# VideoFOCUS User Guide

Every guide in one document, to print or to save as a PDF from your browser.

**Contents**


1. Getting started
   - The ideas
   - Your first case
   - Which tool for which job
2. The main window
   - The layout
   - The media list
   - The Player tab
   - The Frames tab
   - The stills pane
   - The menus
   - Keys
3. Cases and importing
   - Opening, creating and closing cases
   - Case Properties
   - Archiving a case
   - Importing media
4. Edit
   - What the window does
   - The window
   - How to
   - Titles
   - Saving and closing
5. Capture
   - What the windows do
   - Quick Capture
   - Audio Capture
   - How to
   - What you get
6. Reports and audit
   - What is recorded
   - The report
   - What the report contains
   - View Item Data (the audit window)
7. Annotate
   - What the window does
   - The window
   - Regions, tracking and anchors
   - How to
   - Settings of each tool
   - Saving and closing
   - Keyboard and mouse
8. Filters
   - What the window does
   - The window
   - Limiting a filter to part of the picture
   - How to
   - The filters
   - Saving and closing
   - Keyboard
9. Search
   - What the window does
   - The window

- Detections, filters and the search area
- How to
- Reading the results
- Saving and closing

10. Modify
    - What the window does
    - The window
    - Spatial Properties
    - Temporal Properties
    - Audio Properties
    - The order the changes are made in
    - Saving and closing
    - How to
11. Export and Save As
    - Which one to use
    - Export: the options window
    - Video options
    - Audio and image options
    - Choosing the files
    - Save As: an exact copy
    - How to
12. Time Sync
    - What the window does
    - The window
    - Events, tags, groups and set times
    - How to
    - Exactly what Tag Event does
    - Where a view's time comes from
    - Joining views
    - Saving and closing
    - Keyboard
13. Manage Views
    - What the window does
    - The window
    - How to
    - Saving and closing
14. Connecting an AI Assistant
    - How it fits together
    - Choose what the assistant may do
    - Connect the assistant
    - Reconnecting
    - The access token
    - If it does not connect

# Getting started

Open a case, bring video into it, watch it, mark the part that matters, and hand it to a tool that analyses or changes it. The tools put their results in the case as new items, beside the one they started from.

## The ideas

- **Case** – a folder on disk that holds everything for one piece of work. Each open case is a tab in the main window; its tab shows the folder's path.
- **Item** (also called a session or media) – one video, audio recording or image in the case. The list on the left shows them all.
- **Derived item** – what a tool makes from an item: a modified copy, a combination, a demultiplexed set of views, a view-managed version. It is added to the list with a line saying what it came from (for example "Modified version of cam1.Avi.avi"); the item it came from is still there. The list is sorted by *Relationship* by default, so derived items sit under their sources.
- **View** – one picture within an item. Most items have one; a multiplexed recording or a combined item can have several, shown together.
- **Frame** – one picture in time. Frames are counted from 1. A **marked frame** is one you labelled; a **still** is a frame saved as an image.
- **Selection** – the part of an item that the next action works on: a span of time (set with Mark in and Mark out), a set of views, and on the Frames tab a set of thumbnails.

## Your first case

1. **File > Open or Create Case**: choose an existing case folder, or make a new one (Cases and importing).
2. **File > Import Media**: choose video, audio or image files. Each becomes an item in the list on the left.
3. Click an item in the list. The main window shows it on the **Player** tab. Press the Play button, drag the position slider, or type a frame number to move through it. See the Player tab.
4. To work on part of the item, move to where it starts and press **Mark in**, move to where it ends and press **Mark out**. The marked span is the *time selection*.
5. **Clip** saves a clip of the time selection (of the views you selected, if you selected some). **Copy** copies the selection; **Cut** and **Paste** are there too, and Clip and Cut are disabled until you have marked a time. **Snapshot** saves the current picture as a still.
6. Choose a tool from the **Processing** menu (below) to analyse or change the item. The result appears in the list.

To get something out of the case, see Export.

## Which tool for which job

| I want to… | Processing menu | Guide |
|---|---|---|
| Cut, copy, paste and add titles to build a new item | Edit | Edit |
| Mark, track and outline things; add text or a border | Annotate | Annotate |
| Find the people and vehicles in a video | Search | Search |
| Resize, crop, rotate, change speed or frame rate, fix interlacing | Modify | Modify |
| Put several videos on one timeline | Time Sync | Time Sync |
| Record the screen or the computer's sound | File > Quick Capture, Audio Capture | Capture |
| Document an item and how it was made | View > View Report; Help > View Item Data | Reports and audit |
| Get video, audio or images out of the case | File > Export Video, Save Video As | Export |
| Join items, split off audio or one view, merge views, split a multiplexed recording | Combine, Concatenate, Extract Audio, Extract View, Merge Views, Demultiplex | (no guide yet) |
| Find a frame that looks like a picture or description | Find; or the Find box on the Frames tab | (no guide yet) |

# The main window

Where you watch video, choose the part you want, and start every tool. New to VideoFOCUS? Read Getting started first.

## The layout

- **Menu bar** – File, Edit, View, Processing, Automation, Help.
- **Toolbar** – Undo, Redo, Quick Capture, View Movie, View Image.
- **Case tabs** – one tab per open case, named for the case. Everything below belongs to the selected case.
- **Media list** (left) – every item in the case.
- **Player / Frames** (right, top) – two tabs showing the selected item.
- **Stills pane** (right, bottom) – "Media Stills and Frames". The small arrows between the two right-hand panes hide the top or the bottom one.

## The media list

One row per item. The selected row shows a thumbnail and the item's details: length, start time, picture size, audio, whether it is interlaced, and how many marked frames and stills it has. The other rows show the name, with an icon for where the item came from (imported, or made by a tool). **Sorted By** at the top orders the list – *Relationship* by default, which puts derived items under their sources.

A ✅ after the start time means the item's time is *verified*: someone set it with Set Time (on every view, for an item with several), rather than it being inferred from the file. See Verified times.

- Click a row to select it; Ctrl-click adds rows. Combine and Concatenate stay disabled until several rows are selected.
- Right-click a row for the menu of commands that apply to it.
- **Edit > Delete Session** or `Delete` removes the selected item from the case.

## The Player tab

Shows the selected item, with these controls:

| Control | What it does |
|---|---|
| Play / Pause | Plays the item. The loop button repeats it; the play-selection button plays only the marked time. |
| Position slider | Drag to move through the item quickly. The sensitivity slider next to it sets how far a drag moves; the arrows scroll the slider's range. |
| Frame | The current frame number, counted from 1. Type a number, or use its arrows to step one frame. The last frame's number goes to the end, after the last frame. |
| Elapsed time | Seconds from the start, to the millisecond. Type seconds to jump there. |
| Time | The clock time at the playhead (date and time, to the millisecond), where the item has one. Type a date-time to jump there. A ✅ after it means the selected view's time is verified. |
| Mark in / Mark out | Set the start and end of the *time selection*. Previous / Next move between several selected spans. |
| Clip, Cut, Copy, Paste | Act on the time selection (and on the selected views of a multi-view item). Clip and Cut stay disabled until a time is marked; Paste is disabled until there is something to paste. |
| Snapshot | Saves the current picture as a still. |
| Select area, Magnifier | Select area lets you draw a rectangle that snapshots and clips are cropped to; Magnifier shows it enlarged. |
| Add title | Adds a title at the playhead. |
| Set Time (clock) | Sets the time of the frame at the playhead in the selected view, and adds the result as a new item with that time verified. Also on the right-click menu under **Time**, with **Copy Time**, which copies the time at the playhead for Set Time's Copied Time and reads **Copy Time** ✅ when that time is verified. See Set Time in the player. |
| Volume, Mute | Audio level for playback. |

An item with several views (a combined or demultiplexed item) shows them together, and the controls add **Views** and **View times**: which views the actions apply to (none selected means all of them), and when each view starts and ends.

## The Frames tab

A grid of numbered thumbnails, for finding your place or choosing frames.

- **Thumbnail Display** chooses what each thumbnail stands for: every frame, every 1/5 second, every second, every 6 seconds, every minute, or key frames only. When a detection filter such as Search is in use, a thumbnail can instead stand for the span of a detected object.
- **Thumbnail Size** makes the grid larger or smaller.
- **Find** takes a description, or an image you drag in, and searches the item for matching frames.

- Click a thumbnail to select it. The selected thumbnails are the frames that the Edit menu's commands work on (Label Selected Frames, Clear Labels, Edit Labels).

## The stills pane

Lists the stills of the selected item. **View > View Image** opens a selected still in its own window; **View Movie** plays the video it came from, at its frame. Delete a still with **Edit > Delete Image**.

