

Intro to Projection Mapping

A general introduction to Projection Mapping

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Intro

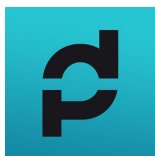
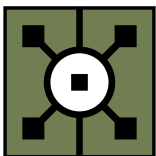
What is Projection Mapping?

Projection Mapping is a technique used to display content such as images or video onto irregularly shaped surfaces or objects. It is commonly used in advertising and stage design, but also by artists who wish to add depth or movement to static objects.



This technique was first used for Disney's Haunted Mansion ride in 1969, where a video of five singing ghosts was projected onto physical busts, creating the illusion of movement. Since then, many creatives continue to incorporate projection mapping in their artistic practice, and the technique has expanded to incorporate more advanced methods, including 3D and immersive projections.

Software



A variety of projection mapping software and masking tools are available online; The Creative Technology Lab supports projects in **Touchdesigner** and **Madmapper**. While our "Intro to Projection Mapping" workshop introduces students to the technique in Touchdesigner, resources are available for both tools on this wiki.

Hardware

Selecting the right projector is crucial for projection mapping: Different projectors suit various environments and surfaces. LED or Laser projectors are ideal for dark rooms, offering intense colors and high resolution. For brighter rooms, Lamp projectors (3000 ANSI lumens or more) work best. It's important to handle lamp projectors carefully – mounting these upside down or from ceilings might damage the lamp inside.

Check out the variety of projectors available in college on ORB or speak to a technician to find out what might work best for your project.


Projection Mapping in Touchdesigner

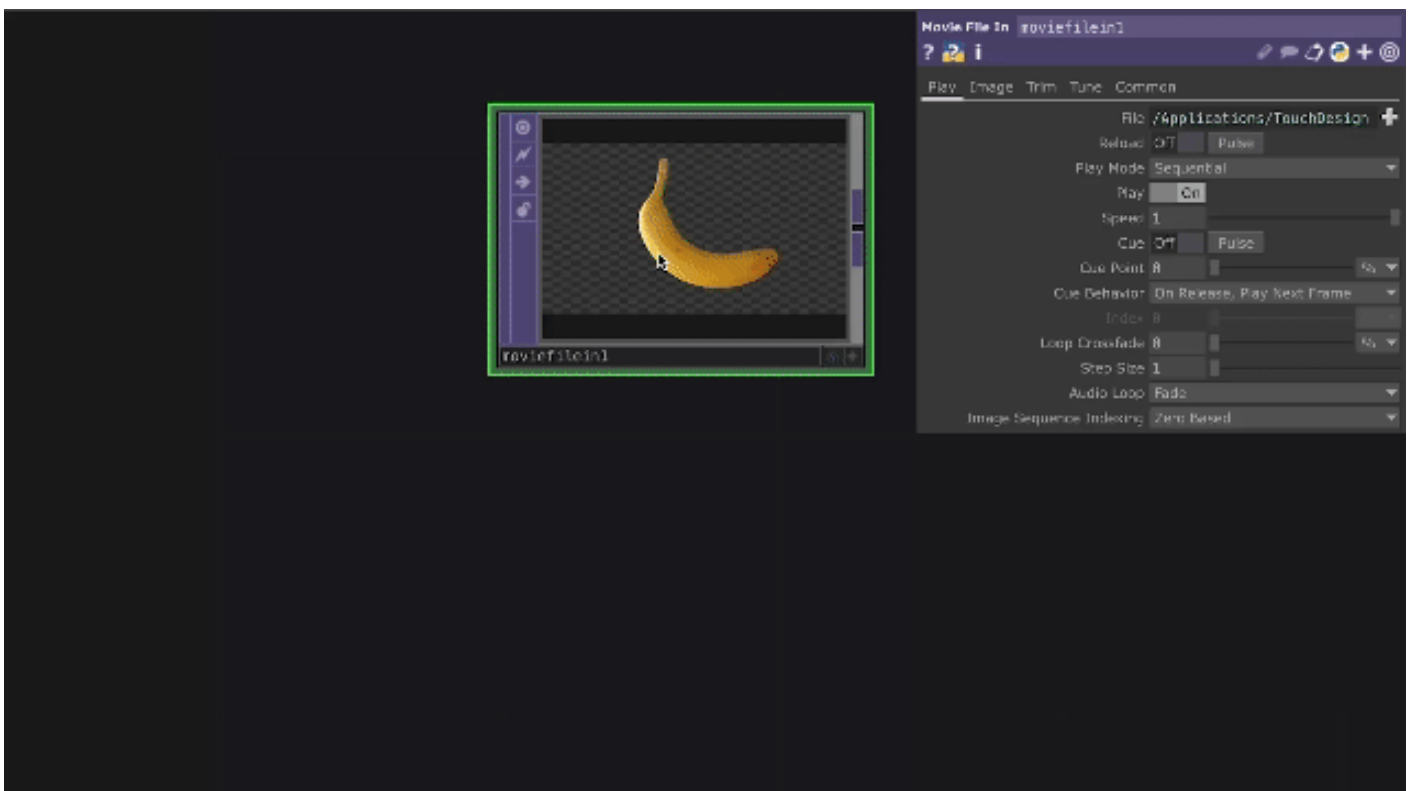
Before we begin...

