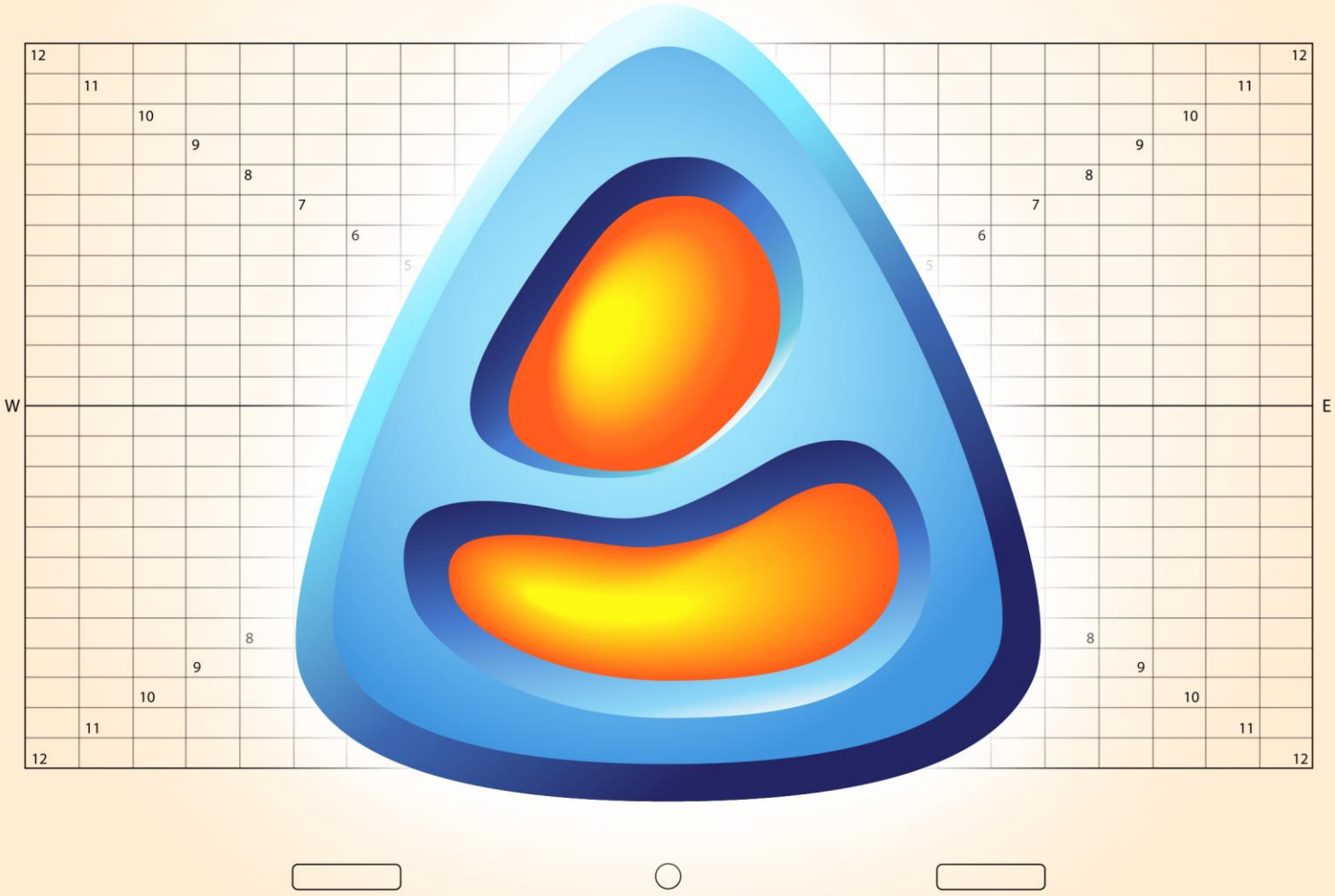
CACANi

Accelerated Inbetween Animation



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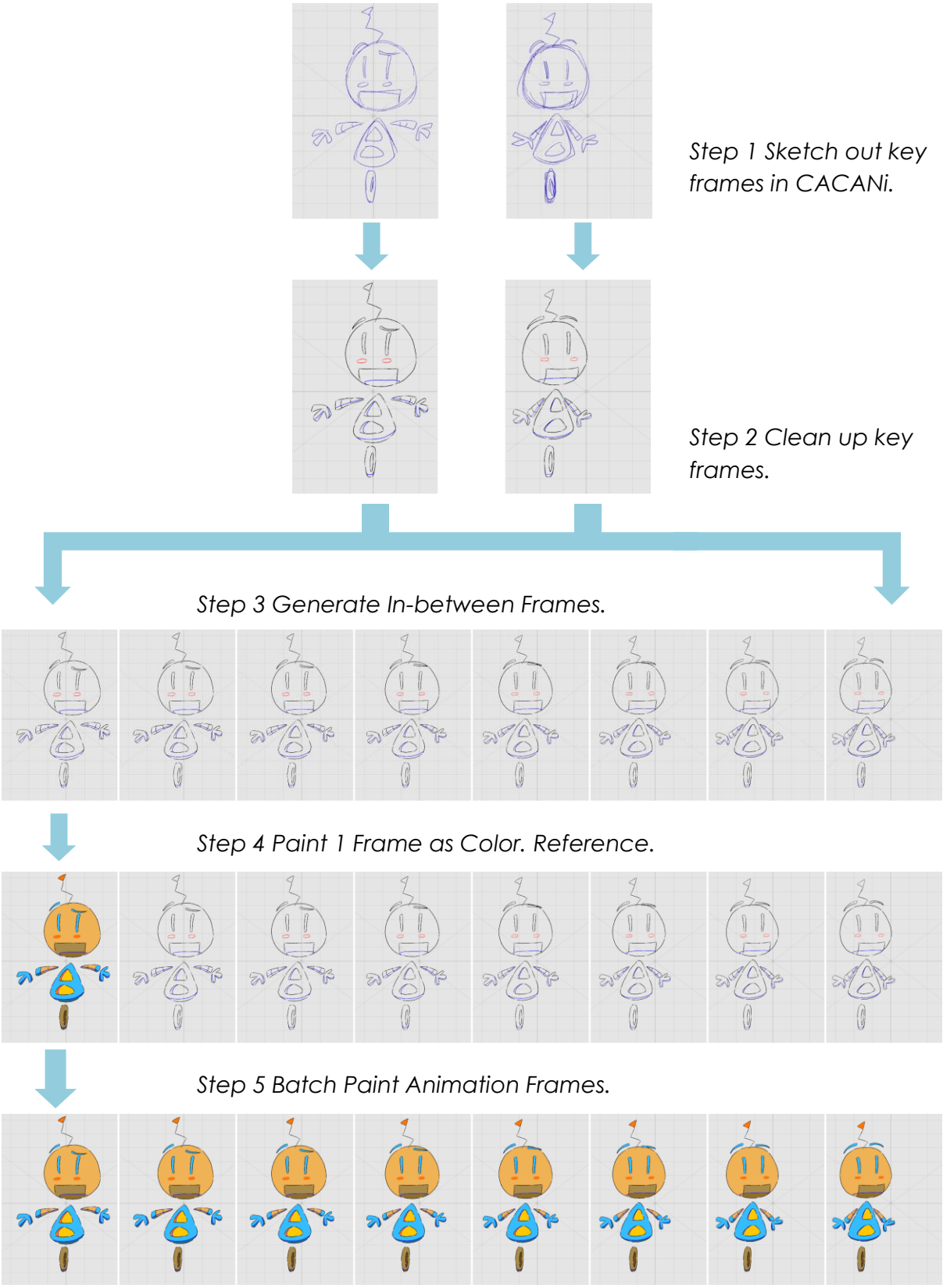
01

What is **CACANi**?

CACANi's Animation Workflow



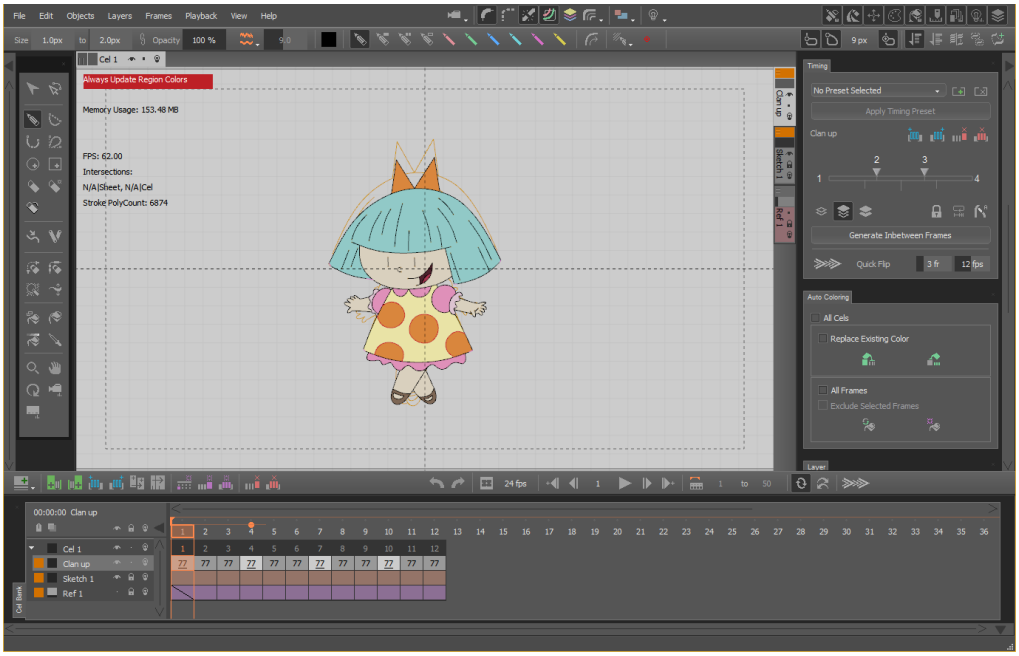
Step 1 Sketch out key frames in CACANi.

Step 2 Clean up key frames.

Step 3 Generate In-between Frames.

Step 4 Paint 1 Frame as Color. Reference.

Step 5 Batch Paint Animation Frames.



CACANi is a revolutionary application developed with hand drawn animators in mind. With our proprietary tools and workflow, CACANi helps reduce the work required by generating in-between frames based on the key frames and automatically painting the frames, creating a smooth and realistic animation sequences in a fraction of the time.

Features of CACANi

- **Unique Pressure Sensitive Sketching and Tracing Capabilities**

With the use of graphic tablets or tablet displays, animators can choose to create their drawings with clean, uniform lines, or organic, pressure-sensitive strokes, directly in the software.

- **Color Separation Line Layers**

To add more depth to the drawings, Color Separation Lines can be drawn to create highlight or shaded regions. These special layers can then be hidden so that the final painted drawings do not show the separation lines.

- **Automatic Generation of In-between Frames**

Animators can make use of CACANi's unique animation engine to automatically generate in-between frames after the key frames are drawn.

- **In-between Timing Adjustments**

Mimicking the hand drawn animation workflow, in-between timing can be easily adjusted via the Timing Panel.

- **Automatic Coloring of Animation Frames**

Using a single painted frame as reference, painters can auto-color all the frames of an animation sequence.

- **Unique Digital Workflow for Hand Drawn Animation**

We have developed an alternative digital production pipeline to make full use of the many advantages of CACANi. It will improve or eliminate several tedious processes that are traditionally required in the hand drawn animation industry.

- **High Quality, Scalable Vector Output**

CACANi is able to export animation sequence of any size and quality. Because all graphics are vector-based, CACANi gives artists the freedom to distribute their creations on multiple platforms with ease, from large HDTVs to mobile devices.

New Features in CACANi 2.0

Since version 1, we have learnt a lot about what makes CACANi useful to animators. With that knowledge, a lot of work has been done to increase performance and improve the different tools that you use.

Performance Improvements

Many of the underlying functions relating to the handling of strokes and regions have been rewritten. As a result, CACANi's ability to handle complex drawings (More than 1000 strokes per frame) have been sped up, while memory usage has decreased.

Drawing like Pencil and Paper

The new **Raster Layers** allow you to draw and edit drawings in a traditional pixel-based manner. Color Separation Sublayers also help you to draw highlight and shadow regions without affecting your main line art.

Better Animation Generation, Stroke Matching

Using **Re-match Stroke Order**, you can now make corrections to fix stroke matching problems between keyframes. You can also now combine strokes together with the **Join Strokes** option.

With the **Auto Feature Points** mode, you can automatically assign feature points to the ends and sharp corners of each stroke after drawing it. This can improve the inbetweening result. You can also overlap the feature points' motion paths, allowing you to create inbetweening motion that looks more natural.

Occlusion and Segment Hiding

The new **Boundary Stroke** and **Occluded Stroke** options allow you to spend even less time in tweaking your drawings. Designate a stroke as a Boundary Stroke to hide or reveal stroke segments automatically, all without having to grapple with layers.

Also, other than masks, the new **Create Clipping Mask** option will allow you to hide strokes outside of a region.

Speeding Up Gap Closing

You can now perform gap closing using different methods, including painting regions and closing gaps at the same time.

In addition, you can now use the **Add Points When Clinging** option when drawing, or the **Add Stroke Connection Points** option after drawing, to help you scale and rotate strokes without creating more gaps.

Adaptive Stroke Width Adjustments

Thinning and thickening the stroke width of your drawings, when you're drawing them and after you've drawn them, are both now much easier with the **Stroke Taper Panel** and **Change Stroke Width** option. Stroke widths will also adjust themselves automatically when edited.

Editing across Multiple Cels and Frames

You can now use selected functions across multiple frames or cels. You can also use the **Select All Frames** option from the context menu or configure it with a shortcut key.

Tools and functions that support multiple cel or frame editing include the **Selection Tool** and the **Apply Stroke Tapering**, **Change Stroke Width**, **Randomize Strokes**, **Transfer / Replace Grouping Info**, **Transfer Boundary Stroke Settings** and the various frames editing and frame type conversion options.

New Layers and Layer Conversion Options

On top of Raster Layers, you can now load, view and edit video frames with **Video Layers**. You can also speed up layer adjustments with the **Start Cel** and **End Cel** options. Audio layers are now like regular cels and are movable as well.

Using **Rasterize Image Layer**, you can now turn video frames and external images into CACANi raster layers for further editing. You can also turn raster line art into CACANi vector strokes with the **Extract Line Art** and **Vectorize Layer** options.

New Frame Types and Frame Type Conversions

You can now use **Repeat Frames** to display a frame again anywhere in the Cel Bank without increasing memory use. You now also have a lot more flexibility in converting between the different types of frames. Finally, much care has also been taken to ensure that after your conversions, the timings in the Timing Panel are not affected.

Switch Quickly between Onionskin Frames

After assigning Offpeg frames, you can toggle between displaying your active frame and the offpeg frames quickly using shortcut keys.

Load and Save Color Palettes

Color Palettes can now be saved as .csf files and transferred between files.

Canvas, Camera and Export Settings

You can now configure the **Print Size** as well as the **DPI**. The **Animation Information** window allows you to include details about your animation in the drawings.

Export to After Effects

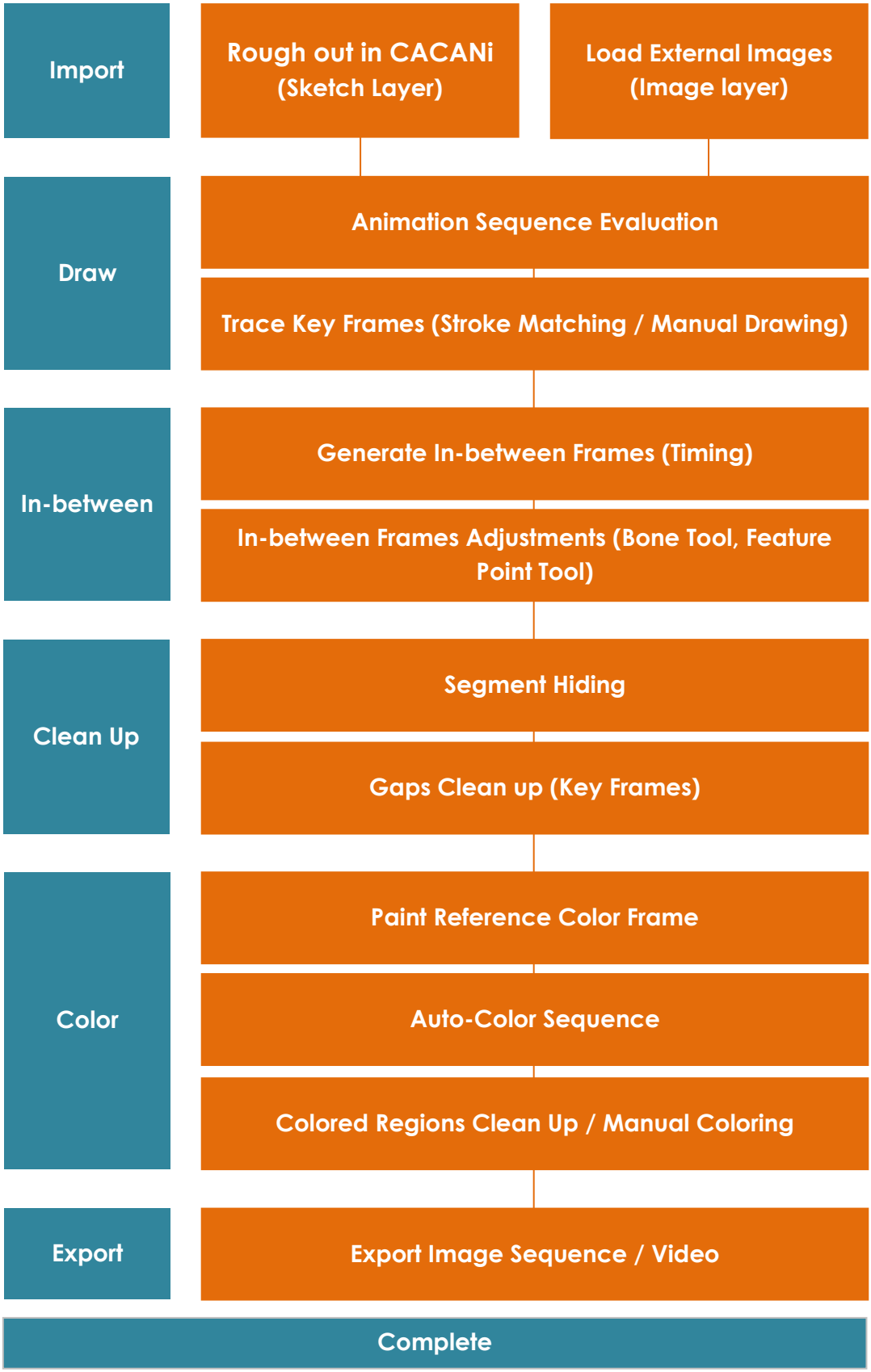
You can now export the layers as individual images, as well as export the layer information to Adobe After Effects.

Better User Interface, Tool Panels, Shortcut Customization

The menus and interface have been improved and reorganized so that you can select more options, but not increase the onscreen clutter. The **Timing**, **Onionskin** (previously Lightbox), **Navigator** and **Cel Bank Panels** have seen more drastic changes in the functions and user interface, while the other panels have smaller cosmetic changes.

The **Customize Shortcut** window has been reorganized for greater clarity when assigning shortcut keys. An additional section to configure the digital stylus buttons has also been added.

The CACANi Animation Pipeline



User Manual Icon Guide

Throughout the user manual, you will encounter some icons describing specific interactions that you'll need to perform with either the mouse or the digital stylus. They are listed as below:

Left Click

Press Left Mouse Button once (Mouse) or Tap Pen Tip on screen once (Stylus)

Double Click

Press Left Mouse Button **Twice** / **Double Click** (Mouse) or Tap Pen Tip on screen **Twice** (Stylus)

Left Click + Drag

Press and **Hold Down** Left Mouse Button and Move in Indicated Direction (Mouse) or Press and **Hold Down** Pen Tip on screen and Move in Indicated Direction (Stylus)

Right Click

Press Right Mouse Button once (Mouse) or Press Pen Button once (Stylus)

Setting Up CACANi

System Requirements

Minimum Configuration
2 GHz Intel® / AMD® processor
Microsoft Windows 7
512 MB RAM
Video card supporting OpenGL 3.0 with at least 128 MB of RAM
Monitor with at least 1024x768 resolution
Mouse device

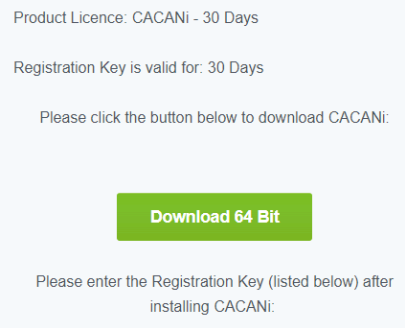
Recommended Configuration
3 GHz Intel® / AMD® processor
Microsoft Windows 7 / 8 / 10
At least 4 GB RAM
Video card supporting OpenGL 3.0 with at least 1 GB of RAM
Monitor with at least 1440x900 resolution
Graphics Tablet or Tablet Monitor device

Internet Connection will also be required for activation of software.

CACANi makes use of advanced rendering technologies to calculate and display the animation drawings. As a result, a relatively modern graphics card is needed to allow CACANi to run properly.

Installation of CACANi

When installing CACANi, you will need to first download the installer file from CACANi's website (www.cacani.sg). The download links are sent to your email when you purchased the software.



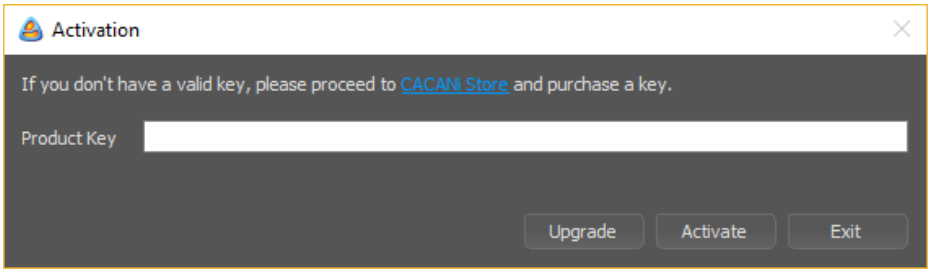
Alternatively, you can download the latest version of the installer from our website. Please note that this is only for users who have purchased CACANi before. You will need to provide the email you used during the previous purchase. For users interested in testing CACANi, please download the trial version.

Double Click on the file to start the installation process. Follow the instructions given.

Activation of CACANi software

After installation, you can start CACANi by **Double Clicking** on the desktop icon. Alternatively, you can open the program from the Windows Start menu.

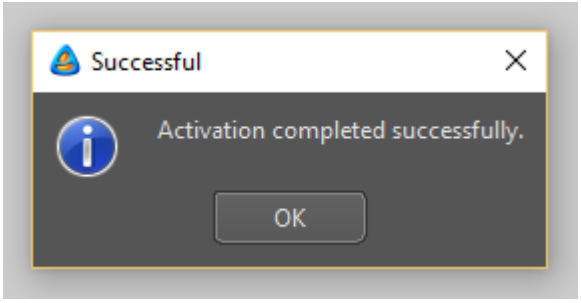
When first starting CACANi, you will see a window asking you to enter the product key.



If you have purchased CACANi already, you should have received an email with the product key. If you haven't purchase CACANi, or your license has expired, you will need to obtain another product key by purchasing it from the website.

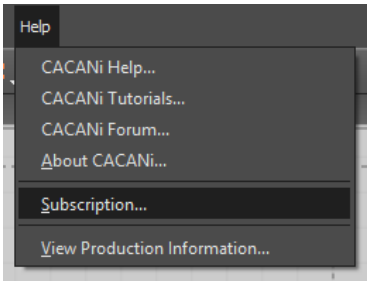
You will need to copy the product key from the email and paste it into the activation window. Internet access is required for the activation to work. Click **Activate** to continue.

When activation is successful, you should see the following window.

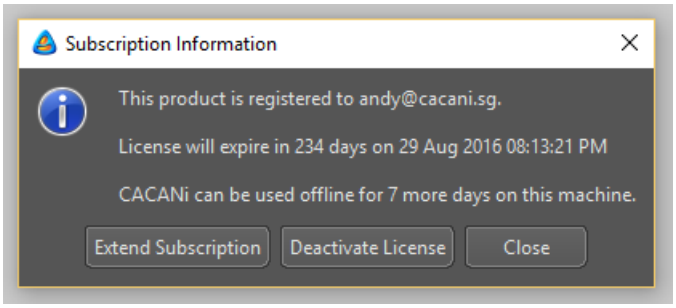


License Details

You can check your license information from the CACANi Help menu, under the **Subscription** option.



In the Subscription window, you will see the type of license, number of days left (for time-based subscription licenses), and number of days for offline access for your CACANi software.



In addition, you can extend the duration of your subscription when it expires or deactivate your license if you need to use CACANi on another computer.

Offline Usage of CACANi

CACANi requires periodic internet access for license verification.

> For time-based subscription licenses, CACANi will only require internet access **every 7 days**.
>
> For perpetual licenses, CACANi will only require internet access **every 30 days**.

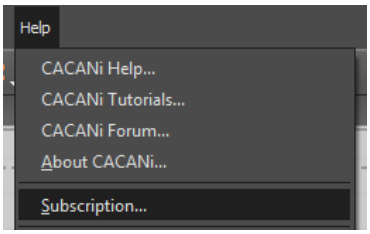
When your machine is not connected to the internet, you can track how long your machine has been offline via the Subscription Window. You can find it in Help > Subscription.

Using CACANi on Multiple Computers

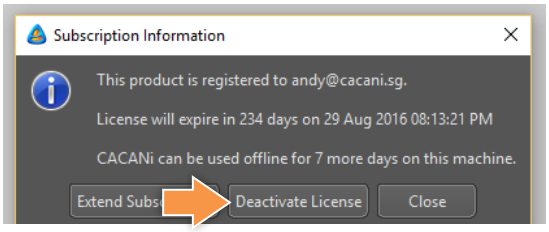
A single CACANi license can be transferred and used on different computers. However, before the license can be transferred, you need to first deactivate your license on the original computer. The CACANi license can only be used on one computer at any given time.

Deactivation from within CACANi Software

Open the **Subscription** option in the **Help** menu.



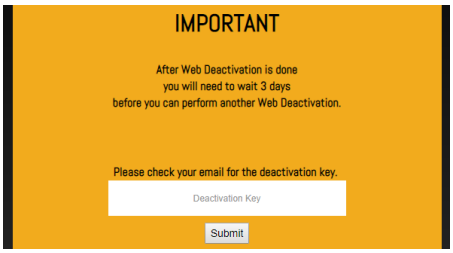
Through the **Subscription** option, you will need to choose the **Deactivate License** button. This will remove the CACANi license from your current computer and allow you to transfer it to another computer.



Web Deactivation (Single License)

If you are experiencing computer issues, for example software or hardware crashes, and cannot open the CACANi software, you can still deactivate CACANi via our website, https://cacani.sg/deactivate-license/ .

After submitting your license details, an email with a deactivation key will be sent. Please enter the attached key in the second page.



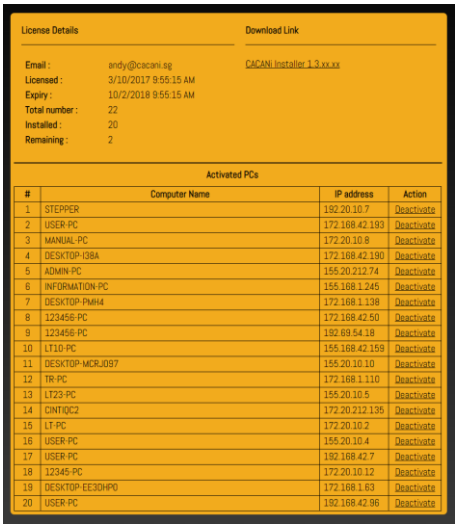
Your license will be deactivated and you can use it on another computer.

IMPORTANT!

After using web deactivation, you will not be able to use this method of deactivation for 3 days. This is because it is only for emergency situations where there's hardware failure.

Web Deactivation (Teams License)

If you are a Teams License administrator, you can use the same method of web deactivation. But after submitting your license details, the page will look different.



License Details

Email : andy@cacani.sg
Licensed : 3/10/2017 9:55:15 AM
Expiry : 10/2/2018 9:55:15 AM
Total number : 22
Installed : 20
Remaining : 2

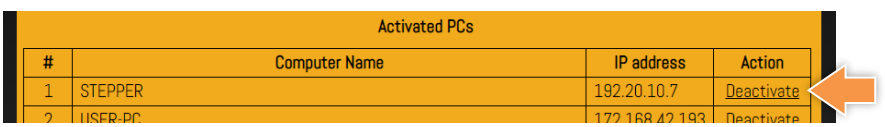
Download Link

CACANi Installer 1.3.xx.xx

Activated PCs

#	Computer Name	IP address	Action
1	STEPPER	192.20.10.7	Deactivate
2	USER-PC	172.168.42.193	Deactivate
3	MANUAL-PC	172.20.10.8	Deactivate
4	DESKTOP-I38A	172.168.42.190	Deactivate
5	ADMIN-PC	155.20.212.74	Deactivate
6	INFORMATION-PC	155.168.1.245	Deactivate
7	DESKTOP-PMH4	172.168.1.138	Deactivate
8	123456-PC	172.168.42.50	Deactivate
9	123456-PC	182.69.54.18	Deactivate
10	LT10-PC	155.168.42.159	Deactivate
11	DESKTOP-MCRJ097	155.20.10.10	Deactivate
12	TR-PC	172.168.1.110	Deactivate
13	LT23-PC	155.20.10.5	Deactivate
14	CINTIQC2	172.20.212.135	Deactivate
15	LT-PC	172.20.10.2	Deactivate
16	USER-PC	155.20.10.4	Deactivate
17	USER-PC	182.168.42.7	Deactivate
18	12345-PC	172.20.10.12	Deactivate
19	DESKTOP-EE3DHP0	172.168.1.83	Deactivate
20	USER-PC	192.168.42.96	Deactivate

You can remove CACANi from any of the listed computers by clicking on the Deactivate button. Unlike the single license version, the deactivation is instant. There is no deactivation key needed.



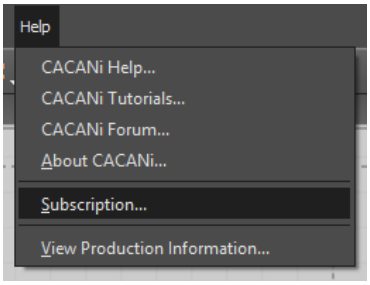
Activated PCs

#	Computer Name	IP address	Action
1	STEPPER	192.20.10.7	Deactivate
2	USER-PC	172.168.42.193	Deactivate

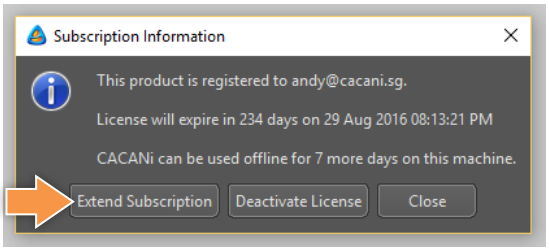
Extension of CACANi Subscription

If you have a subscription or time-based license and the subscription period has not expired yet, you can extend your usage of CACANi by purchasing a new product key from the CACANi website.

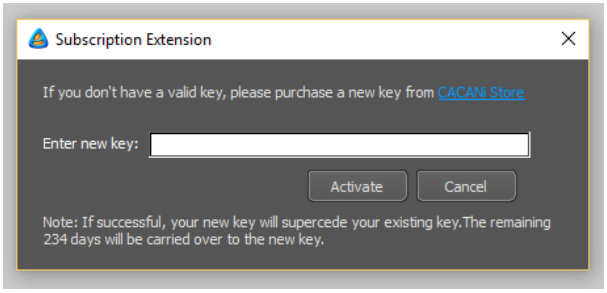
After you purchased a new key, open the **Subscription** option in the **Help** menu.



Choose the **Extend Subscription** option.



Enter your newly purchased product key into the Subscription Extension text-box.



The remaining days will be carried over into the new subscription. Your old product key will then become invalid.

Upgrading the CACANi License

IMPORTANT!

Before you perform an upgrade, please take note:

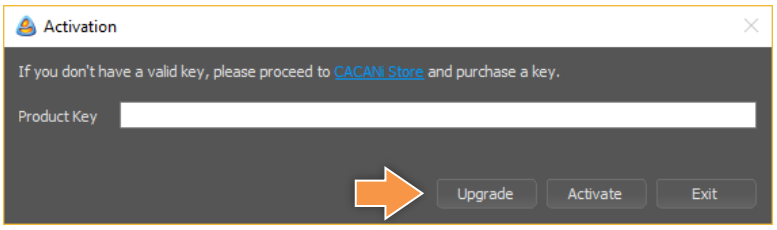
1. Check whether you have a subscription (time-based) or perpetual license.
2. You will need to deactivate the product key you want to upgrade.
3. After a successful upgrade, you will not be able to use the older release any longer.

Subscription or Time-based License Upgrade

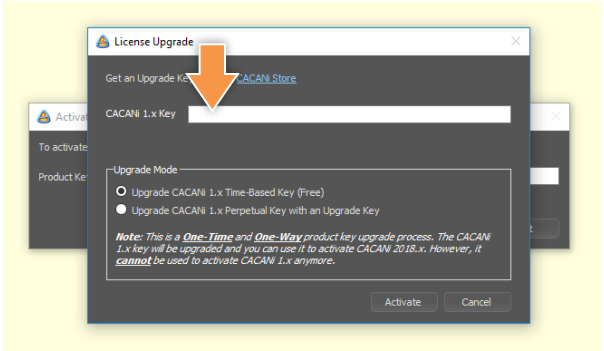
If you have a subscription or time-based license and the subscription period has not expired, you can upgrade to all minor and major releases of CACANi for free.

To upgrade, download and install the new release from https://cacani.sg/cacani-download/ .

Open CACANi and choose the **Upgrade** option.



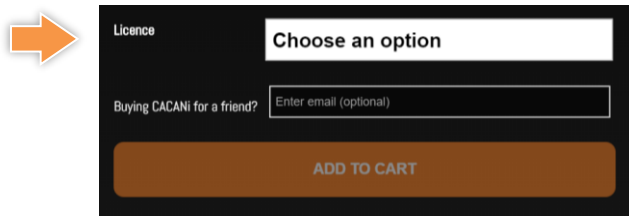
For subscription or time-based license upgrades, you only need to enter your working product key. Remember to deactivate the older version of CACANi from your previous machine.



The product key will be upgraded and activated on your current machine. The new version is ready for use. The key will not be usable on the older version.

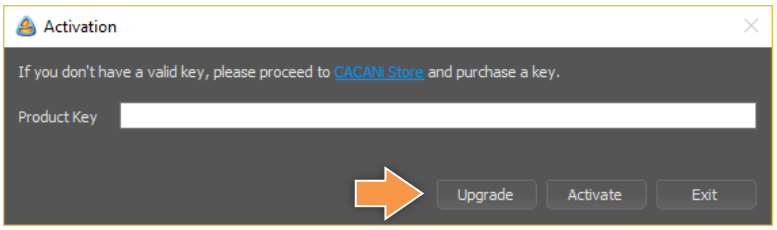
Perpetual License Upgrade

If you have a perpetual CACANi license, you can upgrade to minor releases (1.0 > 1.1 etc) for free. For major releases (1.1 > 2.0), you can upgrade your existing license for a fee. Purchase an Upgrade Key from the CACANi website, https://cacani.sg/store/.

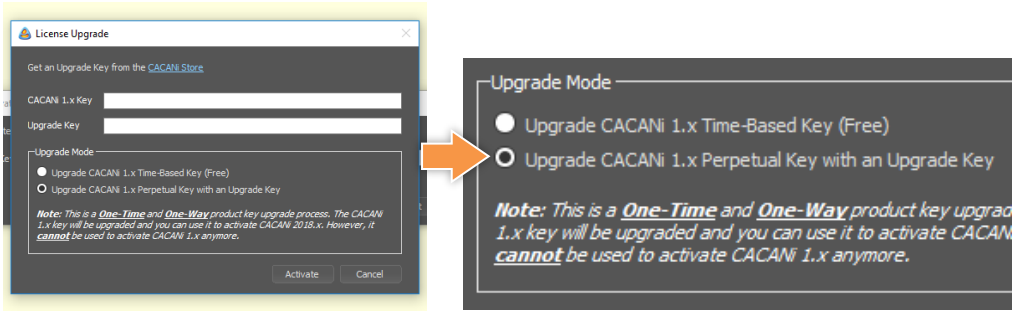


The upgrade key and the download link for the new release will be sent to your registered email address. Alternatively, you can download and install the new release from https://cacani.sg/cacani-download/ .

Open CACANi and choose the **Upgrade** option.



In the **Upgrade Mode** section, choose **Upgrade CACANi 1.x Perpetual Key with an Upgrade Key**. Enter both your existing product key and the new upgrade key in the text-boxes. Remember to deactivate the older version of CACANi from your previous machine.



The product key will be upgraded and activated on your current machine. The new version is ready for use. The key will not be usable on the older version.

02

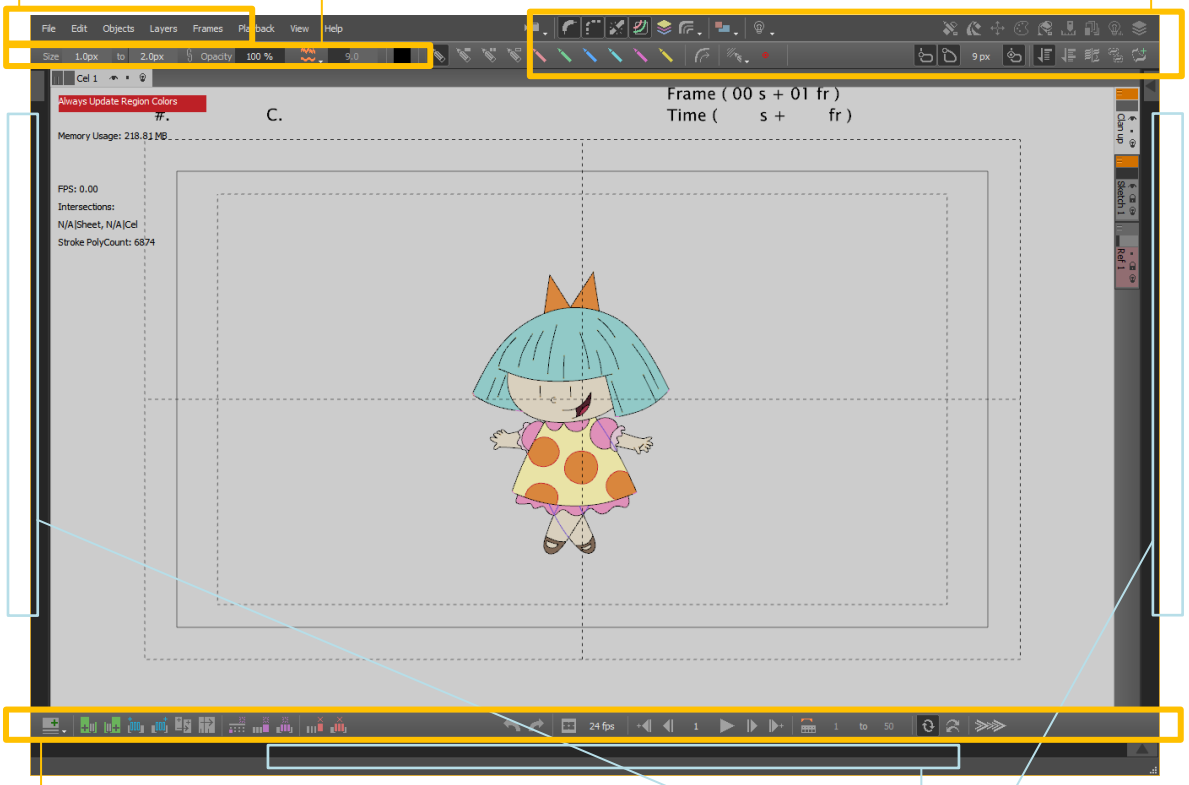
CACANi USER INTERFACE

Understanding CACANi's Interface

The Menu Bar is where you can find all the functions available in CACANi.

The Property Bar lists the properties of the various tools in the Tool Panel.

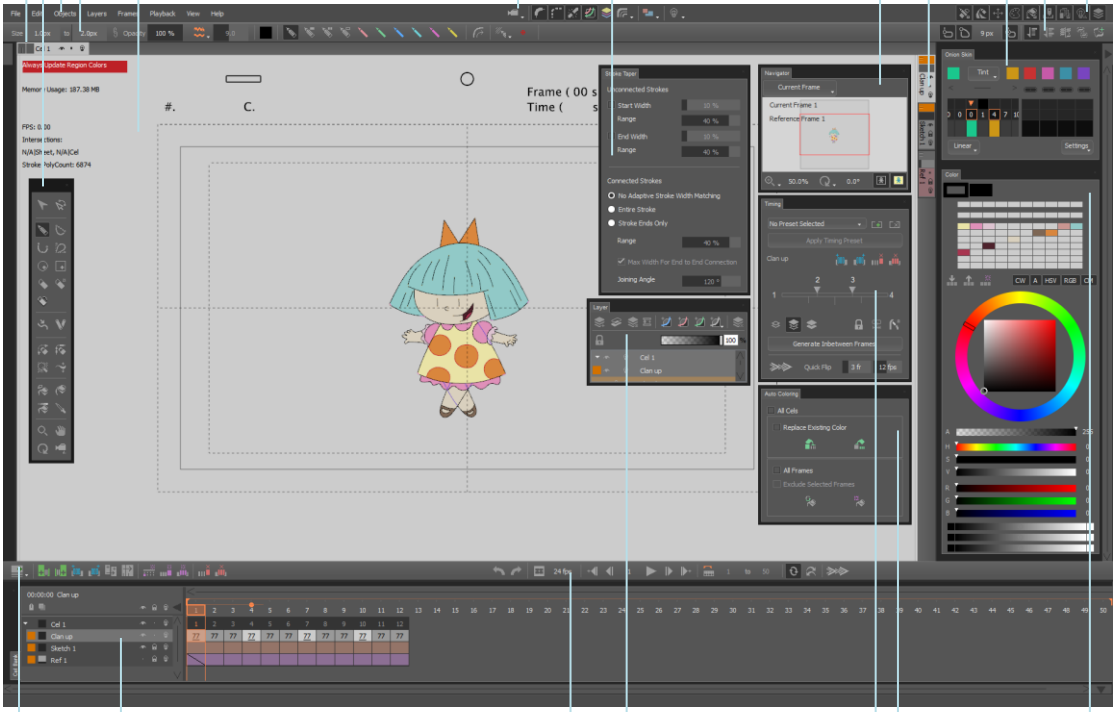
This is where you can find various controls for changing the display and behavior of tools and panels in CACANi.



This is where you can find additional controls for creating cels, frames and also playback your animation sequences in CACANi.

The docking areas at the bottom and sides of CACANi are where you can place your panels so that they do not obstruct your canvas.

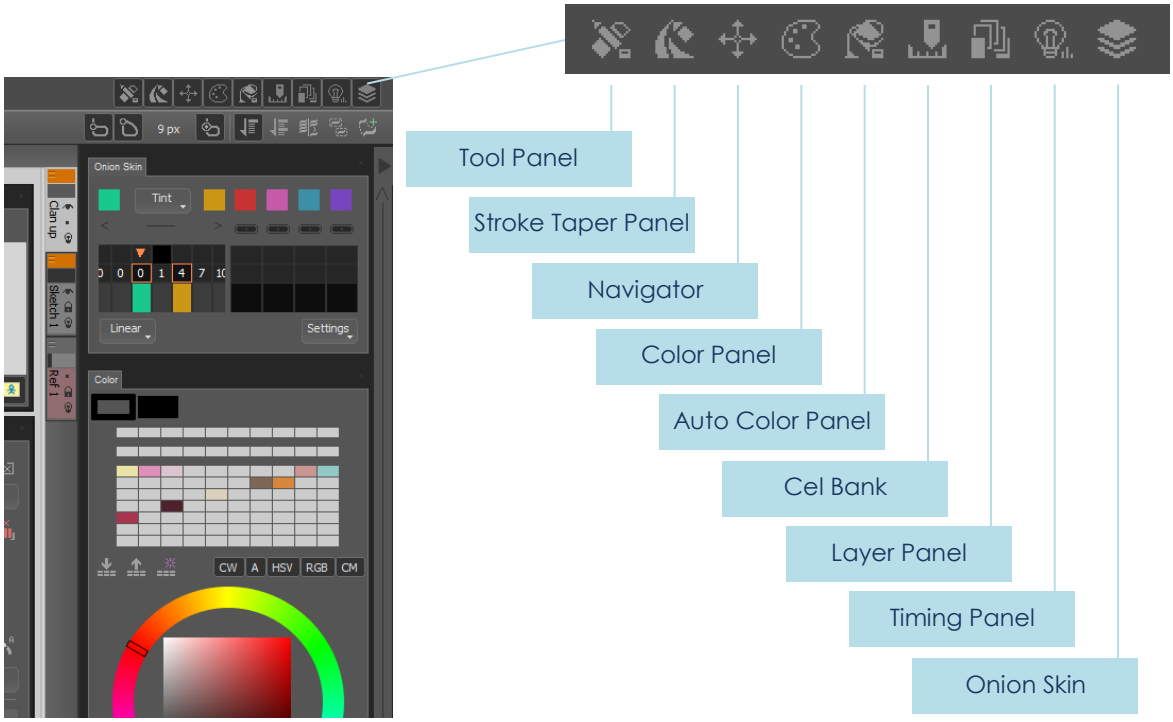
Interface Overview - Full



Interface Management

Panel Access Bar

In CACANi, the various tools for animation are placed in Panels, and these are displayed (or hidden) via the **Panel Access Bar**, located at the top right corner of the workspace.

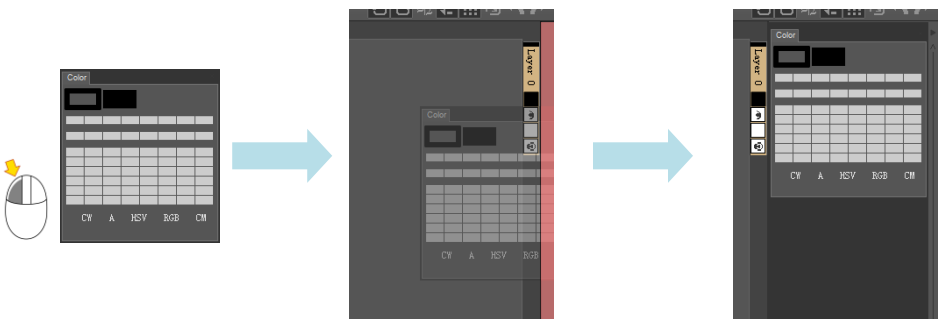


Panel Docking

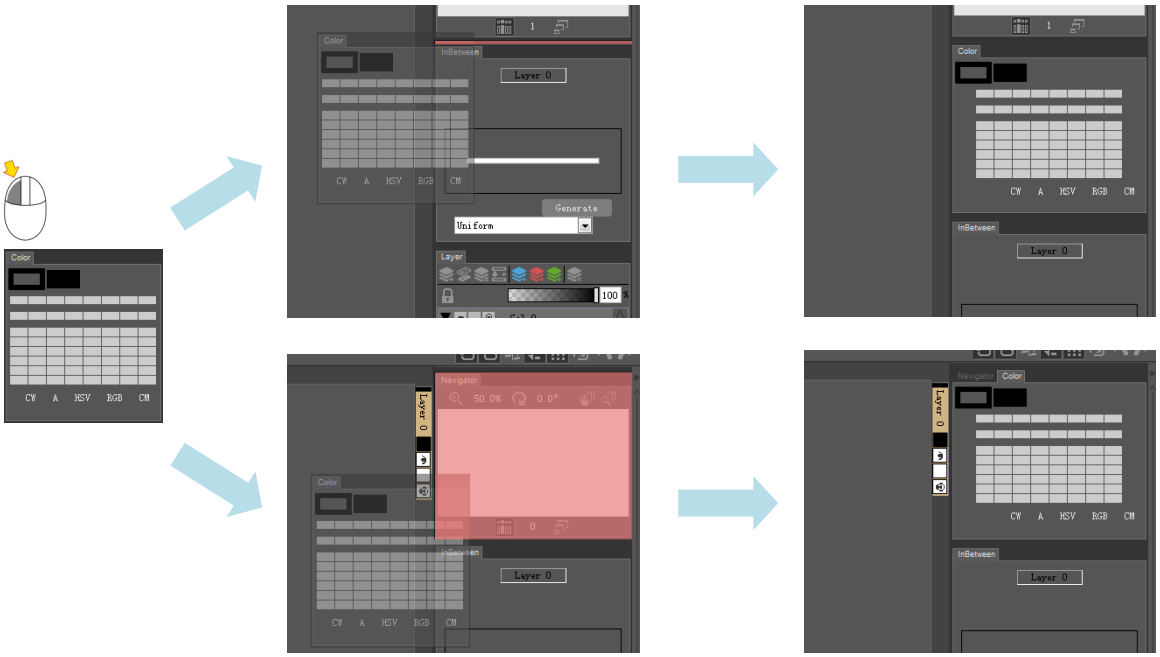
Based on user preferences, Panels can be arranged to be either free-floating or attached/docked to the sides of the workspace.

*Note that the Cel Bank is the exception: it can only be docked to the bottom.

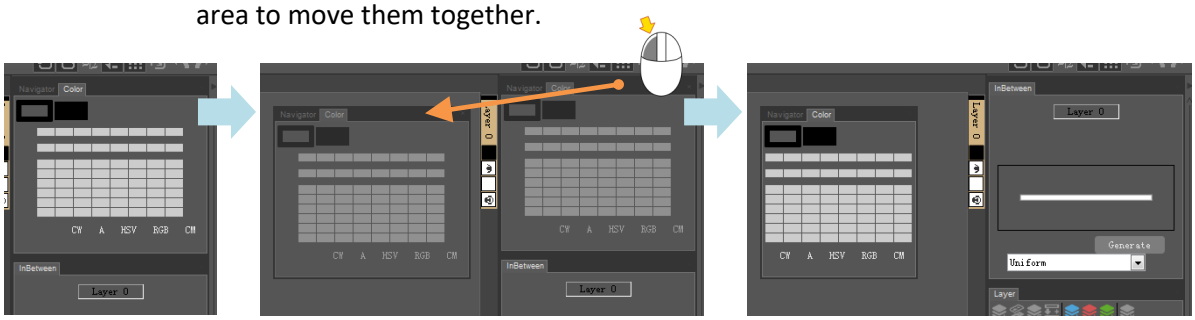
To dock a free-floating panel, **Drag** it to the left, right, or bottom side of the workspace. The panel will snap into the enlarged dock area.



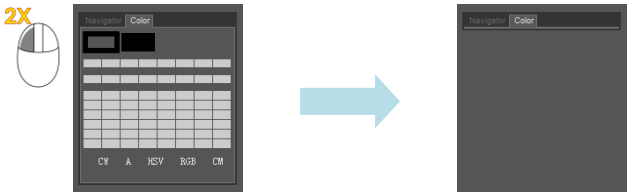
A panel can also be docked in between other panels, or docked behind another panel.



When multiple panels are docked horizontally, **Left Click** and **Drag** the empty dock area to move them together.

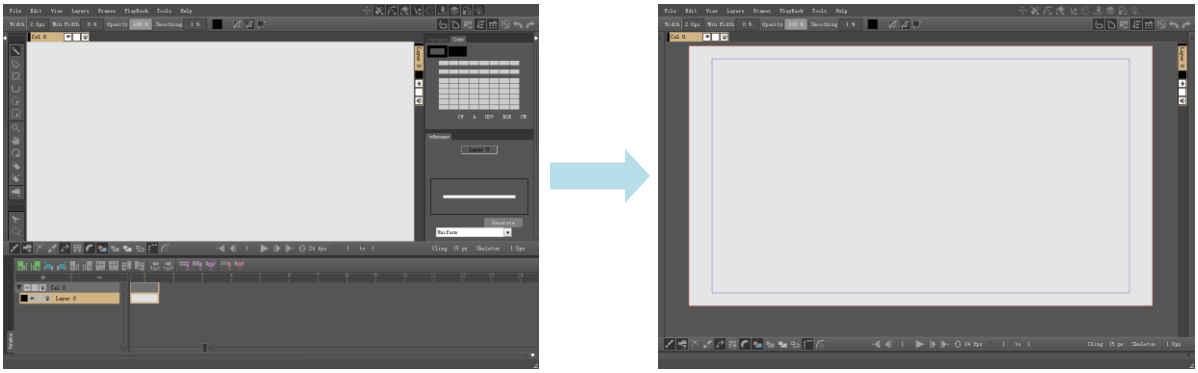


Panels can be minimized by **Double Clicking** on the panel tabs.

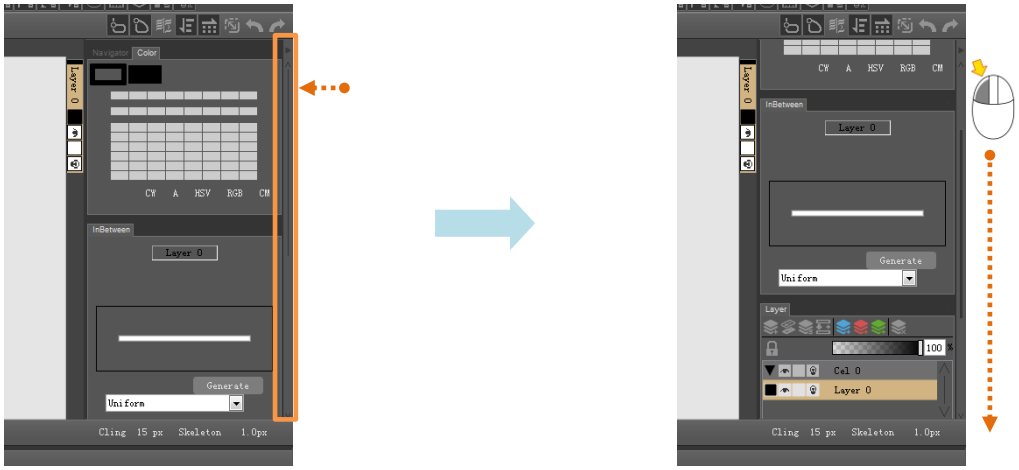


To close the panels, hover to the rightmost corner and **Left Click** on the 'X' icon.

The docking area can be minimized by **Left Clicking** on the docking arrows.



When there are too many docked panels, use the dock slider to navigate to the hidden panels.

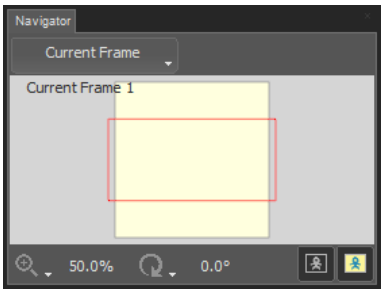


Canvas Navigation

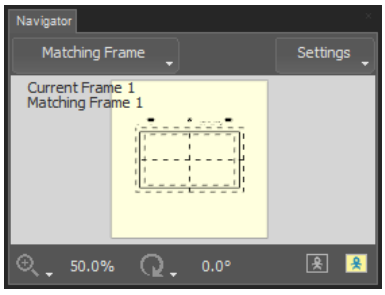
There are several manners in which the canvas can be manipulated to change its view; one can move the canvas vertically or horizontally, rotate the canvas, zoom in or out and flip the canvas horizontally or vertically.

Move around the Canvas

1. Select **Pan Tool** from the **Tools Panel**. On the canvas, **Tap** and **Drag** the stylus.
2. Press and **Hold Space**. Then on the canvas, **Tap** and **Drag** the stylus to pan.
3. Enable the **Navigator** from the **Panel Access Bar**. **Hold** and **Drag** the stylus in the preview window.



Thumbnail view of canvas



Shows the Matching Frame

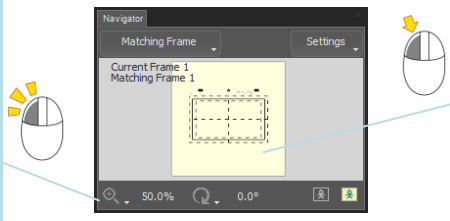
Magnification of Canvas

1. Select the **Zoom Tool** from the **Tools Panel**. To zoom in, place the stylus on the canvas and **Drag** to the **Right**. **Drag** the stylus to the **Left** to zoom out.
2. Press and **Hold Ctrl + Space**. On the canvas, **Hold** and **Drag** the stylus **Left** to Zoom Out of the canvas, and **Drag Right** to Zoom In to the canvas.
3. Press **1** to Zoom Out of the canvas, press **2** to Zoom In to the canvas.
4. Enable the **Navigator** from the **Panel Access Bar**. Use the Zoom Tool or type the zoom level in the input field.

Zoom Level

Tap on icon for zoom level presets. Tap on number for manual zoom level input.

Input values from 1.6% to 6400%



In **Matching Frame** mode only

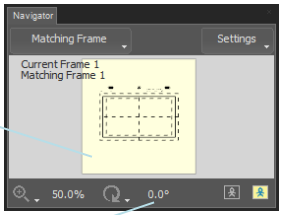
While Holding **Ctrl + Space**, **Hold** and **Drag** stylus **Right** to zoom into the canvas, **Drag Left** to zoom out of the canvas

Canvas Rotation

1. Select **Rotate Tool** from the **Tools Panel**. **Drag** with the stylus on the canvas to rotate the canvas around the center point of the drawing workspace.
2. Press and **Hold Shift + Space**. On the canvas, **Hold** and **Drag** the stylus either Clockwise or Anti-Clockwise to rotate the canvas accordingly.
3. Press **3** to rotate the canvas anti-clockwise, press **4** to rotate the canvas clockwise.
4. Enable the **Navigator** from the **Panel Access Bar**. Use the Rotate Tool or type the rotation angle in the input field.

In **Matching Frame** mode only

Tap and **Drag Right** to rotate the canvas clockwise, **Drag Left** to rotate anti-clockwise

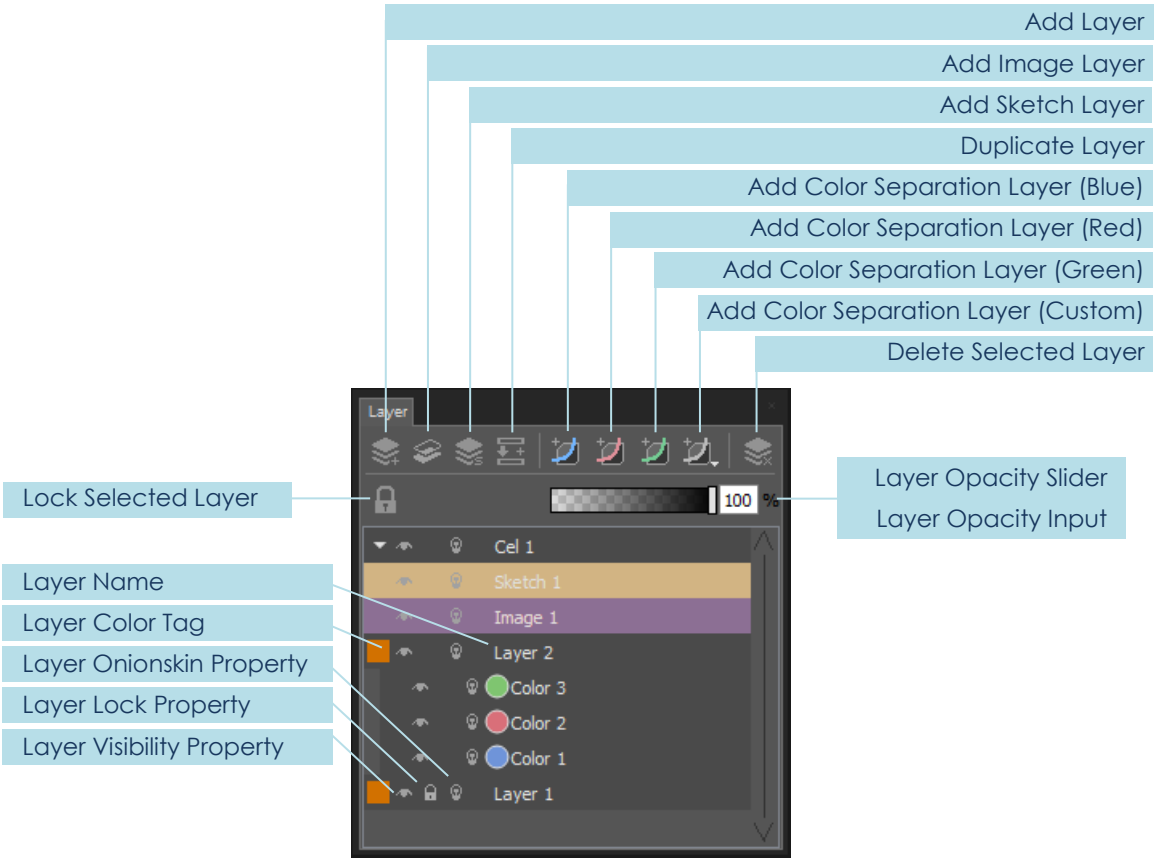


Rotation Angle

Tap on number to perform manual rotation input.

Input values from -180° to 180°

Layer Panel



The **Layer Panel** provides another means of layer manipulation other than the **Cel Bank**.

To select a layer for drawing, simply **Tap** / **Left Click** once on any layer. Stroke Colors are changed via the **Color Panel**.

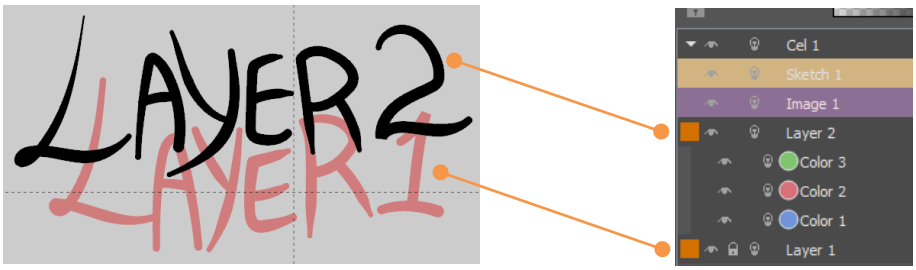
For the Color Separation Layers, stroke colors are determined by the Color Separation Colors.

*Note that it is not possible to draw on the Image Layer without first converting it. Please refer to **Chapter 07 – Rasterize Image Layer**.

Layer Panel Operations

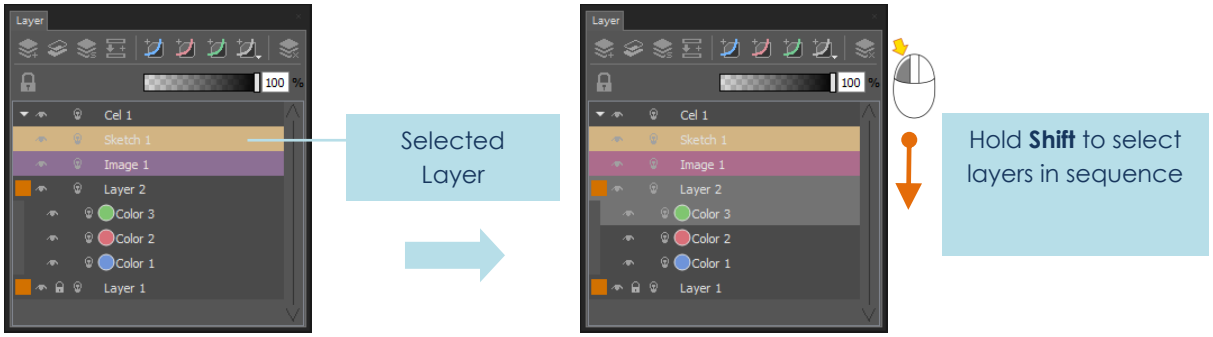
To add a layer, simply press any of the Add Layer buttons in the **Layer Panel**.

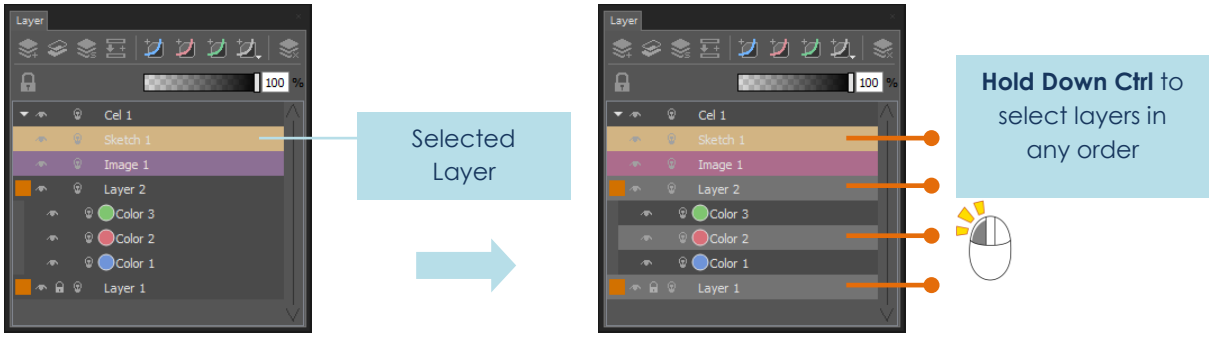
The order of the layers added are shown visually in the **Layers Panel**; strokes and filled regions in the topmost layer will hide strokes and filled regions in lower layers.



To remove a layer, press the **Delete Layer** button after selecting the desired layer.

While **Holding Shift**, **Left Click** on the first and last layer to select a range of layers. Alternatively, **Hold Ctrl** to select multiple layers in any order.





You can also change the order of a layer by selecting the layer. First, select the desired layer, then **Left Click** and **Drag** the layer to the desired position. It is also possible to select multiple layers in the same manner as mentioned above.

Each layer has 4 properties: Layer Tag, Layer Visibility, Layer Lock and Layer Onion Skin.

Layer Tag
Allows you to assign the layer with a specific color for easier identification and selection.

Layer Visibility
Controls whether the contents in that layer will be shown on the canvas.

Layer Lock
Determines whether the contents in that layer can be modified.

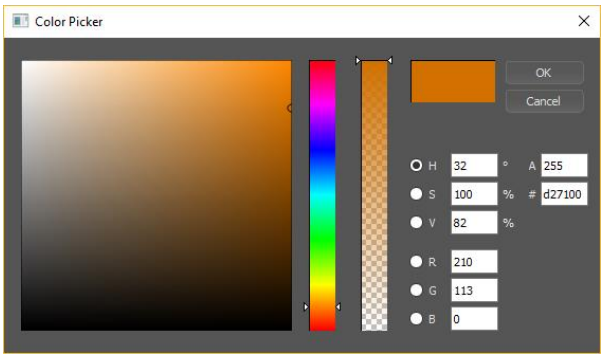
Layer Onion Skin
Determines whether the contents in the layer will be displayed as onion-skinned images.

Left Click on the icons to enable or disable the respective properties.

Change Drawing Layer Color

The Drawing Layers colors can be altered by **Double Clicking** on the **Drawing Layer Color button** in the panel.

A Color picker dialog will appear to allow you to choose the color. Click **OK** to confirm your selection or **Cancel** to preserve the previous color.



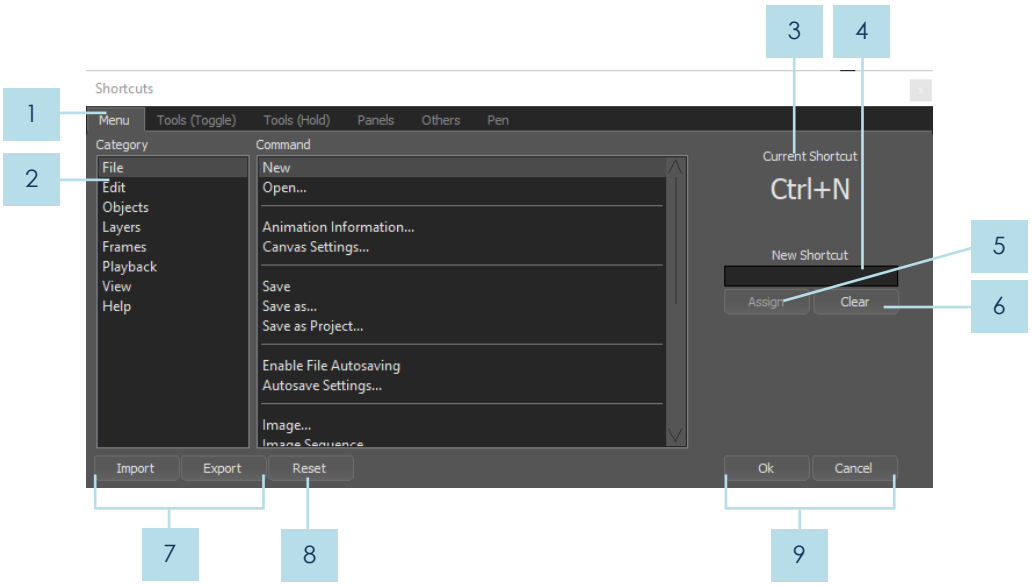
Color Separation Layers

Used for strokes that define highlight and shadow regions on the canvas. These layers are added by **Left Clicking** on the Add Color Separation Layer Buttons.

Customising Shortcuts

From the menu bar, select **File** > **Customise Shortcuts**.

A dialog box will appear showing the category and commands with shortcuts in CACANi.



1 **Functions and Commands Tabs**
Lists of all user assignable functions and commands in CACANi, organized in tabs.

2 **Menu Functions / Commands Selection**
Allows you to choose the menu function or command you want to assign a shortcut for.

3 **Currently Assigned Shortcut**
Shows you the shortcut that is currently assigned to the function or command.

4 **New Shortcut Assignment**
Allows you to enter a shortcut for the selected function or command.

5 **Assign Shortcut Button**
Once a shortcut is entered, you can click this button to confirm the shortcut assignment.

6 **Clear Shortcut Button**
Allows you to remove a currently assigned shortcut to the selected function or command.

7 **Import and Export Shortcuts Buttons**
Allows you to load or save user assigned shortcuts via CACANi shortcut (.csc) files.

8 **Reset All Shortcuts Button**

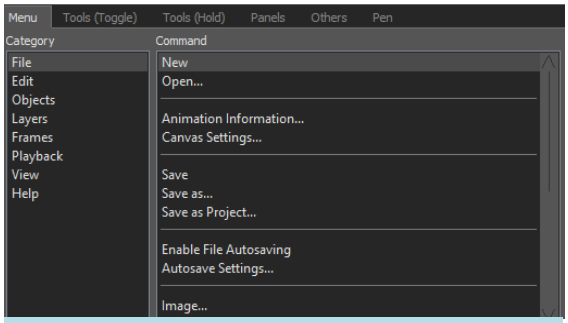
Allows you to remove all user assigned shortcuts and revert to the original state.

9 **Confirmation Buttons**

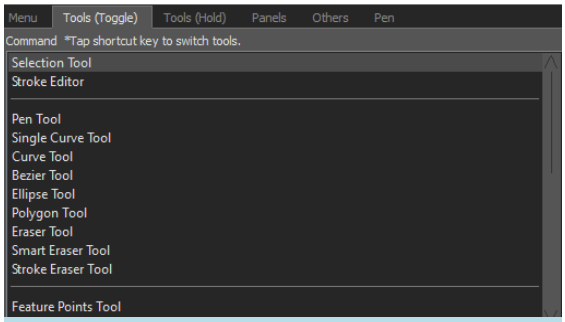
Allows you to confirm changes and exit the dialog box by clicking **Ok** or remove changes by clicking **Cancel**.

Assigning Shortcuts

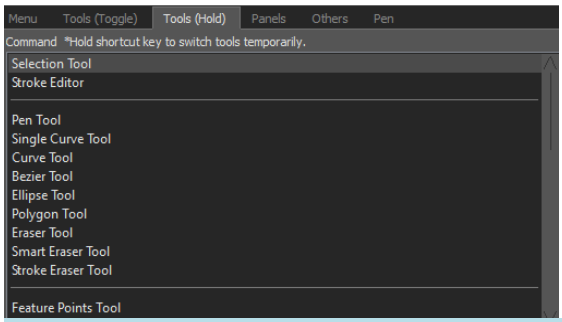
First, a list of the tabs in the shortcuts dialog:



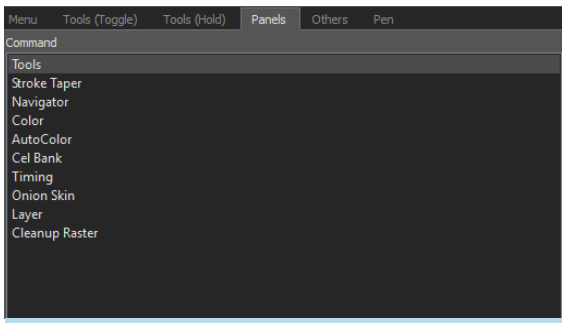
Menu Commands Shortcuts



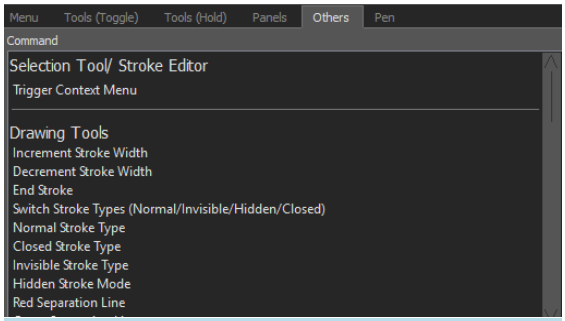
Tool Commands Toggle Shortcuts



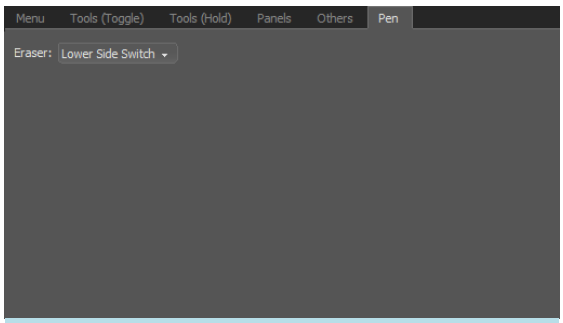
Tool Commands Hold Shortcuts



Tool Panels Display Shortcuts



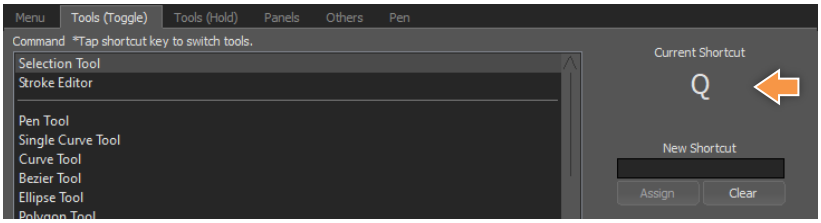
Other Commands Shortcuts



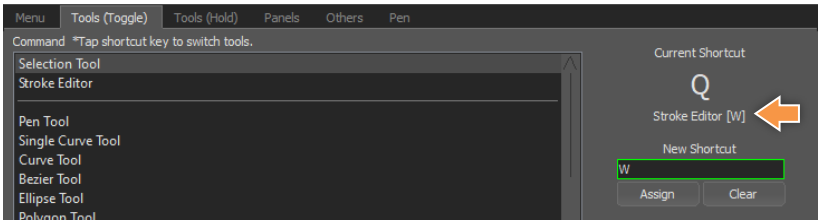
Pen Shortcuts

Procedure for Assigning Shortcuts

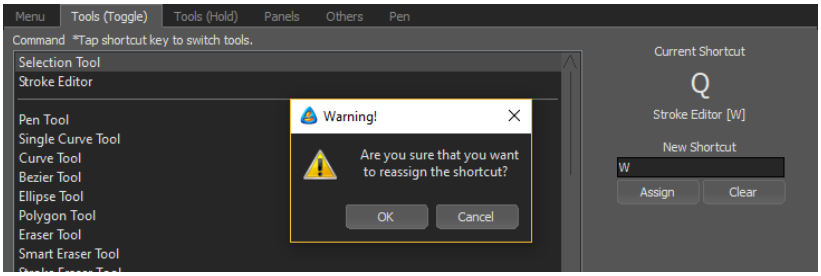
You can assign shortcuts easily by going into the **File** Menu, then choosing **Customise Shortcuts**. In this example, we are going to change the toggle shortcut for the Selection tool. Currently, **Q** is assigned to the tool.



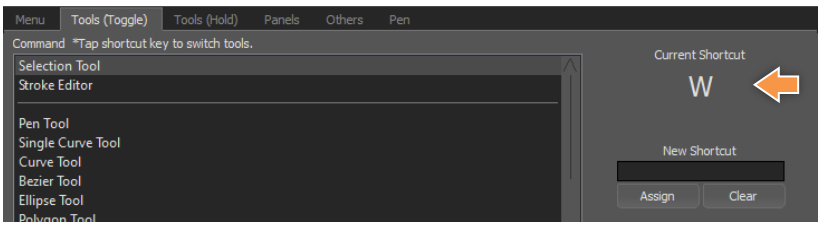
When the shortcut [W] is entered into the **New Shortcut** field, CACANi warns that the shortcut has already been assigned to another tool, the **Stroke Editor**.



Ignoring the first warning and clicking the **Assign Shortcut** button will bring up another warning.

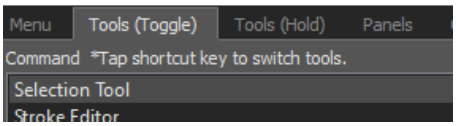


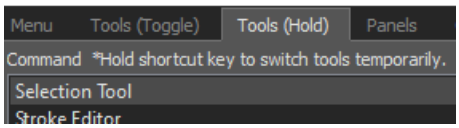
Finally, clicking the **OK** button will make CACANi change the shortcut to **W**, and remove the original shortcut assignment. Note that the Stroke Editor does not have any shortcut assigned to it now.



Toggle and Hold Shortcuts

Other than the typical keyboard shortcut assignments, CACANi also has a unique system of shortcuts that allows you to toggle tools instead of switching to them.





In the **Tools (Toggle)** and **Tools (Hold)** tabs, the tools listed are mostly similar. This is because for those commands, you can choose to either configure a *toggle* shortcut for it, or a *hold* shortcut.

For example, the keyboard shortcut **Q** is assigned to the **Selection tool**.

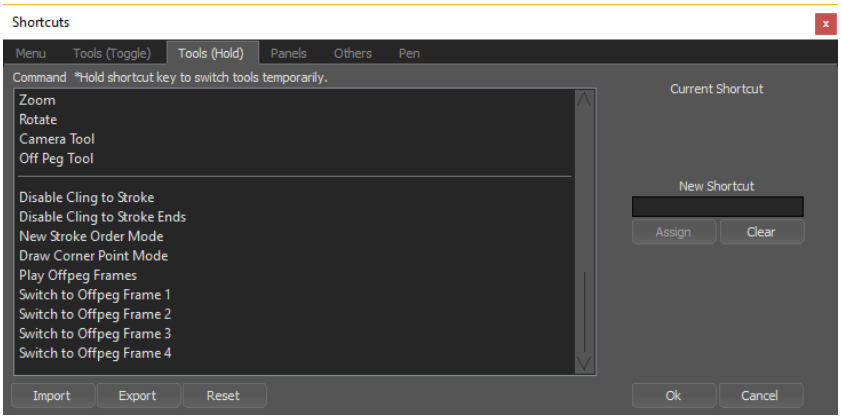
A **Toggle shortcut** is where, after you Press and Release **Q**, the active tool will change and remain as the Selection tool until you choose another tool to switch to.

A **Hold shortcut** is where the active tool changes and remains as the Selection tool **as long as Q is held down**. The moment you release **Q**, the active tool reverts to your previous tool.

This is useful for artists who tend to use only a few tools but need to switch to other tools occasionally.

Additional Options in Tools (Hold)

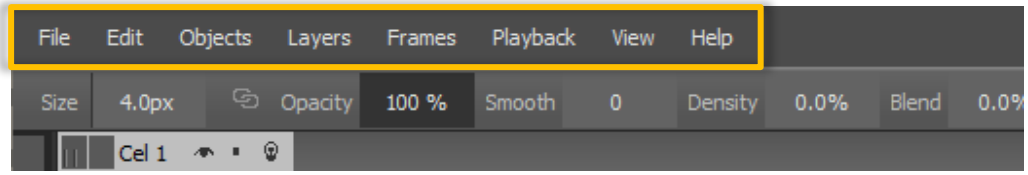
In the **Tools (Hold)** tab, there are additional options not configurable in the **Tools (Toggle)** tab.



