



# Art of Projection

## Session Three: Map the Edge

Dr Waldemar Jenek

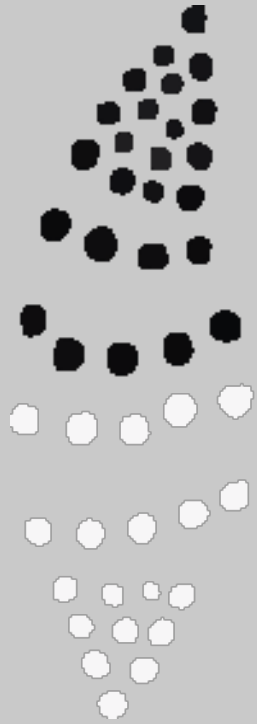
25.05.2024



State Library  
of Queensland



Queensland  
Government



## Acknowledgement of Country

We acknowledge Aboriginal and Torres Strait Islander peoples and their continuing connection to land and as custodians of stories for millennia. We respectfully acknowledge the land on which we all meet today, and pay our respects to elders past, present and emerging.

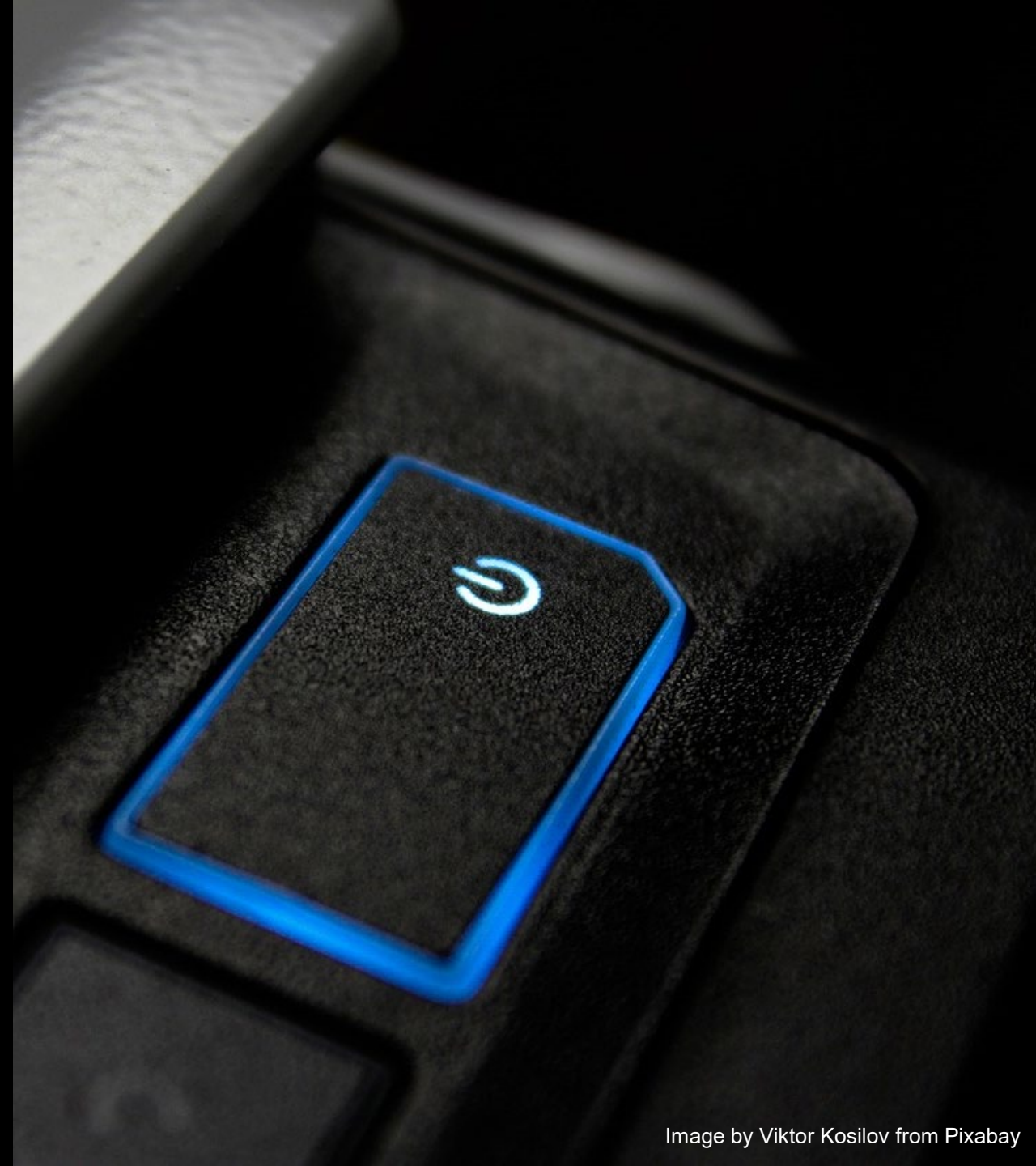
# Session Overview

## Welcome

- Check in and get set up on a computer
- Brief recap of Session Two

## Overview of workshop

- Today's Goals and Timeline



# Equipment

- Computer with Premiere Pro and TouchDesigner
- SLQ collection items for mapping content,
- Projectors
- Portable projection surfaces (cardboard cubes).

# Health & Safety

- For all workshops at The Edge we like to familiarise participants with:
- Exit points
- Lab Risk Assessments
- Safe operating procedures (SOP)



# Objectives

- Basic understanding of projection mapping.
- Ability to use SLQ collection items creatively in digital art.
- Skills in video editing and using TouchDesigner for projection mapping.
- Experience in setting up and executing a projection mapping display

# What is Projection Mapping?

- Technology that turns objects into display surfaces for video projection.
