

TOUCHDESIGNER WRSHP 101

Experimental Media Art and Design for Beginners

10:00 – 11:15

Experimental Media Art & Design : Stefan Kraus

Touchdesigner @ Monomango : Lois Kainhuber

Touchdesigner on Stage : Wieland Hilker

11:15 – 11:30

Coffee Break I

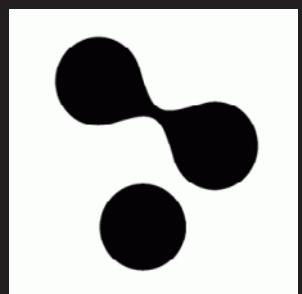
11:30 – 13:30

Introducing Touchdesigner

Rendering an animated 3D Scene

13:30 – 14:30

Lunchbreak / Pizza & Pasta @ aldente-berlin.de



TOUCHDESIGNER WRSHP 101

Experimental Media Art and Design for Beginners

14:30 – 15:45

A (very) simple audiovisual synthesizer

15:45 – 16:00

Coffee Break II

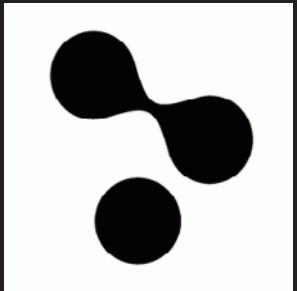
16:00 – 18:00

A live Video Mixer with audio driven Effects
Building an analogue clock with Instancing

18:00 – 18:30

Questions and Answers

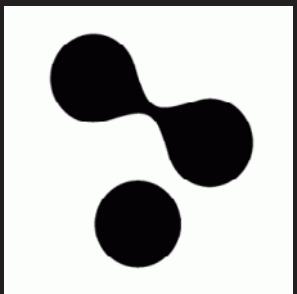
Documents and Files : https://github.com/MXZEHN/TD-WRSHP-BERLIN-2_2019



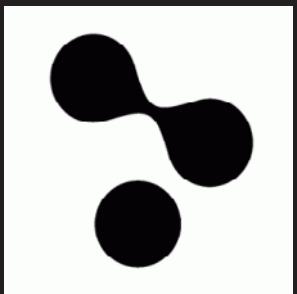
TOUCHDESIGNER WRSHP 101

Experimental Media Art and Design for Beginners

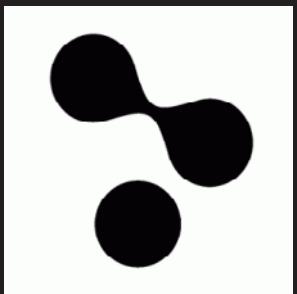
Experimental Media Art and Design for Beginners



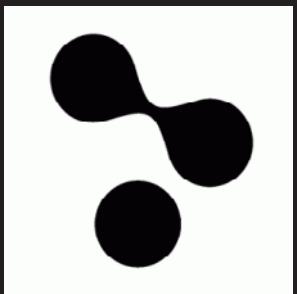
**Media Art explores and
exploits the narrative po-
tential of new technolo-
gies**



Interactive media systems
can be controlled / perfor-
med in real time



**Media in this sense
includes everything
that can be controlled
by us**



Art:

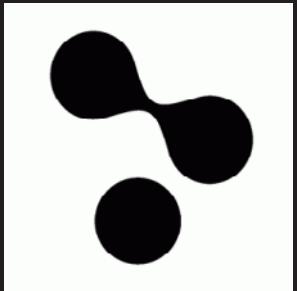
**has no commercial goal but hopes to enlighten
through experience**

Experimental:

an open result process of exploration

Design:

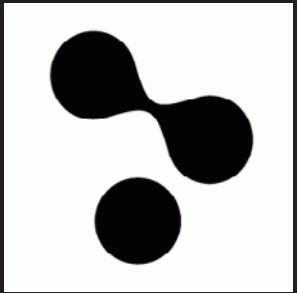
**puts the same tools and skills to a commercial use
based on a (customers) brief**



TOUCHDESIGNER WRSHP 101

Experimental Media Art and Design for Beginners

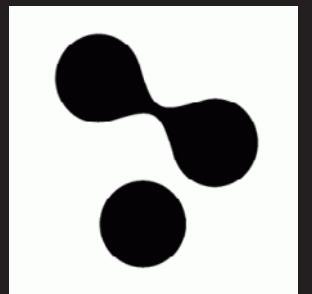
**INPUT
PROCESS
OUTPUT**



TOUCHDESIGNER WRSHP 101

Experimental Media Art and Design for Beginners

Programming Production Tools Creative Coding



TOUCHDESIGNER WRSHP 101

Experimental Media Art and Design for Beginners

Creative Coding

Processing / <https://processing.org>

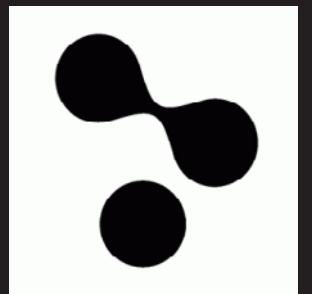
OpenFrameworks (C++) / <https://openframeworks.cc>

Cinder (C++) / <https://libcinder.org/about>

Game Engines

Unity / <https://unity3d.com>

Unreal / <https://www.unrealengine.com>



TOUCHDESIGNER WRSHP 101

Experimental Media Art and Design for Beginners

VJ Software

Resolume / <https://resolume.com>

VDMX / <https://vidvox.net>

Modul8 / <http://www.garagecube.com/modul8>

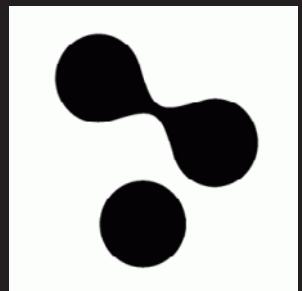
MadMapper / <http://www.garagecube.com/madmapper>

COGE / <https://imimot.com/cogevj>

Millumin / <https://www.millumin.com/v3/index.php>

HeavyM / <https://heavym.net>

SMode / <https://smode.fr>



TOUCHDESIGNER WRSHP 101

Experimental Media Art and Design for Beginners

Media Server

D3 / <https://www.disguise.one/en/products>

Pandoras Box / <https://www.coolux.de/de>

Green Hippo / <https://www.green-hippo.com/hippotizer-media-servers>

Wings / <https://avstumpfl.com/en/server-control-systems/software>

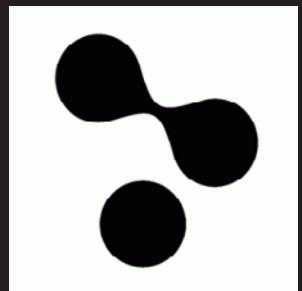
Watchout / <https://www.dataton.com/products/watchout>