Make sure you have installed Touchdesigner, a tutorial on how to get the software started is available [here](#). This tutorial will cover the basics to projection mapping content onto 3D surfaces in Touchdesigner, to learn more about this technique student can attend the 'Intro to Projection Mapping' workshop in the Creative Technology Lab.

Importing content in Touchdesigner


Double click anywhere on the interface to access the OP dialog, this is a "library" of all operators available in Touchdesigner. Operators are divided into families, in this tutorial we'll work with TOPs (Texture Operators).

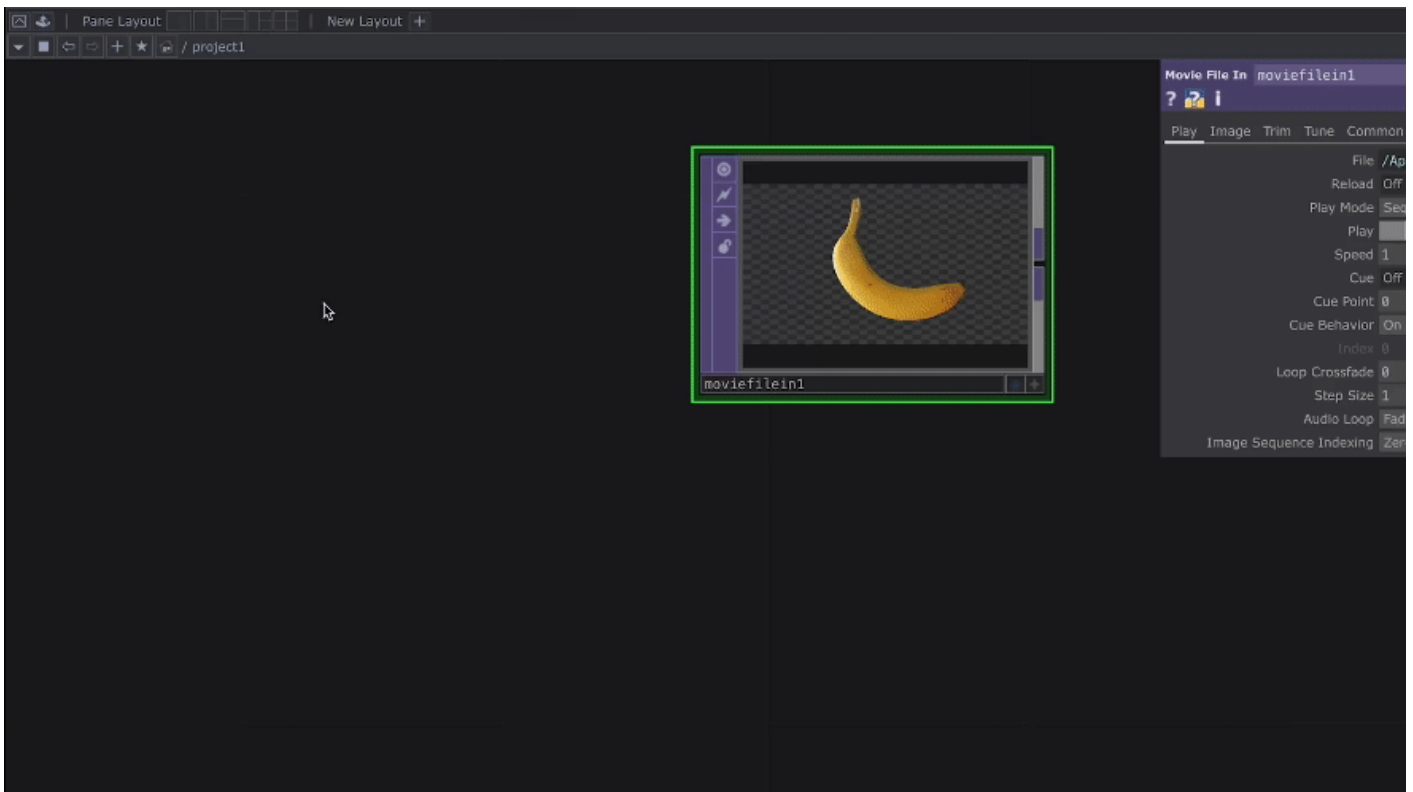
Select the **moviefilein** TOP to import images or videos. You can change the default image to your own visuals by clicking on the  button next to "File" in the parameters window.



