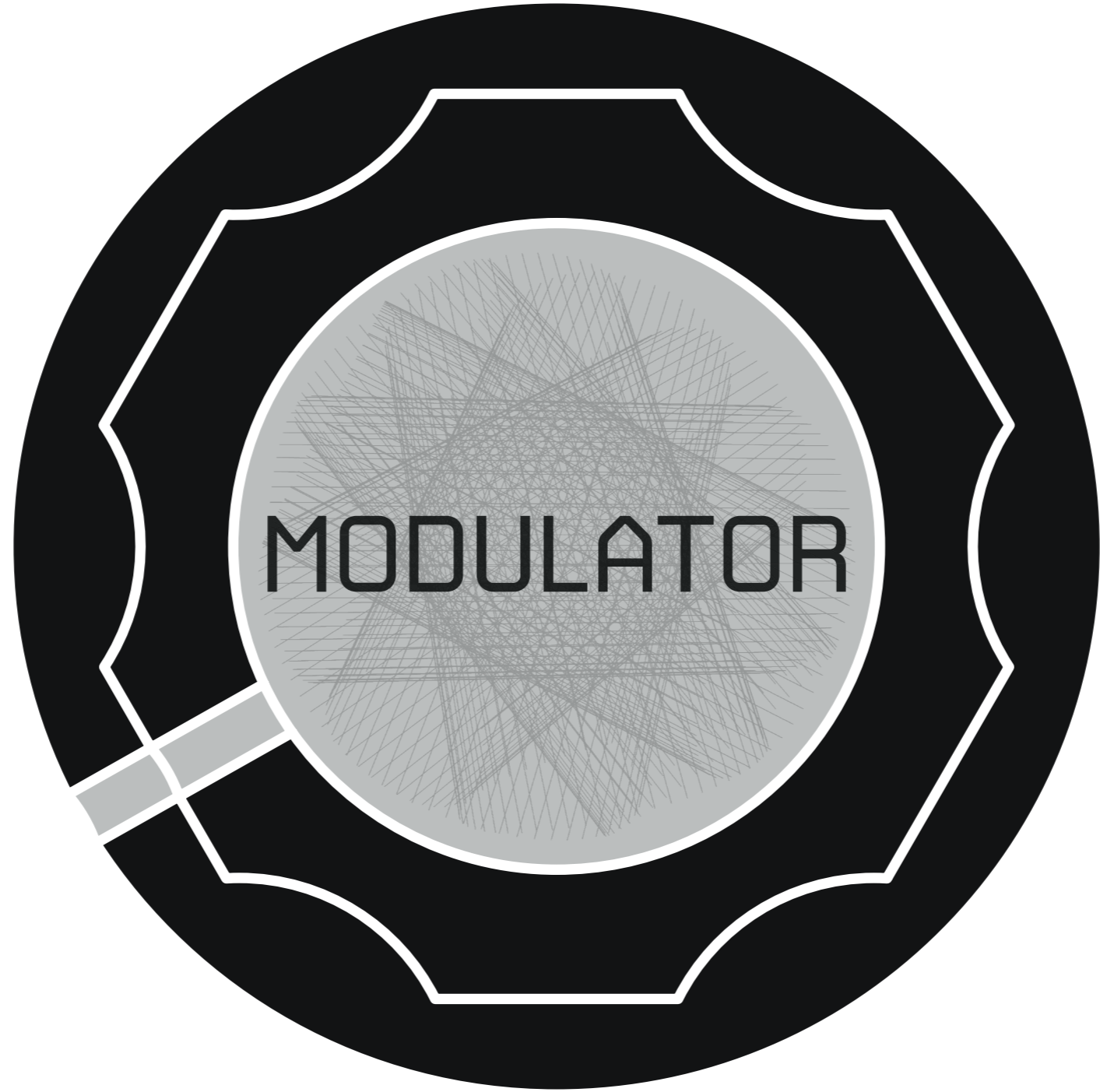# Parametrica

MODULATOR

The Concept

- The Modulator is a reactive, tactile, enveloping experience that is controlled by its users.