- Often used on irregularly shaped surfaces like buildings, stages, or indoor objects.
- Adds extra dimensions, optical illusions, and notions of movement.

# What is Projection Mapping?

- Utilises specialised software to fit images onto the surface of objects.
- Can warp and align projected images to fit perfectly on irregular shapes.
- Employs projectors to display light onto 3D objects, turning them into interactive displays.



# What is Projection Mapping?

- Used in advertising, public art, entertainment, and live concerts.
- Transforms static objects into dynamic visual displays.
- Engages audiences with immersive and artistic experiences.



<https://www.youtube.com/watch?v=SB8WBE2hy9A>

# Video Editing for Mapping

- Repeat: Basic Editing  
Techniques: Cutting, Splicing,  
and Layering
- Preparing Videos for  
Projection Mapping

# Introduction to TouchDesigner

- TouchDesigner Interface and Features
- Mouse Navigation
- Networks/ Network area
- Path
- Operators
- Short cut (I Inside Operator and U outside operator)
- H Home to find networks

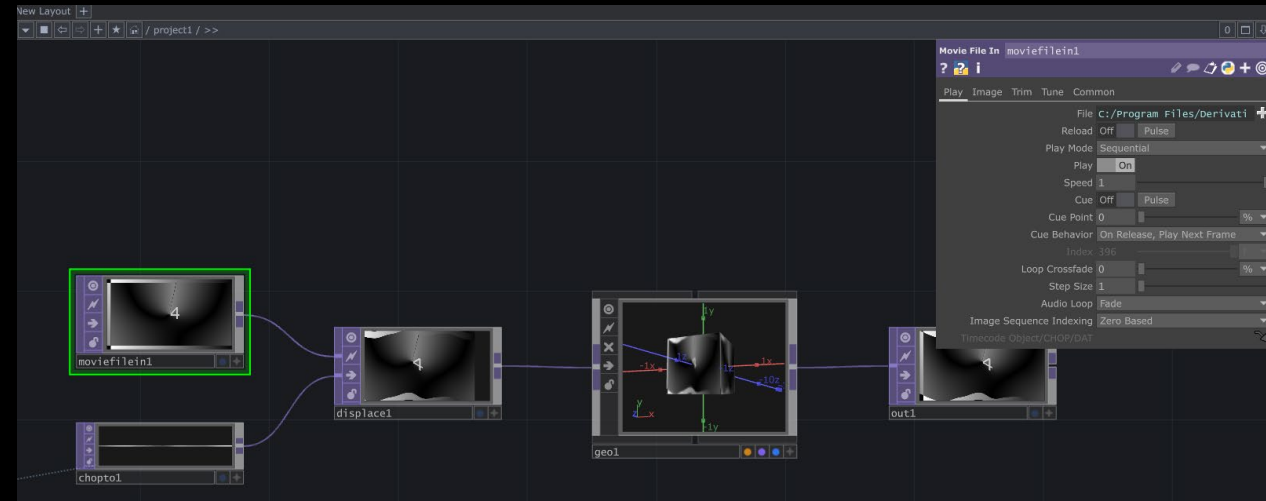
# Introduction to TouchDesigner

- Data Travels from left to right
- Connect and disconnected operators
- Dynamic wires
- Different operators
- Top= Textures, Images, videos
- Chop: Numeric Data Channels Operators
- DAT: Data Operators for Tables, API,
- SOP: Surface Operators 3d Geometry
- COMP: Component Operators
- Mats: Materials operators



