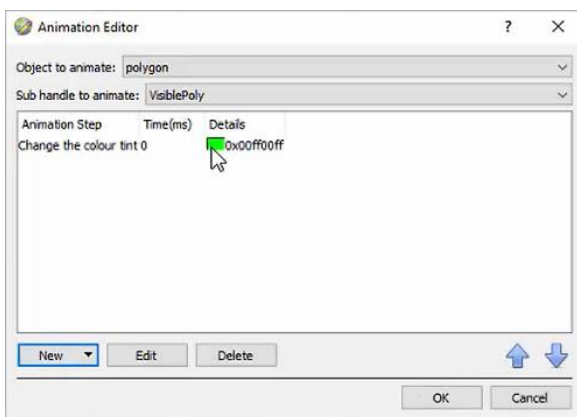
Double-click on the block of colour under **Details**
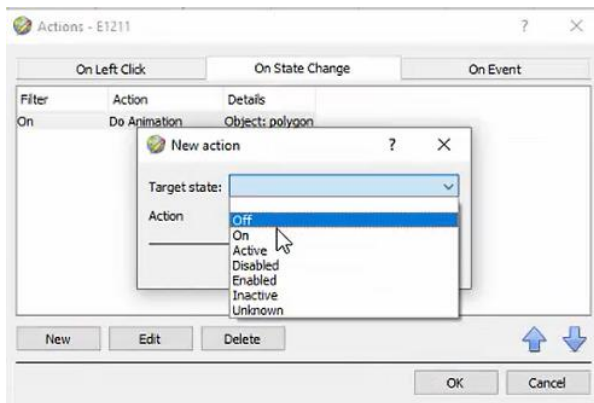to edit the colour. A window will appear with
colour options.

Select the colour which will indicate that the Target State is **On**. In this example, the user has selected red.
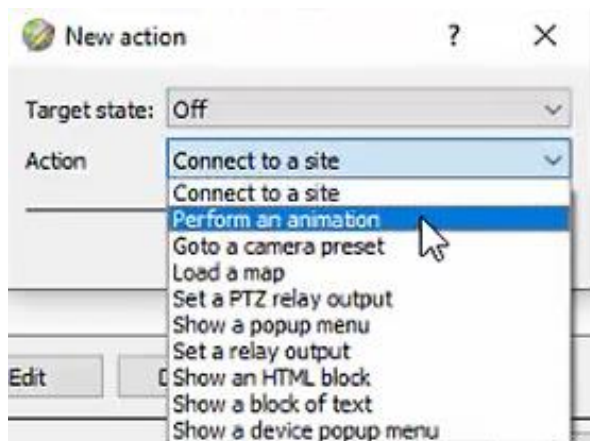
Click **OK**.

On returning to the **Animation Editor** window, click **OK**.
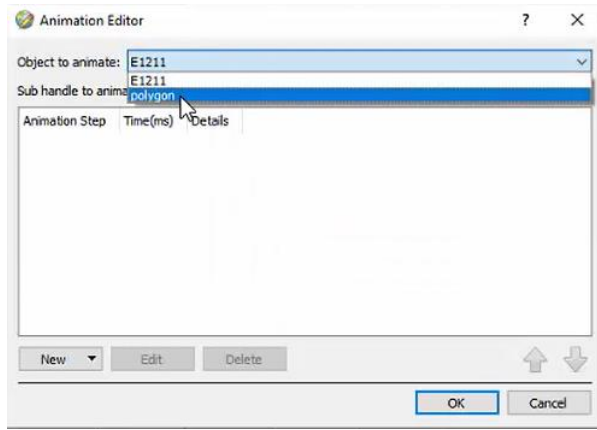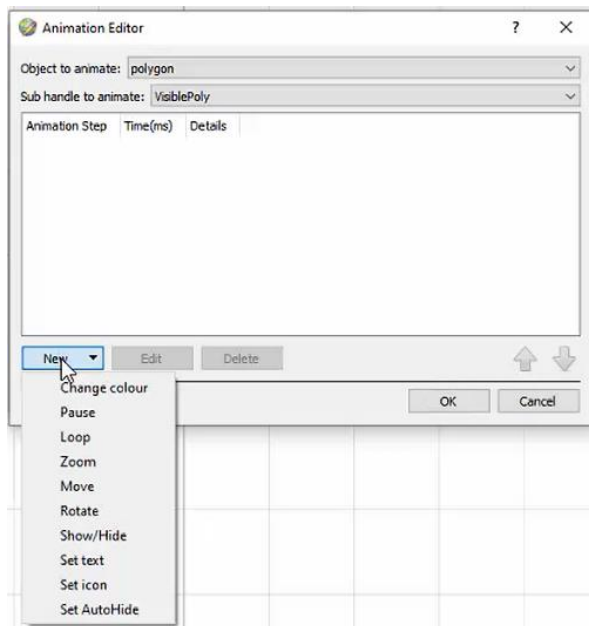
Target State - Off