- It is designed to spark inspiration and generate an understanding of the basic principles of sound and visual synthesis, by immersing users in an interactive, responsive and playful environment.

- To do this we have created a hexagonal space fitted with 4-point surround sound and projectors that fill its three translucent walls with morphing digital artwork. Three central control panels give the users complete control of the space. On these panels, dials, switches and buttons allow the users to collectively modulate the sound track being played and the artwork being projected onto the walls.

As the installation is first seen, your
eye is drawn to the bright, geometric,
pulsating visuals on its translucent
walls. You notice the silhouettes of
people stood, moving at the control
panels in its centre.

Moving much closer, you hear the sound
the Modulator is creating, generated by
whoever happens to be at its controls,
and begin to recognise the relationship
between the sound and the visuals.

Stepping into the hexagonal space,
you are drawn towards the centre by
three central stations, their panels
populated with large dials, buttons
and switches lit with synchronised
minimalistic back-lighting.
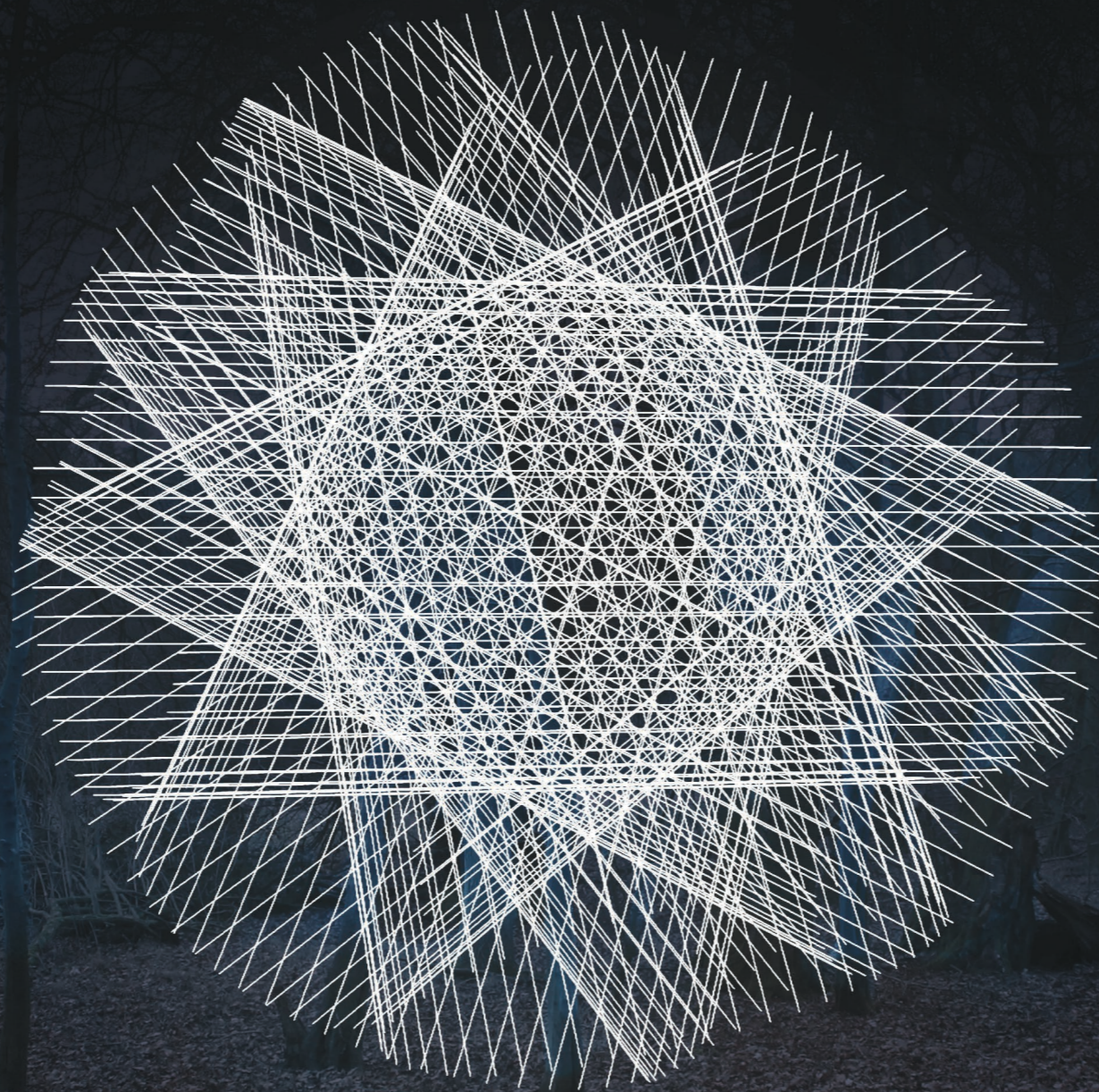
The sound now surrounds you, the space bathed in shifting levels of light and dark, as the artwork and sound converge. You walk up to one of the control panels and begin adjusting dials. The relationship between the dials, sound and artwork is quickly realised, drawing you in to experiment further, exploring the possibilities of its creation. Your friends join in and begin to play with the other control panels and you start manipulating the artwork and sound in unison.
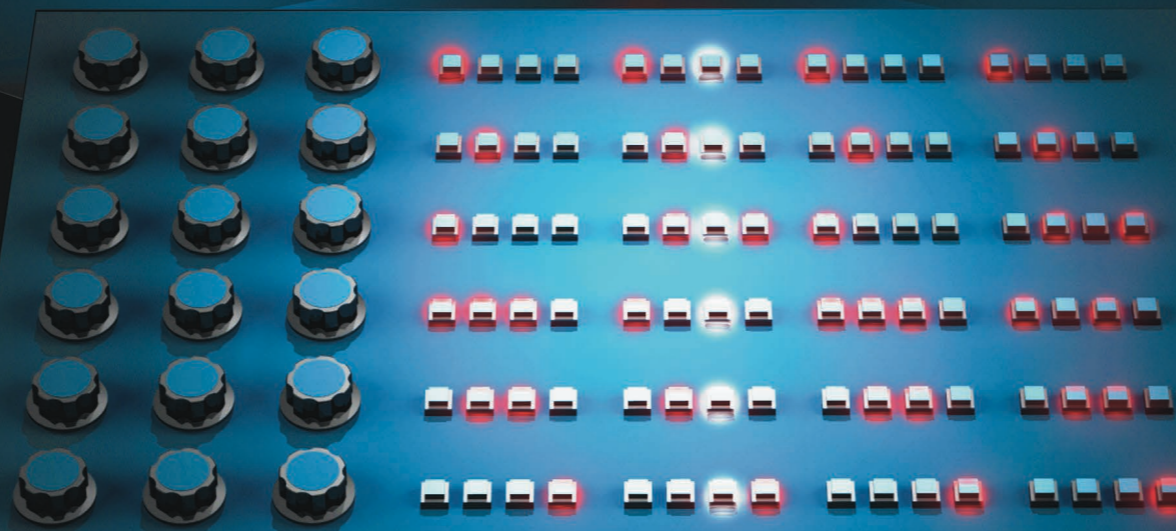
The Modulator and it's Environment

We envision The Modulator in a forested area with the surrounding trees lit by teal coloured wash lighting, subtle changes to this lighting could be triggered by The Modulator, making the experience more synchronous. Its steel frame allows a minimal form while remaining structurally strong; it sits lightly, unimposing on its environment. You see visions of the surrounding teal lit forest through the translucent voile screens, warping, twisting, minimalistic geometric shapes moving over them appearing to hover within the woodland. Viewable and approachable from any angle, the Modulator acts as a beacon in its surroundings, drawing people to the area.