Lighting Hard- & Software

E:cue / <https://www.osram.de/ecue>

Madrix / <https://www.madrix.com>

GrandMA / <https://www.malighting.com/de>



TOUCHDESIGNER WRSHP 101

Experimental Media Art and Design for Beginners

Node based Programming

VVVV / <https://vvvv.org>

Max+Jitter / <https://cycling74.com/products/max>

Pure Data / <https://puredata.info>

Isadora / <https://troikatronix.com>

Notch / <https://www.notch.one>

Ventuz / <https://www.ventuz.com>

XOD / <https://xod.io>

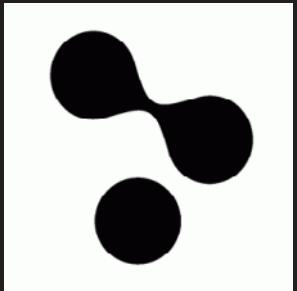
Nodes in other interesting software

Nodal – Musik / <http://nodalmusic.com>

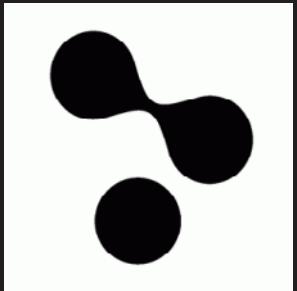
Nuke – Compositing / <https://www.foundry.com/products/nuke>

Houdini – 3D FX / <https://www.sidefx.com/products/houdini>

Substance Designer - Materials / <https://www.allegorithmic.com>



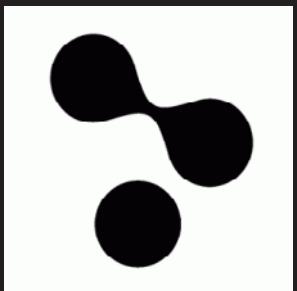
So what about
Touchdesigner?
Applications
& Examples



TOUCHDESIGNER WRSHP 101

Experimental Media Art and Design for Beginners

**CONNECT
EVERYTHING
WITH EVERYTHING**



TOUCHDESIGNER WRSHP 101

Experimental Media Art and Design for Beginners

read, translate and send everything

DMX, Artnet, MIDI, OSC, JSON, Serial, TUIO, RS322, Audio, Video, Text, Sheets, Web, Mobile, Light, Ableton, CV

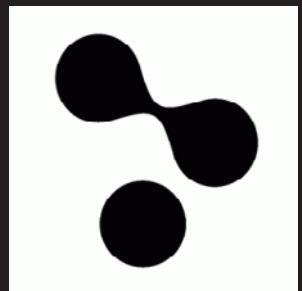
build custom applications

make your programs private for reselling

with a pro license, e.g. GeoPix / <https://www.enviral-design.com>

build custom media servers with multiple outputs

e.g. Luminosity / <https://github.com/IntentDev/Luminosity>



realtime animation

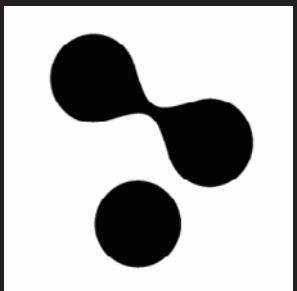
Effects, Motion Design, 3D Animation, Mixing and Routing, Data driven visual content (Music, Data Base, Sheets, Interaction) and Simulations (Physics, Particles) output to wild formats incl. 360°

lighting & laser design

Moving Lights, LED Fixtures, Lasers, LED Sculptures

virtual & augmented reality

prototype VR experiences with VIVE, Oculus, Hololens



web & mobile interaction

connect to users via the internet

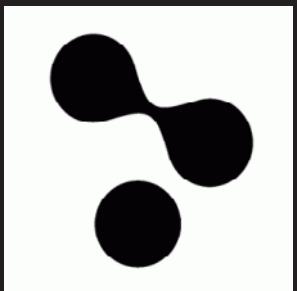
use mobile Apps to control Media Installations

use Web Content in AV Installations

Connect to APIs to gather Data

tracking

Use Kinect, Intel RealSense, Leap Motion, OpenCV and more to learn about the environment and enable touch free interactions



extend the functionality

use scripting and coding to extend functionality

Shader Authoring (GLSL)

**scripting in Python allows to use numerous Libraries
from within Touchdesigner**

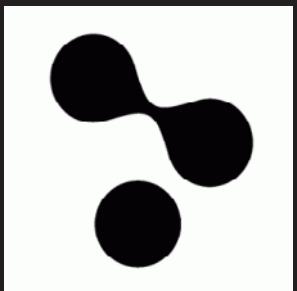
programming custom nodes in C++ (z.B. Vincent Houze)

projection mapping

keystoning with Stoner

creative mapping with Kantan Mapper

projector calibration with CamSchnappr



TOUCHDESIGNER WRSHP 101

Experimental Media Art and Design for Beginners

live design & performance

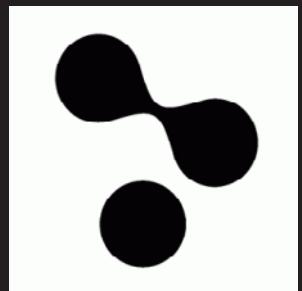
Show / Concert / Event / Exhibition / Fair / Theater

research and development

Data Visualisation / Research / Education / Prototyping

experimental

...



what hardware do we need?

PC over MAC

NVIDIA over ATI & INTEL

QUADRO over GTX

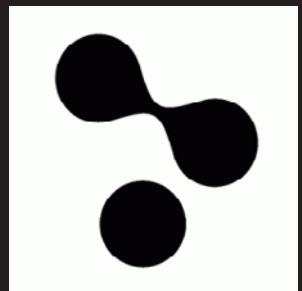
external sound card over internal sound

for video playback

hard disc > memory > CPU > GPU

for generative content

GPU > Memory > CPU



TOUCHDESIGNER WRSHP 101

Experimental Media Art and Design for Beginners

Share Video between Apps:

Syphon / <http://syphon.v002.info>

Spout / <http://spout.zeal.co>

NDI / <https://www.newtek.com/ndi/tools>

Hardware IO:

Arduino / <https://www.arduino.cc>

Enntec DMX / <https://www.enttec.com>

Datapath FX4 / <https://www.datapath.co.uk>

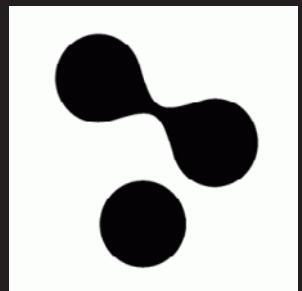
Magewell USB Capture / <https://www.magewell.com/capture/usb-capture>