## The menus

| Menu | Holds |
|---|---|
| File | Open or Create Case, Archive Case, Close Case, Close All Cases, Case Properties (Cases and importing); New Session, Import Media, Quick Capture, Audio Capture; Export Video, Save Video As, Open Video In System; Print Window; Exit. Save Video As and Open Video In System work on the selected item. |
| Edit | Undo, Redo; Copy; Clear Labels, Label Selected Frames, Edit Labels; Select All, Select All Dependent Items, Select All Containing Label; Set As Poster Frame; Delete Session, Delete Image; Preferences; Session Properties. |
| View | View Image, View Movie, View Report (Reports and audit), and lists of the case's sessions and images. |
| Processing | Edit, Annotate, Search, Find, Modify, Combine, Concatenate, Extract Audio, Extract View, Merge Views, Demultiplex, Time (a submenu: Time Sync, Set Time, Copy Time), Manage Views, Filter (a submenu of video filters), Current Frame (a submenu). Items that need a particular selection are disabled until you have it. |
| Automation | Run Script, LLM Configuration, Scripting API Docs, MCP Settings (see Connecting an AI Assistant). Only in products with automation. |
| Help | User Guide (this guide), Sample Movies, Update License, View Item Data (the audit window), Bug Report, About, Legal Notices. |

Export is under **File > Export Video** – see Export.

## Keys

- `F1` – this guide (or, in a tool's window, that tool's guide).
- `Delete` – delete the selected session or image.
- `Ctrl`+`Y` – redo, as well as the shortcut shown in the Edit menu.

# Cases and importing

A case is where everything for one piece of work lives. Open or create one, say who and what it is for, then import the media you will work on.

## Opening, creating and closing cases

- **File > Open or Create Case** shows the *Open Existing or Create New Case* window: a folder chooser that lists your case folders (each shown with the product and version that made it, such as "ab15 (Pro 15.1)"). Choose a case and press **Create** (its tooltip is "Open or create the case") to open it; type a new name in **File name** and press **Create** to make a new case.
- An open case is a tab in the main window. Opening a case that is already open just selects its tab.
- **File > Close Case** closes the selected case's tab; **Close All Cases** closes every tab.

## Case Properties

**File > Case Properties** opens *Case Properties: <case>*:

| Field | What it is |
|---|---|
| Agency, Examiner | Who the work is for and who is doing it. |
| Case #, Title, Notes | Identify the case; Notes is free text. |
| Time Zone Region | The time zone the case shows clock times in. The main window's **Time** display ("the time at the playhead") is in this zone, and a time you type there without an offset is read in it. **Local** sets it to this computer's zone; **UTC** sets UTC. |

**Save** keeps the changes; **Cancel** discards them.

## Archiving a case

**File > Archive Case** packs the selected case into one `.zip` file. A save window asks where to put it (the name starts as the case's name; `.zip` is added if you leave it off). If the file exists you are asked whether to replace it. A progress window *Archiving <case>* shows each file as it is added (*Adding <file> (3 of 120)*); the backups of the case store kept by saves and upgrades are left out; cancelling it deletes the unfinished file.

## Importing media

**File > Import Media** opens *Import Media*, a file chooser for the selected case. You can pick several files at once. Each file you import becomes an item in the case, described as "Import of <file name>".

- **Preview** – when you select a file the right-hand side plays it, so you can check it before importing.
- **Files of type** – shows All Files, Video, Images, Audio or Video, Audio and Images.
- **Accept** – says how to treat what you choose: *any type*, *video and audio*, *only video*, *only audio*, *only images* or *only subtitles*.
- **Skip testing** – each way of importing a file is tested and its result accepted or rejected, which keeps bad media out of the case. Skipping the test is faster but a file that would have been rejected may go in and make the application unstable, so tick it only for sources you know produce error-free media. A warning asks you to confirm.
- **Import As Video … at … fps** – appears when the chosen images look like a numbered sequence. It is ticked by default: the images become one video at the frame rate you give. Untick it to import them as separate images.
- A progress window *Import <name> …* shows each import, with *testing* when it is checking the result. When you import several files it counts them as it goes (*Importing: <file> (2 of 5)*).

Import remembers the folder and the Files of type you last used. Importing needs an open case.

The other ways to get media into a case: **File > New Session** (build one from pieces in Edit), **Quick Capture** and **Audio Capture** (record it), and the **Help > Sample Movies** list (tutorial clips). Next: the main window.

# Edit

Cut parts out of a video, paste parts in, and add title cards, then save the result as a new item. The original stays as it was.

## What the window does

There are two ways in:

- **Processing > Edit** opens the selected item for editing. You work on a copy, so nothing you do changes the item in the case until you Save, and then only by adding a new item.
- **File > New Session** opens the same window with nothing in it. Fill it by pasting something you copied in the main window.

If the item has several views, Edit first asks how to lay them out (the number of rows) and then edits them together as one picture.

## The window

- **The player** – the same controls as the main window's Player tab: play, frame, elapsed time, clock time, Mark in and Mark out, the position slider, volume.
- **Edit menu** – Cut, Copy and Paste.
- **View menu** – Half Size, Normal Size, Actual Pixels and Maximize. These change how the picture is shown, not the item.
- **Title menu** – New, Edit, Delete and Go: see Titles.
- **Name** – the name the new item will have. It starts as the source's name plus `-Edit`.
- **Save** and **Close**.

## How to

### Cut part of the video out

1. Move to where the part starts and press **Mark in**; move to where it ends and press **Mark out**. Or type frame ranges (for example `1-30`) into the time selection.
2. **Edit > Cut**. The part is removed; the item gets shorter and the numbers after the cut move down. The time selection clears.
3. If you cut from the start, the item's clock start time moves later by the length you cut.

### Copy part and paste it somewhere else

1. Select the part, **Edit > Copy**.
2. Move the playhead to where it should go. **Edit > Paste** puts it in at the displayed frame. To add it to the end, go to the last frame's number (typing the last frame number goes to the end, after the last frame) and paste.

3. Paste is disabled until there is something on the clipboard. What you copied in the main window can be pasted here, and the other way round.

### Make a new item from scratch

1. In the main window, select the part you want and press **Copy**.
2. **File > New Session**, then **Edit > Paste**. The name starts as `New Item`.

## Titles

A title is a text card: it shows your text for the time you choose, as part of the item. Adding one makes the item *longer* by that time (a three-second title adds three seconds), and the title counts as a single frame.

- **Title > New** opens **Edit Title** for a title at the playhead: the *Title text*, its *Size* in points, *Left / Center / Right* justification, and *Duration (Seconds)* (default 3.0; OK stays disabled until it is a positive number). **OK** adds it; **Cancel** does not. The text of a new title starts in the middle of the frame (blank lines above it push it down; delete them to move it up). The new title is selected.
- **Title > Edit** and **Delete** work on the title at the playhead, and are disabled when the playhead is not on one.
- **Title > Go** lists the titles in the item, to move the playhead to one.
- A title has no clock time, so the **Time** display is empty while the playhead is on it.

## Saving and closing

- **Save** is disabled until something has changed (a cut, a paste, a title, or a new name). It adds a new item to the case, named as in the **Name** box and described as "Edit of <source>".
- The window stays open after Save, the name moves on to the next free one (`…-Edit-1`), and Save is disabled again. Keep editing and Save again to make another item.
- **Close** (or `Esc`) closes the window. If there are unsaved changes it asks *Save changes before closing?* – **Yes** saves, **No** discards them, **Cancel** stays in the window.
- The item you edited, and the other items in the case, are not changed.

# Capture

Record part of this computer's screen (and the sound it is playing) as video, snap a still of it, or record sound alone. The recording is added to the open case as a new item.

## What the windows do

- **Quick Capture** (toolbar button, or **File > Quick Capture**) records an area of the screen as video, with the computer's sound if you want it, or saves a single still of that area.
- **Audio Capture** (**File > Audio Capture**) records sound only.

Both need an open case. They record what this computer is showing and playing, not a camera or microphone. Opening Quick Capture sends the main window to the back so it is not in the way. Quick Capture stays open between recordings and closes by itself when the last case is closed; closing a case in the middle of a recording cancels the recording.

## Quick Capture

| Control | What it does |
|---|---|
| Preview | The top of the window shows the screen as it is now, with the selected area marked, and the display's name, refresh rate and scale underneath. |
| Selector: Hide, Manual, Auto | How you choose the area. **Manual** shows a box you can move and resize. **Auto** lets you choose a window or a whole display for the box; going back to Manual brings back the box you had. **Hide** takes the selector off the screen. The arrow beside them lists the displays. |
| x, y, width, height | The area in screen pixels, which you can also type. **fix** keeps the box at its size while you move it. |
| Audio | Tick to record the sound the computer is playing along with the picture. While it is ticked there is no Pause. |
| Encoding | *MP4 Compressed* (smaller files) or *Uncompressed (MOV)* (larger, nothing lost). **Encoder settings** opens the MP4 settings (hardware H.264 encoding, hardware colour conversion) and the audio settings (floating audio). |
| Name | What the new item is called. It starts as *Capture* and moves on to a free name after each recording. |
| stop at … mins | Tick to end the recording on its own after that many minutes (30 to begin with). |
| Snap | Saves a still of the selected area, even while recording. |
| Start / Stop | Starts the recording; the same button then stops it and saves it. `Enter` does the same. |
| Pause / Resume | Holds the recording without ending it. `Space` does the same. |
| Cancel | Throws the recording away. `Esc` does the same. |
| Performance, Duration | While recording: frames per second, frames recorded and frames dropped; and the time recorded so far. |

## Audio Capture

The same Name, Encoding (*Uncompressed (WAV)*) and Encoder settings, with **Start / Stop** and **Cancel**. There is no area to choose and no Pause. It records the sound the computer is playing.