# Parameters

- Numbers
- P-key Parameter Window
- Video example and Parameters Speed/Play
- Info Window, right click/info



```
Name: /project1/moviefilein1
Type: Movie File In TOP
Total Cooks: 27603
CPU cook Time: 22.904 ms ( ~22.904 ms )
(CPU Cook Time not measured on previous cook)
GPU cook Time: 0.000 ms
Cook Frame: 368 (/local/time/clock)

-----
Timecode: 00:00:00:45

-----
Size: 640 360
Aspect: (640:360) (16:9) (1.77:1)
Pixels: 230400
Format: 8-bit fixed (RGBA)
Mipmaps: Yes
Start: 0
Length: 100
Sample Rate: 60
Extend: Cycle,Cycle
Fill Mode: Fit Best
GPU Mem this TOP: 3.79 MB
GPU Mem all TOPs: 129.34 MB
Total GPU Mem: 233.43 of 7553.94 MB
```

# User Interface

Timeline

FPS: Frames per Second

Pane Layout Alt z or Alt [

Find Help

Help/Snippets



# Example Networks

Help/Snippets

Smaller packages  
constant

The screenshot displays a software interface with a network diagram on the left and a help panel on the right. The network diagram shows a 'Cue Movie' node connected to a 'nu112' node, which is then connected to two output nodes: 'movieLooping' and 'moviePlayonce'. The 'Cue Movie' node is highlighted with a green border. The help panel on the right is titled 'Button cueMovie' and contains the following text:

Button Layout Panel Look Children Drag/Drop Extensions Common

Label **Cue Movie**

Value: Off

Button Type: Momentary

Button Group Label

Button Group DAT

Color: 0.5 0.5 0.5

The interface also features a 'Snippets' window on the left with a table of various effects and a 'Movie File In' section with a list of actions and their descriptions.

COMP	TOP	CHOP	SOP	MAT	DAT	EXTERNAL TOX
Add	Depth	Lookup	Pack	Switch		
Analyze	Difference	Luma Blur	Point File In	Text		
Anti Alias	DirectX Out	Luma Level	Point Transform	Texture 3D		
BBQ Track	Displace	Map	Projection	Threshold		
Bloom	Edge	Matte	Ramp	Title		
Blur	Emboss	Mirror	Rectangle	Time Machine		
Cache	Feedback	Monochrome	Remap	Transform		
Cache Select	Fit	Movie File In	Render	Video Device In		
Channel Mix	Flip	Movie Title Out	Render Pass	Video Stream Out		
CHOP to	Function	Multikey	Render Select	Web Render		
Chroma Key	GLSL	NDI Out	Reorder			
Circle	GLSL Multi	Noise	Resolution			
Composite	HSV Adjust	Normal Map	RGB Key			
Constant	HSV to RGB	Nvidia Background	RGB to HSV			
Convolve	In	Nvidia Flow	Screen Grab			
Corner Pin	Inside	OP Viewer	Script			
CRPlusPlus	Layout	OpenColorIO	Select			
Crop	Lens Distort	Optical Flow	Slope			
Cross	Level	Outside	Spectrum			
Cube Map	Limit	Over	SSAO			

Movie File In

- loop stop cue image
- index moviePlayer + movieEngine COMP
- play preloading and unloading using timers
- timeline crossfade movie playlist
- reload

This movie's trim value will keep it looping forever. Its Extend Right parameter is set to Cycle.

Extend Right refers to what the TOP will do once it reaches the end of end movie.

The second movie's trim value will hold the last frame.

Its Extend Right parameter is set to Hold.

The Cue button will force the movie to jump to image 20.

