



Illuminating Spaces

Techniques and Tools for Projection and Installation Art

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About Me



Video installation keywords

- Source Equipment
 - Projector
 - Digital Screen
- Environment
 - Light / Dark
 - Size of the Space (site-specific)
- Connection
 - Power source & cable
- Channel
 - Single / multiple



Projector vs Digital Screen

Projector

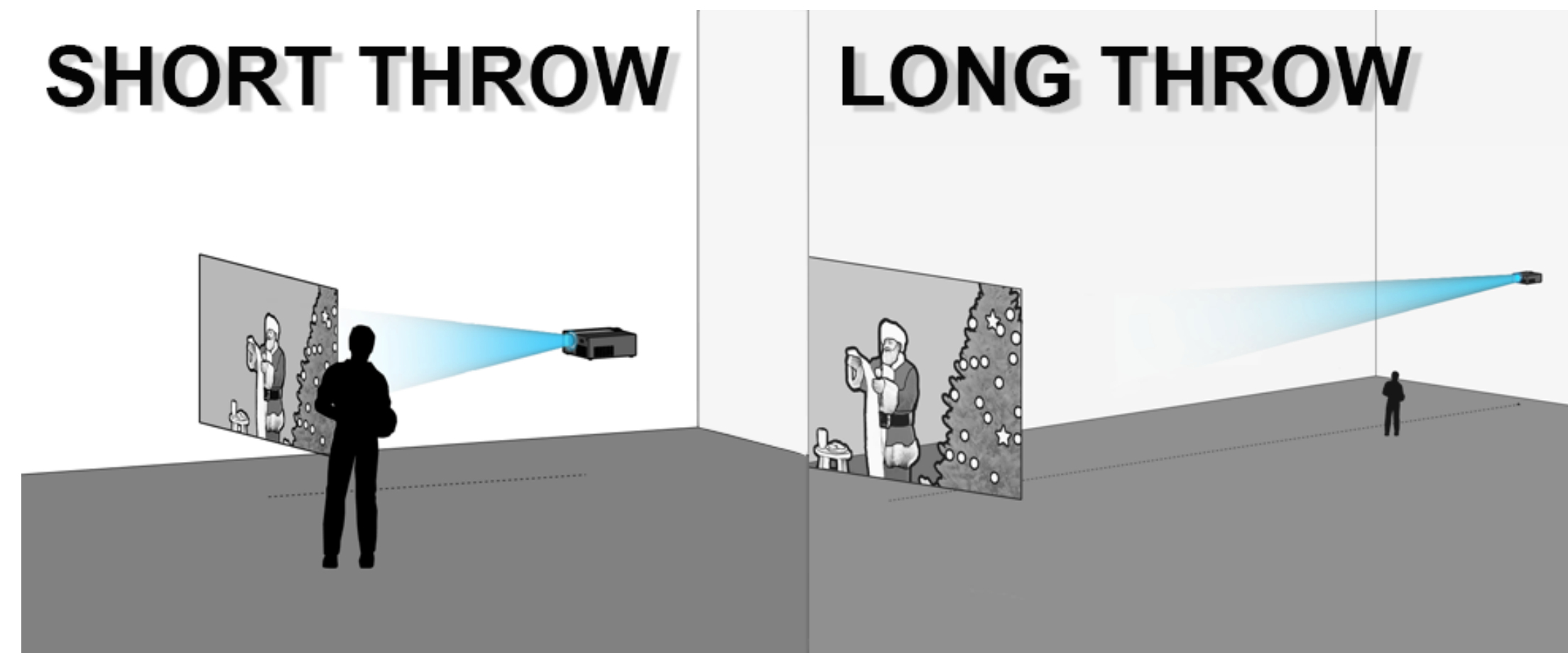
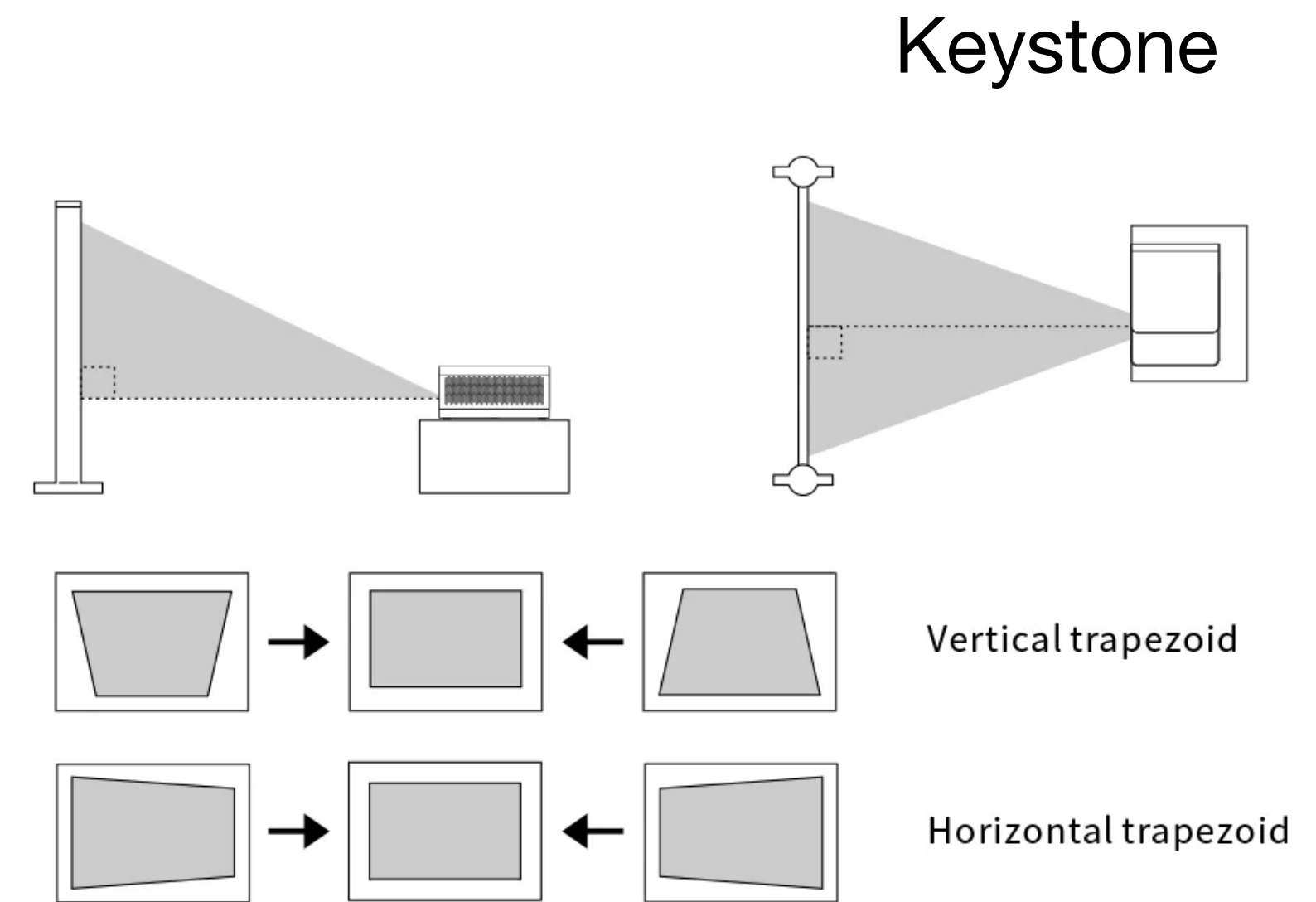
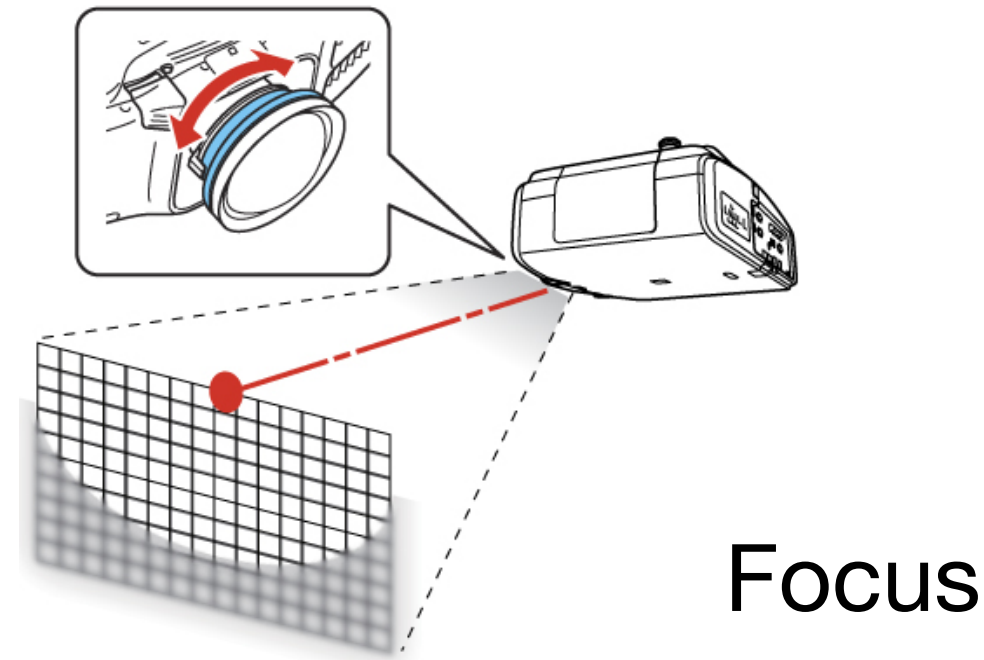
- Advantages:
 - Portable/Versatile
 - Easy to install
- Disadvantages:
 - Imagery quality is harder to control
 - Requirement for the environment & projecting surface