## How to

### Record part of the screen

1. Open the case you want the recording in. Open **Quick Capture** (its toolbar button, or **F2**).

2. Choose **Manual** or **Auto**, and set the area until the box covers what you want. Use **fix** if you want to keep the size.
3. Tick **Audio** if you want the sound. Check **Encoding** and **Name**.
4. Press **Start**. Watch *Performance*: many dropped frames mean the computer is not keeping up.
5. Press **Stop**. The recording appears in the case's media list.

### Take a still

Select the area and press **Snap**. The still is added to the case.

### Record sound only

Open **Audio Capture**, press **Start**, and **Stop** when done.

## What you get

- A new item in the case, named as in the Name box. Its clock time is the time the recording started, so it lines up with other evidence in Time Sync.
- Frames the computer could not keep up with are marked in the item as dropped frames, so you can tell where the recording has gaps.
- If a recording fails part way, it stops there and you are told *Capture stopped because of an error* and pointed to the error log. What was recorded until then is kept and added to the case. If it fails before anything was recorded you are told *Capture cancelled due to error*; if nothing was recorded you get *No samples captured*, and no item is added.
- A still becomes an image item with its own clock time.

# Reports and audit

VideoFOCUS keeps a record of how every item was made. The report turns that record into a document you can hand to someone else; the audit window shows the raw record.

## What is recorded

Each item carries the steps that produced it: the import it came from, then every tool applied after (Edit, Annotate, Modify, Search, Time Sync, a copy, a capture…), each with its settings. The report and the audit window are two views of that same record, so you do not have to remember or write down what you did. Source files also carry their hash values, so a reader can check a file against the original.

## The report

1. Select the item or items in the media list (the media list).
2. **View > View Report**. The report opens in your browser as a PDF.

- The report is of what is selected now: select different items and run it again for a different report.
- Export and Save As can write the report next to the exported files: choose a *Report Type* of Pdf, Doc, Rtf or Mhtml.
- Working out the file hashes can take a while for large files. A *Computing Audit File Hashes* window shows the progress; **Skip** leaves them out of the report.

## What the report contains

| Section | What it says |
|---|---|
| Title block | "Video Analysis Report", the case (number and title) and the examiner. |
| Case Description | *Summary*: when the case was created and when this report was made, the case number, title and name. *Case Notes*: the notes from Case Properties. |
| Item Descriptions | One entry per selected item: start time, duration, picture size and frame count, audio sample rate, for an export or render whose VMAF has been computed (in its Session Properties) the VMAF score – mean, minimum and maximum, and what it was measured against – and its *Steps to reproduce* – the whole chain in order, from the import of the original ("Copy of the file … using the following settings") through each later step, such as "Cut the following times from the edit" or "Add a title of duration … with the following text". |
| Source File Hashes | For each original file: its MD5, SHA-1, SHA-256 and SHA-512 values. |
| Detailed Descriptions | Further detail, where the items have it. |
| System Configuration | The product and version that made the report, its build id, the licence id and the vendor. |

The case's time zone (Case Properties) decides how times in the report are written, such as the item's start time.

## View Item Data (the audit window)

**Help > View Item Data** opens an *Audit* window for the selected item: a tree of the item's stored fields, such as its `label`, `id`, `createdTime`, `sources` and its `activity` (the step that made it, for example `ActivityEdit`). Open a branch to see what is inside it; **File > Expand All** opens every branch at once. **File > Save Audit** writes the whole tree to a plain text file (`.txt`).

Use the report to explain what was done; use the audit window when you need the exact stored values, for example to check a setting the report states in words.

# Annotate

Add a timestamp, text labels or a border to a copy of a video or image, so a viewer sees them whenever the result is shown or exported.

## What the window does

Annotate draws on the pictures of an item. Three kinds of annotation are available:

- **Timestamp:** the time of each frame, drawn on the frame and changing as the video plays. Choose absolute or relative time, and the colours.
- **Label:** text you type, optionally inside an ellipse or rectangle, placed over an object of interest. In a video it can follow the object.
- **Boundary:** a coloured border that makes the frame bigger, optionally to a chosen aspect ratio, for example to make room for text without covering the picture. The picture is never cropped or scaled.

**Save** adds a new item that shows the picture with the annotations drawn on it. The original is not changed.

Open it from **Processing > Annotate** (or the right-click menu) with one item selected: a video, a still image, or a multi-view item with exactly one of its views selected. Audio has no pictures to draw on and cannot be annotated.

## The window

The title is **Annotate: <item name>**. The window has three parts:

- **The player**, with a toolbar above the picture. For a video it has the usual time slider and play controls; the annotation you draw shows on it as it will in the result.
- **The settings panel** under the player, which shows the settings of the selected tool (see below).
- **The bottom row: Undo**, **Redo**, the **Name** of the new item, **Save Video** or **Save Image**, **Close** and **Help**.

### The toolbar

| Button | What it does |
|---|---|
| Zoom | Drag in the picture to pan it. This tool draws nothing. (The mouse wheel zooms with any tool.) |
| Timestamp | Drag in the picture to place a timestamp. |
| Label | Drag in the picture to place a text label. |
| Boundary | Shows the Boundary settings. Drag the edges of the frame outline in the picture to grow the frame. |
| Tracking | Video only. Pressed: the selected region follows the object it was drawn on. Released: it stays where you put it. **A new region starts with Tracking released.** |
| Delete | Removes the selected region. Disabled with nothing selected. |
| Remove anchor | Removes the selected region's anchor at the frame being shown. Enabled only when the region has more than one anchor and one is at this frame. |

Selecting a tool also shows its settings in the panel below. Clicking a region in the picture selects it, and the panel then shows that region's settings.

## Regions, tracking and anchors

### Regions

Each timestamp or label you draw is a **region**: a box in the picture, in image pixels, with the settings of its tool. The boundary is one more region, the outline of the frame itself, which you can only make bigger; there is one per view. A video's regions are numbered **Region 1**, **Region 2** and so on, in the order they were drawn.

### Anchors and tracking

The frame you draw a region on gives it an **anchor**: you said "here, at this moment, the object is in this box". A new region starts with Tracking **off**: select it and press **Tracking** to turn it on. With Tracking on, VideoFOCUS follows the object forward and backward from the anchor, so the region stays on it. Tracking is an estimate and can drift, particularly when the object is occluded, turns, or leaves the frame. Play through the video and check.

To correct it, stop on a frame where the region is wrong and move or resize it. That adds an anchor there, and the tracker now uses both anchors. A region's anchor frames are listed in its description **Remove anchor** undoes one.

With Tracking off, the region does not move: it keeps the shape of its anchor at every frame. The boundary is not tracked; it is the same at every frame.

The status of a region's shape at the displayed frame is *anchor* (you set it here) or *estimate, tracking still running* (the tracker is still working on it; the shape can still change).

A still image has one picture, so its regions have no tracking and the Tracking button is hidden.

## How to

### Add a timestamp to a video

1. Select the video and choose **Processing > Annotate**.
2. Click **Timestamp**. In the settings panel choose the format and colours.
3. Drag a box where the time should appear. A timestamp keeps its text's proportions: it takes its height from the text, so draw its width and position.
4. Play to check the time, then **Save Video**.

### Label a moving object

1. Go to a frame where the object is clearly visible.
2. Click **Label**, type the **Text** in the panel, choose its **Position** and the **Border** shape, then drag a box over the object.
3. Press **Tracking** (a new region starts with it off), play forward and watch the label.
4. Where it slips, stop, drag it back onto the object (a new anchor), and continue.

### Change a region afterwards

Click it to select it. The panel shows its settings; changing them changes the region everywhere. To move it at one frame, drag it there (that adds an anchor). To remove it use **Delete**.

### Add a border

Click **Boundary** and choose the **Border Color** and, if you want one, an **Aspect Ratio**. Then drag the edge or corner of the frame outline outward. The new area is filled with the border colour, and the frame never gets smaller than the picture. Choosing an aspect ratio resizes the frame to fit it, and dragging then keeps that ratio. The picture is not cropped or scaled to make room.

### Undo a mistake

**Undo** and **Redo** work within this window, for as long as it is open: drawing, moving, deleting and changing a setting. They do not touch the project's own undo, and closing the window discards its history.