Wacom / <https://www.wacom.com>

Leap Motion / <https://www.leapmotion.com>

Real Sense / <https://software.intel.com/en-us/realsense/d400>

ZED / <https://www.stereolabs.com/>



TOUCHDESIGNER WRSHP 101

Experimental Media Art and Design for Beginners

Helpful Software:

Ableton Live / <https://www.ableton.com/de/live>

Audacity / <https://www.audacityteam.org>

Blender / <https://www.blender.org>

OBS / <https://obsproject.com>

Mapping Matter / <http://www.mappingmatter.com>

OSC / MIDI

TouchOSC / <https://hexler.net/software/touchosc>

Lemur / <https://liine.net/en/products/lemur>

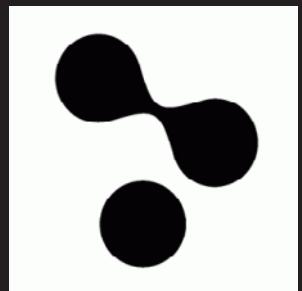
Open Stage Control / <https://osc.ammd.net>

Vezer / <https://imimat.com/vezer>

OSSIA / <https://ossia.io>

RTP Midi / <https://www.tobias-erichsen.de/software/rtpmidi.html>

MIDI Ox / <http://www.midiox.com>



TOUCHDESIGNER WRSHP 101

Experimental Media Art and Design for Beginners

Free Learning Resources

Matthew Ragan / <https://matthewragan.com/touchdesigner-workshop-yale-2017/>

The WIKI / https://docs.derivative.ca/Category:Tutorials#First_Things_to_Know_about_TouchDesigner

More Learning Resources

Elburz & nVoid / <https://learntouchdesigner.com/>

Lichtpfad Studios / <https://lichtpfad.selz.com/de>

Where to get help & connect

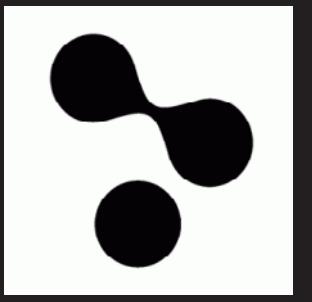
Forum / <http://www.derivative.ca/Forum>

FB Help Group / <https://www.facebook.com/groups/touchdesignerhelp>

TouchDesigner on Discord / <https://discordapp.com>

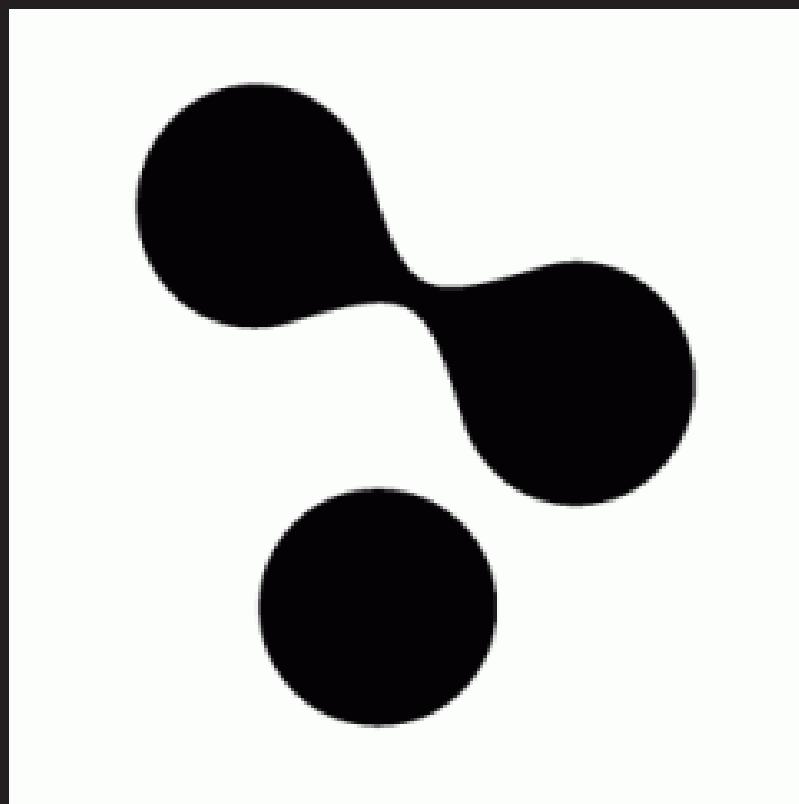
More stuff

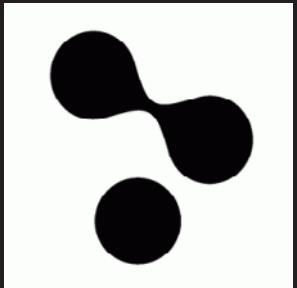
Elburz Templates / <https://template.elburz.io>