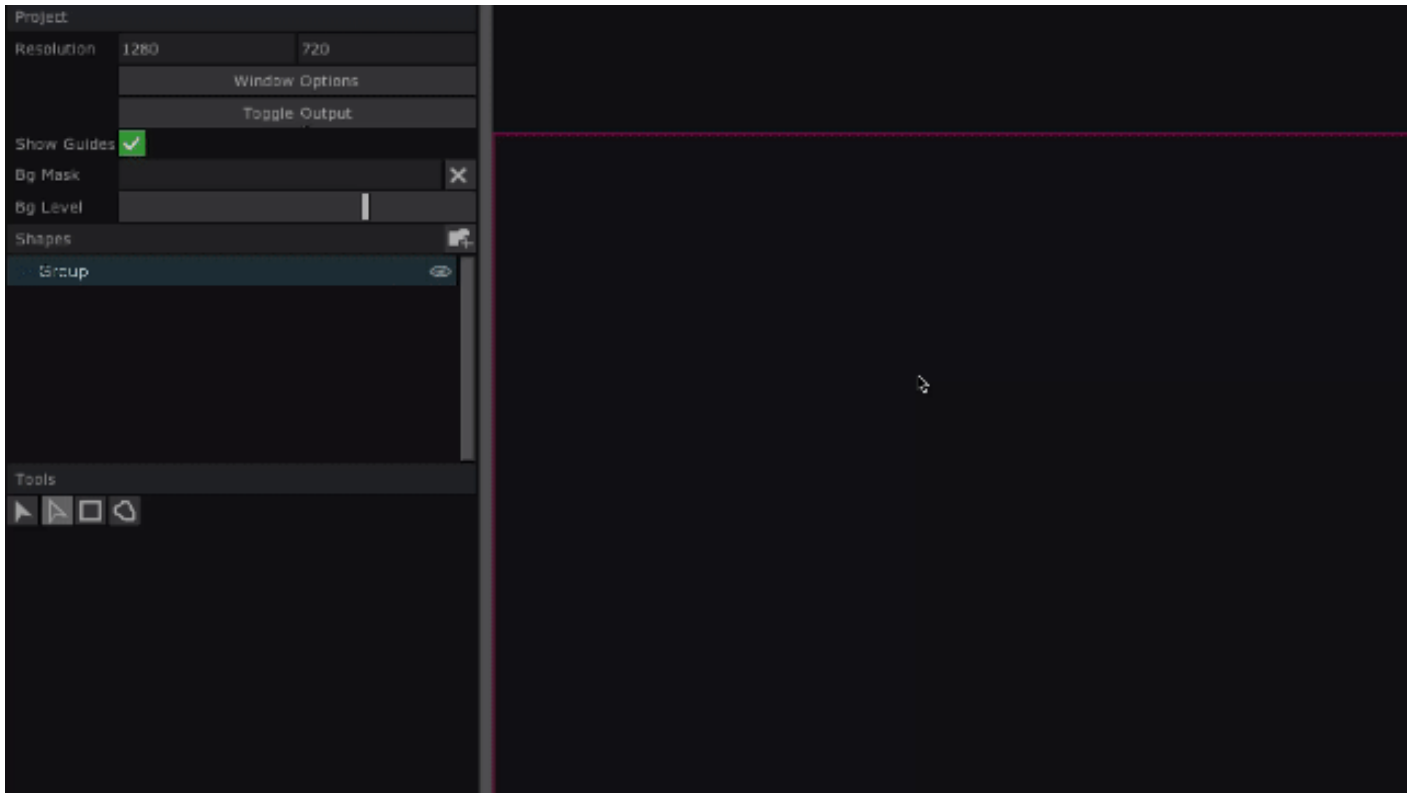
Projection Mapping with kantanMapper

Now that we have uploaded our content we are ready to projection map it onto our object. Make sure to connect your projector to your laptop and that this is set up as an extended monitor: follow the steps provided [here](#) for Windows or [here](#) for iOS.

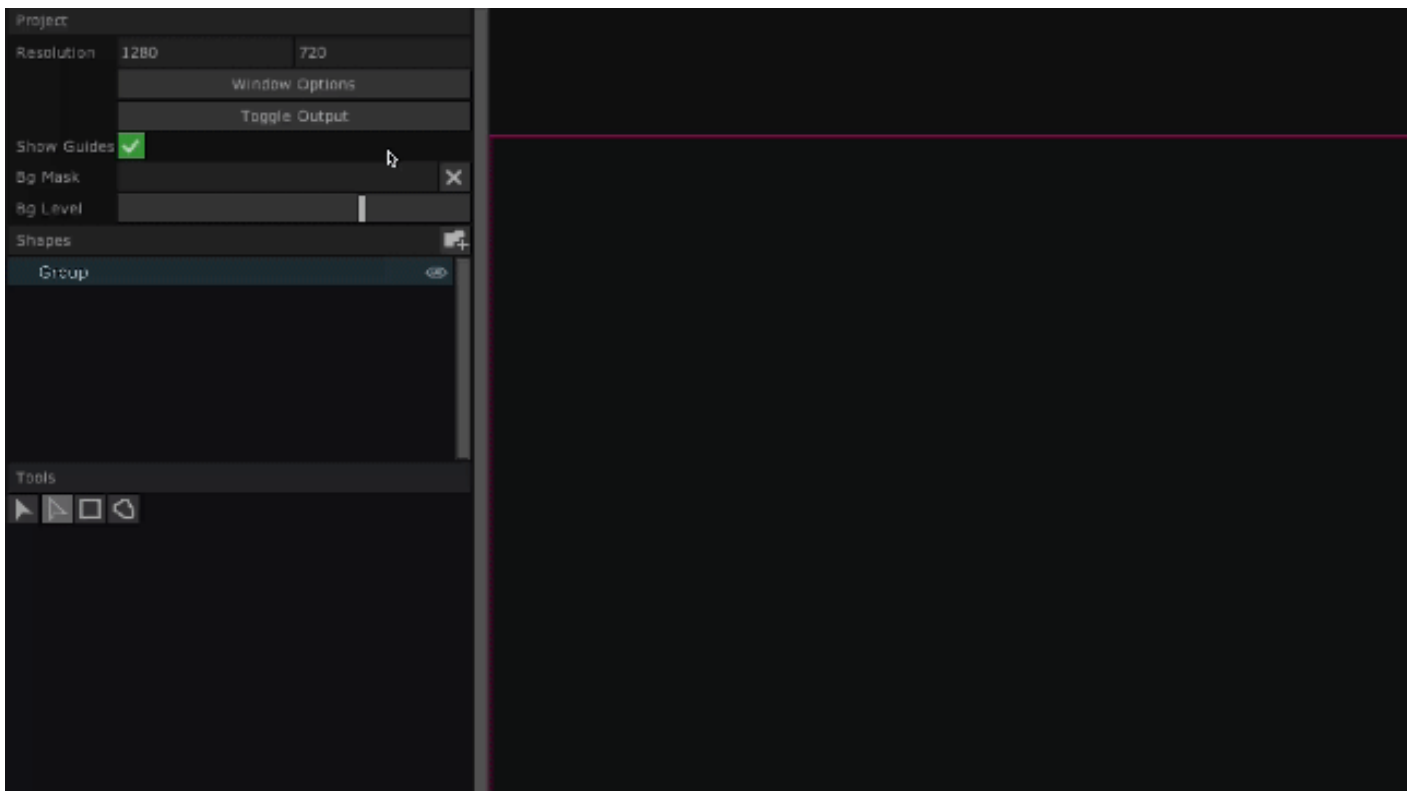
Open the Palette window by clicking on the  button; The Palette is a collection of ready-made useful components (COMPs). In the Palette look for the group “Mapping”, all tools for projection mapping are found here. KantanMapper has been designer to easily mask your area of projection and warp your content onto it. Drag and drop it on your network.