## Settings of each tool

| Tool | Setting | Meaning |
|---|---|---|
| Timestamp | Text Color, Background Color | Colours of the time and of the box behind it (white on black to start with). |
| | Time Format | **Absolute** - the date and time of the frame with milliseconds, in the case's time zone (`HH:mm:ss.SSS MM/dd/yyyy z`); **Absolute (-ms)** - the same without milliseconds; **Relative** - the time from the start (`HH:mm:ss.SSS`); **Relative (+day)** - with a day count first. |
| | Absolute times are only as right as the item's times. If they are wrong, fix them first (see Time Sync for multi-view items). | |
| Label | Text | What the label says; new labels start as "Untitled". |
| | Position | Where the text sits: Top, Center or Bottom. |
| | Text Color, Background Color | The default background is transparent. |
| | Border | None, Rectangle or Ellipse (the starting choice) drawn around the box. |
| Boundary | Border Color | Colour of the area added around the picture (black to start with). |
| | Aspect Ratio | **Unconstrained** (the start), **16 : 9**, **4 : 3**, or your own width and height. If one is chosen, the frame is grown to that shape and kept to it as you drag. |

With a region selected, changing a setting changes that region. The panel's settings are also what the next region you draw starts with.

## Saving and closing

Type a **Name** for the new item (a suggestion is filled in) and click **Save Video** or **Save Image**. The result appears in the case beside the original. Save is available until you have saved once, and after that only when you have made further changes; you can keep working and save again to add more versions. The window stays open.

Closing with changes you have not saved asks whether to save them first.

The original item is kept as it was, so you can always go back to a clean copy; Save never replaces it.

## Keyboard and mouse

| Key | Action |
| --- | --- |
| `Ctrl+Z` | Undo |
| `Ctrl+Shift+Z`, `Ctrl+Y` | Redo |
| `Ctrl+Delete` | Delete the selected region |
| `F1` | This page |
| Mouse wheel | Zoom the picture, with any tool |

# Filters

Improve the look or sound of a copy of a video, image or audio item, checking the result beside the original before you keep it.

## What the window does

A filter changes the pictures or the sound of an item. The Filter window shows the **Input** (the item as it is) and the **Output** (what the filter makes of it) side by side, so you can adjust the filter's settings and see the effect on the same frame. **Save** adds the filtered result as a new item. The original is never changed.

Open it from **Processing > Filter** (or the right-click menu of a video, image or frame) with an item selected; the menu lists the filters that suit it:

- **Video and images:** Grayscale, Sharpen, Equalize, Blur, Levels Adjust, Stabilize (video only) and Super-resolution (one video or frame, producing an image).
- **Audio** (an item with one audio channel set): QuickEnhance, Noise Reduction, Voice Spectrum Equalization, Hum Reduction, Automatic Gain and CARDINAL Minilab. The menu has **Video** and **Audio** submenus; a submenu is greyed out while none of its filters can be used on what is selected.

The window is called **<Filter> Filter: <item name>**, for example **Sharpen Filter: Lobby camera** (CARDINAL Minilab's is **Filter Chain Filter: ...**). It must be closed before you go back to the main window.

## The window

- **Two players. Input** on the left, **Output** on the right, each with the usual time slider and play controls. For audio they show the waveform; the output waveform appears once it has been rendered.
- **A toolbar** beside the input for the zoom and region tools (see below), and **sync buttons** between the players.
- **The filter's settings**: sliders, lists and check boxes, which differ for each filter (see The filters). The output updates as you change them.
- **The bottom row: Undo**, **Redo**, the **Name** of the new item, **Save Video**, **Save Image** or **Save Audio**, **Close** and **Help**.

### Keeping the two players together

The players start linked: moving either moves both, and only a **padlock** shows between them. Click it to release the link; two arrow buttons then appear, each making one player follow the other (and linking them again).

## Limiting a filter to part of the picture

A new window starts with one **region** that covers the whole picture (outlined in green on the input), so the filter applies to everything. To limit it to part of the picture, reshape that region (drag with Square or Circle) or delete it and draw your own. A region you add *alongside* the whole-picture one does not limit anything: the filter still

applies to the union of the regions. Deleting the last region brings back a whole-picture one. The toolbar beside the input has:

| Button | What it does |
|---|---|
| Zoom | Drag in the picture to zoom and pan it. Draws nothing. This is the tool the window starts with. |
| Track | Pressed: the selected region follows the object it was drawn on. Released: it stays put. Disabled with no region selected. |
| Square | Drag to draw a rectangular region. |
| Circle | Drag to draw an elliptical region. |
| Delete | Removes the selected region. |
| Remove anchor | Removes the selected region's anchor at the displayed frame; enabled only when it has more than one and one is at this frame. |

The frame you draw a region on gives it an **anchor**, and with Track on it follows the object from there. Where tracking slips, move the region at that frame to add an anchor. Regions are numbered in order and renumber when one is deleted. A still image has one picture, so its regions do not track. Blur has one extra choice about regions: see Blur. Regions work as they do in Annotate.

Filters that are not about the picture (the audio filters) have no regions.

## How to

### Apply a filter to a whole video

1. Select the video and choose **Processing > Filter** and the filter.
2. Move the input to a frame that shows the problem and adjust the settings; watch the output.
3. Play the output through to check it, then give the result a **Name** and click **Save Video**.

### Blur a face or plate

1. Open **Blur** and go to a frame where the thing is clearly visible.
2. Click **Square** or **Circle** and drag a region over it. If a whole-picture region is still there, select it and click **Delete**, or the whole picture is blurred. Select your region, press **Track**, and play forward.
3. Where the region drifts, stop, drag it back (a new anchor), and carry on.
4. Set the **Radius** (it starts at 2 pixels, which is subtle), then **Save Video**.

### Filter only part of a video

Each region lists the frames it applies on (for example `frames 1-4195`). Select a part in the main window's player before opening the filter and the starting region covers just those frames, and the window opens at the start of the selection.

### Make a still of one frame

Open the filter on an image or a frame, or on a video and **Save Image** to keep the frame shown in the output. **Super-resolution** always makes an image: it has no output player, only one picture made from the frame the input shows (the item is named for it, for example `...--Frame-1-Clarified`), so move the input to the frame you want first.

### Undo a mistake

**Undo** and **Redo** cover settings and regions while the window is open; they are separate from the project's undo.

## The filters

| Filter | Setting | Meaning |
|---|---|---|
| Grayscale | Select Channel | Grayscale (the start), Red Only, Blue Only or Green Only: a grey picture of that colour's brightness. |
| Sharpen | Weighting Value | Strength of the sharpening, Min to Max; it starts at 0, which changes nothing. Its box is read-only. Too much emphasises noise. |
| Equalize | No settings: spreads the brightness levels of the picture to bring out detail in dark or washed-out video. | |
| Blur | Radius | Blur strength in pixels, by slider or by typing a value. |
| | Invert Mask On | **Nothing** (the start): blur the inside of the regions. **Selection**: blur everything *outside* the regions, on the frames they are on. **All Frames**: blur everything outside them, on every frame (not offered for images). |
| Levels Adjust | Input Range (Minimum, Maximum) | Input pixels darker than the minimum become the darkest output, and brighter than the maximum the brightest, so narrowing the range stretches contrast. Histograms of input and output show the effect. |
| | Output Range, Gamma | Limits the output brightness, 0 to 255 like the input range; Gamma (1.000 to start with) shifts the middle tones. Each slider has a number box beside it. |
| Stabilize | Translation Suppression, Rotation Suppression | How much of the camera's shake and tilt is removed, None to Max (both start close to None). Video only. |
| Super-resolution | Frames Used | How many neighbouring frames are combined into the one image: 1 to 201, in steps of the scale shown (3 to start with). More frames can recover more detail. |
| | Apply Motion Correction | Corrects for movement of the object of interest between those frames. It starts on; while it is on you can set **Noise Reduction** (Min to Max). |

### Audio filters

These work on the item's audio and have no regions or region tools. Some have a **Render** button beside the **Name** field (Noise Reduction, Hum Reduction, QuickEnhance and CARDINAL Minilab do; Voice Spectrum Equalization and Automatic Gain do not): it processes the recording, and then reads **Preview**, which goes back to the quick preview.

| Filter | What it does |
|---|---|
| QuickEnhance | A one-step audio clean-up. The window has a **Settings** button for the filter's own settings and a **Program** list (one program, **Default**). |
| Noise Reduction | Two independent operations, each switched on by its own check box: **Predictable** (steady noise, with a **Reverb** option) and **Random** (changing noise, with an **Aggressive** option). Each has an **Attenuation** slider (100% to start, 0% to 100%) that is greyed out until its box is ticked. There is also a **200Hz HPF** check box. |
| Voice Spectrum Equalization | Twenty-four frequency bands from 80 Hz to 6 kHz, each raised or lowered in dB with its slider or number box (all 0 to start). **Preset** offers All Pass, Low Pass and High Pass, and the up and down arrow buttons raise or lower all bands together. |
| Hum Reduction | Reduces hum: set the **Frequency (Hz)** (60 to start with) and the **Attenuation (dB)** (0 to 60, starting at 60), or turn on **Auto-Tracking** to have the frequency found for you. It also has the **200Hz HPF** check box. |
| Automatic Gain | Evens out loud and quiet passages: **Max Gain (dB)** caps the boost (0 to start with) and **Release Time (ms)** sets how quickly it eases off after a loud sound (200 to start with). |
| CARDINAL Minilab | A chain of up to eight audio filters, one per slot (each **No Filter** to start with), with **Bypass All**, **Store...**, **Recall...** and a spectrum display. Its window is titled **Filter Chain Filter**. |

## Saving and closing

Type a **Name** for the new item (a suggestion is filled in) and click **Save Video**, **Save Image** or **Save Audio**. The result appears in the case beside the original and the report of the new item records the filter and its settings. Save is available until you have saved once, and after that only when you have made further changes; you can keep working and save again for more versions. The window stays open.