Digital Screen

- Advantages:
 - High-quality imagery regardless of the environment
- Disadvantages:
 - Fixed-size
 - Harder to move around & install

Projector Keywords

- Focus
 - Auto vs manual
- Keystone
 - Auto vs manual
- Distance & Height
- Environment
- Picture Quality
 - 1080, 4k...
- Brightness (Lumen) & Contrast



Projector Brightness & Contrast

Image Diagonal (inches)	Suggested Projection Brightness (lumens)					
140+	1000	2000	4000	6100	8200	12200
120	750	1500	3000	4500	6000	9000
100	500	1000	2000	3100	4100	6200
80	300	700	1300	2000	2700	4000
70	250	500	1000	1500	2000	3000
60	200	400	750	1100	1500	2200
50	150	250	500	800	1000	1500
40	100	150	300	500	700	1000
30	50	100	200	300	400	550
20	20	50	100	125	150	250
10	10	10	20	30	40	60
Image Brightness (nits)	50	100	200	300	400	600

Ambient Lighting Environment					
Example environment	Dark Room	Dim Room	Lit Room	Bright Room	Outdoors
	A room at night with all lights turned off	A room with soft lighting at night	A well-lit office conference room with no daylight (Home Theater)	Well-lit room with windows and indirect daylight (TV)	Indirect sunlight
Suggested image brightness	50 nits	100 nits	200 nits	300-400 nits	600+ nits

LED Lumen	ANSI Lumen
120	50
300	120
480	200
1200	500
2400	1000
2880	1200

*Generally, ANSI Lumens multiplied by 1.3~2.4, approximately equal to LED Lumens

**ANSI Lumens divided by 0.04~0.06, approximately equal to Light Source Brightness Lumens

Light Source Lumen	ANSI Lumen
830	50
2000	120
330	200
8300	500
17000	1000
20000	1200

Recommend Projector > 2000 Lumen

Reference:

<https://www.viewsonic.com/library/tech/what-are-lumens-and-how-to-use-them-to-choose-a-projector/>

https://www.youtube.com/watch?app=desktop&v=OL7X_agBslQ&ab_channel=HomeCinema%26TechReviews