# Break Time

- 15-30 Minutes Break
- Interactive Q&A Segment

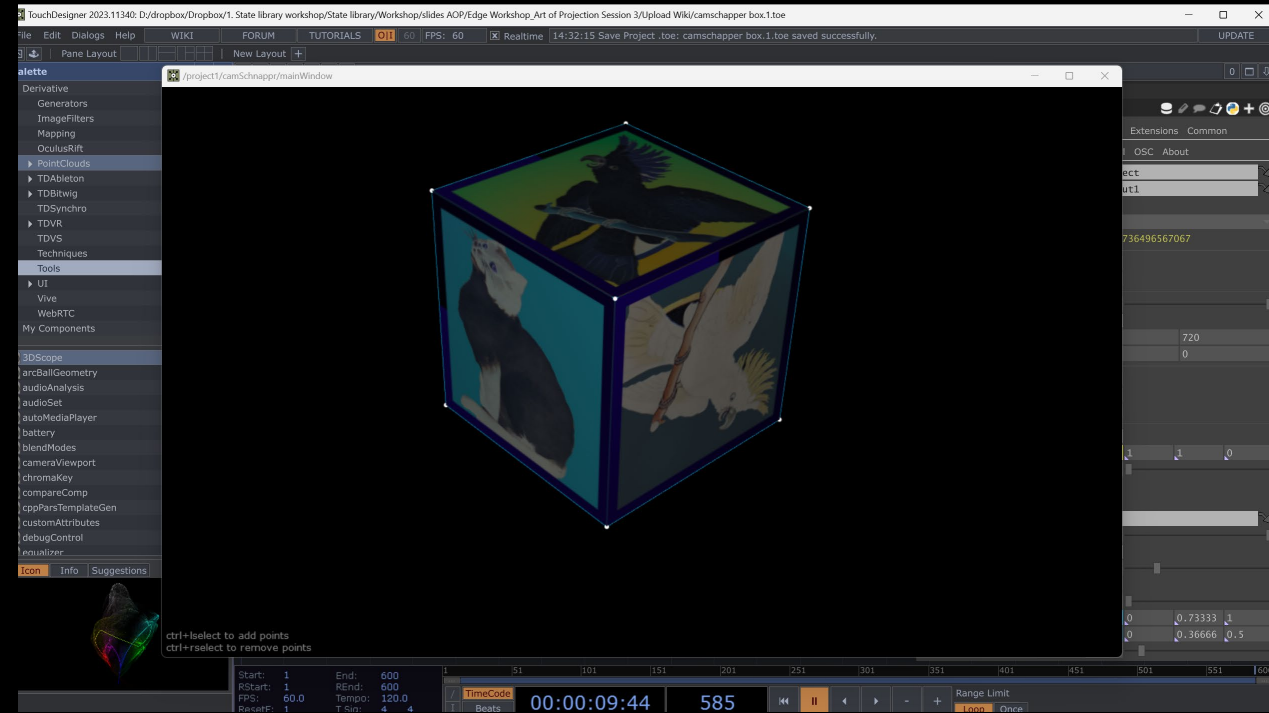


# Hands-On: Practice and Experimentation

- Creating Your Projection Mapping Content
- Step-by-Step Guidance
- Tips for Refining Designs