To change the settings for when the Target State is Off, select **Off** from the drop-down list.
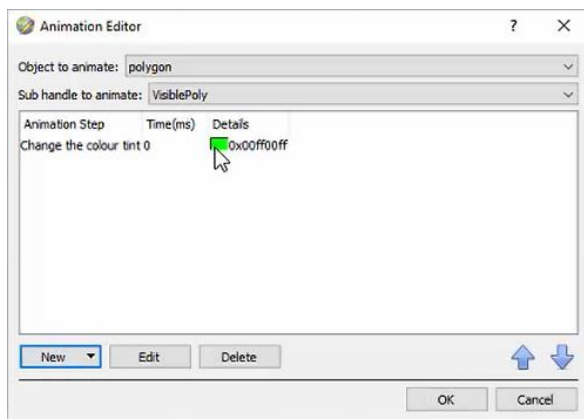

Select an Action from the drop-down list. In this example, the user has selected **Perform an animation**.

In the Animation Editor window that opens, select the polygon as the **Object to animate**.
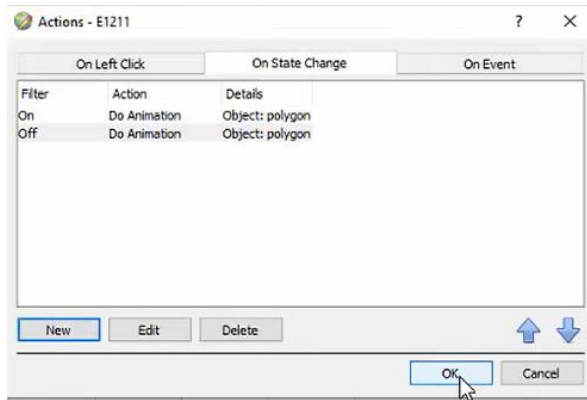

Select **Change colour** from the drop-down list.

Double-click on the block of colour under Details to edit the colour. A window will appear with colour options.
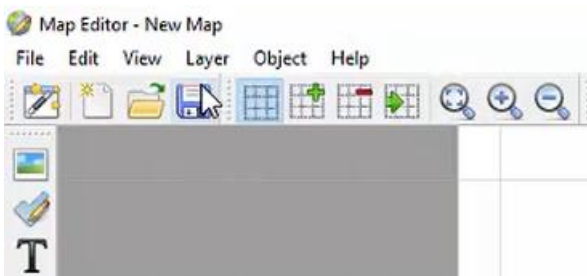
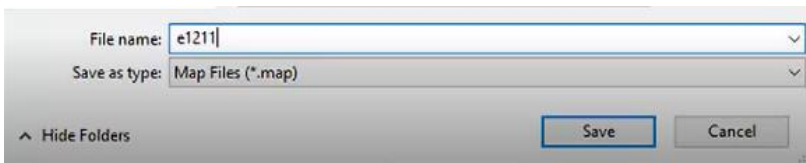In this example, the user has chosen to keep the colour as green.

Click OK.