Closing with changes you have not saved asks whether to save them first.

## Keyboard

| Key | Action |
| --- | --- |
| `Ctrl+Z` | Undo |
| `Ctrl+Shift+Z`, `Ctrl+Y` | Redo |
| `Ctrl+Delete` | Delete the selected region |
| `F1` | This page |

# Search

Find where people and vehicles appear in a video, see when each is visible, and mark those times so you can go straight to them.

## What the window does

Search runs an object detector over one video and shows what it found:

- Every **person** and **vehicle** (and other objects it recognises), with a box around it on the frames where it appears.
- On the time slider, **the times when something was found**, so you can jump between them.
- The **Objects** tab, a grid of thumbnails of the objects found, which you can filter by kind.

You can narrow what is shown to people or vehicles, or to one area of the picture, and attach **labels** to the times or frames that matter. **Save** adds a new item to the case that carries the detections and your labels. The original is not changed.

Open it from **Processing > Search** with a video selected and a view of it chosen (a multi-view item searches the view you have selected). It also appears on the right-click menu of the video.

Search finds objects in a video; it does not identify who a person is. The detector can miss objects and can mistake one thing for another. Treat the results as leads, and check them by looking.

## The window

The title is **Search: <item name>**. It has two tabs, **Player** and **Objects**, and a row of controls at the bottom.

### The Player tab

The video, with the detections drawn on it as it plays, and the usual play controls and time slider. The slider also shows the results (see below). A toolbar down the left side has:

| Button | What it does |
|---|---|
| Zoom | Drag in the picture to pan it. The mouse wheel zooms with either tool. |
| Search area | Drag in the picture to limit the search to a box. See below. |
| Delete | Removes the selected search area, so the whole frame is searched again. |
| People | Pressed (the icon turns red): show only people. |
| Vehicles | Pressed (the icon turns red): show only vehicles. With both pressed, both are shown. |

### The Objects tab

A grid of thumbnails, one for each object found (it is shown over the span of time the object is visible). **Thumbnail Display** chooses which kind to show - **All**, or one kind such as **person** (the choices are the kinds found) - and **Thumbnail Size** makes the pictures bigger or smaller. Selecting thumbnails selects those times in the video. The grid follows the filters: it holds what is currently shown.

### The bottom row

- **Search quality** (**HQ** or **NQ**) and a **progress bar**.
- The **Name** of the item Save will add, **Save**, **Close** and **Help**.

## Detections, filters and the search area

### The search starts by itself

There is no Start button. The search begins when the window opens, at the frame you were on, and runs through the whole video. Play and explore while it runs. The first search after VideoFOCUS starts has to load the detector, so the bar can stay at 0% for a minute or more before it moves. The progress bar reads, for example, `32% NQ (gpu)`: how much of the video has been searched, the quality, whether the GPU or the CPU is doing it, and the speed. If this computer's GPU cannot run the detector, the CPU does the work and a *Search will be slow* warning says so, once. If you change something that needs a new search, the current one is stopped and the new one starts.

A video that already carries detections (for example a saved search result) opens with those results in it, and the search then only has to cover what is missing.

### Quality: HQ and NQ

| Setting | Meaning |
|---|---|
| **HQ** | Higher accuracy: finds more, and fewer mistakes, but the search is slower. |
| **NQ** | Normal accuracy: faster, and fine for a first pass. The window opens on NQ unless the video already has a complete HQ search. |

Changing the quality starts the search again at the new quality; results from the two qualities are kept apart and are not mixed. A common approach is NQ to see roughly where things are, then HQ for the stretch you need to rely on. If both have been run, the window opens showing the completed HQ one.

### Detections and filters

The detector finds everything it can. **People**, **Vehicles** and the **search area** do not make it search again: they only change which of those detections are *shown*. They are quick to change. With neither People nor Vehicles pressed, every kind of object is shown.

### The search area

Drag with the **Search area** tool to draw a box. Only detections inside it are kept; those outside are dropped. With no box, the whole frame counts. There is one box at a time (drawing a new one replaces it), and it is the same at every frame of the video. It is given in image pixels as `x,y,w,h`.

## How to

### Find when a person or vehicle appears

1. Select the video and choose **Processing > Search**.
2. Let it run; the slider fills in with the times something was found.
3. Press **People** or **Vehicles** to see only that kind.
4. Move through the marked times on the slider, or open the **Objects** tab and select a thumbnail, to go to them.

### Search only part of the picture

1. Click **Search area** and drag a box round the part of the scene you care about.
2. Detections outside it disappear at once. Move or resize the box by dragging it; delete it with **Delete**.

### Mark the times you found

Right-click the picture. The menu has label items that act on **the current frame**, **the selected times**, the **times of the objects shown**, or the **frames** where the objects shown are largest. Choose a label (or make a new one) and those times or frames carry it. The labels show on the slider and are saved with the result.

### Run it again at higher quality

Set the quality to **HQ**. The progress bar restarts. Your filters and area stay as they were.

## Reading the results

On the picture, a box round a detection is **red** when it passes the filters you have set and **white** when it was detected but is filtered out (for example, the picnic tables when only People is pressed). With no filter every box is red.

On the time slider, the lines show:

| Colour | Meaning |
| --- | --- |
| Green | The part of the video that has been searched (the shade depends on the quality: brighter for HQ). Where something was detected the white or red line is drawn over it. |
| White | When anything was detected. |
| Red | When something was detected that passes the filters you have set. |

If a time is white but not red, something was detected but filtered out by People, Vehicles or the search area.

Each detection box on the picture is labelled with what it is. A box is a prediction of where the object is, frame by frame; an object that is partly hidden, far off or blurred may be missed, or may come and go.

## Saving and closing

Type a **Name** (one is suggested) and click **Save**. A new item is added to the case: the same video, with the detections attached, and with the labels you made. The original is not changed. Save is available only when there is something new to save: after saving it stays disabled until the results or the labels change, and any change in the search results (more of the video searched, a different filter) counts.

Closing with unsaved results asks whether to save them first. Closing also stops a search that is still running.

The detections saved are the unfiltered ones for the quality shown, so a reader of the saved item can filter them again.

# Modify

Make a changed copy of a video, still image or audio item: crop it, turn it, resize it, change its frame rate or speed, fix its fields, or adjust its sound. The original is never touched.

## What the window does

Modify shows a live preview of the item as it will be after the changes you tick, so you can see the effect before anything is made. When you click **Save**, a new item is added to the case with those changes. Nothing is copied or re-encoded at that point: the new item refers to the original media and applies the changes when it is played or exported. The original item is not changed, and the new item records which changes were made, so they can be reported.

Open it from **Processing > Modify** with one item selected: a video, a still image or an audio item. For a multi-view item, select one view first (Modify works on a single view at a time).

Other things have their own windows: filters and enhancement (Filter), putting views on a common timeline (Time Sync), drawing on the picture (Annotate), and converting to a file format (Export).

## The window

The title says what is being made: **Create Modified Session from <name>**, or **Modified Still** / **Modified Audio** for those kinds.

- **The player** fills the upper part and shows the preview.
- **The settings** are below it, on tabs when there is more than one kind: **Spatial Properties** (how each picture looks), **Temporal Properties** (frames, rate, speed, fields - video only) and **Audio Properties** (only if there is sound). A still image has only the Spatial tab; an audio item only the Audio tab.
- **The bottom row:** the **Name** of the new item, **Save**, **Close** and **Help**.

The preview updates when you tick a box or finish typing a value (leave the field or press Enter). Boxes that need a value stay greyed out until their tick box is ticked.