03

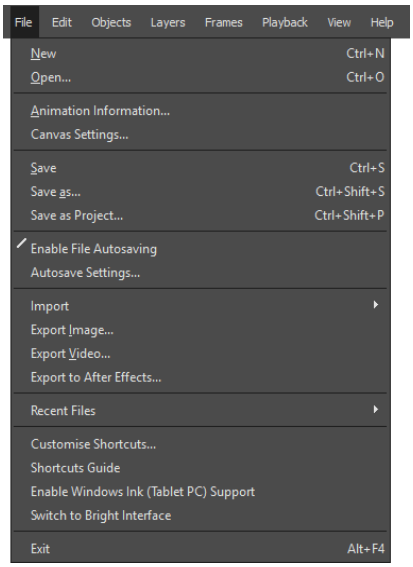
The Menu Bar

CACANi Menu Options



The Menu Bar holds various menus that allow you to control or change various features in CACANi.

File Menu



New [Ctrl + N]

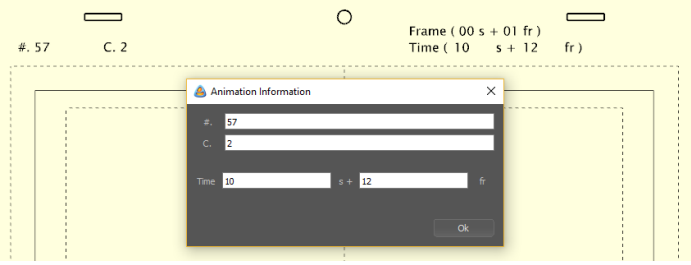
Creates a new file. If a file is currently being worked on, a dialog will prompt whether to save the current work.

Open [Ctrl + O]

Opens a previously saved CACANi (.cacs) or Scalable Vector Graphics (.svg) file.

Animation Information...

Allows you to input Scene or Cut Number, Description and Duration of the current file.



Canvas Size…

Allows you to edit or reset the resolution and color of the viewable canvas.

Please see **Chapter 04 – Changing Canvas Settings**.

(1.x) Merge File

Integrated into the Import CACS, SVG File option.

Save [Ctrl + S]

Saves the current work. If the current work was not saved before, a dialog will prompt on the name and the type of file to save to.

Save as… [Ctrl + Shift + S]

Saves the current work as a different file. A dialog will prompt for the name and the type of file to save to.
Please see **Chapter 10 - Saving the Animation**.

Save as Project… [Ctrl + Shift + P]

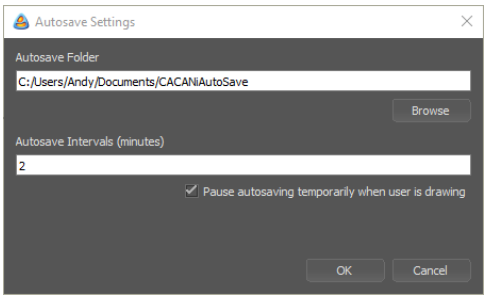
Saves the current work and linked image / audio / video files into a folder.
Please see **Chapter 10 - Saving the Animation**.

Enable File Autosaving

When enabled, CACANi will automatically make a backup of the currently opened file at specific intervals. It is enabled by default.

Autosave Settings…

Allows you to change the folder where the autosave files are stored. Allows you to adjust the elapsed time before CACANi automatically makes a copy of your current file. To prevent the autosaving from interrupting your drawing, you can also configure the function to wait until you stop drawing.



Import

Image…

Creates a new Image layer and displays your selected external images in the canvas. Multiple images can be selected. Compatible image formats include BMP, JPG, JPEG, PNG, TIF, TIFF, TGA and TARGA.

Image Sequence…

Creates a new Image layer and displays a series of images in the canvas. Only image sequences in numeric order, for example, *image01, image02* and so forth, are supported. You only need to select the first image in the sequence. Compatible image formats include BMP, JPG, JPEG, PNG, TIF, TIFF, TGA and TARGA.

Video…

Allows you to select a video file, then a new Video layer is created and the frames of the video are displayed in the canvas. Compatible video formats include AVI, MKV, MP4, MOV and WMV.

CACS, SVG File…

Brings the contents of a different file into the current file. Supports CACANi (.cacs) or Scalable Vector Graphics (.svg) files. Imported Cels are placed above the cels in the current file.

Export Image

Exports the drawings as images. A dialog will prompt you for the format, name, resolution and other settings of the images. Exportable image formats include BMP, JPG, PNG, TIF, TGA, GIF and SVG.

Export Video

Exports the drawings as a video. Exportable video formats include AVI, MP4 and WMV.

Export to After Effects®

Exports the drawings, cels, layers and timing as a collection of images and an After Effects script.

Please see **Chapter 10 – Exporting the Animation**.

Recent Files List

Records the last 10 files that were in use for easier access.

Customise Shortcuts…

Brings up the **Shortcuts Customisation Panel**.

Please see **Chapter 02 - Customising Shortcuts**.

Shortcuts Guide

Shows an overview of the default shortcut keys.

Enable Windows Ink (Tablet PC) Support

Turns on support for Windows Ink pen devices, allows CACANi to obtain pressure information. It is disabled by default.

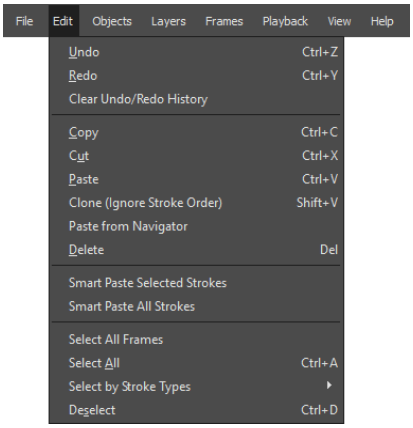
Switch to Bright Interface / Switch to Dark Interface

Changes the user interface of CACANi to a brighter or darker theme.

Exit

Closes the CACANi software. If the existing work has not been saved, an 'Unsaved Changes' dialog box will appear.

Edit Menu



Undo [Ctrl + Z]

Cancels the previous action. You can undo up to a maximum of 50 actions (30 actions in 1.x).

Redo [Ctrl + Y]

Repeats the previous action. You can redo up to a maximum of 50 actions (30 actions in 1.x).

Clear Undo/Redo History

Deletes the undo/redo information, as a way to reduce memory consumption.

Copy [Ctrl + C]

Duplicates and stores the selected strokes in the clipboard.

Cut [Ctrl + X]

Remove the selected strokes from the canvas and place them in the clipboard.

Paste [Ctrl + V]

Transfers the stored strokes back onto the canvas in the active sheet.

Clone (Ignore Stroke Index) [Shift + V]

Transfers the stored strokes back onto the canvas in the active sheet, disregarding any stroke indices. Formerly named Single Paste in CACANi 1.x.

Paste from Navigator

Copies selected strokes in the Navigator (Matching Frame mode only) and paste them onto the canvas in the active sheet.

Delete [Del]

Removes the selected strokes from the canvas.

Smart Paste Selected Strokes

Unmatched strokes selected in the Navigator (Matching Frame mode enabled) are pasted into the active frame.

Smart Paste All Strokes

All unmatched strokes in the reference key frame are pasted into the active frame.

Move Selected Element(s) Up/Down/Left/Right 1 Pixel

Moved to Objects menu.

Move Selected Element(s) Up/Down/Left/Right 10 Pixels

Moved to Objects menu.

Select All Frames

Makes a selection of all the frames in the Cel Bank.

Select All [Ctrl + A]

Makes a selection of all strokes on the canvas. Affected by whether the Cross Layer Operations mode and / or the Cross Cel Operations mode is enabled.

Select by Stroke Type

Normal Strokes
All Color Separation Lines
Red Color Separation Lines
Green Color Separation Lines
Blue Color Separation Lines
Cyan Color Separation Lines
Pink Color Separation Lines
Yellow Color Separation Lines

Makes a selection of all strokes of a similar type on the canvas. Affected by whether the Cross Layer Operations mode and / or the Cross Cel Operations mode is enabled.

Strokes of Similar Depth

Makes a selection of strokes that have the same stroke depth as the initial selected stroke. You will need to select a stroke first. Affected by whether the Cross Layer Operations mode and / or the Cross Cel Operations mode is enabled.

Deselect [Ctrl + D]

Clears any current selection of strokes.

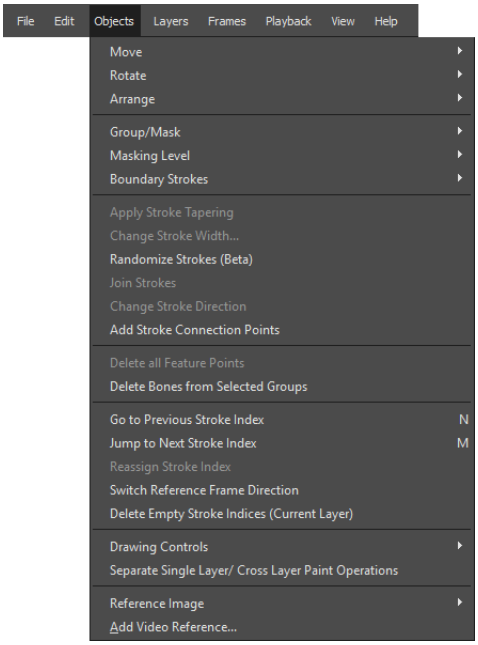
(1.x) (Enable / Disable) All Layers
(1.x) (Enable / Disable) All Frames
Moved to Objects menu, Drawing Controls option.

(1.x) Canvas…
Moved to File menu.

(1.x) Set Auto Save Location
(1.x) Set Auto-saving Intervals
Integrated into Autosave Settings… option in File menu.

(1.x) Reset Panel Locations
Moved to View menu.

Objects Menu



Move

Up 1 Pixel / Down 1 Pixel / Left 1 Pixel / Right 1 Pixel
Translates the chosen strokes by a single pixel in the stated direction.

Up 10 Pixels / Down 10 Pixels / Left 10 Pixels / Right 10 Pixels
Translates the chosen strokes by 10 pixels in the stated direction.

Rotate

Rotate Right 90° / Rotate Left 90°
Rotates the selected objects by 90° clockwise / 90° counter-clockwise respectively.

Flip Horizontal / Flip Vertical
Reverses selected objects left to right / up to down respectively.

Arrange

Bring to Front
Moves selected groups to the front of all other groups.

Bring Forward
Moves selected groups one level above the next group.

Send Back
Moves selected groups to the rear of all other groups.

Send Backwards
Moves selected groups one level beneath the next group.

Group/Mask

Create Group / Create Mask / Create Clipping Mask

Makes a new group, mask or clipping mask respectively from the selected strokes or groups.

Create Group for Each Stroke / Create Mask for Each Stroke / Create Clipping Mask for Each Stroke

Makes a new group, mask or clipping mask respectively for each selected stroke.

Ungroup

Removes the strokes from the selected group.

Masking Level

Cut / Cel / Layer

The mask will hide or reveal strokes across different cels, across different layers within the same cel, or only within a single layer respectively.

Please see **Chapter 08 – Using Stroke Groups and Masks**.

Boundary Strokes

Allows a stroke to hide other strokes.

Hide Strokes…

Allows you to designate selected strokes as boundary strokes. You will need to choose a side (of the boundary stroke) where occluded stroke segments will be converted into hidden segments. The depth of a boundary stroke is automatically increased by 1.

Show Strokes…

Allows you to designate selected strokes as boundary strokes. You will need to choose a side (of the boundary stroke) where occluded stroke segments are revealed. The depth of a boundary stroke is automatically increased by 1.

Occluded Strokes

These strokes can be hidden by boundary strokes that have the same or higher depths. A boundary stroke can also be an occluded stroke.

Un-occluded Strokes

These strokes are not affected by boundary strokes. All strokes are un-occluded strokes by default.

Clear Boundary Settings

Any boundary or occlusion settings will be removed from the selected strokes.

Please see **Chapter 08 – Using Boundary Strokes**.

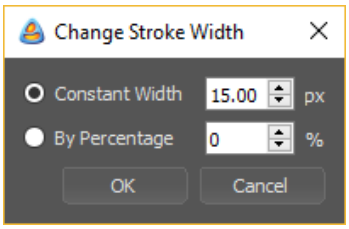
Apply Stroke Tapering

Applies Stroke Tapering function to selected strokes. Stroke Taper settings can be configured from the Stroke Taper Panel. To use this, the Stroke Taper settings needs to be enabled for the Selection Tool.

Please see **Chapter 04 – Stroke Taper Panel**.

Change Stroke Width…

Adjusts the width of selected strokes. You can choose to scale the stroke widths by a fixed value or a percentage. This feature can also be applied when strokes in multiple frames are selected.



Please see **Chapter 08 – Changing Stroke Widths**.

Randomize Strokes (Beta)

Adjusts the curvature of strokes slightly to give a more hand-drawn effect.

Join Strokes

Selected strokes are combined into one single stroke. The selected strokes have to be touching end to end.

Please see **Chapter 08 – Using Join Strokes and Cut Stroke**.

Change Stroke Direction

The starting and ending points of a stroke is reversed. This is useful when the stroke in generated in-between frames is flipped.

Add Stroke Connection Points

Adds data points to every intersection found between strokes. It is applied to all strokes in a frame by default. You can also apply it to selected strokes and frames. This is useful to ensure that gaps do not appear when transforming the strokes.

Please see **Chapter 08 – Using Stroke Connection Points**.

Remove Stroke Connection Points

Remove data points to every intersection found between strokes. It is applied to all strokes in a frame by default. You can also apply it to selected strokes and frames. When there're less points, editing the strokes is easier.

Please see **Chapter 08 – Using Stroke Connection Points**.

Delete All Feature Points

All assigned feature points on a selected stroke are deleted.

Delete Bones from Selected Groups

Allows you to remove bone paths from groups.

Show Previous Stroke (Onionskin)

Allows you to revert to a previously unmatched stroke.

Show Next Stroke (Onionskin)

Allows you to skip the next unmatched stroke.

Re-match Stroke Order

Allows you to change the index number of selected strokes (on the Canvas) to match the selected strokes in the Matching Frame (Navigator Panel, Matching Frame mode).

Please see **Chapter 08 – Using Re-match Stroke Order**.

Reduce Stroke Order (Current Layer)

Analyses the frames in the active layer and reduces the number of stroke indices that do not have a stroke in any frame. Doing this will not improve performance significantly, but it can help you have a more accurate view of the stroke number in each frame.

Drawing Controls

Cling to Stroke Mode

When enabled, the cursor will snap to the nearest stroke. Using in Drawing Tools and Stroke Editor. When Ctrl is held down, both Cling modes are reversed.

Cling to Stroke End Mode

When enabled, the cursor will snap to the nearest stroke end. Using in Drawing Tools and Stroke Editor. When Shift is held down, this mode is reversed. When Ctrl is held down, both Cling modes are reversed.

Cling Range

You can adjust the range (based on screen pixels) at which the clinging will come into effect. At higher zoom levels, the perceived range will be smaller.

Add Points When Clinging

When enabled, after snapping to a stroke, a connection point is also added to the stroke. This helps to ensure that gaps will not appear between connected strokes when they are scaled or rotated together. However, while additional connection points do not affect the strokes, when generating inbetween frames, they can result in more jittery or bumpy strokes.

Cross Layer Operations Mode

When enabled, you can select and edit strokes in different layers, without having to select the layer first.

Cross Cel Operations Mode (Beta)

When enabled, you can select and edit strokes in different layers, without having to select the cel or layer first. Currently, only selection of strokes is supported.

New Stroke Index Mode

When enabled, any unmatched strokes will be disregarded, and strokes drawn will be assigned new stroke index numbers. This is needed when **drawing new elements that are not in the previous key frame**, and **unmatched strokes exist in the current frame**.

Auto Group Mode

When enabled, every stroke drawn will be grouped individually. This is useful when trying to change the behavior of the inbetween animation (through the Bone Tool).

Auto Add Feature Point Mode

When enabled, every stroke drawn will have feature points added to the its ends automatically. This is useful when trying to change the behavior of the inbetween animation.

Please see **Chapter 04 – Drawing Controls**.

Separate Single Layer/ Cross Layer Paint Operations Mode

When enabled, the Single Layer Paint Tool and Cross Layer Paint Tool will only be able to color their respective region types.

Image

Fit to Camera

Resizes the selected image in the Image layer to fit within the resolution of the camera frame.

Fit to Camera Size / Fit to Camera Height

Resizes the selected image in the Image layer to fit within the horizontal / vertical resolution of the camera frame respectively.

Fit Camera to Selected Images

Resizes the camera frame to match the resolution of the selected image. When multiple images are selected, the combined resolution of the selected images are used. The selected images will also be moved to the center of the canvas as well.

Reset Position

Moves the selected images back to the center of the canvas.

Reset Size
Resizes the selected images to their original resolutions.

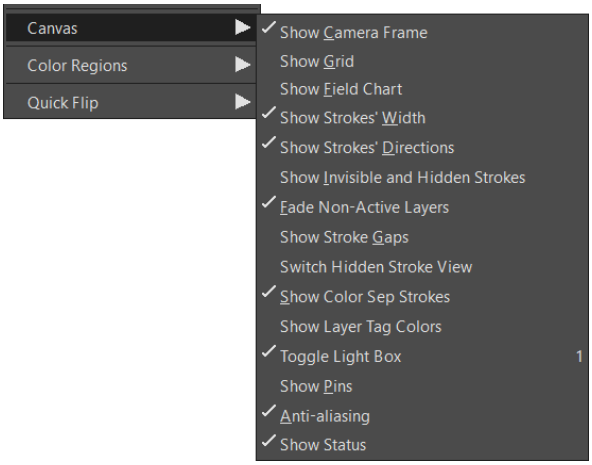
Reset Rotation
Returns the selected images to their original orientations.

Add Video Reference...

Loads a video on the canvas for reference. Unlike the videos in a Video Layer, the frames of the video are not mapped to the layers in the Cel Bank.

Please see **Chapter 05 – Using Video Reference**.

(1.x) View > Canvas



(1.x) Show Camera Frame
(1.x) Show Grid
(1.x) Show Field Chart

Moved to View menu, Canvas Display Options.

(1.x) Show Strokes' Size
(1.x) Show Strokes' Directions
(1.x) Show Invisible and Hidden Strokes
(1.x) Fade Non-Active Layer Strokes

Moved to View menu, Stroke Display Options.

(1.x) Gray Out Matched Strokes (Navigator only)

(Only applicable to Navigator Panel, Reference Frame mode Enabled) Displays strokes that are already matched or corresponded will be as gray strokes, instead of the strokes' original color. Moved to File menu, Customise Shortcuts option, Others tab.

(1.x) Show Stroke Gaps
(1.x) Show Hidden Stroke View
(1.x) Show Color Sep strokes
(1.x) Show Layer Tag Colors

Moved to View menu, Stroke Display Options.

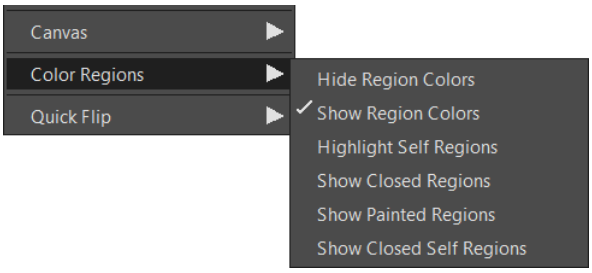
(1.x) Toggle Onion Skin

Moved to View menu.

(1.x) Show Pins
(1.x) Apply Anti-Aliasing to Strokes

Moved to View menu, Stroke Display Options.

(1.x) View > Color Regions



(1.x) Hide Region Colors
(1.x) Show Region Colors
(1.x) Highlight Self Regions
(1.x) Show Closed Regions
(1.x) Show Painted Regions
(1.x) Show Closed Self Regions

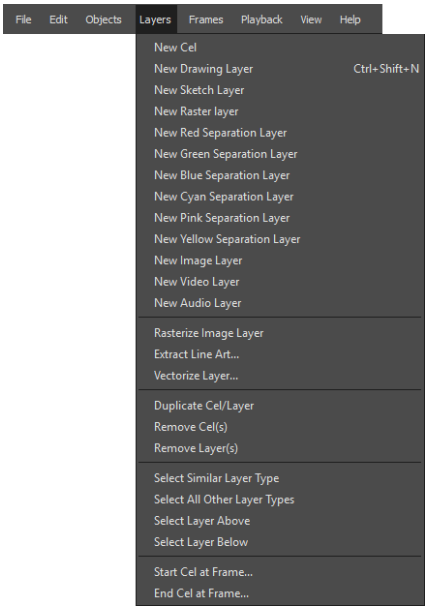
Moved to View menu, Region Display Options.

(1.x) View > Quick Flip

(1.x) Quick Flip Forward
(1.x) Quick Flip Backward

Moved to Playback menu, integrated as Quick Flip option.

Layer Menu



New Cel

Creates a cel above the selected cel in the Cel Bank.

New Drawing Layer

Creates a drawing layer above the selected layer in the Cel Bank.

New Sketch Layer

Creates a sketch layer above the selected layer in the Cel Bank.

New Raster Layer

Creates a raster layer above the selected layer in the Cel Bank.

New Color Separation Layer (Red, Blue, Green, Cyan, Pink, Yellow)

Creates a color separation layer above the selected layer in the Cel Bank. Strokes drawn within the layer will not be shown in the final exported images.

New Image Layer

Creates an image layer above the selected layer in the Cel Bank.

New Video Layer

Creates a video layer above the selected layer in the Cel Bank.

New Audio Layer

Creates an audio layer above the selected layer in the Cel Bank.

Rasterize Image Layer

Converts the image layer into the raster layer. You can use this option to turn external images into the CACANi raster format for further editing.

Extract Line Art…

For Raster Layer only. Allows you to extract drawings and turn the background transparent.

Vectorize Layer…

Converts Raster or Image Layers into Drawing Layers. Allows you to convert the raster drawings into vector strokes. Raster region colors are not supported.

Duplicate Cel / Layer

Clones the contents of the selected cel or layer and place it in a new cel or layer above the current selected one.

Remove Cel

Deletes the selected cel.

Remove Layer

Deletes the selected layer.

(1.x) Hide/Unhide Layer(s)
(1.x) Lock/Unlock Layer(s)
(1.x) Toggle Onion Skin for Layer(s)

Removed from Layers menu. Controls available in Cel Bank.

Select Similar Layer Type

Picks layers that are of the same type as the selected layer. This can be used to quickly change layer statuses for multiple layers.

Select All Other Layer Types

Picks layers that are not of the same type as the selected layer.

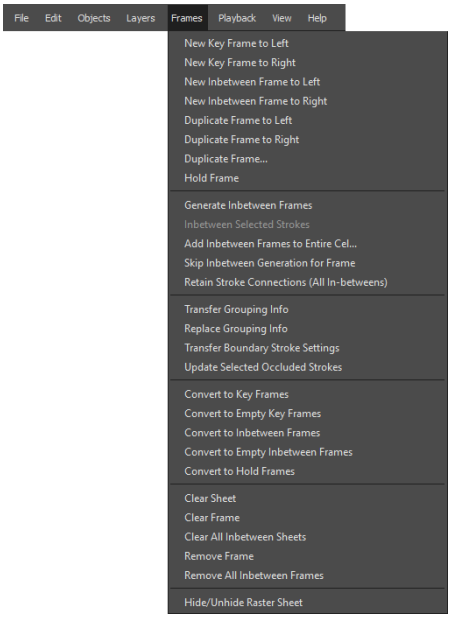
Select Layer Above / Select Layer Below

Selects the layer above the current active layer / beneath the current active layer.

Start Cel at Frame… / End Cel at Frame…

Moves selected cels so that they start or end at the chosen frame.

Frames Menu



New Key Frame to Left / New Key Frame to Right

A new key frame is inserted before/after the selected frame.

New Inbetween Frame to Left / New Inbetween Frame to Right

A new in-between frame is inserted before/after the selected frame.

Duplicate Frame to Left / Duplicate Frame to Right

A clone of the selected frame is made and inserted before/after the original frame.

Duplicate Frame...

Allows you to create a copy of your selected frames.

Hold Frame

Extends the duration of your selected frames.

Repeat Frame

Repeats the contents of a frame. Unlike Hold Frames, Repeat Frames can be placed anywhere in the same sequence.

Generate Inbetween Frames

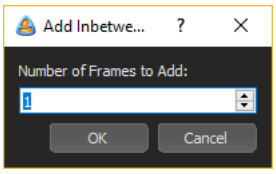
Allows you to create in-between frames for a pair of key frames.

Inbetween Selected Strokes

Generates or re-generates selected strokes in In-between frames, without changing the other non-selected strokes. Selected strokes can be in the Key frames or in the In-between frames.

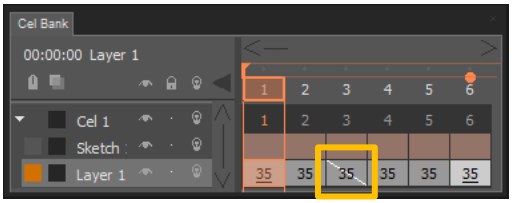
Add Inbetween Frames to Entire Cel…

Allows you to create a fixed number of in-between frames for all key frames in a cel.



Skip Inbetween Generation for Frame

Marks the selected in-between frame so that it is not affected by Generate Inbetween Frames option. This is used when you have added made changes to the drawings in the in-between frame and do not want them to be cleared.



Retain Stroke Connections (In-betweens)

Analyses all inbetween frames for any T intersection gaps and compares them with those in the key frames. If the same strokes in the key frames are connected, CACANi will close the gaps.

Please see **Chapter 08 - Retain Stroke Connections**.

Transfer Grouping Info

Based on the same stroke indices, the grouping information in the source frame is replicated to selected destination frames. However, for strokes that are already grouped in destination frames, they will not be changed.

Replace Grouping Info

Based on the same stroke indices, the grouping information in the source frame is replicated to selected destination frames. Existing groups in destination frames are overwritten.

Please see **Chapter 08 – Animating Groups and Masks**.

Transfer Boundary Stroke Settings

Based on the same stroke indices, the boundary stroke settings in the source frame is replicated to selected destination frames. Existing boundary or occluded strokes in destination frames are overwritten.

Please see **Chapter 08 – Animating Boundary Strokes**.

Update Selected Occluded Strokes

When the **Auto Update Occluded Strokes** option is disabled, you can use this feature to manually update the visibility of selected occluded strokes. The feature can be performed on the active frame or on multiple selected frames.

Please see **Chapter 08 – Editing Occluded Strokes Manually**.

(1.x) Adjust Stroke Size (Multi-Frame)

Integrated into Objects menu, Change Stroke Size… option.

Convert to Key Frames

Changes the selected frames into key frames.

Convert to Empty Key Frames

Deletes the contents of the selected frames before changing them into key frames.

Convert to Inbetween Frames

Changes the selected frames into in-between frames.

Convert to Empty Inbetween Frames

Deletes the contents of the selected frames before changing them into in-between frames.

Convert to Hold Frames

Changes the selected frames into hold frames. The original contents of the frames are deleted.

Clear Sheet / Clear Frame / Clear All Inbetween Sheets

Clear all strokes in the selected sheets / frames / all In-between sheets.

Remove Frame

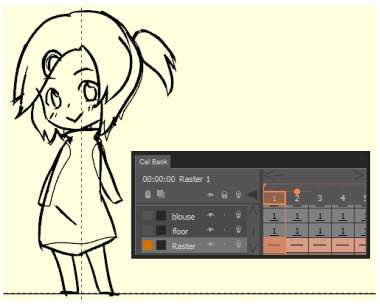
Deletes selected frames from the Cel Bank.

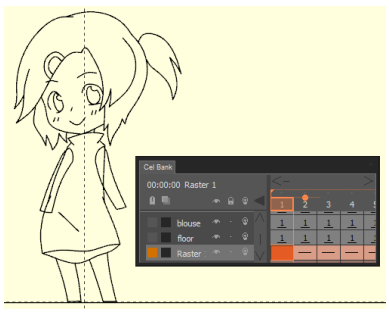
Remove All Inbetween Frames

Deletes selected In-between frames from the Cel Bank.

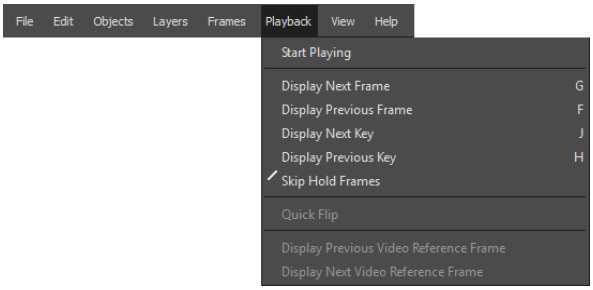
Hide/Unhide Raster Sheet

Temporarily turns off the drawing in a selected sheet. For raster layers only.





Playback Menu



Start Playing

Plays back the animation sequence.

Display Next Frame

Selects the frame to the right of the active frame.

Display Previous Frame

Selects the frame to the left of the active frame.

Display Next Key

Selects the nearest key frame to the right of the active frame.

Display Previous Key

Selects the nearest key frame to the left of the active frame.

Skip Hold Frames

When enabled, Hold Frames are ignored while using the above frame display options.

Quick Flip

Allows you to preview the animation from the previous key frame to the next key frame by generating in-between frames temporarily.

Please see **Chapter 08 – Quick Flip**.

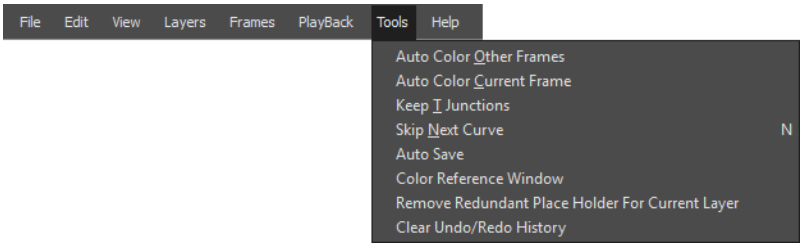
Display Previous Video Reference Frame

Shows the previous frame of a Video Reference file.

Display Next Video Reference Frame

Shows the next frame of a Video Reference file.

(1.x) Tools Menu



(1.x) Retain Stroke Connections (In-betweens)

Moved to Object menu.

(1.x) Go Previous Curve

Moved to Object menu.

(1.x) Skip Next Curve

Moved to Object menu.

(1.x) Auto Save

Moved to File Menu.

(1.x) Color Reference Window

Moved to View menu.

(1.x) Remove Redundant Place Holder for Current Layer

Moved to Object menu.

(1.x) Clear Undo/Redo History

Moved to Edit menu.

(1.x) Remove Hooks (Experimental)

Analyses the stroke ends in a current drawing and truncates unwanted small hooks. Option removed.

(1.x) Switch Cursor

Moved to Canvas Display Options.

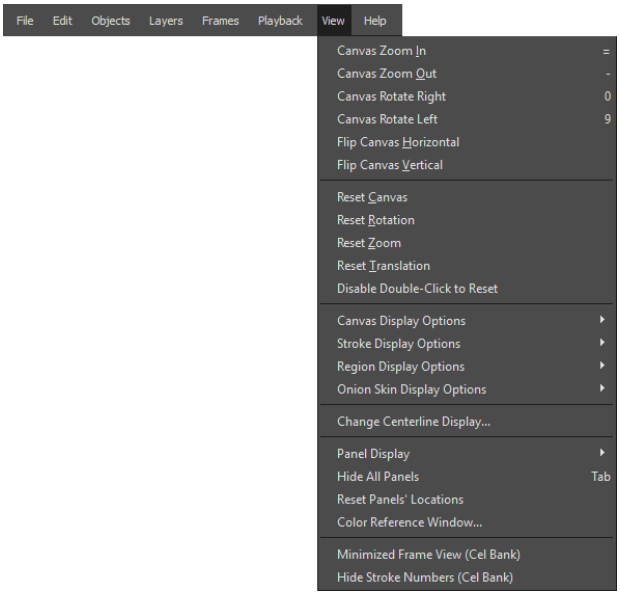
(1.x) New Coloring Mode

When enabled, limits the Single Layer Paint Tool to only apply color in Single Layer or single layer regions (regions formed from strokes in one layer). When disabled, the Single Layer Paint Tool will still apply color to cross layer regions (regions formed from strokes in multiple layers). It is enabled by default. Option removed.

(1.x) Use TabletPC (Experimental)

Moved to File menu.

View Menu



Canvas Zoom In [Ctrl + Space + Mouse Drag Right], [=]

Magnifies the view of the canvas.

Canvas Zoom Out [Ctrl + Space + Mouse Drag Left], [-]

De-magnifies the view of the canvas.

Canvas Rotate Right [Shift + Space], [0]

Rotates the canvas clockwise by 15 degrees.

Canvas Rotate Left [Shift + Space], [9]

Rotates the canvas counter-clockwise by 15 degrees.

Flip Canvas Horizontal

Flips the canvas left to right.

Flip Canvas Vertical

Flips the canvas up to down.

Reset Canvas

Removes any rotation, magnification and movement of the canvas.

Reset Rotation

Removes any rotation of the canvas.

Reset Zoom

Removes any resizing of the canvas.

Reset Translation

Removes any movement of the canvas and moves it back to the center of the workspace.

Disable Double-Click to Reset

When enabled, you cannot use double clicking to reset the canvas' rotation, zoom level or position (with the Zoom, Pan and Rotate tools). This can be helpful if you find that the double click interaction affects your use of the tools.

Canvas Display Options

Please see **Chapter 06 - Canvas Display Options**.

Show Camera Frame

Displays the camera frame on the canvas.

Show Crosshairs

Displays the center point of the camera frame.

Show Field Chart

Displays an animator's field chart within the camera frame.

Show Animation Details and Peg Holes

Displays the Scene or Cut Number, Description and Duration of the current file. Also displays the traditional peg holes found on animation paper.

Show Grid

Displays a grid over the entire canvas.

Show Status

Displays various details about the CACANi software.

Switch to Small Cursor

When enabled, cursor is rendered in software and cursor icons will not be displayed.

Stroke Display Options

Please see **Chapter 06 - Stroke Display Options**.

Show Stroke Widths

Disables thickness of strokes and displays the centerlines only. Can speed up responsiveness of the canvas.

Show Stroke Directions

Indicates the direction of a stroke with colored arrows.

Show Gaps
Indicates unconnected stroke ends.

Show Invisible / Hidden Strokes
Displays invisible and hidden strokes and stroke segments on the canvas.

Show Color Separation Strokes
Displays color separation strokes on the canvas.

Lighten Strokes in Inactive Layers
Distinguishes between strokes in active (selected) and inactive (unselected) layers.

Show Hidden Stroke View
Fades out normal strokes, while invisible and hidden strokes are bolded.

Show Layer Tag Colors on Strokes
Displays stroke colors based on their layer color tags.

Show Intersection and End Points
Indicates intersection points between strokes as well as the end points of each stroke.

Show Stroke Number when Hovering
Displays the index number of a stroke when the cursor hovers above them.

Auto Update Occluded Strokes
Refreshes the visibility of occluded strokes immediately when boundary strokes are edited. When disabled, you can use the **Update Selected Occluded Strokes** option to update the visibility manually.

Show Boundary Indicators and Depth
Displays visual indicators when boundary or occluded strokes are selected. The selected stroke's depth value is shown in brackets.

Show Anti-Aliasing in Strokes (Vector)
Displays vector strokes with edge smoothening on the canvas.

Region Display Options
Please see **Chapter 06 - Region Display Options**.

Show Region Colors
Displays painted regions with their respective colors.

Hide Region Colors
Disables the display of painted regions.

Highlight Closed Regions
Indicates all regions that are ready for painting in multiple colors.

Highlight Single Layer Regions
Indicates all single layer regions in all layers with checkered colors.

Highlight Closed Single Layer Regions
Displays only single layer regions found on the active layer.

Highlight Painted Regions as Black
Indicates all filled regions in black.

Always Update Region Colors
When enabled, CACANi will refresh the region colors after almost every user action.

Onion Skin Display Options

Please see **Chapter 08 – Onion Skin Settings**.

Show Onion Skin Images
Displays strokes from other frames as an onionskin image.

Show Onion Skin Images for Key Frames Only
Disables the display of painted regions.

Loop Onion Skin Images
Displays painted regions with their respective colors.

Switch Matching Frame Direction
Changes the Matching Frame in Navigator Panel to display the strokes from the next Key Frame.

Reset All Onion Skin Image Colors
Disables the display of painted regions.

Reset All Offpeg Frame Colors
Displays painted regions with their respective colors.

Show Offpeg Frames
Disables the display of painted regions.

Clear All Offpeg Frames
Displays painted regions with their respective colors.

(1.x) Auto Pan Reference Frame

Renamed Synchronize Pan. Moved to Navigator Panel, Matching Frame Settings.

Change Centerline Display…

Allows you to adjust the thickness of the centerline of a stroke.

Panel Display

Displays the various tool panels.

Hide All Panels

Turns off all tool panels and displaying only the canvas.
Please see **Chapter 02 - Panel Access Bar**.

Reset Panel Locations

Reverts the various tool panels to their default positions.

Color Reference Window

Opens up a window that allows you to load an image for color reference.

Please see **Chapter 09 – Using the Color Reference Window**.

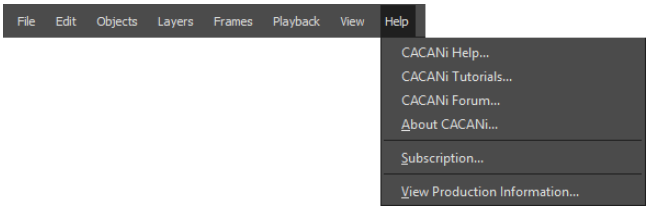
Minimized Frame View (Cel Bank)

Reduces the width of the displayed frames in the Cel Bank. This is helpful as you can see more frames in the same amount of space.

Hide Stroke Numbers (Cel Bank)

Hides the stroke numbers displayed in each sheet in the Cel Bank.

Help Menu



CACANi Help…

Directs you to our online Help document.

CACANi Tutorials…

Directs you to our online Tutorials page, where you can view video tutorials about the various tools in CACANi. You can also download some sample CACANi files here.

CACANi Forum…

Directs you to our online forum, where you can post questions and comments to the CACANi community.

About CACANi…

Shows information about the CACANi software.

Subscription…

Allows you to manage your subscription. You can view subscription information, extend subscription with a new product key or deactivate the subscription to transfer to another computer.

View Production Information…

Shows information about the currently opened CACANi file. Information can be exported as a text file.

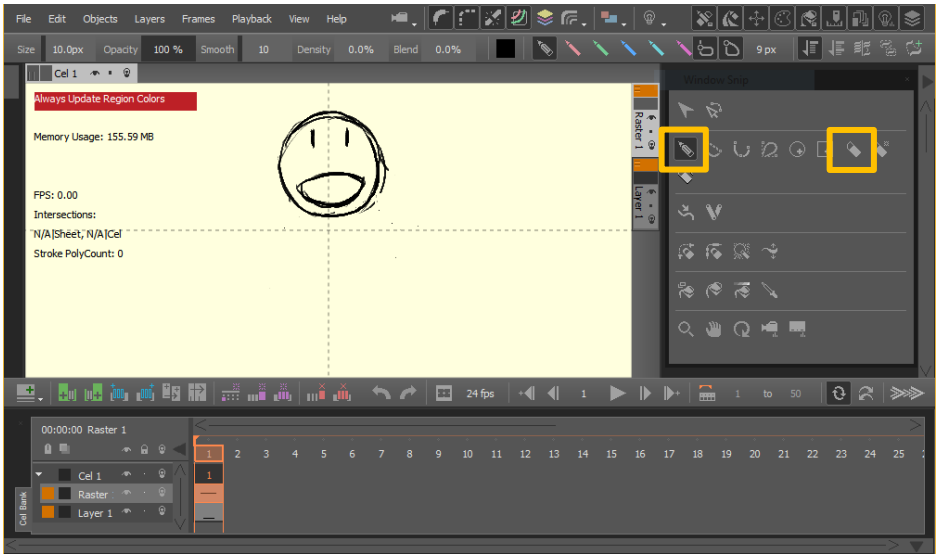
04

Drawing Key Frames

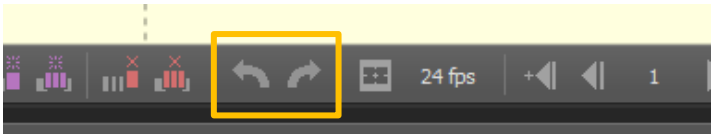
Quick Start Guide

Making animation drawings is the focus of CACANi. The Canvas is your paper, the Tools Panel are your drawing instruments, and the Cel Bank is where you manage the unlimited supply of paper for your animation. This guide will walk you through some of the essential tools to complete an animation in CACANi.

To start drawing in CACANi, it is as simple as choosing the Pen Tool and scribbling away on the canvas. You can also use the Eraser Tool to remove unwanted strokes.

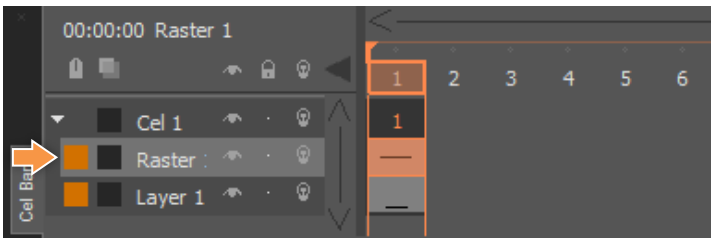


The Undo (Ctrl + Z) and Redo (Ctrl + Y) buttons help you to return to a previous state of your actions.

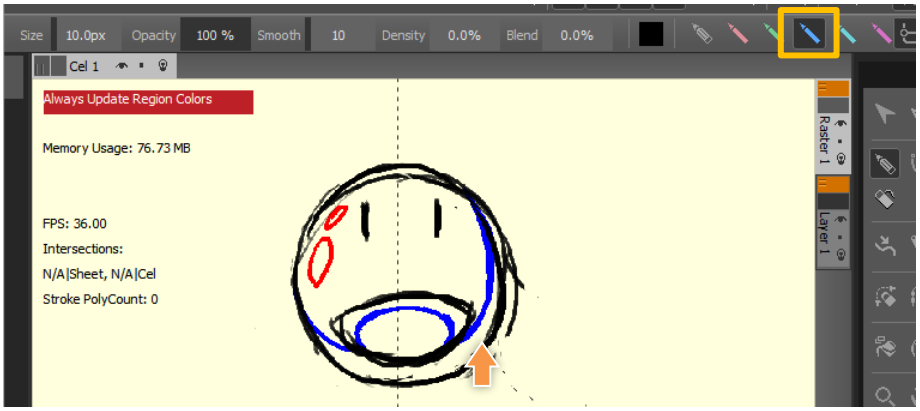


You can zoom in or out of the canvas by **Holding Ctrl + Space**, move around the canvas by **Holding Space**, or rotate the canvas by **Holding Shift + Space**, then **Hold Left Click** and **Drag** the cursor in the canvas.

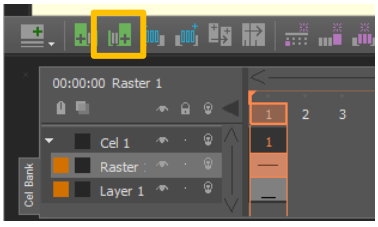
The Raster Layer allows you to draw and erase on a pixel-based canvas. The experience is closer to pencil and paper, but the disadvantage is that you will not be able to make use of the automated inbetweening and coloring features.

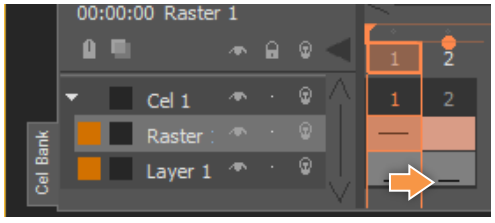


You can make use of the Color Separation Lines to draw shadow and highlight lines. In a Raster Layer, the Color Separation Lines are always under the black strokes.

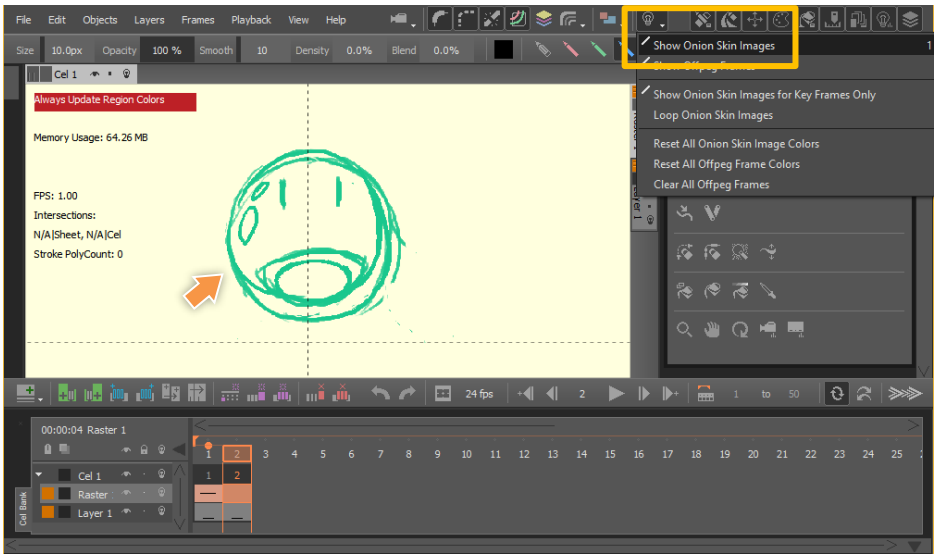


You can create more key frames by using the Frame Control buttons. A key frame has a short line drawn at the bottom. However, do take note that Raster frames do not have the short line to indicate it's a key frame.

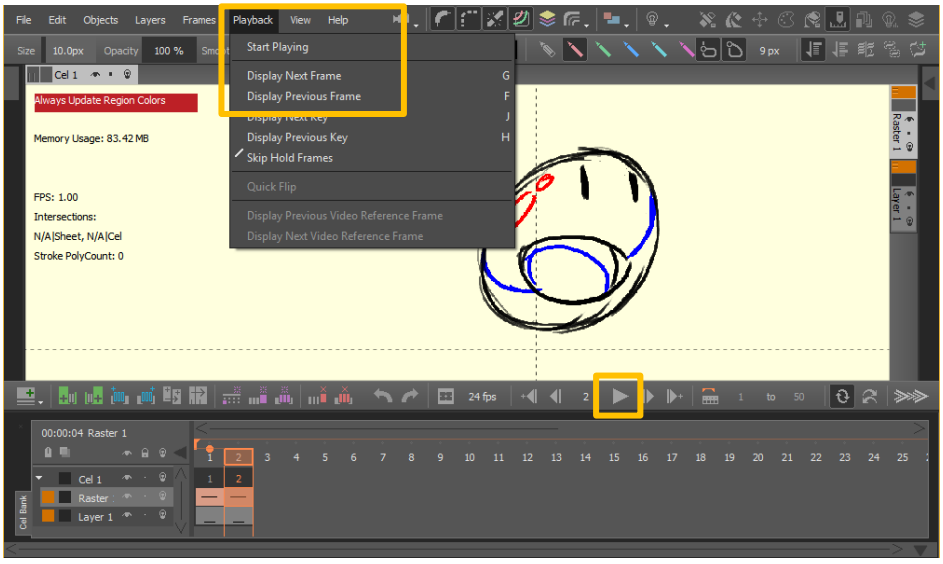




When you're on the second frame and want to use the previous drawing as a guide, you can enable the Show Onion Skin Images option from the Display Property Bar.

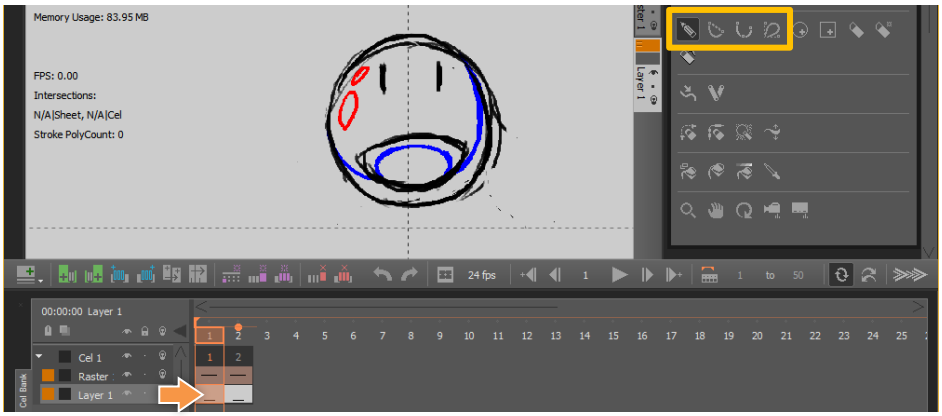


After your sketches are done, you can play back the sequence. You can also quickly toggle between the 2 key frames using [F] and [G] keyboard shortcuts. Because there's only 2 frames, the animation is too fast.

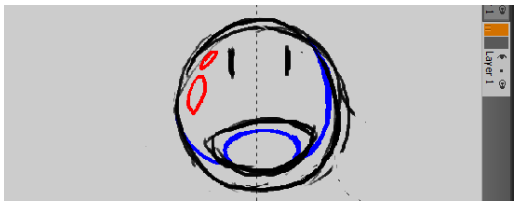


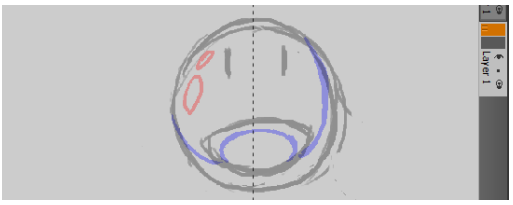
To increase the length of the animation, you can draw more frames by hand. Or you can make use of CACANi's automated inbetweening feature to generate more frames. But to do that, you need to clean up the drawing using the Drawing Layer. It allows you to draw sharp, resolution-independent vector strokes. By default, a Drawing Layer, Layer 1, is created.

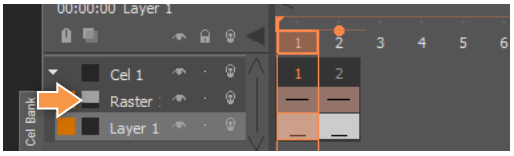
Switch to Key Frame 1 on the Drawing Layer. You can still use the Pen Tool, or you can also use the other Curve and Bezier Drawing Tools.



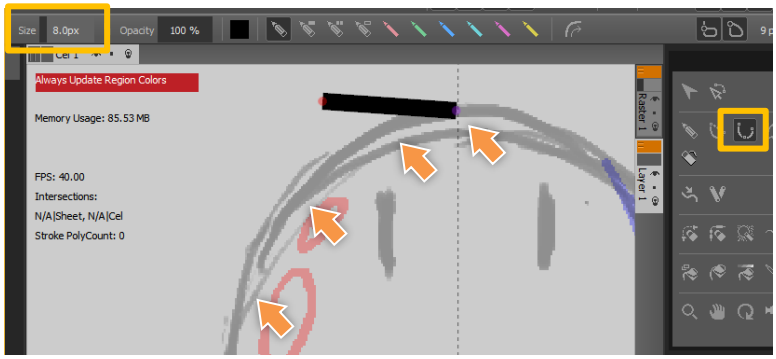
As the sketches are too dark, you can reduce the layer opacity using the Opacity slider. **Hold Left Click** and **Drag** down on the slider. The sketch is now translucent.

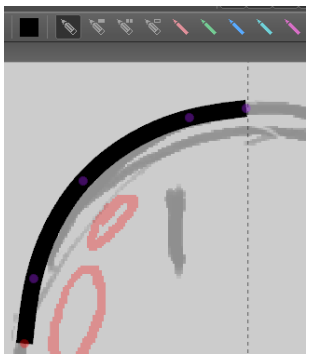




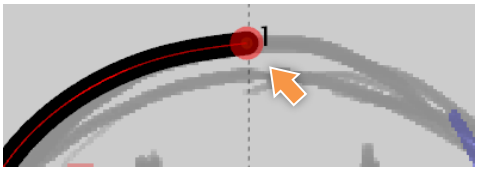


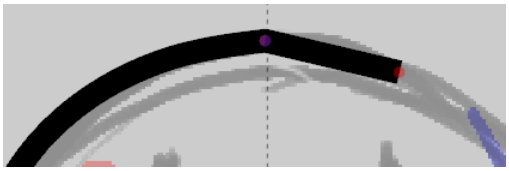
Select the Curve Tool. Increase the Stroke Width to your desired thickness. **Left Click** once on the top of the head and **Left Click** again along the edge until you reach the bottom of the head. You can use keyboard shortcuts to move the canvas in the middle of drawing a stroke. **Left Click Twice** to end the stroke.





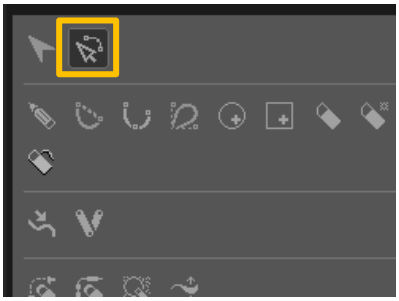
When drawing the next stroke, you can ensure that the strokes are connected by making sure that you see the red cling indicator when you start or end your stroke. This is a very important step because it helps you paint the drawings later.



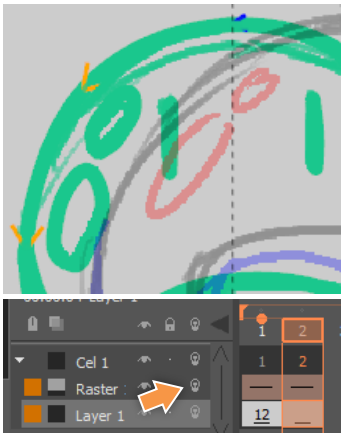


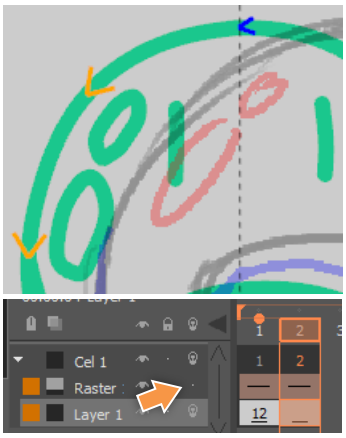
When you hover over each stroke, you can see the stroke number or stroke index. This is very useful when you are matching strokes to other key frames. The total stroke number is also indicated in the frame.

After drawing a stroke, you can adjust its curvature with the Stroke Editor.

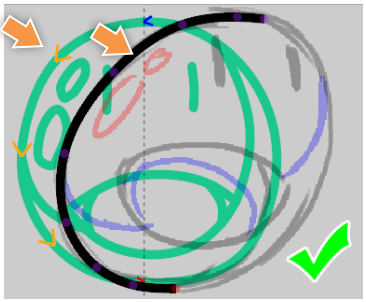


After completing the first key frame, you can repeat the process to clean up the second drawing. However, because the onion skin feature is enabled for both layers, it can be difficult to see the correct strokes. You can turn off the onion skin feature for the raster layer.

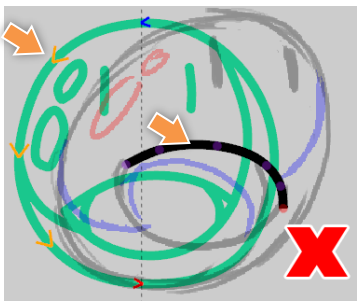




When cleaning up the second drawing, it is important to follow the stroke arrows in the onion skin image. For example, if the arrows indicated drawing the face first and you drew the mouth instead, the automated inbetweening will not work properly later.



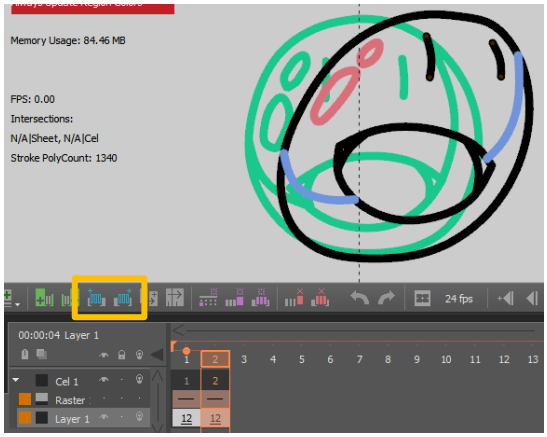
Drawing the face, same as the stroke arrow indicators

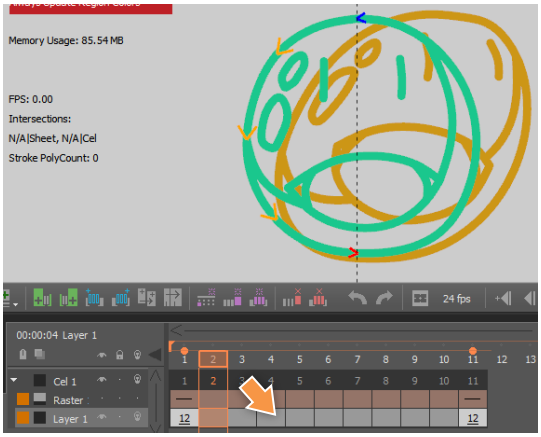


Not following the stroke arrow indicators

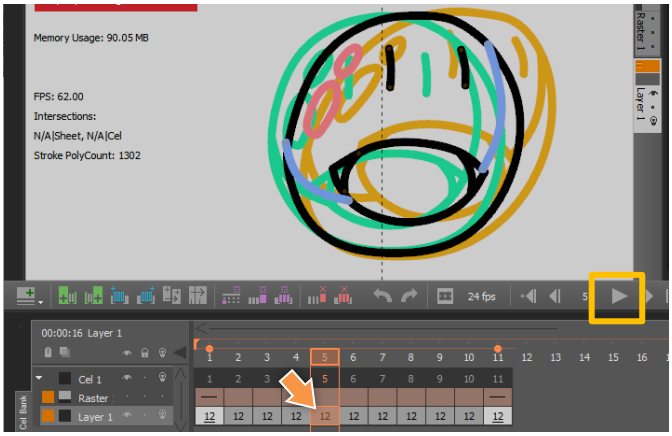
After drawing a few strokes in the second key frame, you can check your clean up easily by using the Quick Flip button. Temporary frames are generated so that you can see whether you made any errors in the clean up.

When the second key frame is completed, you can now add blank inbetween frames to your animation sequence. Make sure that the blank inbetween frames are in the middle of the 2 key frames that you have drawn.

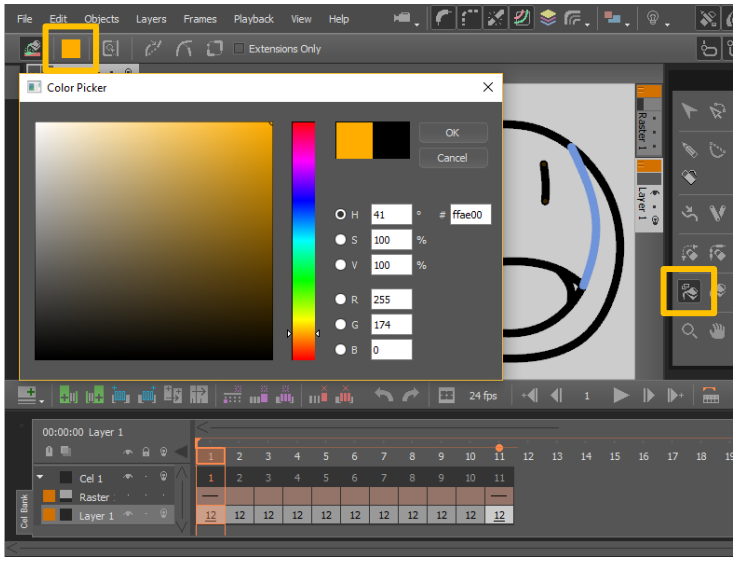


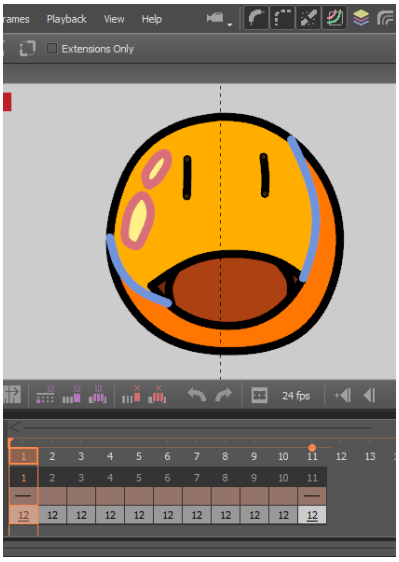


Left Click Twice on any of the blank inbetween frames. They will now be generated based on your key frames. You can now play the animation properly using the Playback button.

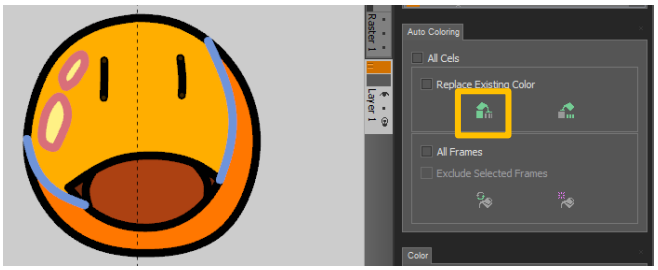


You can now paint the drawings. Select the Cross Layer Paint Tool and **Left Click Twice** on the Color Selection Box to pick a color. After selecting your color, **Left Click** on the region to paint it. You can also **Right Click** to remove a color from a painted region.

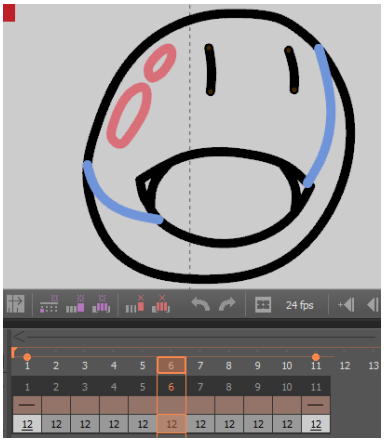


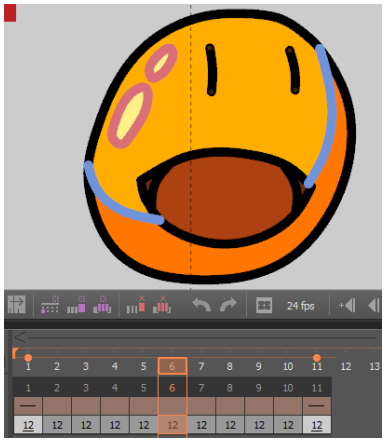


After the first key frame is painted, you can bring up the Auto Color Panel to help you help the rest of the frames. With the first key frame still selected, you can select the Auto Color Other Frames option.



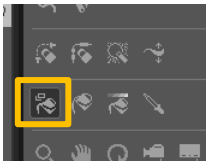
Using your first key frame as reference, CACANi will paint the rest of the frames.

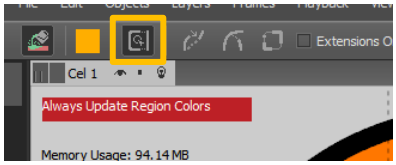




If you find that there are some unpainted or wrongly painted regions, it is likely that there were some open regions. When that happens, you should be able to see orange indicators telling you that there are unconnected stroke ends.

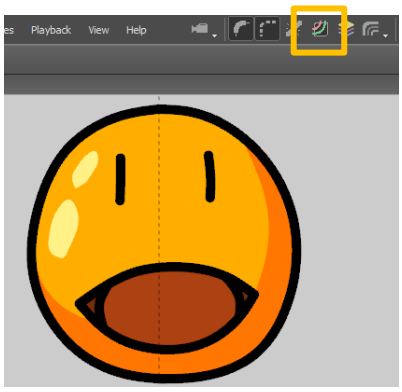
To do a touch up, you can select the Region Gap Close option in the Cross Layer Paint Tool properties.



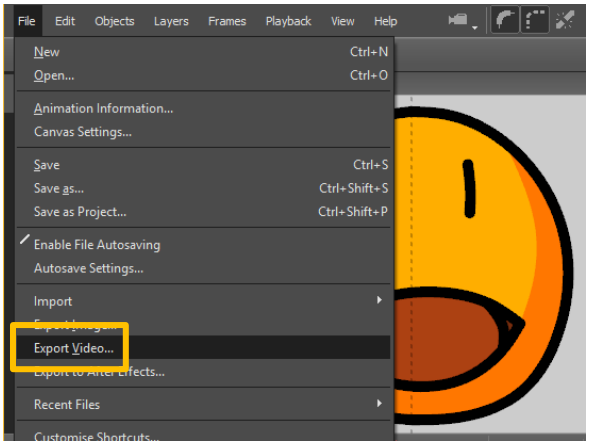


Then **Hold Left Click** and **Drag** over the uncolored region. The **dragging** allows you to decide the size of the gaps that should be closed. Nearby gaps will be closed.

When the uncolored regions are painted, your animation is ready to be exported. You do not want to see the color separation lines, so turn them off from the Display Bar.

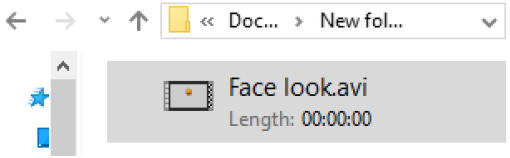


From the File menu, you can choose to export the sequence as a video.



You may want to give your animation a different name, but otherwise you do not need to change anything in the Export Video window.

Your animation is complete!



The Tools Panel

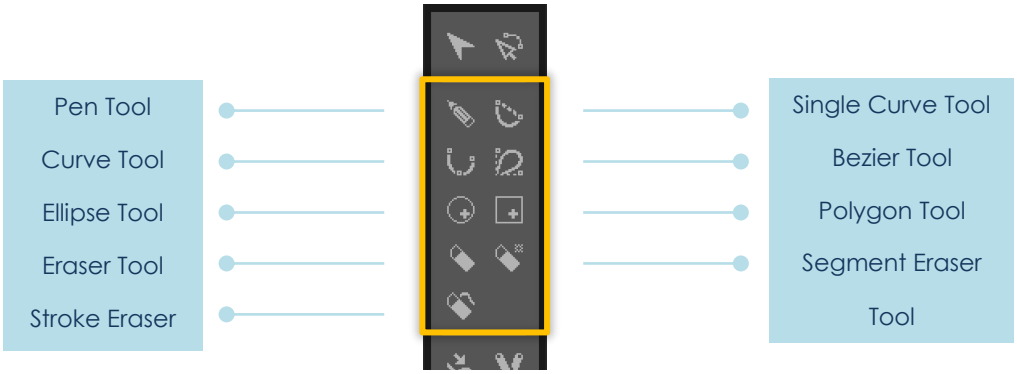
However, without the right tools you will end up wasting time on non-creative and repetitive tasks. To help you overcome that, we have designed tools that will help make the process of animation faster.

Common Tool Properties

There are a number of tools which share similar property controls. For example, the Pen Tool shares many similar properties with the Curve and Bezier Tools. As such, we'll have a more thorough explanation when the property is first listed, while subsequent similar properties will only make references to these descriptions.

Drawing Tools

Of all the tools, the Drawing Tools are probably the most frequently accessed. These are used for the creating of your drawings in CACANi.



Cling Shortcut Keys

Clinging is a method that forces strokes to snap to each other, while drawing or editing strokes.

When using the **Pen**, **Single Curve**, **Curve** and **Bezier Tools** to draw, or the **Stroke Editor** to edit strokes, you can **Hold Down Ctrl** to toggle both **Cling to Stroke End** and **Cling to Stroke**. Alternatively, you can **Hold Down Shift** to toggle **Cling to Stroke End** only.

Both shortcut keys, when held down, **Switch** the mode of the Cling functions. For example, when **Cling to Stroke End** is Disabled in the Drawing Controls Bar, **holding down Shift** will Enable the function.

Please see **Chapter 04 – Cling to Stroke End** for more information on its uses.

Handling Sharp Angles in Strokes

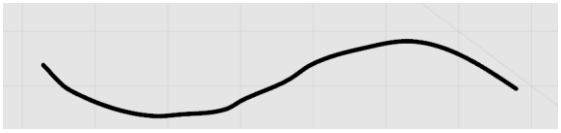
When a drawing is going to be automatically in-betweened, care must be taken in areas of the drawing where the strokes have sharp angles. It is recommended to use a separate stroke for each side of the angle. This will allow a better in-between result.

See **Chapter 08 – In-betweening Sharp Angles**.

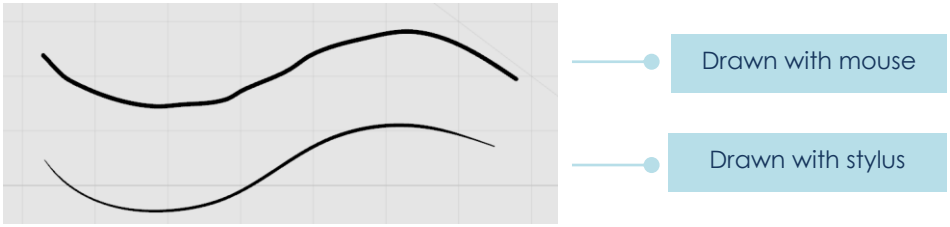
Pen Tool

Allows you to draw strokes freely on the canvas. With a pressure sensitive stylus, you will also be able to create strokes of variable width.

Drawing can be done either using a tablet or the mouse. To draw using the mouse, press down the left mouse button and **drag** to form a path. A stroke will be created from the path and the stroke will have a constant stroke width.

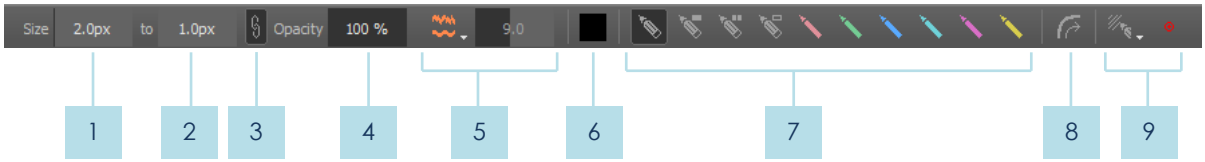


To draw using the tablet, press the stylus down on the tablet to begin. As with the mouse, **drag** the stylus in this manner to form a path and lift the stylus to end the stroke. Using the pressure-based information from the stylus, the curve width will vary accordingly for the stroke.



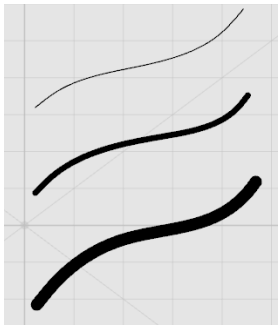
After the stroke is created, it will be smoothed according to the **Smoothing** Property in the Property Window. This applies to both strokes drawn using the mouse and the stylus.

Pen Tool Properties



1 **Maximum Size**

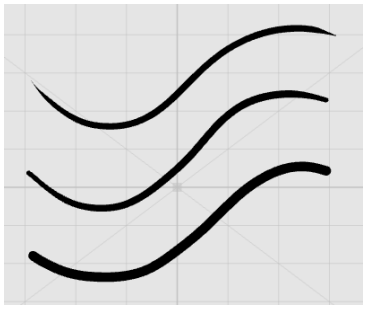
You can set the maximum width of a stroke by **dragging** the slider or **Left Clicking** and typing a specific value.



Strokes at different widths

2 **Minimum Size**

You can set a stroke's minimum width by **dragging** the slider or **Left Clicking** and typing a specific value. By setting a minimum width, you can make use of the stylus pressure to drawing strokes of varying thickness. You will require a graphic tablet to make use of this feature.



Strokes at different minimum widths

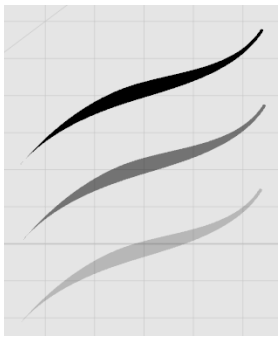
3 **Sync Stroke Width**

Allows you to synchronize the Maximum Size, or maximum stroke width property for all the drawing tools.

4 **Opacity**

You can set the opacity / transparency of the stroke by **dragging** the slider or **Left Clicking** and typing a specific value.

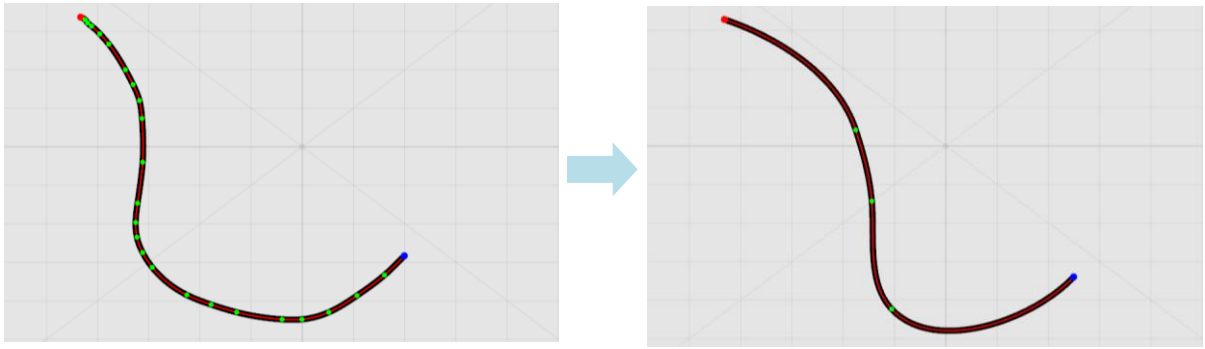
Opacity of the curve to be drawn is set by **dragging** the slider or **Left Clicking** and typing a specific value. The higher the value, the less transparent the curve will appear.



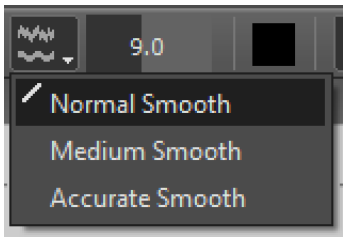
Strokes at different opacity values

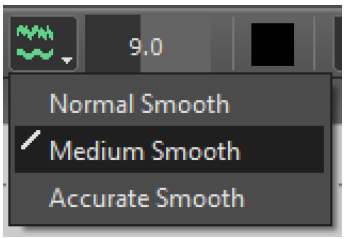
5 **Smoothing**

In the Pen Tool, strokes are drawn by tracking your mouse or pen device continuously across the screen. However, this tends to create many data points in each stroke. The stroke does not look smooth and editing so many points is very troublesome. Smoothing options help you to generate strokes that follow your drawing movements closely yet have the minimum number of data points.

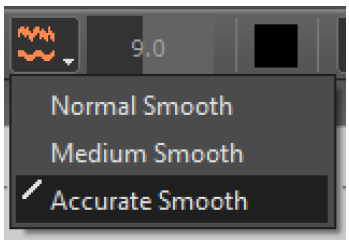


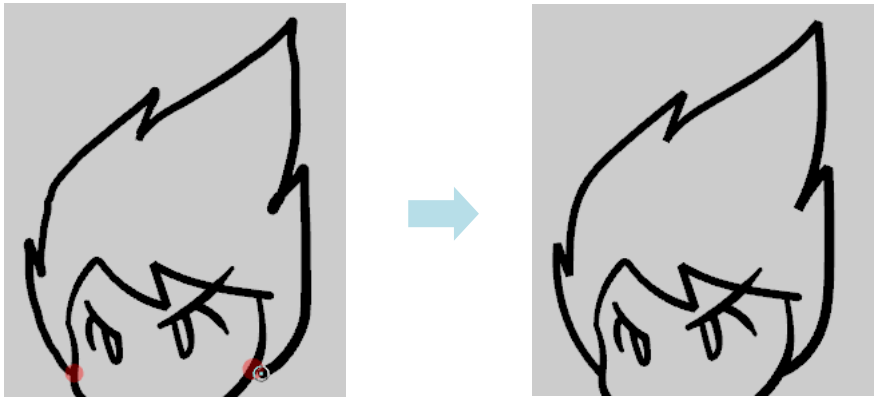
There are 3 smoothing modes. Both the Normal Smooth and Medium Smooth modes work by collecting and averaging data points as you draw with the Pen Tool. You can change the smoothness of the stroke by **dragging** the slider or **Left Clicking** and typing a specific value. The larger the value, the smoother the stroke and the lesser points there are.





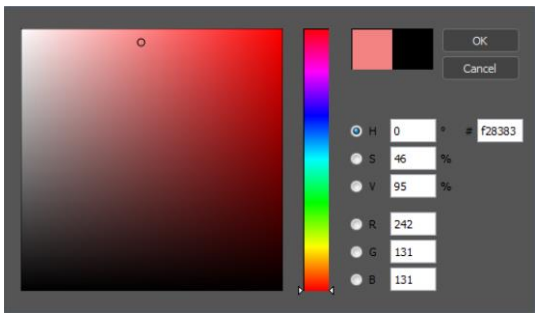
In contrast, the Accurate Smooth mode works by generating the smoothed stroke only after you finish drawing. There is no value adjustment for the Accurate Smooth mode, so the slider is disabled.





6 **Stroke Color Selection Box**

You can set the stroke color by **Double Clicking** to bring up the **Color Selection Box** dialog box. When done, just **Left Click OK** to confirm.



7 **Stroke Rendering Modes**

Allows you to draw a stroke with Normal, Closed, Invisible, Hidden or Color Separation properties.

Please refer to Chapter 04 – Stroke Rendering Modes.

8 **Auto Direction (*experimental feature)**

When enabled, CACANi will try to anticipate the stroke direction when matching strokes. However, when the matching stroke in the new frame has a difference of more than 180 degrees compared to the stroke in the previous frame, it will result in an ambiguous stroke direction error message.

(1.x) Invisible Gaps

With this enabled, when you finish drawing a stroke and the stroke end is near another stroke (based on the Cling threshold value), the stroke will be extended with an invisible segment to form a connection with the nearby stroke. Removed due to change in Cling function.

9 **Drawing Modes**

Drawing Modes act like rulers, allowing you to draw straight strokes based on the selected mode.

Normal Drawing Mode

Drawing Modes are disabled.

Grid Drawing Mode

Strokes are confined to vertical or horizontal straight lines.

Parallel Drawing Mode

Strokes are confined to straight lines at the specified angle.

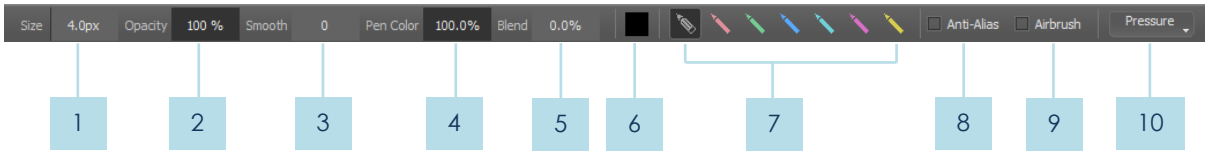
Radial Drawing Mode

Strokes are confined to straight lines radiating from the Pivot Point.

Pivot Point

With this enabled, you can select the Pivot Point on the canvas and move it to either adjust the angle of the straight lines in Parallel Drawing Mode, or to re-locate the convergent point of the strokes in Radial Drawing Mode.

Pen Tool Properties (Raster Layer)



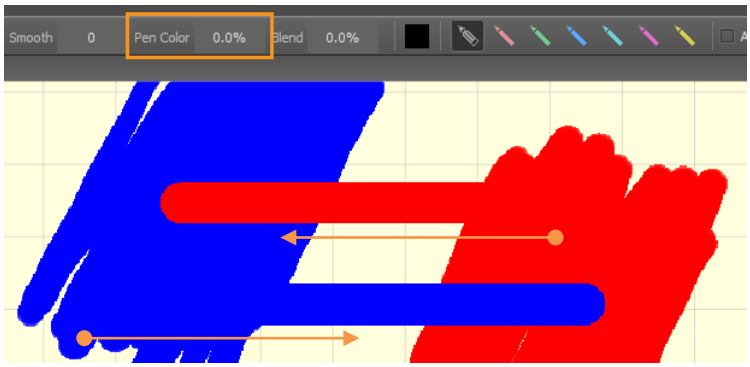
In CACANi 2.0, we are introducing the new Raster Layer. You will find some different properties when changing between the drawing and raster layer.