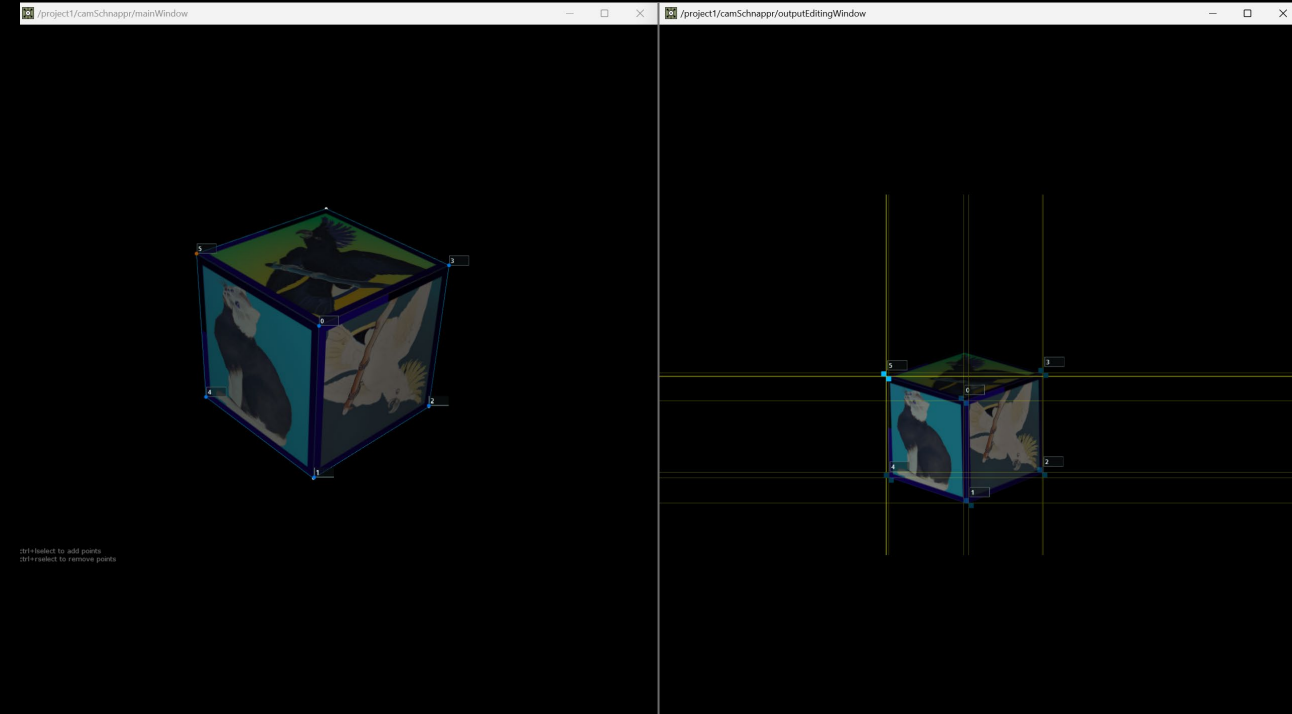
# Setting Up the Projection

- Projector Setup Techniques
- Aligning Projectors with Surfaces
- Using Cardboard Cubes as Projection Surfaces



# Showcase and Feedback

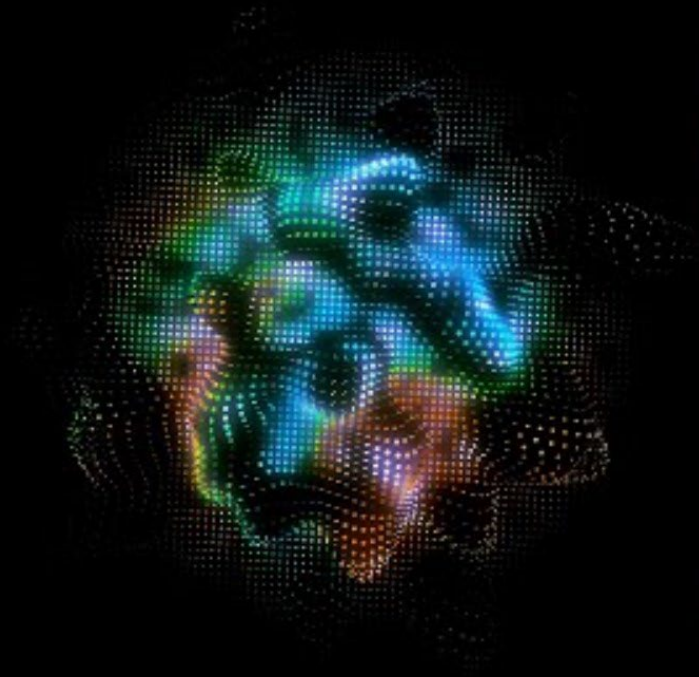
- Presentation of Participant Works
- Group Discussion and constructive Feedback



# Wrap-Up

- Recap of Key Learnings from Session three
- How to Further Explore Projection Mapping
- Feedback Collection and Closing Remarks

# Q&A Session



**AUDIO  
REACTIVE  
INSTANCING**



**TOUCHDESIGNER  
TUTORIAL** 

<https://youtu.be/SSSSbq2YZcA>

# References

- Modern Home Cinema By Tomasz Zajda
- Image by Viktor Kosilov from Pixabay
- <https://youtu.be/SSSSbq2YZcA>
- <https://www.youtube.com/watch?v=SB8WBE2hy9A>

THANKS FOR ATTENDING

---

Please complete our survey that will be sent out via  
Eventbrite.

Tag us on socials @statelibraryqld

Contact us on [appliedcreativity@slq.qld.gov.au](mailto:appliedcreativity@slq.qld.gov.au)





**Queensland  
Government**

[slq.qld.gov.au](http://slq.qld.gov.au)