Below are a couple of images that give an idea of the aesthetic.

Fig 1. Uplit Forest

Fig 2. Voile translucency

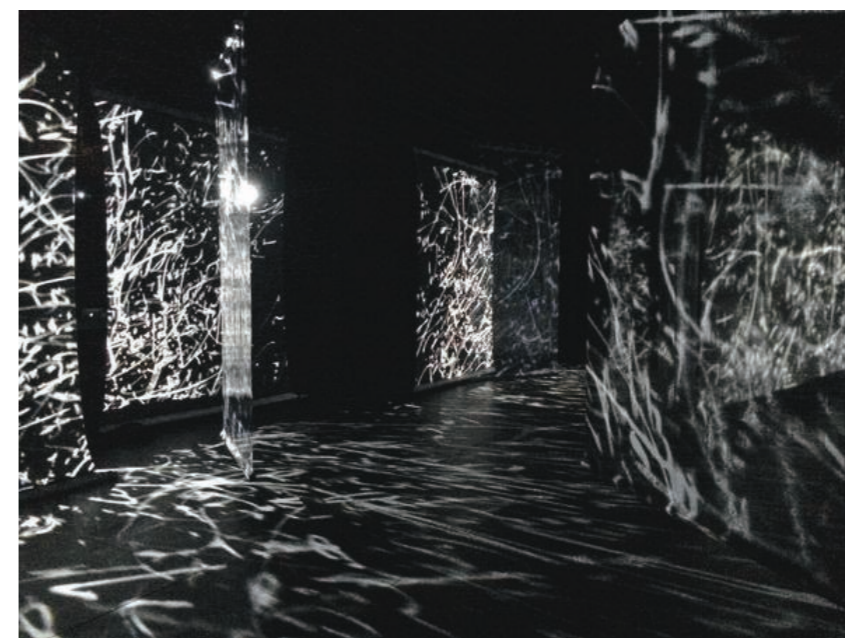# Tier 1 Prototype

The Modulator's first appearance was as a part of NoPlaceArt's second exhibition "What Do You See, How Do You Feel?". Located in a warehouse, converted into a gallery for two weeks. The Modulator filled the centre of the space. We made a voile cube to lower the brightness inside so that the projection would be visible during the daylight hours.

Standing In-front of the Controls

Details

There are three control panels, each designed to be operated by one person at a time.

Each panel controls a different aspect of the music eg. Drums, Lead synth and bass synth.

The control panels are fully waterproofed against rain and drink spillage.

The stations are constructed out of marine grade plywood, their joins sealed with silicone and rubber.

The computer and amp-rack are located centrally behind the stations in a water tight enclosure.