Click OK in the Actions – **On State Change** tab to confirm the selected settings.
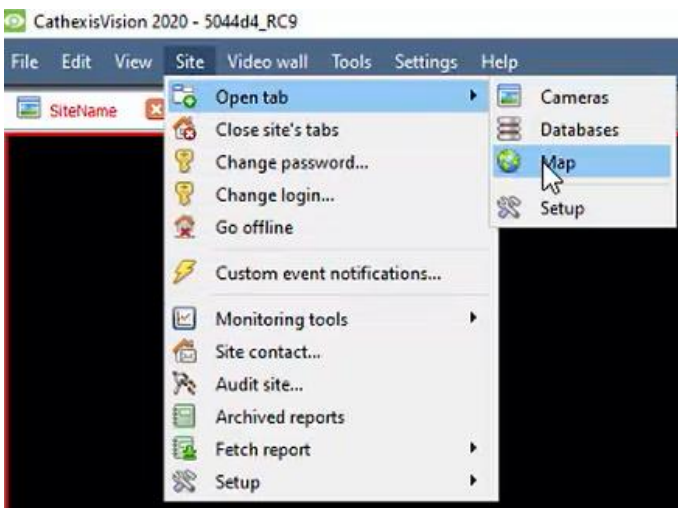
6.3 Save map

In Map Editor, click the **Save** icon.
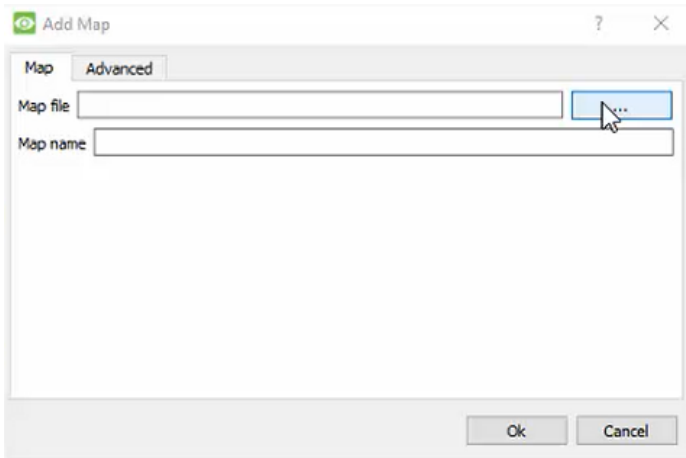

Give the map a name.

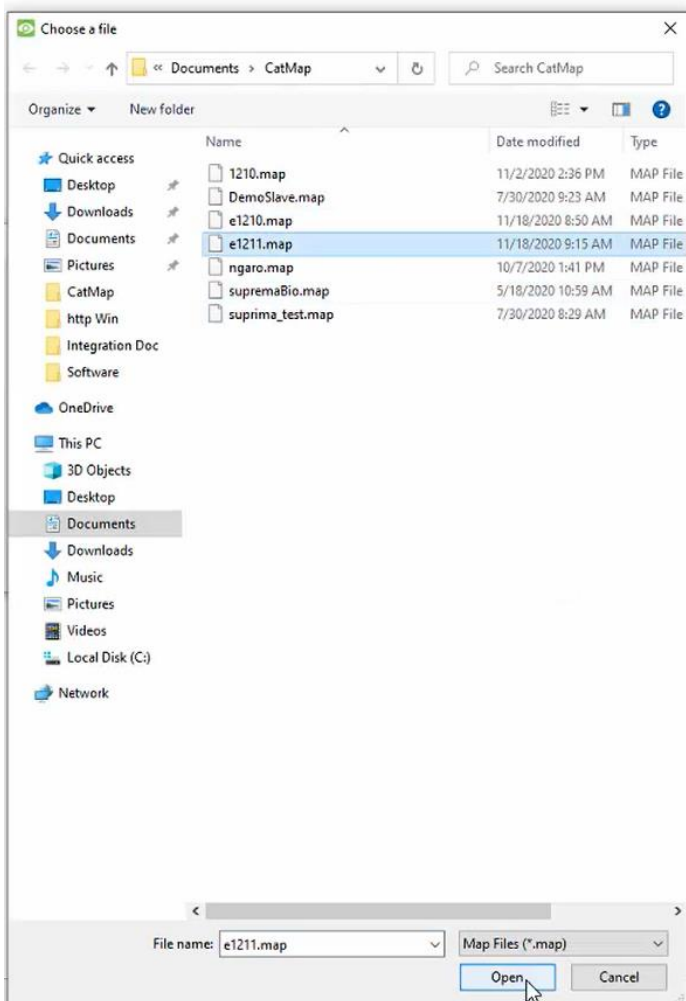Click **Save**.