## Spatial Properties

| Setting | What it does |
| --- | --- |
| **Crop Frame** | Keeps only a rectangle of each picture. A rectangle appears over the preview: drag it to move it and drag its edges or corners to resize it. It cannot be smaller than 16 pixels or go outside the picture. It starts as the top-left quarter of the picture. The preview keeps showing the whole picture with the rectangle on it; the cropping is done when you save. |
| **Change Aspect Ratio**<br>Ratio *W* : *H* | Stretches or squeezes the picture to a new shape (for example, to fix video that was stored with the wrong shape). It starts at the picture's current ratio. Both numbers must be above zero. |
| **Rotate Frame**<br>Degrees | Turns the picture by the number of degrees you enter. |
| **Invert Frame** | Turns the picture upside down (flips it vertically). |
| **Change Frame Size**<br>Width, Height | Makes each picture a different size in pixels. Starts at the picture's full size. With **Constrain Pixel Shape** ticked (the usual state; it is greyed until Change Frame Size is ticked), changing the width changes the height to keep the same shape - the shape of the cropped area, if you are cropping - and the other way round. Untick it to set both freely. |
| **Include Subtitles** | Only for video that carries subtitles, and ticked by default. Untick it to leave them out of the new item. |

## Temporal Properties

| Setting | What it does |
|---|---|
| **Selected Frames Only** (n frames) | Makes the new item from only the frames that were selected in the player when you opened Modify. Greyed out, with no count, if nothing was selected. To use it, select the frames (or a time range) first, then choose Modify. |
| **Resample Frames** Rate | Changes the frame rate while keeping the video the same length, by repeating or dropping frames as needed. |
| **Force Uniform Frame Rate** | For video whose frames come at uneven intervals (common with security recorders). Gives every frame the same duration. Choose **Source Rate** (the average rate of the original, shown in frames per second; single view only) or **User Rate** and type one. |
| **Change Speed** Percent (%) | Changes the average rate by a percentage; 100 leaves it as it is. The preview shows the effect. |
| **Force Interlace Format** | For interlaced video that is marked with the wrong field order. Choose **Odd Field Dominant** (odd scan lines show first), **Even Field Dominant**, or **Not Interlaced** (marks it as not interlaced). It starts on the video's current setting. |
| **Split Fields Into Frames** | Turns each interlaced frame into two frames, one per field. Greyed out when the video is not interlaced, or when you have forced it to Not Interlaced. |

## Audio Properties

With the Audio tab selected the player shows the sound's waveform. The boxes are numbered by channel, from 0.

| Group | What it does |
|---|---|
| **Channel Order** | **Reverse channel order** swaps the order the channels are in. |
| **Sync Adjust** | Tick the channels to move, then enter **Seconds**: those channels start earlier or later by that much (the arrows step in small amounts that follow the player's time scale, never less than a millisecond). Use it to line up sound recorded on a separate channel or device with the picture. |
| **Channel Select** | Untick a channel to leave it out of the new item. An audio-only item must keep at least one channel. For video you can untick them all, which makes the new item silent. |
| **Channel Mix** | **Stereo Balance** (two channels only) moves the sound between left and right with the slider (or the **Left** and **Right** channel percentages). **Mono (equal mix)** mixes all channels into one, equally. |

## The order the changes are made in

When several changes are ticked, they are made in this order. It matters for crop, because the crop rectangle is measured on the picture after the earlier changes:

1. Selected frames only
2. Force interlace format, then split fields
3. Resample frames, then force uniform frame rate
4. Subtitles
5. Change speed
6. Change aspect ratio
7. Rotate, then invert
8. **Crop**
9. **Frame size** (so it sets the size of the cropped picture)
10. Audio changes (sync, channel select, mix)

So when rotating and cropping together, draw the crop on the rotated picture you see in the preview. If you split fields while cropping, the crop rectangle is adjusted to match the half-height frames.

## Saving and closing

Type a **Name** (a suggestion is filled in) and click **Save**. If a value is not usable you are told which: *Invalid User Frame Rate*, *Invalid Speed*, *Invalid Aspect Ratio* or *Invalid Frame Dimensions*, and nothing is saved until you fix it.

The window stays open after a save, so you can change the settings and save another version. Save is available until the first save and after that only when the settings have changed. Closing with changes you have not saved asks whether to save first.

The new item appears in the case beside the original. Because it refers to the original media, do not delete the original if you need the new one; to make a standalone copy, use **File > Make Self-Contained** on the new item.

## How to

### Crop to part of the picture

1. Select the video and choose **Processing > Modify**.
2. On **Spatial Properties** tick **Crop Frame** and drag the rectangle over what you want.
3. Check the preview, then **Save**.

### Make a smaller copy of the part you want

1. In the player, select the range of frames. Choose **Processing > Modify**.
2. Tick **Selected Frames Only**, and on the Spatial tab **Crop Frame** and **Change Frame Size** if you want a smaller picture.
3. Save.

## Fix video that plays at the wrong speed

1. Open the **Temporal Properties** tab and tick **Force Uniform Frame Rate** and choose **Source Rate** or type the right rate - or tick **Change Speed** and enter a percentage.
2. Play the preview to check it, then Save.

## Keep only one microphone

1. Open **Audio Properties**. Under **Channel Select** untick the channels you do not want.
2. Save.

# Export and Save As

Get media out of a case as files: either converted to the format, size and quality you choose (Export), or as an exact copy of the file that is stored (Save As).

## Which one to use

| You want | Use |
|---|---|
| A file in a particular format, for example MP4 to email, or a smaller or different-sized copy, or the result of your edits, filters or annotations | **File > Export** - converts the media to your choices. |
| The same video, with only its container changed, quickly and with no loss | **Export** with **Rewrap** ticked. |
| To keep the converted result in the case without writing a file | **Export** with the **Render** option. |
| The original file, byte for byte, as it was imported | **File > Save As** - a straight copy; nothing is converted. |

Export converts the media every time, so unless Rewrap is used the result is a new encoding of the pictures, not the original file. For evidence that must be identical to what was imported, use **Save As**.

The menu entries name what is selected: **Export Video**, **Export Audio**, **Export Images** or **Export Media**, and likewise **Save Video As** and so on. They are on the File menu and the right-click menu of the items. Frames selected in the player can be exported the same way (**Export Images**).

Selecting a folder exports the media in it, including the media in folders inside it. Renders kept in the case (exports added with **Add render to project**) are not exported again; use **Save As** for those.

## Export: the options window

Choosing Export opens a window titled for what you are exporting (for example **Export Video**). It has one tab for each kind of media selected: **Video**, **Audio** and **Images**. Set the options in each tab, then use the button at the bottom right.

### The Export / Render button

The button at the bottom right is named for the choice you used last (**Render** or **Export**) and starts it. Next to it, **More Options** opens a small menu with the two choices, **Export** and **Render**. Picking one from the menu only changes the button to that choice (and, for Export, makes **Add render to project** optional); nothing starts until you click the button. The choice you start with is remembered for next time.

- **Export:** converts the media, then asks where to save the files (see below).
- **Render:** converts the media and adds the result to the case. No file is written.

**Cancel** closes the window without doing anything. **Help**, at the bottom left, opens this page.

### The two tick boxes

- **Add render to project:** also keeps the converted media in the case, so it can be used or saved again without converting again. It can be turned off for Export; for Render it is always on.
- **Open In System:** opens the exported file in the computer's default player when it is finished. Available only when you export a single item.

The options you choose are remembered for next time.

## Video options

| Option | What it does |
|---|---|
| **Rewrap** "No-reencode render using rewrapping (fast)" | Copies the video and audio into a new container without converting them: fast, with no change in picture quality. Offered when at least one of the selected videos can be rewrapped; if none can, the section only says so. When several videos are exported, those that can be rewrapped are, and the rest are re-encoded with the options below: a note under the tick box names them. When every video can be rewrapped, the format, frame size and sample rate stay those of the originals, so those options are greyed out. Because nothing is re-encoded, use Export without Rewrap when the result must show changes made in the case (filters, annotations). |
| **Layout (rows and cols)** | Only for a multi-view item. **Default** lays the views out automatically; the other choices give a specific number of rows and columns. |
| **Format** | The file type and codecs. A description under the list explains the choice and what it is good for - see the table below. |
| **Frame Size** | The size of the pictures in the file. Choose Full HD, HD, SD, or the original size or a fraction of it (the list adapts to the video, for example 1/4 size, 1/2 size), or type your own width and height. **Constrained** is selected to start with. **Letter Boxed** keeps the picture's shape, fitting it inside the size you chose; **Constrained** adjusts the size you enter so that it keeps the picture's shape. |
| **Audio Sample Rate** | **Native** keeps the source's rate. Other rates convert the audio. |
| **Attempt GPU encoding** | Uses the graphics card to encode, where the format supports it. Usually faster. Off if the format has no GPU encoder, and while Rewrap is ticked and every video can be rewrapped. |
| **Long Frame Recode** | Shown only for videos that contain very long frames (for example a security recorder that stores a picture for a long time). Splits them into several shorter frames so that some players do not drop them. |

### Video formats

| Format | Use it for |
|---|---|
| Uncompressed video and audio in a MOV (RGB, BGR or BGRA versions) | Archive and editing tools. No loss, very large files. Choose RGB for Premiere on Windows, BGR for Apple tools, BGRA for VLC. |
| Uncompressed video and audio in a AVI | Archive, if AVI is needed. Very large files. |
| MJPEG video and uncompressed audio in a MOV | Archive when disk space rules out uncompressed. Large files. |
| H264 video and AAC audio in a MP4 (the starting choice) | Sending a copy by email or uploading. Most compatible. Smaller files, with some loss. |
| H265 video and AAC audio in a MP4 | The same, with smaller files for the same quality, but not every player opens it. |
| Windows Media video and audio in a WMV | Small copies for people who use Windows Media players. |
| Media metadata in a JSON file | Support and debugging when the media itself cannot be shared: writes a description of the media, not the pictures. |

The list a machine shows can differ a little with what is installed.