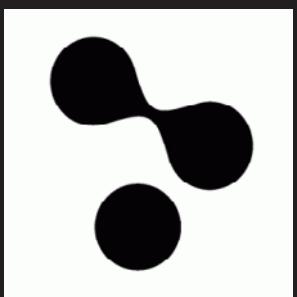
TOUCHDESIGNER WRSHP 101

Experimental Media Art and Design for Beginners



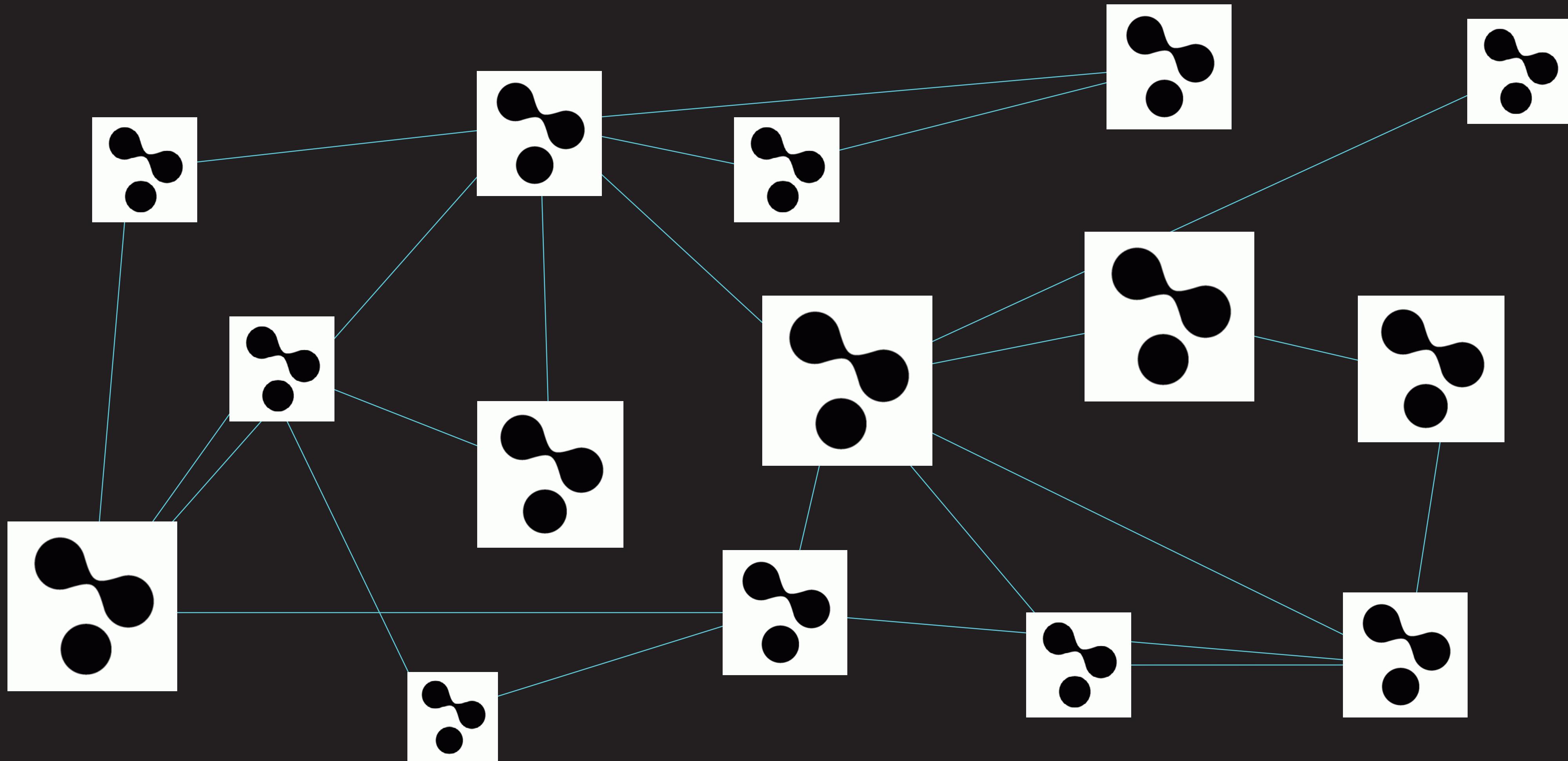


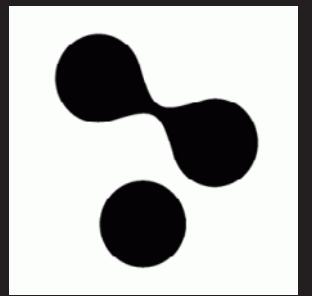
Do not consider
yourself alone
warrior Become part
of a community



TOUCHDESIGNER WRSHP 101

Experimental Media Art and Design for Beginners





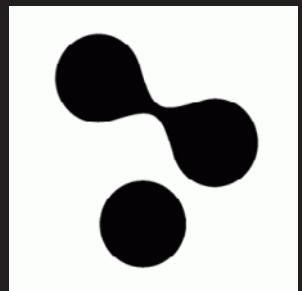
TOUCHDESIGNER WRSHP 101

Experimental Media Art and Design for Beginners

More stuff

Text Editor / <https://www.sublimetext.com>

BPM / FPS Calculator / https://www.vjamm.com/support_av_bpm.php%3Flang=en.html



TOUCHDESIGNER WRSHP 101

Experimental Media Art and Design for Beginners

PBR based Materials

The PBR Material / https://docs.derivative.ca/PBR_MAT

The Environment Light / https://docs.derivative.ca/Environment_Light_COMP

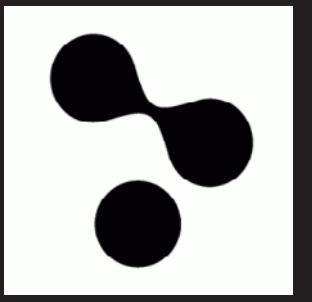
Substance Designer/ <https://www.allegorithmic.com/products/substance-designer>

Free Substance Materials / <https://share.allegorithmic.com>

Free Resources / <https://texturehaven.com>

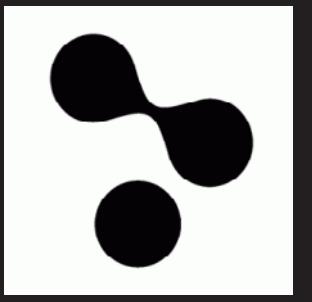
Scans and Tools / <https://quixel.com>

More Materials / <https://www.poliigon.com>



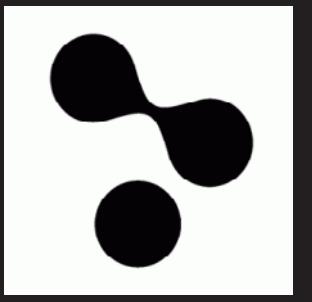
TOUCHDESIGNER WRSHP 101

Experimental Media Art and Design for Beginners



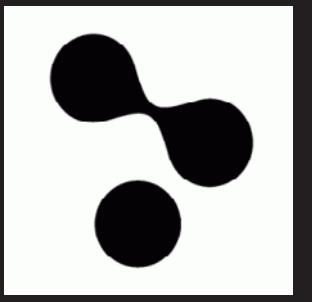
TOUCHDESIGNER WRSHP 101

Experimental Media Art and Design for Beginners



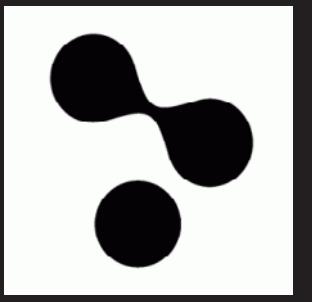
TOUCHDESIGNER WRSHP 101

Experimental Media Art and Design for Beginners



TOUCHDESIGNER WRSHP 101

Experimental Media Art and Design for Beginners



TOUCHDESIGNER WRSHP 101

Experimental Media Art and Design for Beginners

<https://www.whitevoid.com>



<https://www.whitevoid.com>



<https://www.whitevoid.com>



<https://www.whitevoid.com>



<https://www.whitevoid.com>



<http://www.modearchitectural.com>





<http://www.soma-cg.com>



<http://www.soma-cg.com>



https://www.instagram.com/vjrez_tokyo/



https://www.instagram.com/vjrez_tokyo/

The screenshot displays a complex digital performance software interface, likely for a DJ or VJ setup. The interface is organized into several panels:

- Top Bar:** Initialize, PROJECT, ABOUT, OUTPUT OF, PERFORMANCE, FULLSCREEN, DIRECT PACK, MAP, MAP RELOAD.
- Left Panel:** Contains four main sections: +A1, +A2, +B1, and +B2. Each section includes a preview window, file selection, layer parameters (STYLING, SCALE, ROTATE, POSITION X, POSITION Y), and speed controls (NORMAL SPEED, VAL. 100.00%).
- Middle Panel:** Includes a **VIDEO DEVICE IN** section, a **EFFECT** section with various knobs and sliders, and a **SIDE BOX** section featuring a preview window and layer parameters for files like SHINTAROLOGO.D1.
- Right Panel:** Shows a large preview window displaying a colorful, abstract pattern. It also includes sections for **EXTENTION**, **BASE FX**, and **SPEED / SIDE BOX**. The right panel features a sidebar with checkboxes for various system settings like TIME, RENDER, and CONSOLE.
- Bottom Panel:** A grid of visual assets labeled with letters A through Z and numbers 1 through 16, each with a preview image and a "Cell is empty" status indicator.

https://www.instagram.com/vjrez_tokyo/

https://www.instagram.com/vjrez_tokyo/

The screenshot displays a complex VJ software interface with the following sections:

- BASE LAYERS:** Contains four sub-layers labeled A1, A2, B1, and B2. Each layer has its own parameters: FILE, STYLING, ZSCALE, ZROTE, POSITION X, POSITION Y, and SPEED. The main title "BASE LAYERS" is centered above the sub-layers.
- VIDEO DEVICE IN:** Shows a preview window with the text "VIDEO DEVICE IN". It includes LAYER PARAMETER controls for BRIGHTNESS, CONTRAST, and BLACK LEVEL, along with settings for CAMERA FX (VAL: 0.00x) and EFFECT (SET: FOG WAVE).
- EFFECTS BANK:** Displays a large title "EFFECTS BANK" and a sub-section "SUB LAYER". It features a 4x4 grid of cells labeled G1 through H4, each containing the text "Cell is empty".
- MAP PREVIEW:** Shows a preview window with the text "MASTER PREVIEW" and "ageHa BASIC LED SET(3FACE)". It includes LAYER PARAMETER controls for COLOR and MONO COLOR, and a section for TIME, RENDER, and SUB MAP.
- PARAMETERS:** A section titled "PARAMETERS" with a 4x4 grid of cells labeled G1 through H4, all showing "Cell is empty". It includes LAYER PARAMETER controls for INVERT 1, INVERT 2, COLOR, and EXPANDER.
- EXTRA LAYERS FOR MAP:** A section titled "EXTRA LAYERS FOR MAP" with a 4x4 grid of cells labeled G1 through H4, all showing "Cell is empty". It includes LAYER PARAMETER controls for OVER, EXPANDER, and EXPANDER 2.
- COLOR CONTROL:** A section titled "COLOR CONTROL" with a 4x4 grid of cells labeled G1 through H4, all showing "Cell is empty". It includes LAYER PARAMETER controls for COLOR, EXPANDER, and EXPANDER 2.
- EXTRA LAYER FOR MAP:** A section titled "EXTRA LAYER FOR MAP" with a 4x4 grid of cells labeled G1 through H4, all showing "Cell is empty". It includes LAYER PARAMETER controls for EXPANDER, EXPANDER 2, and EXPANDER 3.

On the right side of the interface, there is a vertical sidebar with the following options:

- FPS: 58
- MAPPING: COLOR
- LAYER PARAMETERS: ZSCALE, ZROTE, POSITION X, POSITION Y
- MONO COLOR
- TIME
- RENDER
- SUB MAP
- LEVEL: MULT, ADD, OVER
- CONSOLE
- OPTIONS
- REZ NET: ON, OFF
- LAYER PARAMETERS: EXPANDER, EXPANDER 2, EXPANDER 3
- OVERLAYER: EXPANDER, EXPANDER 2, EXPANDER 3
- EXTRABER: EXPANDER, EXPANDER 2, EXPANDER 3
- EXTRABER 2: EXPANDER, EXPANDER 2, EXPANDER 3
- EXTRABER 3: EXPANDER, EXPANDER 2, EXPANDER 3
- SPEED / SIDE BOX: ZTIMES, ZSCALE, POSITION X, POSITION Y
- UNDER CONTROL