1 **Size**
Sets the maximum width of a stroke.

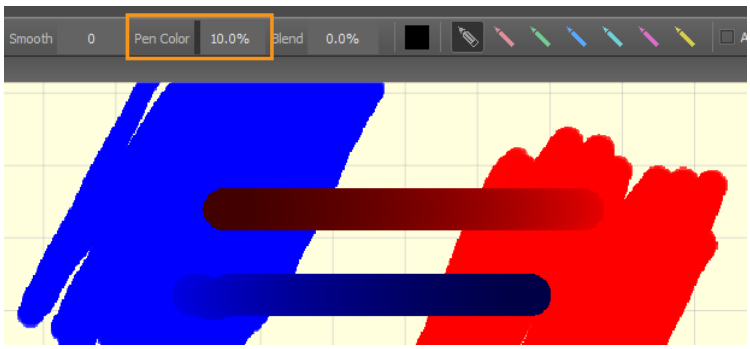
2 **Opacity**
Sets the opacity / transparency of a stroke.

3 **Smooth**
Generates smoother strokes by collecting and averaging inputs from your mouse or stylus as you draw. You can change the smoothness of the stroke by **dragging** the slider or **Left Clicking** and typing a specific value. The larger the value, the smoother the stroke.

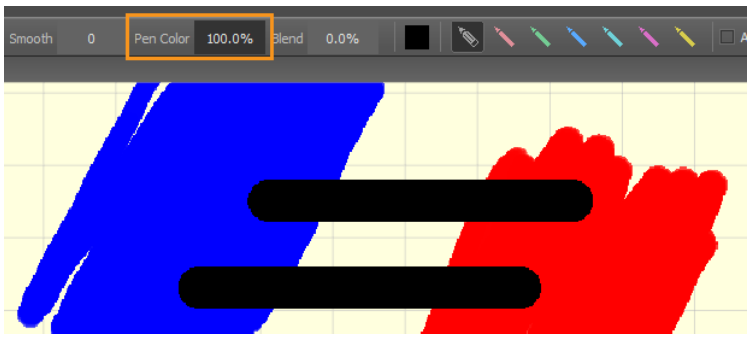
4 **Pen Color**
Controls how much the existing background color is affected by the selected pen color. In the example below, the selected pen color is black. At 0%, the selected pen color is not considered and the existing background color at the start of the drawing replaces the selected pen color.



As the value increases, more of the pen color is mixed with the background color. So the black pen color is mixed with the background red or background blue respectively.

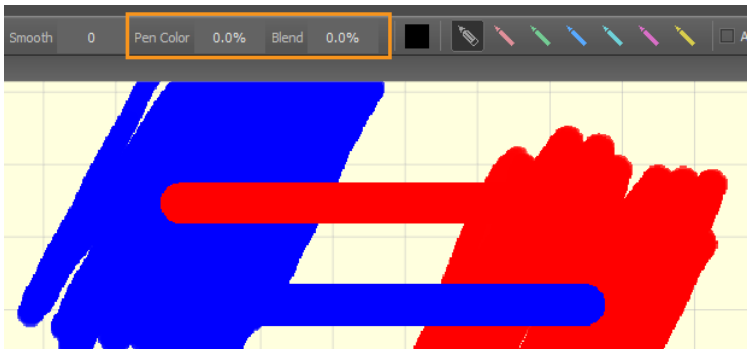


At 100%, the pen color is used and no mixing with the background color is done.

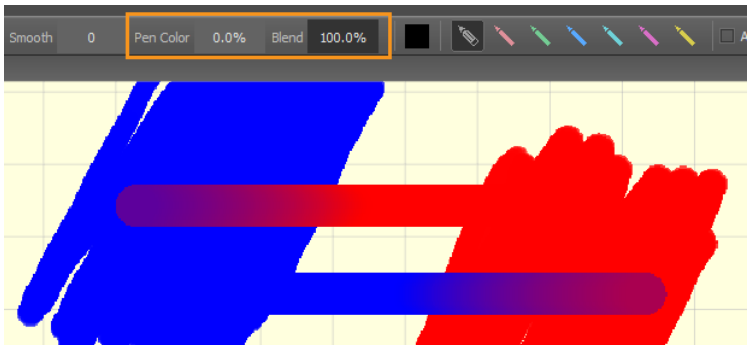


5 **Blend**

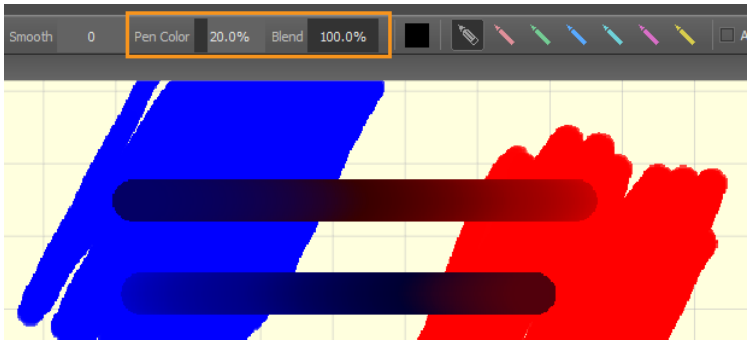
Controls the amount of color mixing when drawing. When the blend value is 0%, no blending occurs.



As the blend value increases, the background color will have a stronger influence on the pen color.



When both the pen color and blend values are used together, the selected pen color will influence the color mixing. In this case, the black pen color is now affecting the red and blue background colors.



6 **Stroke Color Selection Box**

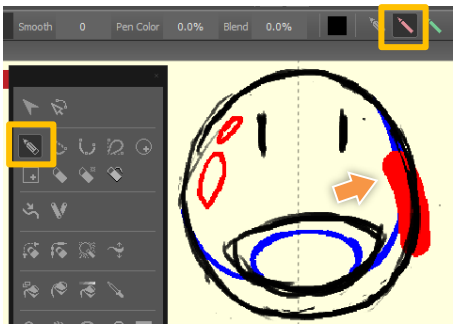
You can set the stroke color by **Double Clicking** to bring up the **Color Selection Box** dialog box. When done, just **Left Click OK** to confirm.

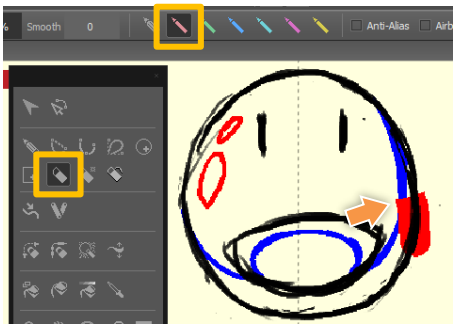
7 **Color Separation Modes (Raster Layer)**

Allows you to draw highlight or shade lines for painting later.

While they are similar conceptually to the Color Separation Strokes mentioned in **Chapter 04 – Stroke Rendering Modes**, there is a difference in how you use them.

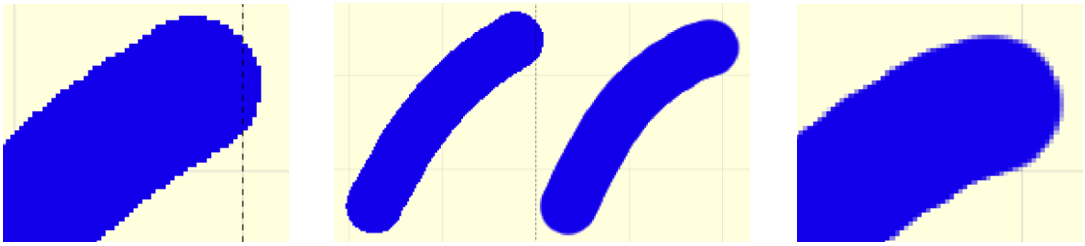
You can think of each stroke color as a sublayer of the raster layer. When you use the red color separation pen, you are drawing on a sublayer beneath the black stroke sublayer. Whereas in the Drawing Layer, the color separation strokes are not divided into sublayers. The eraser will also erase only the specific color separation stroke.





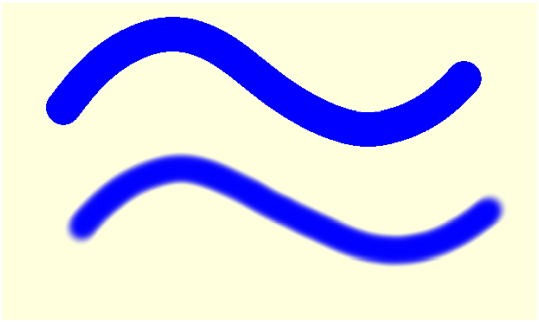
8 **Anti-Alias**

Applies anti-aliasing to the edge pixels, making the strokes look smoother.



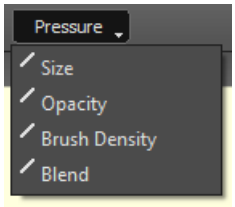
9 **Airbrush**

Blurs the edge pixels to achieve a softer brush effect when drawing.



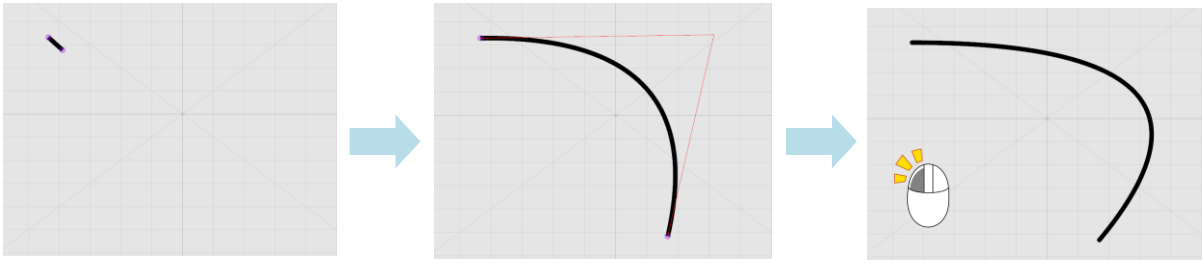
10 **Pressure**

Allows you to control the various pen properties, Size, Opacity, Brush Density or Blend with stylus pressure. You will require a graphic tablet to make use of this feature.



Single Curve Tool

Allows you to draw a stroke, by first **dragging** from the starting to the ending point, then adjusting the curvature with the cursor and keyboard shortcuts.

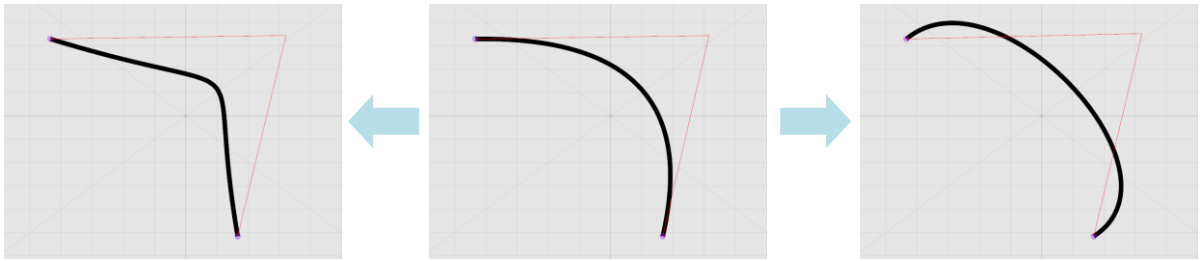


Drag to ending point and **Left Click**

Hover to adjust stroke

Left Click again to confirm stroke

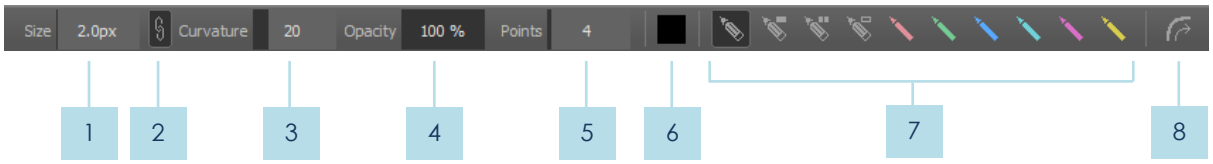
While drawing, the curvature can be changed with shortcuts [[ ] and [ ]] after setting the ending point.



Decrease Curvature [**[**]

Increase Curvature [**]**]

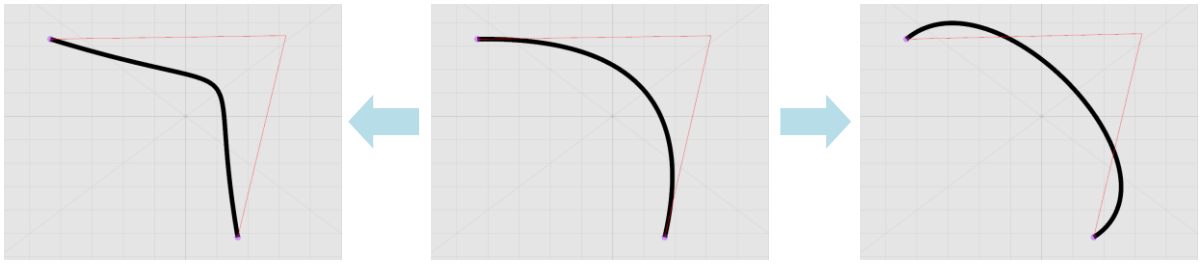
Single Curve Tool Properties



1 **Size**
Sets the maximum width of a stroke.

2 **Sync Stroke Width**
Allows you to synchronize the Maximum Size, or maximum stroke width property for all the drawing tools.

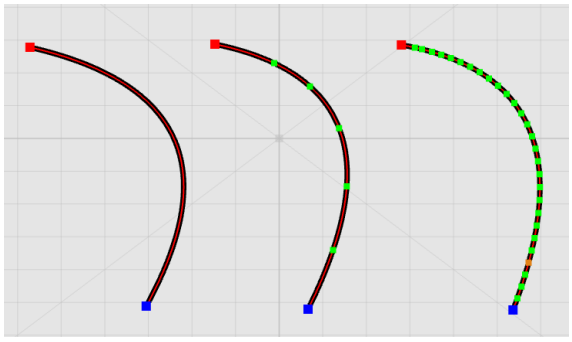
3 **Curvature**
You can set the curvature of the stroke by **dragging** the slider, or **Left Clicking** and typing a specific value.



Curvature at 0 | Curvature at 100

4 **Opacity**
Sets the opacity / transparency of a stroke.

5 **Points**
Sets the number of data points on the stroke. With more data points, refined adjustments to the stroke can be made, but it can also be too time-consuming.



2 points | 7 points | 30 points

6 **Stroke Color Selection Box**
Sets the color of the strokes being drawn.

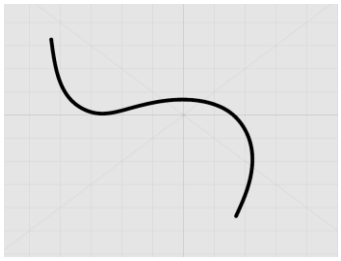
7 **Stroke Rendering Modes**
Allows you to draw a stroke with Normal, Closed, Invisible, Hidden or Color Separation properties.
Please refer to **Chapter 04 – Stroke Rendering Modes**.

8 **Auto Direction (*experimental feature)**
When enabled, CACANi will try to anticipate the stroke direction when matching strokes. However, when the matching stroke in the new frame has a difference of more than 180 degrees compared to the stroke in the previous frame, it will result in an ambiguous stroke direction error message.

Curve Tool

Allows you to draw a smooth stroke by creating a sequence of points. **Left Click** on the canvas to create points for the stroke, and **Right Click** to end the stroke.

Create a series of points



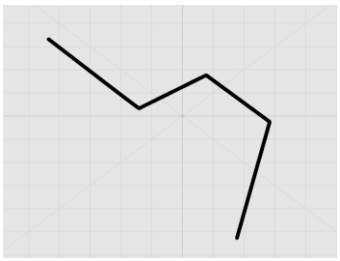
Stroke drawn based on points

Curve Tool Properties

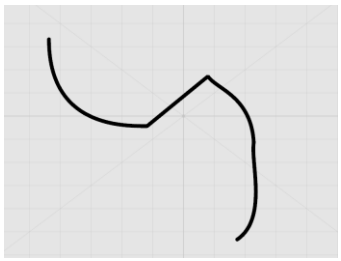
Please refer to **Chapter 04 - Single Curve Tool Properties**.

Bezier Tool

Allows you to draw a discontinuous stroke by creating a sequence of points. Straight, discontinuous segments are created when **Left Clicking** only, while **holding down Left Click** and **Dragging** will create curved stroke segments.



Left Clicking only



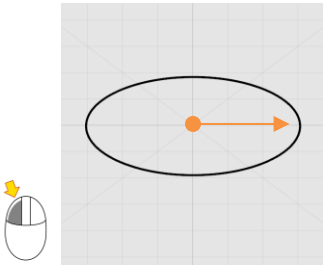
Hold Left Click and **Drag**

Bezier Tool Properties

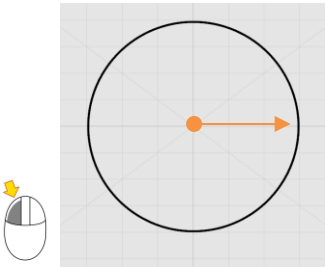
Please refer to **Chapter 04 - Single Curve Tool Properties**.

Ellipse Tool

Allows you to draw an ellipse or circle. **Dragging** the cursor will create an oval shape. To create a circle, **Hold Ctrl** while **dragging**.

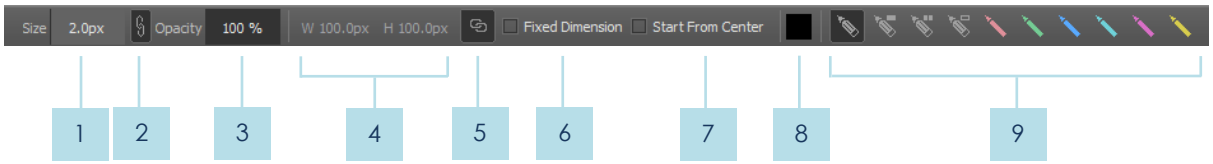


Normal **Drag**



Ctrl + Drag

Ellipse Tool Properties



1 **Size**
Sets the maximum width of a stroke.

2 **Sync Stroke Width**
Allows you to synchronize the Maximum Size, or maximum stroke width property for all the drawing tools.

3 **Opacity**
Sets the opacity / transparency of a stroke.

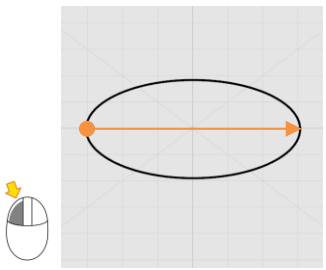
4 **Width and Height (Resizing)**
Size and Height of the ellipse, in pixels. Change either value by **dragging** the slider, or **Left Clicking** and typing a specific value.

5 **Maintain Aspect Ratio**
When enabled, changing either the width or height of the ellipse will lead to a corresponding change in the other.

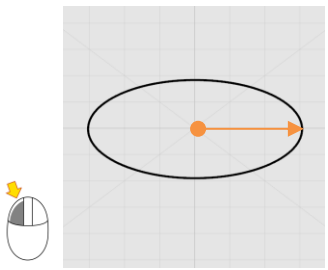
6 **Fixed Dimension**
When enabled, all newly created polygons will be the same pixel width and height as stated in the **Width** and **Height** input fields.

7 **Start From Center**

When enabled, the creation of an ellipse will always start from the center.



Normal



Start from Center enabled

8 **Stroke Color Selection Box**

Sets the color of the strokes being drawn.

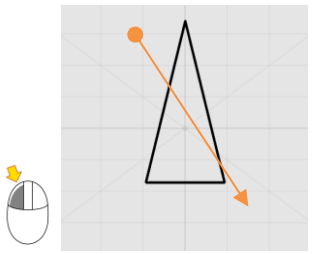
9 **Stroke Rendering Modes**

Allows you to draw a stroke with Normal, Closed, Invisible, Hidden or Color Separation properties.

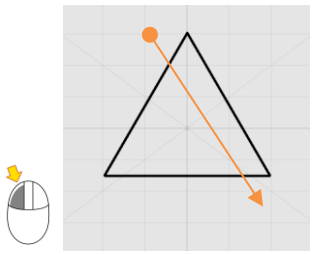
Please refer to Chapter 04 – Stroke Rendering Modes.

Polygon Tool

Allows you to draw a polygon. **Dragging** the cursor will create a polygon. To create regular polygons, **Hold Ctrl** while **dragging**.

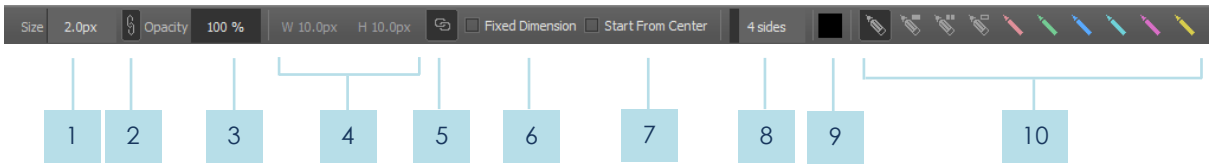


Normal **Drag**



Ctrl + Drag

Polygon Tool Properties



1 **Size**
Sets the maximum width of a stroke.

2 **Sync Stroke Width**
Allows you to synchronize the Maximum Size, or maximum stroke width property for all the drawing tools.

3 **Opacity**
Sets the opacity / transparency of a stroke.

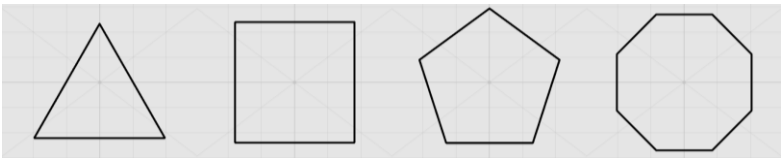
4 **Width and Height (Resizing)**
Width and Height of the polygon, in pixels. Change either value by **dragging** the slider, or **Left Clicking** and typing a specific value.

5 **Maintain Aspect Ratio**
When enabled, changing either the width or height of the polygon will lead to a corresponding change in the other dimension.

6 **Fixed Dimension**
When enabled, all newly created polygons will be the same pixel width and height as stated in the **Width** and **Height** input fields.

7 **Start From Center**
When enabled, the creation of an ellipse will always start from the center.

8 **No. of Sides**
You can create polygons with different number of sides by changing the value in the spin box.

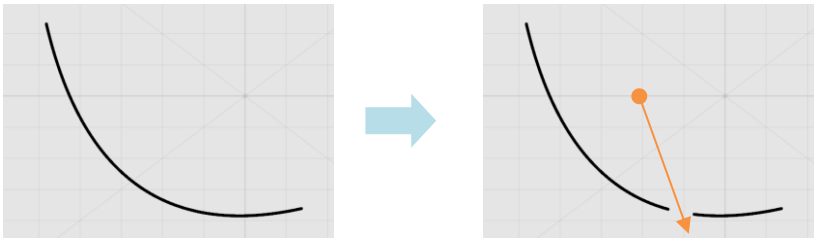


9 **Stroke Color Selection Box**
Sets the color of the strokes being drawn.

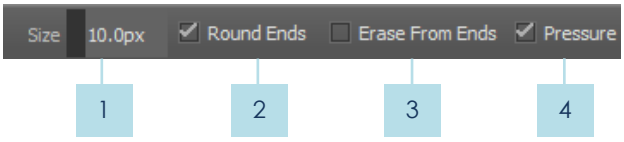
10 **Stroke Rendering Modes**
Allows you to draw a stroke with Normal, Closed, Invisible, Hidden or Color Separation properties.
Please refer to **Chapter 04 – Stroke Rendering Modes**.

Eraser Tool

Allows you to erase strokes by **dragging** over them.



Eraser Tool Properties

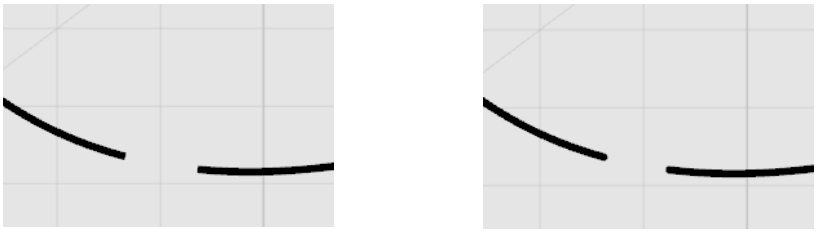


1 **Size**

By changing the width of the Eraser Tool, the erasing area will be larger.

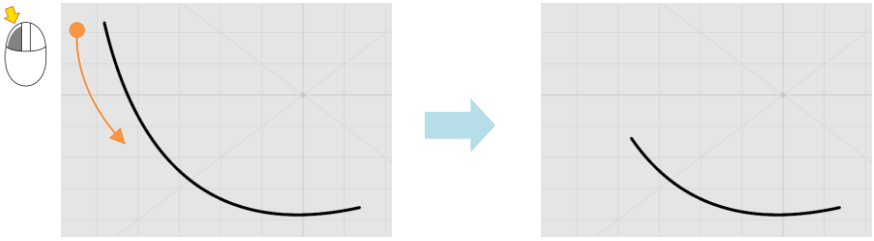
2 **Round Ends**

When enabled, the ends of the erased stroke segments will be rounded.



3 **Erase From Ends**

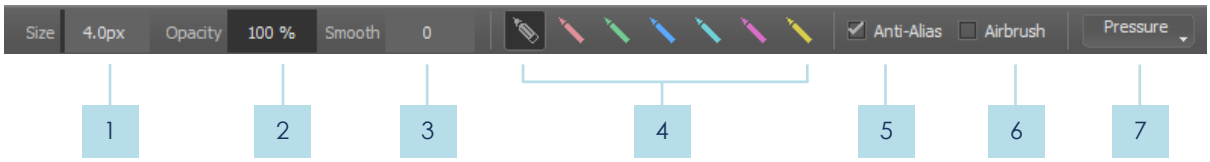
When enabled, strokes can only be erased from their ends.



4 **Pressure**

When enabled, the stylus pressure will affect the size of the erasing area. You will require a graphic tablet to make use of this feature.

Eraser Tool Properties (Raster Layer)



1 **Size**
Sets the maximum width of a stroke.

2 **Opacity**
Sets the opacity / transparency of a stroke.

3 **Smooth**
Generates smoother erasing areas by collecting and averaging inputs from your mouse or stylus. You can change the smoothness of the erasing by **dragging** the slider or **Left Clicking** and typing a specific value. The larger the value, the smoother the erasing.

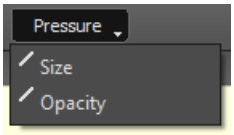
4 **Color Separation Modes (Raster Layer)**
Allows you to erase highlight or shade lines. You can think of each stroke color as a sublayer of the raster layer. When you use the red color separation pen, you are erasing red pixels on a sublayer beneath the black stroke sublayer.

While they are similar conceptually to the Color Separation Strokes mentioned in Chapter 04 – Stroke Rendering Modes, there is a difference in how you use them.

5 **Anti-Alias**
Applies anti-aliasing to the edge pixels, making the strokes look smoother after erasing.

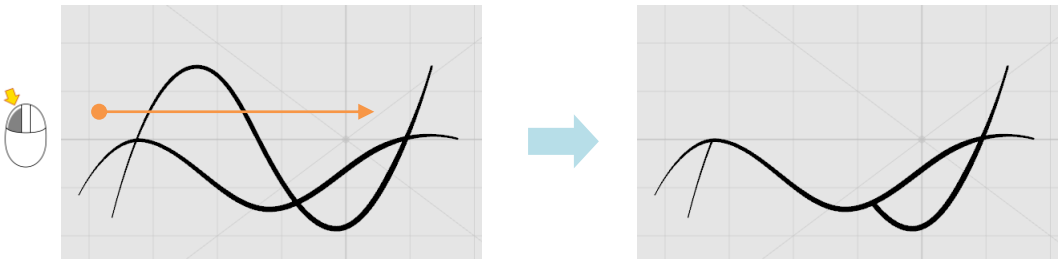
6 **Airbrush**
Blurs the edge pixels to achieve a softer brush effect when erasing.

7 **Pressure**
Allows you to control the various pen properties, Size or Opacity with stylus pressure. You will require a graphic tablet to make use of this feature.



Segment Eraser Tool

Allows you to erase stroke segments between intersection points.



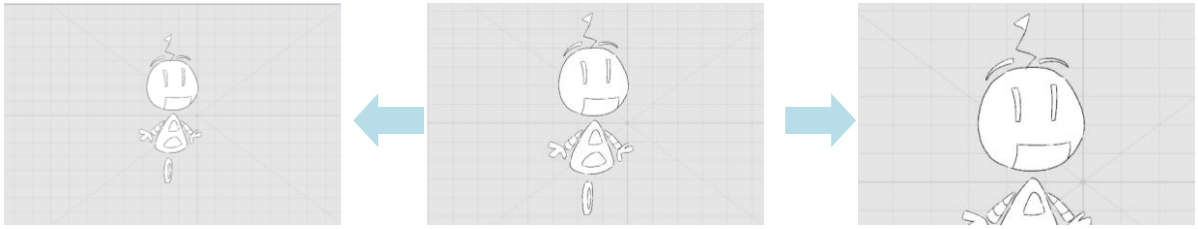
Stroke Eraser Tool

Allows you to erase the entire stroke.

Canvas Tools

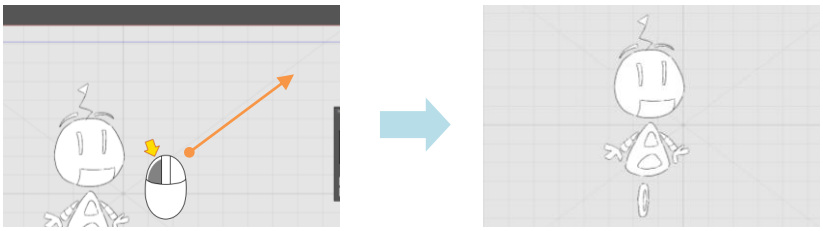
Canvas Magnifier Tool [Ctrl + Space + Drag] or [1] and [2]

Allows you to zoom into the canvas by **Dragging Right**, and zoom out by **Dragging Left**.



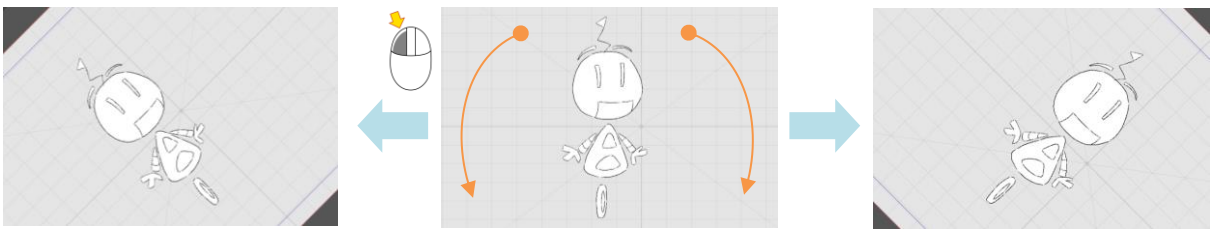
Canvas Pan Tool [Space + Drag]

Allows you to move the canvas by **dragging**.



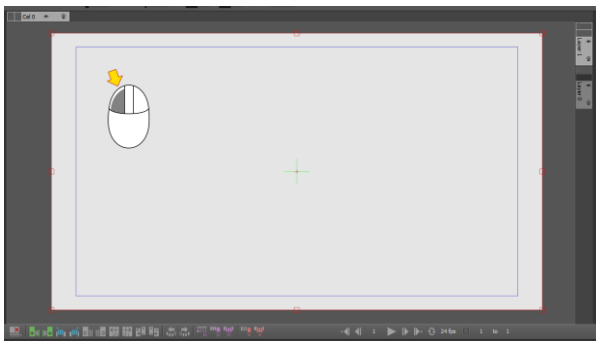
Canvas Rotate Tool [Shift + Space] or [3] and [4]

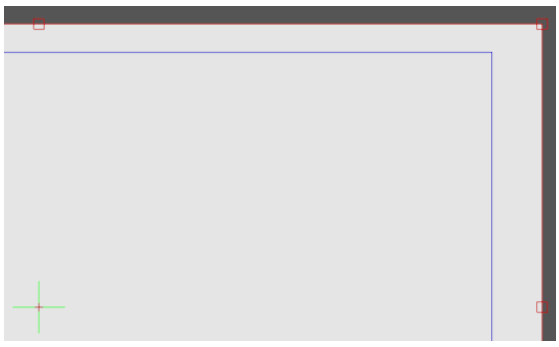
Allows you to rotate the canvas by **dragging** in a clockwise, or anti-clockwise motion.



Camera Tool

Allows you to adjust various camera settings in the property bar. When the tool is selected, the camera frame is outlined in red on the canvas, with adjustment handles.





Resizing, Rotating, Moving the Camera on the Canvas

To **Resize** the camera, **Left Click** and **Drag** on any of the 8 handles.

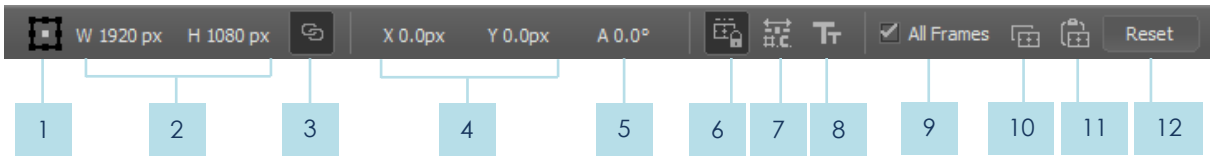
If the **Maintain Aspect Ratio** option is enabled (in Property bar), **dragging** on any of the **4 corner handles** will resize the camera frame proportionally.

Alternatively you can also **Hold Shift** while **dragging** the corner handles.

To **Rotate** the camera, **Left Click** and **Drag** anywhere along the edge of the camera frame.

To **Move** the camera, **Left Click** anywhere within the camera frame and **Drag**.

Camera Tool Properties



1 **Anchor Point**

Allows you to reposition the anchor point for the transformation of the camera frame.

2 **Width and Height (Resizing)**

Resolution of the camera frame, in pixels. Change either value by **dragging** the slider, or **Left Clicking** and typing a specific value.

3 **Maintain Aspect Ratio**
When enabled, changing either the width or height of the camera will lead to a corresponding change in the other dimension.

4 **X and Y (Translation)**
Horizontal and Vertical positions of the centre of the camera frame. A positive **X** value moves the camera frame right, whereas a positive **Y** value moves the camera frame up.

5 **Angle (Rotation)**
Rotation angle of the camera frame. A positive value rotates the camera frame in the clockwise direction, whereas a negative value rotates the camera frame in the anti-clockwise direction.

6 **Scale Animation Information with Camera**
Locks peg holes and animation information fields so that they can be transformed proportionally with the camera frame.

7 **Customize Animation Information**
Allows you to resize the various sections of the animation information module. For example, this can help you customize the layout to fit your animation paper.

8 **Edit Animation Information**
Allows you to enter information about the scene or cut.

9 **All Frames Mode**
When enabled, any changes to the camera frame will be applied to all the frames in the same layer.

10 **Copy Camera Frame**
Copies the camera properties in the selected frame.

11 **Paste Camera Frame**
Applies the copied camera properties into the selected frames.

12 **Reset**
The translation, scaling and rotation values of the camera frame are reverted to their original values.

Offpeg Tool

Allows you to adjust offpeg image settings in the property bar. When the tool and a offpeg image are **both** selected (in property bar or Onion Skin), the offpeg frame is outlined in red on the canvas, with adjustment handles.

Resizing, Rotating, Moving the Offpeg Frame on the Canvas

To **Resize** the Offpeg frame, **Left Click** and **Drag** on any of the 8 handles.

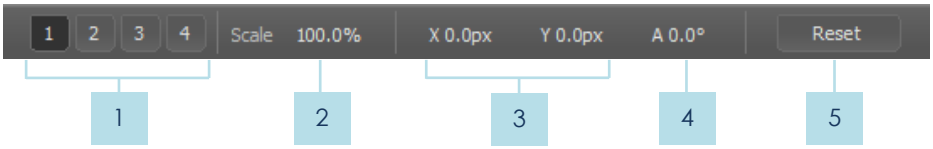
If the **Maintain Aspect Ratio** option is enabled (in Property bar), **dragging** on any of the **4 corner handles** will resize the offpeg frame proportionally.

Alternatively you can also **Hold Shift** while **Dragging** the corner handles.

To **Rotate** the offpeg frame, **Left Click** and **Drag** anywhere along its edge.

To **Move** the offpeg frame, **Left Click** anywhere within the frame and **Drag**.

Offpeg Tool Properties



1 **Offpeg Frame Selection**

Shows the offpeg frame numbers. You can also manipulate offpeg frames by selecting them here.

2 **Scale**

Width and Height of the offpeg frame, in pixels. Change either value by **dragging** the slider or **Left Clicking** and typing a specific value.

3 **X and Y (Translation)**

Horizontal and Vertical positions of the centre of the offpeg frame, in pixels. A positive **X** value moves the image right, whereas a positive **Y** value moves the image frame up.

4 **Angle (Rotation)**

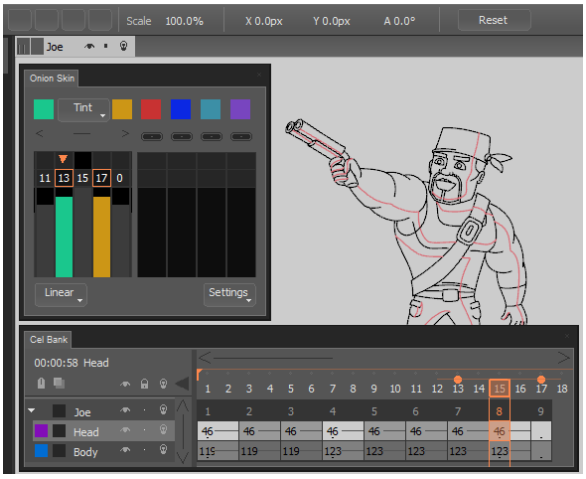
Rotation angle of the offpeg frame. A positive value rotates the image in the clockwise direction, whereas a negative value rotates the image in the anti-clockwise direction.

5 **Reset**

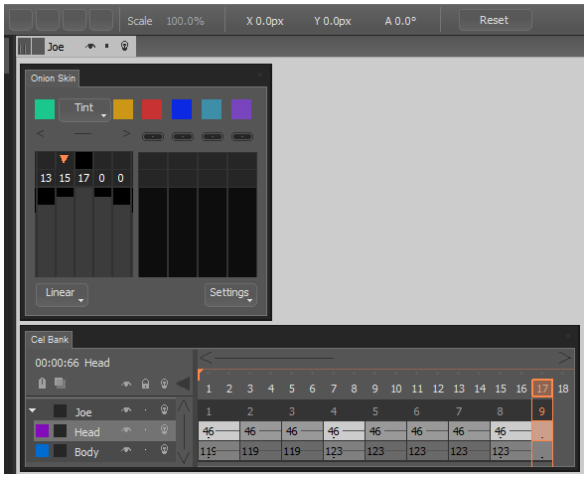
The translation, scaling and rotation values of the offpeg frame are reverted to their original values.

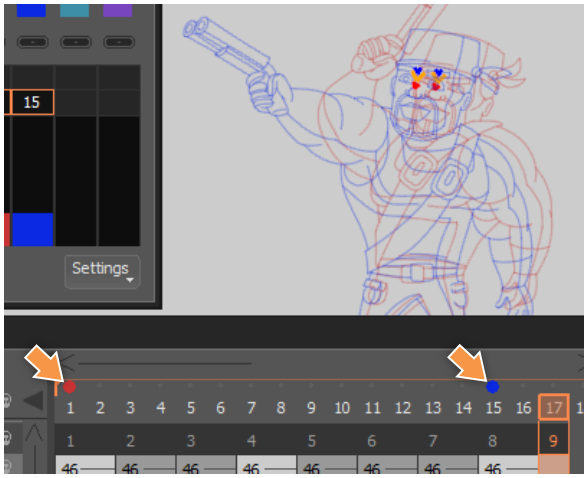
Using the Offpeg Tool

In this example, you need to draw a new frame for the character.

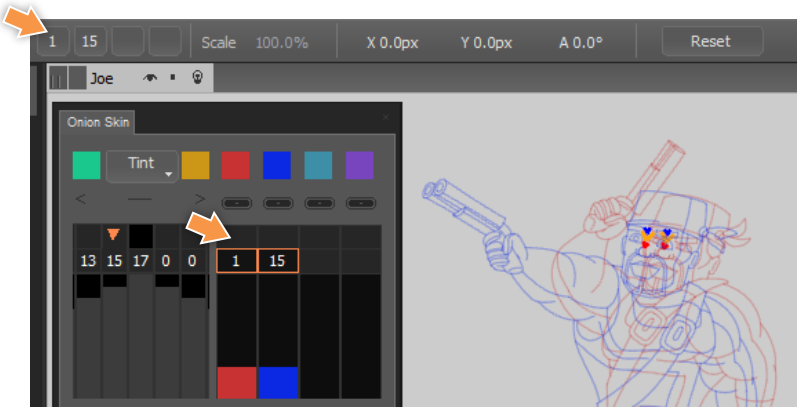


To ensure that the drawing is consistent with the other frames, you can use the Offpeg frame feature. First, select the 2 frames that will serve as references. You can do so from the Cel Bank.

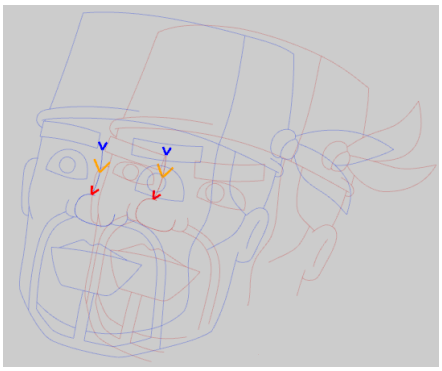


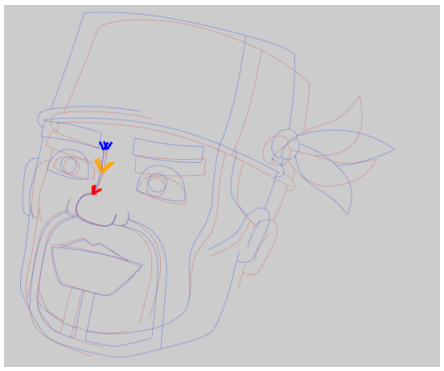


You can see the frame numbers in the Onion Skin Panel and the Offpeg Tool.

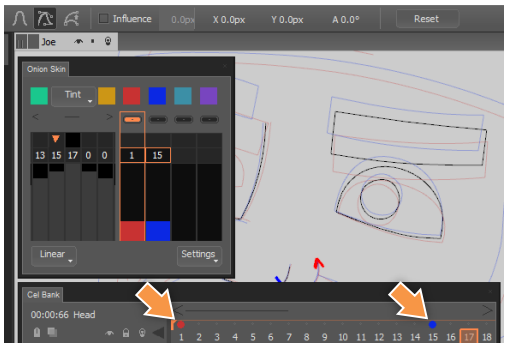


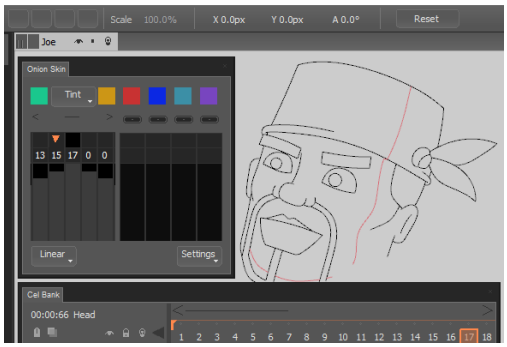
Because the drawings are slightly apart, you will need to position them closer together to draw your new frame more accurately. To select a frame, you can **Left Click** on the frame number in the Offpeg Tool properties, or on the active offpeg frame button in the Cel Bank. With the Offpeg Tool selected, you can now **Left Click** and **Drag** the Offpeg frame to reposition, scale or resize it in the canvas.





After the drawing is done, you can clear the offpeg frames by **Left Clicking** on the Offpeg Frame Indicators in the Cel Bank, or by using the Clear All Offpeg Frames option from the Onion Skin Panel settings.





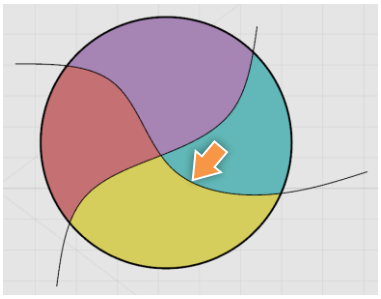
Stroke Rendering Modes

To make hand drawn animation convincing, 3 dimensional movements like turning and rotation are frequently employed. As a result, the features of an object or character are always changing, appearing and disappearing in animation sequences.

To help with this aspect of animation production, we have introduced the concept of **Stroke Rendering Modes** and **Color Separation Modes** in CACANi. Strokes or segments of strokes can be rendered invisible or hidden so that they do not show up on the exported images.

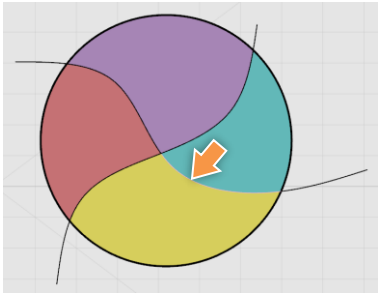
Normal Stroke Rendering Mode

Strokes drawn are displayed on the canvas and can be exported. They can form closed regions.



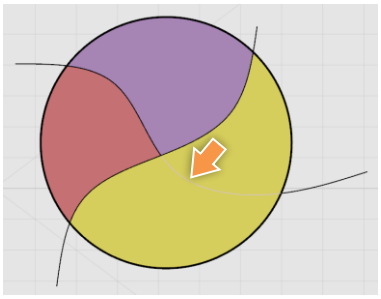
Invisible Stroke Rendering Mode

Strokes drawn are displayed as pink paths on the canvas and cannot be exported. Invisible strokes or stroke segments cannot be seen, but they can still form closed regions.



Hidden Stroke Rendering Mode

Strokes drawn are displayed as purple paths on the canvas and will not be exported. Hidden strokes or stroke segments cannot be seen and cannot form closed regions.

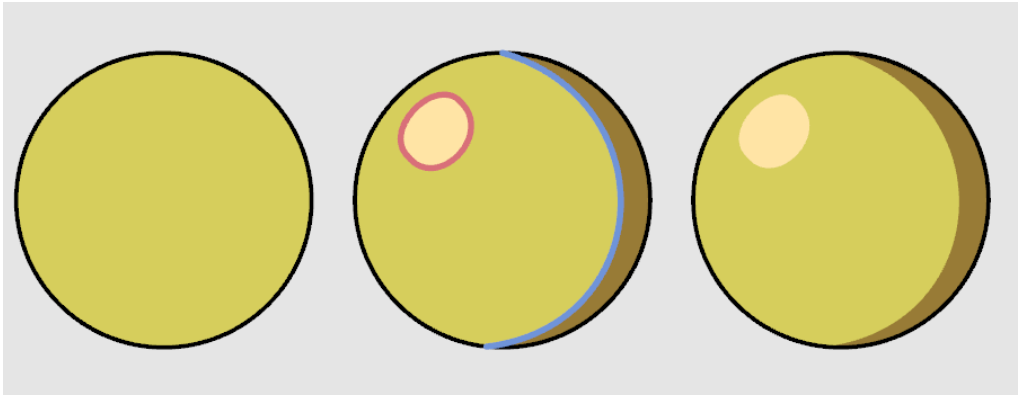


Color Separation Modes

In addition to the 3 stroke rendering modes mentioned above, we have another 6 color separation modes to allow you to draw color separation strokes.

Understanding Color Separation Strokes

These are strokes that you can use to draw regions like highlights or shaded regions of an object or character. These strokes can be turned off (via the Color Separation Display Mode) and will not appear in the final export of the drawings.



No Color Separation Strokes drawn	Color Separation Display Mode **Enabled**	Color Separation Display Mode **Disabled**

Color Separation Modes VS Color Separation Layers

The main difference lies in that when using **Color Separation Modes**, the strokes are within the same layer as the normal visible strokes. In addition, the Bone Tool can be used to group them together with the normal strokes.

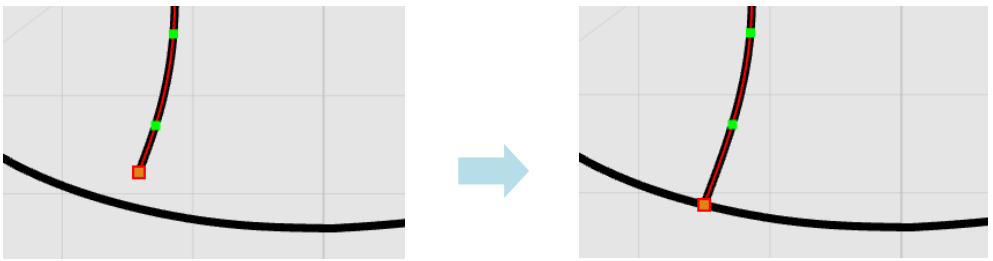
The **Color Separation Layers** are discrete layers, so ALL strokes within are color separation strokes. However, that means that these strokes cannot be grouped with strokes in other layers.

Drawing Controls

The Drawing Controls holds the drawing mode options and the Undo and Redo tools. The drawing mode options, when enabled, affect the drawing and selection of strokes in different ways, so it is best for the artist to learn and be familiar with their usages in different scenarios.

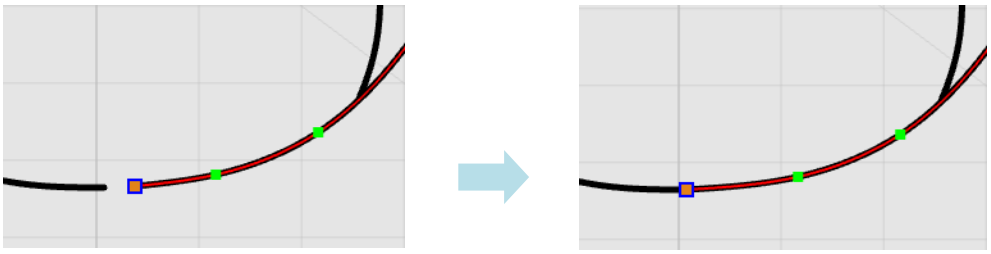
Cling to Stroke Mode

When enabled, the cursor will snap to the nearest stroke.



Cling to Stroke End Mode

When enabled, the cursor will snap to the nearest stroke end.



Cling Range

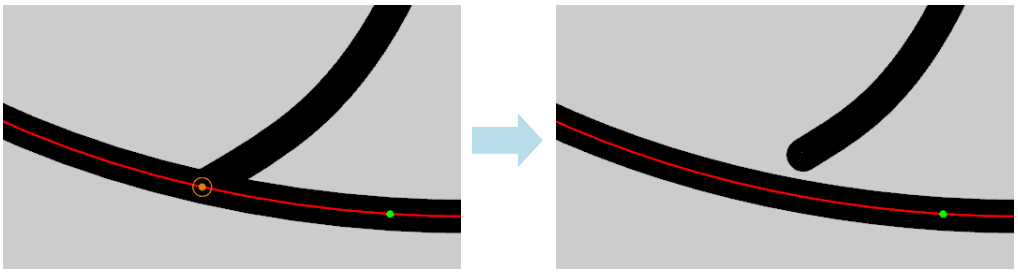
You can adjust the range (based on screen pixels) at which the clinging will come into effect. Note that at higher zoom levels, the perceived range will be smaller.

IMPORTANT: Clinging is a crucial step to ensure the strokes form closed regions for painting later.

Please see **Chapter 05 – Cling Shortcut Keys** for more information on its uses.

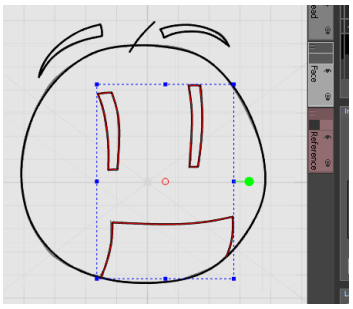
Add Points When Clinging

When enabled, after snapping to a stroke, a connection point is also added to the stroke. When the vertical stroke is moved away, the connection point is removed as well. This helps to reduce any gaps appearing when transforming the strokes.

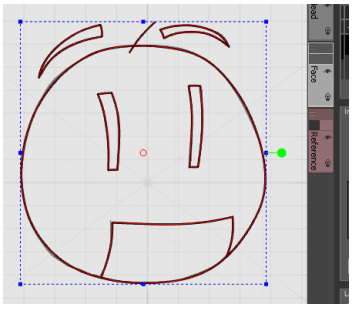


Cross Layer Operations Mode

When enabled, you can select and edit strokes in different layers, without having to select the layer first.



Disabled: Only strokes in active layer are selected



Enabled: Strokes in all layers (within cel) are selected

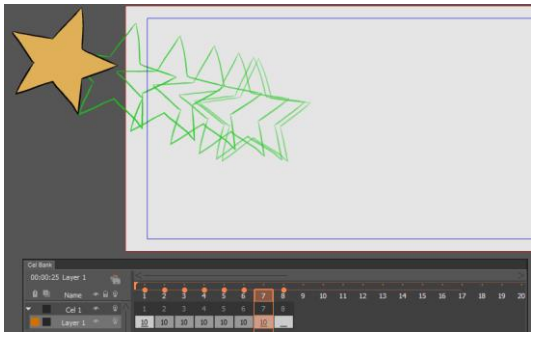
Cross Cel Operations Mode (Beta)

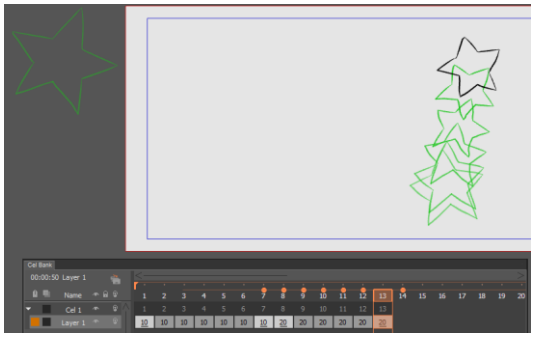
When enabled, you can select and edit strokes in different layers, without having to select the cel or layer first. Currently, only selection of strokes is supported.

New Stroke Index Mode

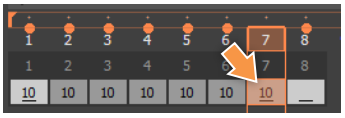
When enabled, any unmatched strokes will be disregarded, and strokes drawn are assigned new stroke index numbers. This is needed when **drawing new elements that are not in the previous key frame**, and **unmatched strokes exist in the current frame**.

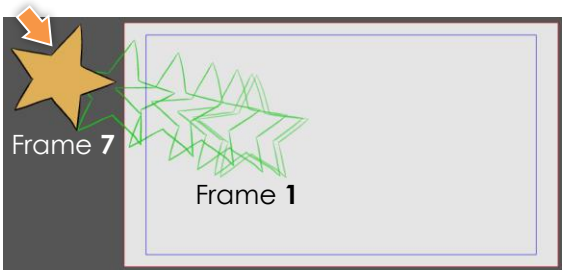
In the example below, one star moves out of the canvas at Frame 7, and a second star appears from Frame 8 to Frame 13. Without enabling the **New Stroke Index Mode**, CACANi will keep prompting you to draw the first star in Frames 8 – 13.



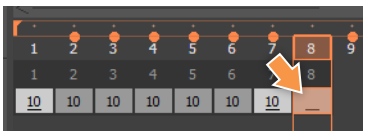


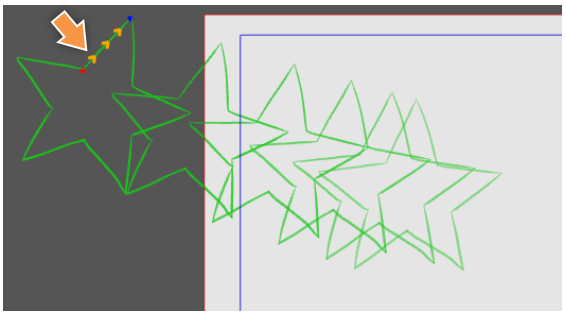
To draw the above example, 10 strokes are drawn for the first star in the first 2 key frames, and then 5 in-between frames are generated.





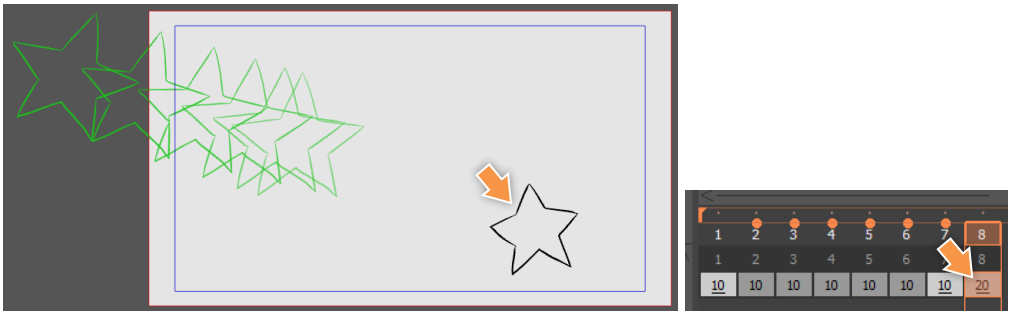
Moving to the empty third key frame (Frame 8), CACANi will prompt you to draw the matching strokes.



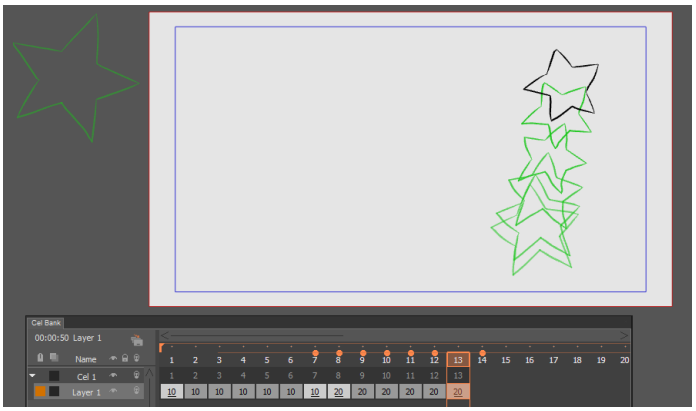


However, from Frame 8 onwards, since the star has disappeared from the canvas, we do not need to draw the star anymore.

Hence, to skip the drawing of the first star, enable **New Stroke Index Mode**. This will instruct CACANi to **disregard the matching strokes in the previous frame**, and allow you to draw new strokes, which in this case, is the second, smaller star.



Now, from Frame 9 onwards, you will not be prompted to match those strokes anymore.



However, if you need to draw the first star again in subsequent frames, that can be done by changing the Matching Frame to display Frame 1's Onionskin Image.
Please refer to **Chapter 08 – Onion Skin Panel: Matching Frame**.

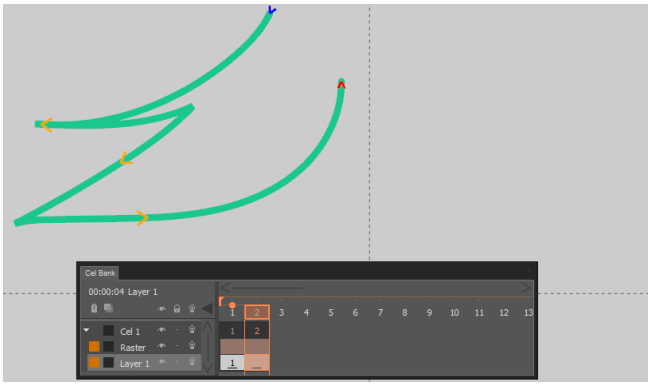
Auto Stroke Grouping Mode

When enabled, every stroke drawn will be grouped individually. It can be useful when used together with the Bone Tool.

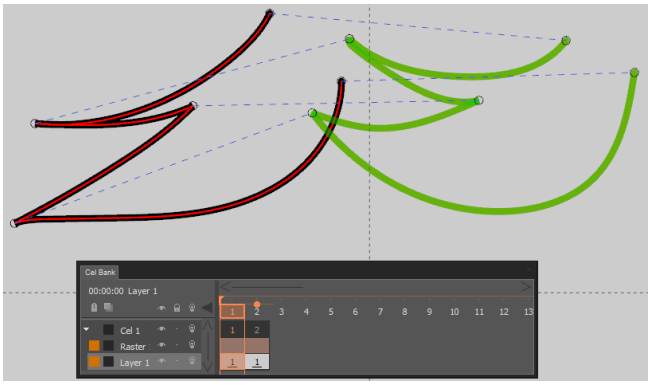
Auto Add Feature Point Mode

When enabled, every stroke drawn will have feature points added to the its ends automatically. This is useful when trying to change the behavior of the inbetween animation.

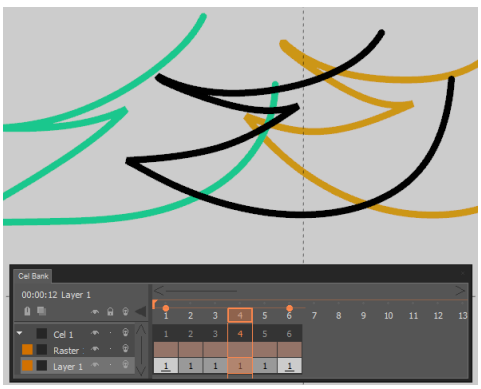
This is an example where the stroke is more complex and has 2 sharp corners.

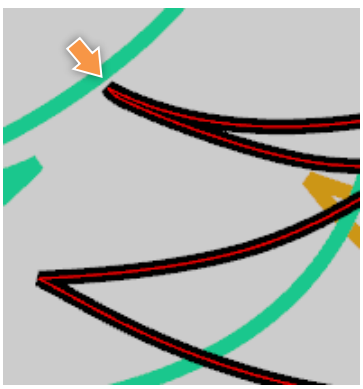


With the mode enabled, feature point paths are added after the stroke is drawn in the 2nd key frame.

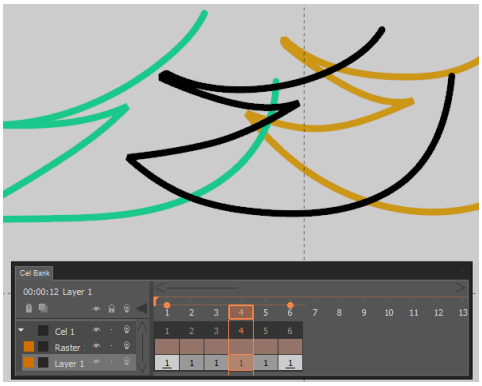


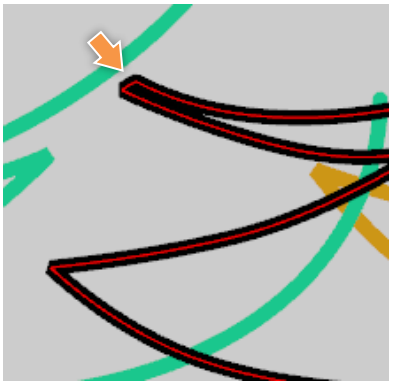
When generating the inbetween frames, the sharp corners are better maintained.





Without the mode, the results are not as good.





However, because the feature point paths are automatically generated, in certain scenarios the results might still require additional adjustments.

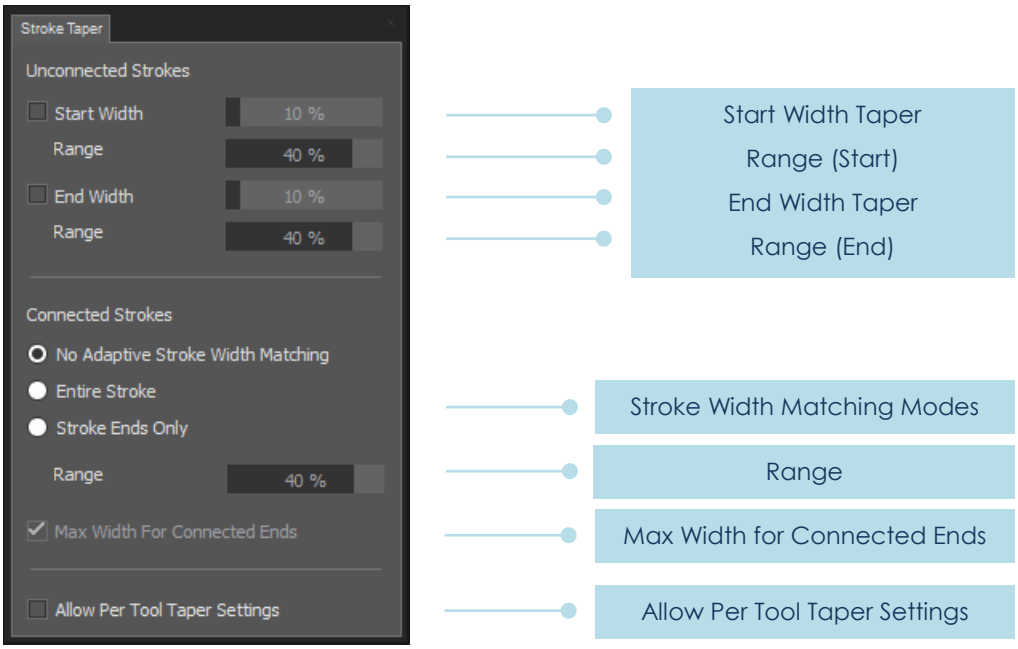
(1.x) Undo Previous Action

(1.x) Redo Next Action

Moved to Playback Bar.

Stroke Taper Panel

Controlling the width of your strokes allows you to express nuanced details in your drawings. However, it is not easy for the animator to get consistent results across so many frames. With the Stroke Taper Panel, you can adjust the width of a stroke as it starts or ends and how it connects to another stroke.



Start Width Taper

Affects the starting width of the stroke. You can enable this option by clicking on the checkbox.

Range (Start)

Determines how much of the stroke is affected by the Start Width Taper option. Affects the 1st half of the stroke.

End Width Taper

Affects the ending width of the stroke. You can enable this option by clicking on the checkbox.

Range (End)

Determines how much of the stroke is affected by the End Width Taper option. Affects the 2nd half of the stroke.

Stroke Width Matching Modes

These modes allow you to choose what happens when a stroke connects to another stroke.

No Adaptive Stroke Width Matching

Modes are disabled.

Entire Stroke

Stroke width matching affects the whole stroke.

Stroke Ends Only

Stroke width matching affects only the ends of a stroke.

Range

Determines how much of the stroke is affected by the Stroke Ends Only mode. Affects both ends of the stroke. A 50% value means that the stroke width adjustment will affect up to 50% of the stroke on the connected end.

Max Width for Connected Ends

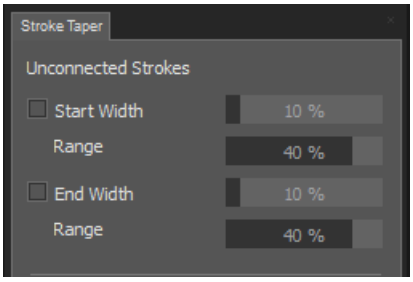
When enabled, the ends of both connecting strokes will be set to the maximum stroke width value of the existing stroke. When disabled (default), the ends of both connecting strokes will be set to the current stroke width value of the existing stroke.

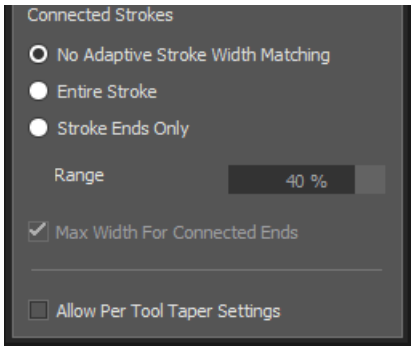
Allow Per Tool Taper Settings

By default (disabled), the settings in the panel will apply to all Drawing Tools, Selection Tool and Stroke Editor. When enabled, you can configure the taper settings for each tool.

Using the Stroke Taper Panel

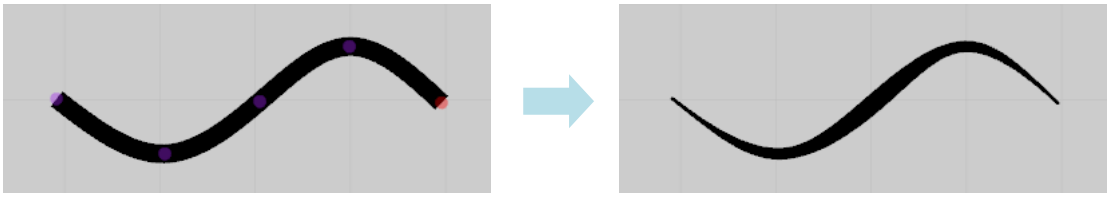
The panel is divided into 2 sections. The 1st section has properties to adjust the width of unconnected stroke ends, while the 2nd section has properties affecting the width of connected stroke ends.



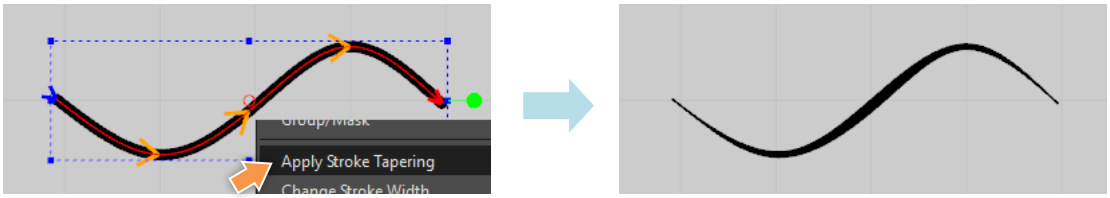


You can enable and disable the Stroke Taper Panel from the Panel Display Bar.

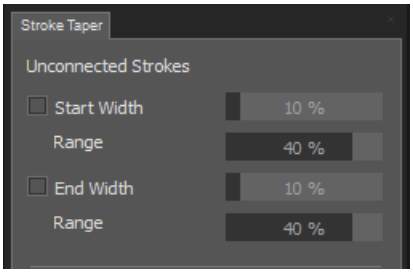
You can use the stroke taper properties together with the Drawing Tools, Selection Tool, the Stroke Editor and the Clean Up Tool. To do so, you need to first select any of the above tools, then configure the properties. This is because each tool can have different stroke taper properties. Subsequently the tapering effect will work after the tool is used.

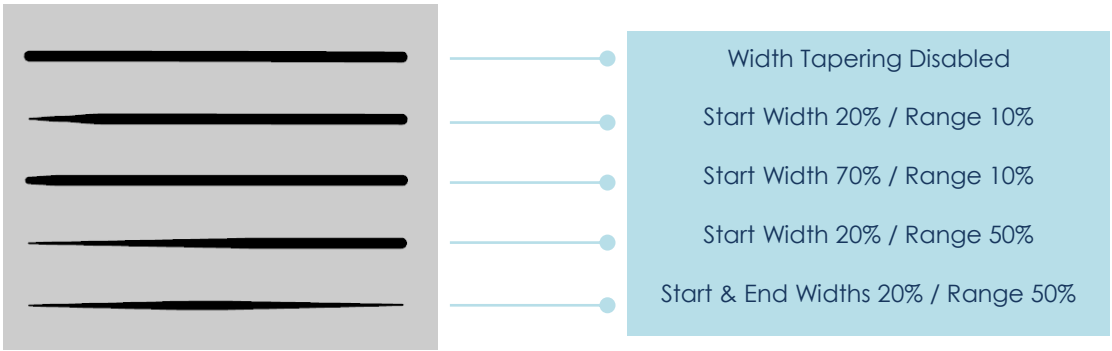


However, the Selection Tool is an exception. To use the stroke tapering with it, first select the stroke or strokes, then **Right Click** and select Apply Stroke Tapering.

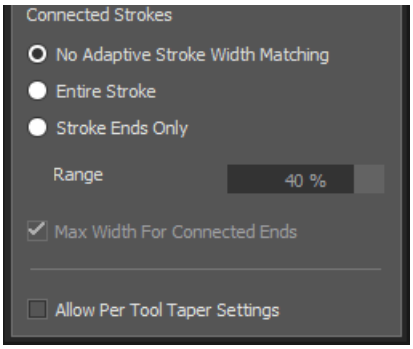


This is an example of the tapering when different values are set for the Unconnected Strokes section.

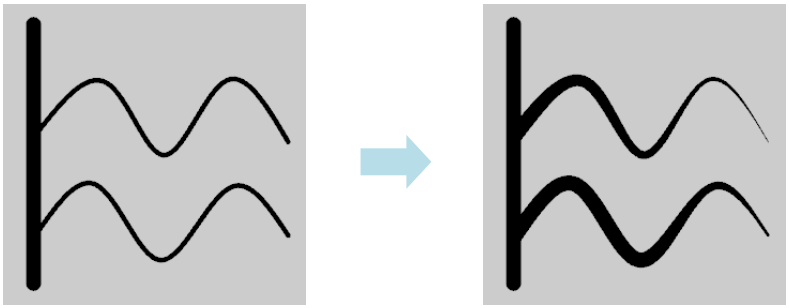




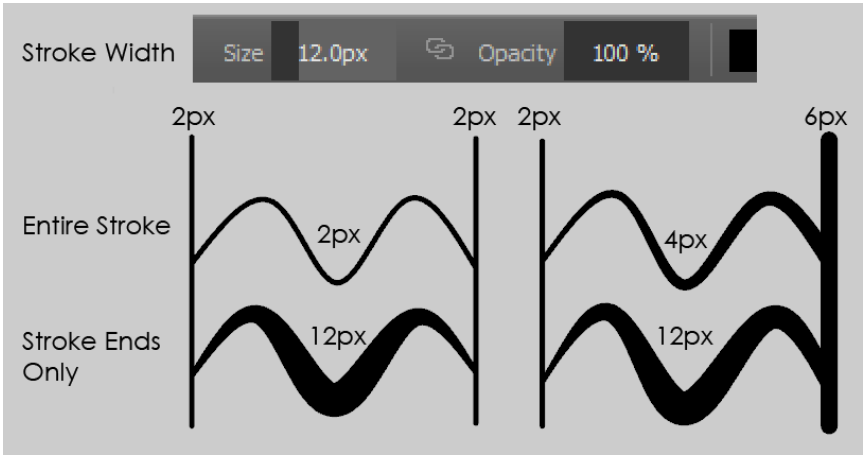
In addition to the ends of unconnected strokes, you can adjust how strokes connect to each other as well.



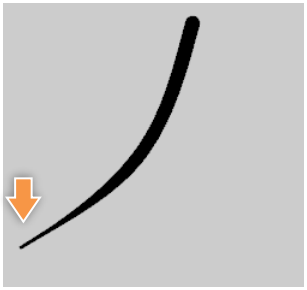
When either the Entire Stroke or Stroke Ends Only mode is enabled, the connected stroke end will match the width of the stroke it's connected to.

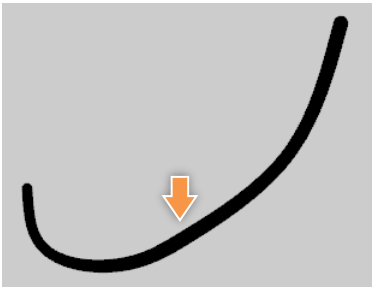


The difference between the Entire Stroke and Strokes Ends Only modes can be seen when drawing a stroke that is connected on both ends. When the Entire Stroke mode is enabled, the maximum stroke width is determined by either of the connected ends. When using Stroke Ends Only mode, the maximum stroke width is determined by the tool's Stroke Width property.



The Max Width for Connected Ends mode is useful when you want to thicken the stroke width when 2 strokes are connected. The width value is based on the thickest width value in the existing stroke.

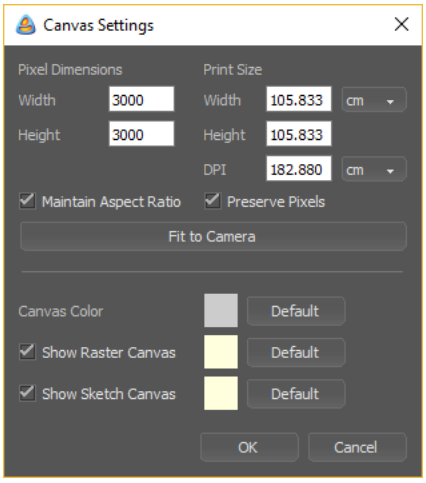




You can also set shortcut keys to enable or disable the options from the keyboard.

Changing Canvas Settings

Other than drawing tools, there will be times when you need to adjust the canvas to suit particular scenes. The canvas can be changed by selecting the **Canvas Settings…** option in the **File menu**. In this option, you can adjust the canvas size, DPI and canvas colors.

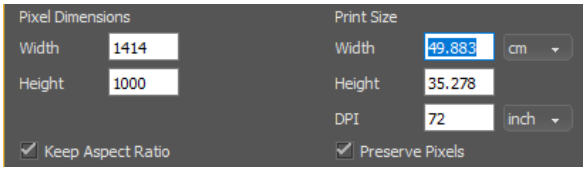


Pixel Dimensions: Width and Height

You can manually specify the width and height of the canvas, in pixels.

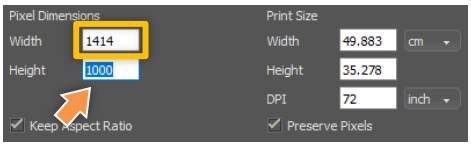
Print Size: Width, Height and DPI

You can also specify the physical width and height dimensions in centimeters or inches. There is an additional option, the **DPI** or Dots per Inch. In CACANi, it is equivalent to PPI, or Pixels per Inch. This is useful when you have to print out the images.



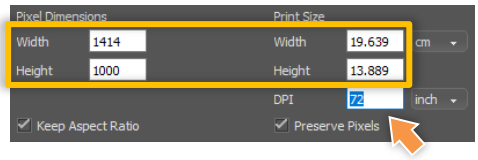
Keep Aspect Ratio

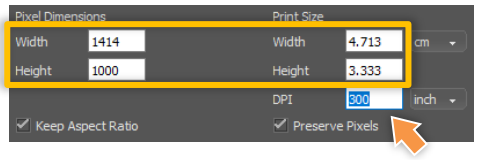
When enabled, the **Width** and **Height** of the canvas is scaled proportionally whenever one of the values is changed.



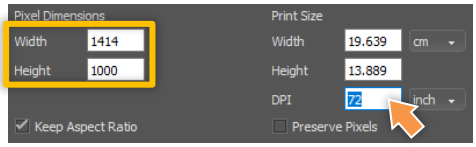
Preserve Pixels

When enabled, the Print Size **Width**, **Height** and **DPI** will be adjusted automatically to fit the original pixel dimensions into the defined values. The **Keep Aspect Ratio** option will also be enabled automatically. This is useful when you do not want the original pixel dimensions of the canvas to change.



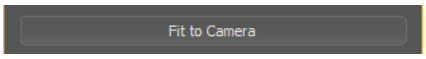


Conversely, when the option is disabled, changing the DPI value will increase the pixel dimensions of the canvas.



Fit to Camera

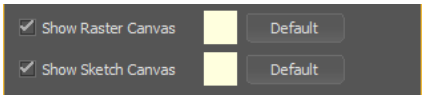
Allows you to assign the camera dimensions as the canvas dimensions as well.



Changing Canvas Colors

Allows you to change the default canvas color to other values. **Left Click Twice** on the **Color Selection Box** to choose a different color. **Left Click** on the **Default** button to reset any color changes.

You can also choose to show the Raster Layer and Sketch Layer canvases with different colors. If you do not want those layers to have different canvas colors, turn off the checkboxes.



05

Selecting & Editing Strokes

Refining your Drawings in CACANi

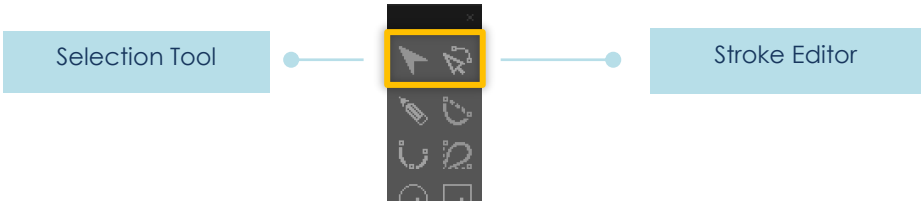
With CACANi's paperless workflow, we have created tools that will help you produce animation drawings of utmost finesse. From stroke selection to gap closing to segment hiding, these editing tools will allow you to prepare the sequence for coloring.