## Audio and image options

### Audio tab

**Format** and **Audio Sample Rate**, as for video.

| Format | Use it for |
|---|---|
| WAV, 32-bit float | Archive of audio. The recommended choice. Moderate files. |
| WAV, 16-bit | Archive of audio. Moderate files. |
| MP3 | General distribution when no more processing is expected. Small files, with some loss. |

### Images tab

**Format** and **Frame Size**, as for video.

| Format | Use it for |
|---|---|
| PNG | Lossless; the choice for the internet and for other tools. |
| TIFF | Lossless; compatibility with other tools. |
| BMP | Lossless; compatibility with Microsoft tools. |
| JPG | Compressed, with some loss; the smallest files. |

## Choosing the files

When you Export (not Render), and for every Save As, a file window opens, titled for the items (**Save Video As**, **Save Audio As**, **Save Images As**, **Save Media As**, or **Save <name>** for one item).

- Choose the folder. The window opens in the folder you used last for this case.
- For one item, type the file name. For several items each is named after the item, and the names cannot be edited. A name that would clash with an existing file gets a number added.
- The right file ending is added if you leave it off.
- **Report Type:** optionally also writes a report about the exported items - **Pdf**, **Doc**, **Rtf** or **Mhtml** - next to the files. **None** writes no report.
- **Open In System:** opens the file when done. With a report chosen it opens the report. With several items and no report it is unavailable.

If a file already exists you are asked whether to replace it: **Yes**, **Yes to all**, **No** (skip that file) or **Cancel**. Click **Save** to start. A progress window shows the name of each file as it is written and has a Cancel button.

If an export fails with a message about the frame size, choose a smaller size or a different format; some formats and systems cannot make very large pictures.

## Save As: an exact copy

**File > Save As** (for example **Save Video As**) does not convert anything: it copies the file stored in the case to where you choose, byte for byte, so the copy is identical to the original. There are no format, size or sample rate options, only the file window described above.

It is available for:

- media imported from a file and not changed since, and
- an export that was added to the case (Add render to project).

It is not available for items created by editing in the case - a clip, a filtered or annotated video and so on - because there is no stored file to copy. Export those instead.

A Report Type can be chosen here too, for a record of what was saved, when the items support one. When you save an imported original, the Report Type box is greyed out.

## How to

### Email-sized copy of a video

1. Select the video and choose **File > Export Video**.
2. On the Video tab choose **H264 video and AAC audio in a MP4** and a smaller **Frame Size** such as HD.
3. Click **Export**, choose a folder and name, and click **Save**.

### A faithful copy of what was imported

1. Select the video and choose **File > Save Video As**.
2. Choose the folder and name; optionally set a **Report Type**. Click **Save**.

### Change the container without converting

1. Select one or more videos, choose **File > Export Video** and tick **Rewrap**. With several videos, any named in the note under it are re-encoded instead.
2. Click **Export** and save.

### Export frames as pictures

Select the frames in the player and choose **Export Images**. Pick PNG or TIFF for no loss, and a frame size.

# Time Sync

Put every view of a multi-view item on one timeline, at the right time, so the same moment lines up across all of the cameras.

## What the window does

A multi-view item (made with Combine, for example) plays several videos side by side, each at its own time. Each view's time usually comes from its file, and different devices' clocks seldom agree, so the same moment can be seconds or even years apart from one view to the next. Time Sync moves views in time - changing only when each starts, never the video itself - until they agree:

- **Relative alignment:** find a moment that shows in two views (a door closing, a flash, a car passing) and **tag** it as the same event in both. The views then line up on it.
- **Absolute time:** where you know the real time of a frame (from a clock in the picture, a log, a witness), **set** it. That view, and every view lined up with it, moves to the right time.

The job is done when every view's lane is green: each view is lined up with a view whose time you set. **Save** then adds a new item with the corrected times; the original item is not changed.

Open it from **Processing > Time > Time Sync** on a multi-view item. For a one-view item it is off: use Set Time in the player.

## The window

The player shows all of the views. Under it, the time slider has a lane per view, showing when that view has video on one absolute timeline, so you can see how the views line up. The **Time** readout gives the absolute time at the playhead.

At least one view is always **selected** - click a view to select it; Ctrl-click adds views (see Joining views). Tag Event and Set Time act on the selected view, at the playhead. Each view's border is the same colour as its lane:

| Colour | Meaning |
|---|---|
| Orange | The selected view, or views. |
| Green | In a group with a set time: this view's time is known. Done. |
| Blue | No set time, but synced to the selected view: it moves when the selected view moves. |
| White | No set time, and not synced to the selected view. |

The buttons along the bottom are **Undo**, **Redo**, the **Name** of the item to save, **Save**, **Close** and **Help**. Tag Event, Remove Tag and Set Time are on the right-click menu of the player.

## Events, tags, groups and set times

### Events and tags

An **event** is a named moment, such as "Door closes". **Tagging** it in a view marks the frame under the playhead as that moment. An event has one tag per view at most, and all of its tags are at the same time: tagging it in a second view moves that view so the two frames coincide.

### Sync groups

Views are **synced** when they share a tagged event. Syncing carries through: if view 1 and view 2 share one event, and view 2 and view 3 share another, all three are one **group**. A group moves as one. Moving any of its views, by tagging or by Set Time, moves the whole group and keeps it lined up.

### Set times

A view's time is **implied** until you set it: it comes from the file (see below) or from the views it is synced to. **Set Time** makes it known: the group moves so the frame under the playhead is at the time you enter, and the group turns green. A tag never moves a group with a set time - the other group moves to it instead.

Set Time also moves every other view whose time is still implied (white, or blue in another group) by the same amount, so they keep their timing relative to the view you set. Views that already line up in their files can then be given their real time with one Set Time, without tagging them together. They stay white: their times are still implied, and a later Set Time or tag can move them again. Views in a group with a set time (green) never move.

Groups can be timed independently. Two cameras that never see the same thing can't be tagged together, but if you know each one's time, set each one: both turn green, and they are right relative to each other too.

### Which view is the reference?

None is fixed. When you tag, the view you tag (with its group) moves, and the views already tagged stay where they are. So, until a time is set, a group keeps the time of the first view tagged into it. Once a group has a set time, it is the one that stays put.

## How to

### Line up two views on a shared moment

1. Select the first view, and move the playhead to the moment (play, drag, or step frames).
2. Right-click the player, choose **Tag Event > New ..**, name the event (it suggests Time 1, Time 2, ... each in the next colour) and press OK. The first tag of an event moves nothing: it fixes the event's time.
3. Select the second view, and move the playhead to the same moment as it shows in that view.
4. Right-click, **Tag Event >** the event. The second view (and anything synced to it) moves so the frame is at the event's time. The playhead stays on the tagged frame, now lined up.

Play across the moment to check. Tag more events, between other pairs of views, to bring the rest into the group.

### Correct a tag that was on the wrong frame

Select the view, put the playhead on the right frame, and tag the event again: the tag moves there, and the view (with its group) moves to match. Or use **Remove Tag** (below) and tag again.

### Give a group its real time

1. Select any view in the group, and move the playhead to a frame whose real time you know.
2. Right-click, **Set Time...**. Enter the date and time (24-hour clock, to the millisecond) and its time zone (**Time Region**), then **Apply**.

If you copied a time with **Copy Time** (in the player or Manage Views), click **Copied Time** in Set Time to enter it, then Apply to give this frame the copied time. The button is off when no time was copied, or when the fields already show it. To line up views here, tag a shared moment instead. The keyboard shortcut for Set Time is Ctrl+Shift+T.

The group moves so that frame is at that time, and turns green; views with no set time move with it. If the time shown is already right, Apply it anyway: nothing moves, but the group is marked as having a set time.

Set Time is also in the player: the clock button on its toolbar, or **Time > Set Time...** (Ctrl+Shift+T) on the right-click or Processing menu. It works as here and adds the new item at once.

### Verified times

A time you set is *verified*: when you save, it is kept with the new item and marked with ✅ after the item's date in the session list (once every view has one) and after the time in the player (for the selected view). A time that only comes from the file, the import or the capture is *inferred* and has no mark. Reopening Time Sync on a verified item shows those views green again, and a view synced by tags to a view with a set time is verified with it.

Copy Time carries the mark: the menu item and **Copied Time** show ✅ when the time is verified. Applying a copied inferred time as it is moves the views, but leaves their time inferred (not green). Change any field before Apply, or type the time, and it is yours: verified. Times set before this version were not saved as verified: set them again to mark them.

### Line up views that share no moment

Set the time of each group separately, from what you know about each. Every group with a set time is green, and all of them are on the same absolute timeline.

### Remove a tag

Right-click, **Remove Tag >** the event. It removes that event's tag from the selected view, wherever the playhead is. Nothing moves, but the view may no longer be synced to the views it was tagged with. You can also remove a tag by picking the event under Tag Event when it is ticked - ticked means the playhead is on that event's tagged frame in the selected view.