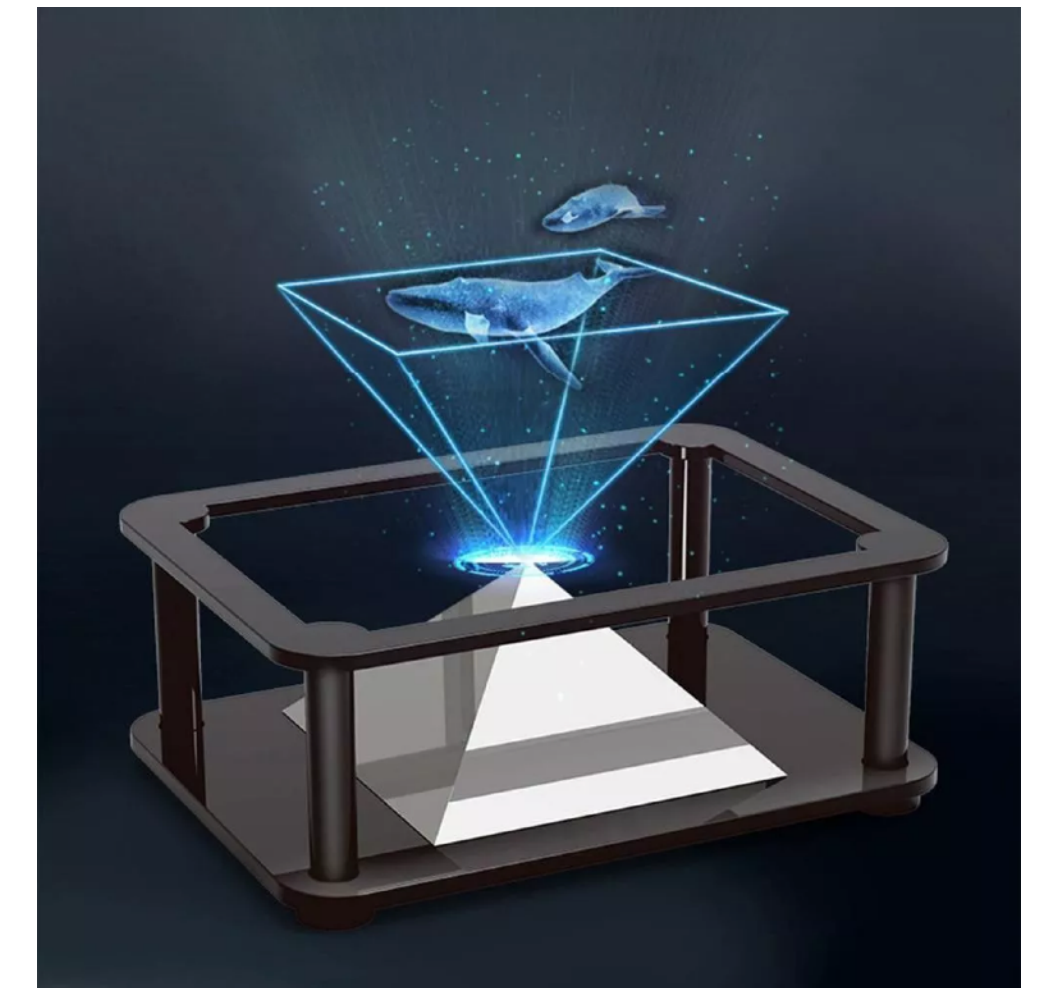
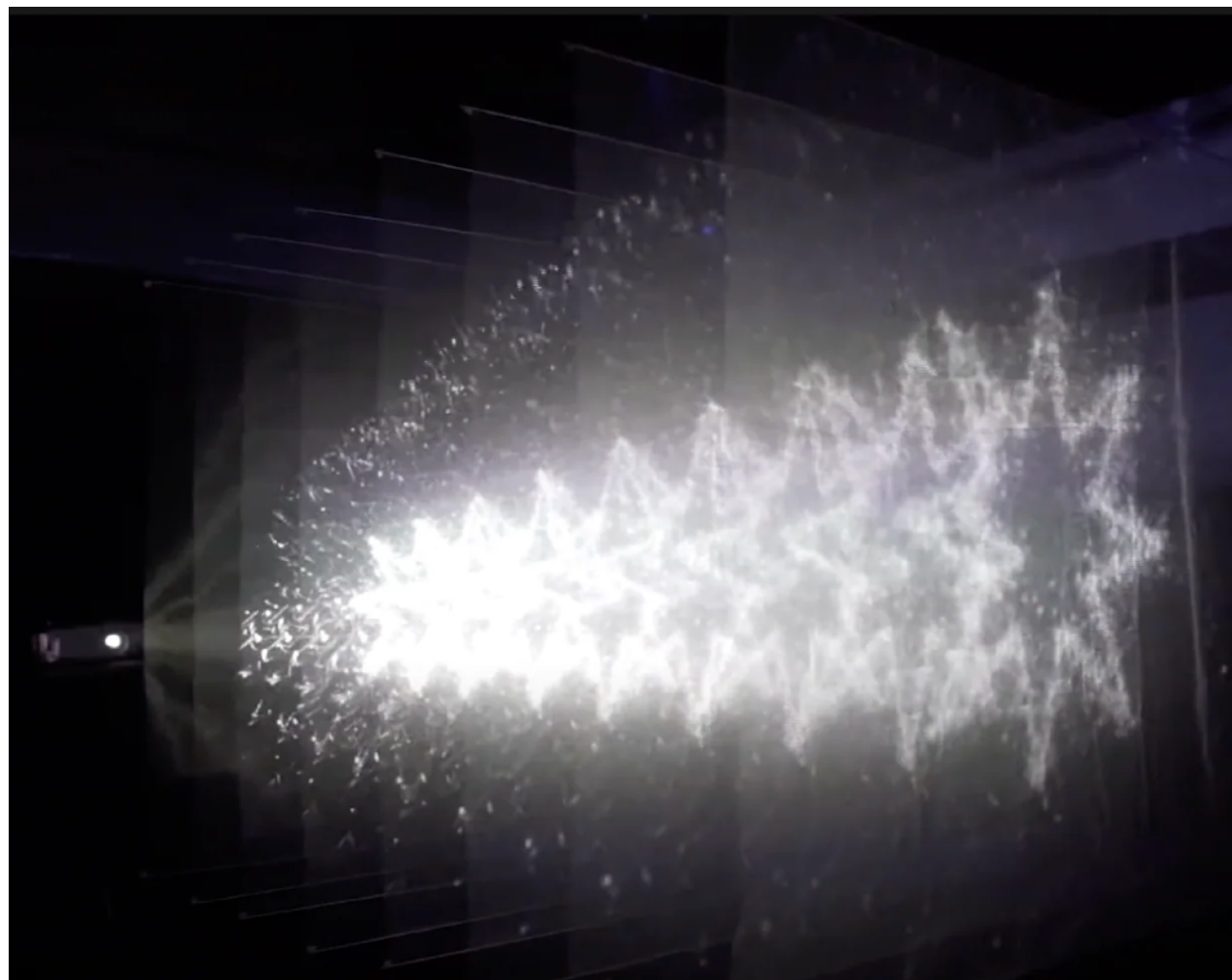
Projector Screen Options

- White surfaces
 - wall - Projector paint
 - objects - Projection mapping
- Projection screen
 - Solid surface- smoothness
 - Sheer surface



Other Projector Screens

- Sheer surfaces
 - The projector can be in the back of the screen
- Holographic projection