The cables for the speakers and projectors are run to the projector housings through weatherproof pipes dug into the ground.
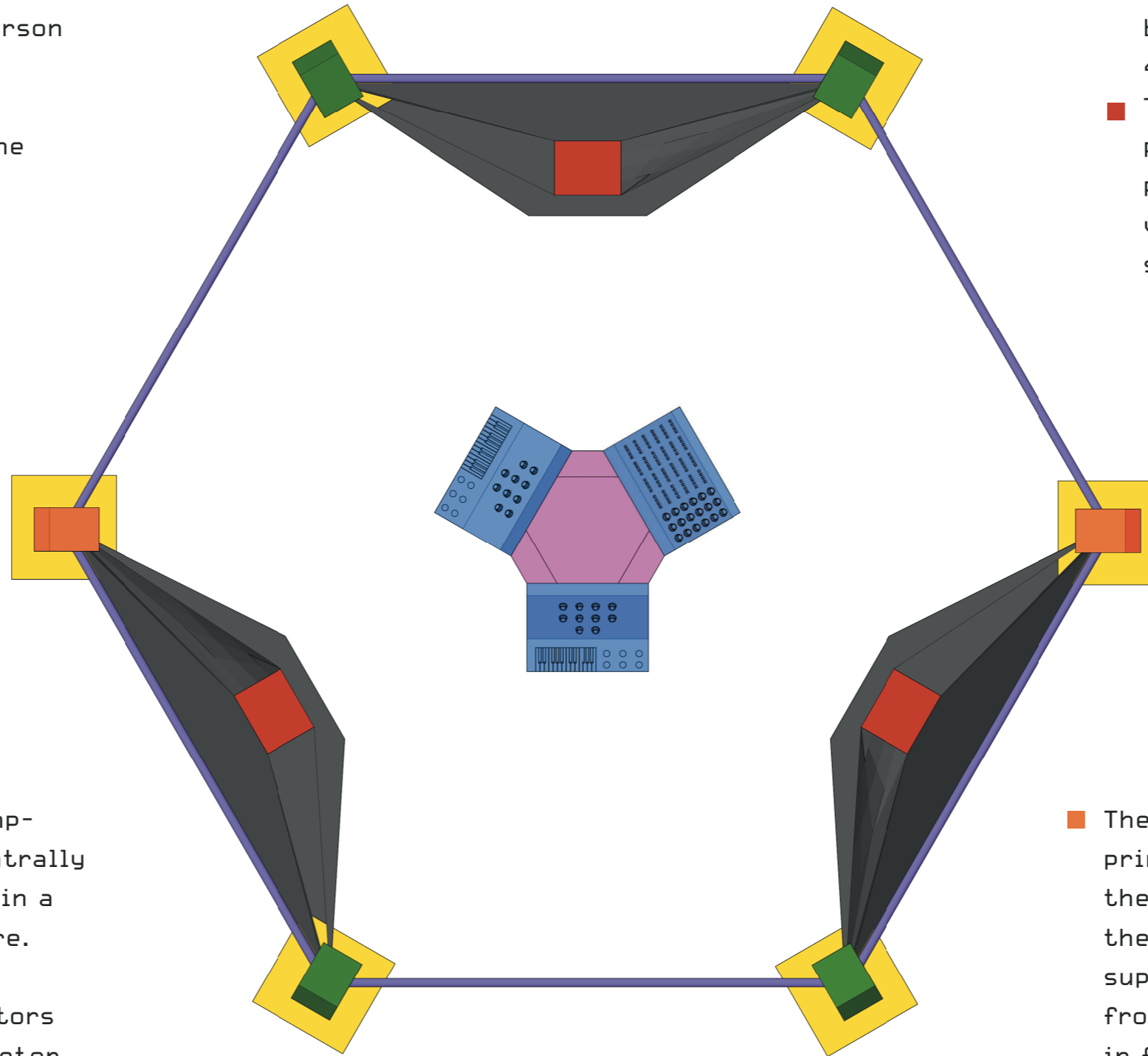
The projectors are made by Optoma producing a bright full HD image at 4000 lumens.

The projectors are protected from rain with polycarbonate and the void their located in is sealed with Lycra.

The speakers consist of custom built enclosures and studio grade Volt Loudspeaker drivers.

They're pole mounted on top of the installations uprights.

Protected from rain by fitted black PVC covers.

The installation will primarily be lit with the glow created from the projections with supplementary lighting from 2 led lights housed in false speaker boxes. These can light the entire space in the event of an emergency.