### Undo a mistake

**Undo** and **Redo** step back and forward through every change made in the window: each tag, tag removal and Set Time is one step, including whatever it moved and whether it set a time.

## Exactly what Tag Event does

Tag Event tags the chosen event at the frame under the playhead in the selected view, moving the view's tag there if it already has one. Then:

| When | What happens |
|---|---|
| The event isn't tagged in any other view | Nothing moves. The tag fixes the event's time. |
| The event is tagged in another view, at the same time | Nothing moves. The views are now synced. |
| The event is tagged in another view, at a different time | The selected view's group moves so the tagged frame is at the event's time. |
| ... and the selected view's group has a set time | The selected view's group stays; the group of the view the event is tagged in moves to it. |

It refuses, changing nothing, in two cases:

- **Already Synced** - the selected view is already synced, through other events, to a view tagged with this event at a different time. Moving would break that link. Decide which tag is wrong, remove it, and tag again.
- **Times Disagree** - both groups have a set time, and the event puts them at different times, so the times can't both be right. Correct the wrong one with Set Time, or remove the wrong tag.

## Where a view's time comes from

Until you set it, a view's time is the one it was imported with: the start date given when importing, if there was one, otherwise the file's last-modified time. That file time may be when the recording finished rather than when it started, or may have changed when the file was copied, so treat it as a starting point only. Views made from other items keep their source's times.

## Joining views

Select two or more views (Ctrl-click) and press **Join** to make them one view. While several are selected only Join works: Tag Event, Remove Tag and Set Time are off. A joined view is one view from then on: Set Time, a tag or a sync moves all its parts by the same amount, so they keep their times relative to each other. Its parts follow one another in time (where they overlap, the later one shows). **Undo** takes a join back. Save records which views are joined.

## Saving and closing

- **Save** adds a new item, named as in the Name field, with the views at their new times. It is enabled while the times differ from when the window opened (or from the last save); the window stays open after saving.
- **Close**, Esc, or the window's close button asks whether to save if times have changed.
- Events, tags and set times belong to the window: they are not saved with the item. The saved item keeps only the resulting times.

## Keyboard

| Key | Does |
|---|---|
| `Ctrl` + `Z` | Undo |
| `Ctrl` + `Shift` + `Z` or `Ctrl` + `Y` | Redo |
| `Esc` | Close |
| `F1` | This help |
| `F11` | Maximize the window |

# Manage Views

Choose the order in which the views of a multi-view item are shown, then save the result as a new item. It changes only the order: the videos and their times stay as they are.

## What the window does

A multi-view item (made with Combine, for example) shows its views side by side, numbered in order. Manage Views puts them in the order you want – for example earliest first, or the camera that matters most at the top left. Open it from **Processing > Manage Views** with a multi-view item selected.

It does not change when anything happens. To line views up in time, or to join several into one, use Time Sync; the window's **Time Sync** button is a reminder of that.

## The window

- **The player** – shows every view; the controls are those of the main window's Player tab. Under the position slider each view has a lane showing when it has video; the selected views are orange. Drag in a view to zoom and move its picture.
- **Selecting views** – click a view to select it. Ctrl-click adds or removes one; Shift-click selects the range from the last view selected on its own.
- **Move Earlier**, **Move Later** – move the selected views one place earlier or later. Each is off when no view is selected, and when the selection already includes the first (for Earlier) or last (for Later) view.
- **Order by Start Time** – puts the views in order of when they start, the earliest first. It is off when they already are.
- **Undo**, **Redo** – step back and forward through the reorders made in the window (`Ctrl`+`Z`; `Ctrl`+`Shift`+`Z` or `Ctrl`+`Y` to redo). Each Move or Order press is one step, and the selection comes back with it. Each is off when there is nothing to undo or redo.
- **Name** – the name the new item will have; it starts as the source's name plus `-Manage`, or the next free name such as `-Manage-2`.
- **Time Sync** – opens a note saying Time Sync is now its own operation, in the Processing menu.
- **Copy Time** (right-click) – copies the time at the playhead, for Set Time's **Copied Time** in another item. It reads **Copy Time** ✅ when that time is verified.
- **Save**, **Close**, and **Help** (or `F1`).

A view that is a join of several (see Joining views) moves as one view.

## How to

### Put the views in start-time order

Press **Order by Start Time**. The views reorder, the selection stays on the same views, and **Save** turns on.

### Put one view somewhere particular

1. Click the view.
2. Press **Move Earlier** or **Move Later** until it is where you want it. The selected view keeps its selection as it moves.
3. Press **Save**.

After any reorder each view goes back to its normal, unzoomed picture; a zoom or move you made by dragging is not kept.

## Saving and closing

- **Save** is off until the order differs from the one the window opened with (or the last save). Putting the views back as they were turns it off again. It adds a new item, described as "View management of <source>", named as in the **Name** box; the original is not changed.
- The window stays open after Save, and the name moves on to the next free one.
- Each view keeps whether its time is verified; a joined view is verified when all its parts are.
- **Close** (or `Esc`) closes the window. With unsaved changes it asks *Save changes before closing?* – **Yes** saves, **No** discards them, **Cancel** stays.

# Connecting an AI Assistant

Let an AI assistant that supports MCP (Model Context Protocol), such as Claude, work with the open case: run scripts, and, if you allow it, read and operate the VideoFOCUS window.

## How it fits together

VideoFOCUS runs a small server on this computer only; it cannot be reached from other machines. The assistant does not talk to it directly. It starts **mcp.exe**, a bridge program installed beside **VideoFOCUS.exe**, and the bridge passes its requests to the running VideoFOCUS. The bridge finds VideoFOCUS and the access token by itself, so there is nothing to copy or paste.

You do two things, once: choose what the assistant may do (in VideoFOCUS), and tell the assistant where **mcp.exe** is (in the assistant).

## Choose what the assistant may do

Open **Automation > MCP Settings...**. Three switches decide what a connected assistant can do:

| Switch | What it allows | Default |
|---|---|---|
| **Allow MCP clients to run scripts** | Working with cases and media by running scripts: importing, searching, filtering, exporting. | On |
| **Allow MCP clients to view and operate the VideoFOCUS window** | Reading the window's text, and clicking, typing and changing anything you can. Scripts cover most jobs; turn this on only if you want the assistant to drive the windows themselves. | Off |
| **including screenshots of it** | Seeing what is on screen, including video and images from the case. With this off the assistant can still read the window's text, but not the pictures. Available only when the switch above is on. | Off |

Click **Close** to apply your changes; they are kept between sessions. When a switch is off, the assistant is told so, and which setting to change, rather than being left to guess.

Because a connected assistant can do whatever the switches allow, turn on only what you need, and connect only assistants you trust with the case.

## Connect the assistant

Register **mcp.exe** with the assistant as a local (stdio) MCP server. You need its full path: the folder VideoFOCUS is installed in, then **mcp.exe**.

**Claude Code.** In a terminal:

```
claude mcp add videofocus -- "<install folder>\mcp.exe"
```

or add it to the project's `.mcp.json`:

```
{ "mcpServers": { "videofocus": { "command": "<install folder>\\mcp.exe" } } }
```

Then start Claude Code (or type `/mcp`), approve the **videofocus** server when asked, and check that `/mcp` lists it as connected.

**Other assistants.** Add the same entry – a command that is the full path of **mcp.exe**, no arguments – wherever the assistant keeps its list of MCP servers.

## Reconnecting

- You can start the assistant before or after VideoFOCUS. Until VideoFOCUS is running the assistant can list the tools but a call says VideoFOCUS is not running.
- If you **restart VideoFOCUS**, reconnect the assistant (in Claude Code, type `/mcp`). A call made over the old connection may hang or fail.
- If you change the switches, the next call uses the new settings; no reconnect is needed.
- If you **regenerate the token**, reconnect the assistant too: the bridge reads the token when it connects.

## The access token

The **Token** shown in MCP Settings is the password for the server. The bridge reads it for you, so you only need it for an MCP client that connects straight to VideoFOCUS's `/mcp` address, sending it as an **Authorization: Bearer** header. **Copy to Clipboard** copies it.

**Regenerate token** replaces it, and asks first, because any client set up with the old token stops working until it is given the new one. The bridge picks the new one up when it next connects to VideoFOCUS (see Reconnecting).

**Trusted hosts** is only for assistants that run in a web browser and are served from another computer on your network: list the host names allowed to call VideoFOCUS. Leave it empty otherwise, and add only hosts you control, since anything served from a listed host can use the tools the switches allow.

## If it does not connect

- **The assistant says the server closed or failed to start.** Check the path to **mcp.exe** is right and that the file is there. The bridge writes its problems to `mcp-bridge.log` in `%LOCALAPPDATA%\SalientSciences\VideoFocus`.
- **It lists the tools, but a call says VideoFOCUS is not running.** Start VideoFOCUS, then try again.
- **A call is refused.** The message names the switch in MCP Settings that is off.
- **Calls hang after VideoFOCUS was restarted.** Reconnect the assistant (`/mcp` in Claude Code).