Common Tool Properties

There are a number of tools which share similar property controls. As such, we'll have a more thorough explanation when the property is first listed, while subsequent similar properties will only make references to these descriptions.

Editing Tools

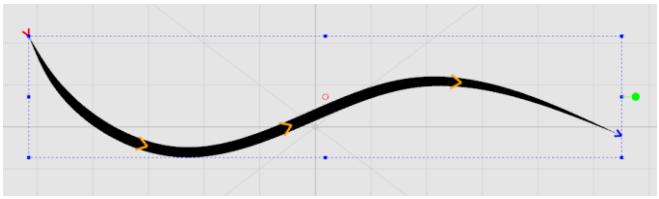
The Editing Tools are used for stroke and image selection and adjustments.



Selection Tool

Allows you to make selections and adjust strokes, groups, and images on the canvas. **Left Click** on the element to select it or **drag** a selection box around multiple elements to select them.

Hold Down Shift to select multiple elements. **Hold Down** [**Alt**] to deselect elements. After selecting an element, its bounding box will appear.



To **move selected elements**, **Left Click** on one of the elements and **drag** to the desired location. **Left Clicking** on the canvas, either within or outside of the bounding box, clears the selection.

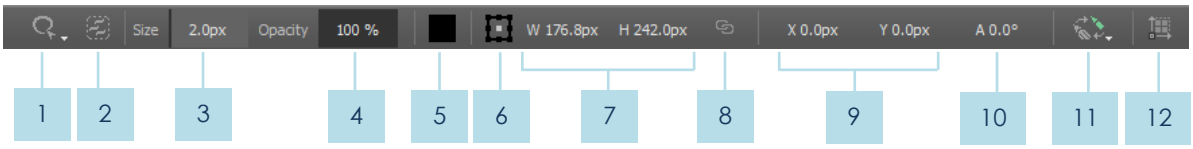
To **resize selected elements**, **Left Click** and **Drag** on one of the bounding box handles. To resize elements **proportionally**, **Hold Shift** while **Left Clicking** and **dragging** the handles.

To **rotate selected elements**, **Left Click** and **Drag** the green circular handle in a clockwise or anti-clockwise motion. The elements will be rotated with respect to the pivot (small red circle). If you want to change the centre of rotation, **Left Click** and **Drag** the pivot to the desired position before rotating.

Multiple Frames Transformation

To move, resize or rotate elements across multiple frames, you will need to select the desired frames in the Cel Bank.

Selection Tool Properties



1 **Selection Modes**

Allows you to select strokes using **Lasso Selection**, **Box Selection** or **Path Selection** Modes.

Lasso Selection Mode

Allows you to select strokes by forming a freeform region around the strokes. This will select strokes partially within the freeform region as well.

Box Selection Mode

Allows you to select strokes by forming a rectangular region around the strokes. This will select strokes partially within the rectangular region as well.

Path Selection Mode

Allows you to select strokes by moving your cursor over the strokes. Strokes touched by the cursor path will be selected.

2 **Group Select Mode**

When disabled, you can select and edit strokes in groups and masks.

(1.x) Apply to Colored Regions

Updates colored regions whenever strokes are moved, scaled or rotated. Removed after improvement in stroke connections.

3 **Size**

Sets the maximum width of selected strokes.

4 **Opacity**

Sets the opacity / transparency of selected strokes.

5 **Stroke Color Selection Box**
You can set the stroke color by **Double Clicking** to bring up the **Color Selection Box** dialog box. When done, just **Left Click OK** to confirm.

6 **Anchor Point**
Allows you to reposition the anchor point for the transformation of selected elements.

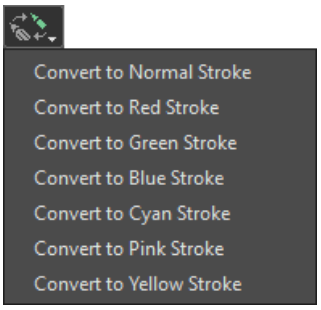
7 **Width and Height (Resizing)**
Size and Height of the selected elements, in pixels. Change either value by **dragging** the slider, or **Left Clicking** and typing a specific value.

8 **Maintain Aspect Ratio**
When enabled, changing either the width or height of selected elements will lead to a corresponding change in the other.

9 **X and Y (Translation)**
Horizontal and Vertical positions of the centre of the selected elements. A positive **X** value Shifts the elements right, whereas a positive **Y** value Shifts the elements up.

10 **Angle (Rotation)**
Rotation angle of the selected elements. A positive value rotates the elements in the clockwise direction, whereas a negative value rotates the elements in the anti-clockwise direction.

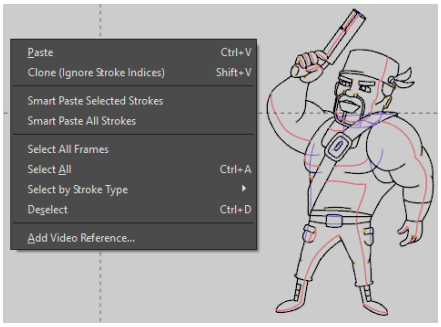
11 **Stroke Rendering Mode Conversion**
Allows you to convert between the different stroke modes.

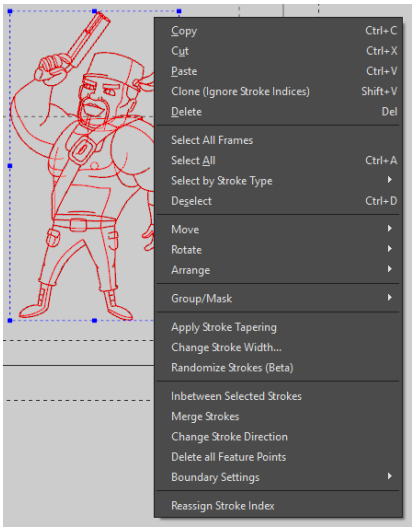


12 **Set Single Pivot (Multiple Frames Only)**
When enabled, all selected frames will rotate around a single point on the canvas.

Selection Tool Context Menu

When you have strokes selected, there are additional functions that you can use. You can see them when you perform a **Right Click** in the canvas. There are 2 different context menus: one when nothing is selected and another when the cursor is over a selection of strokes.



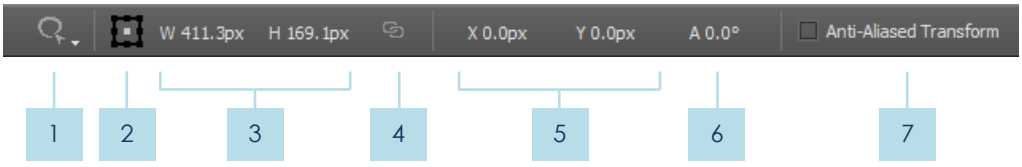


Please see **Chapter 03 – Edit Menu** and **Chapter 03 – Objects Menu** for explanation on the various functions.

Selection Tool (Raster Layer)

You can use the Selection Tool to adjust and transform your drawings in the raster layer.

Selection Tool Properties (Raster Layer)



1 **Selection Modes**

Allows you to select sections of your drawing using **Lasso Selection** or **Box Selection** Modes.

Lasso Selection Mode

Allows you to select strokes by forming a freeform region around the strokes. This will select strokes partially within the freeform region as well.

Box Selection Mode

Allows you to select strokes by forming a rectangular region around the strokes. This will select strokes partially within the rectangular region as well.

2 **Anchor Point**
Allows you to reposition the anchor point for the transformation of selected elements.

3 **Width and Height (Resizing)**
Size and Height of the selection, in pixels. Change either value by **dragging** the slider or **Left Clicking** and typing a specific value.

4 **Maintain Aspect Ratio**
When enabled, changing either the width or height of the selection will lead to a corresponding change in the other dimension.

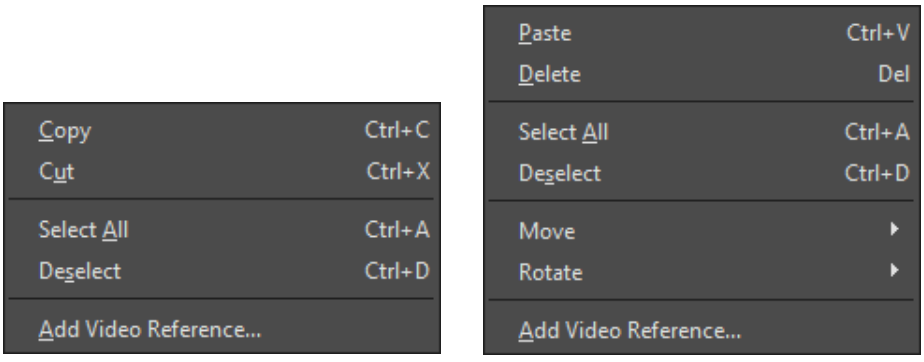
5 **X and Y (Translation)**
Horizontal and Vertical positions of the centre of the selection, in pixels. A positive **X** value moves the selection right, whereas a positive **Y** value moves the selection frame up.

6 **Angle (Rotation)**
Rotation angle of the selection. A positive value rotates the selection in the clockwise direction, whereas a negative value rotates the selection in the anti-clockwise direction.

7 **Anti-Aliased Transform**
When enabled, non-transparent pixels along selection edges are smoothed.

Raster Context Menu

When you have sections of your drawing selected, there are additional functions that you can use. You can see them when you perform a **Right Click** in the canvas. There are 2 different context menus. You will see the first when nothing is selected, or a selection is made but not cut or copied. The second context menu is available when a selection is cut or copied.



Please see **Chapter 03 – Edit Menu** and **Chapter 03 – Objects Menu** for explanation on the various functions.

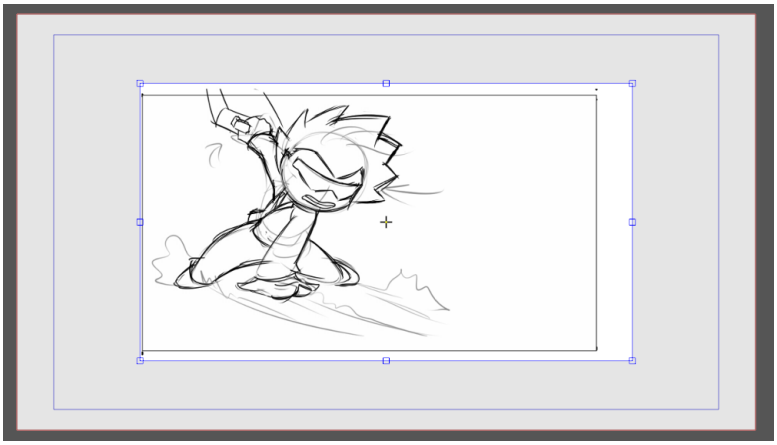
Selection Tool (Image Layer)

You can use the Selection Tool to adjust and unload images as well.

Loading / Unloading Images

Please see **Chapter 07 - Loading Images** on how to load external images.

To unload an image, the **Image layer** in the **Cel Bank** must be active. Then use the Selection Tool to click on the image on the canvas. It will be outlined in red. **Right Click** to bring up the Context Menu, and then select **Remove Selected Images**.



Resizing, Rotating, Moving the Image on the Canvas

To adjust an image, the **Image layer** in the **Cel Bank** must be active. Then use the Selection Tool to click on the image on the canvas. It is outlined in red, with adjustment handles.

To select multiple images, **Hold Shift** and **Left Click** on each of the images. Alternatively, **Left Click** and **Drag** the cursor over the images to select them.

To **Resize** the image(s), **Left Click** and **Drag** on any of the 8 handles.

If the **Maintain Aspect Ratio** option is enabled (in Property bar), **dragging** on any of the **4 corner handles** will resize the image proportionally.

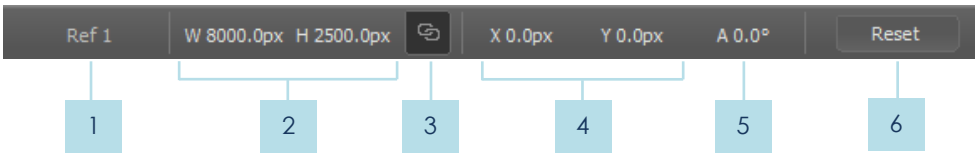
Alternatively, you can also **Hold Shift** while **dragging** the corner handles.

To **Rotate** the image(s), **Left Click** and **Drag** anywhere along the edge of the image.

To **Move** the image(s), **Left Click** anywhere within the image and **Drag**.

Selection Tool Properties (Image Layer)

When an image is selected, the Selection Tool properties will have different options.



1 **Layer Name**

Shows the name for the selected layer.

2 **Width and Height (Resizing)**

Size and Height of the image, in pixels. Change either value by **dragging** the slider or **Left Clicking** and typing a specific value.

3 **Maintain Aspect Ratio**

When enabled, changing either the width or height of the image will lead to a corresponding change in the other dimension.

4 **X and Y (Translation)**

Horizontal and Vertical positions of the centre of the image, in pixels. A positive **X** value moves the image right, whereas a positive **Y** value moves the image frame up.

5 **Angle (Rotation)**

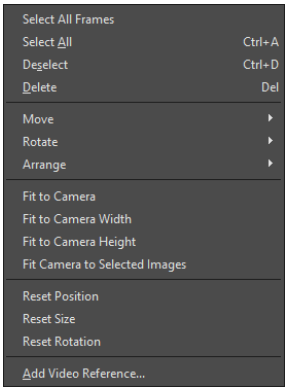
Rotation angle of the image. A positive value rotates the image in the clockwise direction, whereas a negative value rotates the image in the anti-clockwise direction.

6 **Reset**

The translation, scaling and rotation values of the image are reverted to their original values.

Image Context Menu

You can bring up the context menu by **Right Clicking** on an image in the canvas.

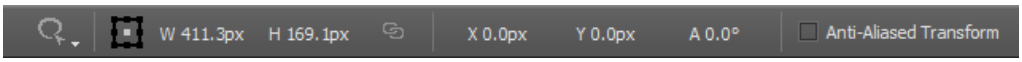


Please see **Chapter 03 – Edit Menu** and **Chapter 03 – Objects Menu** for explanation on the various functions.

Selection Tool (Video Layer)

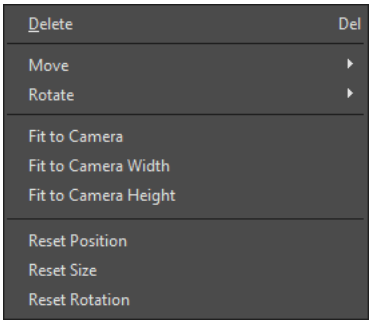
Right after loading a video file, CACANi will switch to the Selection Tool so that you can adjust and transform the video on the canvas. When you **Left Click** outside of the video and change a tool, there will be a dialog to confirm the adjustments. After the confirmation, you can edit and transform sections of the video like a drawing on a raster layer.

Selection Tool Properties (Video Layer)



Please see **Chapter 05 – Selection Tool Properties (Raster Layer)**.

Video Context Menu

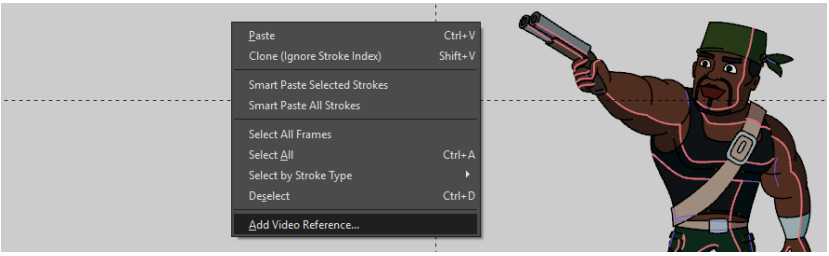


Please see **Chapter 03 – Edit Menu** and **Chapter 03 – Objects Menu** for explanation on the various functions.

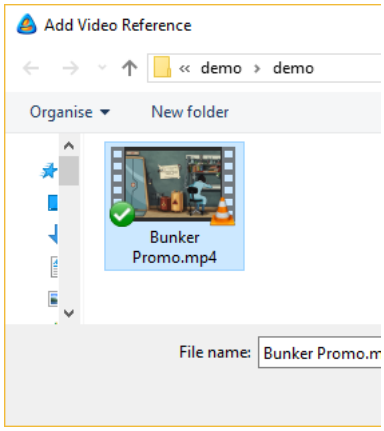
Using Video Reference

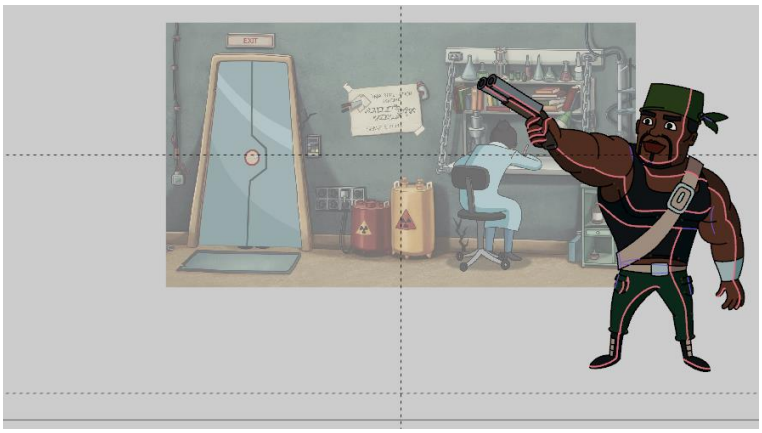
A video reference is different from a video in a video layer. A video reference works like a standalone video player in the canvas, while a video is loaded as video frames in a video layer and is synchronized with other layers in the Cel Bank.

You can add a Video Reference using the Selection Tool. **Right Click** to bring up the context menu.

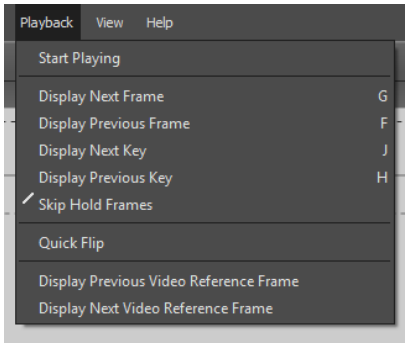


Select the video and you will see it loaded on the canvas. No video layer is created in the Cel Bank.

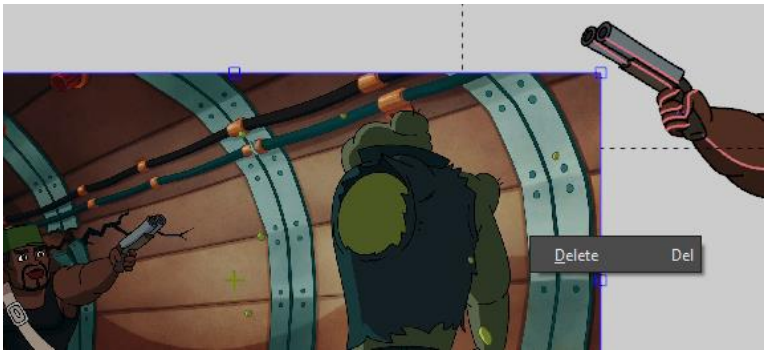




You can move and scale the video on the canvas. You can play the video using the frames slider or using keyboard shortcuts.

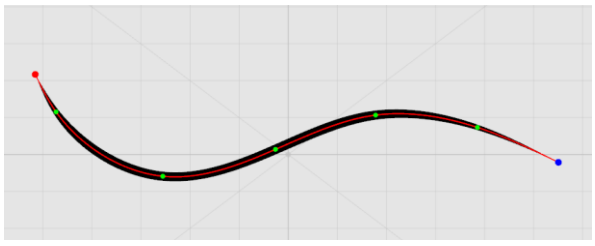


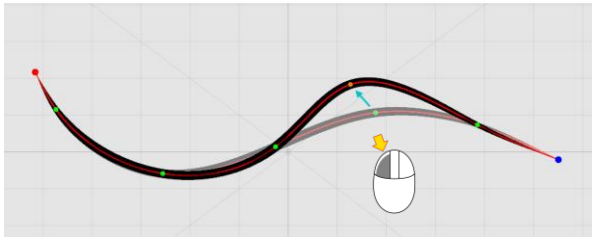
To remove the video reference, **Right Click** on the video and select Delete.



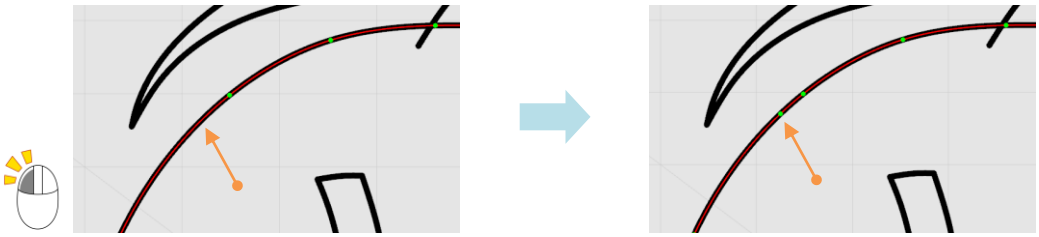
Stroke Editor

Allows you to edit data points on a stroke to adjust its path. To do so, move the cursor over the stroke to highlight it. To change the path of a stroke, **Left Click** and **Drag** on a data point.





To **add a data point**, **Hold Alt** and **Left Click** on any part of the stroke that does not already have a data point. This creates a new data point.

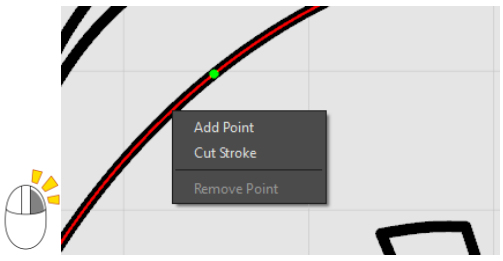


To **remove a data point**, **Hold Alt** and **Left Click** on any existing data point. The selected data point is removed.

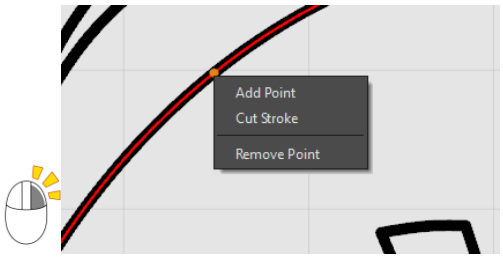
Stroke Editor Context Menu

Alternatively, you can access stroke editing options via the context menu.

Hover over any part of the stroke without a data point and **Right Click** to bring up the context menu. Select **Add Point** to create a new data point.

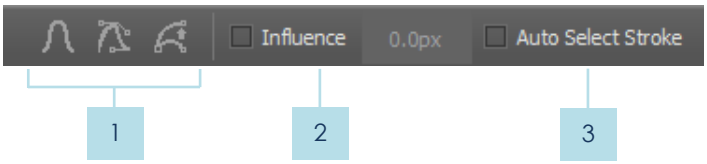


To remove data points, hover over a data point and **Right Click** to bring up the context menu. Select the **Remove Point** option.



A stroke can also be separated into 2 strokes by selecting the **Cut Stroke** option from the context menu. This option can be found in both context menus.

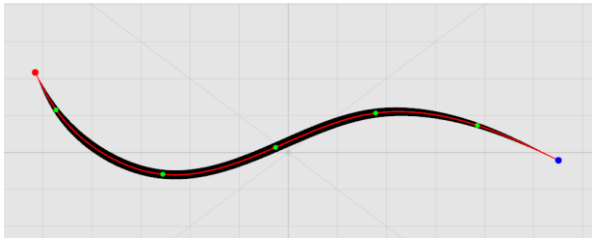
Stroke Editor Properties

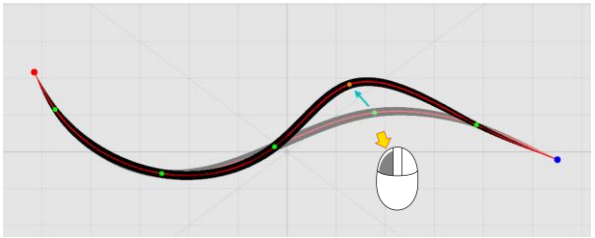


1

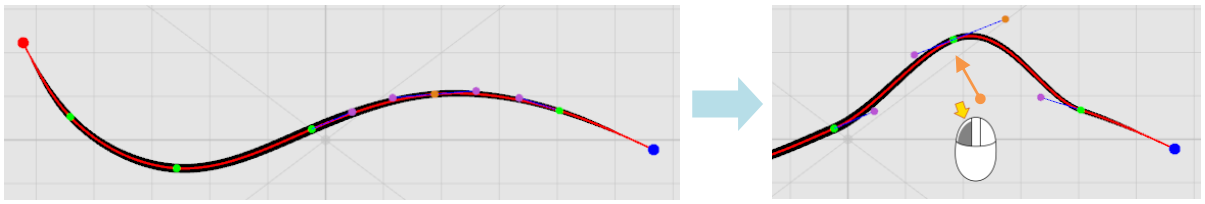
Stroke Edit Modes

When adjusting strokes with **Smooth Edit** mode selected, smoothness within the segments of a stroke is maintained. You can adjust the path of the stroke by **Left Clicking** and **dragging** the data points (green points) and end points (red and blue point). The selected stroke will be highlighted in red, and the selected point will be displayed as an orange dot.



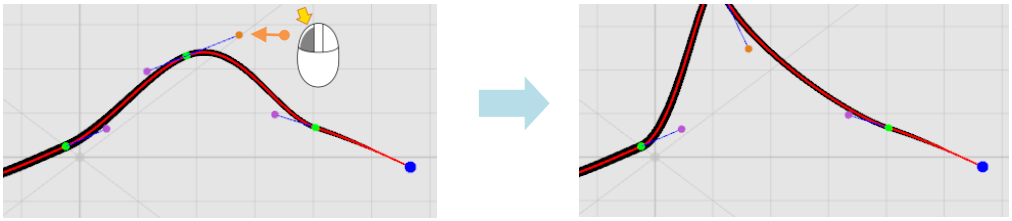


When adjusting strokes with **Control Point Edit** mode selected, segments of a stroke can be either continuous or discontinuous. The control points (purple points) of a selected data point and its adjacent data points are displayed. When editing, only the segment around the selected data point will be affected.

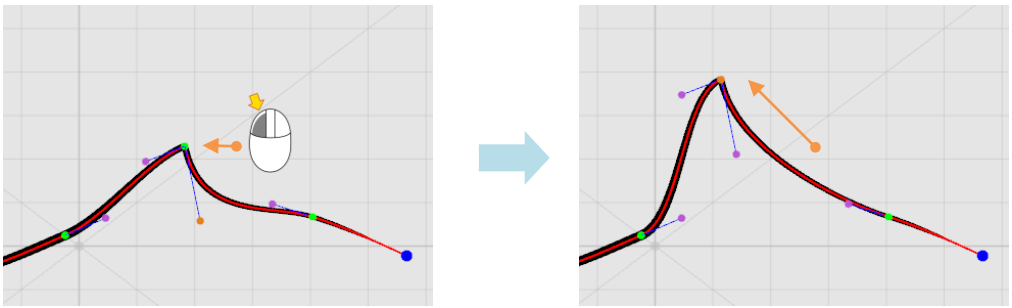


When moving data points, stroke path is continuous.

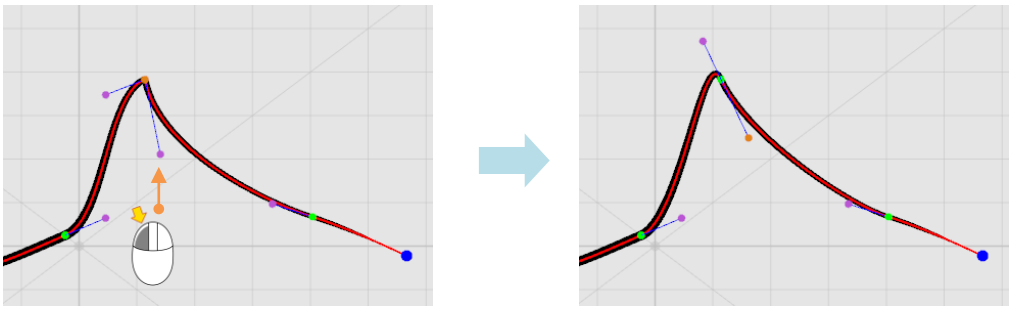
To create sharp corners in the stroke, **Hold Ctrl** while **dragging** the control points. The stroke is now discontinuous.



After the stroke is made discontinuous, the sharp corner will be maintained, even when moving the point.

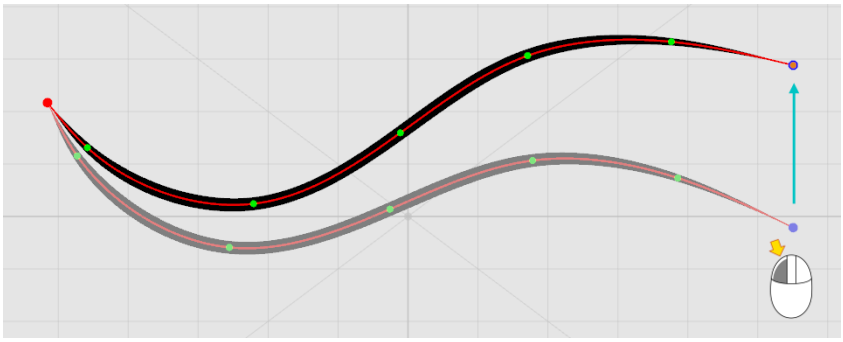


However, moving a control point for a sharp corner will cause the discontinuous segment to be automatically re-adjusted into a continuous segment.



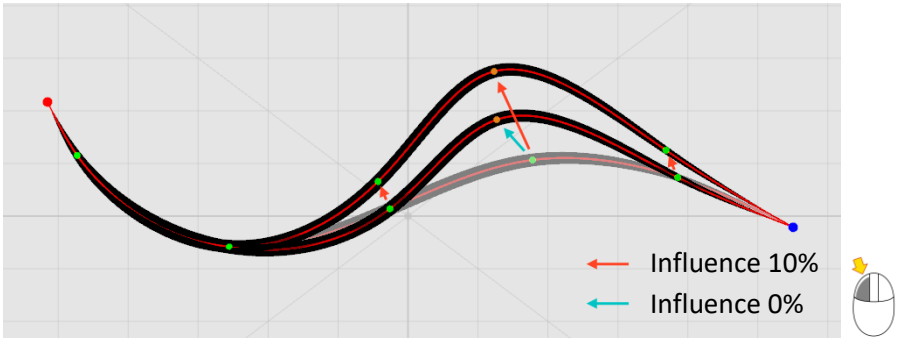
To maintain the sharp corner while moving the control point, **Hold Down Ctrl**.

When **Fixed Ends** mode is selected, only the 2 end points of a stroke can be selected. When you select and **drag** one end point, the other end point will be fixed and will act like a pivot. The stroke then can be rotated or resized according to this pivot.



Influence

Controls how many adjacent points are affected by a data point adjustment in the stroke. With a higher influence, the movement of adjacent points will become larger. At 0% influence, the adjacent data points are not affected.

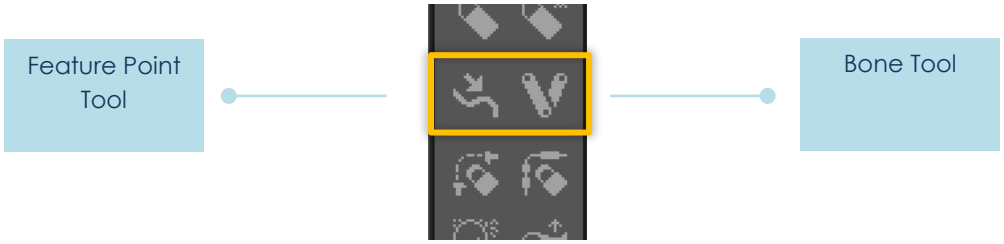


Auto Select Stroke

When enabled, a stroke remains selected during the editing of its points, or when the cursor hovers away from it.

Animation Editing Tools

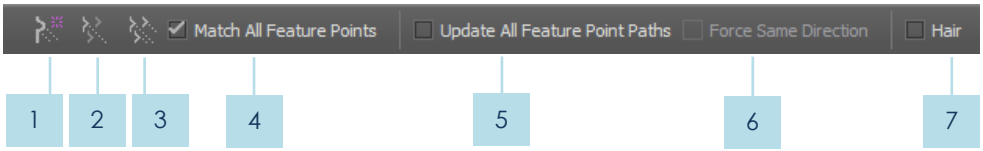
The Animation Editing Tools are used when you need to adjust the generated strokes in the in-between frames.



Feature Point Tool

Allows you to adjust the deformation of a generated stroke in an in-between frame. Please see **Chapter 08 – Using the Feature Point Tool** for more information.

Feature Point Tool Properties



1 **Remove All Feature Points**
Allows you to clear all feature points on the selected stroke.

2 **Auto Add Feature Points for Stroke**
Automatically creates matching feature points for the start, end and sharp corners in a selected stroke in the current and next key frames.

3 **Auto Add Feature Points for All Strokes**
Automatically creates matching feature points for the start, end and sharp corners in all strokes in the current and next key frames.

4 **Match All Feature Points**
CACANi will try to link all feature points in both key frames, even when the stroke segment does not look the same. For example, a sharp corner will be matched to a straight segment.

5 **Update All Feature Point Paths**
Except for feature point paths on the starting and ending of a stroke, all feature point paths will be adjusted at once on the selected stroke.

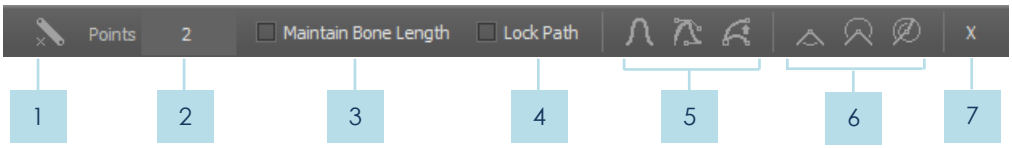
6 **Force Same Direction**
When enabled, all feature point paths will bend in a similar direction and curvature to the adjusted path. To use this, Update All Feature Point Paths property needs to be enabled.

7 **Hair**
When there are unequal number of hair-like spikes in a stroke in a pair of key frames, this property will help make those spikes appear or disappear into another segment of the stroke.

Bone Tool

Allows you to change the way strokes are generated in a group in an in-between frame. Please see **Chapter 08 – Using the Bone Tool** for more information.

Bone Tool Properties



1 **Remove Bone**
Allows you to clear the paths for the selected stroke group.

2 **Points**
Defines the number of points present on the created path.

3 **Maintain Bone Length**
When enabled, the paths for a stroke group will be constrained by the length of the drawn bones in the key frames.

4 **Lock Path**
When enabled, the path is kept selected and can be edited more easily.

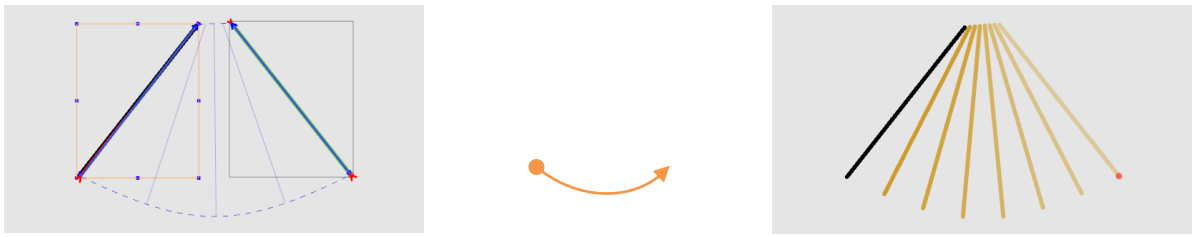
5 **Stroke Edit Modes**
Allows you to edit data points on a stroke to adjust the paths of the stroke groups. Please see **Chapter 05 – Stroke Editor Properties – Stroke Edit Modes** for more information.

6 **Bone Rotation Paths**

Allows you to change how the paths are generated based on the angle of rotation.

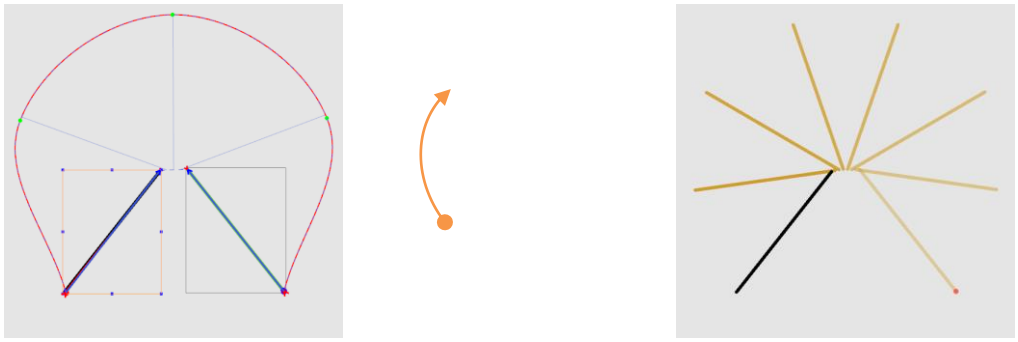
Direct Rotation Path

The in-between frames for the stroke group are generated based on an angle of rotation less than 180°.



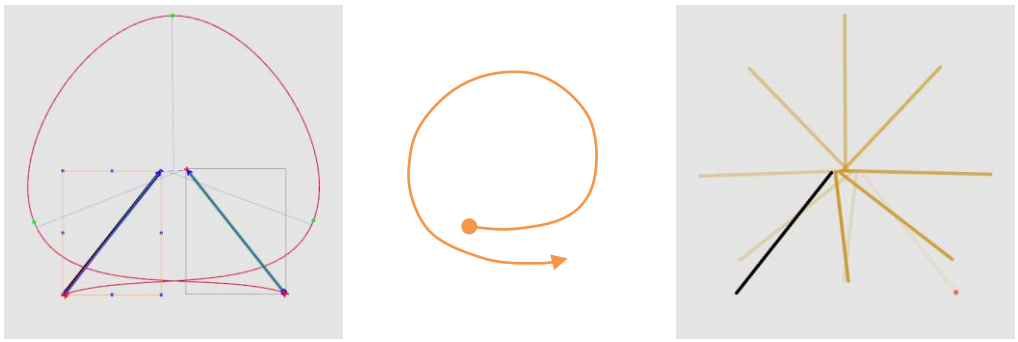
Reverse Rotation Path

The in-between frames for the stroke group are generated based on an angle of rotation larger than 180° but smaller than 360°.



Over 360° Rotation Path

The in-between frames for the stroke group are generated based on an angle of rotation larger than 360° but smaller than 540°.

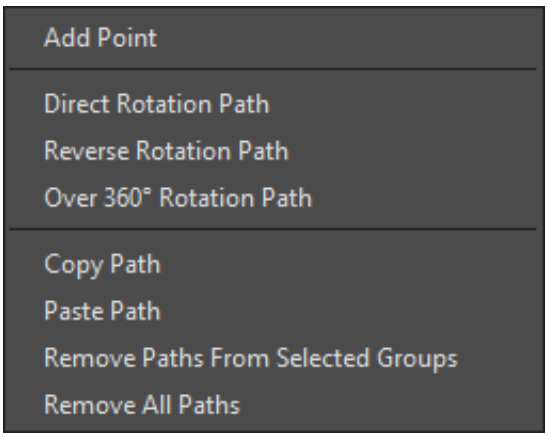


7 **Remove All Paths**

Deletes bone paths of all stroke groups in the active frame and cel.

Bone Tool Context Menu

Other than the Bone Tool properties, you can bring up the Bone Tool's context menu when you **Right Click** on a bone path.



Add Point
Allows you to add points to a bone path for editing.

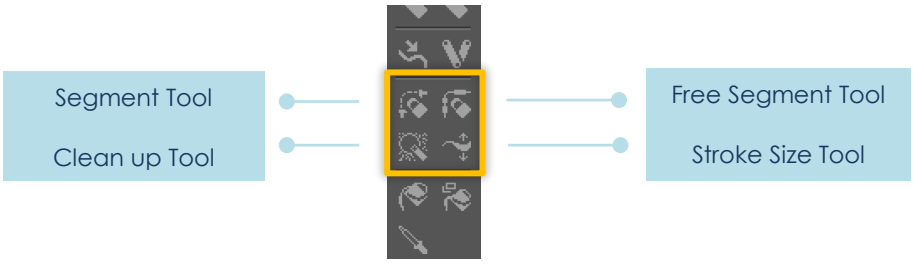
Copy Path / Paste Path
Allows you to replicate the selected bone path to another group of strokes in the same or a different layer.

Remove Paths from Selected Groups
Deletes both bone paths from the selected groups of strokes.

Remove All Paths
Deletes bone paths of all stroke groups in the active frame and cel.

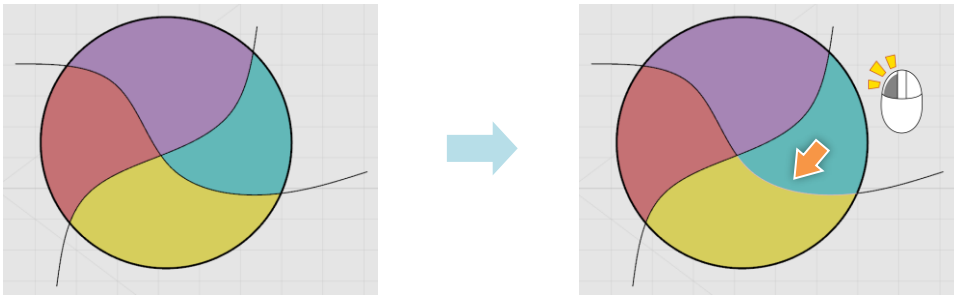
Segment Editing Tools

The Segment Editing Tools are used for cleaning up and adjusting the look of the strokes. They are also very important for ensuring that the drawings are ready for painting. However, the tools do not affect the curvature of the strokes.

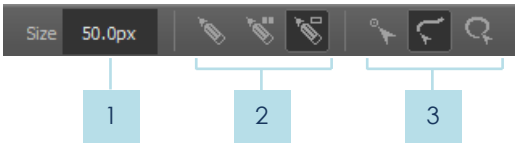


Segment Tool

Allows you to alter the visibility of sections of a stroke, where the sections are created by intersections with other strokes.



Segment Tool Properties



1 **Size**
Allows you to increase the selection area when changing the segment rendering. This property is only applicable in the Click Selection Mode.

2 **Stroke Rendering Modes**
Allows you to change a stroke segment into one with Normal, Invisible or Hidden properties.
Please refer to **Chapter 04 – Stroke Rendering Modes**.

3 **Segment Selection Modes**

You can select segments using either the Click Selection, Line Selection or Lasso Selection modes.

Click Selection

Click on a stroke segment to change its property.

Line Selection

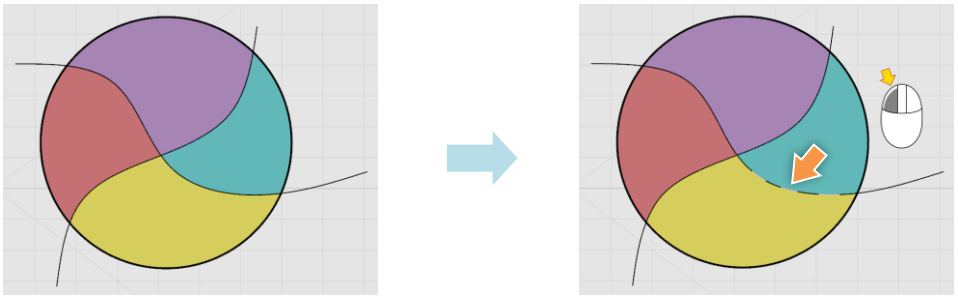
Draw a line across stroke segments to change their properties.

Lasso Selection

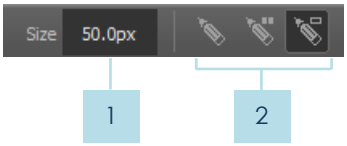
Draw a region around stroke segments to change their properties.

Free Segment Tool

Allows you to alter the visibility of sections of a stroke, regardless of any intersections with other strokes.



Free Segment Properties



1 **Size**

Allows you to increase the selection area when changing the segment rendering.

2 **Stroke Rendering Modes**

Allows you to change a stroke segment into one with Normal, Invisible or Hidden properties.

Please refer to Chapter 04 – Stroke Rendering Modes.

Clean Up Tool

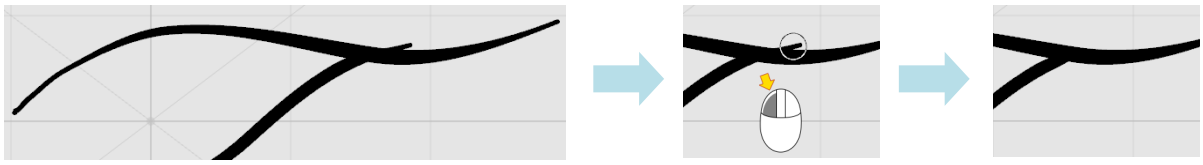
Allows you to edit how strokes are attached to each other to form closed regions for painting. The Clean Up Tool can perform **2 different functions**, depending on how the strokes are selected or lasso-ed.

Gap Closing

At least 1 stroke end must be within the selected region for the tool to work.

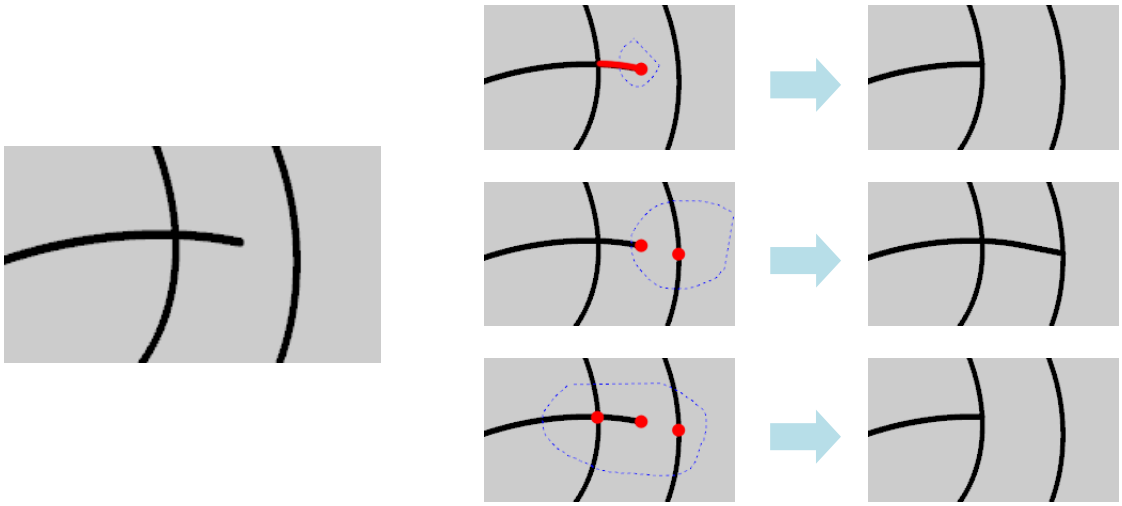
Segment Removal

Allows you to remove stroke segments, or unwanted stray ends, during the drawing process. Stroke segments falling within the threshold region are removed.

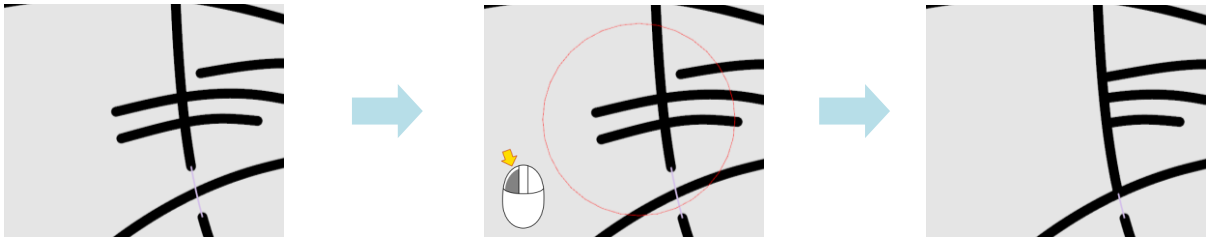


Clean Up Modes

The **Combined Mode** will either do gap closing or segment removing based on the selected stroke ends and intersections.

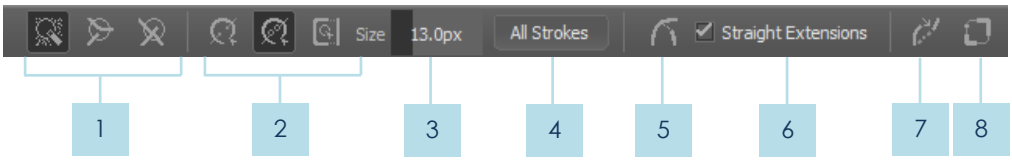


You can lasso a lot more stroke ends, but depending on the complexity and proximity of the selected strokes, results will vary.



The other 2 modes, **Gap Close Only** and **Segment Removal Only**, as their names suggest, limits the Clean Up Tool to only perform gap closing or segment removing respectively. This can help with certain situations where there are many intersecting strokes.

Clean Up Tool Properties



1 **Clean Up Modes**

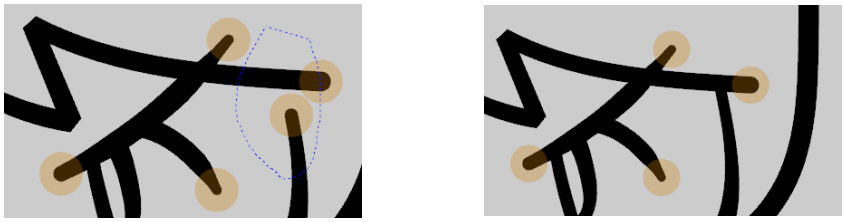
Allows you to specify whether the tool works in **Combined**, **Gap Close Only** or **Segment Removal Only** Mode.

2 **Gap Selection Modes**

Allows you to close gaps in different ways.

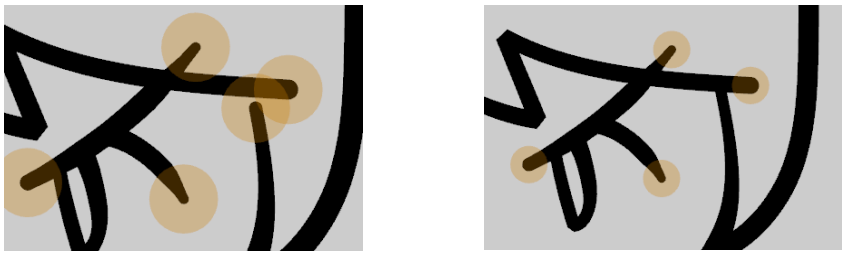
Lasso, Variable Gap Size

Closes a gap as long as the end of a stroke and a target stroke segment are both selected in the lasso region. The gap size slider is not applicable in this mode. This is the original mode in CACANi 1.x.



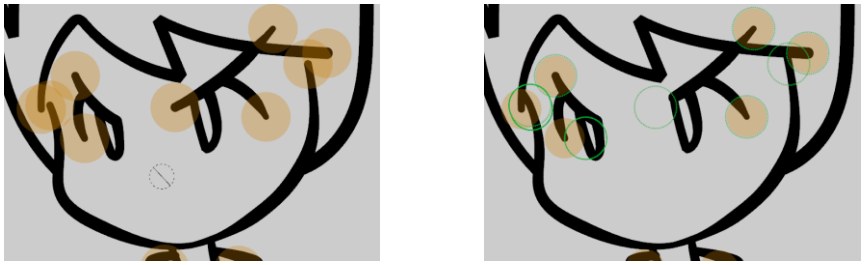
Lasso, Fixed Gap Size

Closes a gap when the end of a stroke and a target stroke segment are within the gap indicator region.



Region Gap Close

Closes gaps around a region. The gap size is set when the user clicks and drag within a region.



3 **Gap Size**

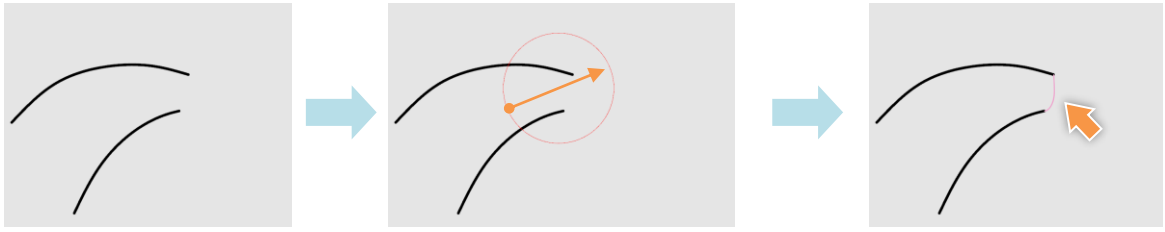
Sets the gap close or segment removal threshold region for the **Apply to All Strokes** option. A larger value results in wider stroke gaps closed or longer stroke segments removed.

4 **All Strokes**

Allows you to close all stroke gaps and remove all segments in the drawing that are within the region defined in the **Size** property. However, some strokes may be altered in an undesirable way.

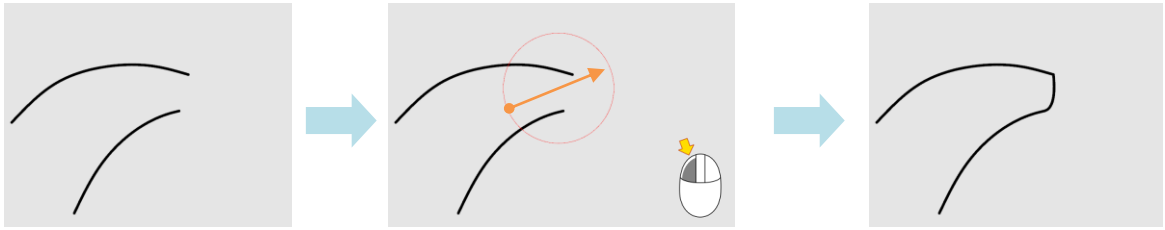
5 **Keep Gaps Invisible**

When enabled, any gaps closed using the Clean Up Tool are performed with invisible strokes so that the strokes do not appear to be altered.

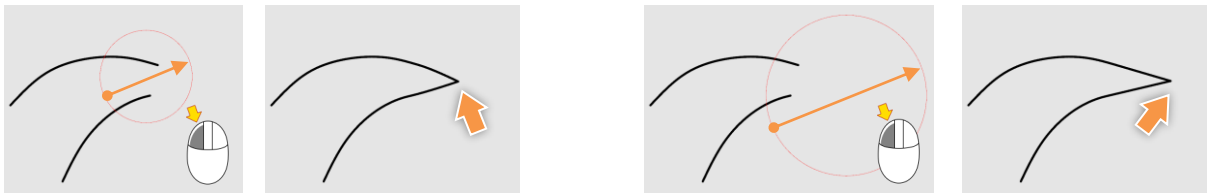


6 **Straight Extensions**

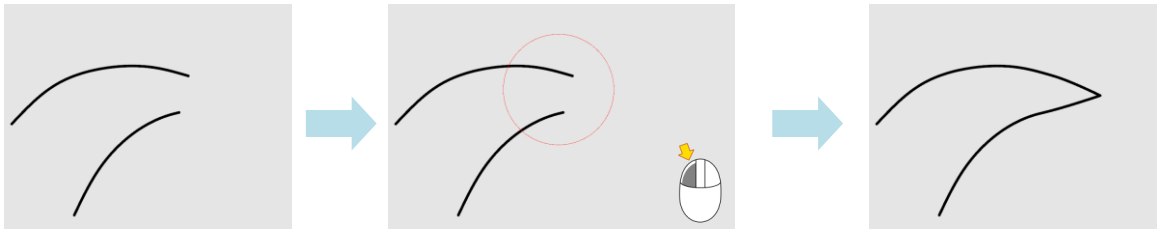
When disabled, stroke ends within the lasso threshold size / circle will be extended to connect to each other, regardless of the strokes' directions.



Also, using different threshold sizes will result in different stroke extensions, as the **circumference of the threshold determines where the connection point is**.

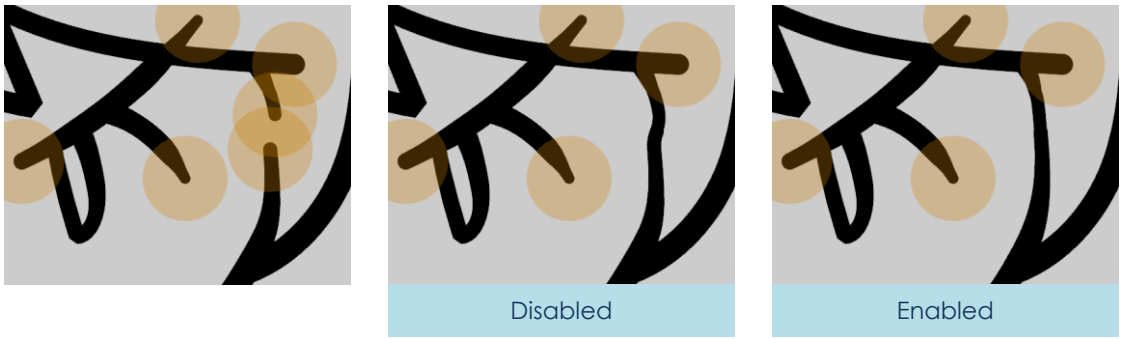


When enabled, the stroke ends will be extended and connected to each other. The lasso size does not affect the result.



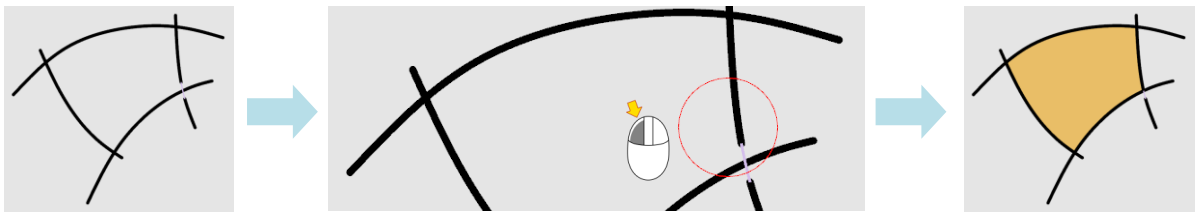
7 **Adjust Stroke Ends When Closing**

Shifts stroke ends when performing gap closing. This helps prevent a 'step-ladder' extension effect. The property is only available when the Lasso, Fixed Gap Size, or the Region Gap Close mode is selected.



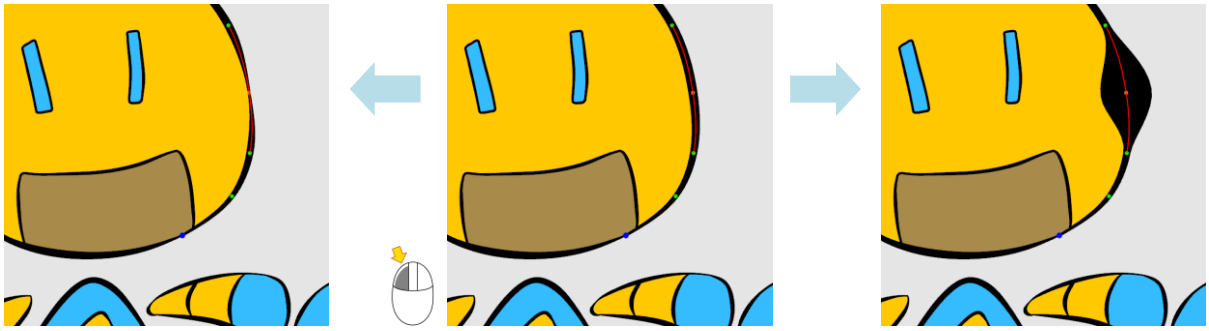
8 **Reveal Hidden Segments**

Allows you to convert hidden segments back to visible segments, without having to switch to the **Segment** or **Free Segment Tools**. This is helpful when regions are not closed due to hidden segments.



Stroke Width Tool

Allows you to change the stroke width at different segments of a stroke. You can adjust the stroke width by **Left Clicking** on any of the data points or endpoints, and **dragging** the mouse **left** (decrease stroke width) or **right** (increase stroke width).



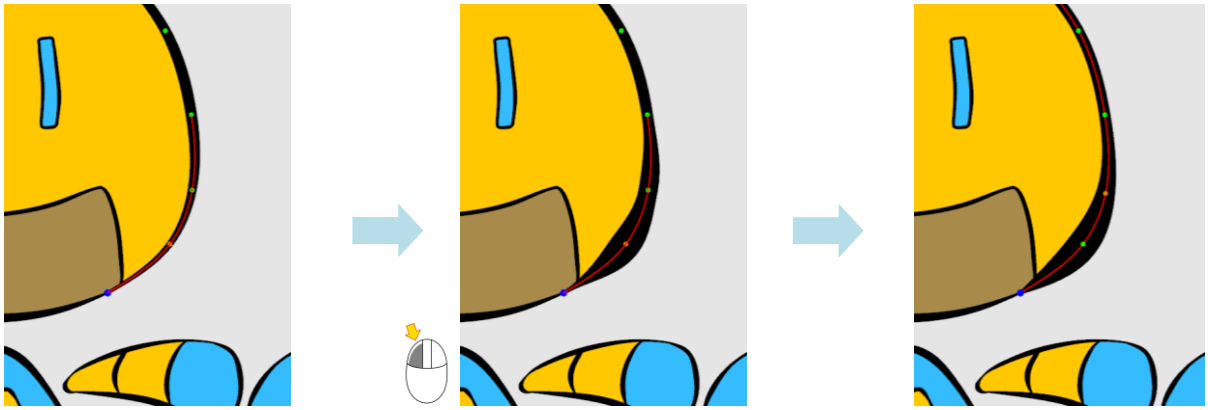
Stroke Width Tool Properties

1 **Size**

Sets the maximum width of selected strokes.

2 **Range**

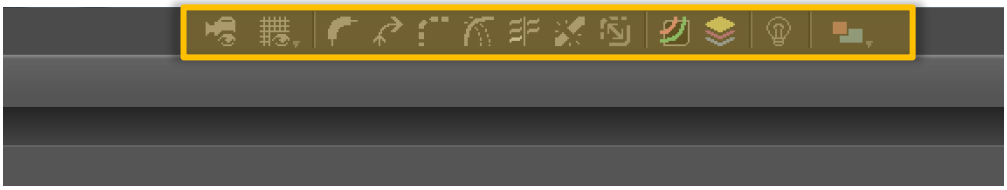
Sets the number of adjacent data points that are affected by the stroke width change. Note that after the width adjustment, you will also need to move the data point slightly with the **Stroke Editor** to get a smooth width transition.



06

Using Display Tools

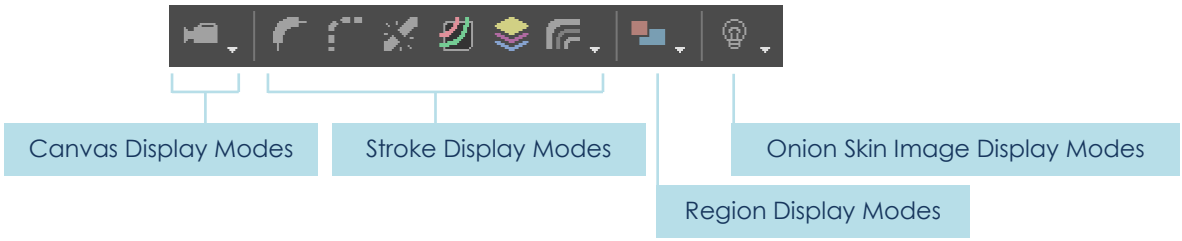
Displaying Information on the Canvas



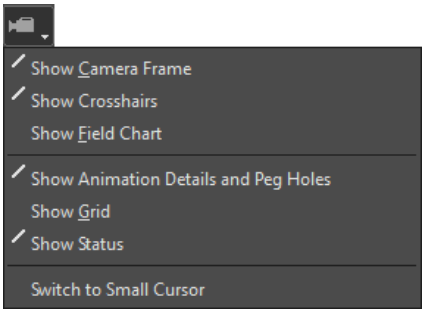
While drawing, animators frequently need to see information about their drawings, from camera frames to measurement grid and stroke gaps. However, it can be very messy when all the information is switched on at the same time. In CACANi, these display modes are arranged at the top of the interface so that they can be activated when needed.

Display Property Bar

The **Display Property Bar** is divided into a few sections.



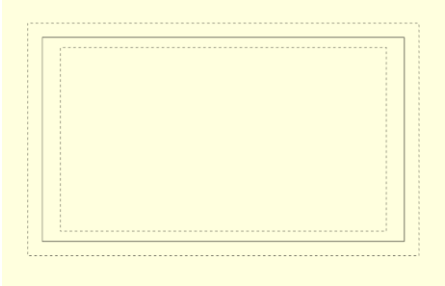
Canvas Display Options



The canvas shows various information to help you with the animation process. You can turn them on or off here.

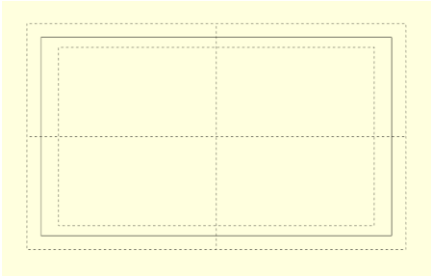
Show Camera Frame

When enabled, it allows you to see the camera frame (solid line) on the canvas. The video safe frame is the dotted line within the camera boundary.



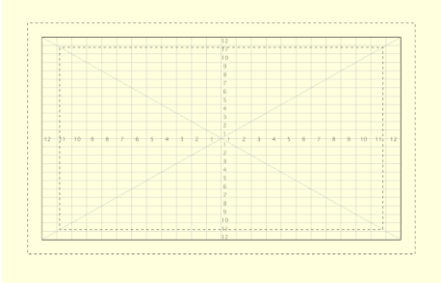
Show Crosshairs

Divides the camera into 4 sections, which can help with the layout of the animation drawings. **Show Camera Frame** needs to be enabled.



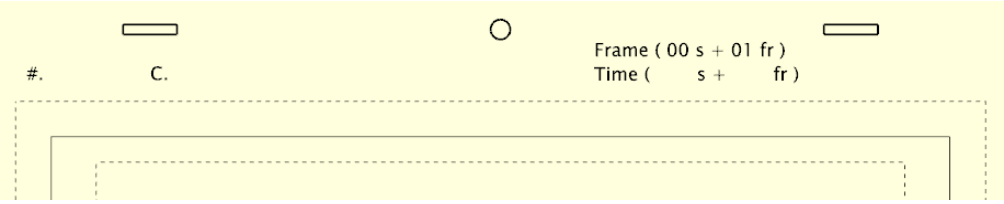
Show Field Chart

Allows you to display an animation field chart within the camera. This will help with the planning and layout of drawings within the canvas.

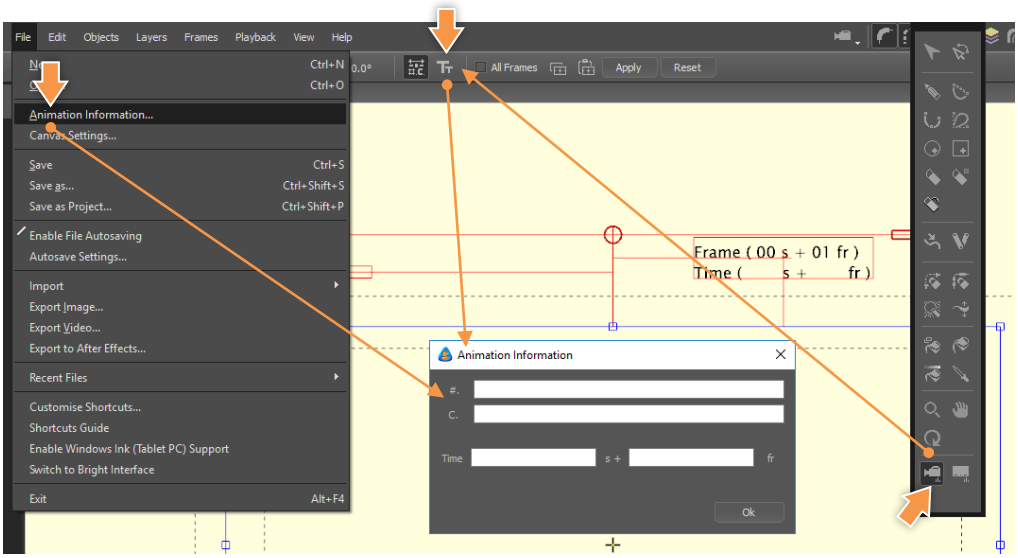


Show Animation Details and Peg Holes

Displays the Scene or Cut Number, Description and Duration of the current file. Also displays the traditional peg holes found on animation paper.

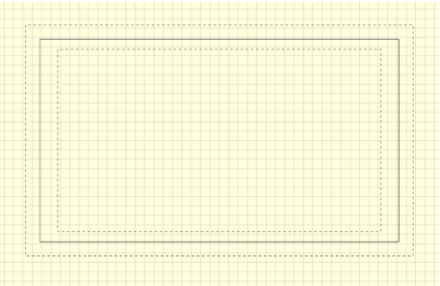


The animation details can be entered via the **Animation Information…** option in the File menu, or from the **Camera Tool**, **Enter Animation Information** option.



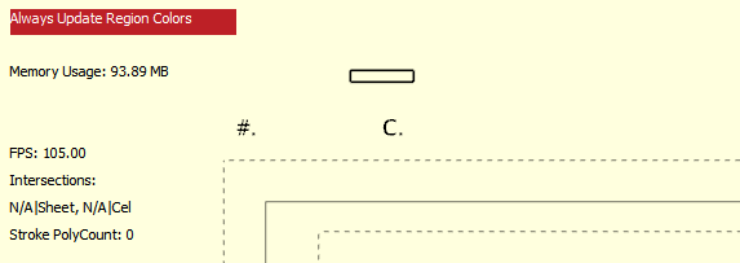
Show Grid

Allows you to display a rectangular grid over the canvas. This will help with the planning and layout of drawings within the canvas.



Show Status

Displays various details about the current state of the CACANi software and the opened file.



'Always Update Region Colors' mode – When enabled, CACANi will constantly recheck the regions after every user interaction. Gives faster updates of colored regions and location of gaps, but drawings with many vector strokes will slow down the canvas refresh rate.

Memory – memory used by the CACANi software.

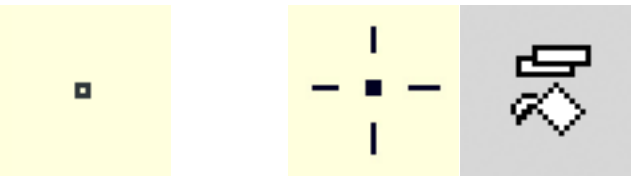
FPS – Refresh rate of the canvas, measured in Frames per Second. A useful numerical indicator of the responsiveness, or choppiness, of the canvas. Generally, the more vector strokes there are, or the larger the canvas in a drawing, the lower the FPS.

Intersections – Counts the number of connections between vector strokes. The more connections there are, the less responsive the canvas.

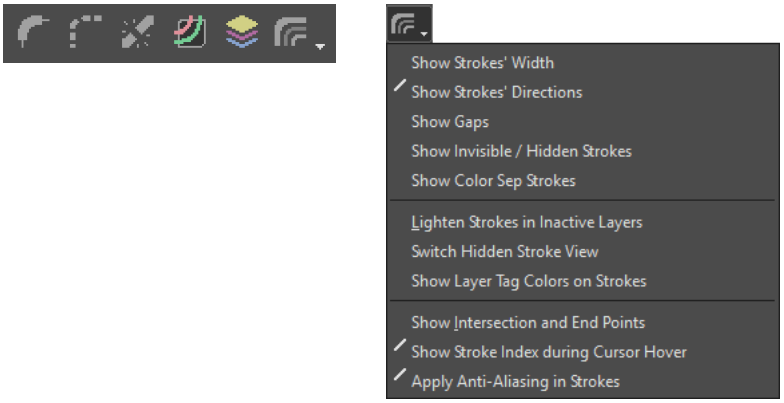
Poly Count – Shows the number of triangle faces of the vector strokes, when stroke width is enabled. The higher the poly count, the less responsive the canvas.

Switch to Small Cursor

When enabled, cursor is rendered in software as a simple square and cursor icons will not be displayed. When disabled, the cursor is rendered using OpenGL and will change depending on the stroke width and tools selected. If you find that the cursor is lagging, enabling this may help. It is disabled by default.



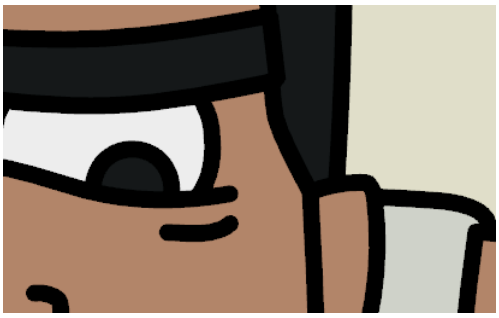
Stroke Display Options

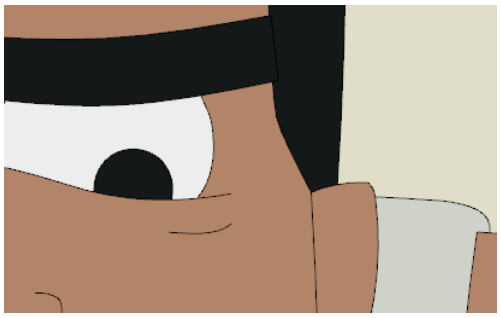


The Stroke Display Options section has some buttons allowing you to select frequently used options and a dropdown menu listing all the options.

Show Stroke Width

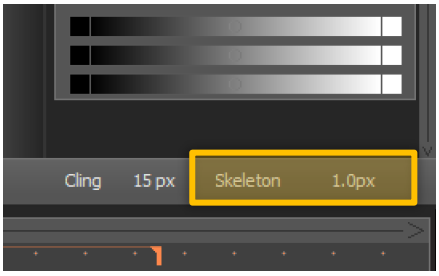
When enabled, the actual stroke width is displayed. When disabled, the Stroke Skeleton is shown, for more accurate drawing.



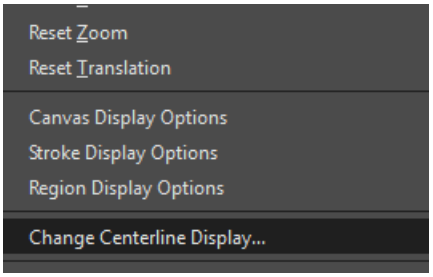


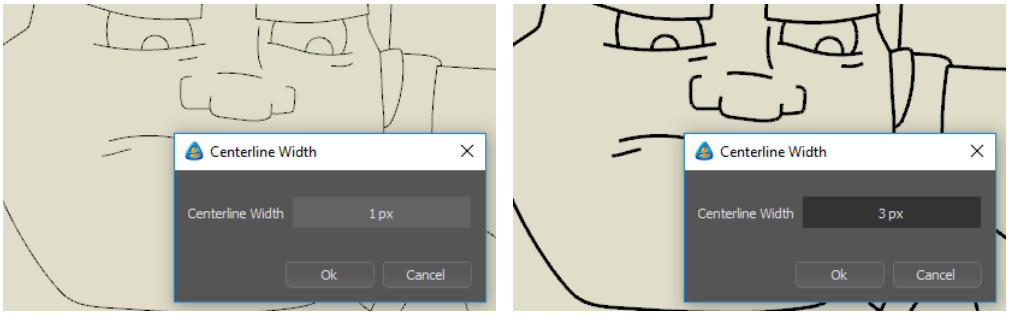
In addition, the stroke centerline can be thickened using the Stroke Skeleton slider for easier viewing. In CACANi 2.0, this option is renamed 'Change Centerline Display…' and has been moved to the View menu.

CACANi 1.x



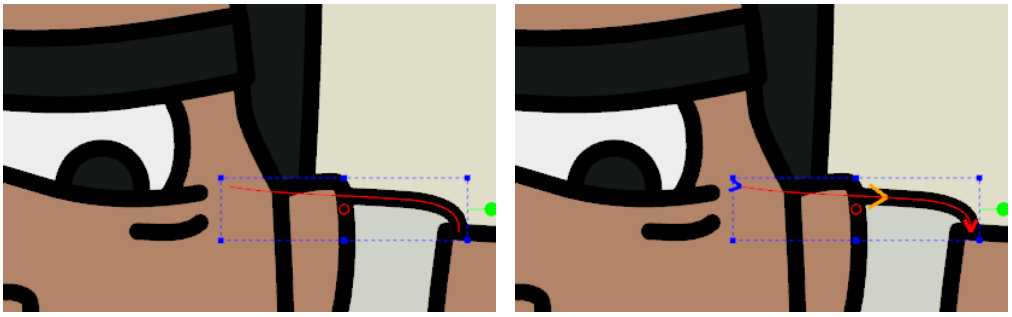
CACANi 2.x (View menu)





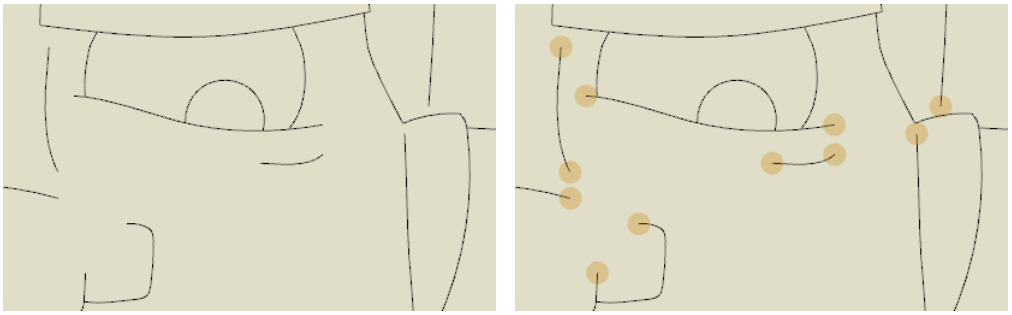
Show Strokes' Directions

When enabled, strokes selected with the Selection tool will have arrows displayed on them. These arrows indicate the direction in which the stroke was drawn and will allow you to draw matching strokes in subsequent frames correctly.



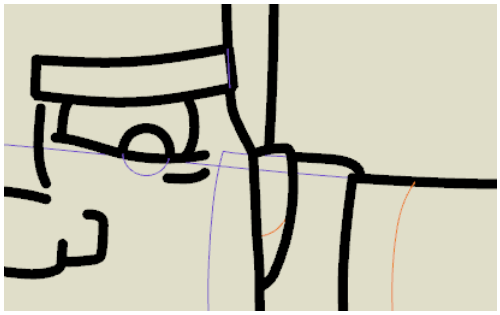
Show Gaps

When enabled, stroke ends that are not connected to any other stroke will be indicated with a light orange circle.



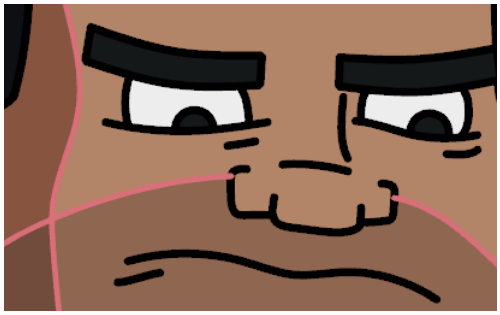
Show Invisible / Hidden Strokes

When enabled, invisible and hidden strokes are displayed in the canvas in orange and purple respectively.



Show Color Separation Strokes

When enabled, strokes selected with the Selection tool will have arrows displayed on them. These arrows indicate the direction in which the stroke was drawn and will allow you to draw matching strokes in subsequent frames correctly.