<https://vincenthouze.com>

<http://www.daveandgabe.care/projects>



<https://vincenthouze.com>

<http://www.daveandgabe.care/projects>



<https://www.derivative.ca/Events/2015/Luminosity/>

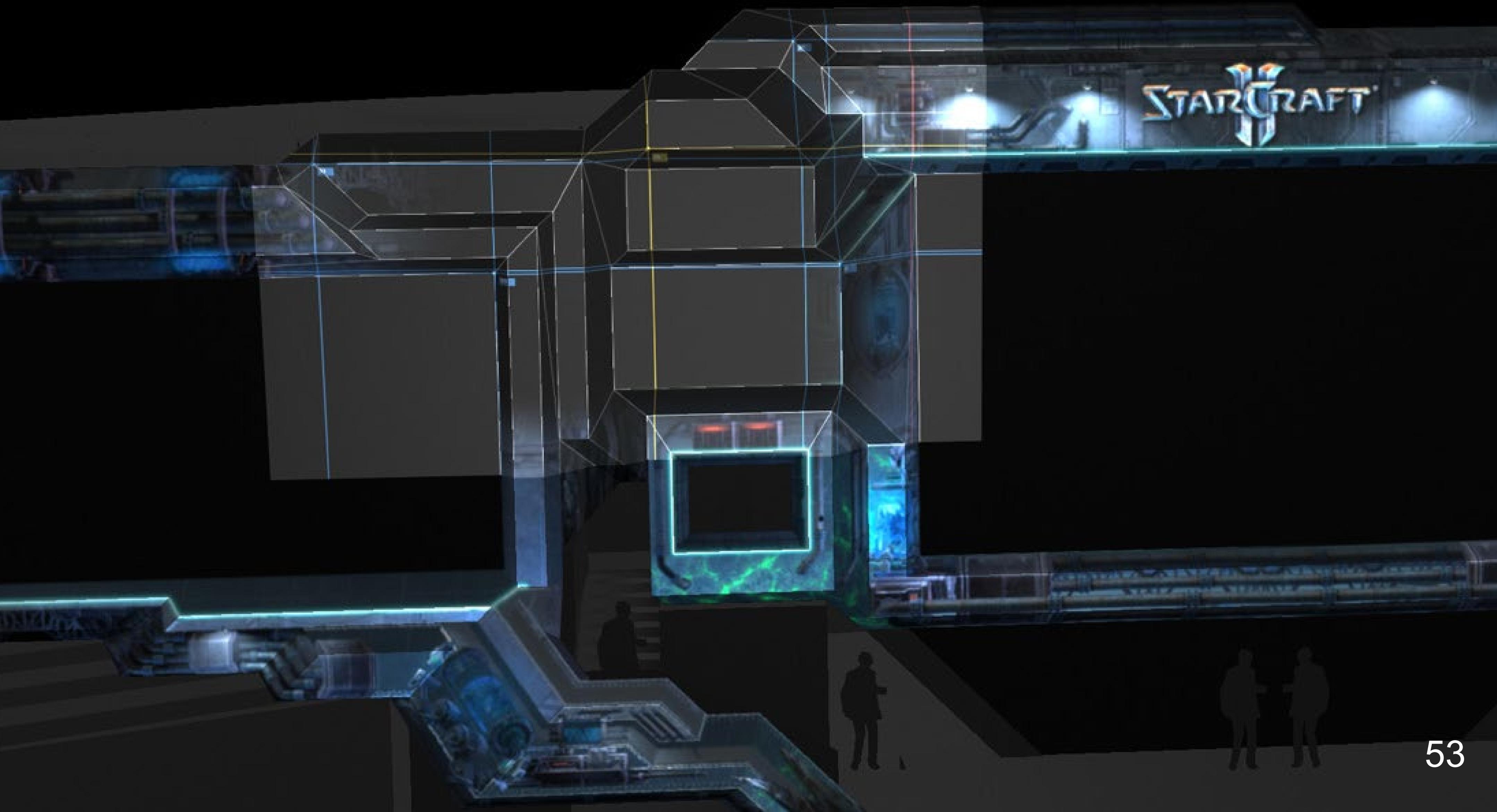


<https://www.derivative.ca/Events/2015/Luminosity/>

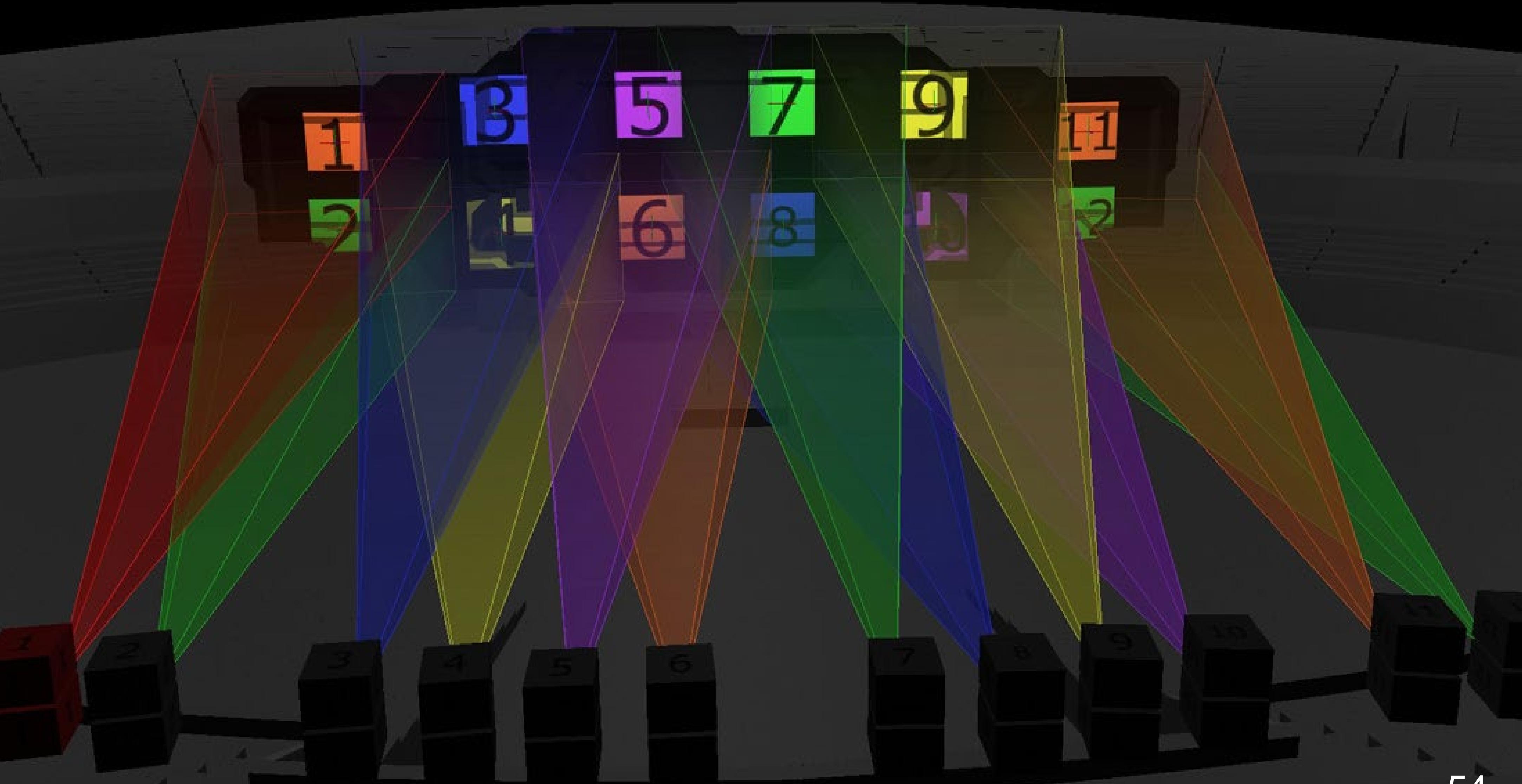
The screenshot displays a sophisticated real-time visual effects (RTVE) application interface. At the top, a navigation bar includes 'Map Select', 'Map', 'MIDI', 'OSC', 'DMX', 'Live', 'Master Prev', 'CrossFade', '120 BPM', 'PreLoading', and '158'. The main workspace features a large preview window on the left showing a scene with glowing orange and red energy fields against a dark background. Below this are several panels:

- Bank Selection:** A grid of buttons labeled K3, Bank4, Bank5, Bank6, Bank7, Bank8, Bank9, Bank10, Bank11, Bank12, Bank13, Bank14, Bank15, and Bank16, with sub-sections for 'Scene2', 'Scene3', 'Scene4', 'Scene5', 'Scene6', 'Scene7', and 'Scene8'.
- Effects Controls:** A series of panels for 'Levels', 'Feedback', 'Strobe', and 'Trigger' with various sliders and knobs.
- Clip and Aux Control:** A central area with tables for 'Clip 5' and 'Aux 2' settings, including 'Inserts' (e.g., 'No Effect', 'Feedback'), 'Sources', and 'Sends'.
- Video In:** A section featuring 'Particles', 'SacredGeo', and 'Curves' with preview thumbnails.
- Asset Browser:** A large grid of thumbnail previews for assets like 'soTron_17_1', 'NepTron_16_1', 'Lighter Than Air', 'HeadsUp_14_1', 'HeadsUp_16_1', 'NepTron_20_1', 'HeadsUp_18_1', 'HeadsUp_19_1', 'HeadsUp_20_1', 'NepTron_19_1', 'soTron_22_1', 'NepTron_25_1', 'HeadsUp_17_1', 'NepTron_26_1', 'NepTron_27_1', 'NepTron_24_1', 'NepTron_23_1', 'HeadsUp_08', 'HeadsUp_09', 'HeadsUp_10_1', 'HeadsUp_11_1', 'HeadsUp_12_1', 'NepTron_28_1', 'Spherical', 'HeadsUp_02', 'HeadsUp_03', 'HeadsUp_04', 'HeadsUp_05', 'HeadsUp_06', 'HeadsUp_07', and 'HeadsUp_08'.
- Timeline and Controls:** A bottom row of controls for 'Opacity', 'Volume', and 'Master' levels, along with 'A', 'B', and 'Auto' buttons.