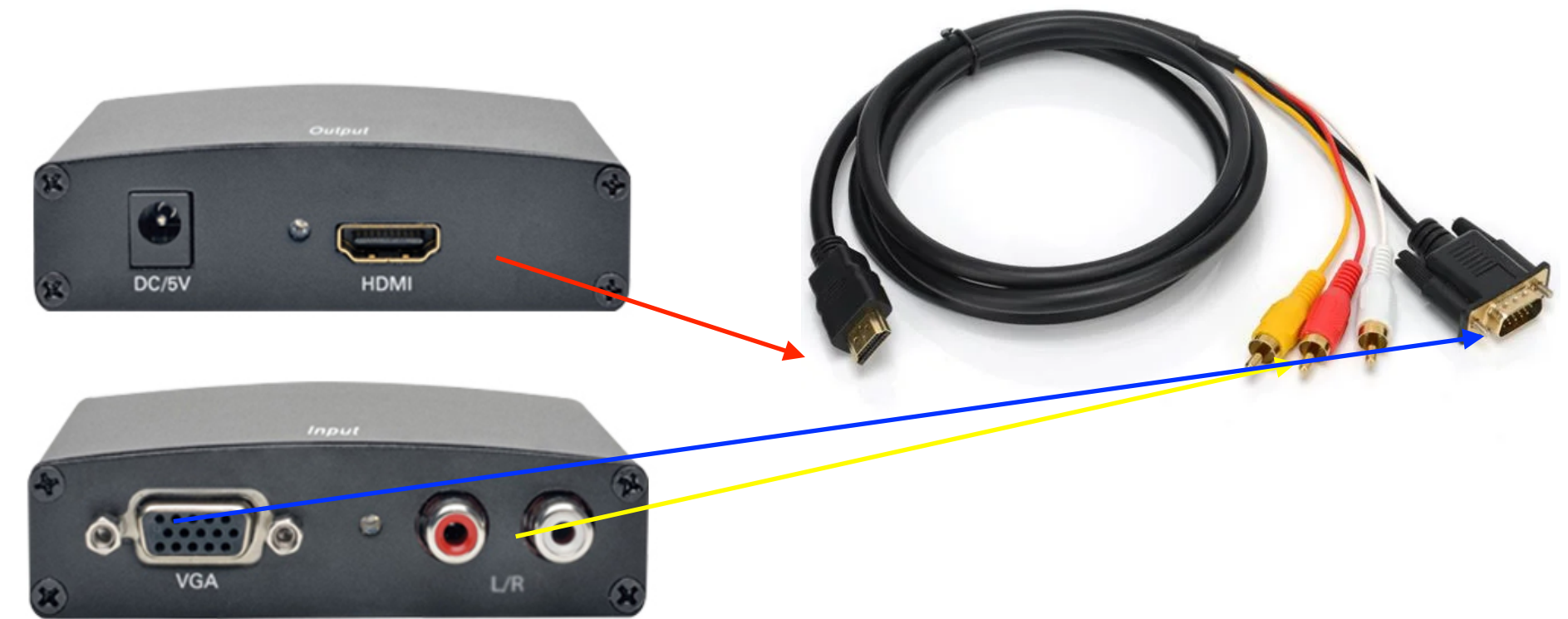
Digital Screen Keywords

- Size
- Installation
 - Wall Mount
 - Stand
- Touchscreen?
- Audio output (Built-in Speaker)
- Picture Quality
 - 1080, 4k...



Other Elements to Consider

- Input/output
 - Cables - hdmi/ VGA/ RCA
- USB / SD cards
- Media Player (adapter for media)



Media player



USB



SD card & Micro SD

Other Elements to Consider

- Power source and plugs
 - Power strips
- Cable coverup
 - Cable Stripe
 - gaffer's tape