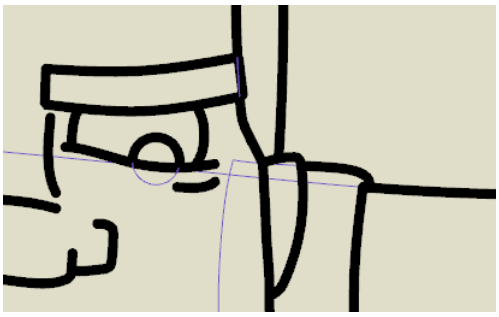


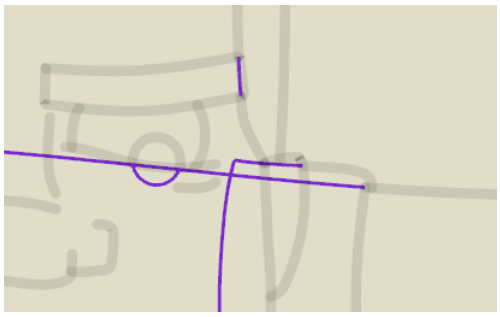
Lighten Strokes in Inactive Layers

When enabled, strokes on unselected layers will be faded out. By only showing specific sections of a drawing, this can help you to focus on those areas and not be confused.

Switch Hidden Stroke View

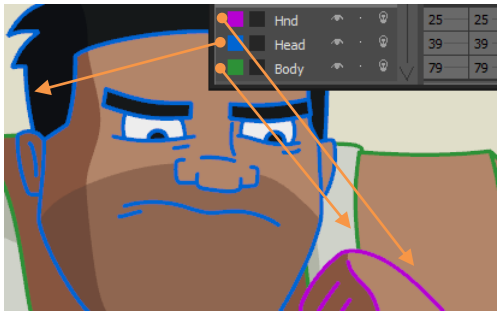
Fades out normal strokes, while invisible and hidden strokes are bolded. This helps you to see and draw those strokes easily.





Show Layer Tag Colors on Strokes

Displays stroke colors based on their layer color tags.

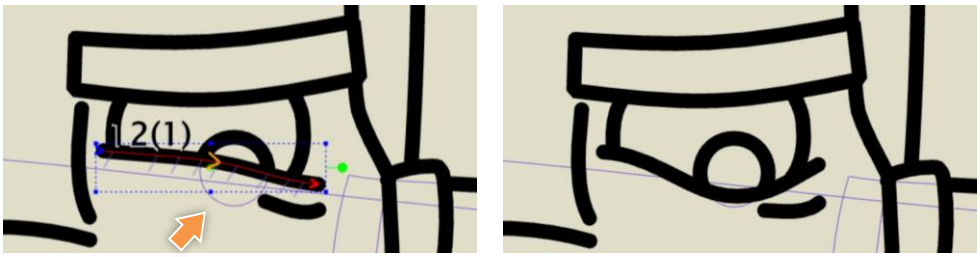


Show Intersection and End Points

Indicates intersection points between strokes as well as the end points of each stroke. Mainly used for troubleshooting purposes.

Auto Update Occluded Strokes

Refreshes the visibility of occluded strokes immediately when boundary strokes are edited. When disabled, you can use the **Update Selected Occluded Strokes** option to update the visibility manually.

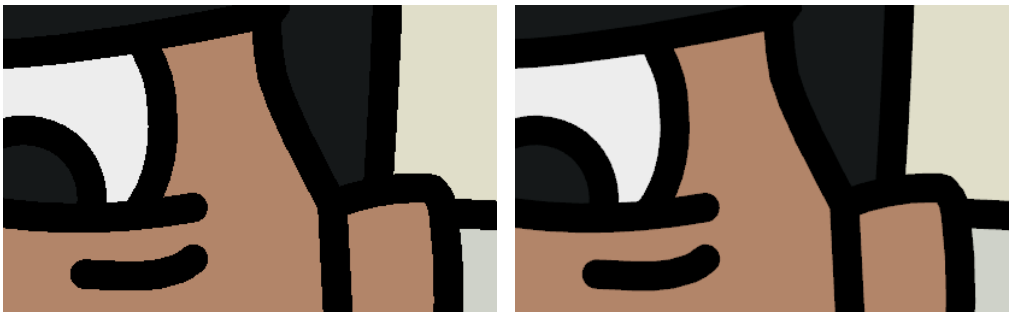


Show Stroke Index during Cursor Hover

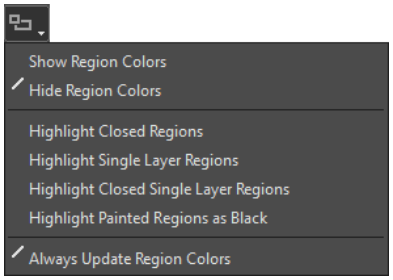
Displays the index of a stroke when the cursor hovers above them.

Apply Anti-Aliasing in Strokes

Enables edge smoothening to vector strokes. Applies to strokes in Drawing and Sketch Layers.

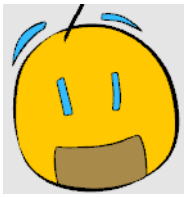


Region Display Options



Show Region Colors

When enabled, all filled regions are displayed in their original colors.



Hide Region Colors

When enabled, no region colors are displayed.

Highlight Self Regions

When enabled, all Single Layer regions will be displayed with checkered patterns.

Show Closed Regions

All closed regions without any gaps will be painted in alternating colors. Use it to check for gaps before painting the regions.

Show Closed Self Regions

All single layer regions that are closed and do not have any gaps, are painted in alternating colors with checkered patterns.

Show Painted Regions

All regions filled with color are painted in black. This is useful when verifying that you have not missed any regions that require painting.

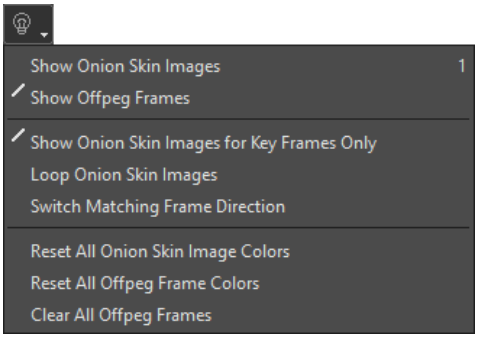
Please see **Chapter 10 - Cross Layer and Single Layer Regions** for more information on regions.

Always Update Region Colors

When enabled, region colors are updated immediately after each drawing or editing operation. This is useful for quick feedback as you draw your animation. However, for drawings with thousands of strokes, this can slow down the computer.

Onion Skin Display Options

Displays drawings from previous or subsequent frames on the canvas as onion-skinned images.



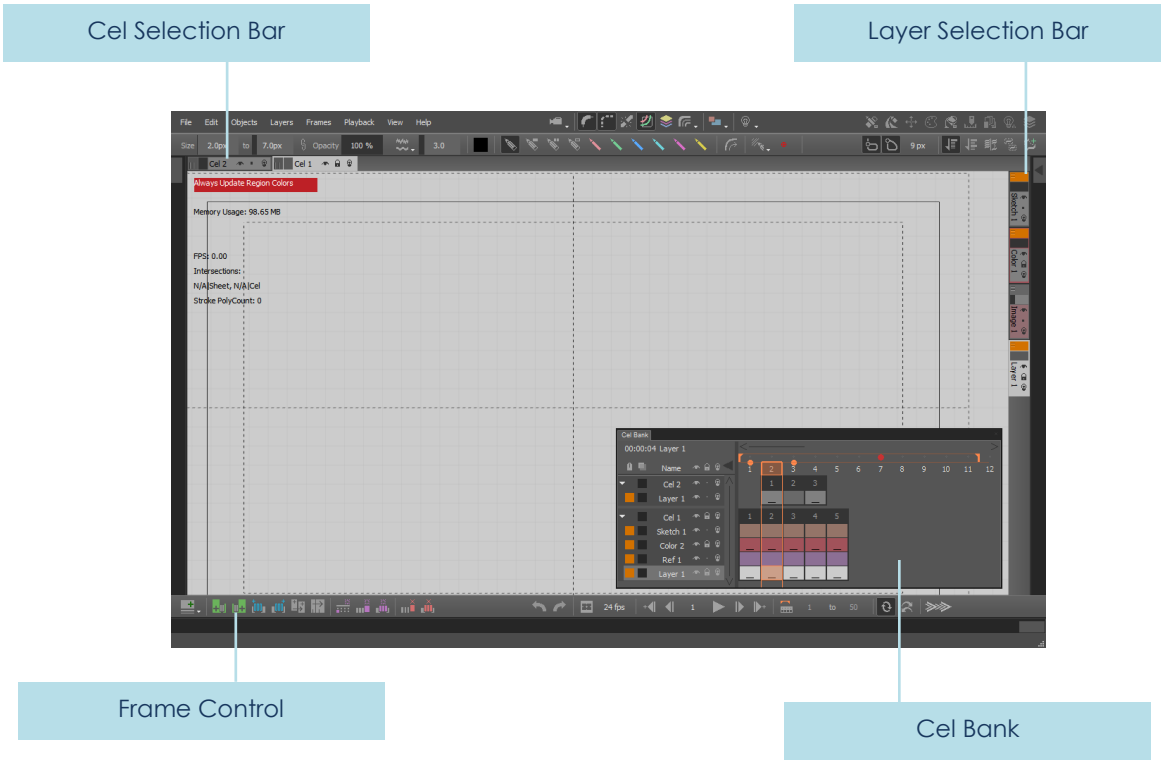
Please see **Chapter 08 – Onion Skin Settings**.

Please see **Chapter 08 – Onion Skin Panel** for more information on configuring onion-skinned images.

07

CACANi Cel System

The Cel System



The Cel System is used for the management of layers and frames for animation. Cels, Layers and different types of frames can be added or removed, their orders changed and management for drawing and animation.

Cel Selection Bar

Allows you to access cels and adjust various cel-related settings easily.

Layer Selection Bar

Allows you to access layers and adjust various layer-related settings easily.

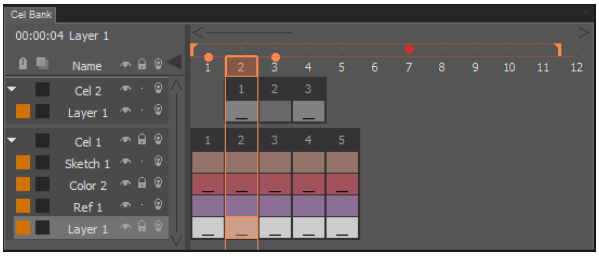
Frame Controls

Allows you to create or remove cels, layers or frames.

Cel Bank

Allows you to perform all cel, layer and frame operations.

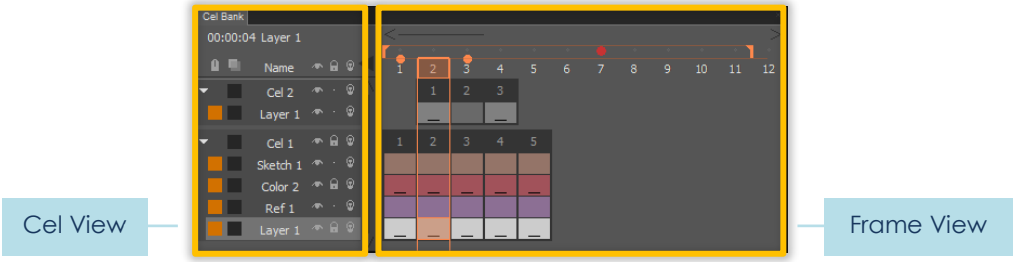
Cel Bank



In CACANi, the Cel Bank is the main location for frames, layers and cels creation and editing, while the Cel / Layer Selection Bars and Cel Control Bar provide supplementary support.

While the Cel Bank is a panel that can be moved around, docked or hidden from view, the Cel Selection Bar, Layer Selection Bar and Cel Control Bar are fixed on the user interface for ease of use.

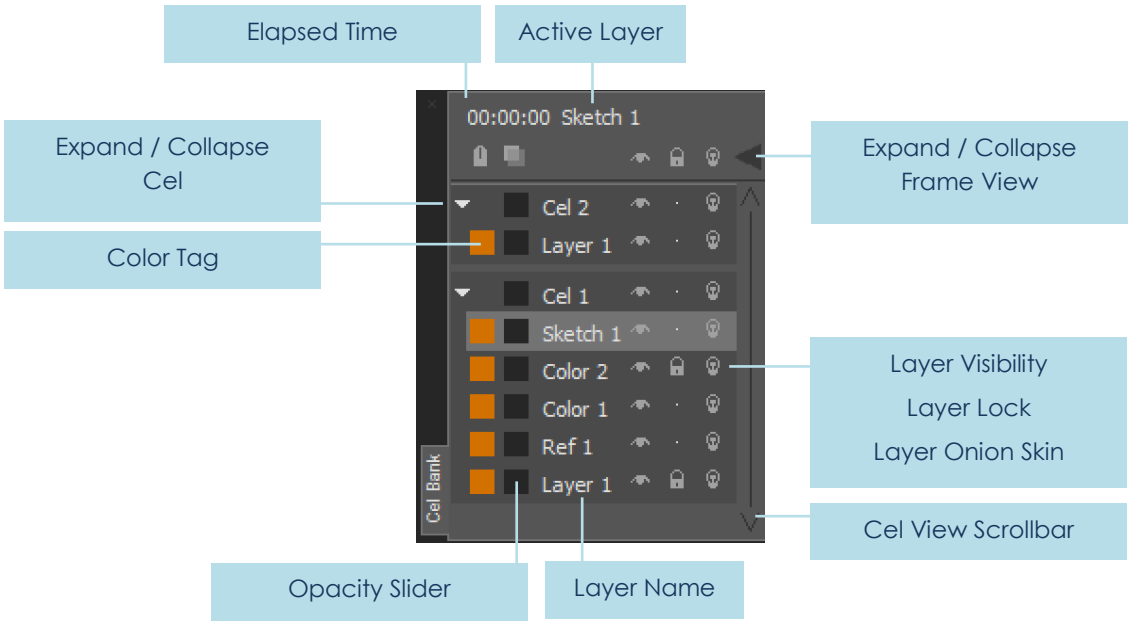
Sections of the Cel Bank



The Cel Bank consists of 2 distinct components, the Cel View section and the Frame View section.

The **Cel View** shows the cel / layer names and allows you to perform cel / layer operations, while the **Frame View** shows the frames and contains the frame operations.

Cel View



Elapsed Time
Shows the time at the active frame, in (Minutes : Seconds : Frames) format.

Active Layer
Lists the current selected cel or layer.

Expand / Collapse Cel
Reveals or hides the layers within a cel.

Color Tag
Displays the color tag of a layer.

Opacity Slider
Allows you to adjust the opacity level of a cel or layer.

Layer Name
Displays the cel or layer.

Expand / Collapse Frame View
Reveals or hides the Frame View section of the Cel Bank.

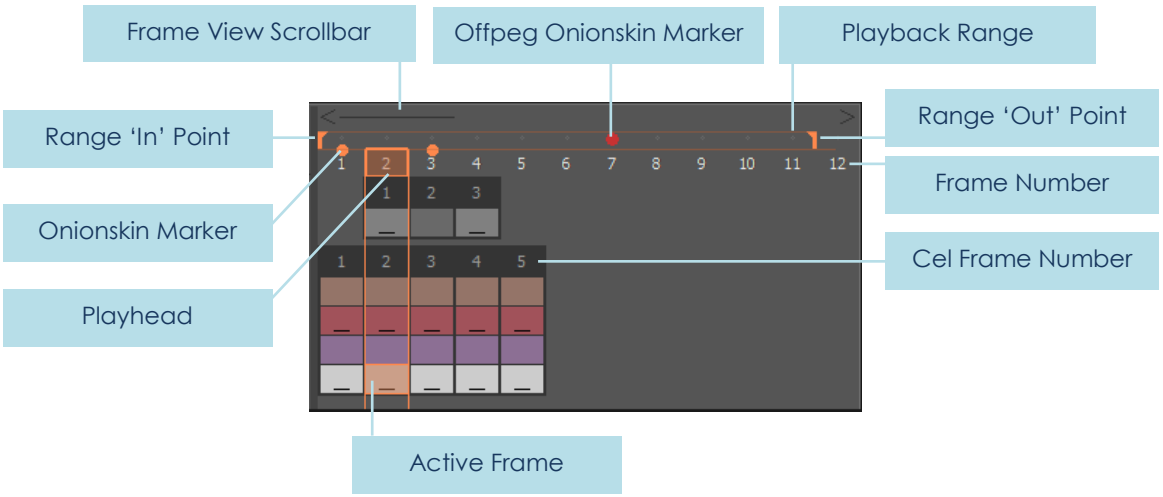
Layer Visibility
When enabled, the contents of the layer are displayed.

Layer Lock
When enabled, the strokes in the layer are locked and cannot be changed.

Layer Onion Skin
When enabled, the strokes in the layer are included when displaying the frame as an onionskin image.

Cel View Scrollbar
Allows you to pan vertically through the created cels and layers.

Frame View



Frame View Scrollbar
Allows you to pan horizontally through frames and sheets.

Offpeg Onionskin Marker
When enabled, an onionskin image of the current frame is displayed on the canvas, independent of the active frame.

Playback Range
Indicates the frames that will be played back when the **Playback Range** checkbox is ticked in the **Playback Bar**.

Range 'In' Point
Allows you to adjust the starting frame of the Playback Range.

Range 'Out' Point
Allows you to adjust the ending frame of the Playback Range.

Onionskin Marker
When enabled, an onionskin image of the current frame is displayed on the canvas. Unlike the Offpeg Onionskin, this is always in relation to the active frame.

Playhead
Indicates the location of the active frame. You can **drag** the Playhead to make another frame active.

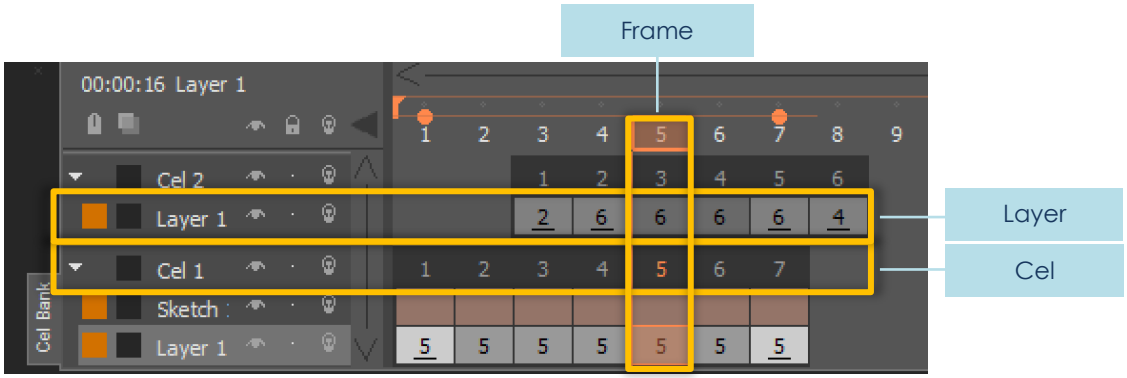
Active Frame
Indicates the current selected frame in the cel bank.

Frame Number
Indicates the frame number of the overall animation sequence.

Cel Frame Number
Indicates the frame number of the specific cel.

Frames, Layers, Cels

The distinction between cels, layers and frames is important to the understanding of CACANi's system of animation. With this knowledge, you will be able to make use of CACANi's unique workflow to create your animations quickly.



Frames

A frame can consist of a drawing in a single layer or be made up of a column of drawings in multiple layers. A frame is what you see displayed on the canvas.

Layers

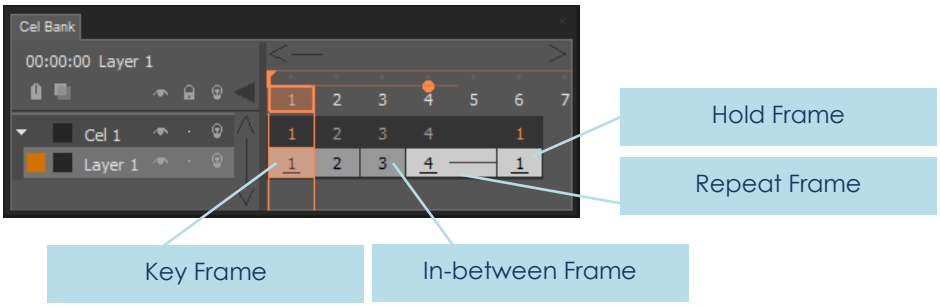
A layer is a single sequence, or row, of frames. There are different types of layers available, each with its own purpose. Layers within the same cel have the same number of frames and frame types.

Cels

A cel is a master layer that can hold multiple layers. Cels can have different number of frames from each other.

Frame Types

In CACANi, there are 4 types of frames, **Key Frames**, **In-between Frames, Hold Frames** and **Repeat Frames**.



Key Frames

Frames that hold drawings created by the animator. They are normally at the beginning and ending part of an animation sequence. Key frames are denoted with a dash beneath the stroke numbers.

In-between Frames

Transition frames that are generated based on the key frames. Information between matching strokes in a pair of key frames is used to create in-between frames. In-between frames do not have any marking beneath the stroke numbers and are colored a darker shade of gray compared to key frames.

Note that multiple layers within a cel form a **frame**.

Hold Frames

Extends the duration of the previous Frame. Use them when you need to show a drawing for a longer time.

Repeat Frames

Mirrors the drawing in another Frame. Unlike duplicating a frame, a repeat frame will be updated whenever the original frame is changed. Repeat Frames can also be placed anywhere in the cel. **Left Click Twice** on a hold frame to convert it to a repeat frame.

Onion Skin Frames, Offpeg Frames

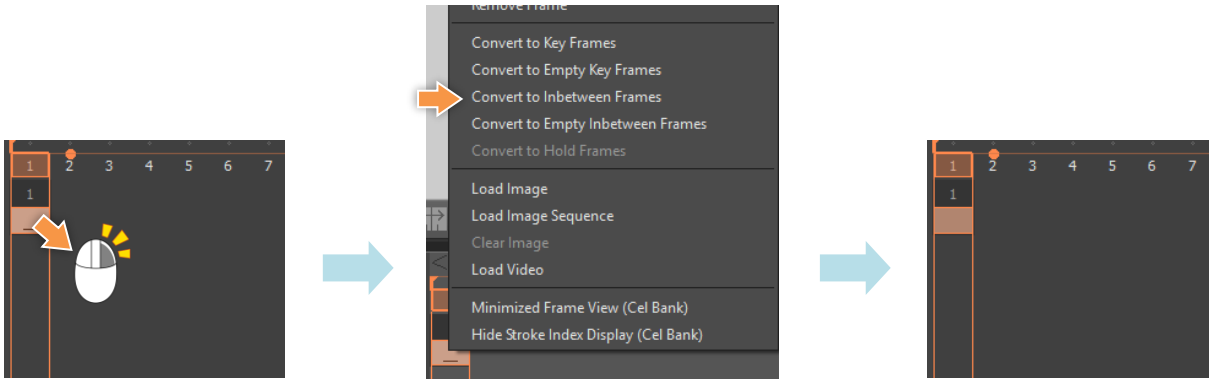
In addition, to help you visualize drawings from other frames, we have Onion Skin Frames and Offpeg Frames, or Onion Skin Images and Offpeg Images.

These are covered in **Chapter 08 - Onion Skin Panel**.

Frame Type Conversion

You can turn a key frame into an in-between frame, and vice versa. This can help you to perform adjustments on the animation sequence, or as a way to create breakdown key frames.

To perform this action, **Right Click** on a frame to bring up the context menu. Since this frame is a key frame, select **Convert to Inbetween Frames** to convert into an in-between frame.



Alternatively, you can also select the options from the Frames main menu.

Other than converting between key and in-between frames, you can select other types of frames.

Convert to Key Frames
Changes the selected frames into key frames.

Convert to Empty Key Frames
Deletes the contents of the selected frames before changing them into key frames.

Convert to Inbetween Frames
Changes the selected frames into in-between frames.

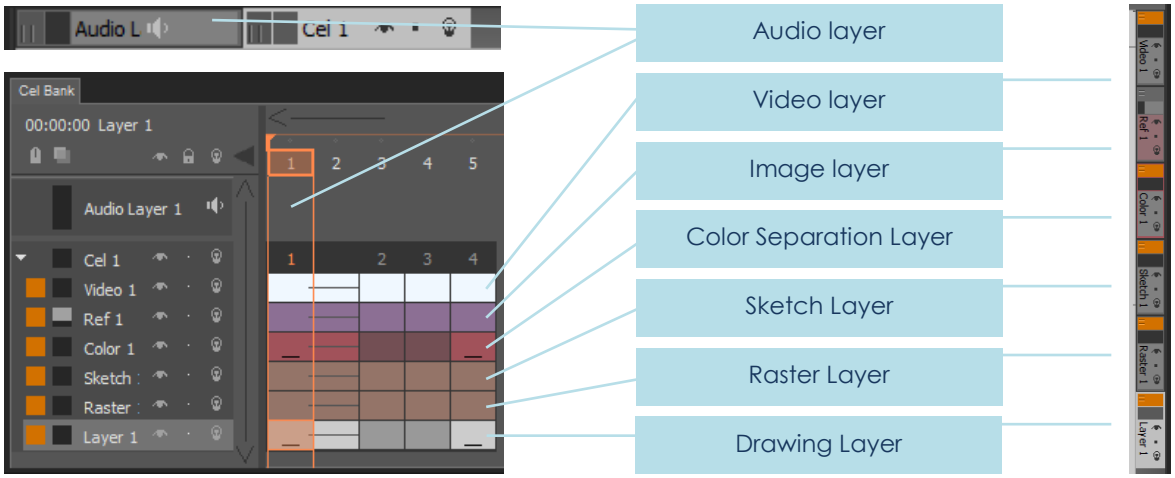
Convert to Empty Inbetween Frames
Deletes the contents of the selected frames before changing them into in-between frames.

Convert to Hold Frames
Changes the selected frames into hold frames. The original contents of the frames are deleted.

However, you have to be careful when converting key frames into in-between frames, in that you do not accidentally **re-generate** in-between frames. This may cause the strokes in the newly converted in-between frame to change. Or erase a drawing by turning a frame into an empty key frame.

Layer Types

There are different types of layers to help you animate in CACANi. Each type is colored differently and has a specific use. You can access them from both the Cel Bank and the Layer Selection Bar.



Drawing Layer

Most frequently used layer type. You can draw, trace, animate and paint your drawings here. Strokes and regions are vector-based.

Sketch Layer

Used for roughing out your animations. Sketch layers do not have animation capabilities. In addition, you cannot paint regions formed by strokes in Sketch layers. Like Drawing Layers, strokes in the Sketch Layer are vector-based.

Raster Layer

Used for drawing draft or finished animations. Raster layers do not have automatic in-betweening capabilities. Strokes and regions in raster layers are bitmap / pixel-based.

Please see **Chapter 04 – Pen Tool Properties (Raster Layer)** for more information.

Color Separation Layers

Used for drawing color separation strokes. When **Color Separation Display Mode** is turned off, the strokes in these layers do not show up on the canvas or the exported images. Strokes and regions are vector-based.

There are 6 different color separation layers: Red, Green, Blue, Cyan, Pink, Yellow.

Please see **Chapter 05 – Color Separation Strokes** for more information.

Image Layer

Used for loading external image files into the Cel Bank. Loaded images can be moved and manipulated using the Selection Tool. No drawing or animation can be done on this layer.

Please see **Chapter 07 – Working with Images** for more information.

Video Layer

Used for loading external video files into the Cel Bank. You can move and manipulate the video right after loading it, but after confirming the changes, you will not be able to manipulate the video anymore. After placing and video, you can draw, erase, paint and edit each video frame, like a raster layer.

Please see **Chapter 07 – Working with Video Files** for more information.

Audio Layer

Used for loading external audio files into the Cel Bank. You can hear the audio with the Play button, or scrub through the audio file by **dragging** the Playhead.

Please see **Chapter 07 – Working with Audio Files** for more information.

Layer Type Conversion

In CACANi 2.0, each layer type has their own strengths and weaknesses. For example, the drawing experience in raster layers is closer to pencil and paper, while working with vector strokes in drawing layers is like making a technical illustration. Each layer type is useful for different stages of animation production. At the same time, you can also take advantage of these functions below to bridge the different stages.

Rasterize Image Layer

Converts the image layer into the raster layer. You can use this option to turn external images into the CACANi raster format, or the raster layer, for further editing.

Extract Line Art…

Allows you to extract line art from drawings and turn the background transparent. You can use this option on Raster Layers only. For best results, images should be of high resolutions, with distinct strokes and regions.

Vectorize Layer…

Converts Raster or Image Layers into Drawing Layers. Allows you to convert the raster drawings into vector strokes. Raster region colors are not supported.

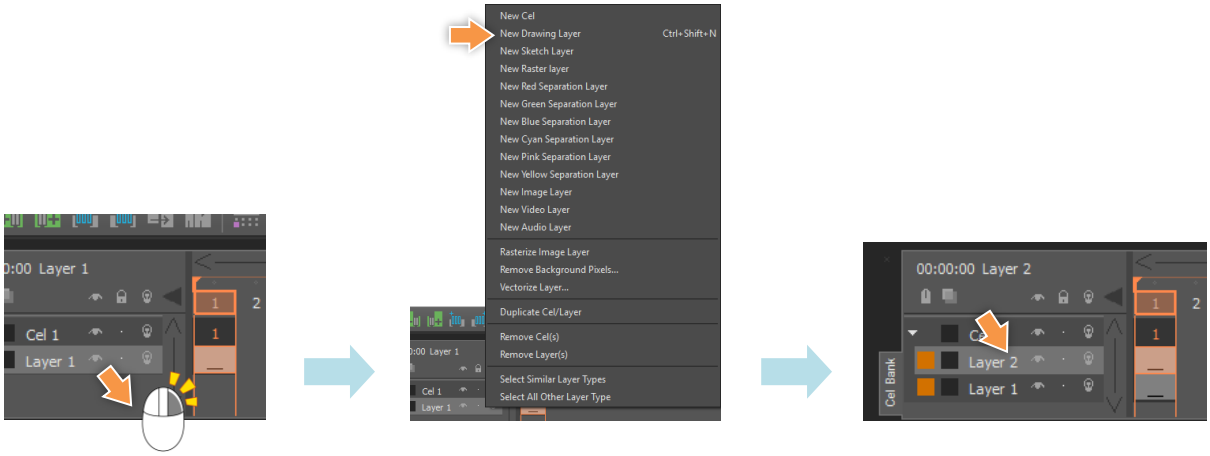
Please see **Chapter 07 – Image Rasterization and Vectorization** for more information.

Using the Cel Bank – Cel View

This is where you can perform layer / cel creation and selection operations, as well as amend various layer statuses.

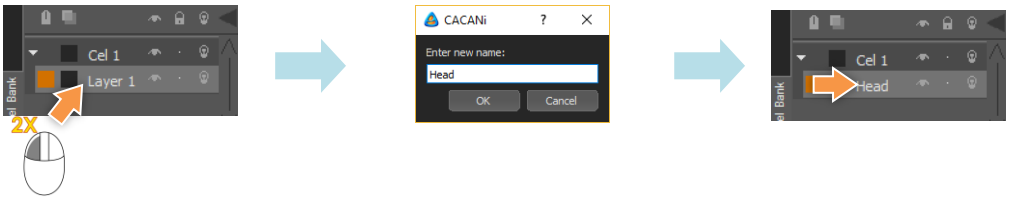
Layer / Cel Creation

You can create a new layer by **Right Clicking** on a cel, layer, or the empty space below the layers and choosing either of the New ... Layers options from the dropdown menu.



Layer Name Change

You can rename a layer by **Double Clicking** on the name. A dialog box will pop up and the new name can be entered.



Layer Selection

When working in CACANi, there are various methods you can use to select layers:

Single Layer

A single layer can be selected easily by **Left Clicking** directly on the specific layer. The layer will be highlighted.

Multiple Layers in Sequential Order

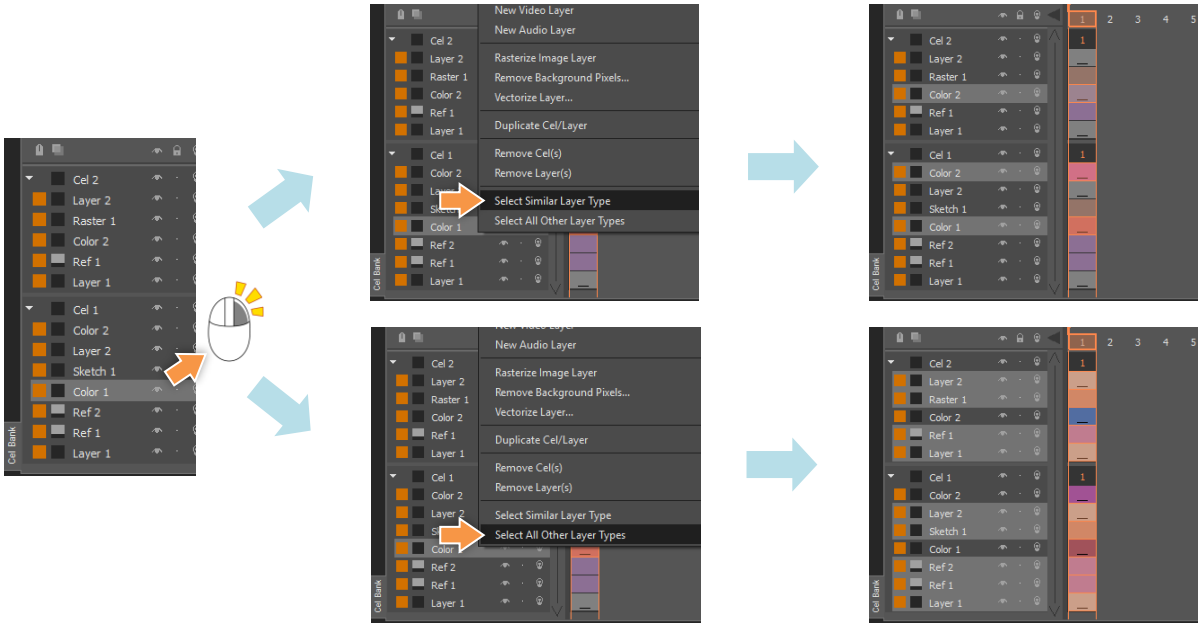
When you need to select layers arranged in sequence, start by **Left Clicking** on the first or last layer of the sequence. Then, **Hold Shift** and **Left Click** to select the layer on the other end of the sequence.

Multiple Layers in Non-sequential Order

When you need to select layers arranged arbitrarily, start by **Left Clicking** on any layer you wish to select it. Next, **Hold Ctrl** and **Left Click** on another layer you wish to include in your selection.

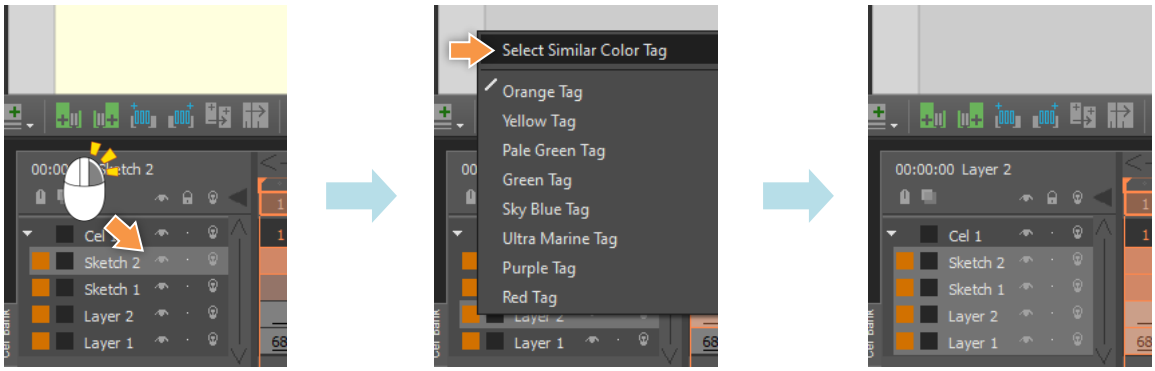
Layer Types

As there are different types of layers, you can use Select Similar Layer Type to only pick layers that are of the same type as the current active layer. This can be used to quickly change layer statuses for multiple layers. Conversely, you can choose Select All Other Layer Types to pick layers that are not of the same type as the current active layer.



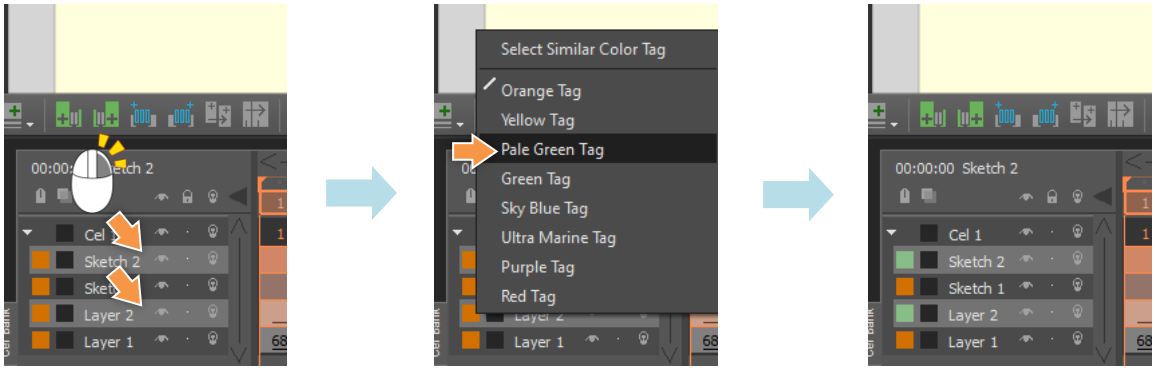
Layer Selection - Color Tags

In addition to Layer Types, you can also assign Color Tags to specific layers, so that you can select them easily later. All layers are assigned the Orange Tag by default. To select layers with the same Color Tag, you can **Right Click** on the Orange square on a layer to bring up the dropdown menu and choose Select Similar Color Tag.



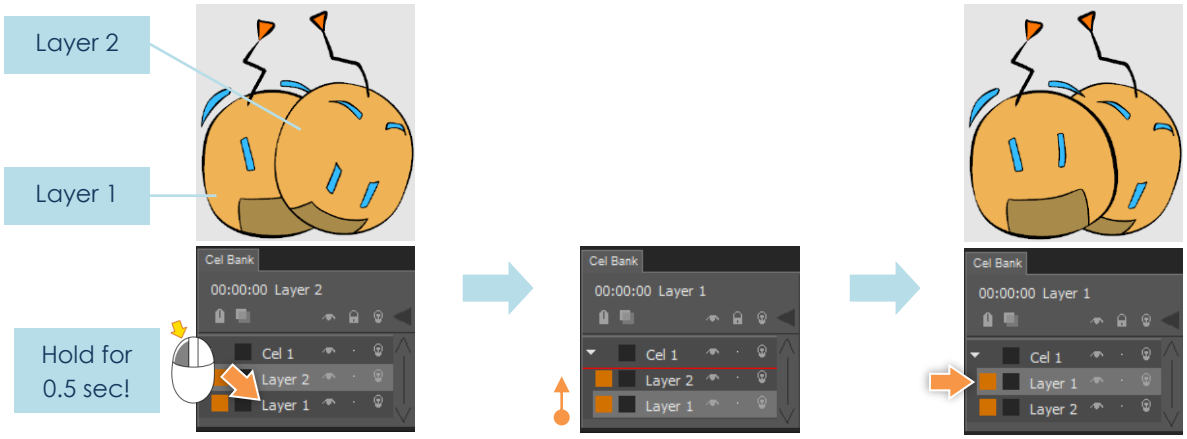
To assign a new Color Tag, first select the required layers (**Shift + Left Click** or **Ctrl + Left Click**).

Then, **Right Click** on the Orange square on the layer and choose a different Color Tag from the dropdown menu.



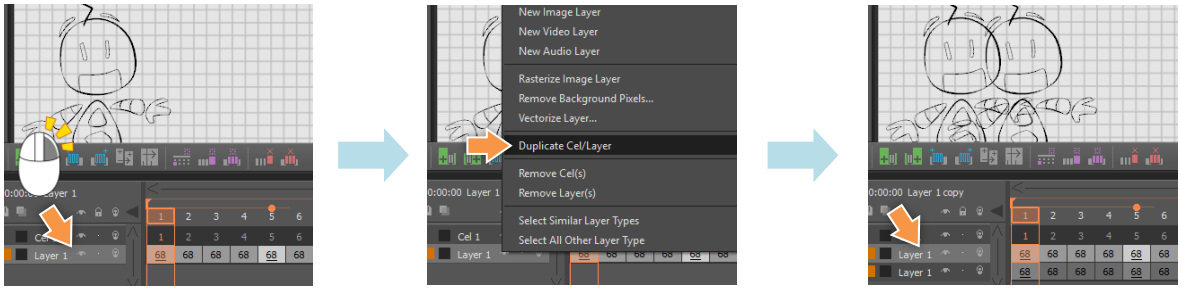
Moving Layers / Cels (Display Order)

You can adjust the order of the layers or cels so that the contents of a layer are displayed above or below the rest. However, in order to help you minimize any accidental movements of layers, you need to **Hold Left Click** on a layer for half a second before you can move it. After that, you will see the cursor icon change to a hand icon. **Drag** the layer to reposition it. A red line will appear to indicate where the new position of the layer will be.



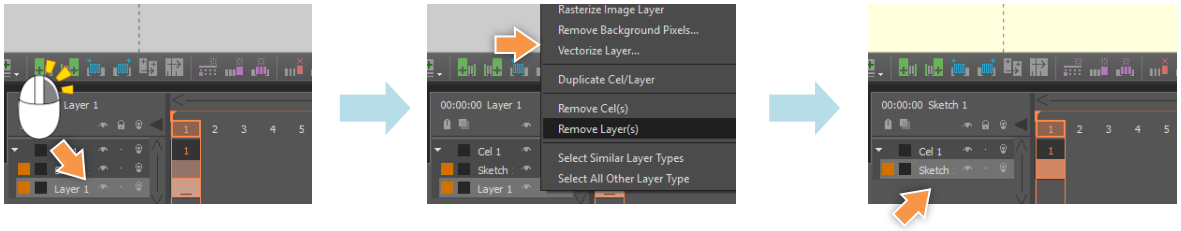
Layer Duplication

You can clone an active layer by **Right Clicking** and choosing Duplicate Active Layer from the dropdown menu.



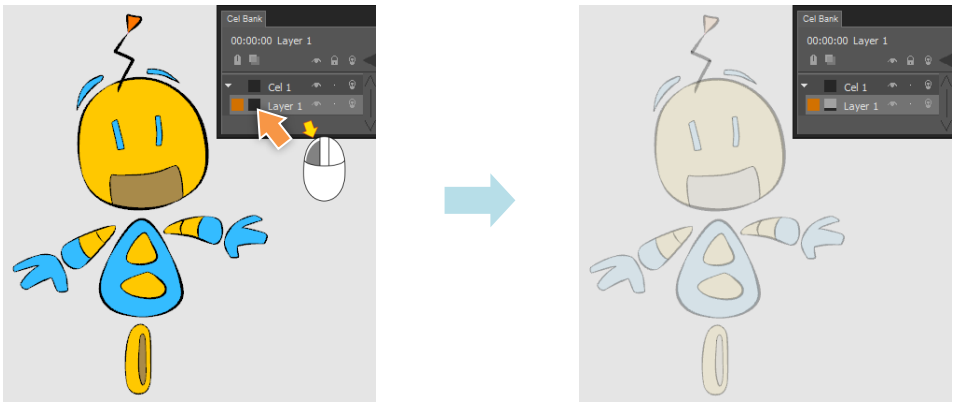
Layer Removal

You can delete a selected layer or cel by **Right Clicking** and choosing Remove Layer or Remove Cel from the dropdown menu. In addition, multiple layers or cels can be deleted at the same time by using **Shift + Left Click** (for layers / cels arranged in sequence) or **Ctrl + Left Click** (for layers / cels arranged arbitrarily) to select the required layers.



Layer Opacity Slider

You can adjust the opacity, or transparency, of a layer via the Layer Opacity Slider. **Left Click** and **Drag** on the slider to vary the opacity level.

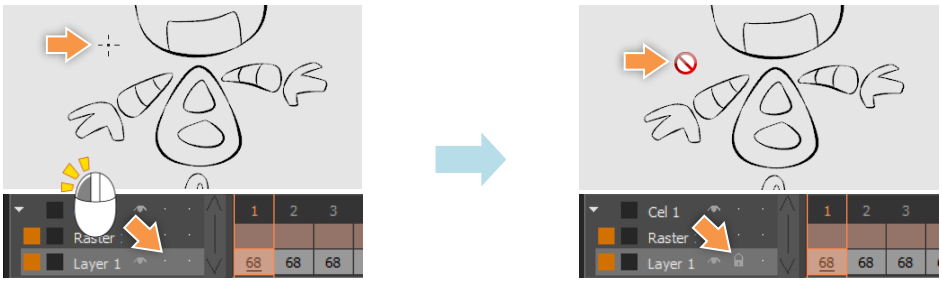


Layer / Cel Status Toggle

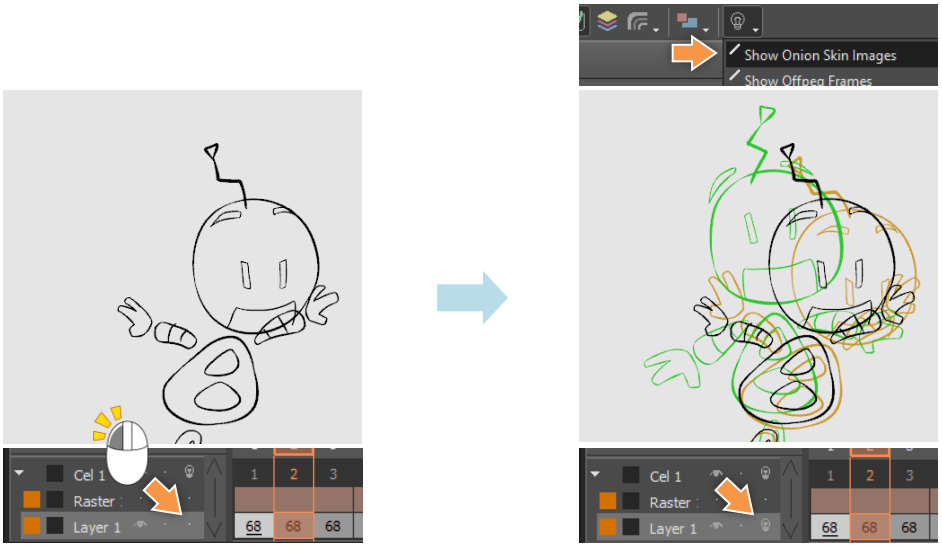
You can change the status of a layer or cel in the Cel View by enabling / disabling the icon directly.

The **Visibility** icon displays or hides the contents of the selected layer.

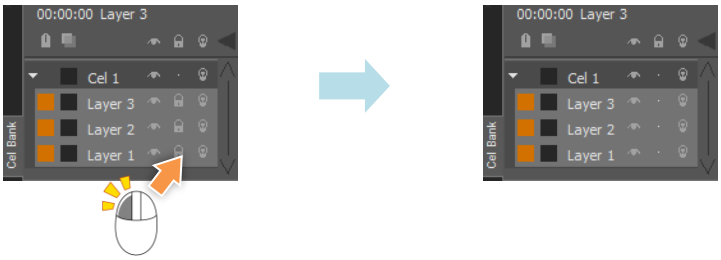
The **Lock** icon, when toggled, prevents the contents of the selected layer from being changed. The cursor icon will change to reflect the locked status of the active layer.



The **Layer Onion Skin** icon, when toggled, includes the strokes of the selected layer when the frame is displayed as an onionskin image. Note that the onionskin image will only be displayed when the **Show Onion Skin Images** option in the Display Bar is enabled as well.



To change a similar status for multiple layers / cels at the same, you can first select multiple layers / cels (**Shift + Left Click Drag** or **Ctrl + Left Click**), then **Left Click** on the relevant status icon for one of the selected layers.

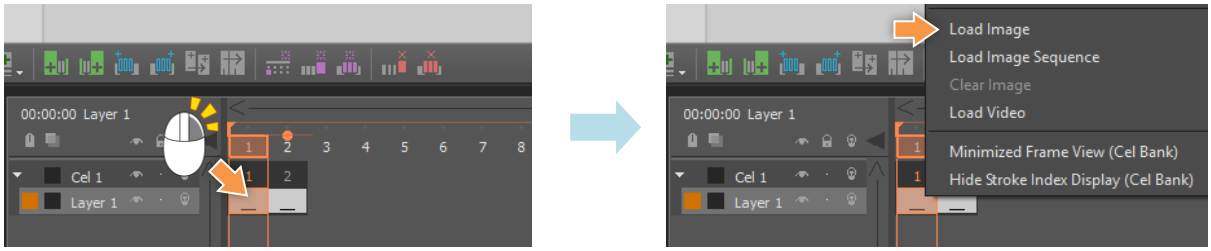


Working with Images

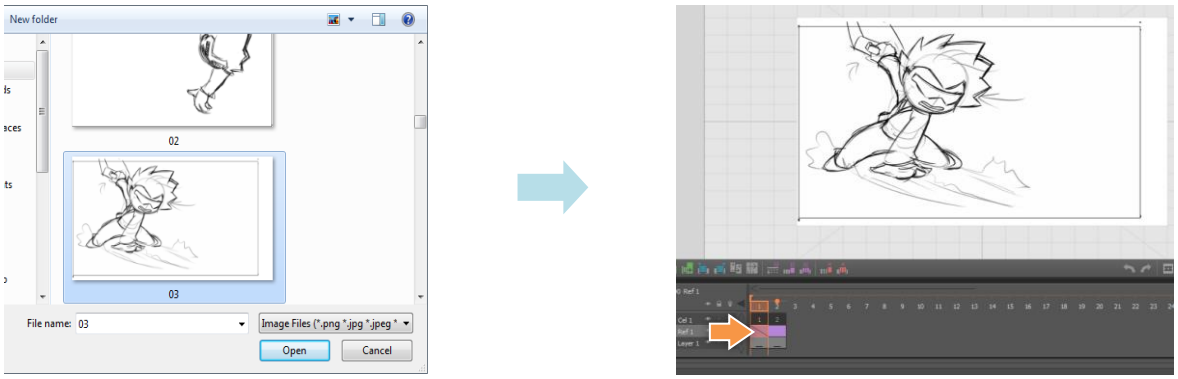
You can load images into image layers in a few ways.

Loading a single image to the Image layer

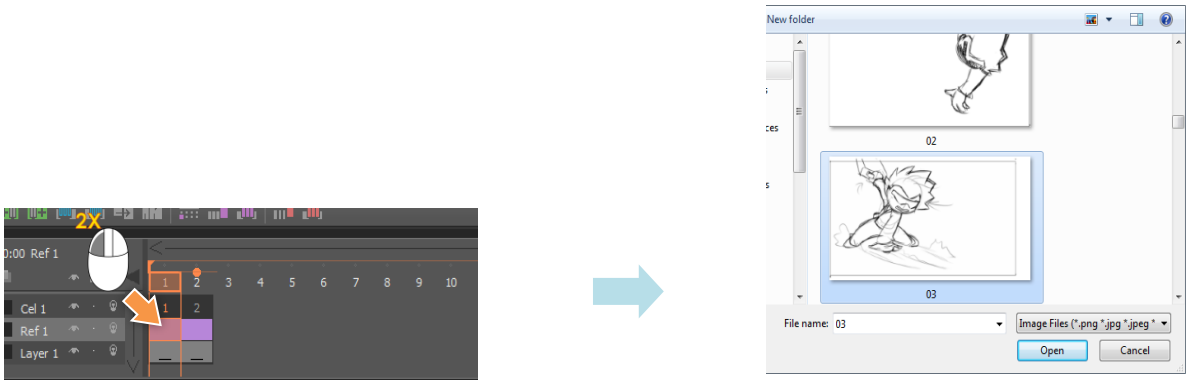
To load an image file as an image, **Right Click** on any frame in the Cel Bank, then select Load Image(s) from the context menu.



Choose an image file from the File Explorer Dialog. A **new** Image layer will be created with the selected image in the same cel, indicated with a diagonal line over the reference sheet.

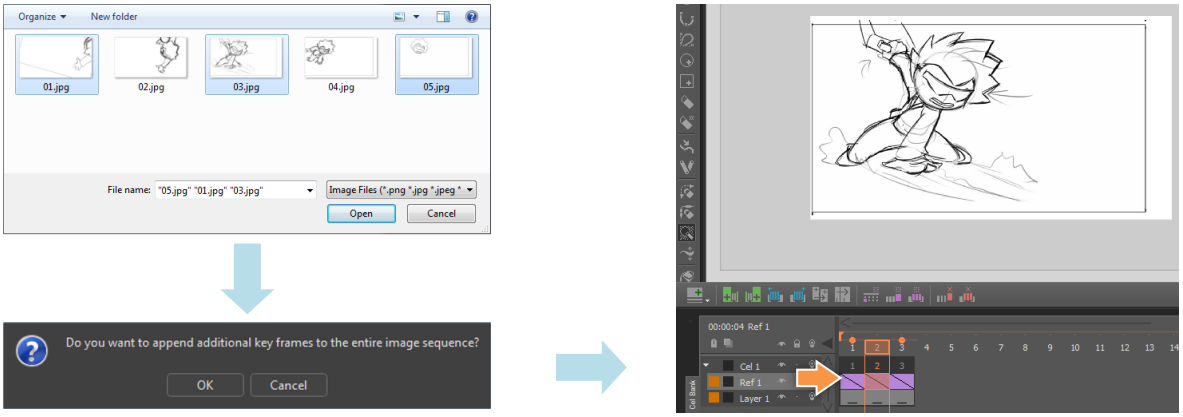


Alternatively, you can start by first creating the image layer, then **Double Clicking** on a particular frame to bring up the image loading dialog window.



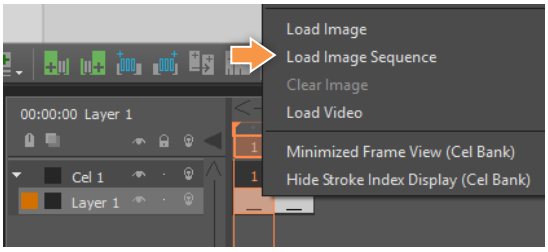
Loading multiple images to the Image layer

Using the same Load Image(s) option or **Double Clicking** on an image layer frame, you can also select multiple, non-sequential image files to bring into the Cel Bank.

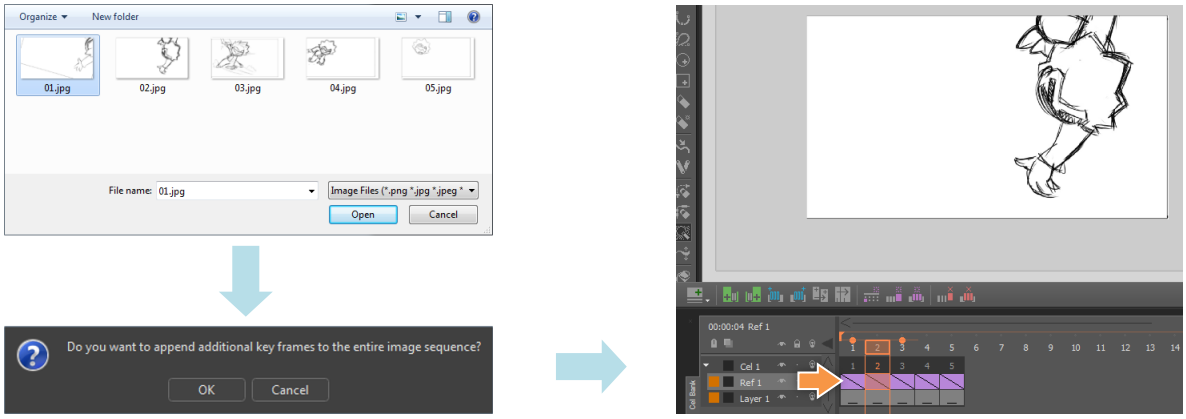


Loading an image sequence to the Image layer

Alternatively, you can select Load Image Sequence to load a series of pictures numbered sequentially into CACANi.



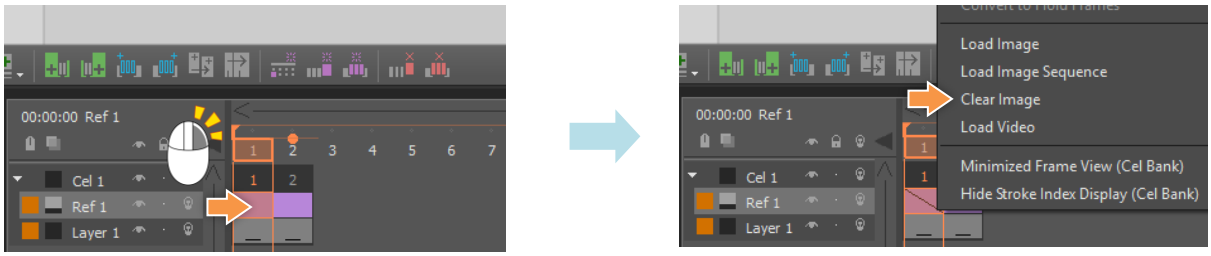
You only need to choose the first file for the sequence. CACANi will warn you that it will be increasing the number of created frames and possibly replacing images loaded previously. Click OK to continue.



For the above to work correctly, all the files in the image sequence should have filenames that end with a numeric value (ie. file001, file002, file003…..).

Clearing images from the Image layer

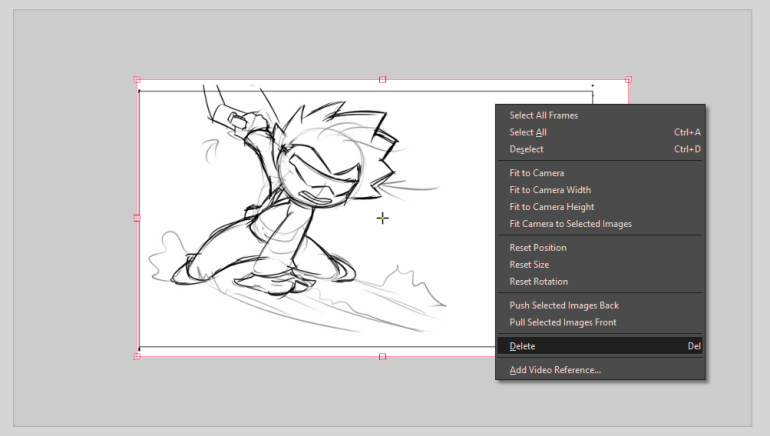
To clear an image, **Right Click** on the frame in the **Cel Bank**, then select **Clear Image** from the context menu. The diagonal line indicator will disappear from the reference sheet as well.



To clear multiple images that are **arranged sequentially**, you can use **Hold Left Click + Drag** or **Shift + Hold Left Click** to first select the reference sheets, then **Right Click** and select Clear Image(s) from the context menu.

To clear multiple images that are **not arranged sequentially**, you can use **Ctrl + Hold Left Click** to first select the reference sheets, then **Right Click** and select Clear Image(s) from the context menu.

Alternatively, you can use the Selection Tool to click on the image on the canvas. It will be outlined in red. **Right Click** to bring up the Context Menu, and then select **Delete**.



Resizing, Rotating, Moving the Image on the Canvas

To adjust an image, the **Image layer** in the **Cel Bank** must be active. Then use the Selection Tool to click on the image on the canvas. It is outlined in red, with adjustment handles.

To select multiple images, **Hold Shift** and **Left Click** on each of the images. Alternatively, **Left Click** and **Drag** the cursor over the images to select them.

To **Resize** the image(s), **Left Click** and **Drag** on any of the 8 handles.

If the **Maintain Aspect Ratio** option is enabled (in Property bar), **dragging** on any of the **4 corner handles** will resize the image proportionally.

Alternatively you can **Hold Shift** while **dragging** the corner handles.

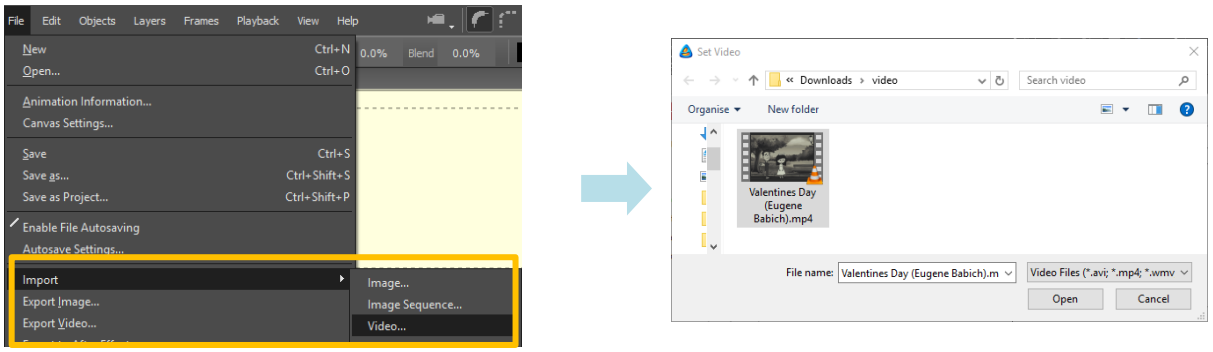
To **Rotate** the image(s), **Hold Left Click** and **Drag** anywhere along the edge of the image.

To **Move** the image(s), **Hold Left Click** anywhere within the image and **Drag**.

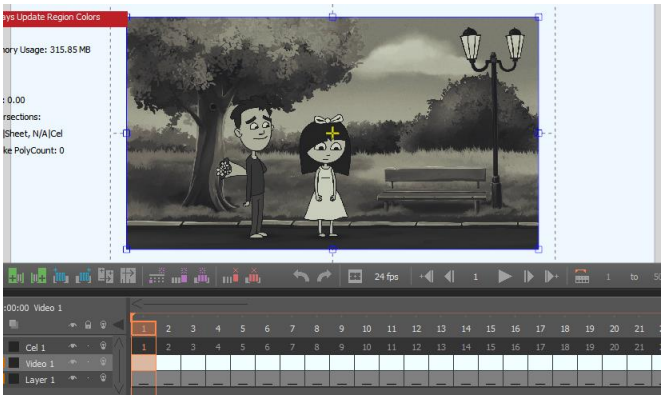
Working with Video Files

Loading video files

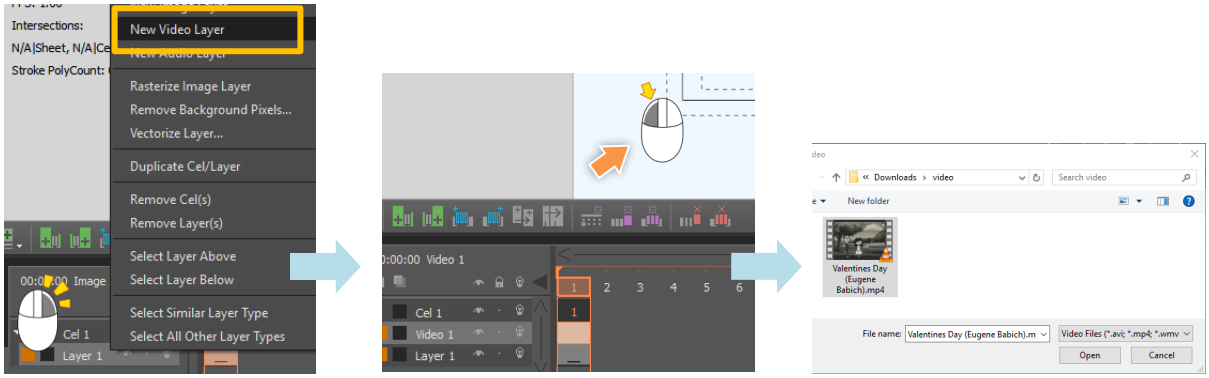
You can load video files into CACANi in a few ways. Select the Import Video… option from the File menu. Select a video to load. CACANi supports AVI, MP4 and WMV formats.



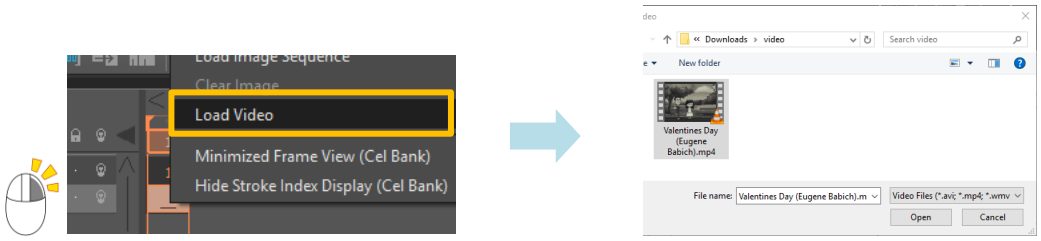
A video layer is created and the video is imported onto the canvas.



Alternatively, you can load the video from the Cel Bank. First create an empty video layer from the Cel View, then click on the canvas to bring up the load video dialog window.



Or you can **Right Click** on a frame to bring up the context menu in the Frame View. The chosen video will then be loaded into a new video layer.



After the video is loaded, the Selection Tool is automatically chosen so that you can adjust it on the canvas. by using the blue handlebars around the video frame.

Resizing, Rotating, Moving the Video on the Canvas

Use the Selection Tool to click on the video on the canvas. It is outlined in blue, with adjustment handles.

To **Resize** the video, **Hold Left Click** and **Drag** on any of the 8 handles.

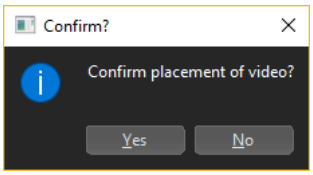
Dragging on any of the **4 corner handles** will resize the video proportionally.

Alternatively you can **Hold Shift** while **dragging** the corner handles.

To **Rotate** the video, **Hold Left Click** and **Drag** anywhere along the edge of the video.

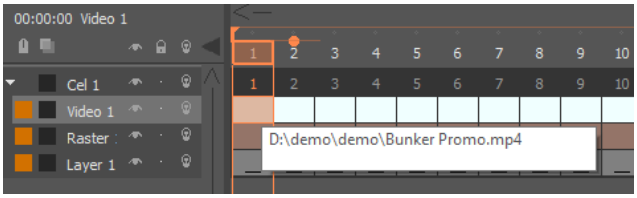
To **Move** the video, **Hold Left Click** anywhere within the video and **Drag**.

You can only adjust the video right after it is loaded. You will need to finalize the adjustments. Other than scrubbing the playhead to preview the animation, clicking anywhere else will bring up the confirmation dialog. After confirmation, the video's location, size and orientation is fixed on the canvas.



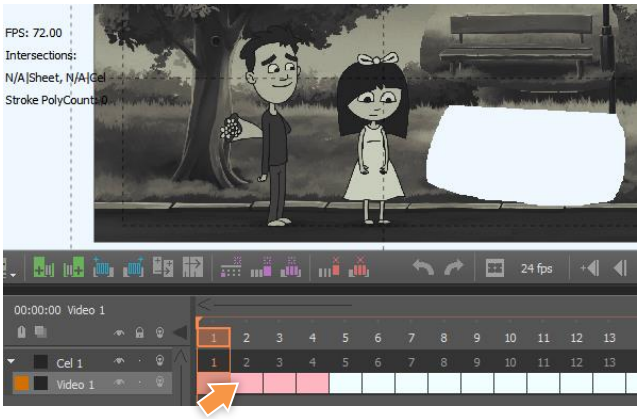
External Video Link and Saving

Although the video is loaded onto the canvas, it is not saved into the .cacs work file yet. It maintains its link to the original video file. Deleting or moving the external video file will break the link. When that happens, the video will not be viewable from the canvas. In such a situation, you can hover over the video layer to see the folder path to the missing video.

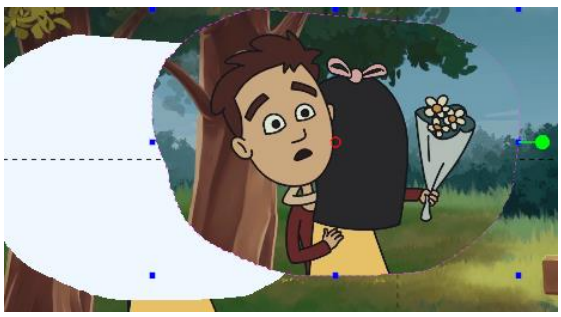


Editing the Video

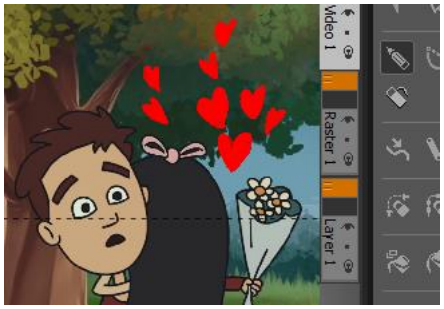
Using the Selection Tool, Pen Tool or Eraser, you can edit the loaded video frames. Please note that when a video frame is edited, the frame's link with the original video is broken and the edited frame is now saved in the .cacs work file. On the Cel Bank, the video frame will be marked with a different color.



With the Selection Tool, you can cut, copy and paste portions of the video.



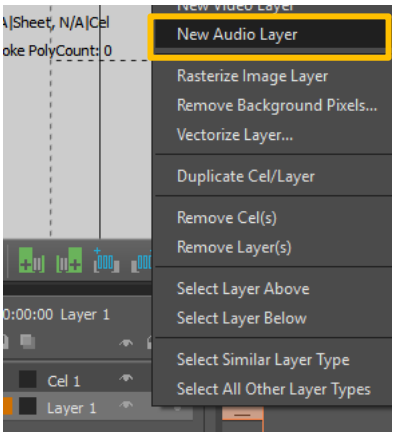
You can also draw and erase on the video frame using the Pen Tool and Eraser respectively. They work similar to the Pen Tool and Eraser on Raster Layers.

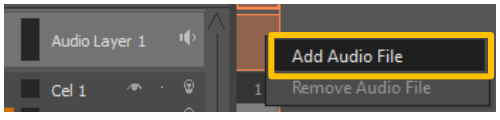
Please see Chapter 04 – Pen Tool Properties (Raster Layer).

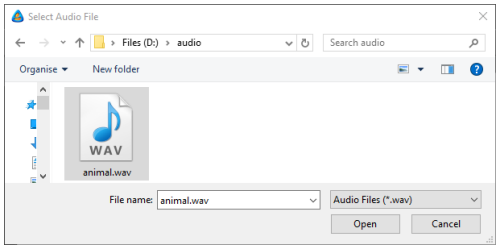
Working with Audio Files

You can load audio files into CACANi by creating an Audio Layer. **Right Click** on the Cel View to bring up the context menu and select New Audio Layer.

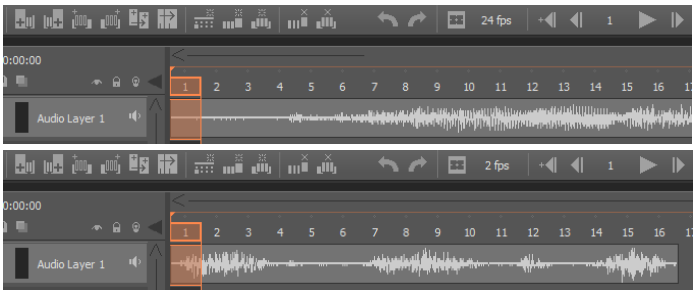


Right Click on the Frame View section to bring up the context menu and select Add Audio File.

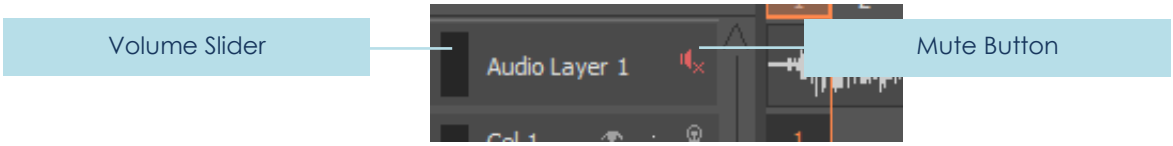




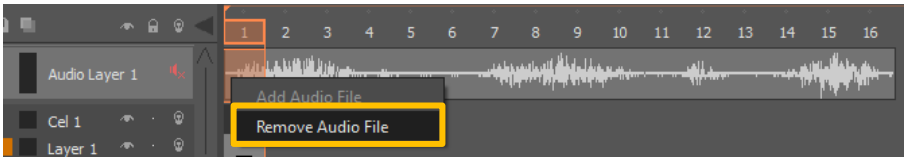
Changing the Playback Framerate does not affect the audio playback, but it will change the duration of the animation sequence.



In the Cel View, you can adjust the volume or mute it completely.

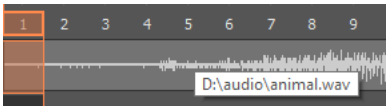


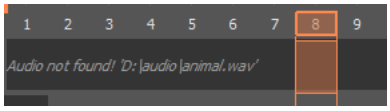
To delete the audio file, **Right Click** above the waveform and select Remove Audio File.



External Audio Link and Saving

Although the audio file is loaded onto the canvas, it is not saved into the .cacs work file yet. It maintains its link to the original audio file. Deleting or moving the external audio file will break the link. When that happens, the audio cannot be played from CACANi. A message will appear when the audio file was, showing you the last known location and name of the audio file.

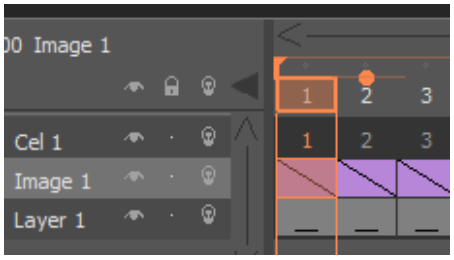


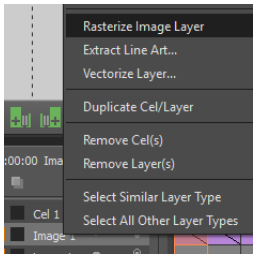


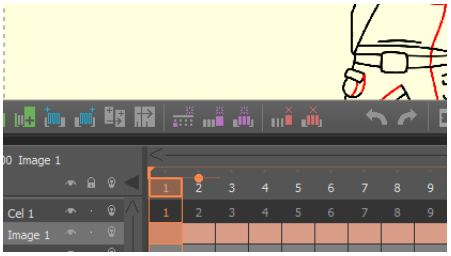
Rasterize Image Layer

This will convert all the images loaded in the layer into editable raster pixels in CACANi.

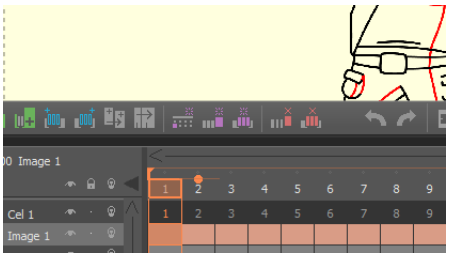
Right Click on the image layer to bring up the option.

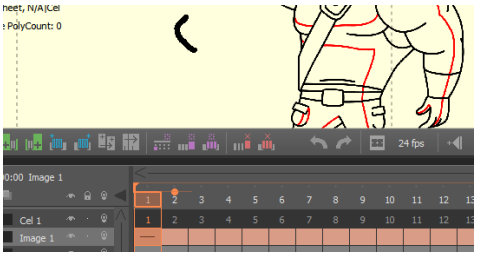






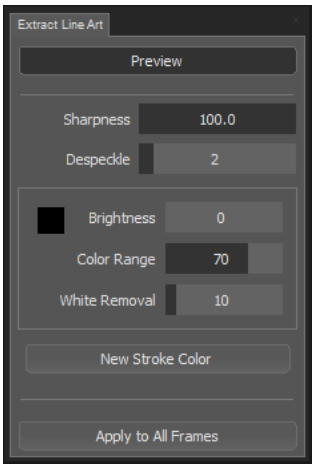
After rasterization, the links to the external image files are still maintained. When the Selection Tool, Pen Tool or Eraser is used to edit a frame, the link will then be broken and the frame will be saved in CACANi.





Extract Line Art…

By extracting the line art from drawings and turning the background transparent, it is easier for you to edit them. You can use this option on Raster Layers only. For best results, images should be of high resolutions, with distinct strokes and regions. Extracted strokes have aliased, non-smoothed edges.



Preview Mode

Allows you to see the results of the various settings in the canvas. When preview mode is enabled, the canvas background color is temporarily changed to pale green.

Sharpness

Controls the reproduction of details. Lower values will create thicker strokes at the expense of details.

Despeckle

Removes small, isolated pixels from the drawings. Higher values will cause larger areas of pixels to be removed.

Black Stroke Properties

Brightness

Affects the thickness of the black strokes. Higher values reduce the stroke thickness.

Color Range

Affects the range of colors that are converted to black pixels. Higher values mean less colors are converted to black pixels.

White Removal

Affects the range of colors considered as the blank paper pixels and hence be removed. Higher values mean more colors will be considered as blank paper pixels.

Color Stroke Properties

Brightness

Affects the thickness of the color strokes. Higher values reduce the stroke thickness.

Color Range

Affects the range of colors that are considered as the specified color. Higher values mean a greater range of colors are converted to the specified color.

Width

Affects the range of pixels with similar saturation levels as the specified color. Higher values mean that pixels with a larger variation of saturation are converted to the specified color and the stroke width is increased.

New Stroke Color

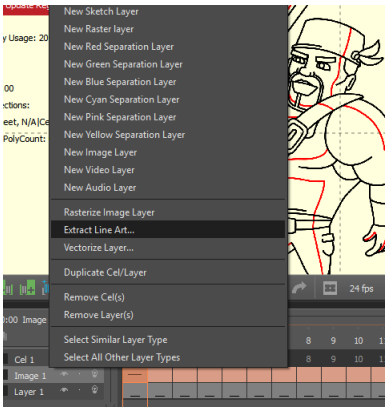
Allows you to extract an additional stroke color from the raster image. A total of 6 stroke colors can be added.

Apply to All Frames

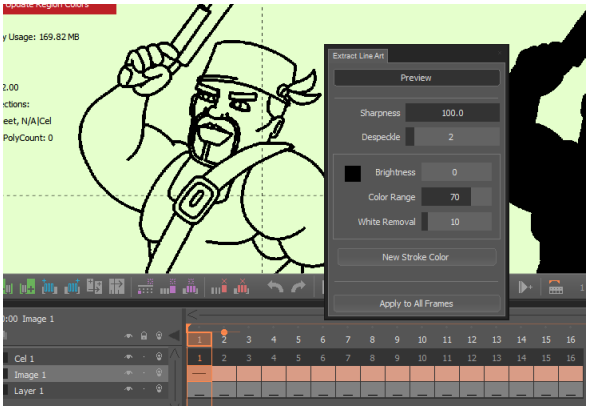
Processes the frames based on the settings in the panel. When the processing is complete, each extracted color stroke is organized into its own sublayer so that you can edit them separately.

Using Extract Line Art

Right Click on the Image Layer to bring up the context menu then select the Extract Line Art… option.



Click on the Preview button. The canvas will turn green to signify that CACANi is in preview mode. You can now see the result when you alter the settings.

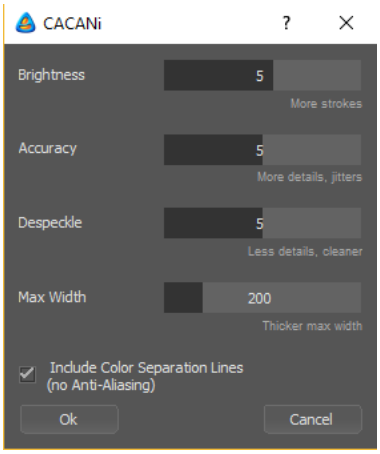


Click on the New Stroke Color button. By setting the different stroke colors, you can further extract them into their own sublayers.

Finally, click on Apply to All Frames button and CACANi will process the frames based on the settings.

Vectorize Layer...

Converts Raster or Image Layers into Drawing Layers. Allows you to convert the raster drawings into vector strokes. Raster region colors are not supported, they will instead be turned into strokes. To get the best results for external images, you should use the Extract Line Art option first.



Brightness

Determines the brightness of pixels to be considered in the vectorization process. Higher values mean that brighter pixels are included in the process. This will lead to a larger number of strokes as well as thicker stroke widths.

Accuracy

Determines how close the vector strokes should follow the original image. Higher values mean that the strokes are more detailed but might not be smooth.

Despeckle

Determines whether small, isolated pixels are considered in the vectorization process. Higher values mean that the vector strokes might have less details but are smoother.