<https://www.derivative.ca/Events/2015/Luminosity/>



<https://www.derivative.ca/Events/2015/Luminosity/>

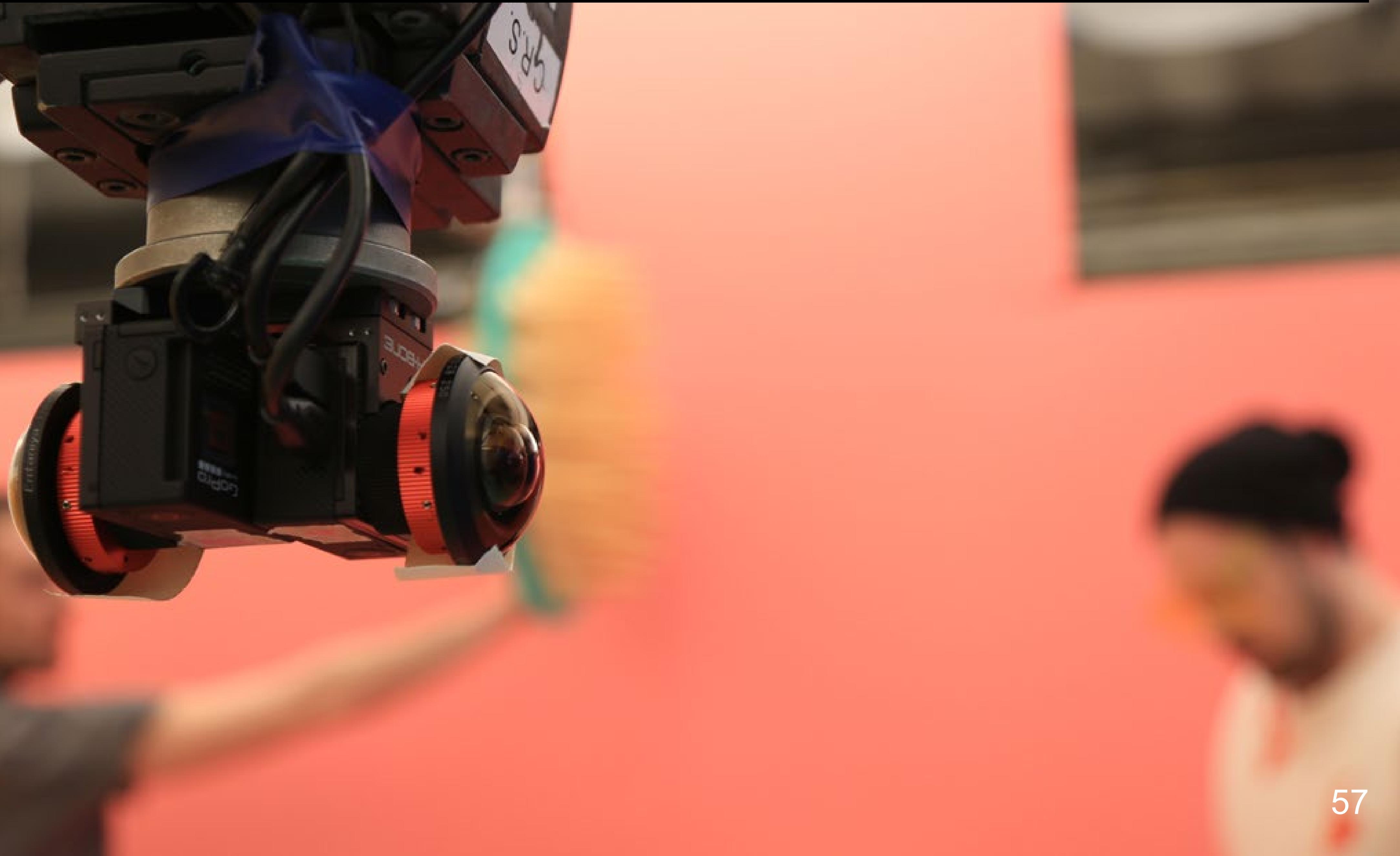


<https://www.derivative.ca/Events/2016/FutureOfMusic>

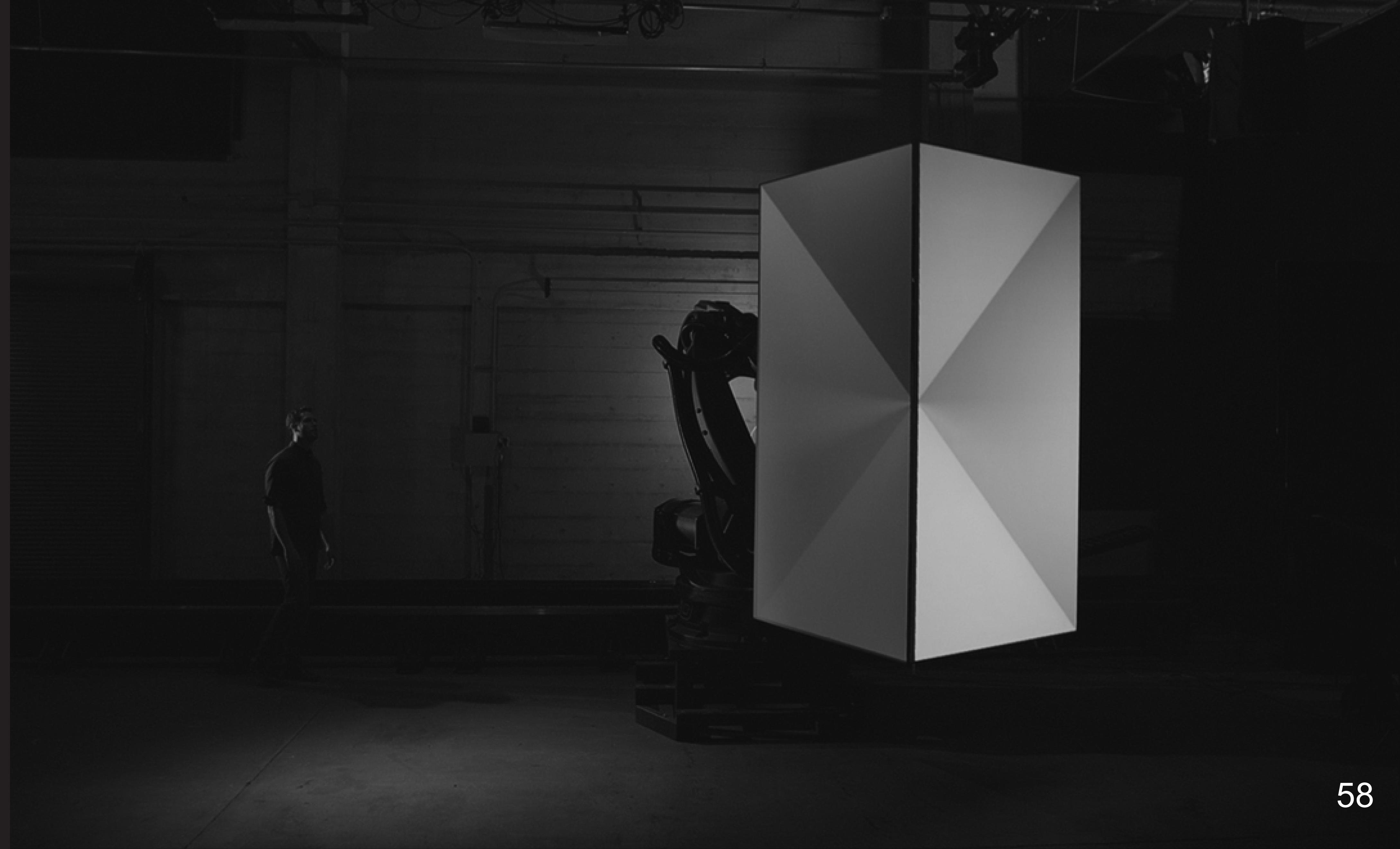




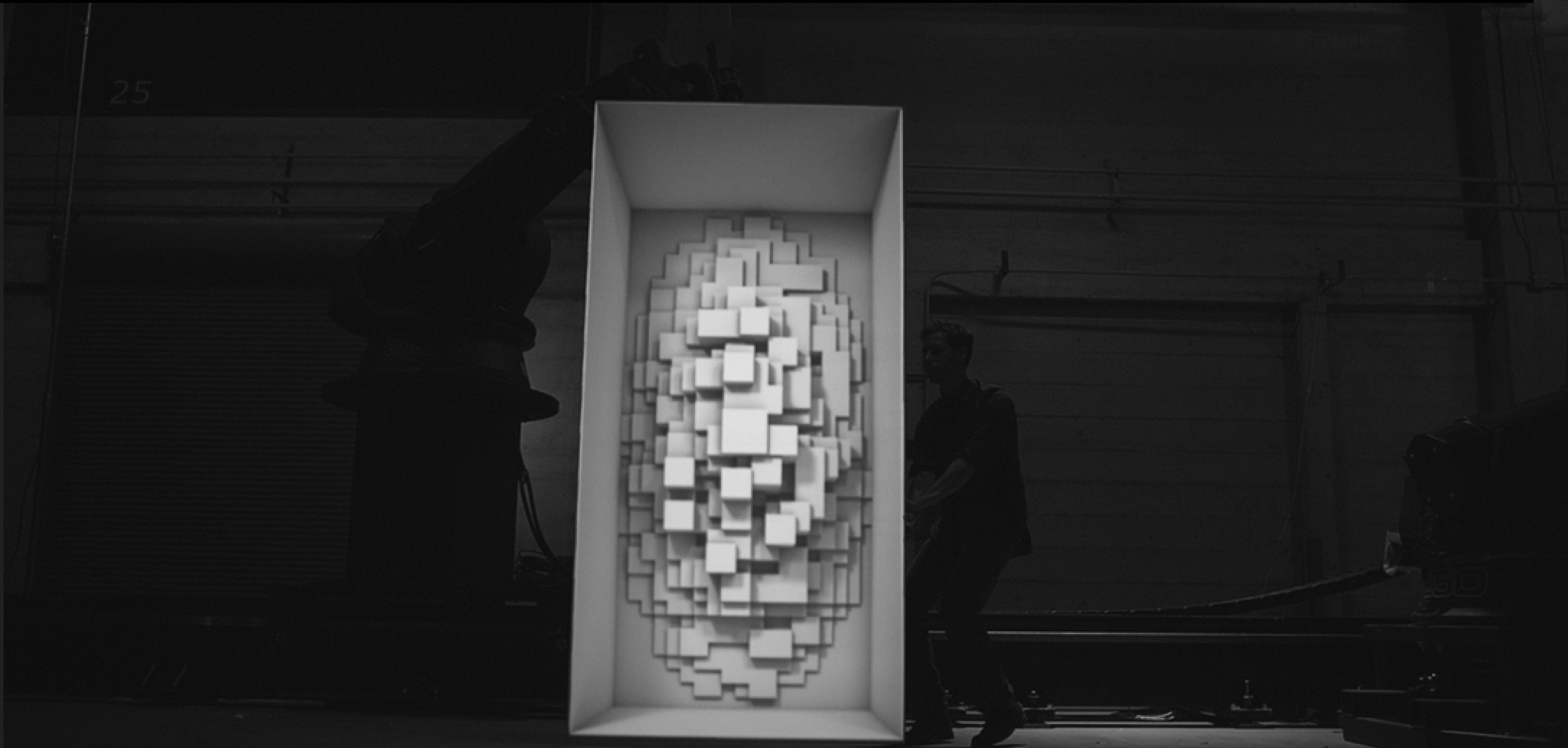
<https://www.derivative.ca/Events/2016/FutureOfMusic>



<https://gmunk.com/BOX>



<https://gmunk.com/BOX>



<https://gmunk.com/BOX>