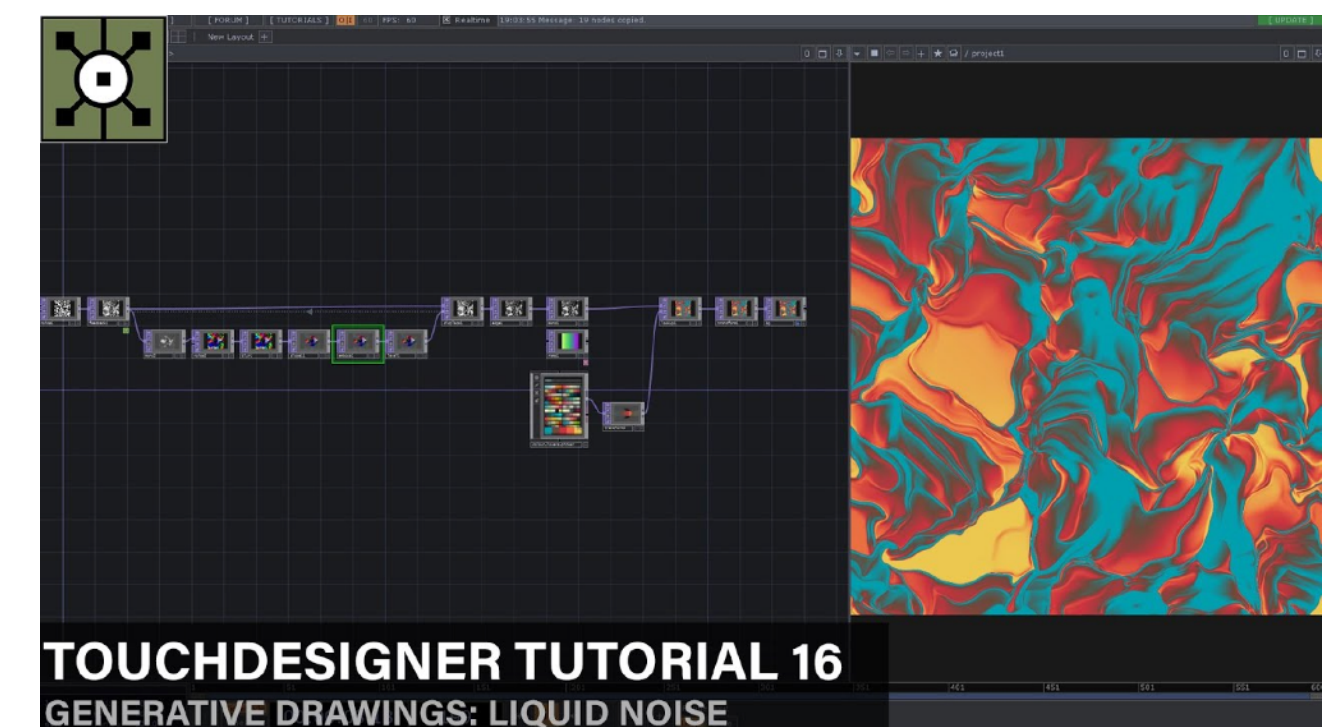
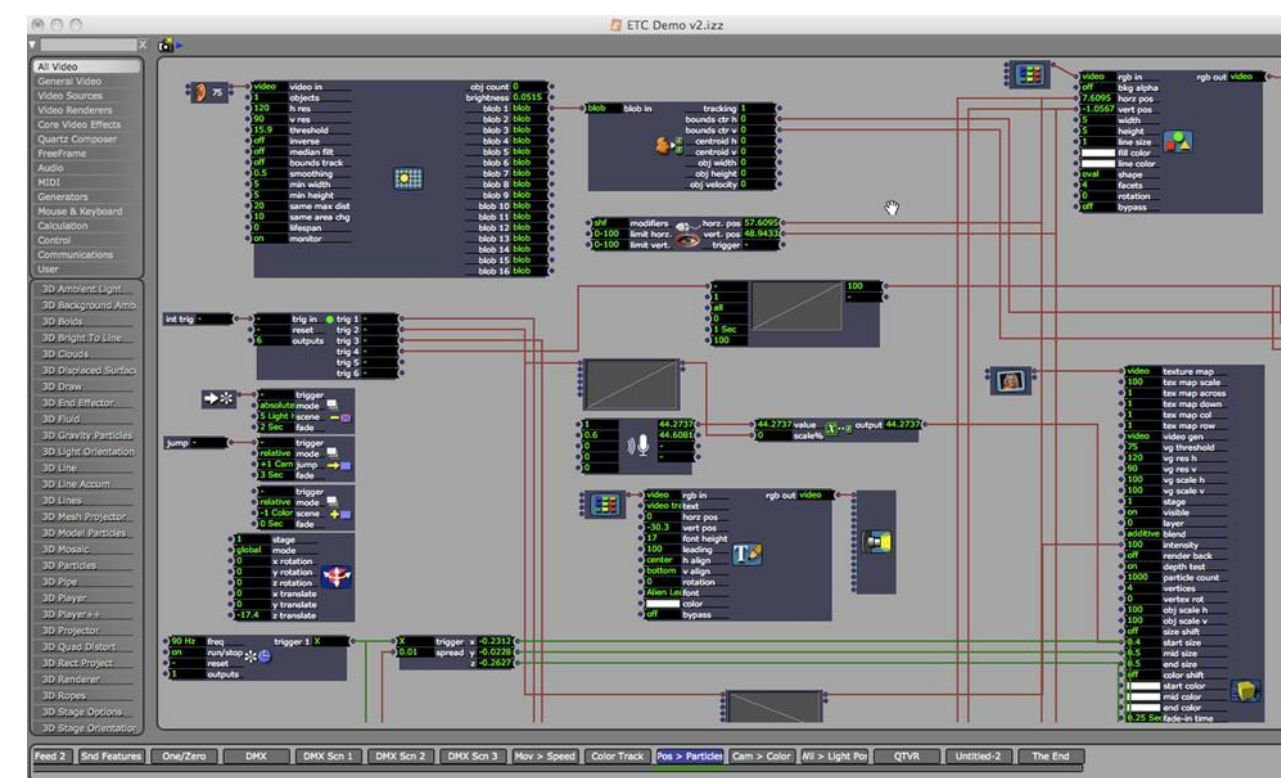
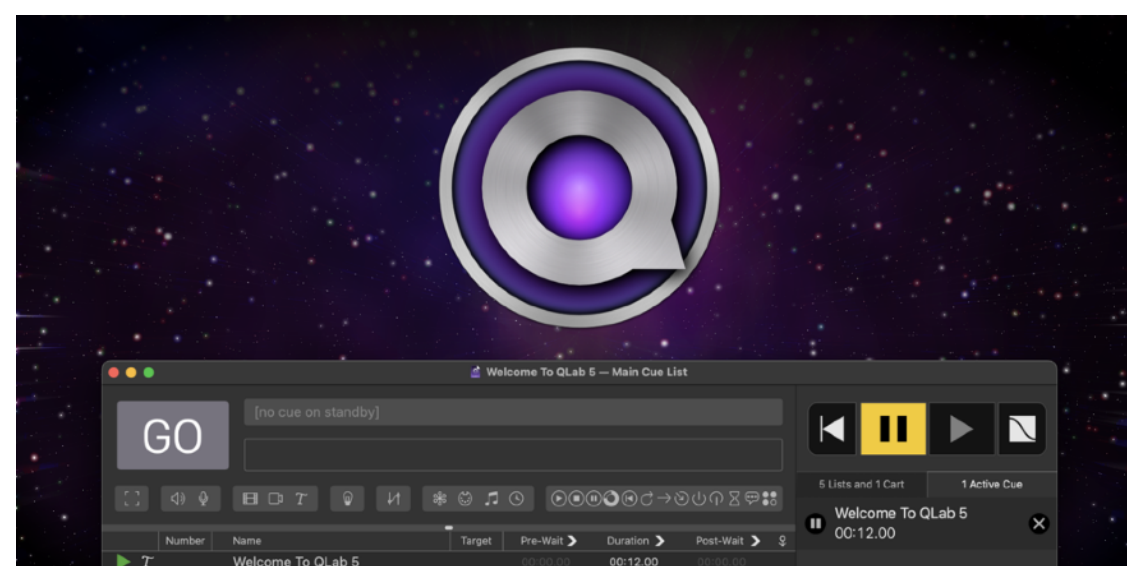
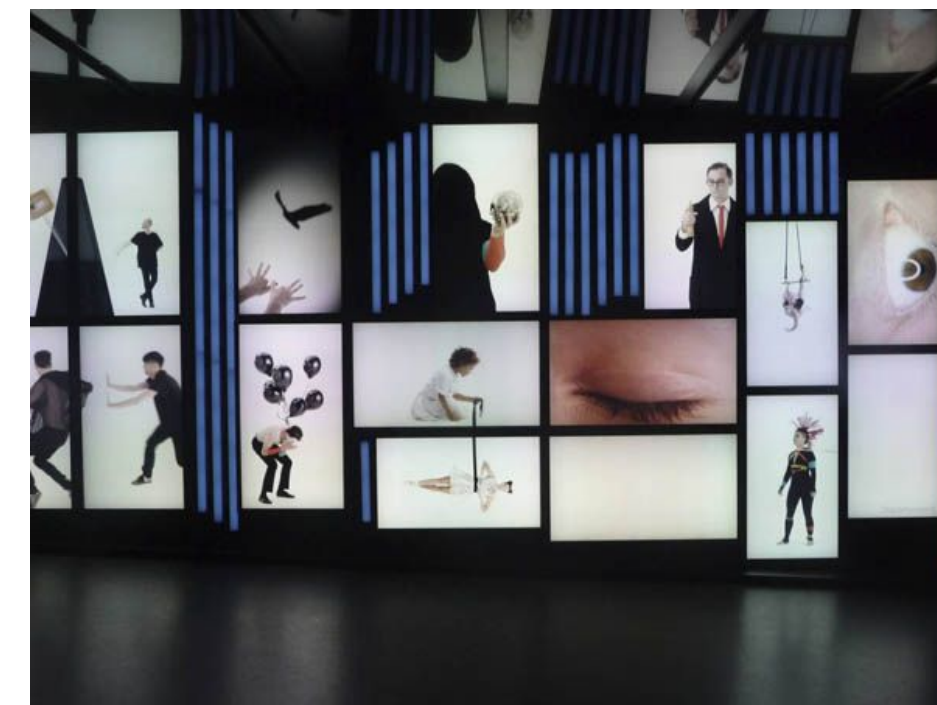


!!! Every Device is completely different,
The ultimate key is to research and test in advance !!!