Max Width

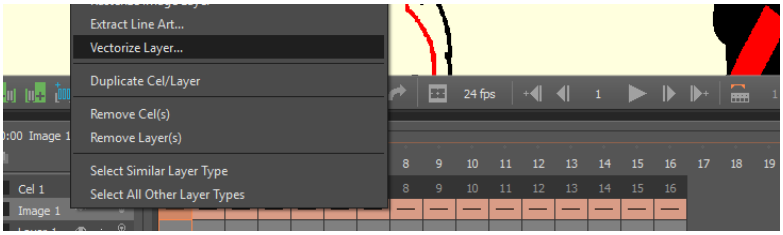
Allows you to control the maximum thickness of the vector stroke width. Higher values mean that the maximum stroke width is thicker.

Include Color Separation Lines (no Anti-Aliasing)

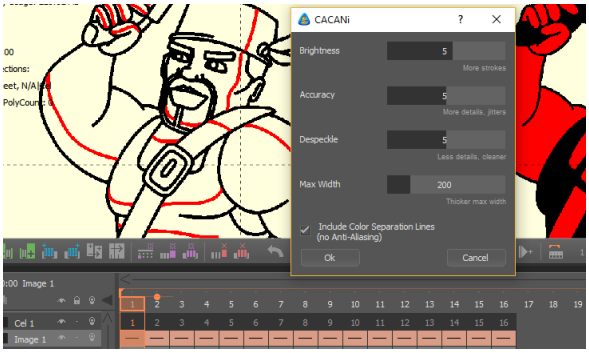
When enabled, raster color strokes are converted into vector color separation lines. However, if the stroke edges have anti-aliasing, the conversion results will not be good.

Using Vectorize Layer

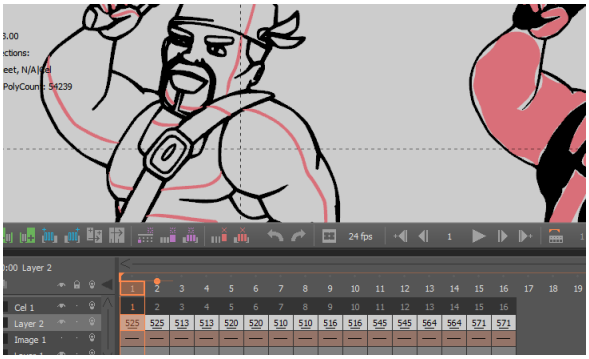
Right Click on the Raster Layer to bring up the context menu and select the Vectorize Layer… option.



The Vectorization dialog window will appear.



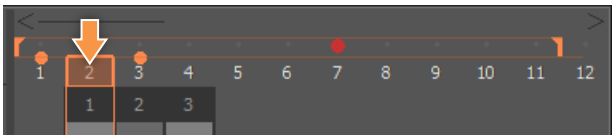
Click Ok and CACANi will process the frames based on the settings. A new drawing layer is created with the vector strokes above the raster layer.



Using the Cel Bank - Frame View

Using the Playhead

The playhead shows the location of the active frame. You can scrub through the animation sequence by **Left Clicking** and **Dragging** the **Middle** of the playhead. The active frame is displayed on the Canvas.



Displaying Onion Skin Frames

Please see **Chapter 08 – Displaying Onion Skin Frames**.

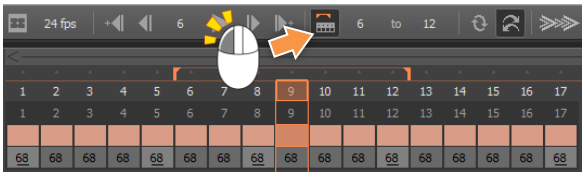
Displaying Offpeg Frames

Please see **Chapter 08 – Displaying Offpeg Frames**.

Setting the Playback Range

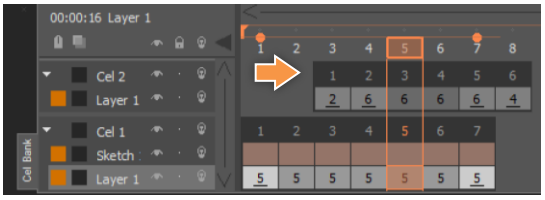
You can set a specific range to be played back with the 'In' and 'Out' range tabs. **Left Click** and **Drag** the 'In' range tab to the starting frame of your range, and the 'Out' range tab to the ending frame of your range.

Finally, enable the **Playback Range** icon to loop the playback.



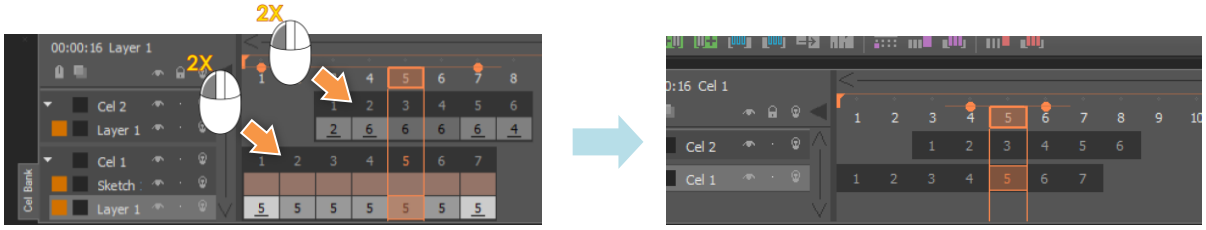
Cel Timing Adjustments

You can move a cel (and the layers within) forwards or backwards in time so that different cels start / stop at different frames.



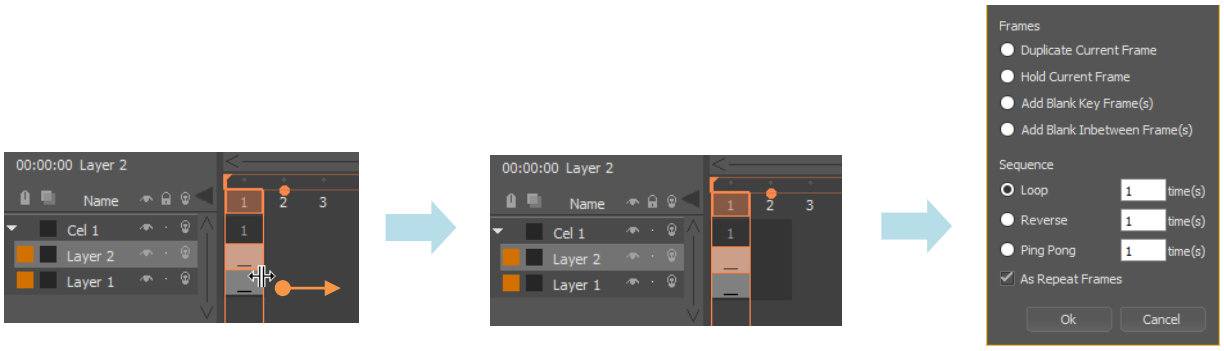
Maximizing / Minimizing a Cel

Cels can be minimized by **Double Clicking** on the cel frames in the cel bank frame view. You can maximize the cel again by **Double Clicking** on the cel frames.



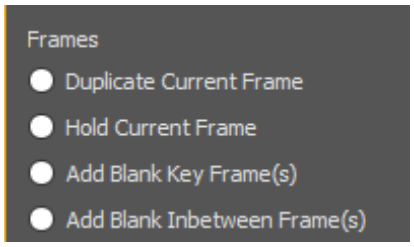
Frame Creation Window

In Frame View, you can create frames via the Frame Creation dialog window. You can bring up this window by moving your cursor at the right end of a frame, or in the gutter between 2 frames. The cursor icon will change. **Left Click** and **Drag** the cursor **to the right** and the window will pop up.



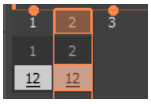
Frame Addition

The Frame Creation Window allows you to create different types of frame(s) or sequences.



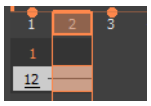
Duplicate Current Frame

Creates a copy of your selected frames.



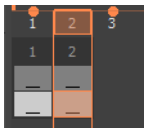
Hold Current Frame

Creates a hold frame that extends the duration of your selected frames.



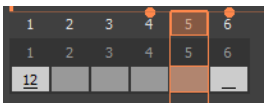
Add Blank Key Frame(s)

Creates empty key frames for drawing.



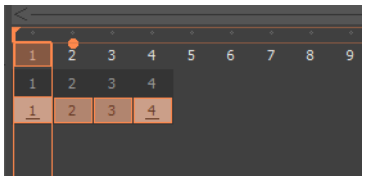
Add Blank In-between Frame(s)

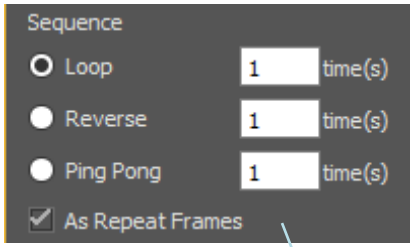
Creates empty in-between frames for generating in-betweens.



Sequence Looping

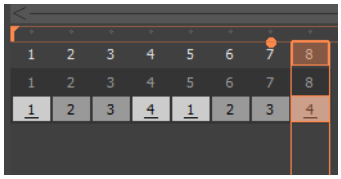
Other than adding frames, the Frame Creation Window also allows you to easily duplicate a sequence of frames. Instead of selecting a single frame, use **Shift + Left Click** to select a series of frames. Enter a numeric value to determine how many times the sequence is duplicated.





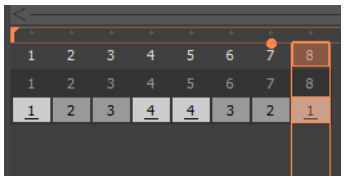
Loop

Duplicates the selected sequence, with the frames arranged in the same sequence.



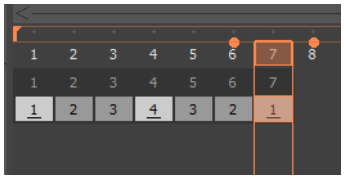
Reverse

Duplicate the selected sequence, but with the frames arranged in reverse order.



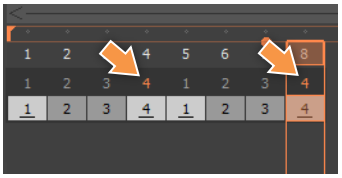
Ping Pong

Duplicate the selected sequence, but without duplicating the last frame, and with the rest of the frames arranged in reverse order.



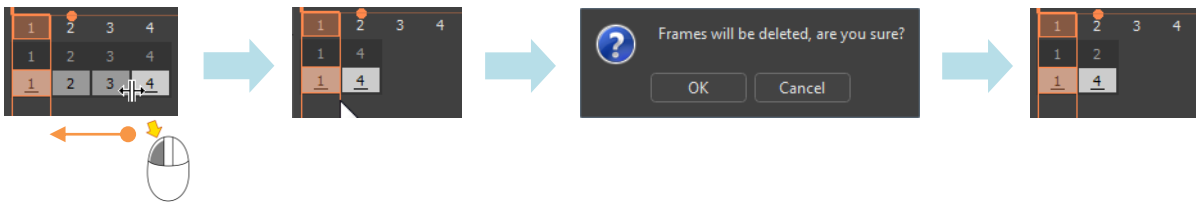
As Repeat Frames

Used together with Loop, Reverse or Ping Pong options. All the frames in the duplicated sequence are repeated frames of the original frames.

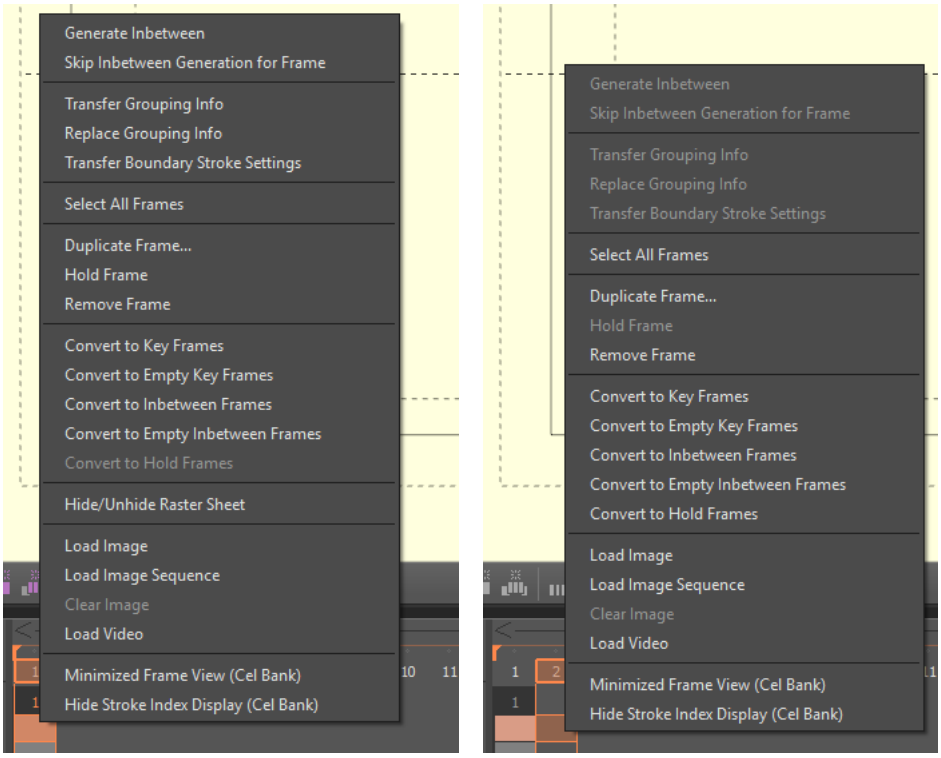


Frame Removal

To remove or delete frames, move your cursor at the right end of a frame, or in the gutter between 2 frames. The cursor icon will change. **Left Click** and **Drag** the cursor **to the left** and a confirmation window will pop up. Click **OK** to complete.



Frame View Context Menu



The Frame View context menu allows you to access additional options found in the various main menus.

Please see **Chapter 03 – Import**, **Chapter 03 – Frames menu** and **Chapter 03 – View menu** for more information.

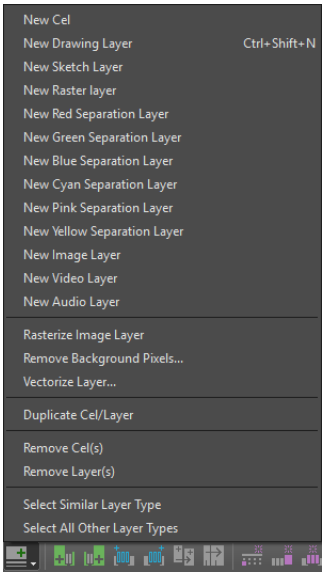
Frame Controls

Frames can be easily created or removed using any of the **Frame Control** buttons located below the **Canvas**.

Cel Options Menu

Allows you to add or remove cels and layers in the Cel Bank.

Please see **Chapter 07 - Layer / Cel Creation**.



Frame Addition and Removal Buttons

Allows you to create/clear/delete frames without accessing the Cel Bank.

Add new Key Frames to the Left / Right

The first icon creates a key frame **before the active frame**, the second creates one **after the active frame**. This affects all layers in the same cel.

In-between Frames

The first icon creates an in-between frame **before the active frame**, the second creates one **after the active frame**. This affects all layers in the same cel.

Duplicate Frame

The first icon creates a duplicate frame **before the active frame**, the second creates one **after the active frame**. This affects all layers in the same cel.

Hold Frame
Allows you to extend the duration of the active frame.

Clear Sheet
Allows you to clear the strokes in the active sheet.

Clear Frame
Allows you to clear, or empty, all strokes in the active frame. This affects all the layers in the same cel.

Clear In-between Frames
Allows you to clear all strokes in the in-between frame sequence. This affects all in-between frames within the same pair of key frames, as well as all the layers in the same cel.

Delete Frame
Allows you to remove the active frame from the cel sequence. This affects all the layers within the same cel.

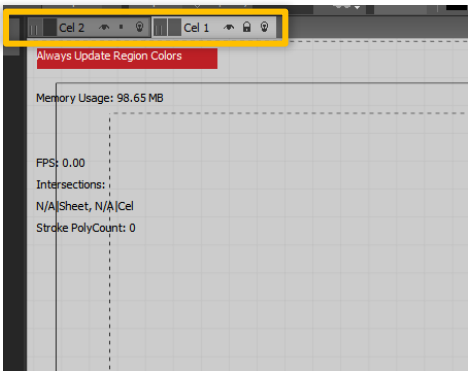
Delete In-between Frames
Allows you to remove all in-between frames within a pair of key frames. This affects all the layers in the same cel.

Deleting and clearing of selected frames can also be done en-mass to a group of selected frames.

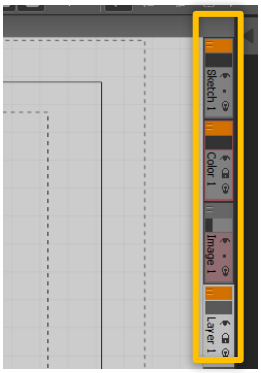
Multiple frames can be selected either with **Ctrl + Left Click** to select different frames or **Shift + Left Click** to select a range of frames.

Cel and Layer Selection Bars

The Cel and Layer Selection Bars works with the same concept of frames, layers and cels, but just displayed in a different manner. You can use the **Cel Selection Bar** to select the cel you want to work on. When a cel has been selected, the layers within the cel will be displayed in the **Layer Selection Bar** on the right.



Cels



Layers

Layer / Cel Tabs

Layer Header

By **Holding Left Click** and **Dragging**, you can reposition the specific layer and change the display order.

Layer Name

You can **Double Click** to rename the layer here. In addition, when there are too many tabs, by **Holding Left Click** and **Dragging** Up or Down on this portion of the tab, you can scroll up and down the Layer Selection Bar.

Layer Opacity Slider

Similar to that in the Cel Bank, you can adjust the opacity level of the layer here.

Layer Status Icons

The layer status icons seen in the Cel Bank are also available here on the tabs.

In the Cel and Layer Selection Bars, you can **Right Click** to access the context menu for adding and removing cels and layers.

08

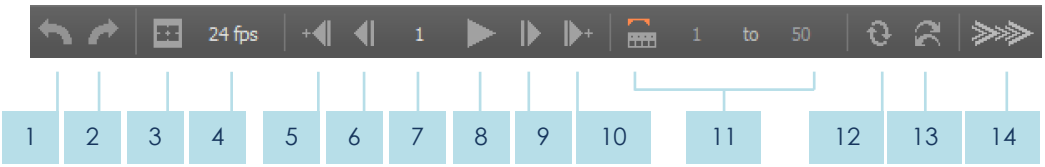
Animating & In-betweening

Your Own Animation Assistant

CACANi has been designed to harness the power of the computer in the hand-drawn animation workflow. With information from the key frames, in-between frames can be automatically generated and painted. At the same time, the artists retain full control of the process, by being able to adjust the frames as and when they need.

Playback Bar

When animating, it is important to preview the sequence constantly. Only by looking at the drawings in motion, will you be able to tell if the drawings are properly animated, or require further tweaking and adjustments.



1 **Undo**
Cancels the previous action. You can undo up to a maximum of 50 actions (30 actions in 1.x).

2 **Redo**
Does the previous action again. You can redo up to a maximum of 50 actions (30 actions in 1.x).

3 **Camera View Only**
Hides drawings outside the camera frame during playback, so that you can see how the final animation will look.

4 **Playback Frame Rate**
Sets the rate at which the sequence is played back, in Frames per Second (FPS). Click and **drag** on the number to change the frame rate during playback or click on the number to key in a new frame rate. A negative frame rate will reverse the playback of the sequence.

5 **Go to Previous Key Frame**
Moves the Playhead to the previous key frame.

6 **Go to Previous Frame**
Moves the Playhead to the previous frame.

7 **Current Frame / Time**
Displays the current active frame or time. In addition, you can scrub through the frames by **Left Click** and **Dragging** on the frame number. **Dragging** right will move the playhead forward, while **dragging** left will move it backwards.

8 **Play / Stop**
Perform playback for the animation sequence. Click again to stop the playback.

9 **Go to Next Frame**
Moves the Playhead to the next frame.

10 **Go to Next Key Frame**
Moves the Playhead to the next key frame.

11 **Playback Range, Start Frame, End Frame**
When enabled, you can select the range of frames to playback. After the playback reaches the End Frame, it loops back to the Start Frame. The frame numbers also correspond to the Start Frame and End Frame Tabs in the Timeline.

Cycle Animation modes

12 In Repeat mode, after the playback reaches the end of the animation sequence, it loops back to the first frame.

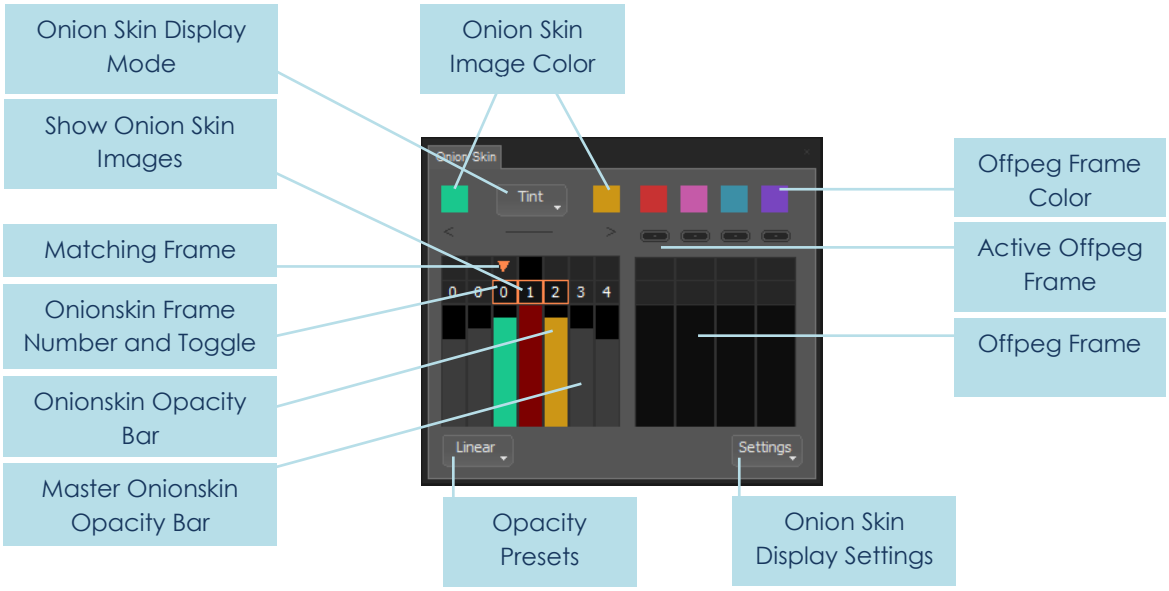
13 In Ping Pong mode, after the playback reaches the end of the animation sequence, the sequence is played in reverse.

14 **Quick Flip**
Allows you to preview the animation from the previous key frame to the next key frame by generating in-between frames temporarily.

Please see **Chapter 08 – Quick Flip**.

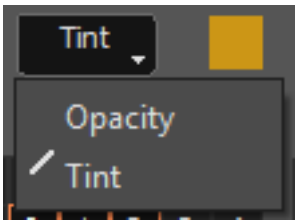
Onion Skin Panel

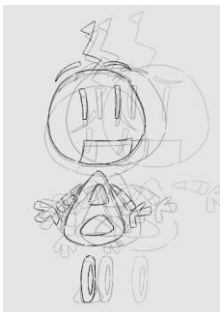
The **Onion Skin Panel** is used for referencing other frames when drawing for better accuracy in drawing. An Onion Skin Frame or Image shows you a view of what the drawing is in the previous frame or the next frame. An Offpeg Frame, while also an onion skin image, allows you to select specific frames for references. An offpeg frame can also be transformed temporarily.



Onion Skin Display Mode

Allows you to change between **Tint** and **Opacity** display modes. Opacity mode also preserves the original colors of the images.





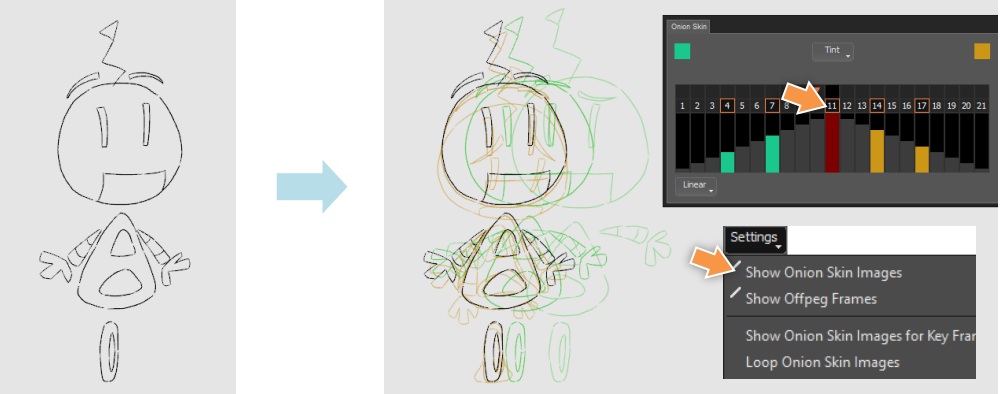
Opacity Mode

Tint Mode

Show Onion Skin Images

Allows you to toggle on or off the onionskin images.

To enable / disable onionskin images, click on the **Onion Skin Image Display** button on the **Onion Skin Panel**. Alternatively, the Onion Skin Image Display option can also be found in the **Display Property Bar**.

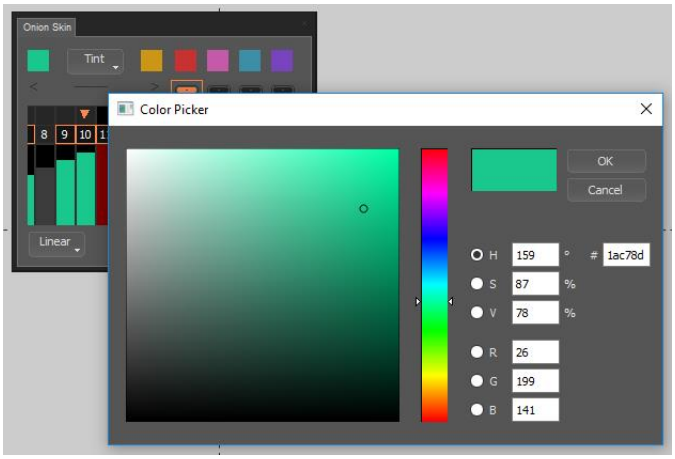


Onion Skin Image Color

Allows you to change the color of onion skin images before or after the active frame. To do so, **Double Click** on the color selection box and a color selection dialog will appear.

By default, onion skin images before the currently selected frame will be colored **green**, those after the selected frame will be colored **ochre brown**.

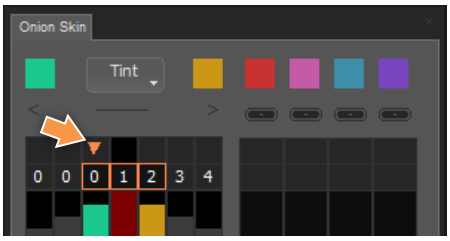
You can change the colors of the onion skin images by **Double Clicking** on the color selection boxes. This will trigger a dialog for onion skin image color changes.



Matching Frame

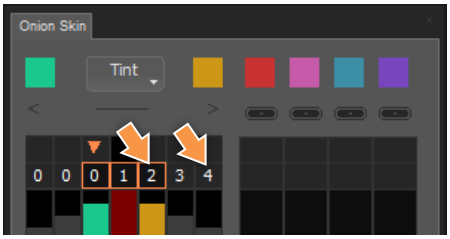
Allows you to designate a frame for stroke matching. Because matching strokes are normally confined to adjacent key frames, this will allow you to **match strokes to non-adjacent frames**.

The Matching Frame is viewed as an onionskin image, either on the canvas or in the **Navigator Panel**, when **Matching Frame mode** is enabled.



Onionskin Frame Number and Toggle

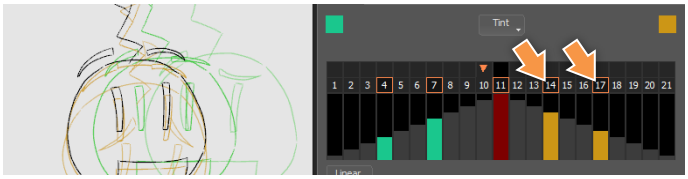
Indicates the frame number relative to the active frame. Clicking on the number also toggles on the onionskin image. When toggled on, the opacity bar will be shown in color and the frame number is outlined in orange.



Onionskin Opacity Bar

Allows you to change the opacity value of the onionskin image displayed on the canvas.

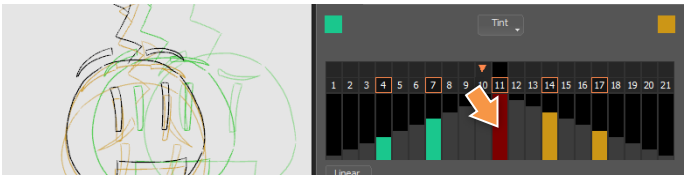
Onionskin images further away from the selected frame will have lower opacity values by default, thus giving an appearance of fading away. The opacity values of the onionskin images can be changed by adjusting the onionskin opacity bars corresponding to the onionskin images.



Master Onionskin Opacity Bar

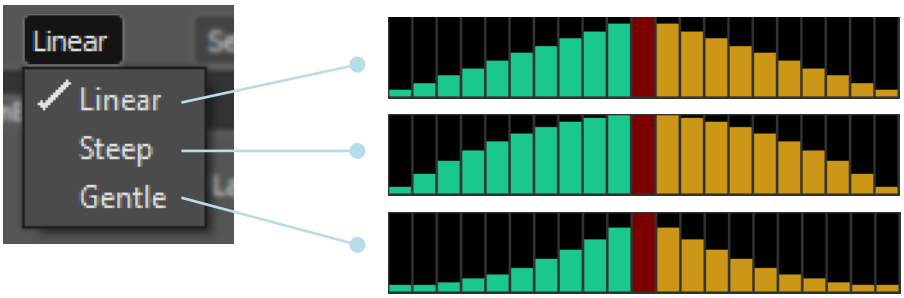
Determines the maximum opacity value of the onionskin images.

Alternatively, the maximum opacity can also be changed by adjusting the Master Onionskin Opacity Bar.



Opacity Presets

A list of presets that changes how fast the opacity values of the onionskin images fades.



Active Offpeg Frame

Selected Offpeg Frame. This is used when you need to move the Offpeg frame with the Offpeg Tool.

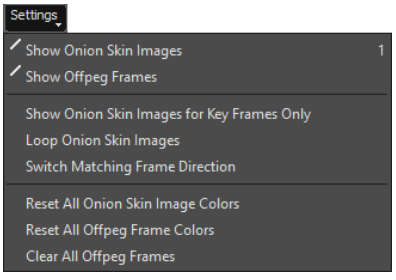
Offpeg Frame

Offpeg frame bars. Activated when an offpeg frame is toggled in the Cel Bank.

Offpeg Frame Color

Allows you to change the color of the offpeg frames.

Onion Skin Settings

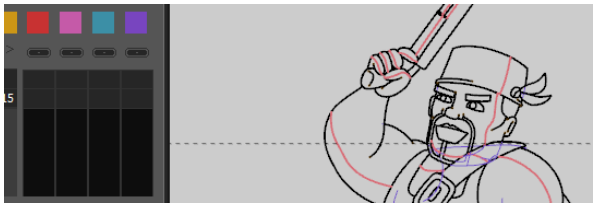


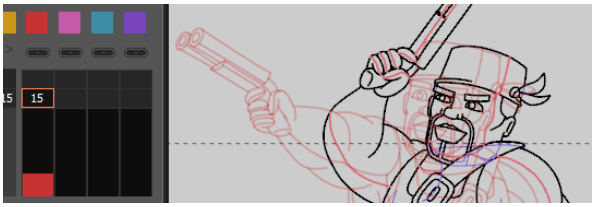
Show Onion Skin Images

Displays drawings from other frames as onionskin images in the canvas. The onionskin frames are relative to the playhead and active frame. When the playhead is moved, the onionskin frames are changed as well.

Show Offpeg Frames

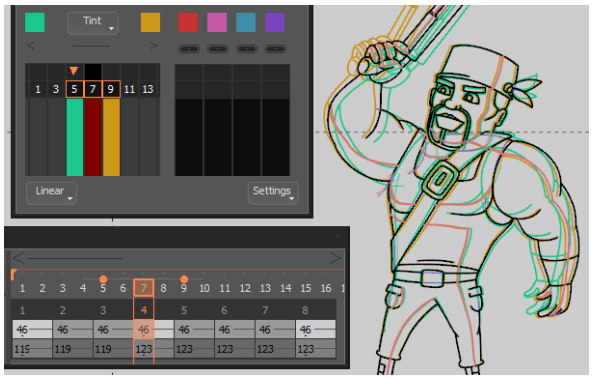
Displays drawings marked as Offpeg Frames in the canvas. Offpeg frames are a different type of onionskin frames. They do not change when the playhead is moved. They can be activated by **Left Clicking** on the dots above the Frame Numbers in Frame View in the Cel Bank.

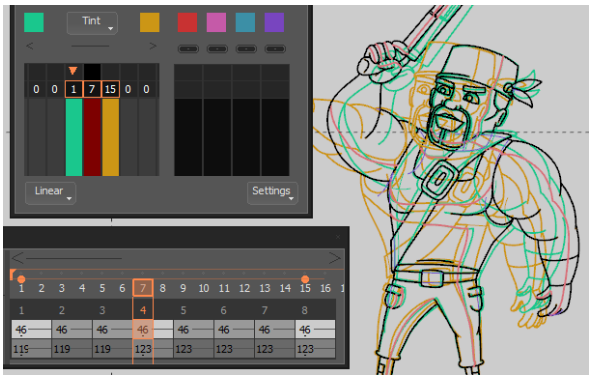




Show Onion Skin Images for Key Frames Only

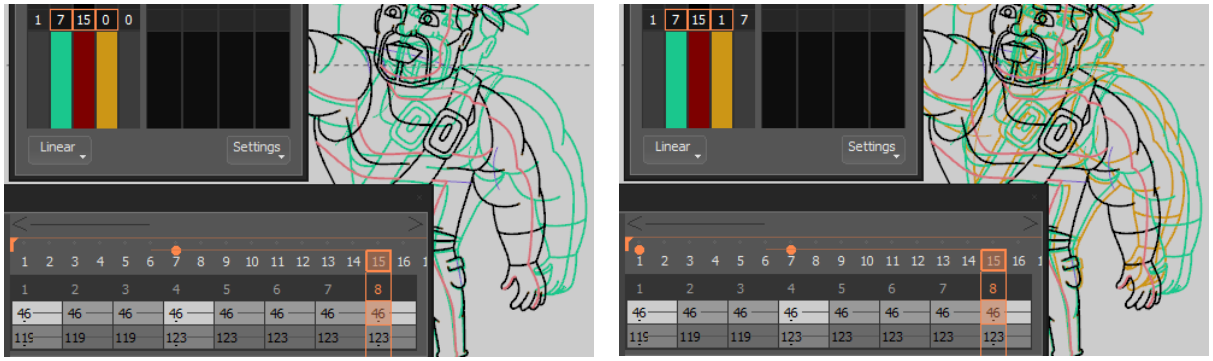
When enabled, the onionskin images will only reflect the key frames, and skip the in-between frames. Show Onion Skin Images option needs to be enabled.





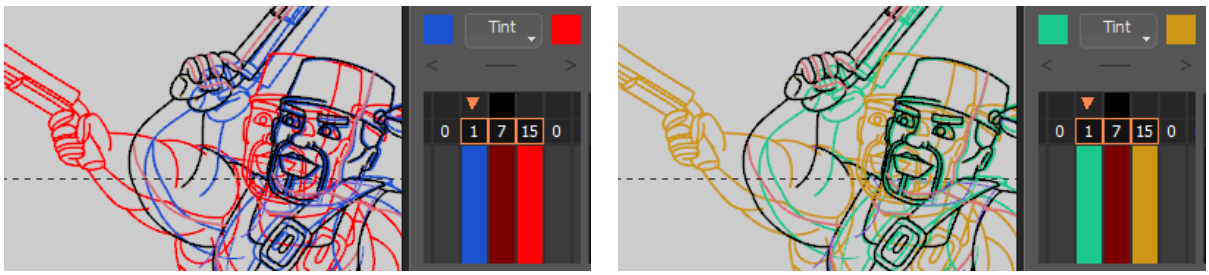
Loop Onion Skin Images

When the currently selected frame is the last frame of the sequence, this mode allows you to see the onionskin image of the first frame.



Reset All Onion Skin Image Colors

Changes the colors of the onionskin images back to their default colors.

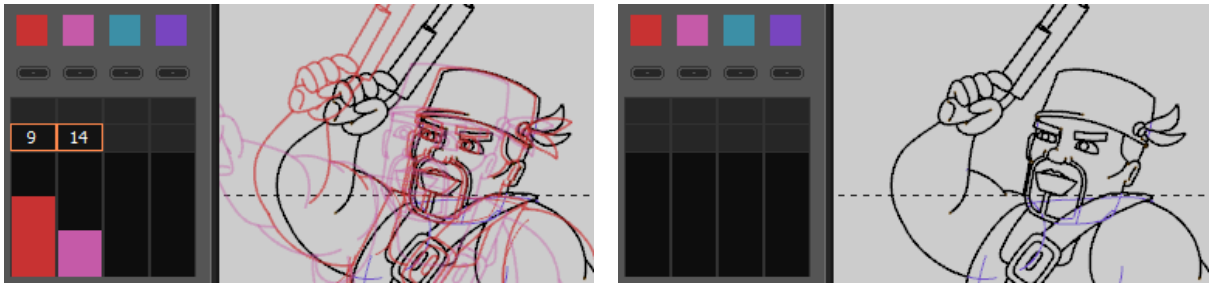


Reset All Offpeg Frame Colors

Changes the colors of the offpeg frames back to their default colors.

Clear All Offpeg Frames

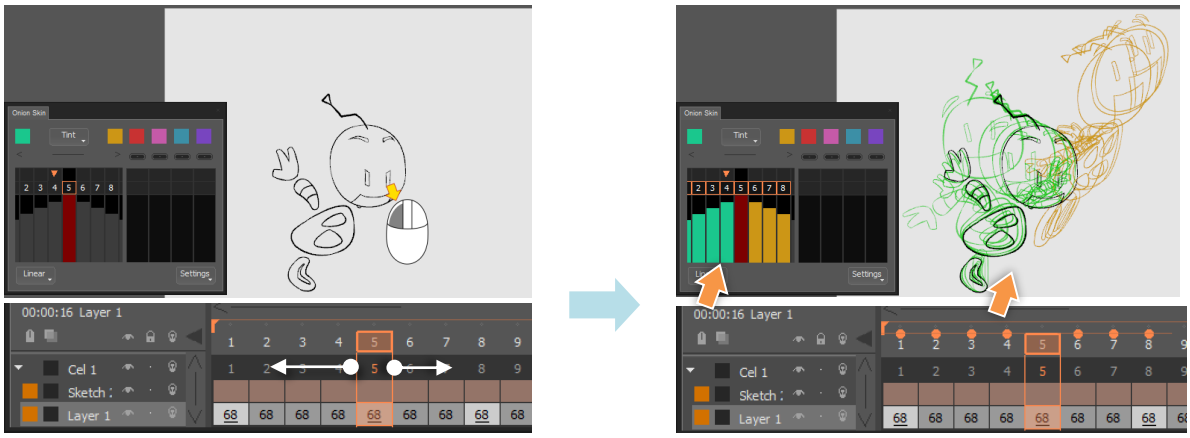
Removes the active offpeg frame.



Displaying Onion Skin Frames

The playhead in the Cel Bank can be used to display or hide onionskin frames. You can do that by **Left Clicking** and **Dragging** the **Edges** of the playhead. The orange dots indicate the onionskin frames displayed.

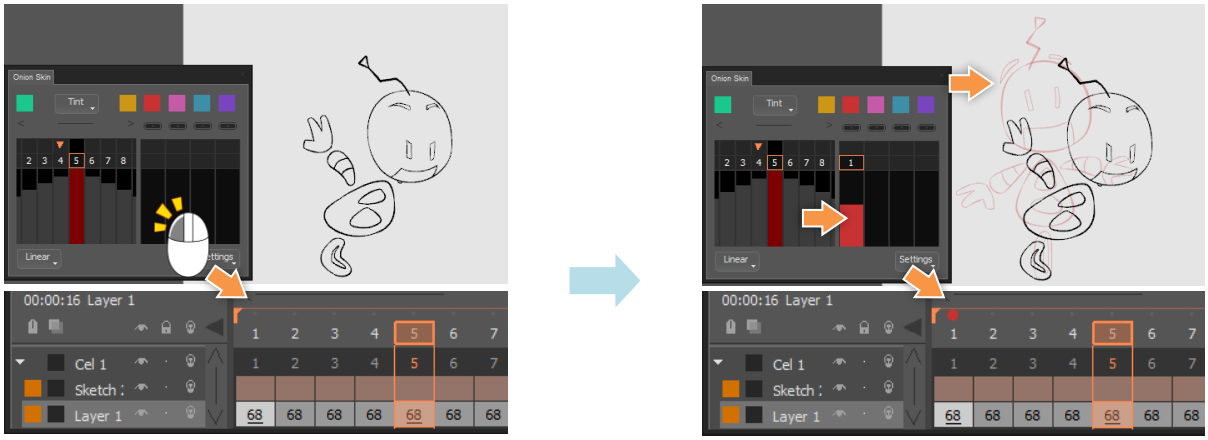
Left Click and **Drag AWAY** from the playhead to display onionskin frames.
Left Click and **Drag TOWARDS** the playhead to hide onionskin frames.



Displaying Offpeg Frames

The onionskin frames are relative to the playhead and active frame. When the playhead is moved, the onionskin frames are changed as well.

Offpeg frames are a different type of onionskin frames. They do not change when the playhead is moved. They can be activated by **Left Clicking** on the dots above the Frame Numbers in Frame View. To deactivate the offpeg frame, **Left Click** on the dot again.



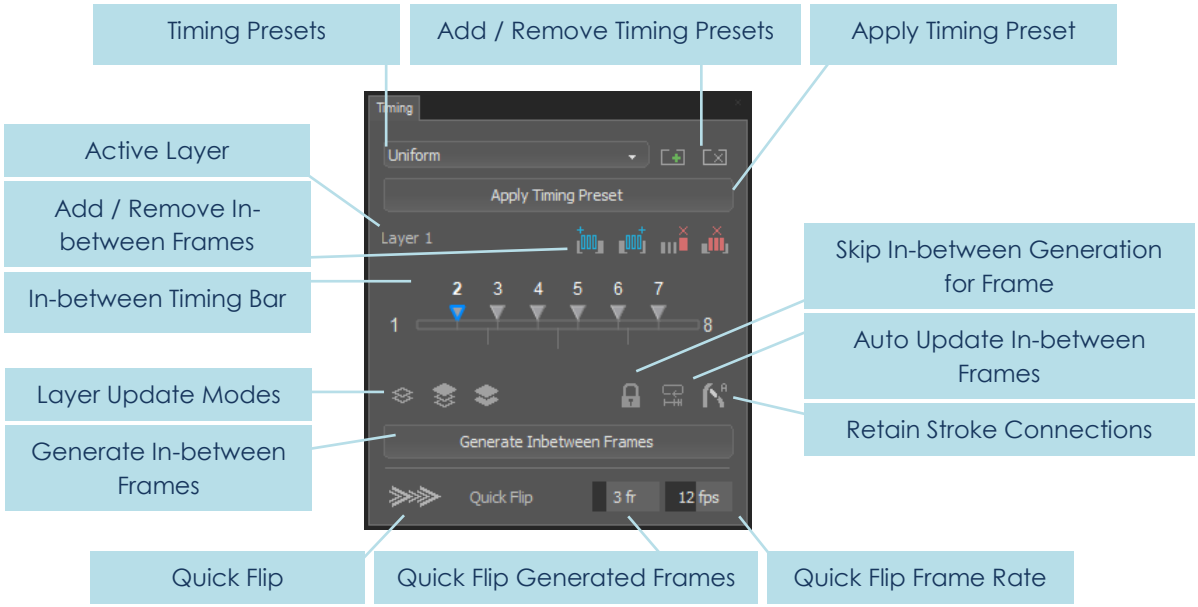
Adjusting Offpeg Frames

With the Offpeg Tool, you can move, scale and rotate offpeg frames. This is useful when you need to use the offpeg frames as references for drawing other frames.

Please see **Chapter 04 – Offpeg Tool**.

Timing Panel

In-between generation is one of the key functions in CACANi. Given two key frames depicting extreme poses of an action, intermediate frames, aka in-betweens, can be automatically generated by CACANi, creating a smooth motion. The **Timing Panel** provides flexible control of in-between frame generation as well as easy adjustment of their timing and spacing.



Timing Presets

Provides you with a number of frequently used settings for quick timing adjustments. Click on the **Timing Preset Button** to update the **In-between Timing Bar** with the selected presets.

Uniform

In-between frame markers are spaced the same distance from each other. The motion between key frames will be at a constant speed.

Accelerate

In-between frame markers are spaced closer together as they approach the second key frame. The motion between key frames will be speeding up.

Decelerate

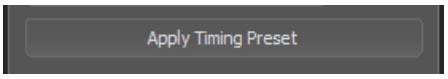
In-between frame markers are spaced further apart as they approach the second key frame. The motion between key frames will be slowing down.

Accelerate -> Decelerate
The spacing between in-between frame markers is further apart in the middle, and closer together when they approach the key frames on either side. The motion between key frames will be slowing down, then speeding up.

Decelerate -> Accelerate
The spacing between in-between frame markers is closer together in the middle, and further apart when they approach the key frames on either side. The motion between key frames will be speeding up, then slowing down.

Add / Remove Timing Presets
Allows you to save customized timings from the In-between Timing Bar to the Timing Presets dropdown menu or delete previously saved presets.

Apply Timing Preset
When clicked, any prior adjustments to the In-between Timing Bar will be cleared and the markers will be moved based on the **Timing Presets**. However, this does not alter the actual in-between frames. The frames will only be changed to the new timing if the **Generate In-between Frames** button is clicked again, or if the **Auto Update In-between Frames** mode is enabled.



Active Layer
Shows the current selected layer.

Add / Remove In-between Frames
The first creates an in-between frame **before the active frame**, the second creates one **after the active frame**.

The third icon allows you to remove the active in-between frame from the cel sequence. The last allows you to remove all in-between frames within a pair of key frames. These options affect all the layers in the same cel.

In-between Timing Bar
Shows the timing of in-between frames in the current pair of key frames. By adjusting the position of the notches, it will allow you to change the speed of animation for the in-between frames.

Layer Update Modes

Allows you to select which layers or cels are affected by the timing adjustments.

Selected Layers

When enabled, only selected layers are affected by the timing adjustments.

Selected Cel

When enabled, all the layers in the active cel are affected by the timing adjustments.

All Cels

When enabled, all cels with similar timing and frame types are affected by the timing adjustments.

Generate In-between Frames

When clicked, it will generate in-between frames based on the settings in the **In-between Timing Bar**.

Skip In-between Generation for Frame

When enabled, the active in-between frame will be prevented from any changes or updating due to timing adjustments in the **Timing Panel**. However, you will still be able to manually adjust the strokes of the locked frame directly on the canvas.

Auto Update In-between Frames

When enabled, in-between frames will be updated instantly whenever the timing is adjusted. However, this applies only to in-between frames that have been generated already, and does not apply to blank in-between frames.

Retain Stroke Connections

When enabled, CACANi will help to minimize unwanted stroke gaps in generated in-between frames.

Please see **Chapter 08 – Retain Stroke Connections**.

Quick Flip

Allows you to preview the animation from the previous key frame to the next key frame by generating in-between frames temporarily. The preview animation is generated for the active layer.

Quick Flip Generated Frames

Allows you to decide the number of frames that will be generated when using Quick Flip.

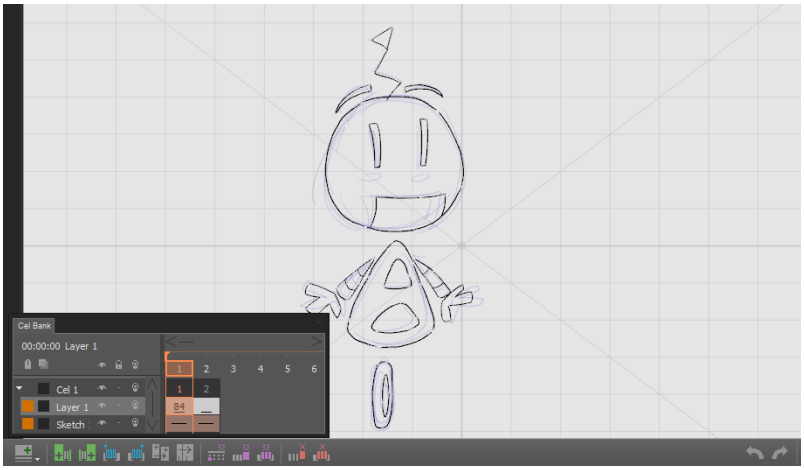
Quick Flip Frame Rate

Allows you to decide the playback speed when viewing the Quick Flip generated frames, in Frames per Second (FPS).

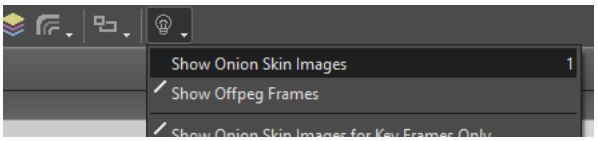
Using the Timing Panel

1. Create the 1st key frame

Start by creating your first drawing in key frame 1.

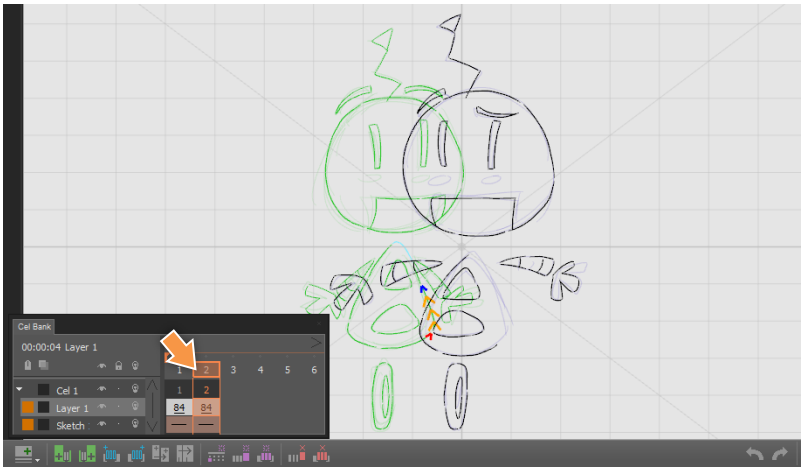


2. Switch on the Onion Skin in the Display Bar



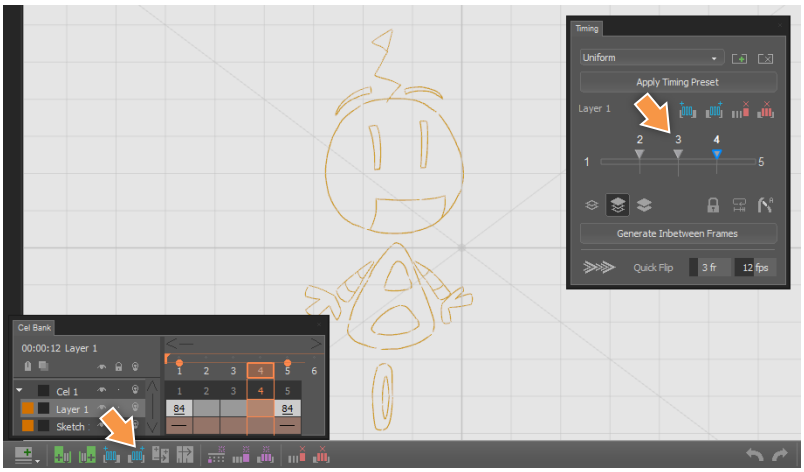
3. Create the 2nd key frame

Draw the second drawing in key frame 2, while taking note of the stroke matching arrow indicators in key frame 1.



4. Create Blank In-between Frames

Decide the number of in-between frames needed between the pair of key frames.

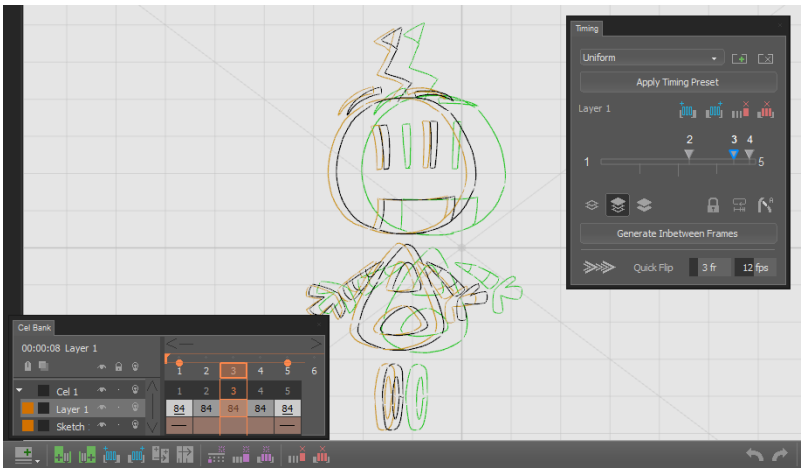


5. Adjust Timing for In-between Frames

By default, the in-between frames have equal timing, hence the speed of the animation will be constant. However, movements in real life have irregular speeds. When the frame markers are nearer, the animation will speed up. When they are further apart, the animation will slow down. In this case, the animation is adjusted such that the movement speeds up.

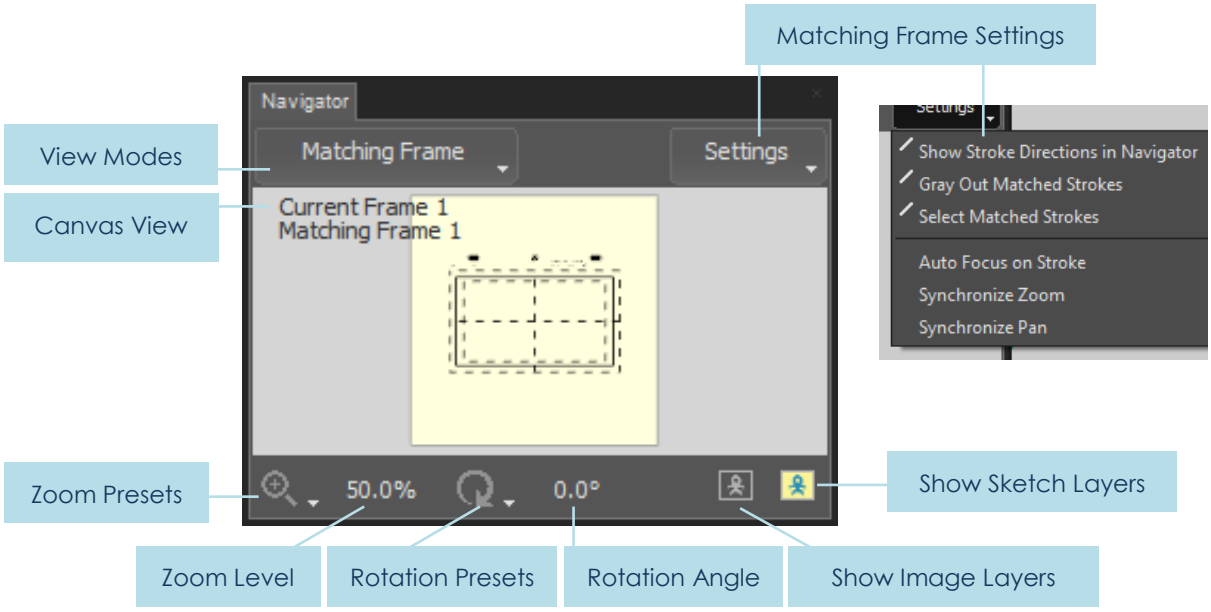
6. Generate In-between Frames

After the timing is adjusted, click on the **Generate** button. In-between frames will now be created. In the example below, we can see the onionskin images of the in-between frames. Note that the spacing between them is not constant, which is a result of our timing adjustments earlier.



Navigator Panel

The Navigator Panel provides a secondary view of your canvas, allowing you to pan, scale and rotate around the canvas. Another important feature of the Navigator, is that it can be used to display the Matching Frame, separate from the Current Frame in the canvas.



View Modes

Allows you to switch between the 2 view modes. The Current Frame mode duplicates the display of the main canvas, while the Matching Frame mode shows the Matching Frame. This allows you to view and match strokes without the Matching Frame cluttering up the main canvas.

Canvas View

Shows you a thumbnail view of the canvas. Also allows you to pan the canvas. **Left Click** and **Drag** with the red frame (Current Frame mode) to re-position the canvas window. The top right corner of the Canvas View shows the frame number displayed.

Zoom Presets

Allows you to select preset zoom percentages. This affects the zoom level in the main canvas.

Zoom Level

Allows you to zoom in and out of the canvas. This affects the zoom level in the main canvas. **Left Click** and **Drag right** on the slider to zoom into the canvas, **Drag left** to zoom out of the canvas.

You can also key in the precise zoom percentage. **Left Click** on the number to input any value from 1.6% to 6400%.

Rotation Presets

Allows you to select preset rotation angles. This affects the rotation angle in the main canvas.

Rotate Angle

Allows you to rotate the canvas for easier drawing of strokes. This affects the rotation angle in the main canvas. **Left Click** and **Drag right** on the slider to rotate the canvas clockwise, **Drag left** to rotate anti-clockwise.

You can also key in the precise degree of rotation. **Left Click** on the number to input any value from -180° to 180°.

Show Image Layers

Allows you to show or hide image layers in the Navigator Canvas.

Show Sketch Layers

Allows you to show or hide sketch layers in the Navigator Canvas.

Matching Frame Settings

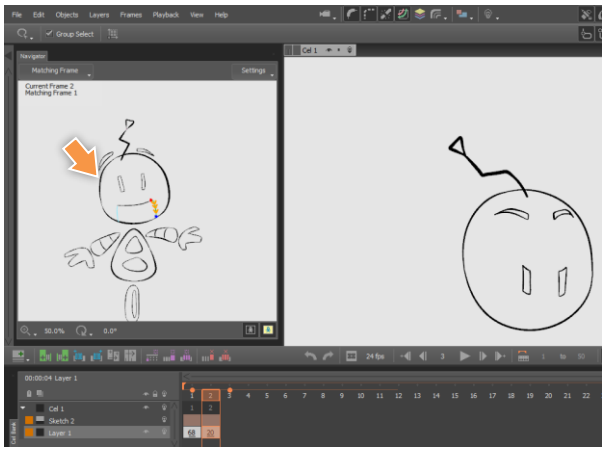
When using the Matching Frame View Mode, you can change various display attributes of the Navigator canvas. These settings are not available when using the Current Frame View Mode.

Show Stroke Directions in Navigator

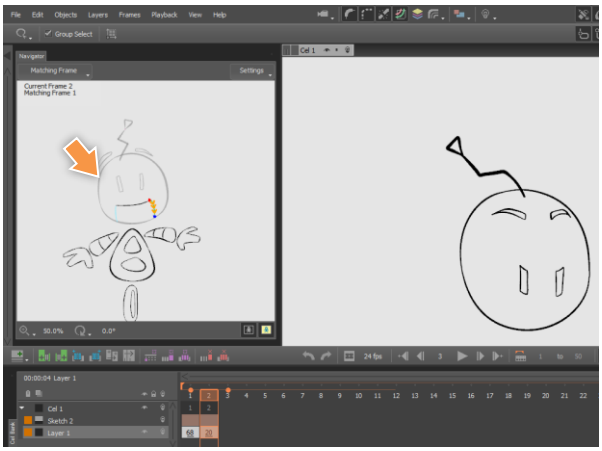
When enabled, stroke direction arrows are displayed on the selected strokes.

Gray Out Matched Strokes

When enabled, strokes that have matched indices are shown in gray. This helps you to identify the remaining strokes to match.



Matched Strokes (head) displayed as black strokes



Matched Strokes displayed as gray strokes

Select Matched Strokes

When enabled, strokes that have matched indices will still be selectable and editable.

Auto Focus on Stroke

When enabled, the selected stroke will be centered in the Canvas View.

Synchronize Pan

When enabled, panning in the preview window will affect the canvas as well.

Synchronize Zoom

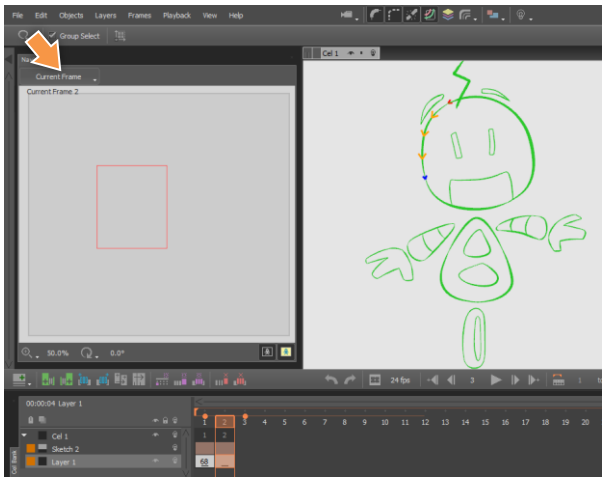
When enabled, zooming in and out in the preview window will affect the canvas as well.

Using the Navigator Panel – Canvas Navigation

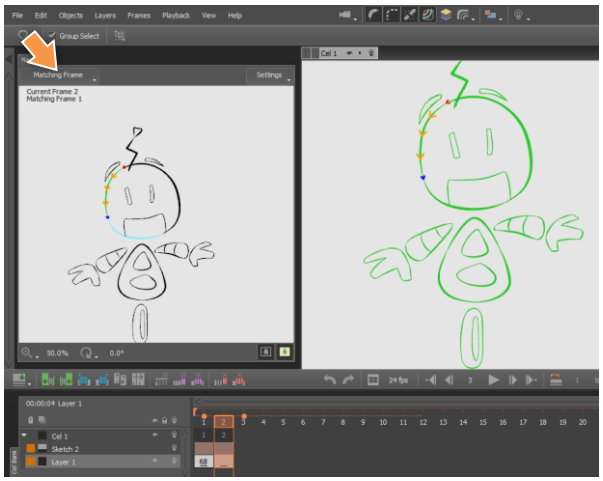
Please refer to **Chapter 02 – Canvas Navigation**.

Using the Navigator Panel – Matching Frame Mode

In this mode, the Navigator allows you to view a frame that has been designated as a Matching Frame. As CACANi's in-betweening system works by corresponding strokes in a pair of key frames, a Matching Frame refers to the key frame used for stroke matching in the current or active frame.

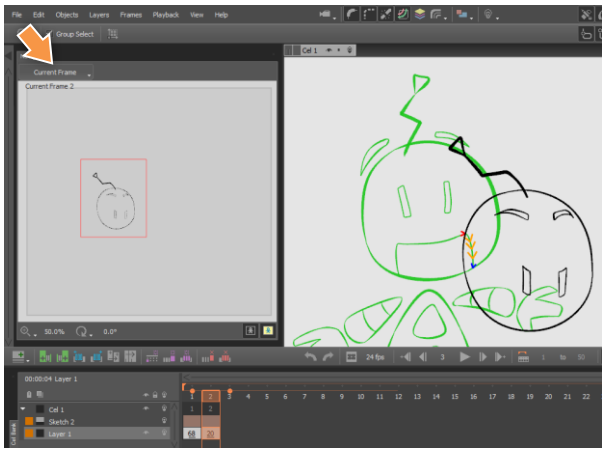


Navigator Current Frame Mode



Navigator Matching Frame Mode

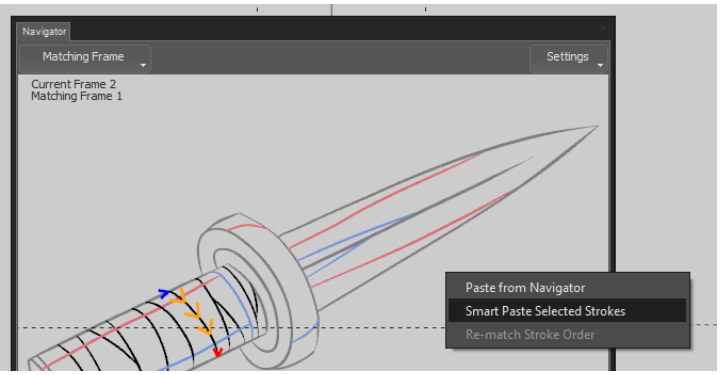
This helps you to separate the strokes in the Matching Frame from the strokes you need to draw in the active frame. This is especially useful when the drawings are very complex.



Onion Skin enabled,
Navigator Current Frame Mode

Onion Skin disabled,
Navigator Matching Frame Mode

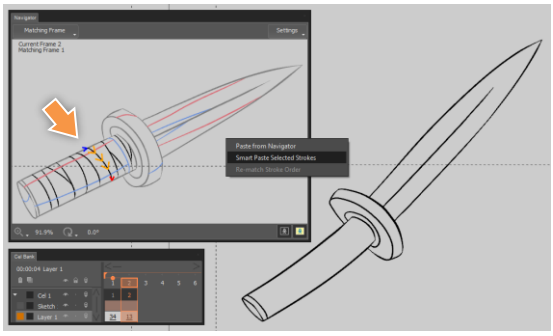
In the Navigator context menu, there are 2 options, Smart Paste Selected Strokes and Re-match Stroke Order. You can see their usage below.

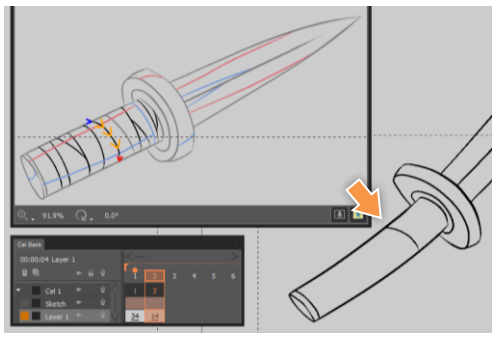


Using Smart Paste

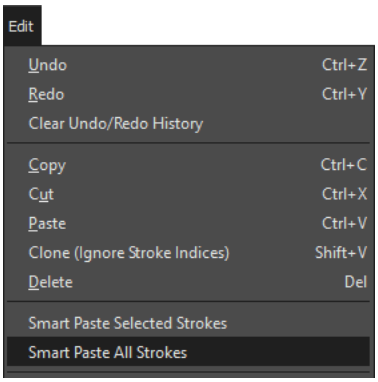
Strokes copied and pasted using Smart Paste are adjusted to fit other existing strokes in the active frame. For Smart Paste to work for a stroke, the destination frame should have existing strokes that were connected to the selected stroke in the initial frame.

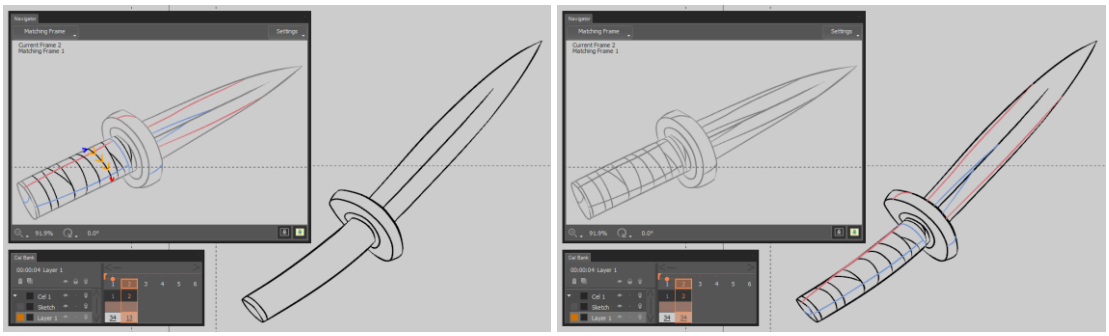
In the example below, the details in the handle haven't been drawn in Frame 2. By using Smart Paste Selected Strokes in the Navigator, the indicated stroke has been copied over and morphed to fit the space between the existing strokes of the handle.





You can also copy over all remaining strokes using Smart Paste All Strokes in the Edit menu.



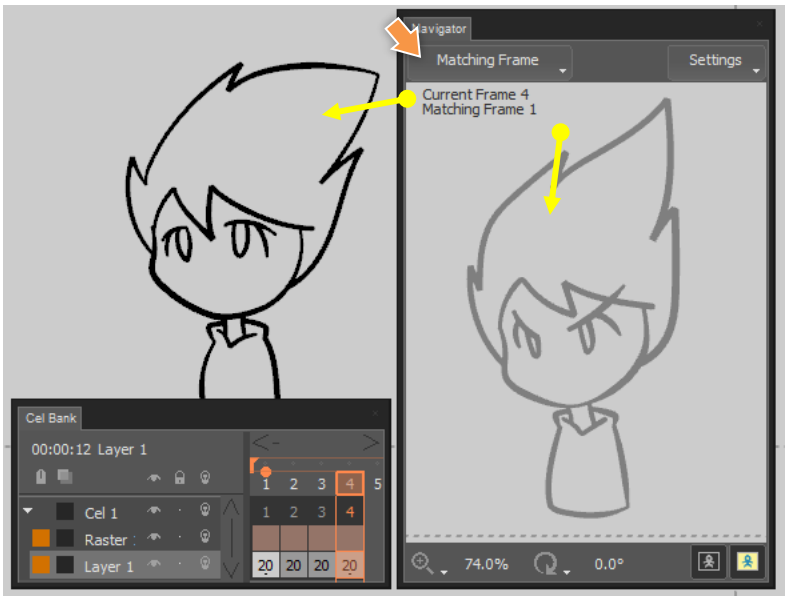


Using Re-match Stroke Order

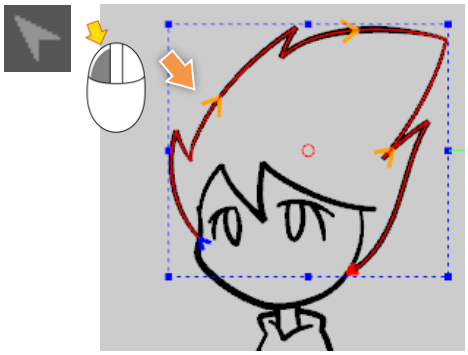
When making complicated drawings, it is quite common to mismatch strokes in key frames. Using the Navigator and the Re-match Stroke Order feature, you can easily correct those mistakes.

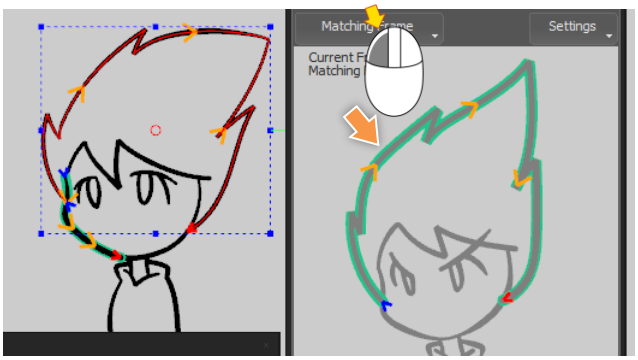
In this example, some of the strokes were not matched correctly, so the generated in-between frames do not look good.

To fix this, select the 2nd Key Frame, or Frame 4. In the Navigator, remember to choose Matching Frame mode. You should see the 1st Key Frame, or Frame 1.

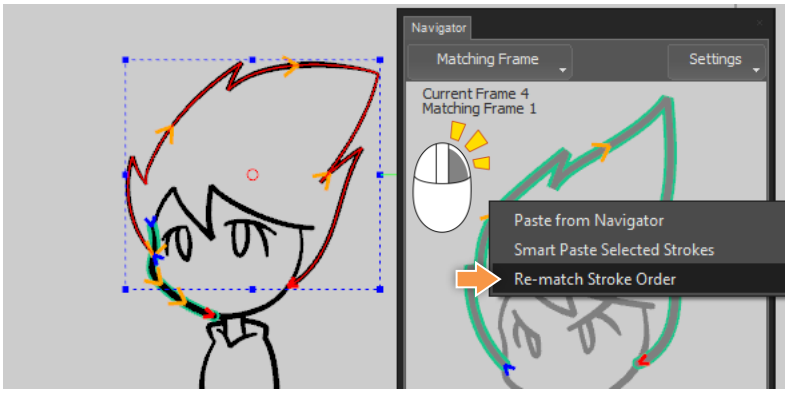


Using the Selection Tool, first select the hair stroke in the current frame. Then select the same hair stroke in the Matching Frame (in the Navigator). You can see that the stroke for the hair is wrongly matched to the stroke for the cheek, as both are highlighted in green.

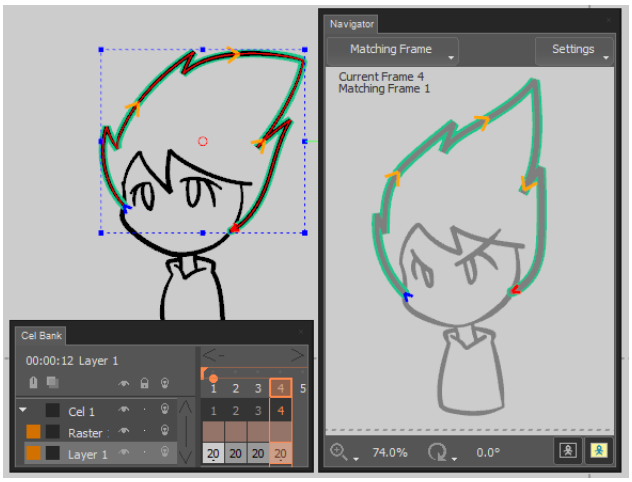




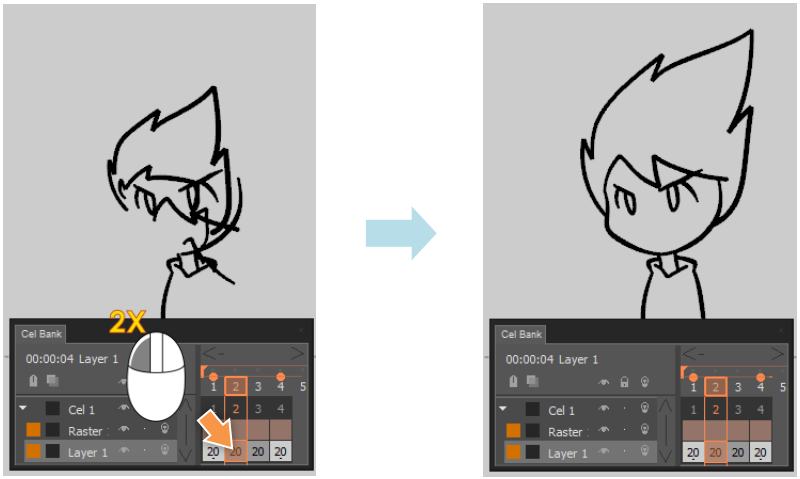
Still in the Navigator, **Right Click** and select Re-match Stroke Order.



The hair stroke should be matched in the key frames now. Both strokes are highlighted in green.



Double Click on the in-between frames so that it's updated. The mismatched strokes are now fixed.

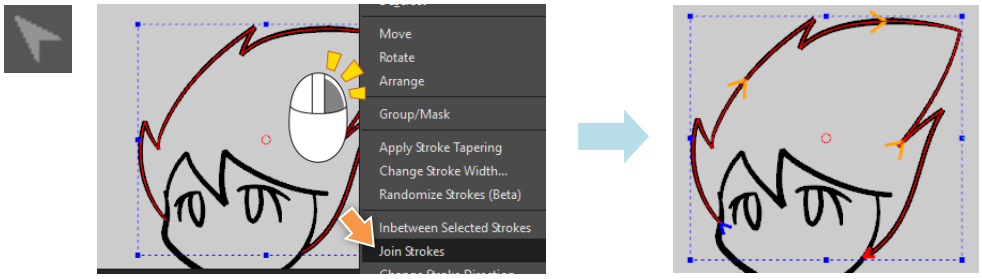


Using Join Strokes and Cut Stroke

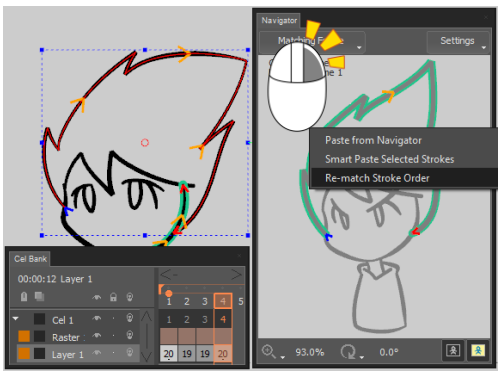
Sometimes, using Re-match Stroke Order alone is not sufficient to fix problems with mismatched strokes. For example, when the user did not refer to the onion skin image when drawing, or when a drawing was vectorized.

In this example, the character's hair was drawn with 3 strokes in the 2nd key frame. As a result, they could not be matched with the 1st key frame.

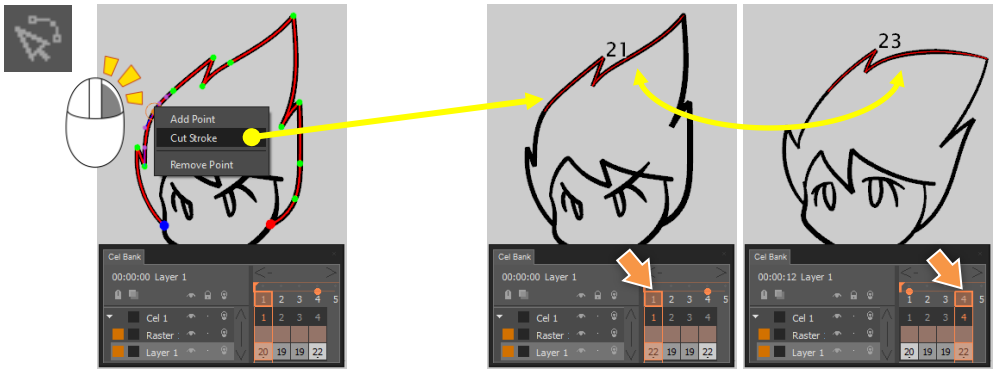
The Join Strokes option lets you combine strokes that are connected at a common end point. Select the strokes using the Selection Tool, then **Right Click** to bring up the context menu. Select the Join Strokes option.



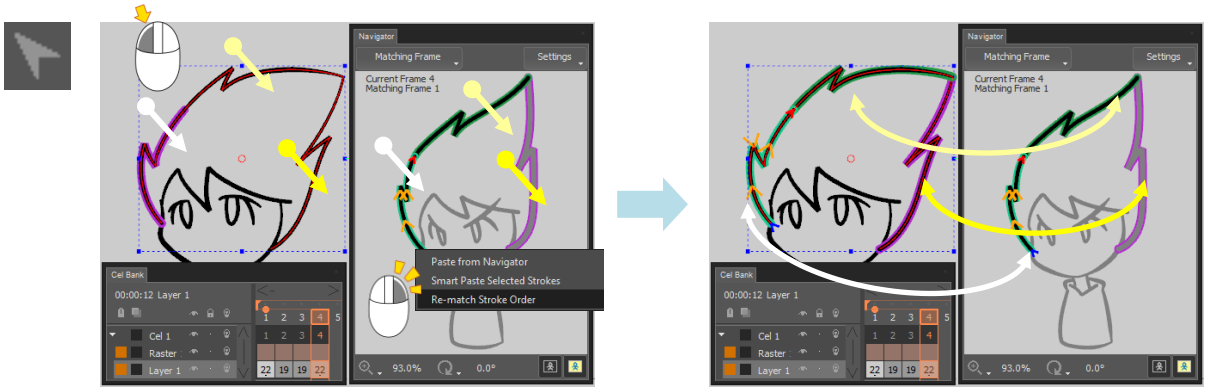
After joining the strokes, use Re-match Stroke Order to fix the mismatched strokes.