In the parameters' window on the right click on PULSE to open Kantan window, this will enable us to access this operator. At this point we have to inform Touchdesigner on where our projector is before masking the surface area we will project onto: To do that click on WINDOW OPTIONS, here use the “monitor” slider to specify the number that corresponds to your projector, this is usually 1. Change the “opening size” to FILL and hit UPDATE - this will make sure that your masking tool fills all of the screen area available. Scroll to the bottom of this window to “Open as Separate Window”, hit OPEN to view the masking tool.

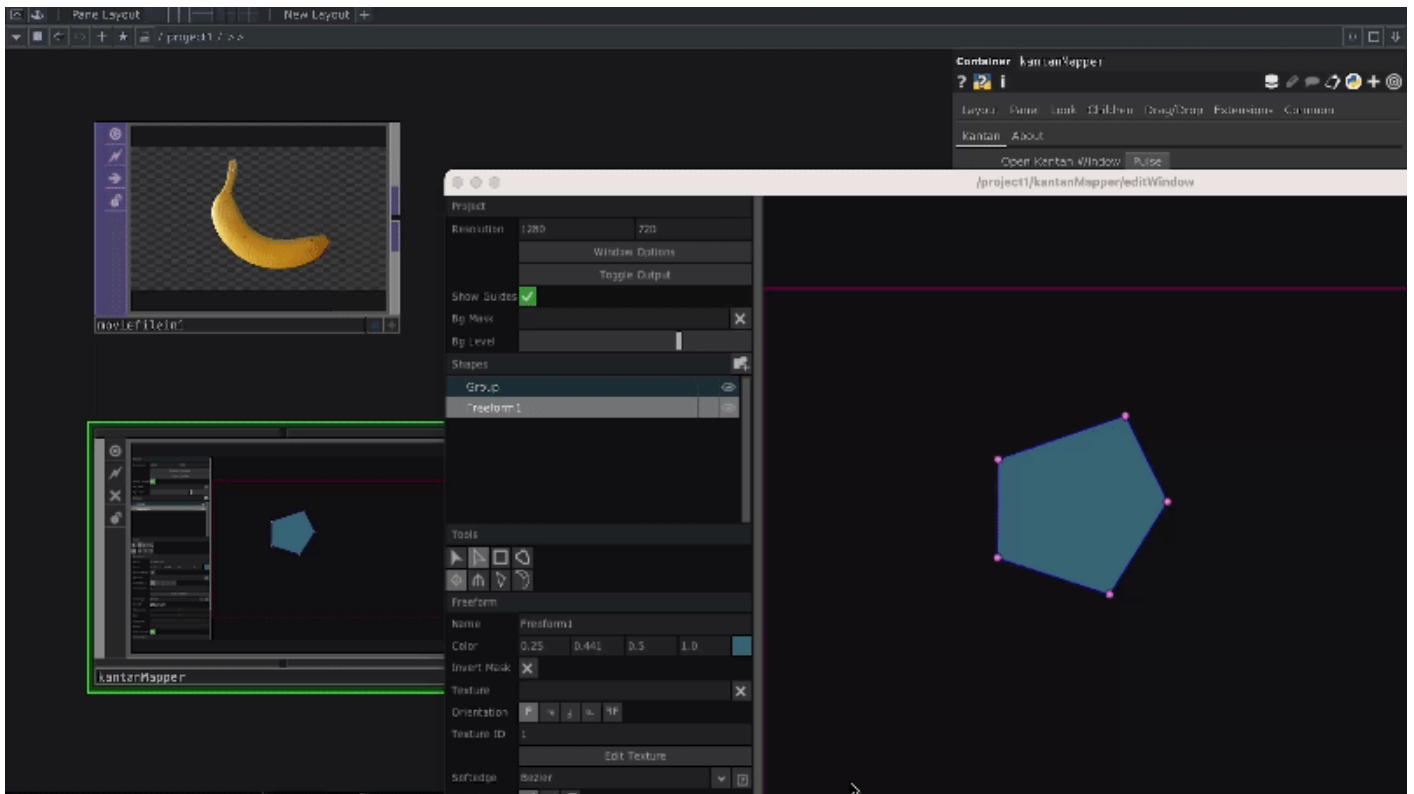


You can now close this window and click on TOGGLE OUTPUT to finally start masking your area of projection. Select the freeform tool and click on the corners of your object to trace its perimeter. Make sure to close your shape before moving on. Other tools are also useful to transform your shape, read more about this [here](#).



With the shape masking our area of projection read, we can now assign our **moviefilein** TOP as the "texture" of the shape, simply drag and drop this in the parameter and click the button near it

to activate view the texture.



Find out more about kantanMapper in Touchdesigner:
<https://docs.derivative.ca/Palette:kantanMapper>.

Projection Mapping in MadMapper

Why use MadMapper?

MadMapper is a powerful tool for projection mapping, especially when working at large scales — like projecting onto a building facade. Unlike TouchDesigner, MadMapper isn't free, but a 30-day demo version is available. The demo is great for testing but won't let you save projects.

Our lab holds a limited number of full licenses. These cannot be installed on personal devices, but you can borrow a machine with MadMapper pre-installed — just contact us.

If you're working on a large-scale projection (anything over 3 meters), MadMapper's high-resolution output is ideal. Start by installing the DEMO version here:

<https://madmapper.com/madmapper/software>.