6.4 Load map on CathexisVision

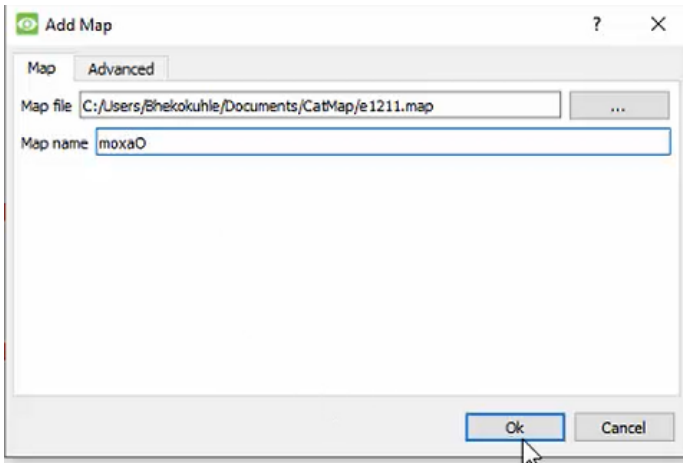In CathexisVision, go to Site / Open tab / Map

Then, in the Map tab, go to Map / **Add site map**

In the **Add Map** window that opens, click on the ellipses icon to retrieve the **Map file**.
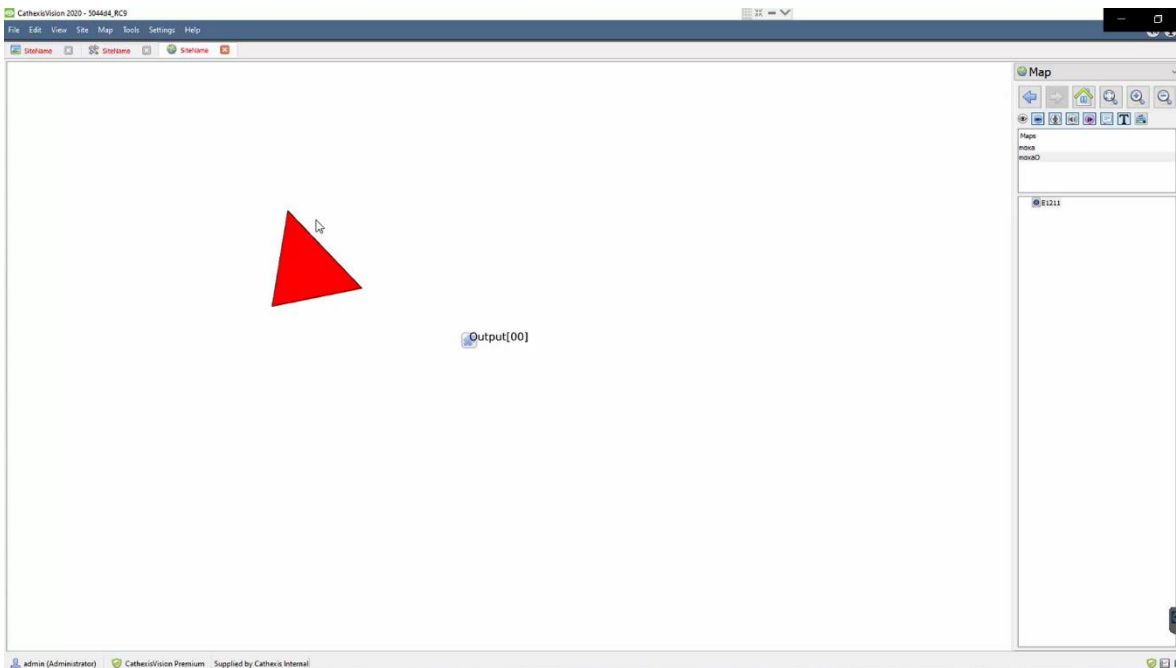
Select the integration map and then click **Open**.

Give the map a **descriptive name**.

Click **OK**.

The applied changes will now be reflected on the map, as shown below.

7. Conclusion

This app-note was designed to deal specifically with this integration. For further information about the CathexisVision software, please consult the main manual (http://cathexisvideo.com/).

For support, please contact support@cat.co.za