Cue Control Applications

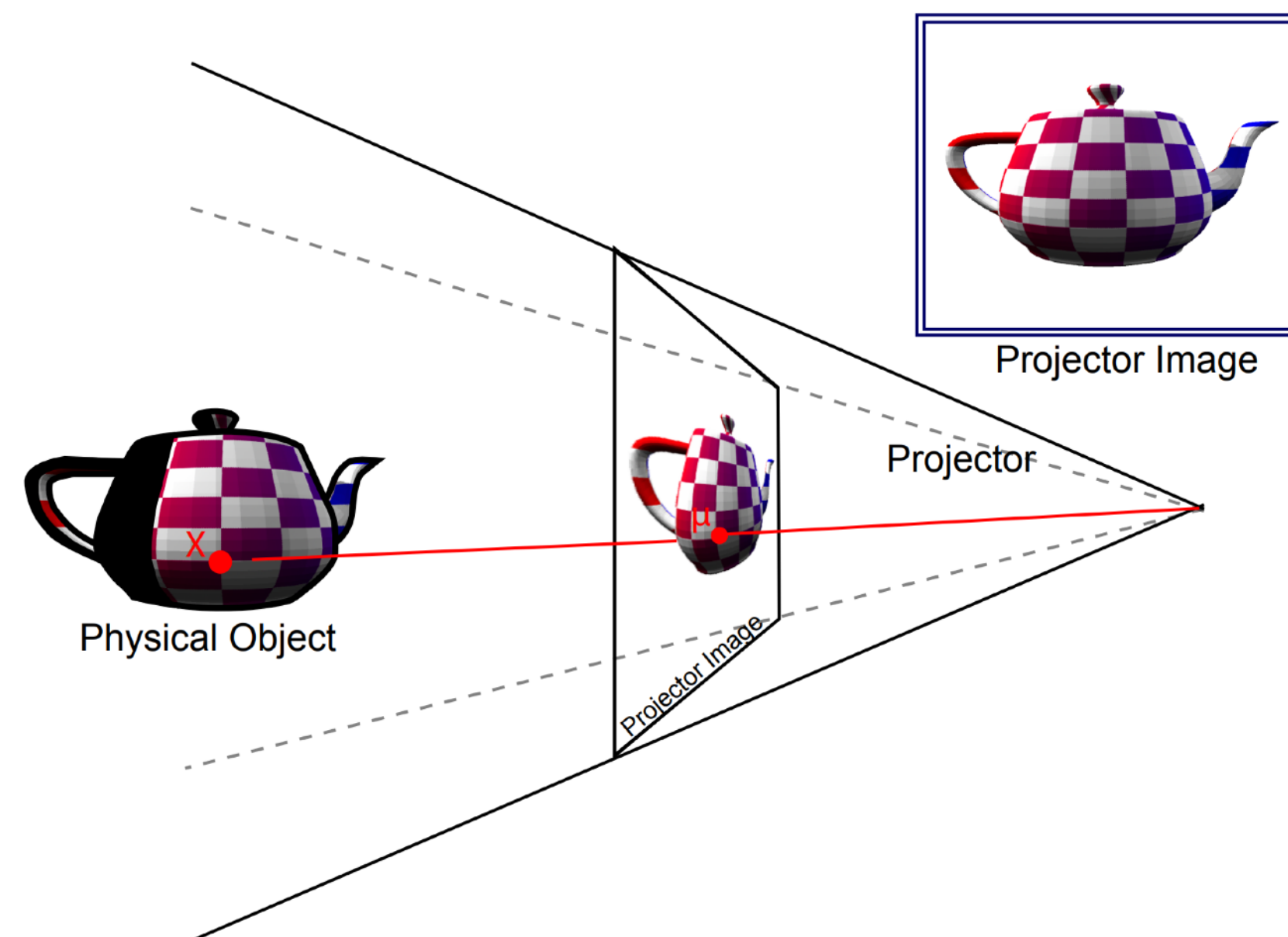
For multiple channels & interactive installations

- Q-Lab <https://qlab.app/>
- Isadora <https://troikatronix.com/>
- TouchDesigner <https://derivative.ca/>