Software Setup

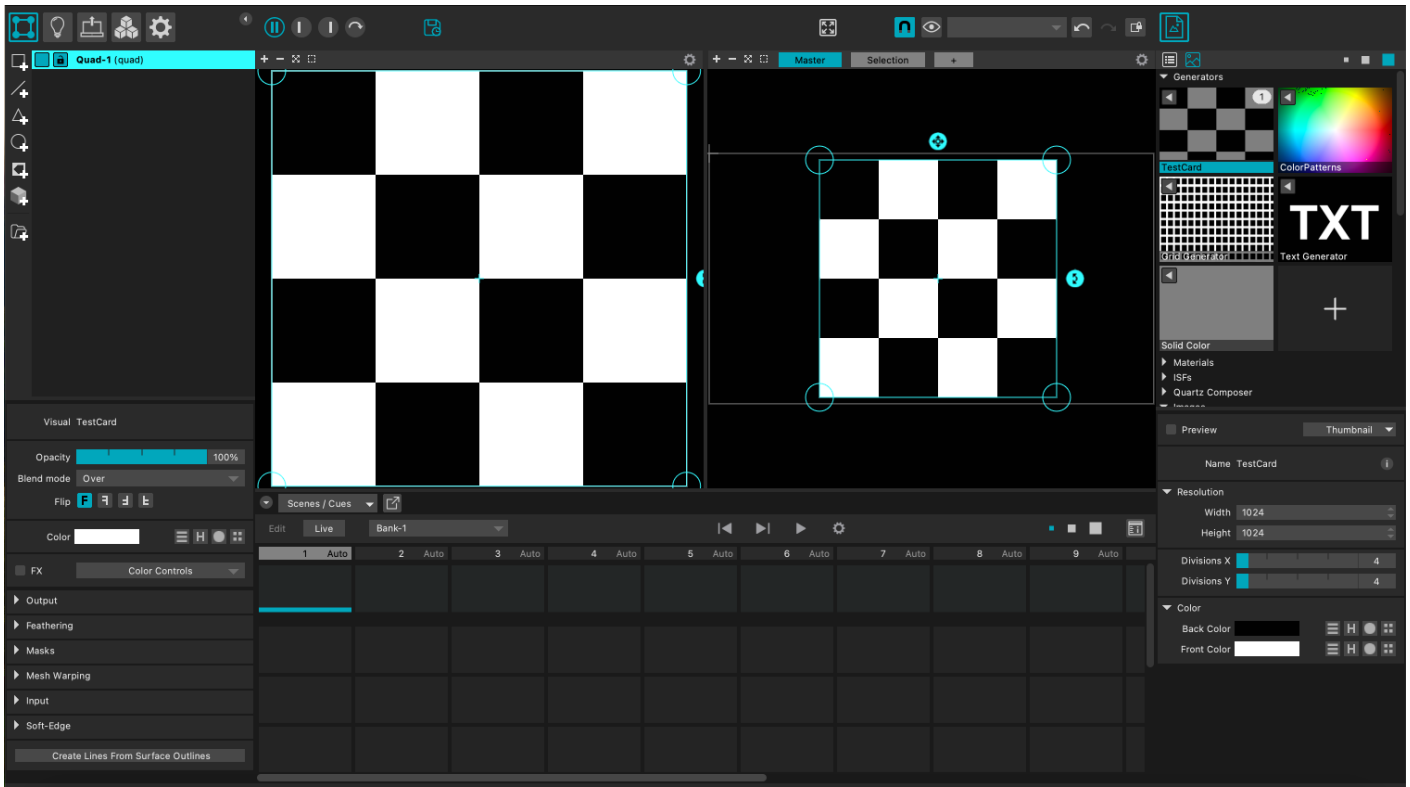
Before launching MadMapper, make sure your displays are not mirrored:

- macOS: Go to *System Preferences > Displays*, and uncheck "Mirror Displays".
- Windows: Go to *Display Settings*, and choose "Extend these displays".

Import your content

MadMapper comes with a few built-in visuals, but to add your own:

1. Click the + icon on the right side to import images or videos.
2. You can also use Syphon or webcams as live inputs.
3. Drag your imported content into the empty area on the left to start working with it.



Adjusting and Transforming

MadMapper's interface is split into two key areas:

- Left side: Edit content—resize, crop, rotate, etc.
- Right side: Map the content—adjust corners, apply masks, and shape your projection surface.

Project your output

- Click the **projector icon** (top left).



- Choose your projector from the list under **Output Destination**.
- Adjust the **Output Size** if needed, or let it auto-adapt.
- Enter **Fullscreen mode** via the *Output > Fullscreen Mode* menu or by pressing **Cmd + U** (use **Cmd + T** to exit Fullscreen).

More resources are also available here: <https://madmapper.com/madmapper/tutorials>.