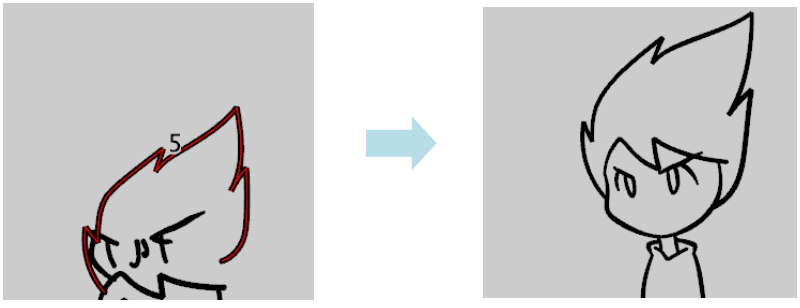
Conversely, you can also cut a stroke to make the matching work. Using the same example, select the stroke for the hair in the 1st key frame with the Stroke Editor. With your cursor on the stroke, **Right Click** to bring up the context menu, then choose the Cut Stroke option. Try to cut the stroke at a spot similar to those in the 2nd key frame.



After cutting the stroke into 3 strokes, move to the 2nd key frame and use Re-match Stroke Order to fix the mismatched strokes. You can match the strokes one by one, or you can use Shift **+ Drag** to select and match all 3 strokes at the same time. However, you need to make sure that the strokes are selected in the same order for both key frames.



Double Click on the in-between frames so that they're updated. The mismatched strokes are now fixed.



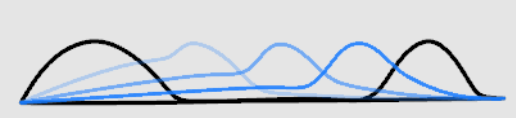
Using the Feature Point Tool

When generating strokes from a key frame, there are times when you will require the stroke to deform in a specific way. For example, when drawing smoke animation, the 'bump' in a stroke should move through the stroke. That can be achieved with the Feature Point Tool.

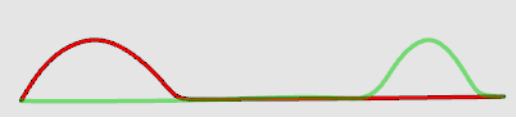
As an example, we have 2 key frames below, drawn with only 1 stroke:

The generated in-between frames (in red) will look like this:

To create an effect where the 'bump' moves through the stroke, the in-between frames will look like this:

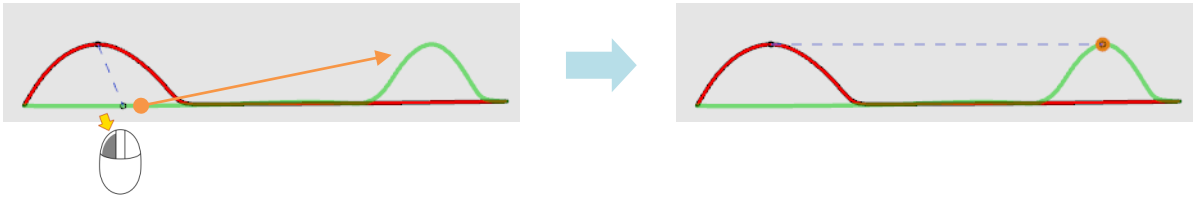


To do so, use the Feature Point Tool to select the stroke in the first key frame. The second key frame is highlighted in green.

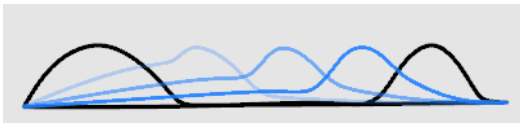


Right Click at the highest point of the 'bump' to bring up the context menu and select **Add a Feature Point**. A dashed path will appear, leading from the first key frame and ending on the second key frame. This indicates how the stroke moves at that point.

Move the ending point of the path to the bump on the second key frame.



Generate the in-between frames this time will give you the following result.



You can also adjust the path to modify the generation of the in-between strokes.

Using Boundary Strokes

Boundary strokes provide you with a way to hide sections of your drawing by mimicking how different objects overlap each other. Compared to masks, you do not need to worry about gaps or make sure that the strokes in a mask form an enclosed region. In addition, the stroke depth feature helps to reduce the need to organize your strokes in multiple layers. Boundary strokes are only usable in Drawing Layers.

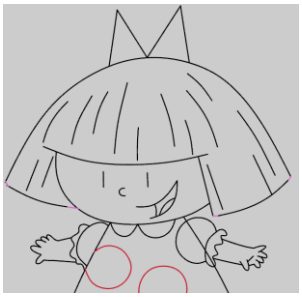
A boundary stroke can hide another boundary stroke, if the latter stroke has the occluded stroke property and a lower stroke depth than the former.

Assigning Boundary Strokes

Boundary Stroke assigning is done with the **Selection tool**.

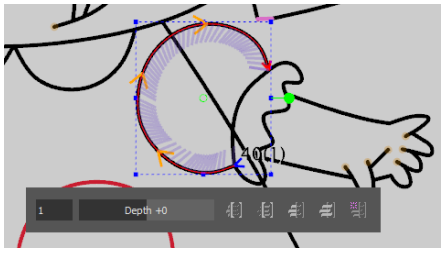
To use boundary strokes, you need to both choose a boundary stroke **and** decide which strokes are going to be affected or occluded by boundary strokes. First choose the stroke to be assigned as the boundary stroke.

A new boundary settings panel will appear under the selected stroke. Select the Hide Strokes… option.

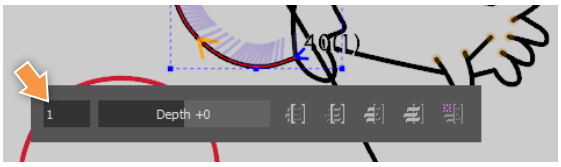


You will see the instructions, ‘Hide at this Location’ following your cursor. This allows you to decide whether the boundary stroke will hide the drawings on its left or right. The sides of a boundary stroke are based on the stroke direction.

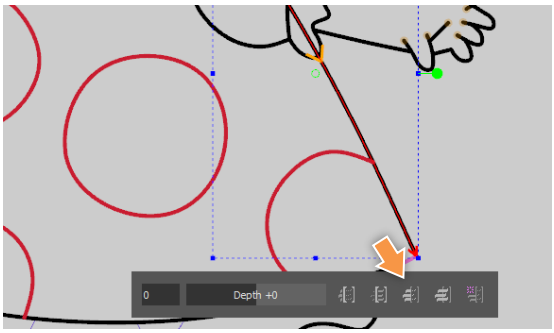
Click on the right side of the selected stroke. A series of diagonal lines on the right side of the stroke indicates the ‘hiding side’.

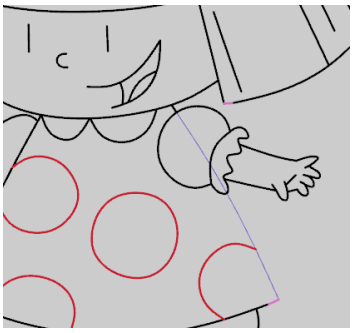


In addition, when a stroke is assigned as a boundary stroke, the stroke's depth is automatically increased by 1, so that it is above other strokes.



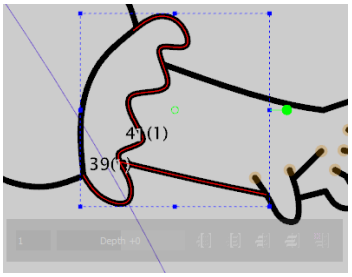
Although you have created a boundary stroke, all strokes are still visible. By default, all strokes are non-occluded strokes and are unaffected by boundary strokes. You'll need to pick the strokes that are going to be affected, called Occluded Strokes. Depending on their location in relation to the boundary stroke, sections of the strokes are hidden when they intersect. When both boundary strokes and occluded strokes are assigned, you will see a change in the visibility of the occluded stroke.

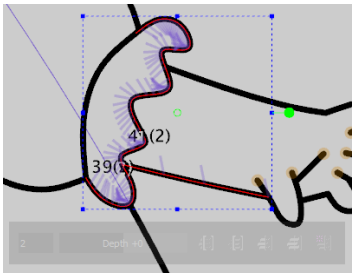


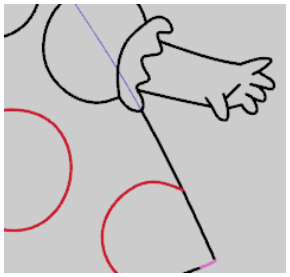


However, the blouse should only be hidden by the overlapping section of the arm. So you will need to set the other strokes of the arm as boundary strokes. But this time, these strokes will help to reveal the blouse again.

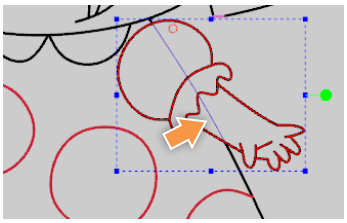
There can be more than 1 boundary stroke. When that happens, strokes will be hidden based on the nearest boundary stroke.





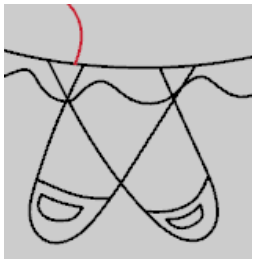


If you adjust the boundary stroke or the occluded strokes using the Selection Tool, the visible segments will change.

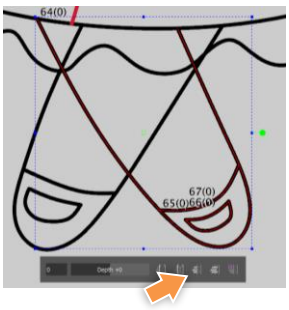


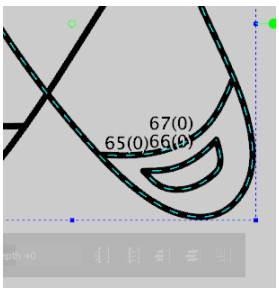
Multiple Boundary Strokes and Stroke Depth

In addition to boundary strokes, you can now assign depth to your strokes. This is useful when you need to have objects hiding each other. In the example below, the right leg is hidden by the left leg, which is in turn hidden by the blouse.

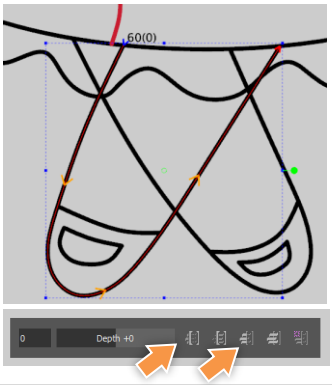


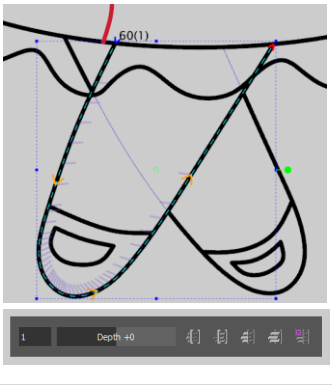
Start by setting the right leg as occluded strokes.



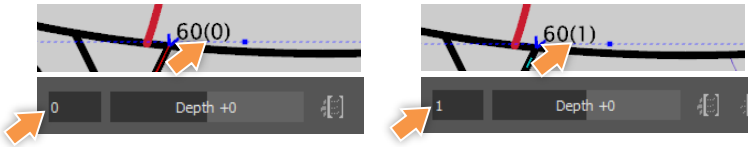


For the left leg, you will only need to select the outermost stroke. Assign it to be both a boundary stroke (to hide the right leg), as well as an occluded stroke (to be hidden by the blouse).

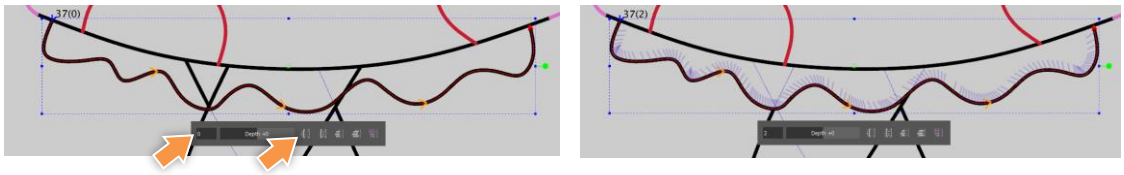




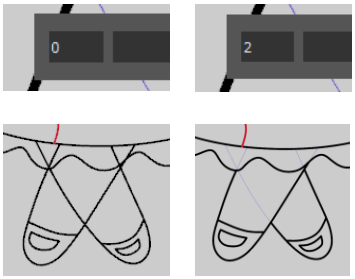
Also, the depth of a boundary stroke is automatically raised by 1. The depth of a selected stroke can be seen in brackets on the canvas or in the stroke depth indicator.



With the legs done, the final step is to hide the legs with the blouse. Set the stroke to be a boundary stroke and change the stroke depth to 2.



It is important to make sure that both legs are set to be occluded, and that the stroke for the blouse is at a higher depth, in this case, 2, than the legs, which are at depths 1 and 0.

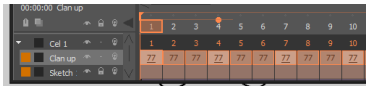


Animating Boundary Strokes

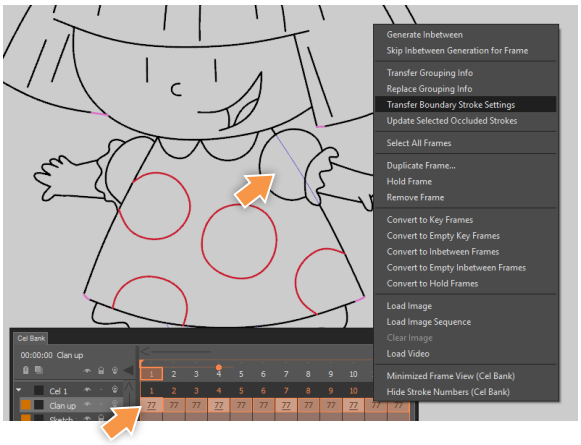
The effects of using boundary strokes can be replicated to other frames in 2 ways; by using inbetween generation, or by using the Transfer Boundary Stroke Settings option. The same stroke indices in the other frames will inherit the boundary and occluded strokes settings.

If the first key frame has boundary and occluded strokes, after generating the inbetween frames, they will have strokes with similar properties. However, the properties are not transferred to the second key frame, so the boundary and occluded stroke settings need to be assigned manually.

Alternatively, the Transfer Boundary Stroke Settings option allows you to choose the frames to copy to. Please take note that the source frame with the boundary stroke assigned should be the first frame in the selection. Use **Left Click + Drag** / **Shift + Left Click** to select frames in sequential order or use **Ctrl + Left Click** to pick isolated frames in the Cel Bank. If you want to transfer the settings to all the frames, you only need to select the first frame.

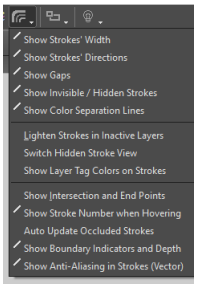


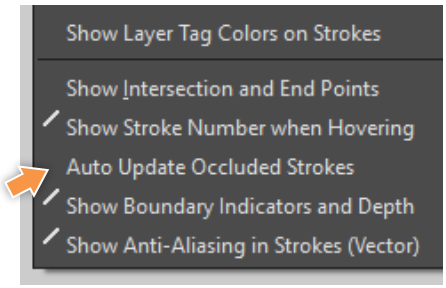
Then **Right Click** on any of the selected frames to bring up the context menu. Select the option, and the boundary and occluded settings in the first frame are copied to the rest of the frames.



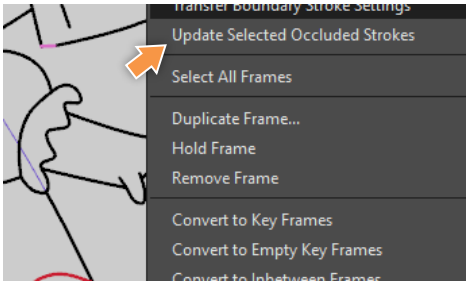
Editing Occluded Strokes Manually

If you want to make manual adjustments to the visibility of occluded strokes, you will need to disable the Auto Update Occluded Strokes option. (View menu > Stroke Display Options submenu).





When the Auto Update Occluded Strokes option is disabled, and you wish to update the visibility of individual occluded strokes, you can use the Update Selected Occluded Strokes option. It is found in the Frames menu, or the Cel Bank's context menu.

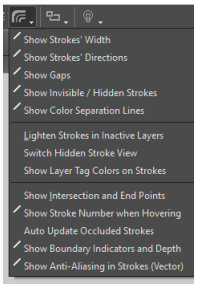


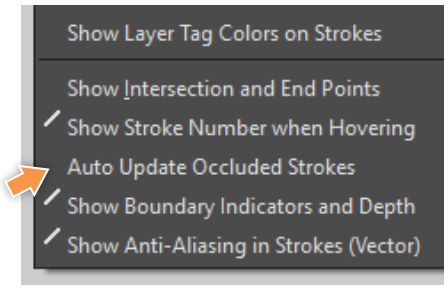
In addition, you can also update the occluded stroke 's visibility in the other frames, as long as the frames are selected in the Cel Bank, and the same stroke index in the other frames already have the occlusion property assigned to them.

Occluded Strokes and Hidden Segments

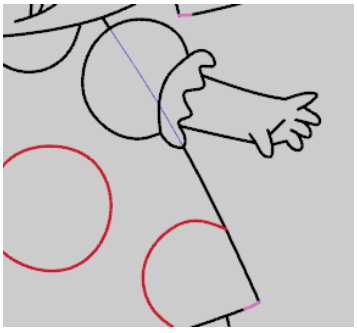
You can also use the Segment Tool to manually edit the visibility of the stroke segments.

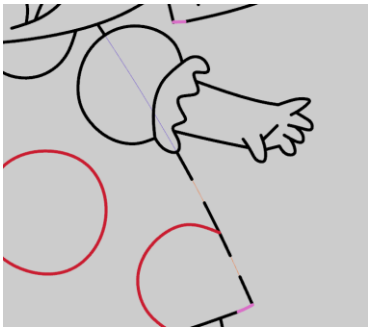
However, by default, an occluded stroke is not affected by the Segment Tool. The difference between Occluded Strokes and Hidden Strokes is that occluded strokes are affected by boundary strokes while hidden strokes are not. To use the Segment Tool properly, the Auto Update Occluded Strokes option needs to be disabled.





Subsequently, you will be able to manually edit occluded strokes. This manual editing has a limitation: if the Auto Update Occluded Strokes option is re-enabled and further changes are made to the stroke, the manually added segments will not remain.





Using Stroke Groups and Masks

Stroke Grouping allows you to manipulate multiple strokes at the same time. In addition, the **Bone Tool** will only work with groups, not individual strokes.

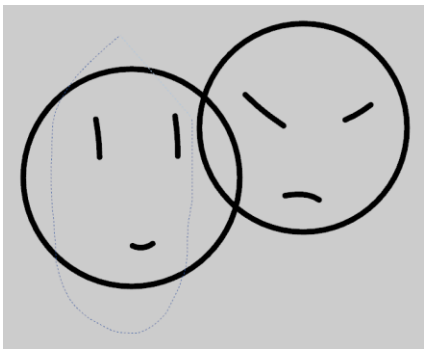
Enabling **Auto Group mode** will cause each stroke to be grouped individually, so that bones can be created for each stroke.

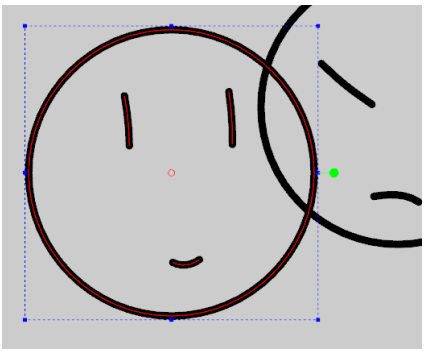
Strokes can be grouped in both key frames and inbetween frames.

How to Group and Ungroup Strokes

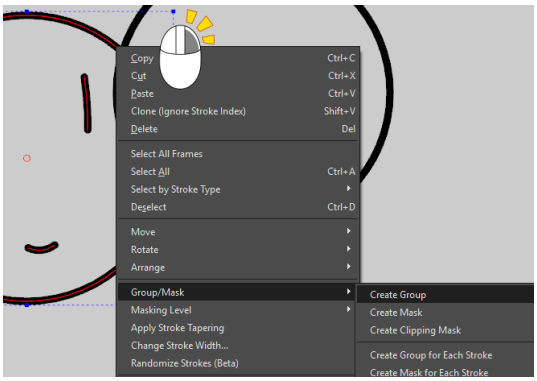
Stroke grouping can be done with the **Selection tool**.

Select the strokes on the canvas. Take note that you can only group strokes on the same layer.

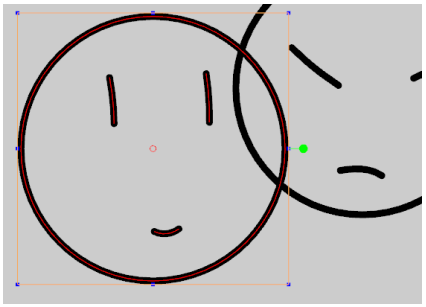




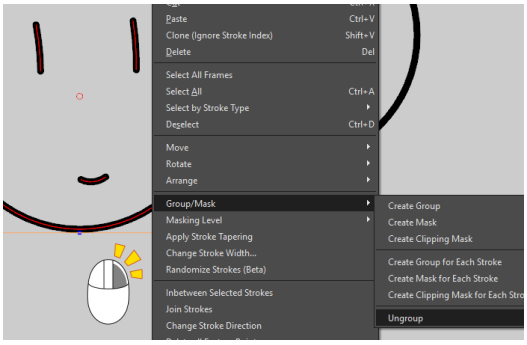
Right Click while hovering over any of the selected strokes. From the context menu, choose **Group/Mask**, then **Create Group**. If the option does not appear in the context menu, it could be because you have selected strokes from multiple layers.

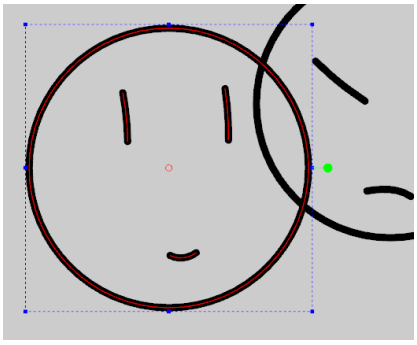


Strokes will now be grouped. The selection box is now orange.



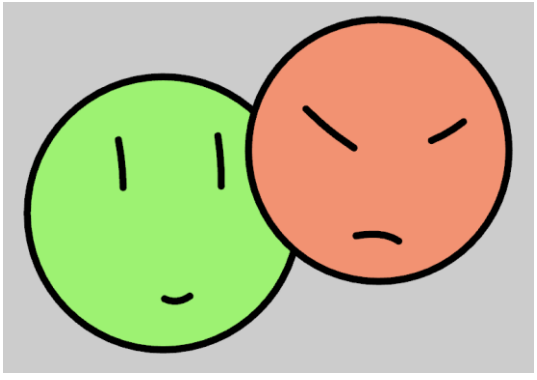
To ungroup, **Right Click** while the group is selected. Choose **Ungroup** from the context menu.



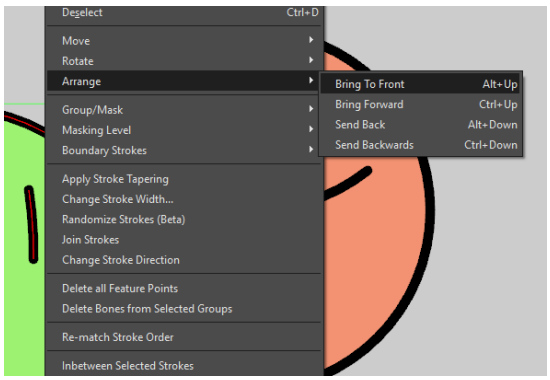


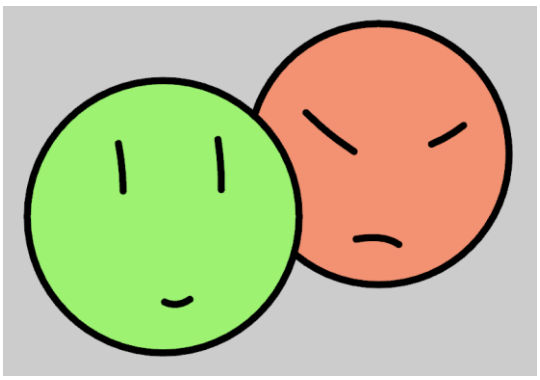
Changing Group Display Order

When you find that a group of strokes is hiding sections of a drawing or another group in an incorrect way, you may be able to fix the problem by changing the group display order.



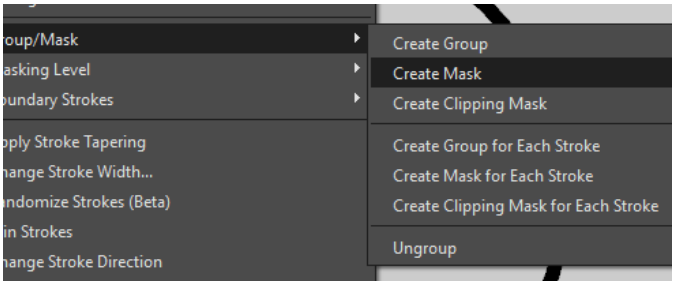
Use the Selection Tool to pick the group and **Right Click** on the group to bring up the context menu. From the Arrange option, select Send to Front. Now the group is rendered behind other groups.



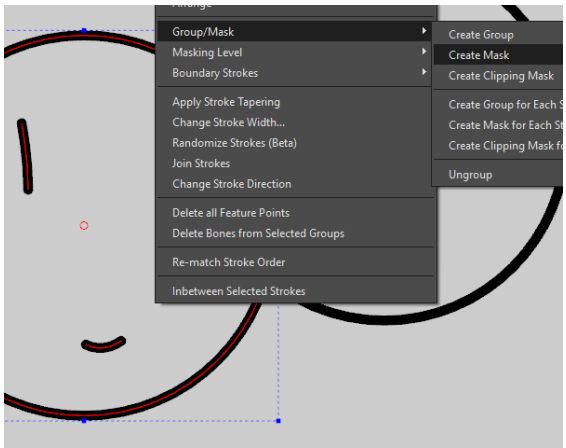


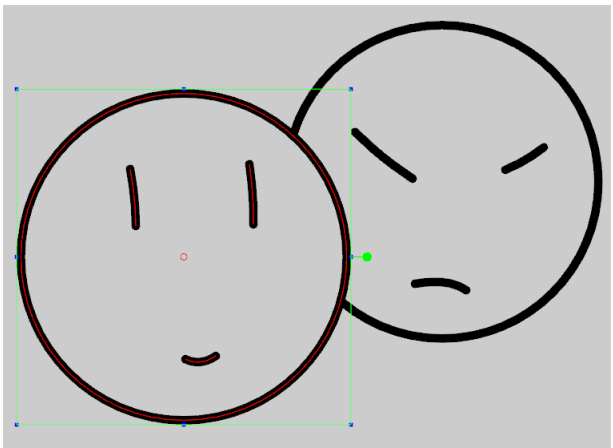
Groups, Masks and Clipping Masks

Masks and Clipping Masks are similar to groups, with the difference being that the 2 types of masks will also hide or reveal strokes even when the regions are not painted. But like groups, you will need to make sure that the regions are closed for the masking to work properly.

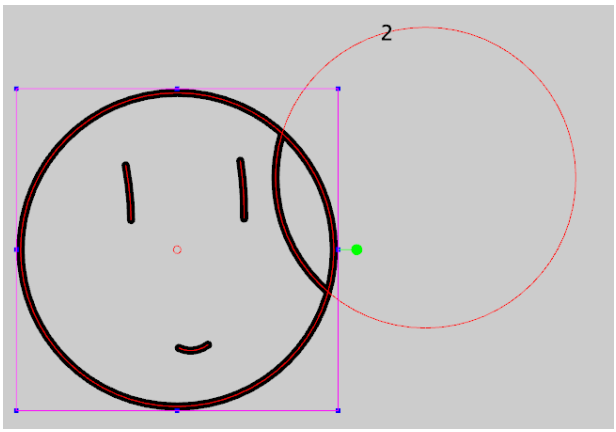


When you turn a set of strokes into a Mask, the region enclosed within the strokes will hide strokes from other groups. This is a good way to see how your final drawing will look like without first painting the regions. A mask has a green selection box.





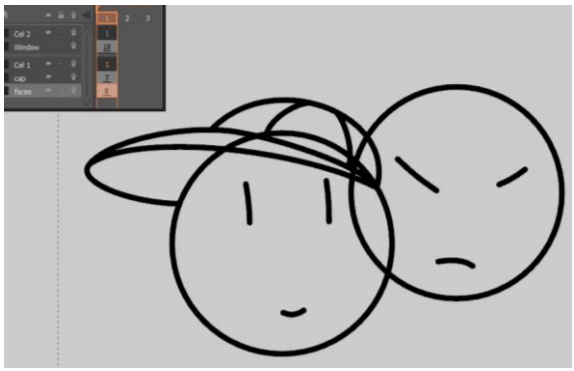
In contrast, a Clipping Mask will display strokes within its closed regions and hide strokes outside of its regions. A clipping mask has a purple selection box.



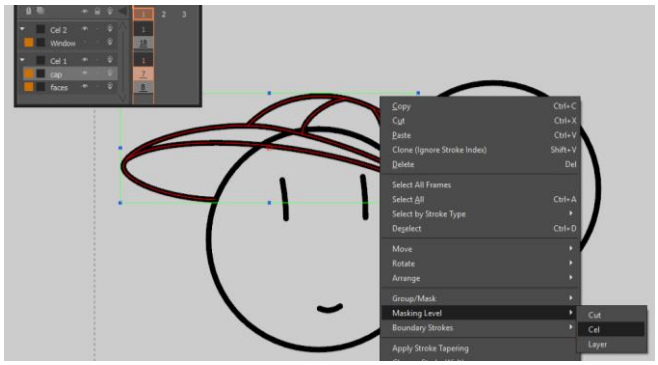
Setting the Masking Level

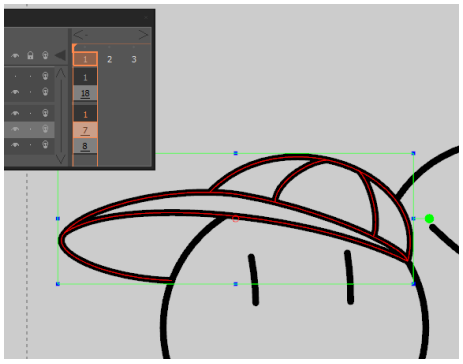
When using masks, you can also decide how the mask affects strokes in other layers and cels. When the mask level is set to Layer, the mask will only affect strokes and groups in the same layer. When set to Cel, the mask will affect strokes and groups that can be on different layers, but within the same cel. Finally, setting the mask level to Cut means that the mask will also affect strokes and groups in other cels. However, do take note that strokes and groups can only be hidden if they are on a layer or cel below the mask.

In this example, we have already turned the smiley face into a mask.

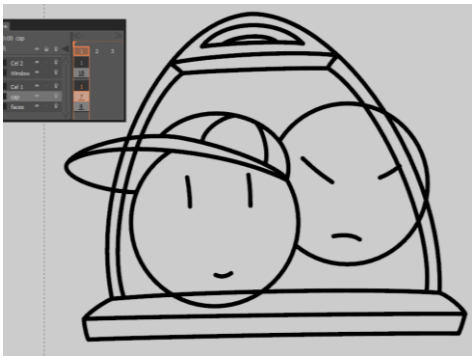


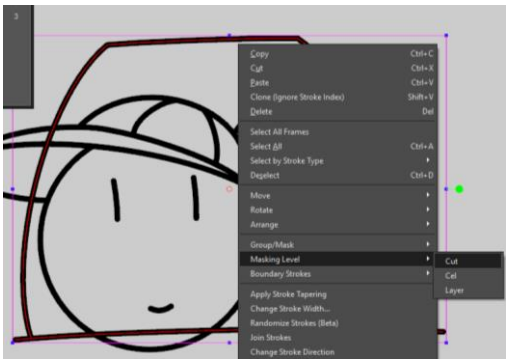
The cap is on a layer within the same cel as the faces. So, you need to create a mask for the cap and set the masking level to Cel.

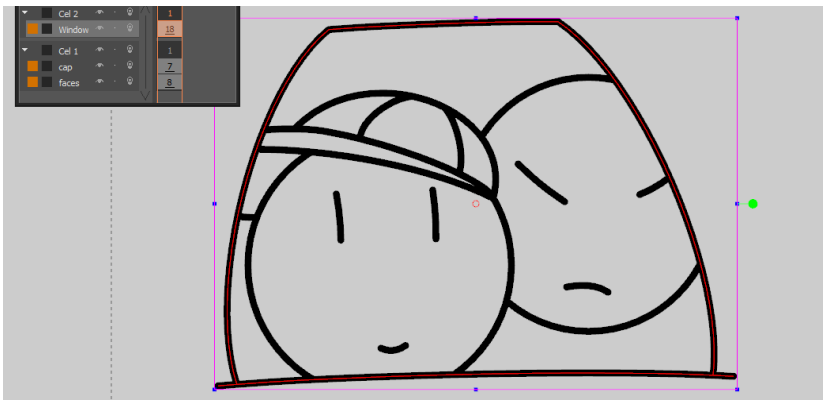




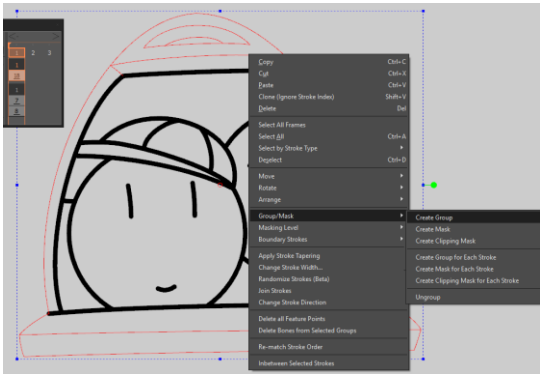
The window is drawn on a different cel. To show the faces looking out of the window, a clipping mask needs to be used. And because the faces are on a different cel, the masking level has to be set to Cut.

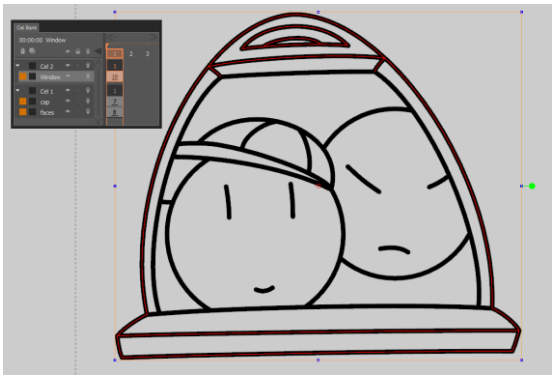






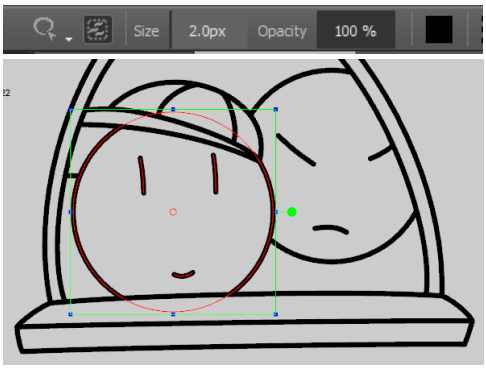
Finally, because the external section of the window is hidden by the clipping mask, we need to group the strokes together. After doing so, the strokes are automatically displayed above the clipping mask.

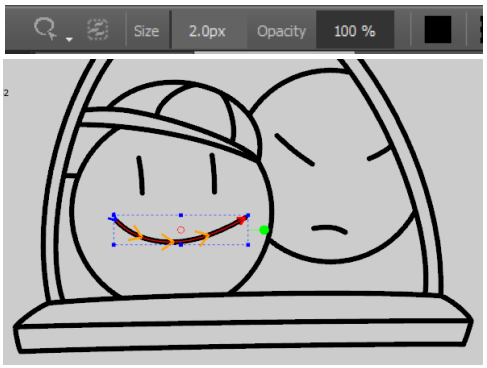




Editing Strokes within Groups and Masks

When you need to select or edit strokes within a group or mask, you need to turn off the Select Groups option found in the Selection Tool properties.





Animating Groups and Masks

Stroke groups and masks are not created when generating inbetween frames. Instead, they can be replicated to other frames by using the Transfer Grouping Info and Replace Grouping Info options in the Cel Bank. The same stroke indices in the other frames will inherit the grouping information.

To use either of the options, use the Selection Tool to choose the frames to copy to. Please take note that the source frame with the grouping information should be the first frame in the selection. Use **Left Click + Drag** / Shift **+ Left Click** to select frames in sequential order or use Ctrl **+ Left Click** to pick isolated frames in the Cel Bank. Then select either of the options by **Right Clicking** on any of the selected frames to bring up the context menu.

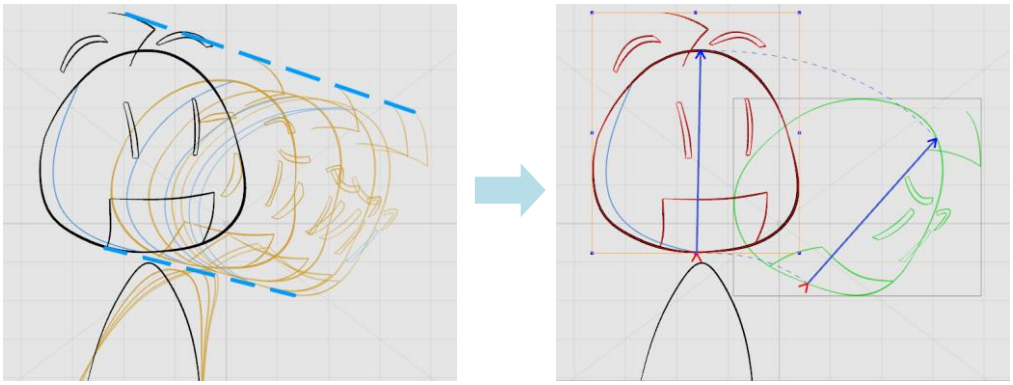
The difference between Transfer Grouping Info and Replace Grouping Info is that the former will update those strokes without any groups or masks, while the latter will overwrite existing grouping information in the destination frames.

Using the Bone Tool

By default, the automatic generation of in-betweens is set to straight in-betweens. How, artists frequently utilize motion arcs for more natural animations. The extent of motion arcs can vary from animation to animation, and indeed, a single character usually has body parts moving with multiple motion arcs.

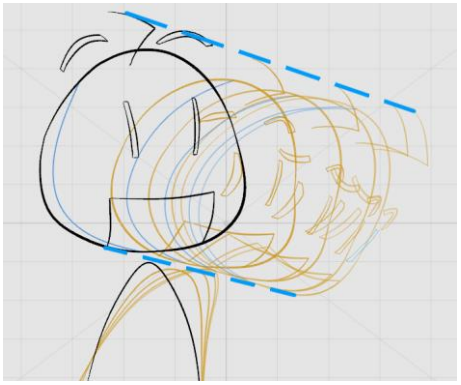
The **Bone Tool** allows you a further level of optimization and control in the generation of in-betweens. By specifying the motion arcs, in-betweens can be adjusted for more accurate animation.

The Bone Tool can only be created and adjusted **from groups in key frames**.

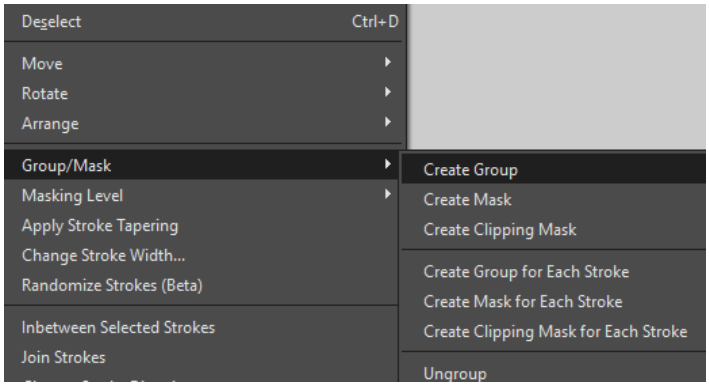


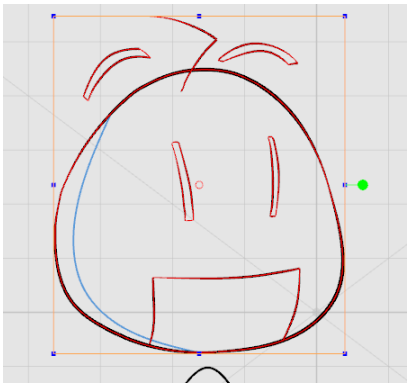
Creating Bone Paths

1. In this example, the character is turning his head. But the default generated in-betweens make the animation very robotic. The head should be moving in an arc, not a straight line.

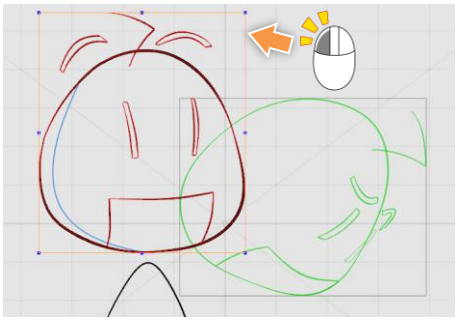


2. Begin by selecting the strokes for the head with the **Selection tool**, then **Right Clicking** to group them. This is required as the **Bone Tool** is only usable in groups.

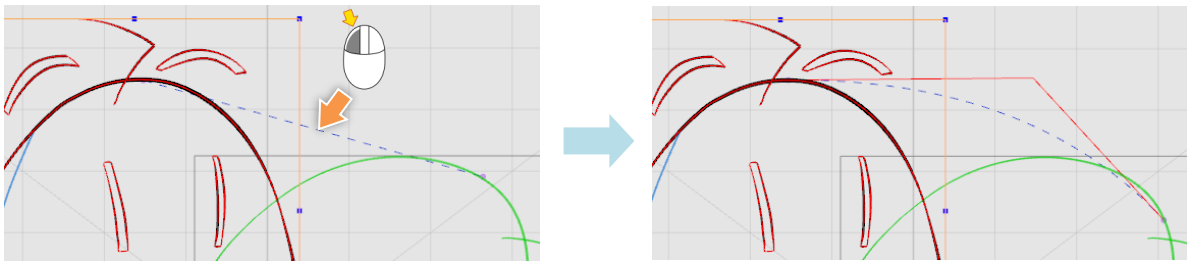




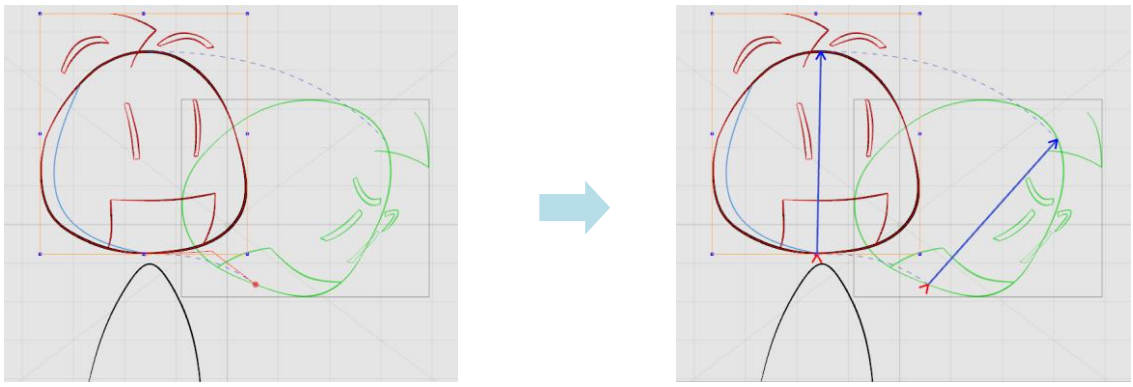
3. After creating a group, select the **Bone Tool**. Click on the strokes in the group. A bounding box will appear around the strokes. At the same time, a second bounding box showing the same strokes in the next frame will be displayed in green.



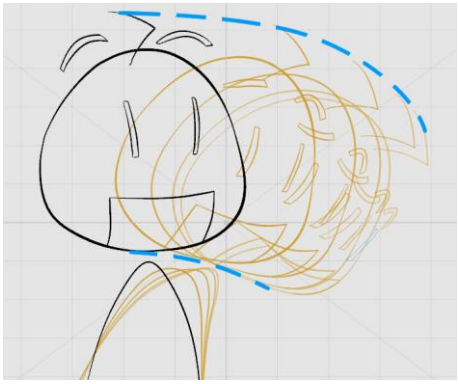
4. With the group still selected, start the first motion arc by **Left Clicking** somewhere near the top of the bounding box and **dragging** a straight line to a similar area in the second bounding box. Upon release of the mouse, adjust the motion arc by moving your mouse while hovering. **Left Click** again to confirm the arc.



5. The second motion arc is drawn in the same way. For better results, it's recommended to place the second arc near to the bottom of the bounding box.



6. With that, the in-between frames can now be generated via the **Timing Panel**. Compared to the original in-between frames, the new ones now move according to the motion arcs described by the artist.

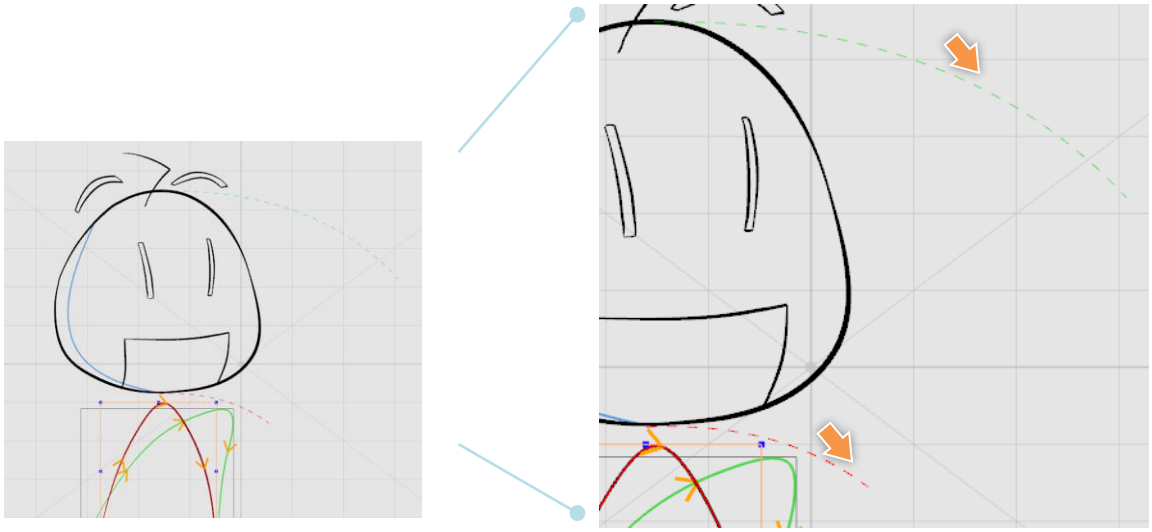


Bones can only be created on key frames and will only affect the in-between frames within a pair of key frames. As such, separate bones and motion arcs will have to be created for the next pair of key frames.

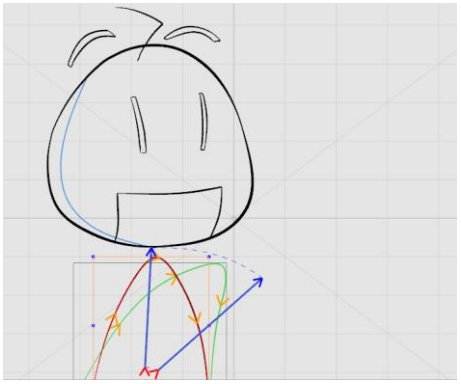
Synchronizing Multiple Bones

When multiple groups are created, each can have a set of bones. In this case, it's important to synchronize the movement of the bones.

In this example, the body and head are in different groups. To synchronize the body's bone movement to the head, select the body group with the **Bone Tool** and press **Ctrl**. All the motion paths will be highlighted.



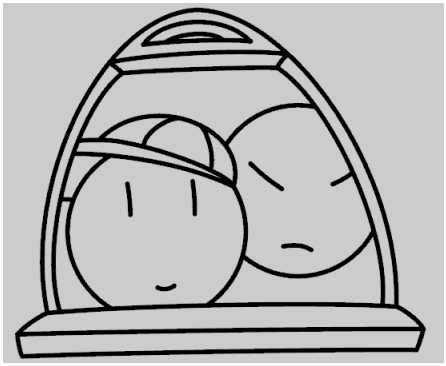
Left Click on the highlighted motion path to synchronize the body group with the head group. Create the second motion path near the bottom of the body. The body group is now synchronized with the head group.

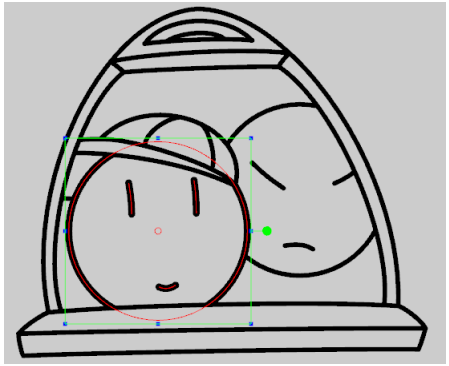


Changing Stroke Widths

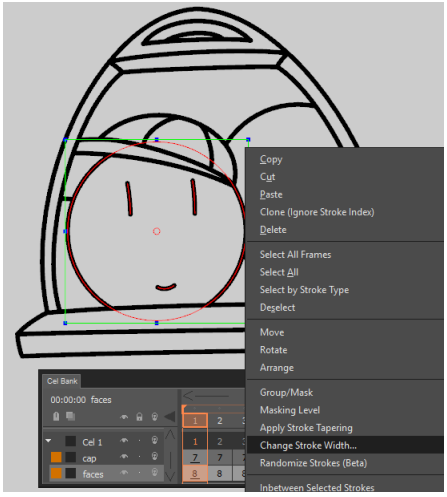
One advantage of using vector strokes in CACANi is that you can still adjust the stroke widths after they are drawn. There are a few ways you can do this in CACANi. You can use the **Stroke Width Tool** for adjusting single strokes, the **Change Stroke Width** option which affects single or multiple selected strokes, the **Stroke Taper Panel** to adjust the stroke widths as you draw them, and finally the **Stroke Magnification** option during the exporting process.

For this example, we are thickening the strokes of one of the faces.

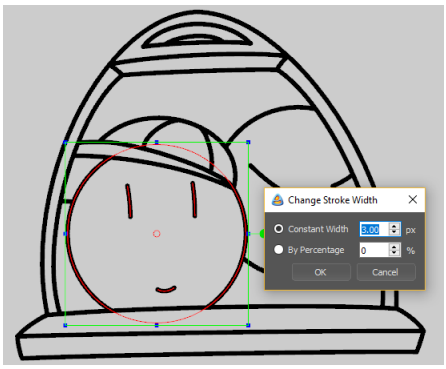


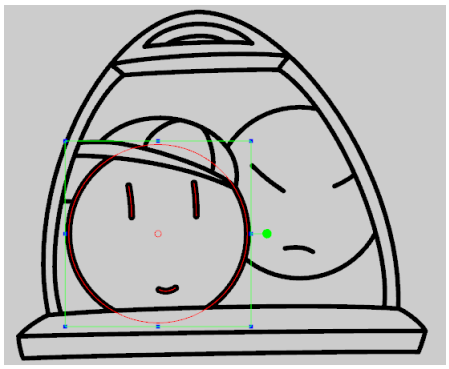


This can be done with the Selection Tool and the Change Stroke Width option. Select the smiley face, then **Right Click** to bring up the context menu.

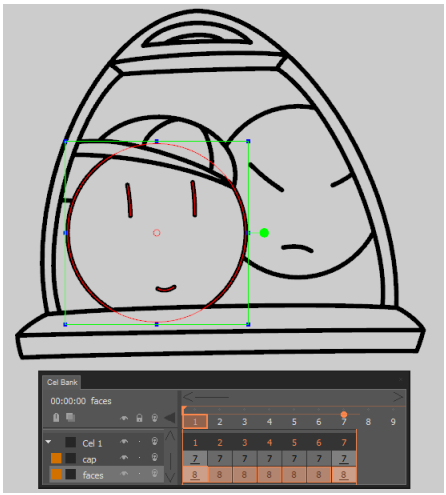


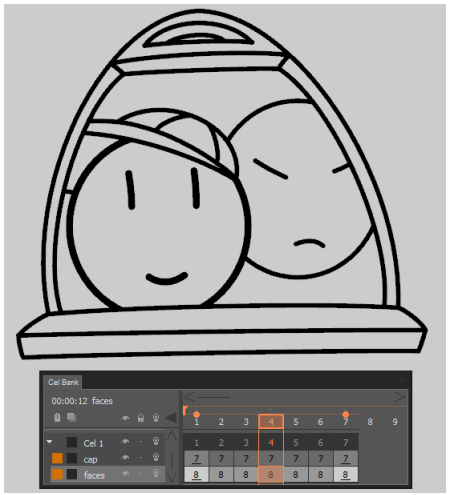
You can choose to change the thickness to a constant value, or if the stroke width has varying thickness, you can choose to change it by a percentage.





In addition, you can apply the change to multiple frames. You just need to Shift **+ Drag** to select the frames you need first, then choose the Change Stroke Width option. All the selected frames will receive the changes applied.



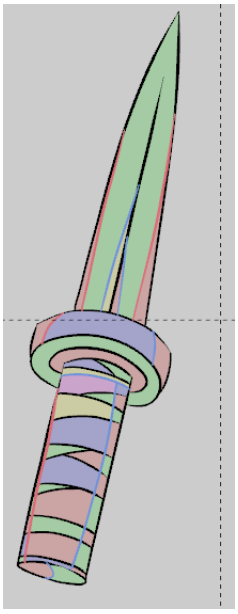


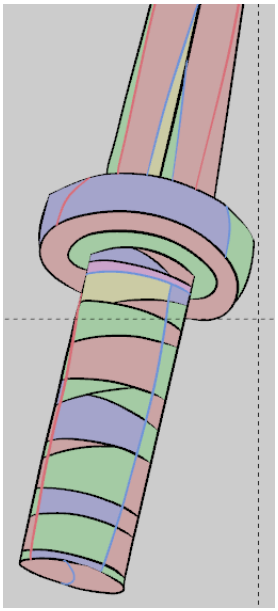
Please also see **Chapter 04 – Stroke Taper Panel**, **Chapter 05 – Stroke Width Tool** and **Chapter 10 – Stroke Magnification**.

Using Stroke Connection Points

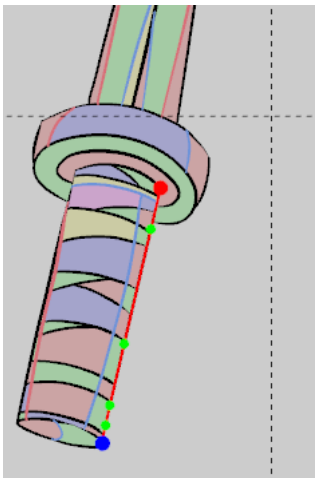
Connecting strokes to each other are an important part of the drawing and painting process in CACANi. To ensure that strokes remain connected when transforming them, you can use the Add Stroke Connection Points option after you finish cleaning up your drawings.

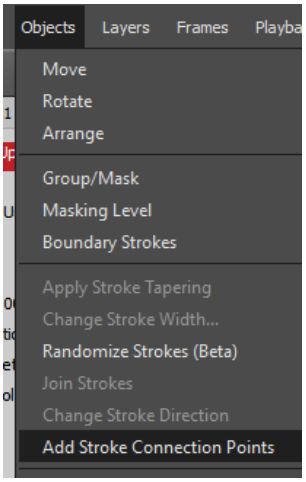
In this example, the animation drawings are already complete. But when you scale the drawings, you may find that gaps can appear.

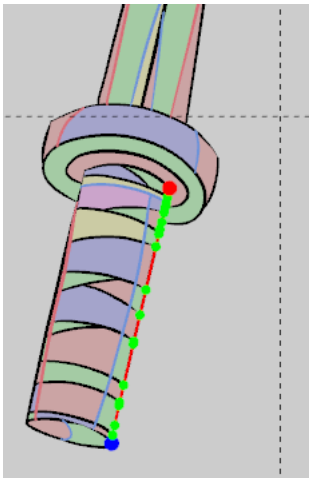




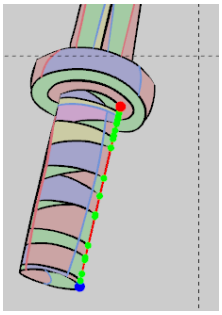
Adding Stroke Connection Points helps you define the intersections much more accurately. However, because of the additional points, stroke editing is harder.

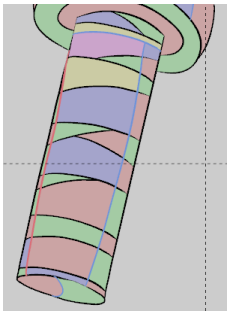




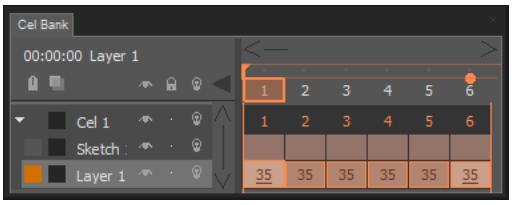


With the connection points, regions will not change when scaling or rotating.





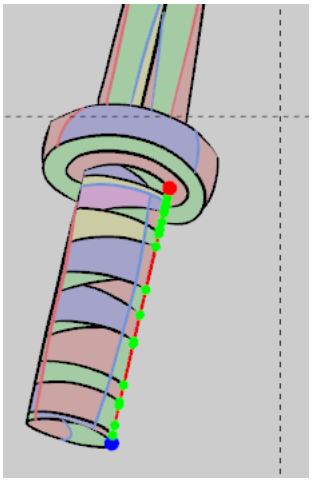
You can also apply the option to selected strokes in multiple frames. Select the frames first before using the option.

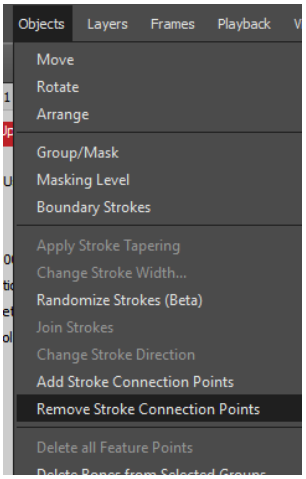


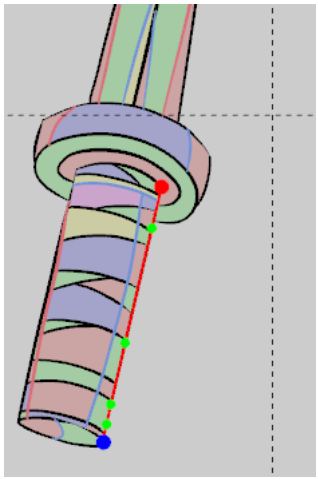
Alternatively, you can enable the Add Points When Clinging option so that when you're drawing or editing strokes, a connection point is added to the stroke you're snapping to. When the stroke end is shifted away, the connection point is also removed.

Please see **Chapter 04 – Add Points When Clinging**.

Adding Stroke Connection Points are best done when the drawings are almost complete. Conversely, if you need to edit points extensively, you can use the Remove Stroke Connection Points option.

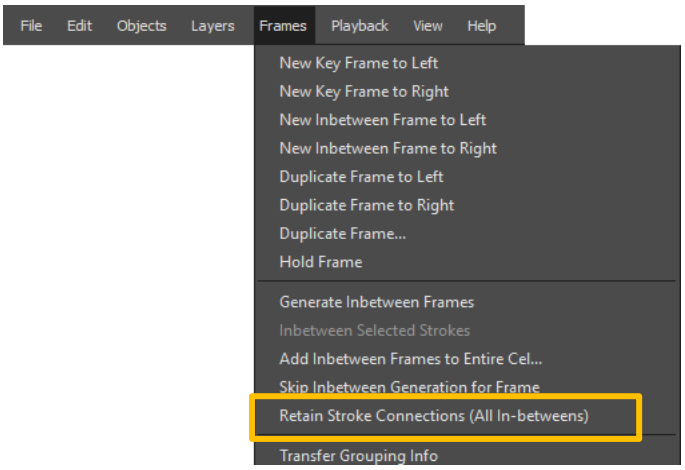






Retain Stroke Connections

The **Retain Stroke Connections** function is a tool to help minimize unwanted stroke gaps in generated in-between frames. This will make it easier for artists to paint the in-between frames at a later stage. The function can be found in the **Menu Bar**, under the **Tools** menu.

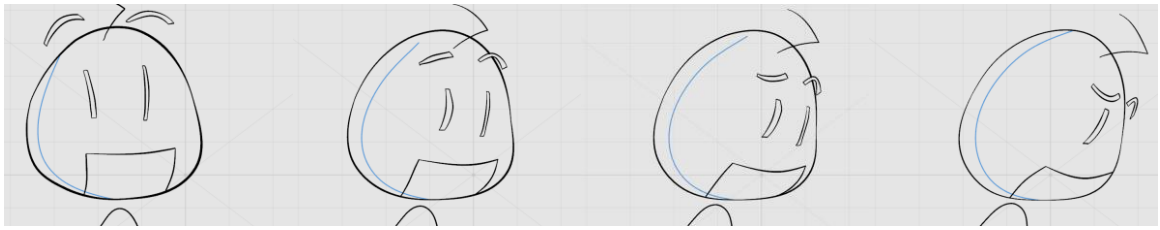


When an end of a stroke connects with another stroke, they form a T intersection as shown in the figure below.

This function first detects T intersections in key frames. When found, it generally means that the strokes are connected to each other and will form regions. Based on this information, CACANi will try to ensure that the same strokes are connected in the automatically generated in-between frames as well.

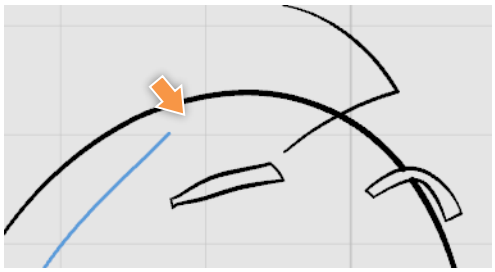
Using the Retain Stroke Connections Function

1. The example below shows a simple sequence with 2 key frames and 2 generated in-between frames.

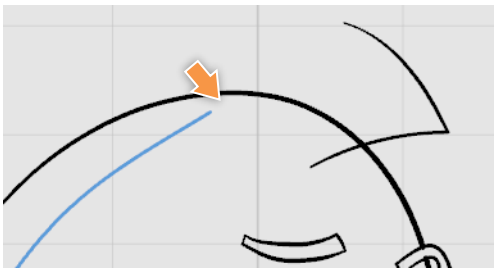


Key frame 1 | In-between 1 | In-between 2 | Key frame 2

2. You will be able to notice that in the in-between frames, the blue separation stroke does not touch the black outline, unlike the key frames.



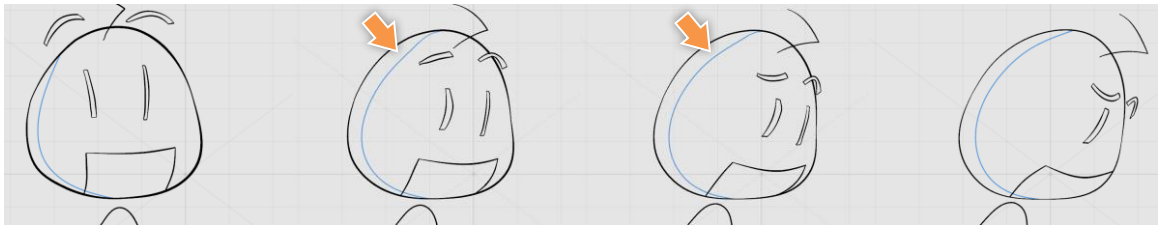
Gap in In-between 1



Gap in In-between 2

3. Select **Frames** menu > **Retain Stroke Connections (All In-betweens)**. Since T intersections can be found in key frames 1 and 2, the function will automatically close the gaps between the strokes in in-between frames 1 and 2.

4. The stroke gaps are now closed and the in-between frames are ready for painting.



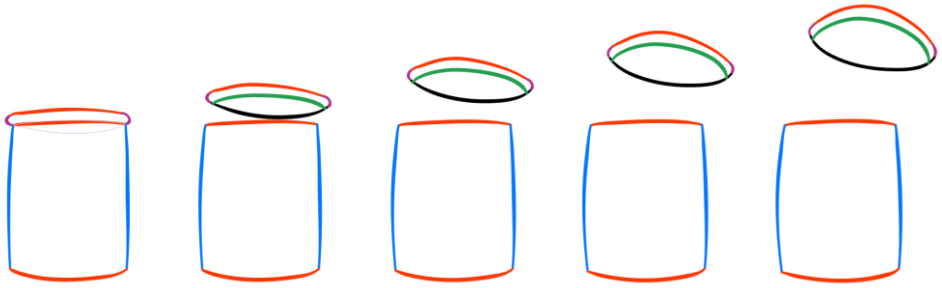
Key frame 1 | In-between 1 | In-between 2 | Key frame 2

Guidelines for In-betweening

CACANi's unique in-betweening technology allows strokes to be automatically generated in in-between frames. However, to get the best results, there are a few guidelines to follow when drawing your key frames.

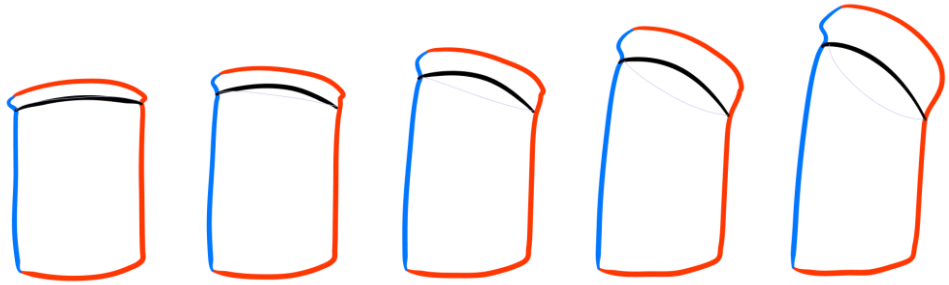
Separate Strokes for Different Parts

When drawing in CACANi, it is recommended to try to relate each stroke to a part of the object or character you are creating. In the example below, you can recognize that the object comprises of 2 distinct parts, the lid and the can. By drawing separate strokes (represented with different colors) for the lid and can, it will be easier for you to in-between the opening of the lid automatically.



Generated In-between Frames

Conversely, if you had drawn the lid and can with only 2 strokes (1 orange stroke and 1 blue stroke), the in-betweening result will not be good.



Generated In-between Frames

In-betweening Sharp Angles

When drawing an object or a character with sharp angles, like the example below, it is recommended to have separate strokes as well. This will help maintain the sharp angles in the in-between frames.

Generated In-between Frames

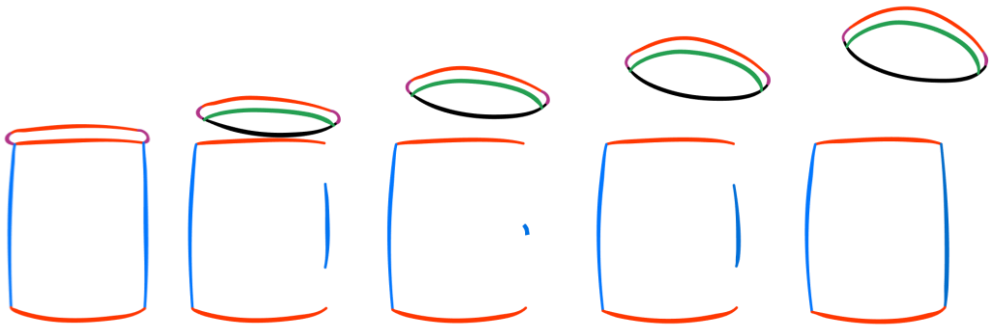
It is harder to generate in-between frames accurately when there are multiple sharp angles within a stroke.

Generated In-between Frames

Corrective Features for Stroke In-betweening

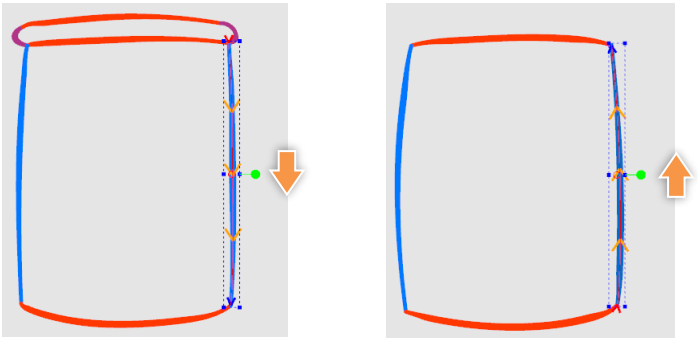
It is inevitable that mistakes will be made when cleaning up key frames in CACANi. For example, strokes were drawn in the wrong direction, or in the wrong order. When that happens, you can make use of corrective features like **Change Direction** and **In-between Selected Strokes**, found in the Selection tool's context menu.

In the example below, one stroke is flipped in the generated in-between frames due a problem with stroke direction in the key frames.

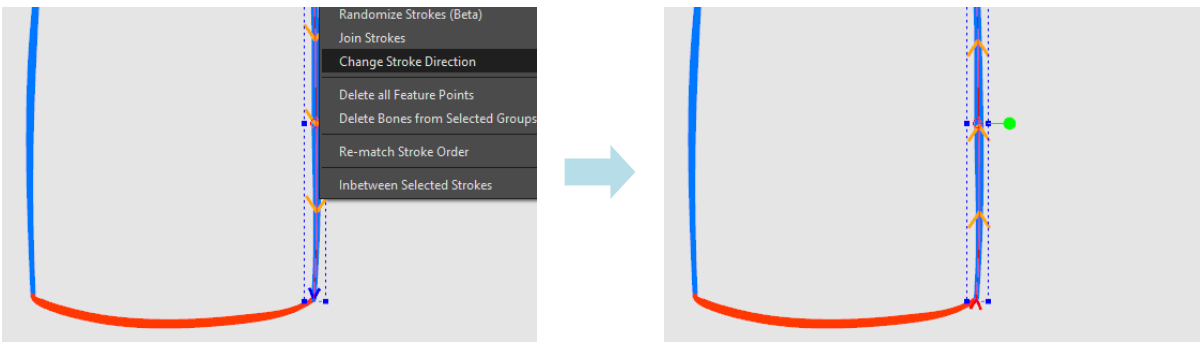


Generated In-between Frames

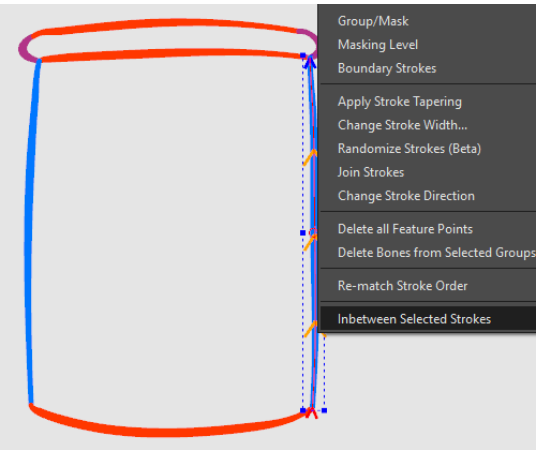
To view the stroke direction, use the Selection tool to select the stroke in the key frames.



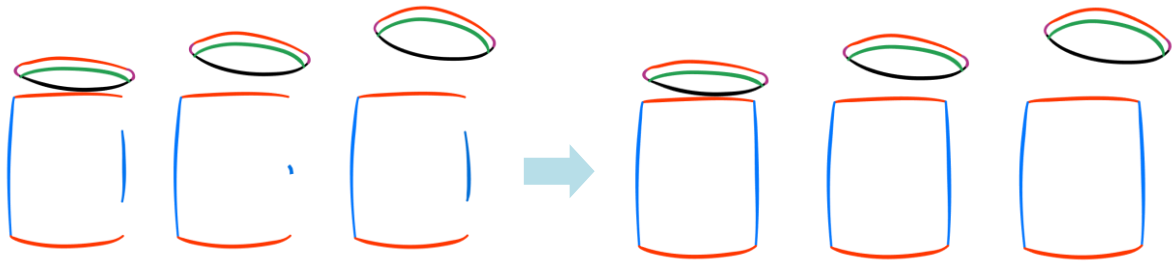
Still using the Selection tool, **Right Click** on the stroke in the first key frame to bring up the context menu. Choose **Change Direction**.



After changing stroke direction, the stroke can be updated in the in-between frames using the **In-between Selected Strokes** option, without affecting the other strokes. This is especially useful in cases when there have been extensive changes made to the strokes in the in-between frames.



With the corrections, now the in-between frames are generated properly.



Hiding Stroke Segments Last

During the process of animating, there is always a high chance that the strokes in the key frames or in-between frames need to be changed. As such, it is generally a good practice to leave any stroke segment editing / hiding to when the key frames are almost finalized, or after the in-betweening process has been carried out.

Keeping this in mind will help minimize time spent in the re-editing of stroke segments.

09

Painting Your Animation

A Dash of Sunshine

With all the innovation found in the in-betweening tools, we have tried to do the same with the painting process, by leveraging on the key frame information gathered earlier.

As a result, CACANi has an intelligent painting system that will help you to paint animation frames automatically.

But before continuing with the different painting tools, there is a need to understand how painting works in CACANi. On the canvas, before painting can be done, you must ensure that the strokes form closed regions. That can be done with the Clean Up Tool, or you can use the Stroke Editor to adjust the strokes so that they cling to each other.

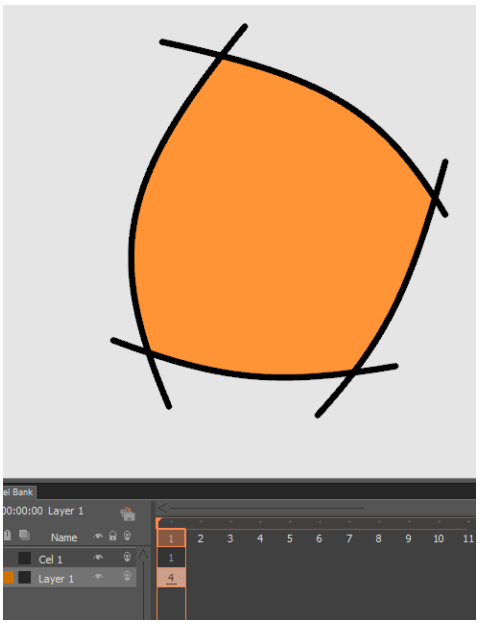
Please refer to **Chapter 05 – Stroke Editor** and **Chapter 05 – Clean Up Tool** for different ways to prepare for painting.

You can use the various region display modes to check if the regions are indeed closed.

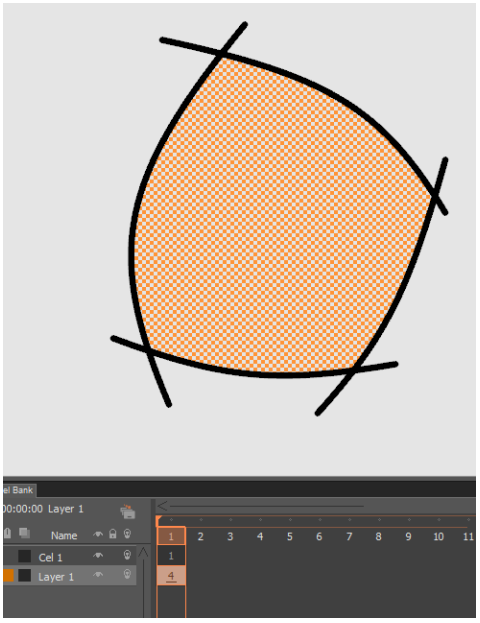
Please refer to **Chapter 06 – Region Display Modes** for more information on different ways of displaying regions.

Cross Layer and Single Layer Regions

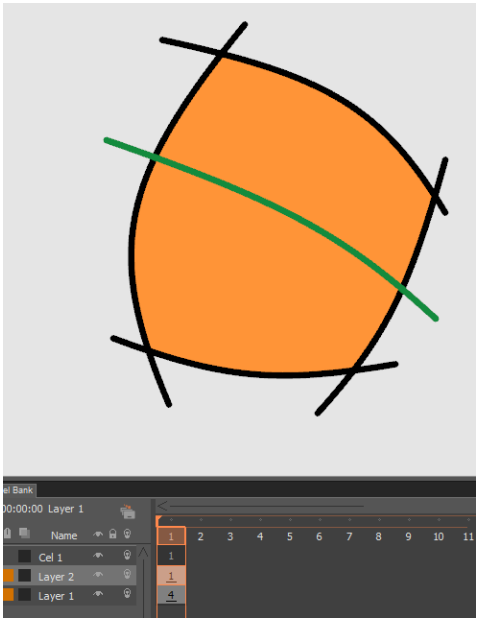
Next is the concept of cross Layer regions and Single Layer regions. In this example, as the strokes were all drawn in 1 layer, the region formed by the 4 strokes is a **Single Layer Region**, or **Self Region**. The Single Layer Paint Tool is used to fill in the region.



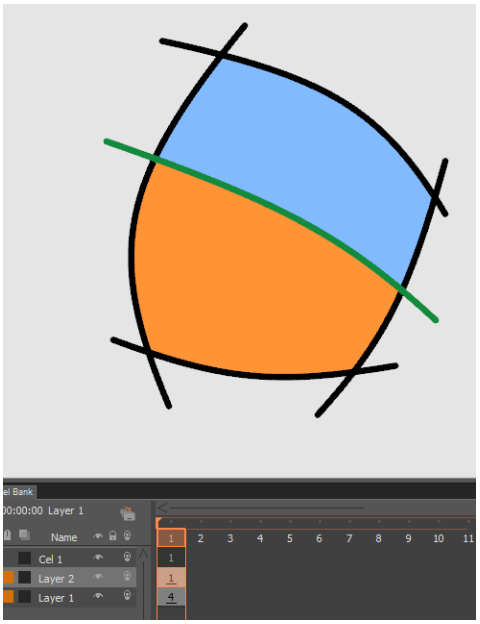
To verify this, you can enable the Highlight Single Layer-Regions display mode. All single layer regions will be displayed with a checkered pattern.



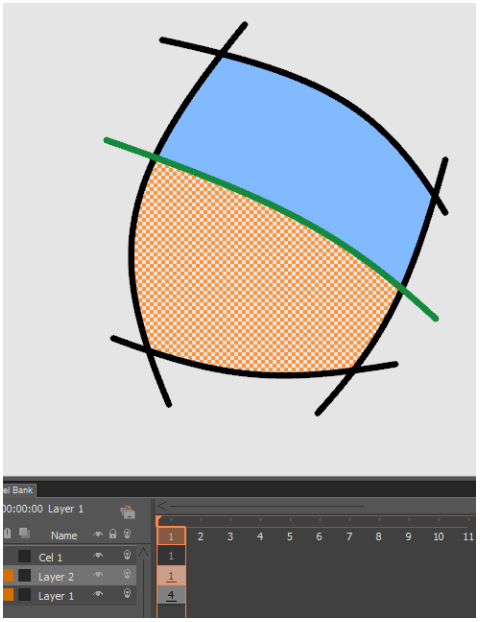
On a new layer, a green stroke is drawn. This new stroke does not affect the single layer region underneath.