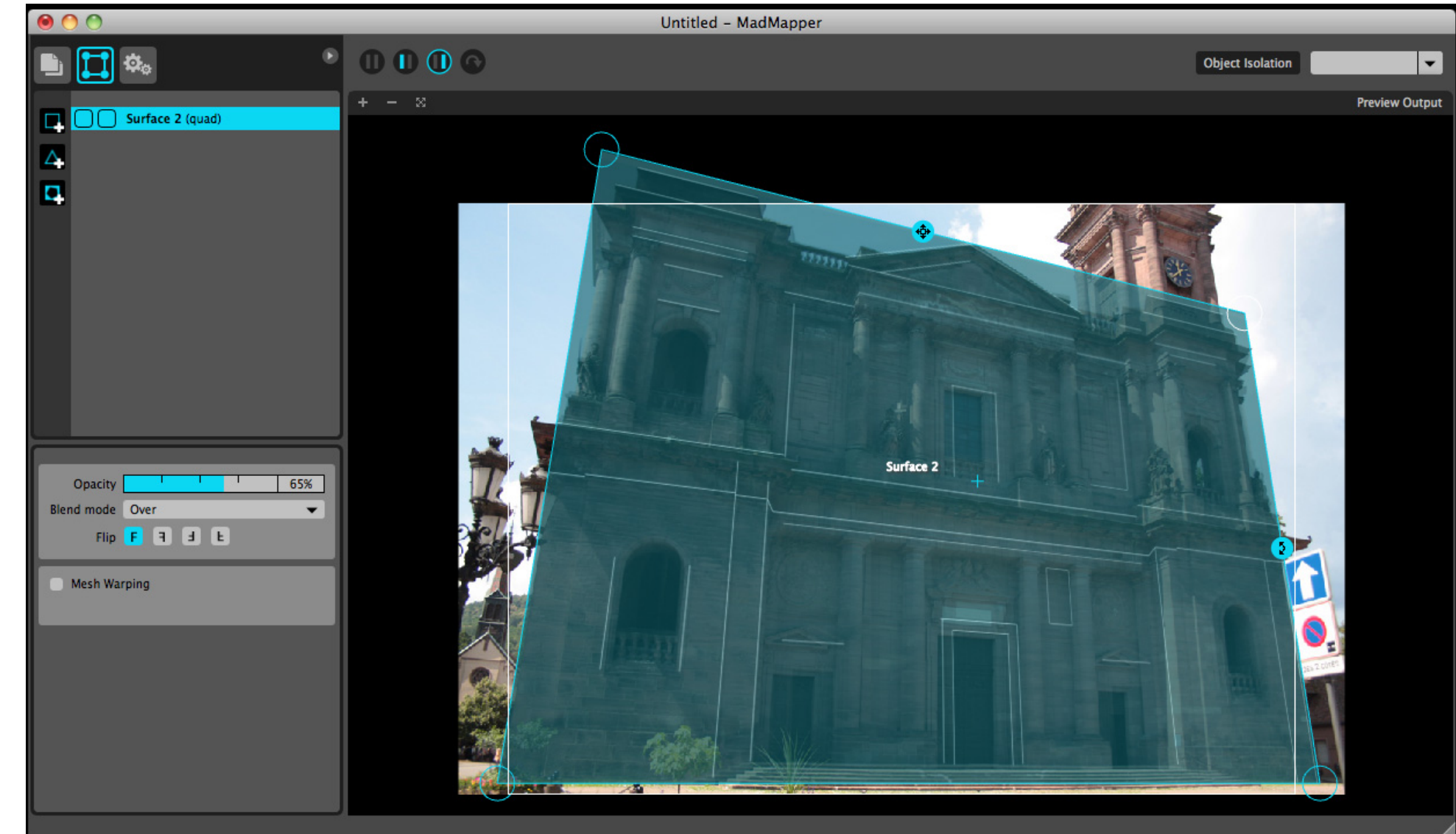
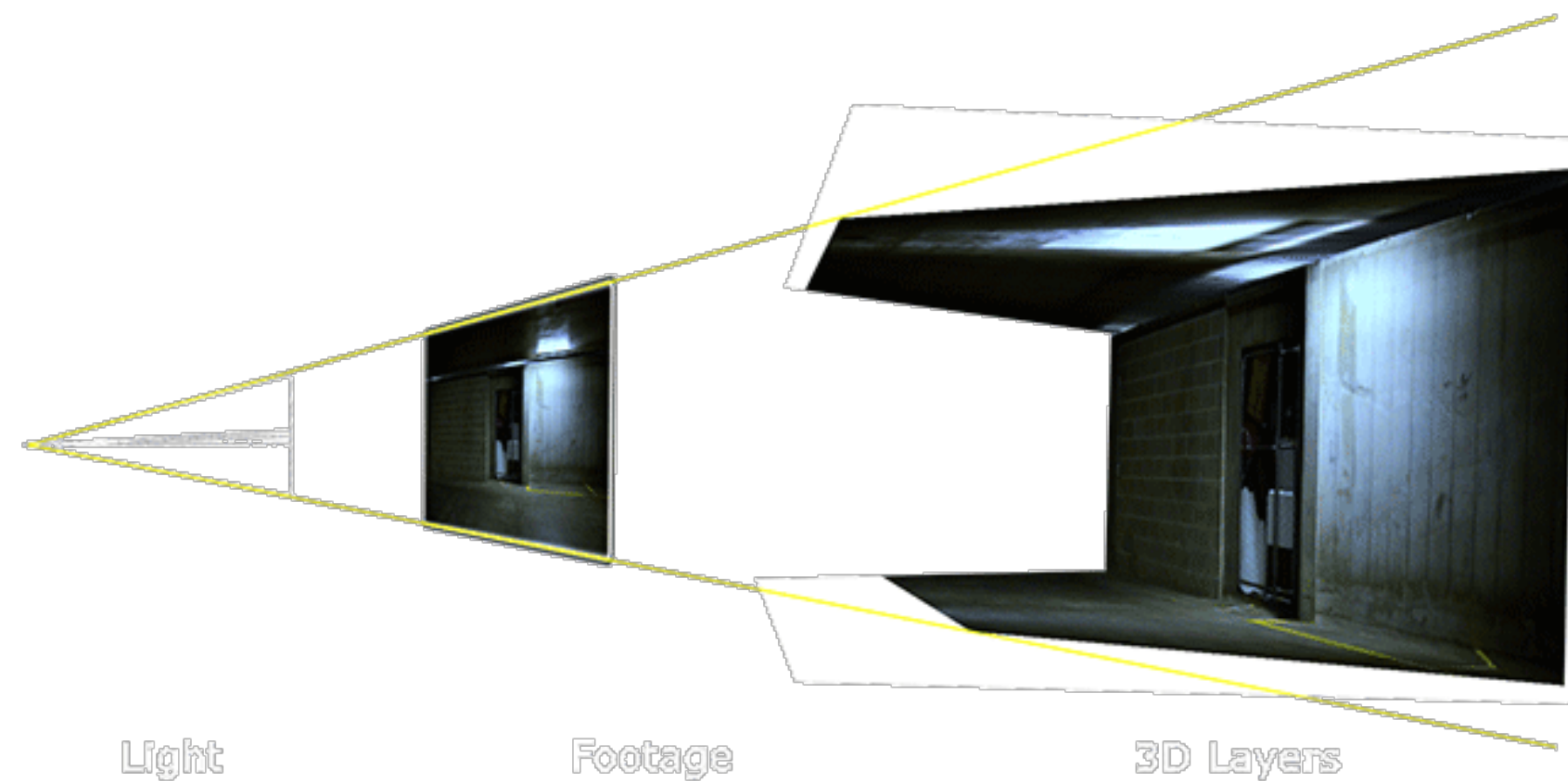
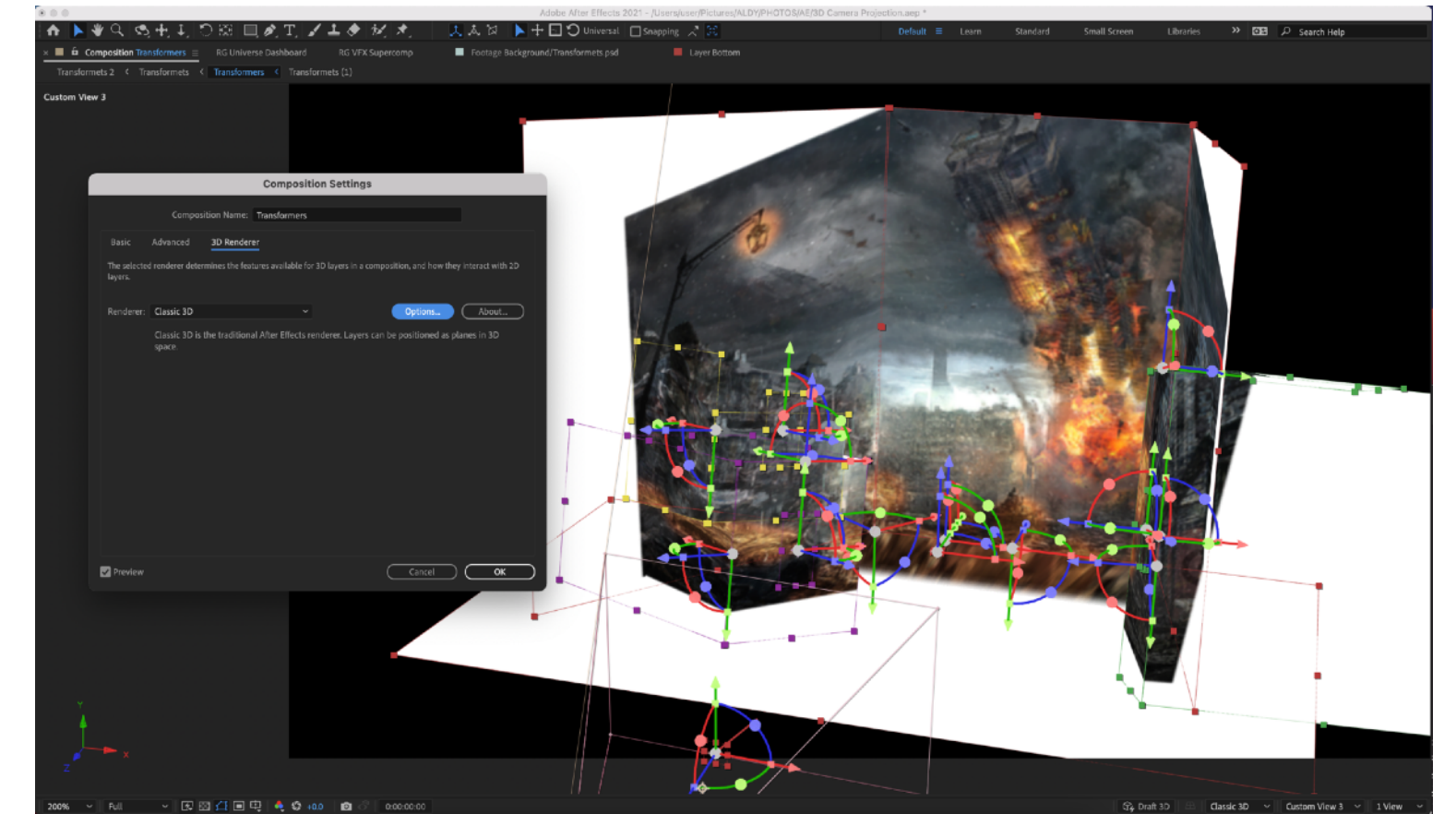
Projection Mapping

- Definition: **Projection mapping**, similar to **video mapping** and **spatial augmented reality**, is a **projection** technique ^{[1][2]} used to turn objects, often irregularly shaped, into display surfaces for video projection. The objects may be complex industrial landscapes, such as buildings, small indoor objects, or theatrical stages.



Projection Mapping

- Softwares
 - Adobe After Effects <https://www.adobe.com/products/aero.html>
 - TouchDesigner <https://derivative.ca/>



3D Modeling Softwares

- Blender <https://www.blender.org/>
 - Free easy to use
- Cinema4D <https://www.maxon.net/en/cinema-4d>
 - Motion graphic & industrial scene
- Maya <https://www.autodesk.com/products/maya/overview?term=1-YEAR&tab=subscription>
 - Professional animation
- Nomad Sculpt - iPad <https://nomadsculpt.com/>
 - Easy to use, most intuitive



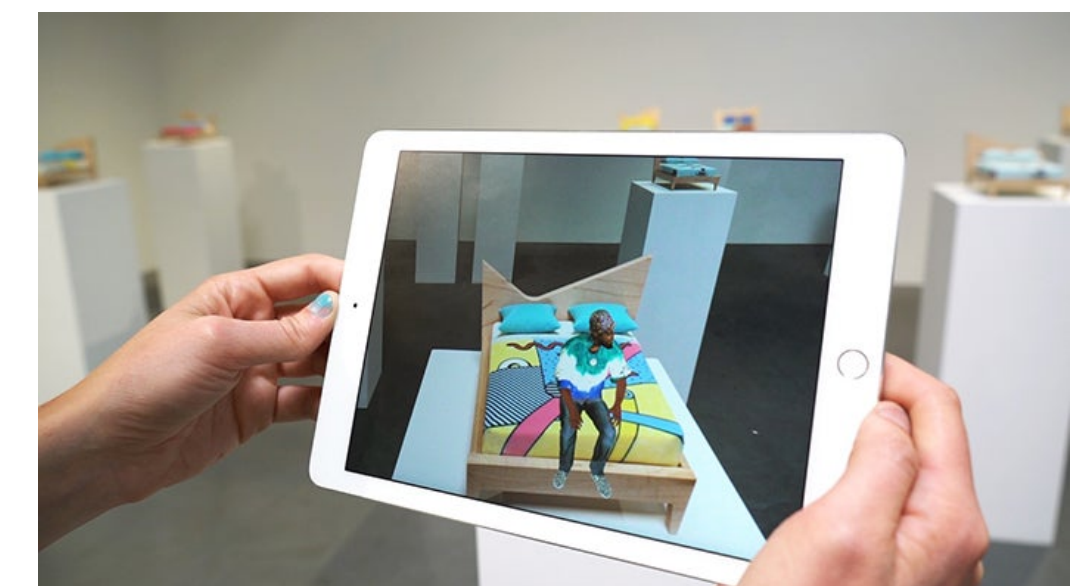
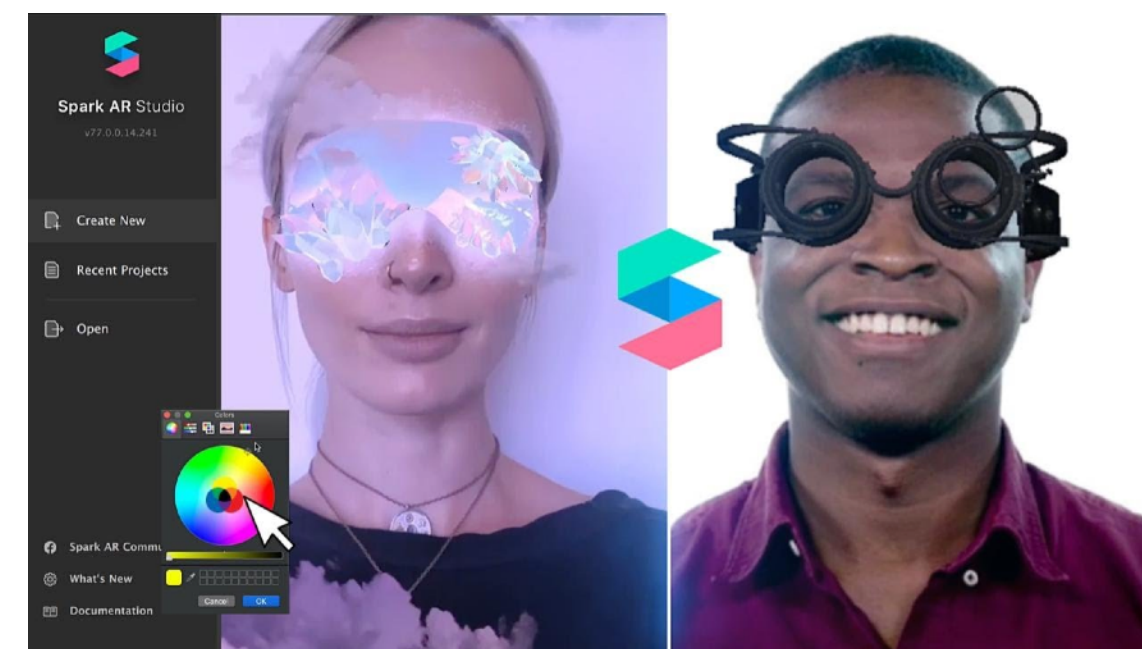
Video Editing Softwares

- Davinci Resolve <https://www.blackmagicdesign.com/products/davinciresolve>
 - Comprehensive
 - Color grade/VFS
 - Onetime payment for professional version
- Adobe Premiere pro <https://www.adobe.com/products/premiere.html>
- Final Cut Pro <https://www.apple.com/final-cut-pro/>
- iMovie <https://imovie-app.com/>
- Capcut <https://www.capcut.com/>



VR/AR Softwares

- VR/ Immersive Gaming Environment
 - Unity 3d <https://unity.com/>
 - Unreal Engine <https://www.unrealengine.com/en-US>
- AR
 - Spark AR - Instagram filters <https://spark.meta.com/download/>
 - Adobe Aero <https://www.adobe.com/products/aero.html>



Q & A

Thank you!!!

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