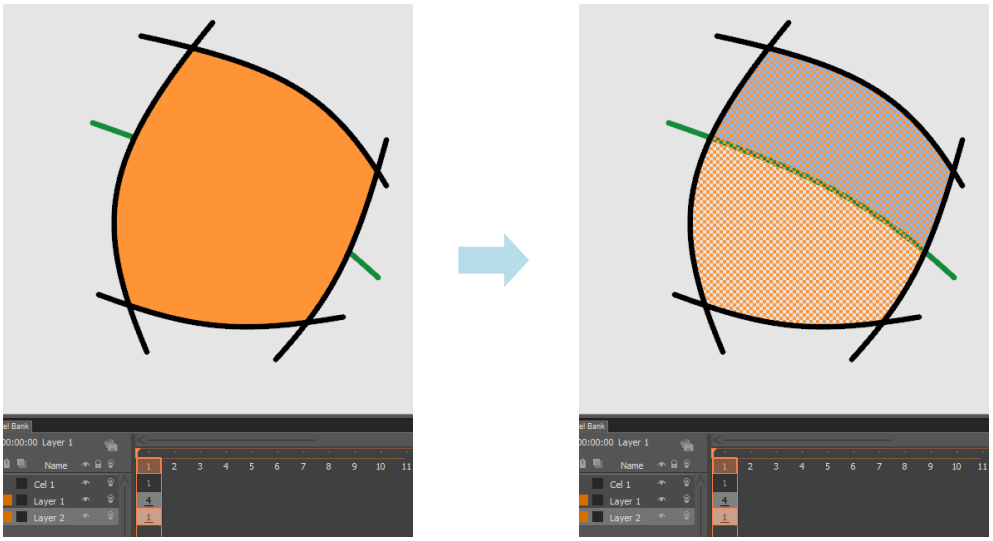
Rather, because the new layer is above the single layer region, it intersects with the first 4 strokes and creates 2 distinct new **Cross Layer Regions**. This is apparent when using the Cross Layer Paint Tool results in the new light blue region.



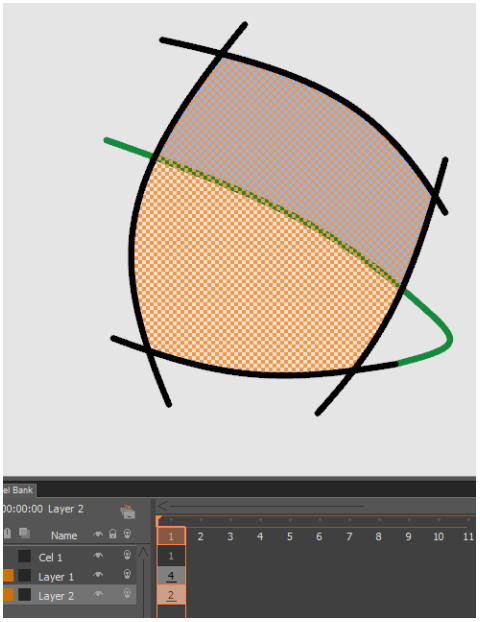
The single layer region still shows the checkered pattern, while the light blue cross layer region doesn't. In this case, as the green stroke is above the other 4 strokes that form the single layer region, the cross layer region hides the single layer region.



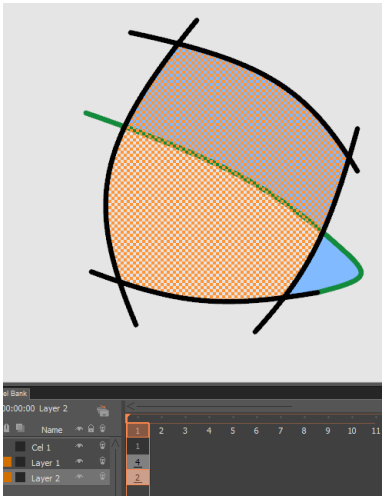
By reversing the order, now the 4 strokes are above the green stroke. As a result, the orange single layer region is now hiding the light blue cross layer region, as well as the green stroke. In Highlight Single Layer Regions display mode, the translucent single layer region reveals the cross layer region.



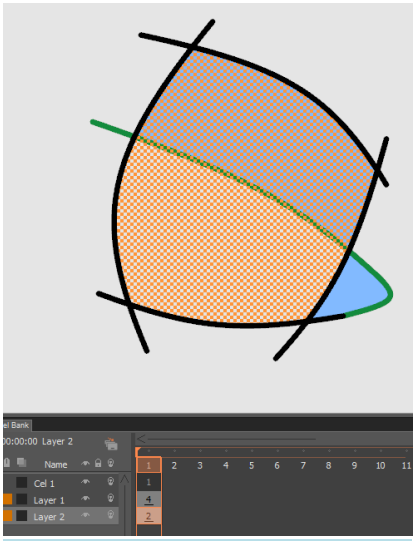
Taking the example further, another green stroke is added to the bottom layer, connecting the first green stroke in the bottom layer to the black stroke in the top layer.



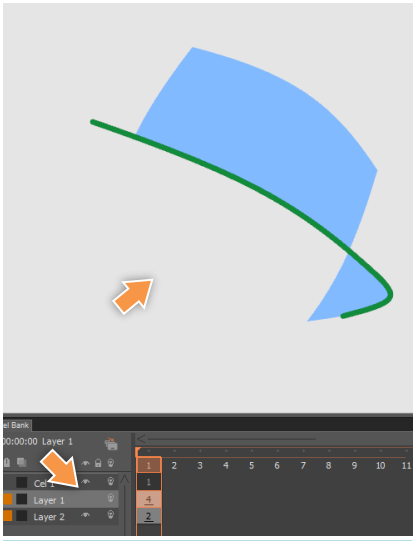
Because the strokes that make up this region belong to different layers, there is no single layer region formed. Using either the Cross Layer Paint Tool or the Single Layer Paint Tool will result in a cross layer region with no checkered pattern.



Another difference between single layer regions and cross layer regions is the layer where the color information is stored. Since **single layer regions** are formed by strokes on a single layer, the **color information is naturally stored together in the same layer**.

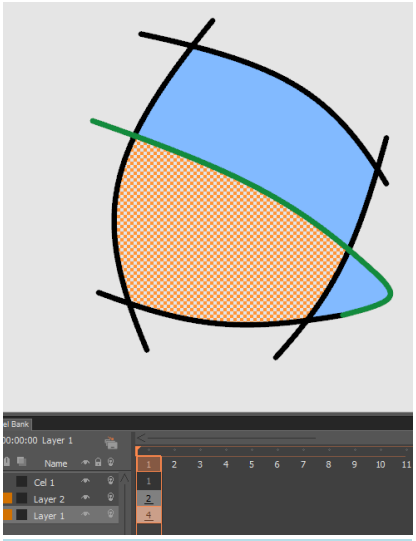


Single Layer region colors (stored in top layer) hiding Cross Layer region colors (stored in bottom layer)

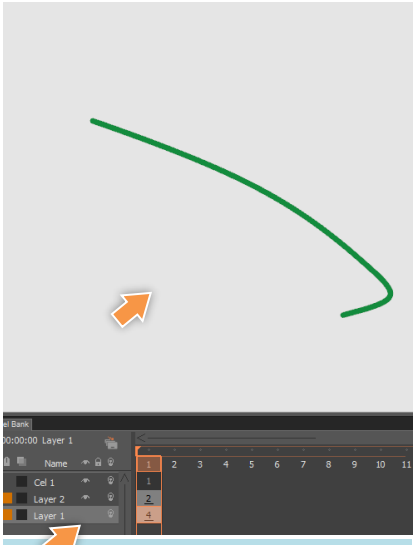


When top layer is hidden, Single Layer-region colors disappear, but bottom Cross Layer region colors remain

However, as **cross Layer regions** are formed by strokes from different layers, **color information is stored in the bottom-most layer**. Understanding this is important, especially when attempting to hide layers.



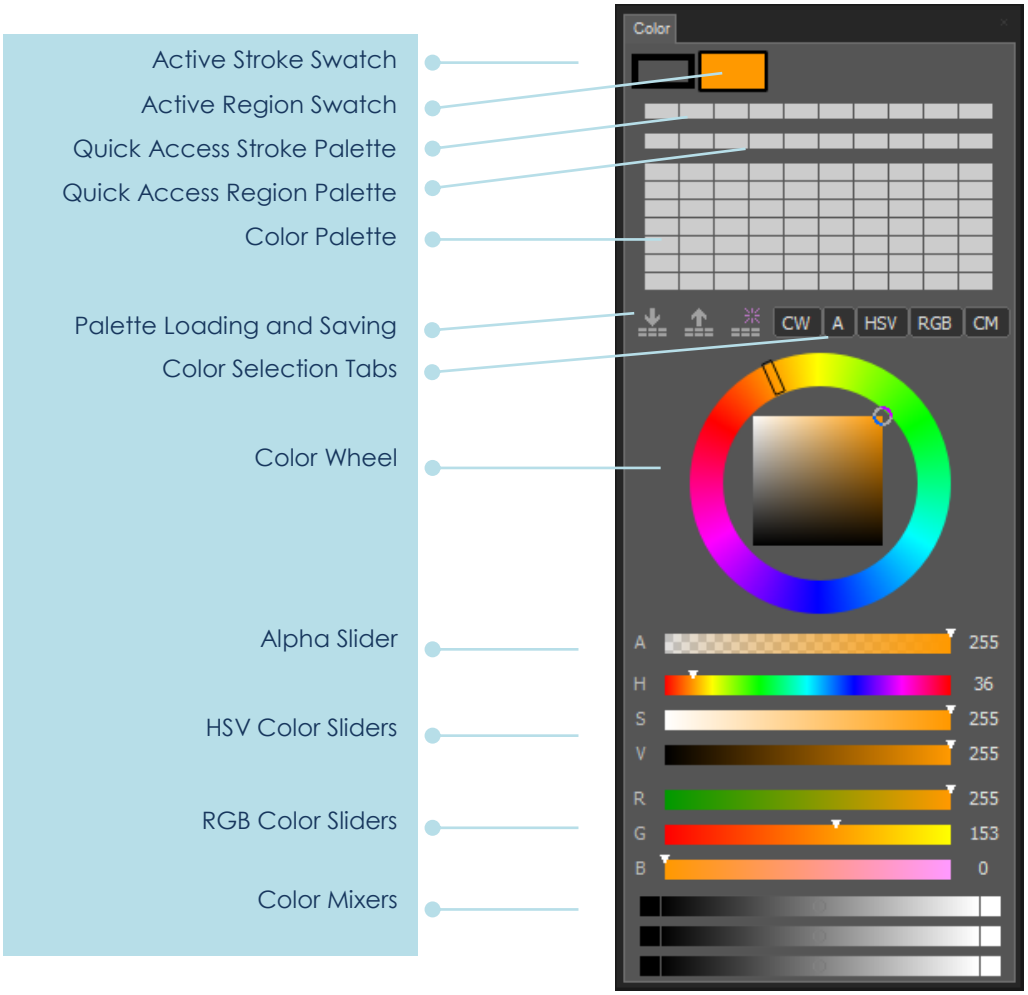
'Green strokes' layer moved to top layer, Self-region colors moved to bottom layer together with strokes



Cross Layer region and Self-region colors now stored together in bottom-most layer and are both hidden at the same time

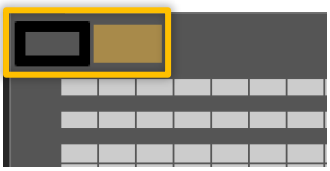
Color Panel

The Color Panel is where you can define or change colors for selected strokes and regions. You can also store color swatches for adjustments or testing.

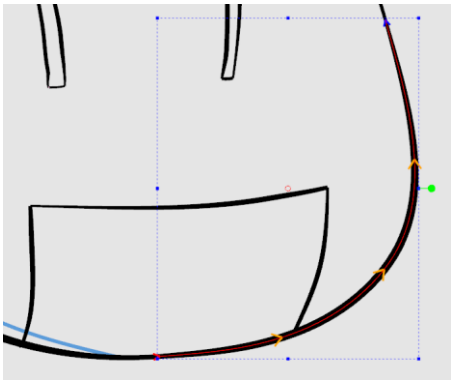


Active Stroke and Region Swatches

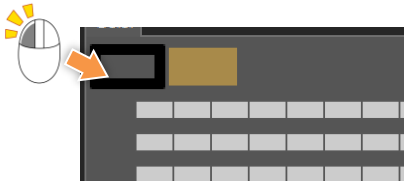
When active, it'll allow you to set or change the color of the selected strokes or region.



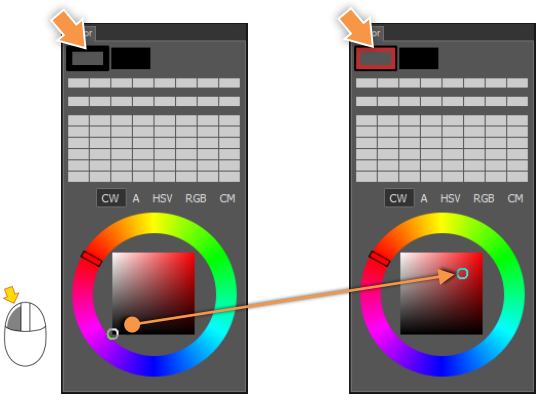
To change stroke colors, use the **Selection tool** to select the strokes.



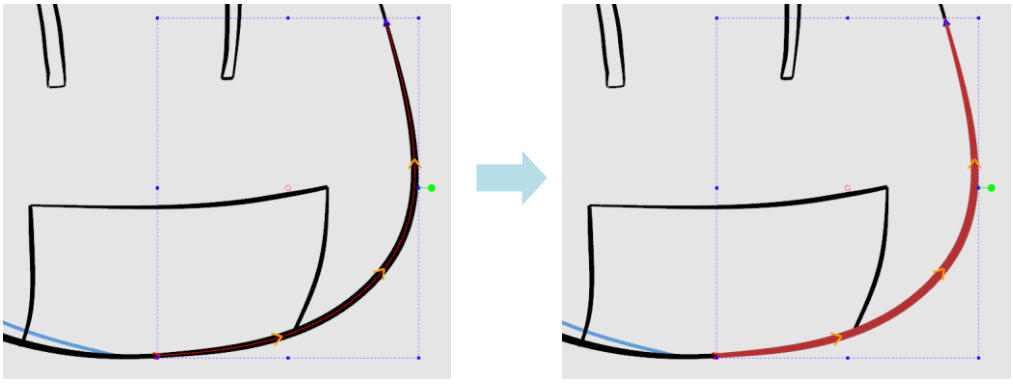
Left Click on the **Active Stroke Swatch** to make sure that the color adjustment will apply to strokes and not regions.



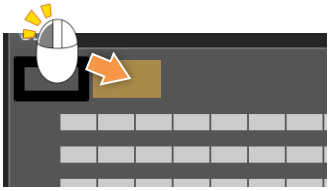
Enable the **Color Wheel Selection Tab** (**CW**). **Left Click** and **Drag** the circular indicator to a different color in the color wheel. The color in the **Active Stroke Swatch** is now changed.



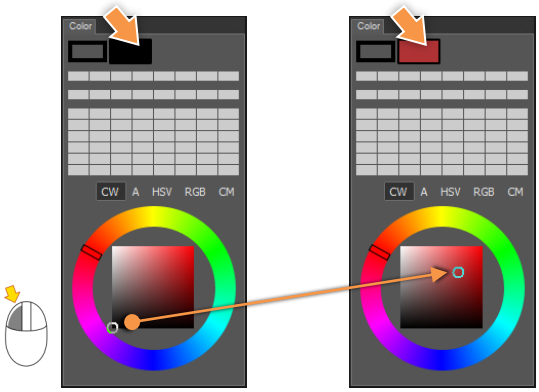
The color of the selected stroke on the canvas is also changed.



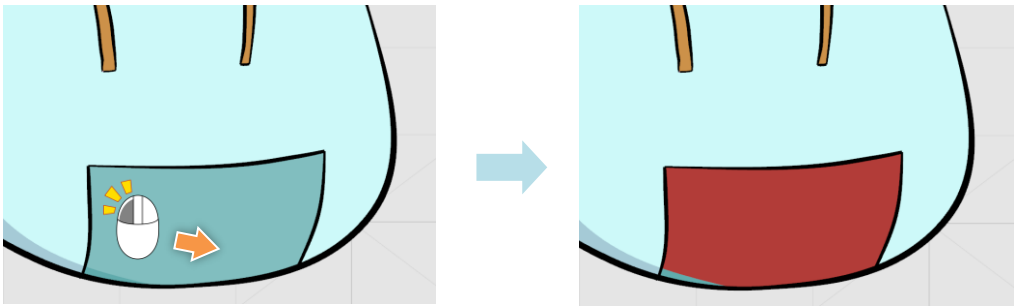
Unlike strokes, regions cannot be selected. **Left Click** on the **Active Region Swatch** to make sure that the color adjustment will apply to regions and not strokes.



Adjust the indicator on the color wheel to change the color in the **Active Region Swatch**.

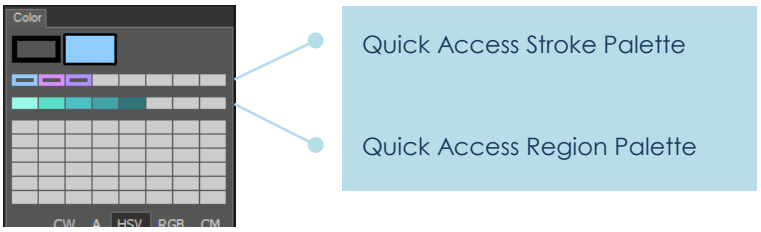


Select the **Cross Layer Paint Tool** and **Left Click** on a closed region on the canvas to fill it with the selected color.

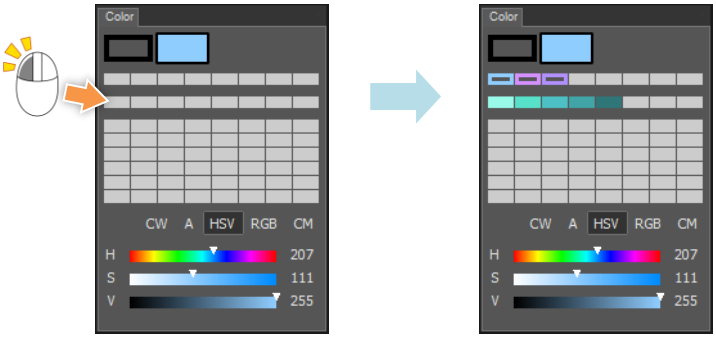


Quick Access Stroke and Region Palettes

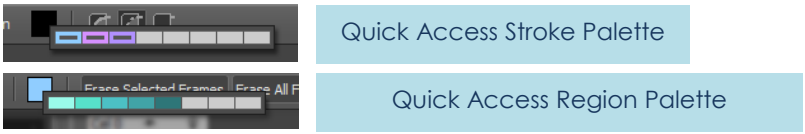
Allows you to select swatches quickly from the dropdown menus in the stroke drawing tools or Cross Layer Paint Tool property bars. With the quick access palettes, frequently used color swatches can be accessed from the property bar, and the need to have the **Color Panel** opened all the time is reduced.



To add swatches to the quick access palettes, open the **Color Panel**. **Hold Alt** and **Left Click** on any of the empty quick access swatches.

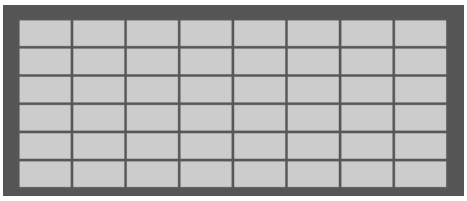


To use the quick access swatches, select any of the Drawing Tools, Painting Tools or the Selection tool. **Left Click** and **Hold** on the **Color Selection Box** in the property bars. **Left Click** on a quick access swatch, and it will replace the color in the Active Swatch.

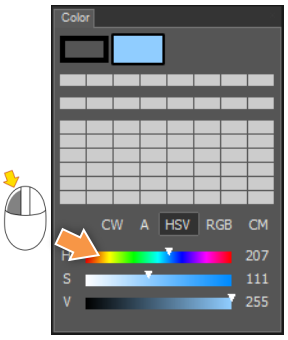


Color Palette

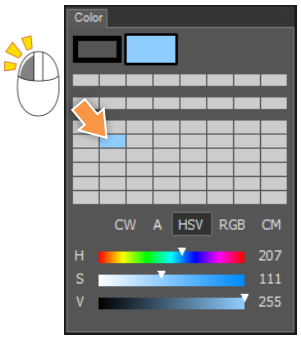
Allows you to store color swatches for easier selection.



To add a swatch to the color palette, first select a color from either the color wheel or the color sliders.



Then **Hold ALT** and **Left Click** on one of the empty swatches in the color palette. The color is now added.



Palette Loading and Saving

Allows you to swap color palettes. Color palettes can be saved as .csf files.

Save Palette

Saves the current color swatches as a palette to a .csf file.

Load Palette

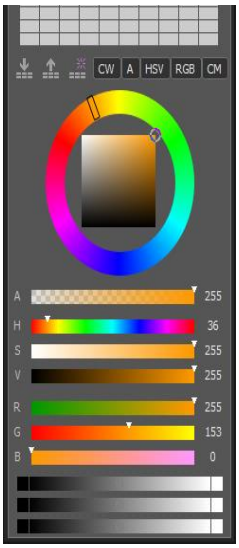
Replaces the current color swatches with a new set from a .csf file.

Clear Palette

Removes all color swatches.

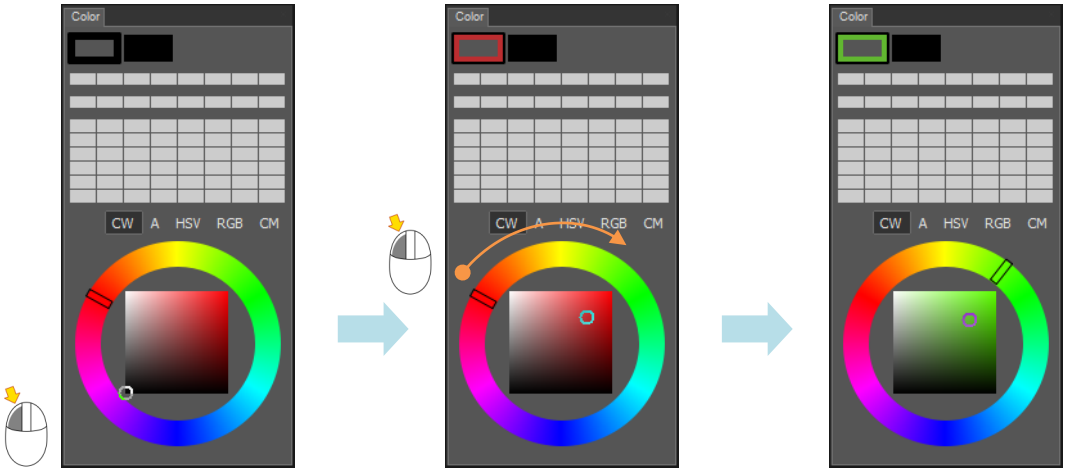
Color Selection Tabs

Allows you to display or hide the color wheel and various color sliders.



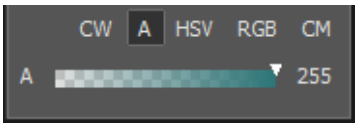
Color Wheel [CW]

Allows you to define colors for the Stroke or Region Swatches through visual selection. The color wheel consists of an outer color circle, and an inner brightness square. Enable the color wheel by **Left Clicking** on **CW**.

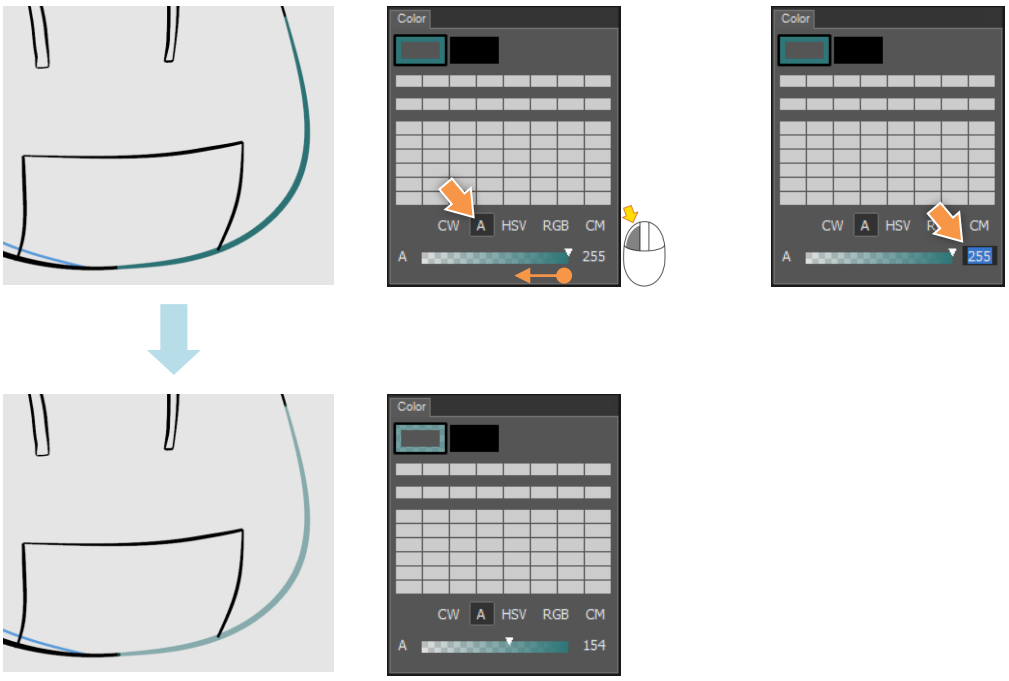


Alpha Slider [A]

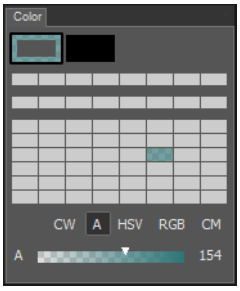
Allows you to define the alpha, or transparency, value of a color for the Stroke or Region Swatches. To change the alpha value of selected strokes, enable the Alpha slider by **Left Clicking** on **A**.



Adjustments can be made by either **Dragging** the triangular indicator, or by **Left Clicking** on the input field to key in the new value directly.

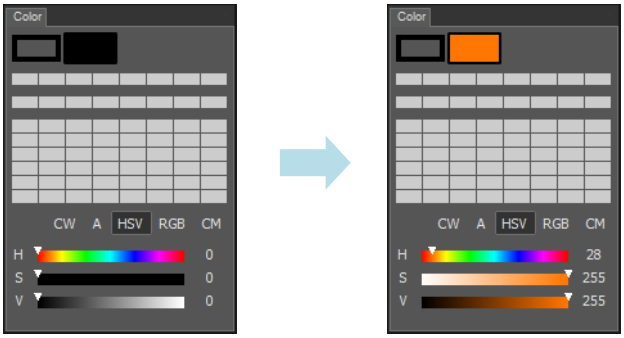


Colors with different alpha values can also be stored as swatches in the **Color Palette**.



HSV Sliders [HSV]

Allows you to define colors through the adjustment of H (hue), S (saturation) and V (black level) values. Enable the HSV sliders by **Left Clicking** on **HSV**.



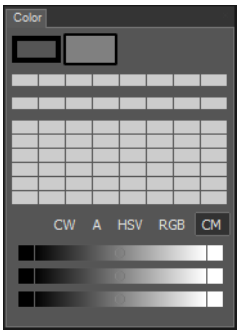
TIP! It's easier for artists to select colors using the HSV sliders than the RGB sliders, mainly because HSV sliders are visually easier to understand.

RGB Sliders [RGB]

Allows you to define colors through the adjustment of R (red), G (green) and B (blue) values. Enable the RGB sliders by **Left Clicking** on **RGB**.

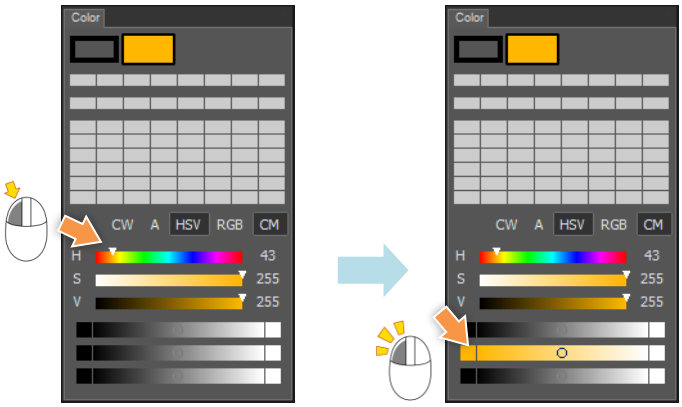
Color Mixers [CM]

Allows you to define colors through the mixing of two user-assigned colors on either end of the slider. Enable the color mixers by **Left Clicking** on **CM**.

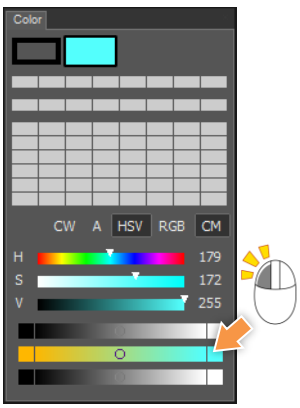


To assign colors to the mixers, you will first need either the color wheel or the color sliders. The HSV sliders are used in this example.

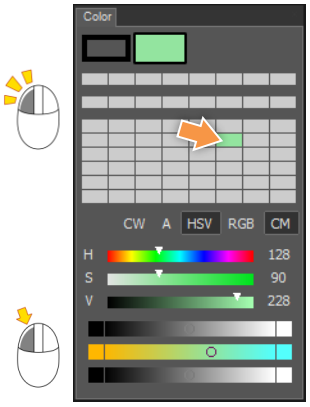
Adjust the sliders to a color of your desire. Apply the color by **Left Clicking** on one of ends of a color mixer.



Select another color, and then apply the second color to the other end of the same color mixer.



Now you can adjust the circular indicator to get a new color mixed from the selected colors. Keep this new color by **Holding down Alt** and **Left Clicking** on the color palette.



Color Picker Tool

Allows you to sample colors from the canvas. The colors can be from a stroke or region on the canvas, or from a loaded image in the Image Layer.

Using the Color Picker Tool

Select the Color Picker Tool and **Left Click** anywhere on the canvas. The color at the spot will be reflected in the Active Swatch in the **Color Panel**.

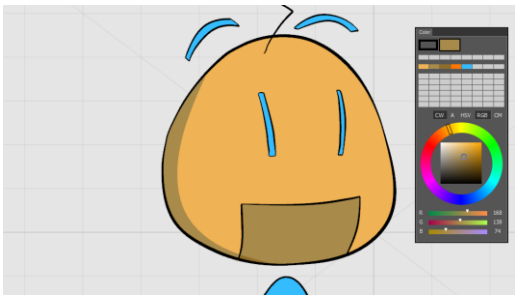
Cross Layer Paint Tool, Single Layer Paint Tool Difference

The main difference between the Cross Layer Paint Tool and the Single Layer Paint Tool is the latter's ability to determine and paint self-regions.

The Cross Layer Paint Tool does not determine whether strokes are forming self-regions and can only create cross Layer regions. Hence, it is more useful and efficient when painting elements that do not require regions to hide, or occlude, each other.

Cross Layer Paint Tool / Single Layer Paint Tool

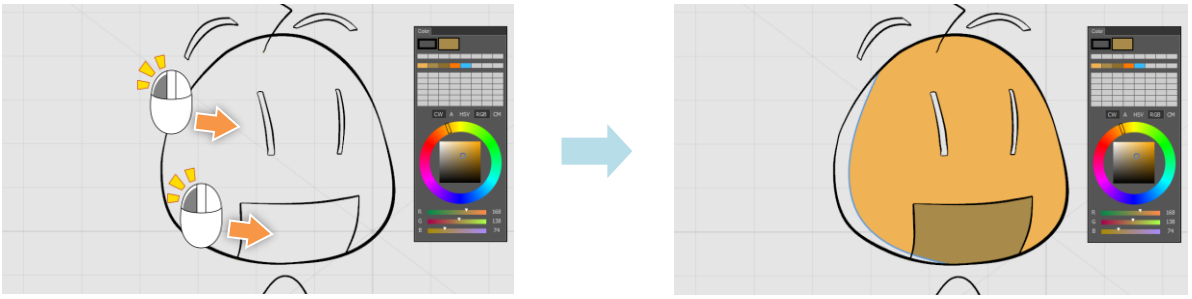
Allows you to fill a closed region with the selected color by **Left Clicking** or **Dragging** on the region.



Using the Cross Layer Paint Tool

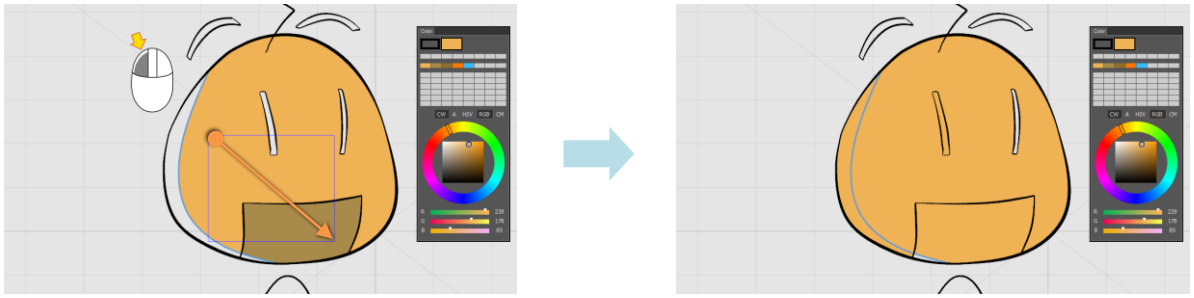
To paint a closed region, first pick a color using the **Color Panel's** palettes or color sliders, then **Left Click** within the region.

To remove color from a painted region, **Right Click** within the region.



You can also use **drag** selections to paint multiple regions, or remove color from multiple painted regions. To do so, **Left Click** and **Drag** a rectangular selection over regions to be painted. Any region that falls within the selection will be filled with the same color.

Conversely, to remove colors from multiple painted regions, **Right Click** and **Drag** a selection over them.

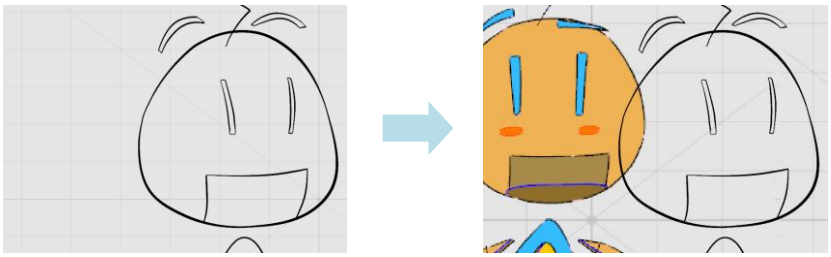


TIP! When painting regions, you may find that certain regions cannot be painted. One reason for this may be that the strokes forming the region have gaps amongst them.
Please see **Chapter 05 – Clean Up Tool** for more information.

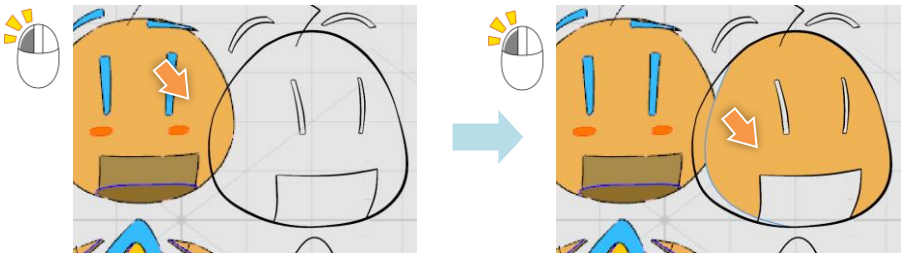
Sampling Colors from an Image

Other than selecting colors from the **Color Panel**, you can also toggle the **Color Picker Tool** from within the **Cross Layer Paint Tool**. Colors can be sampled from drawings created in CACANi as well as images loaded from external sources.

First, load an image into CACANi.
Please see **Chapter 07 – Image layers** for more information.



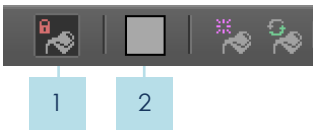
With the Cross Layer Paint Tool selected, **Hold ALT + Left Click** on the colored image, then **Left Click** on the character's face. The face is now painted with the color sampled from the image.



In this way, artists will be able to quickly sample colors from images and reduce the need for the Color Panel.

Cross Layer Paint Tool Properties

Cross Layer Paint Tool has similar properties with Single Layer Paint Tool.

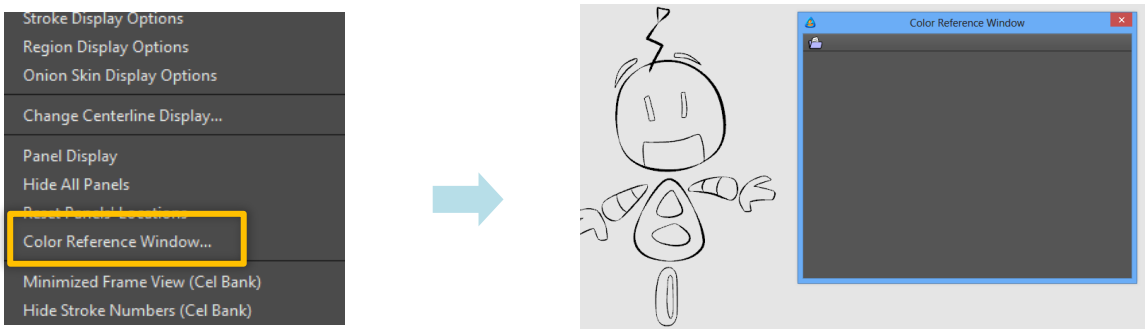


1 **Replace Existing Color**
When enabled, you will be able to replace colors in painted regions.

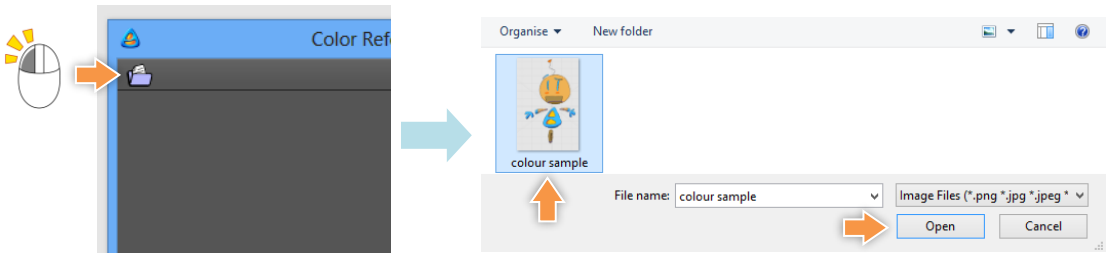
2 **Region Color Selection Box**
You can set the region color by **Double Clicking** to bring up the **Color Selection Box** dialog box. When done, just **Left Click OK** to confirm.

Using the Color Reference Window

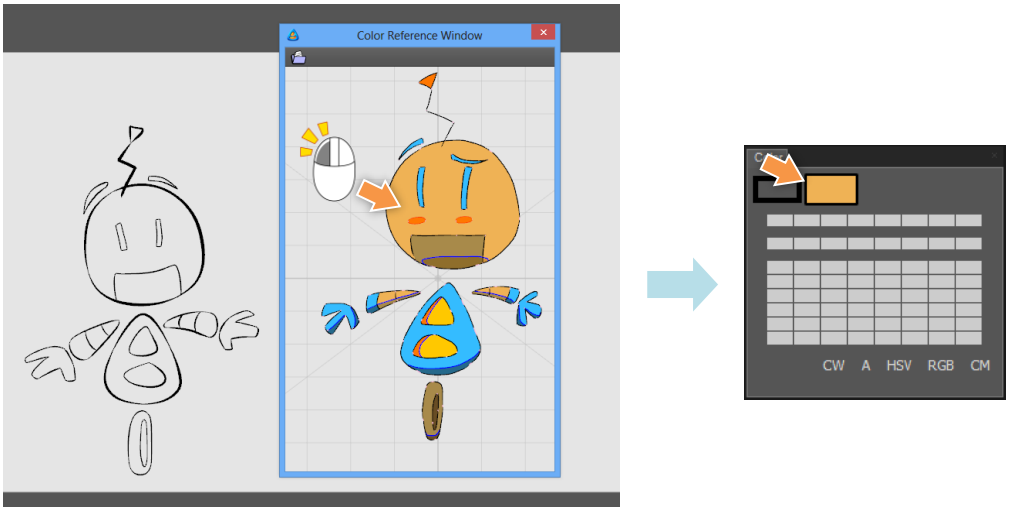
Other than loading the images into an image layer, you can also use the **Color Reference Window** from the **View** menu to load your images.



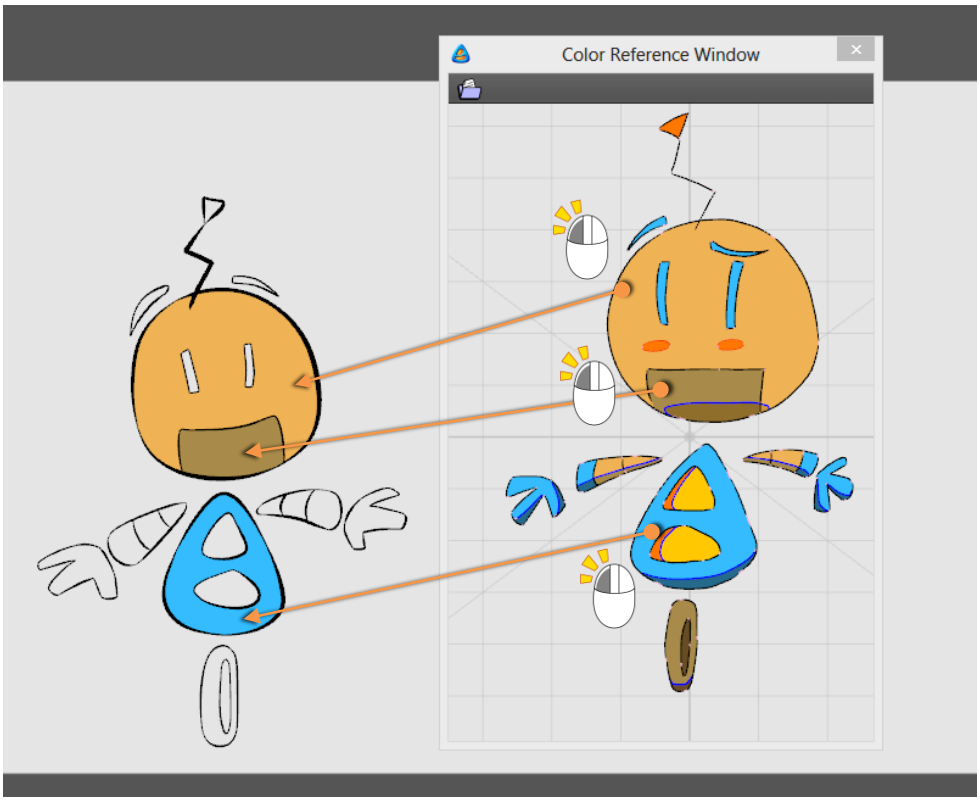
From the Color Reference Window, you can **Left Click** on the Load Image icon to bring up the selection dialog box to load an image.



When you **Left Click** anywhere on the loaded image, the color value at that pixel is sampled and automatically recorded as an active swatch in the Color Panel.



Using the Cross Layer Paint Tool, you can proceed to paint the corresponding regions in the canvas.

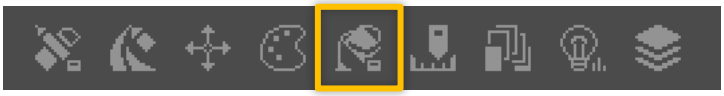


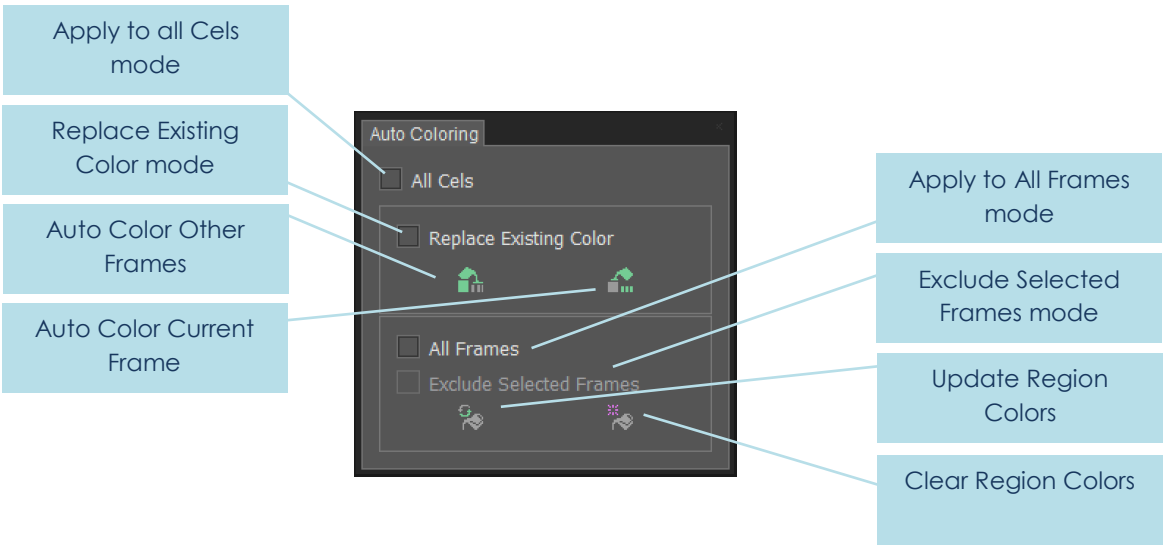
Assisted Painting System

Painting animation frames has always been a time consuming process, even on a digital, paperless workflow. However, CACANi's assisted painting feature will allow you to finally surmount this obstacle. By taking a painted frame as reference, CACANi can automatically paint the rest of the animation sequence for you, helping you save time and money.

Auto Coloring Panel

The Auto Coloring Panel provides you with tools to paint the frames easily. Activate it from the Panel Display Bar.





Apply To All Cels mode

When enabled, **Auto Color Other Frames**, **Auto Color Current Frame**, **Update Region Colors** and **Clear Region Colors** will affect all cels.

Auto Color Other Frames

The painted regions of the current frame will be used to paint all other frames or frames in a selection.

Auto Color Current Frame

Regions in the active frame will be painted with colors from the previous frame, or adjacent frames.

Replace Existing Color mode

When enabled, **Auto Color Other Frames** and **Auto Color Current Frame** will replace colors in painted regions when applied.

Apply To All Frames mode

When enabled, **Update Region Colors** and **Clear Region Colors** will affect all the frames within the active layer.

Exclude Selected Frames mode

When enabled, **Update Region Colors** and **Clear Region Colors** will not affect the selected frames within the active layer.

Update Region Colors

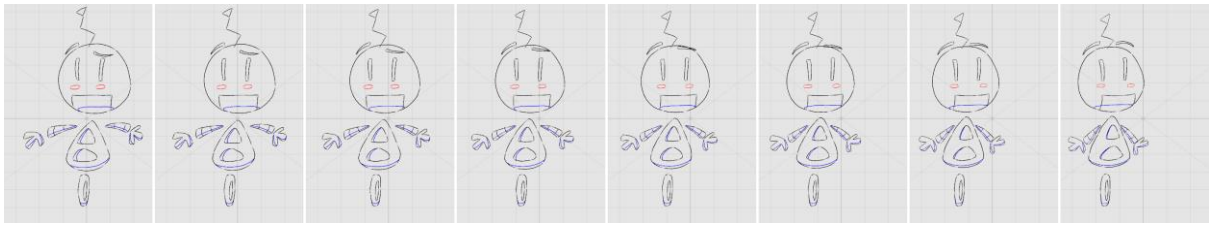
If the regions of the selected frame are already painted, this will restore the display of the colors in those regions.

Clear All Region Colors

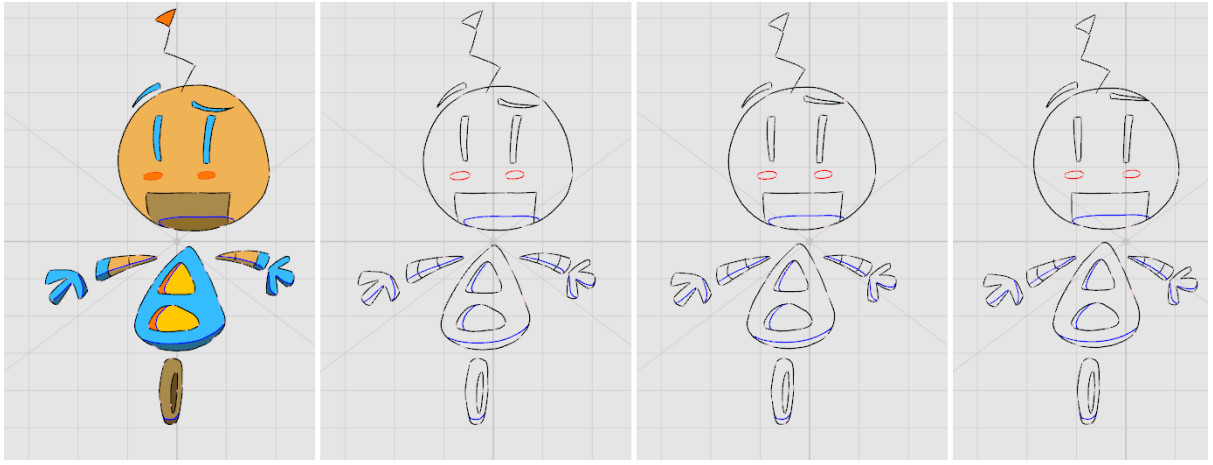
When pressed, all region colors in the selected frame will be erased.

Using Auto Painting

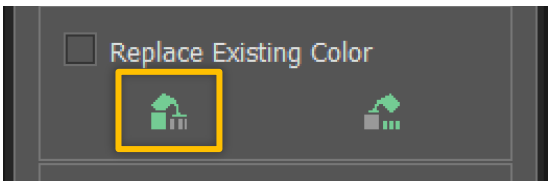
First, ensure that the regions to be painted in the animation frames do not have any unwanted gaps. This can be done by using the Cross / Single Layer Paint Tools and **Left Clicking** on any open areas to check for unclosed regions.



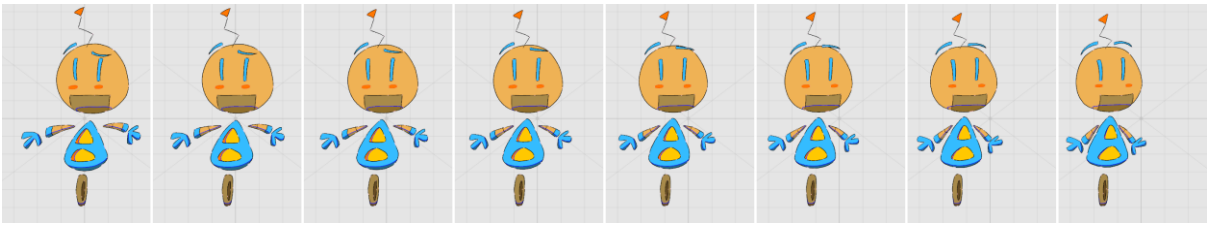
Select one of the animation frames and paint it. This will provide CACANi with the painting information for the rest of the animation sequence.



With the painted frame active, select the **Auto Coloring Panel**. **Left Click** on **Auto Color Other Frames**. CACANi will now analyse and paint all other prior and subsequent frames in the animation sequence automatically.



IMPORTANT: The auto coloring process is based on matching strokes. If the regions are enclosed by the same strokes in all the frames, the auto coloring will be very accurate. In the example below, the character's head is based on the same stroke indices 01-05.



So, the color regions enclosed by the same strokes in the head will be successfully painted automatically.

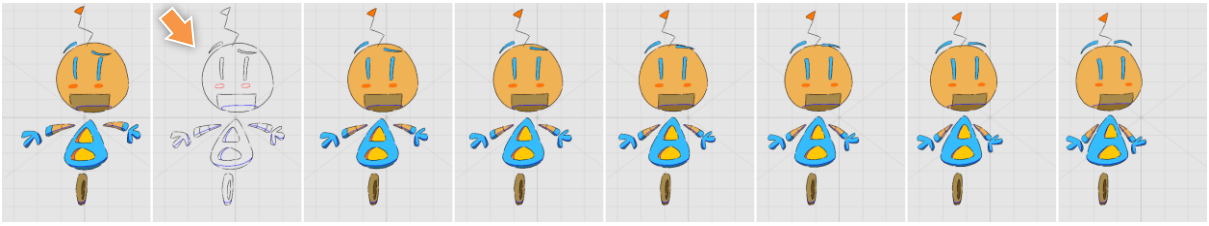
In addition, it is useful to understand how the auto coloring process works. From the 1st painted frame, it will be used to paint the 2nd frame. The 2nd frame will be used to paint the 3rd frame. The process continues until there are no more frames.

If there are still unpainted regions, you can use the Cross / Single Layer Paint Tools to manually paint those regions.

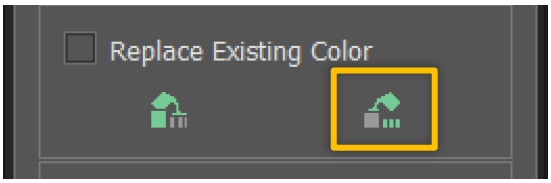
Auto Paint Single Frames

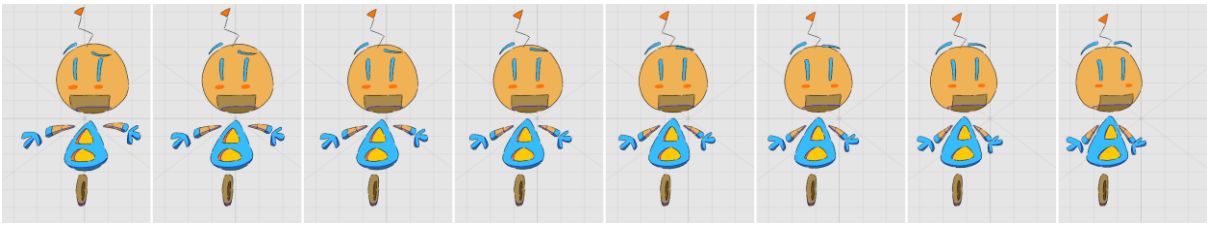
In the event that a new frame is created, or some adjustments were made to a painted frame, you can repaint the frame automatically without affecting the rest of the sequence.

Select the unpainted frame.



Apply **Auto Color Current Frame** from the Paint / Single Layer Paint Tools**.** The selected frame will be painted based on the nearest painted frame.





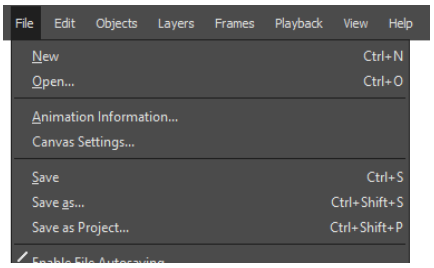
TIP! **Auto Color Current Frame** is very useful when there are more complex drawings. You can check the painted frames one by one before applying **Auto Color Current Frame** to the next frame.

10

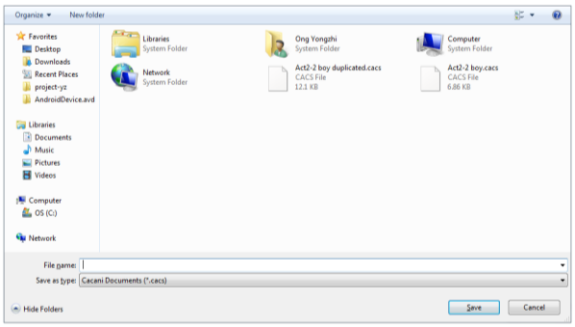
Completing Your Animation

Saving the Animation

From the menu bar, select **File** > **Save** or **Save As**. Alternatively, press Ctrl **+** S or Ctrl **+** Shift **+** S to save a file.



When you choose **Save**, if the file has not been saved before, a **Save** dialog box will appear. If not, no dialog box will appear and the file will be saved immediately. When you choose **Save as**, a **File Save As** dialog box will always appear.



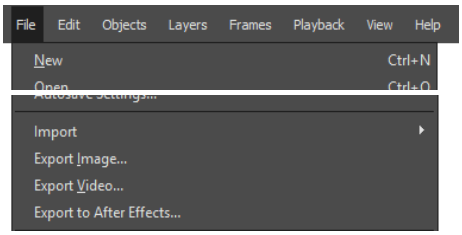
You will be required to enter a file name for their files. The **CACANi Documents format (*.cacs)** is the file format for CACANi. All file information is saved.

Save as Project

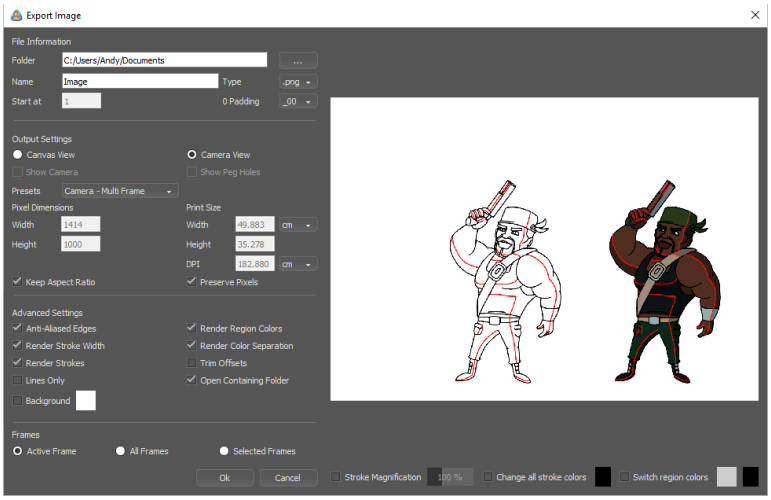
Creates a folder and lets you save your work along with external image, video and/or audio files that are currently loaded in CACANi. It is useful for consolidating external files that may be stored on different locations on the computer.

Exporting Images

From the menu bar, select **File** > **Export Image**.



An **Export Image** Dialog box will appear. A thumbnail window shows the current selected frame.



File Information

Folder

Allows you to save their file in the default **Documents** folder, specify your own folder location, or use **Browse** to select another folder of your preference.

Name and Type

You will be required to type in your preferred filename in the text field. You can choose the default **png** image format, or select a different format from the dropdown menu. CACANi supports **png**, **jpg**, **bmp**, **tiff**, **tga** and **svg** formats.

Start at

This allows you to assign a naming convention and appends a numeric value (1, 2, 3, etc) to the end of each frame's filename when they are exported from CACANi. This is only configurable when **All Frames** or **Selected Frames** are selected in the **Frames** property.

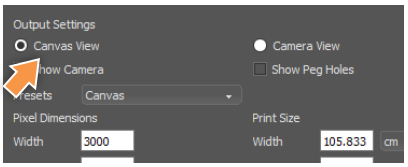
0 Padding

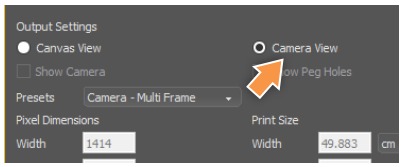
Adds zeros to the file name for image sequences so that the exported files will be visually arranged in numeric order in the folder.

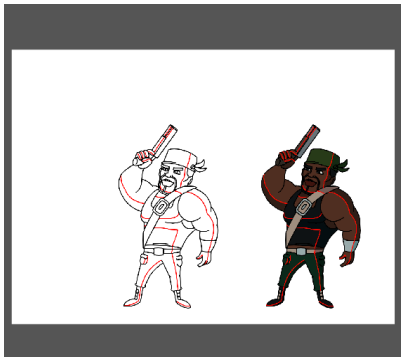
Output Settings

Canvas View and Camera View

You can choose to export either the full canvas resolution or the camera resolution from CACANi. In the comparison below, the canvas is 3000 x 3000 pixels while the camera is 1414 x 1000 pixels.

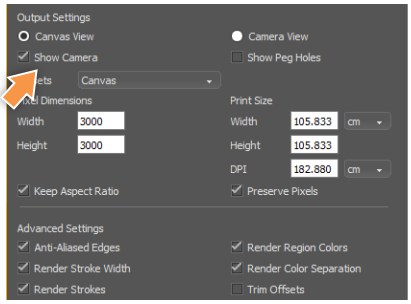






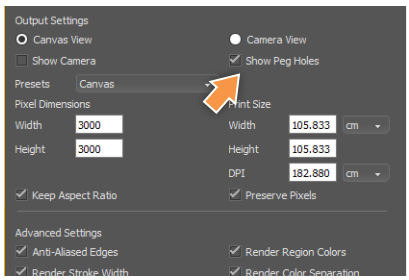
Show Camera (Canvas View only)

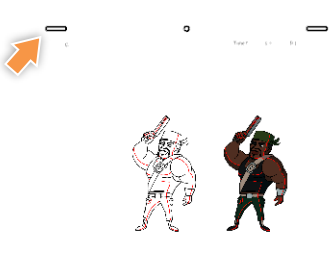
When enabled, you can export the camera frame together with the drawings.



Show Peg Holes (Canvas View only)

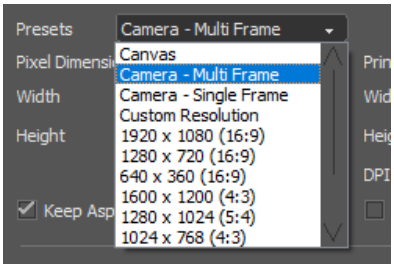
When enabled, you can export the peg holes and animation information together with the drawings.



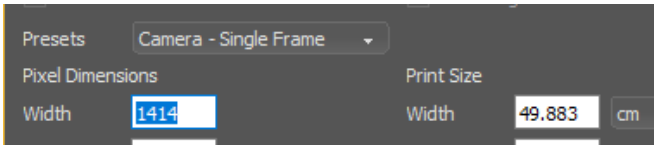


Presets

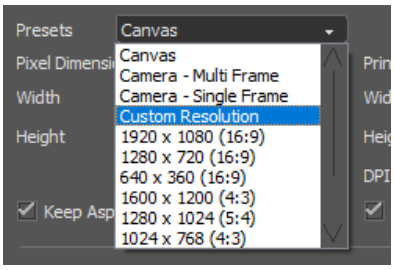
A set of resolution presets. Larger resolutions will result in sharper images, at the expense of larger file sizes. By default, the **Camera – Multi Frame** preset is selected when exporting with the **Camera View option**. This means that the animation sequence is exported based on the camera resolution set in each frame. With this preset, you can export an image sequence with a different resolution for each image. You cannot alter the resolution when using this preset.



In contrast, the **Camera – Single Frame** preset sets a camera resolution for all the frames in the sequence.



Finally, if you want to define your own resolution values, the menu will automatically switch to the Custom Resolution preset.



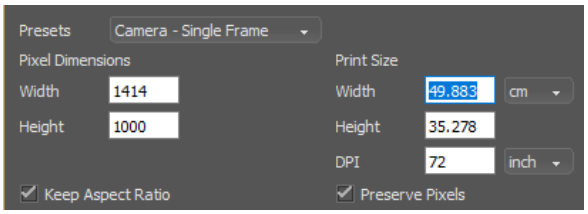
Pixel Dimensions: Width and Height

You can manually specify the width and height of the exported image, in pixels. To change the values in the Export Image window, you need to select the **Single Frame** or **Custom Resolution** preset.

Print Size: Width, Height and DPI

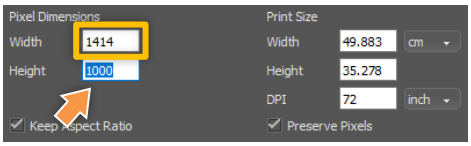
You can also specify the physical width and height dimensions in centimeters or inches. There is an additional option, the **DPI** or Dots per Inch. In CACANi, it is

equivalent to PPI, or Pixels per Inch. This is useful when you have to print out the images.



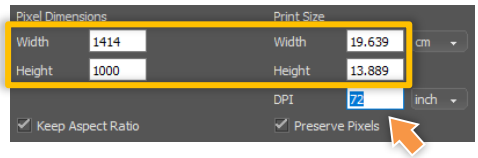
Keep Aspect Ratio

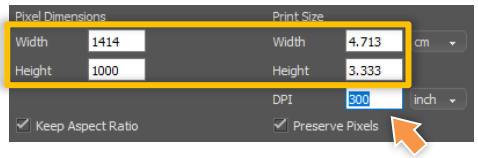
When enabled, the **Width** and **Height** is scaled proportionally whenever one of the values is changed.



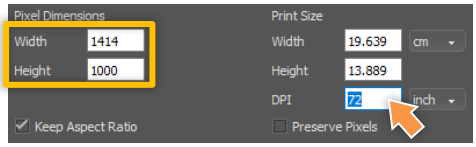
Preserve Pixels

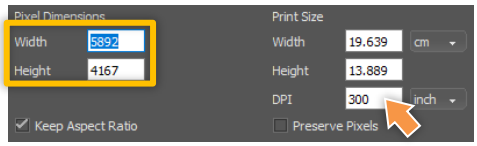
When enabled, the Print Size **Width**, **Height** and **DPI** will be adjusted automatically to fit the original pixel dimensions into the defined values. The **Keep Aspect Ratio** option will also be enabled automatically. This is useful when you do not want the original pixel dimensions to change.



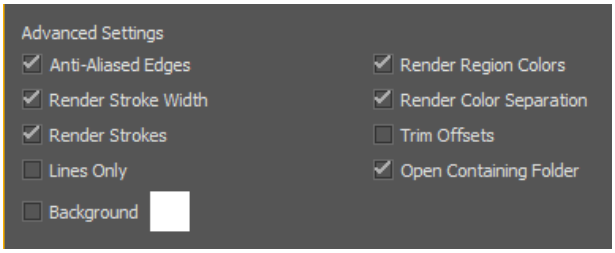


Conversely, when the option is disabled, changing the DPI value will increase the pixel dimensions of the image.





Advanced Settings



Anti-Aliased Edges

When enabled, edges between different colors in the exported images will be smoothed. A higher value will create a smoother result, but will also appear increasingly blurred.

Render Stroke Width

Disabling this option will result in the exported image showing the centerlines, without the stroke widths.

Render Strokes

Disabling this option will result in the exported image showing the painted regions without the strokes.

Lines Only

Exports strokes only. Anti-aliasing is disabled in this mode.

Background

When enabled, all exported images will have an opaque background. You can further define a background color.

Render Region Colors

When disabled, painted regions will not be exported.

Render Color Separation

When disabled, color separation lines will not be exported.

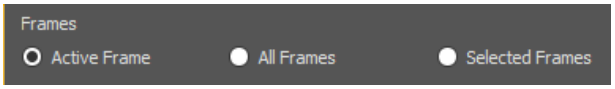
Trim Offsets

When enabled, frames that have no visible information are not exported. This is applicable only when exporting a range of frames.

Open Containing Folder

CACANi will open the folder where the images are saved to after the exporting is complete.

Export Range:



Users can choose between:

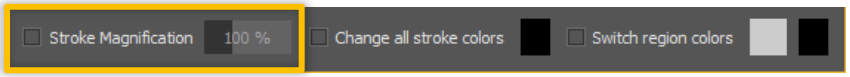
Active Frame
Exporting only the active frame shown on the canvas as an image.

All Frames
Exporting all the frames in the animation sequence as an image sequence.

Selected Frames
Exporting a selected range of frames as an image sequence. The selection of frames is done in the Cel Bank.

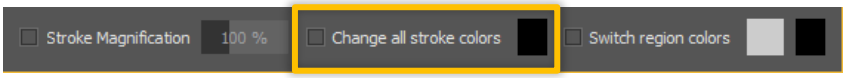
Stroke Magnification

Strokes in the drawings can be thickened or thinned with the percentage slider during the export stage, without affecting the original artwork.



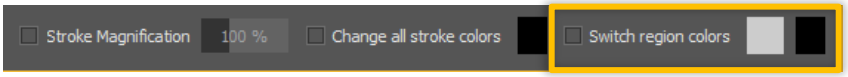
Change All Stroke Colors

You can use this to specify a standard color for all strokes. This is useful when there are multiple stroke colors in the drawings and you need to view the artwork with those colors.



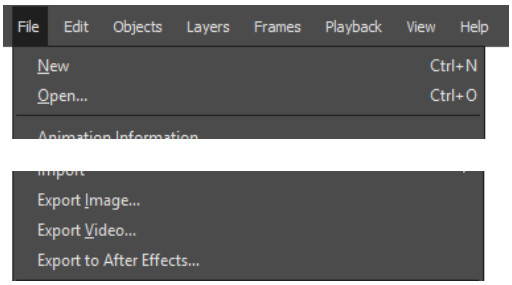
Switch Region Colors

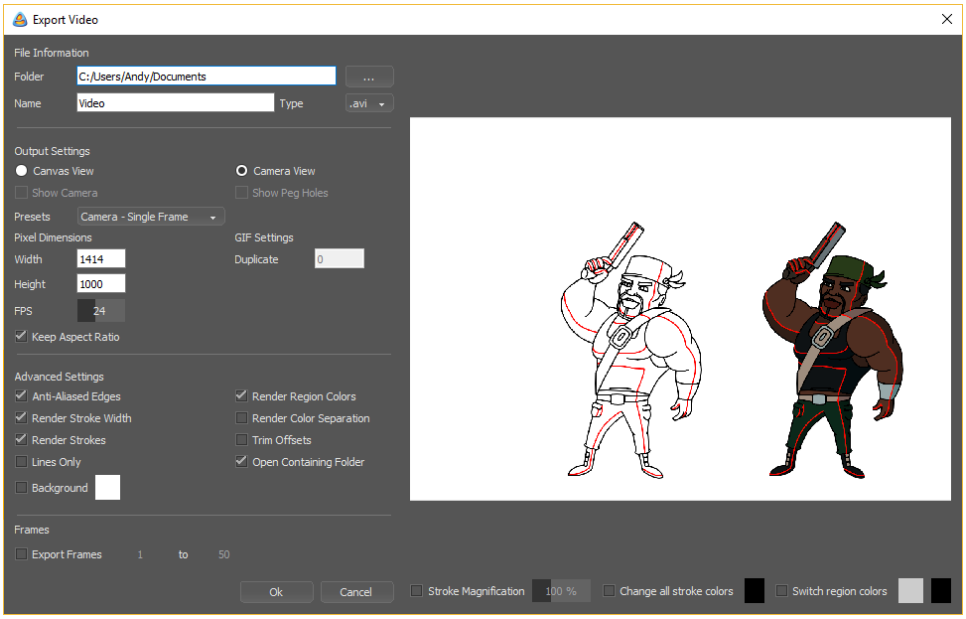
You can use this to change a region color temporarily in the export stage without affecting the original artwork.



Exporting Video

The options for exporting videos are mostly similar to those for exporting images. From the menu bar, select **File** > **Export Video**.





The differences are in the File Type and the Export Frames options. CACANi supports **avi**, **wmv**, **mp4** and **mov** video formats. Specifically, you can export videos with a transparent background with the .mov format.

Enabling the Export Frames option allows you to export a selected range of frames.

FPS

Defines the playback speed of the exported video, in Frames per Second. A higher value means the video will play much faster.

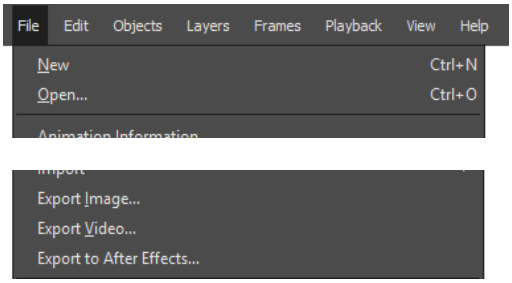
Duplicate

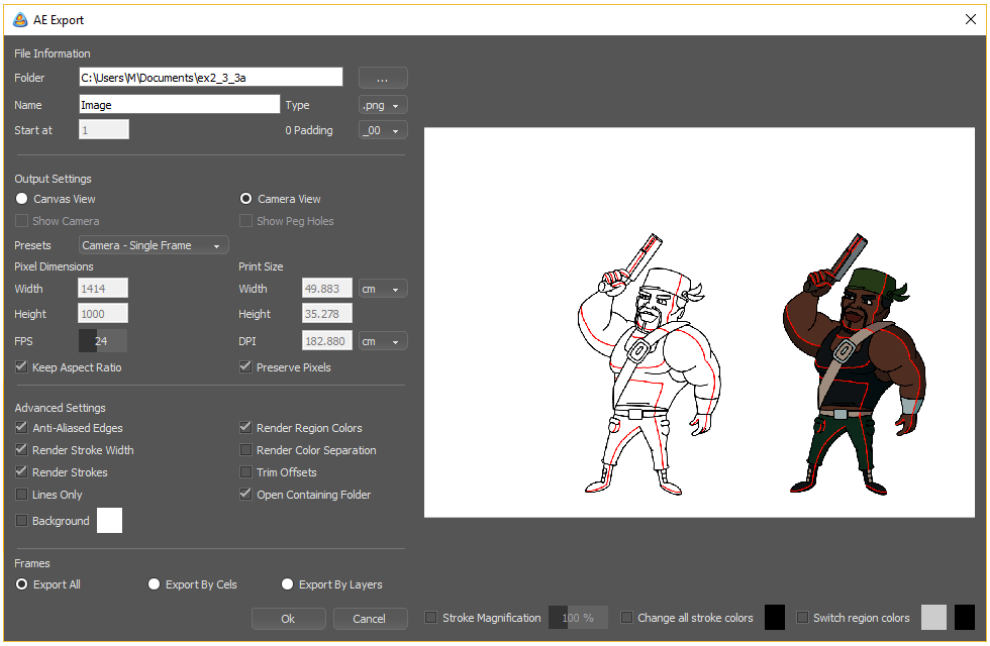
Allows you to increase the duration of the animation by duplicating each frame. This is only configurable when exporting to the GIF format.

Exporting to After Effects

After Effects is a digital visual effects, motion graphics, and compositing application developed by Adobe Systems. If you own After Effects or work in a team project that uses After Effects in the production pipeline, you can make use of this feature to create an After Effects project with the layers and animation timings in CACANi still intact.

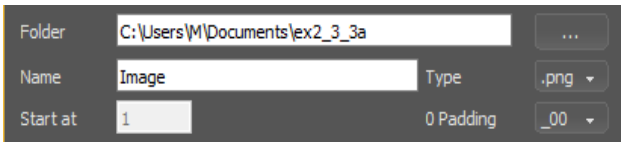
From the menu bar, select **File** > **Export to After Effects**.



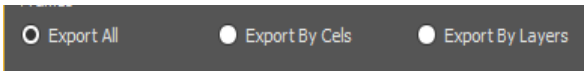


Since you will be exporting image sequences, the options are almost the same as the Export Image window. The difference is that Export to After Effects will export images from individual layers and create subfolders to store them.

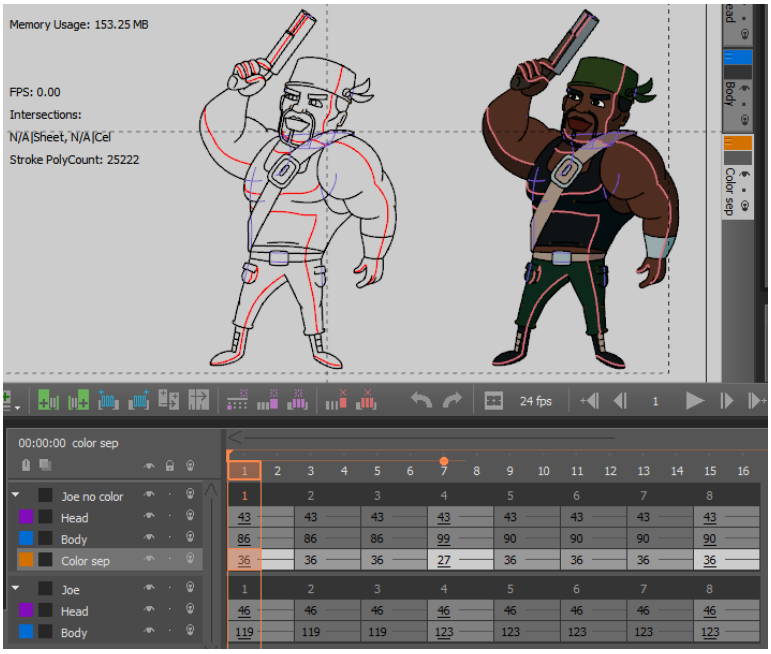
Unlike the Export Image option, a folder named after the filename will be created. You can change it to a different folder name.



Then the options below allow you to decide how these images are exported and organized.

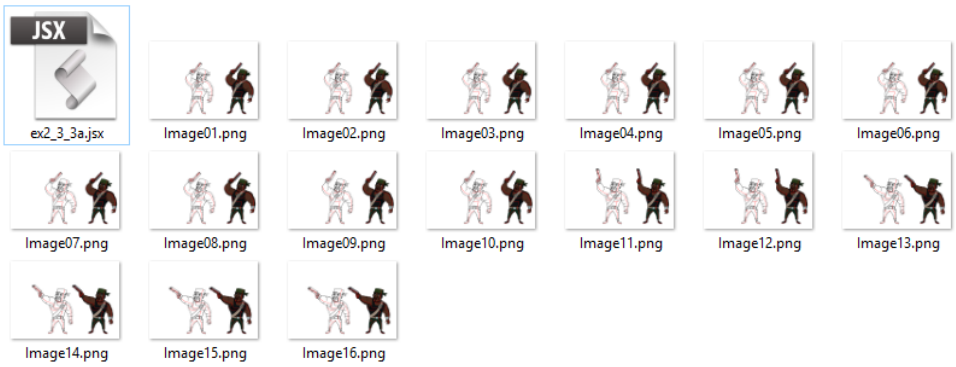


In the example below, there are 2 cels with multiple layers in each of them.



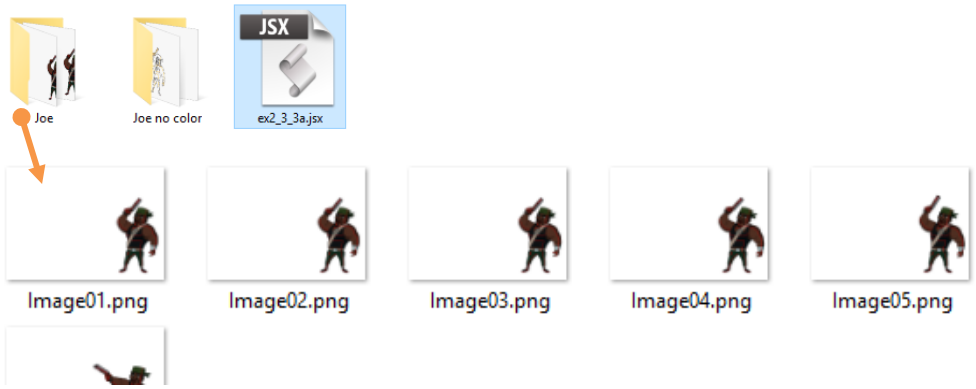
Export All

Flattens all the layers when exporting, similar to how Export Image works. Folder contains a single image sequence and the After Effects script.



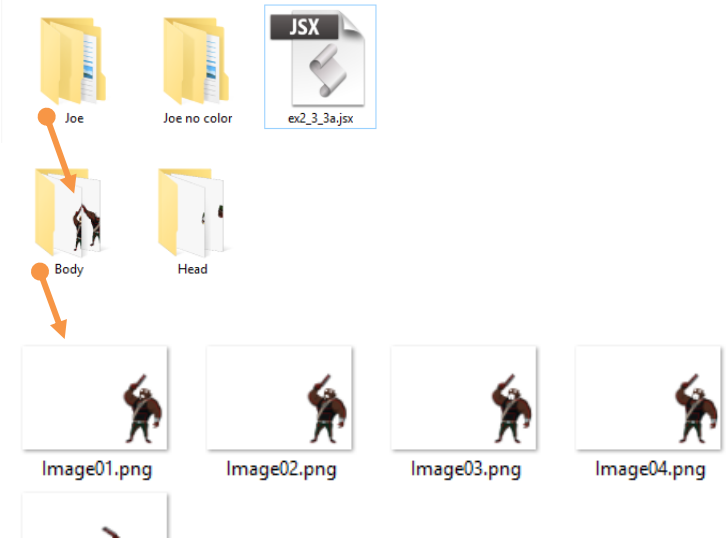
Export by Cels

Flattens layers into their individual cels. Each cel is exported as a subfolder.

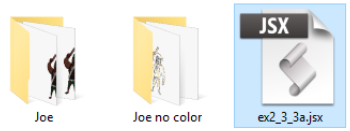


Export by Layers

Each layer is exported as a subfolder.



After the folder and script are exported, you can now load the sequence into After Effects by choosing (from within the After Effects application) File > Scripts > Run Script, then choosing the **jsx** script file.



END