Details
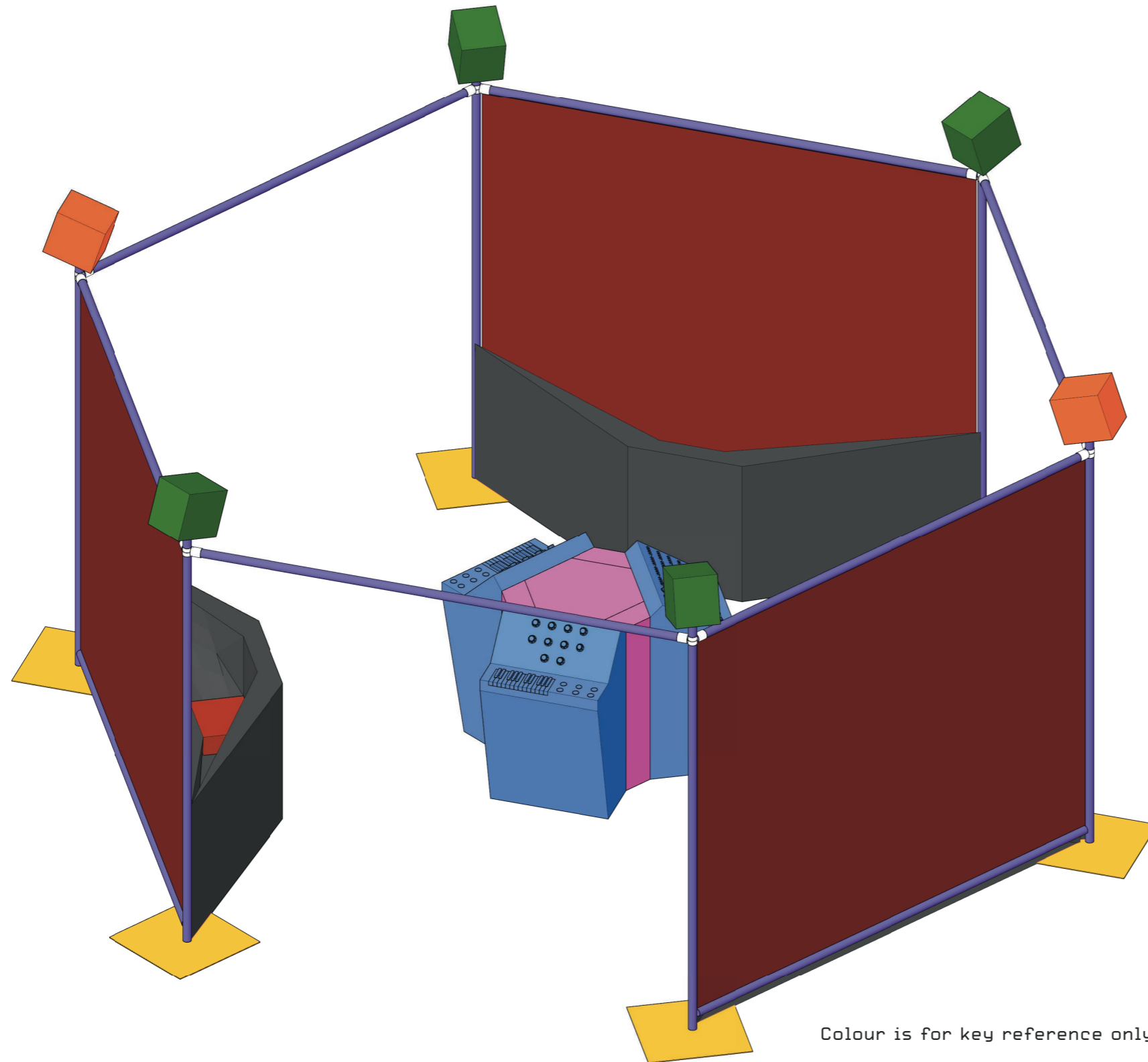
The screens are a perforated scrim, making them translucent, also decreasing the amount of wind drag created.

The structures main uprights are 2.6m long, 48mm diameter steel poles mounted on tank traps bolted onto Spirafix ground anchors.

The uprights will be clamped at 2.6m to horizontal identical aluminium poles, stiffening the structure at the high level.

Colour is for key reference only

Detail of Cladding
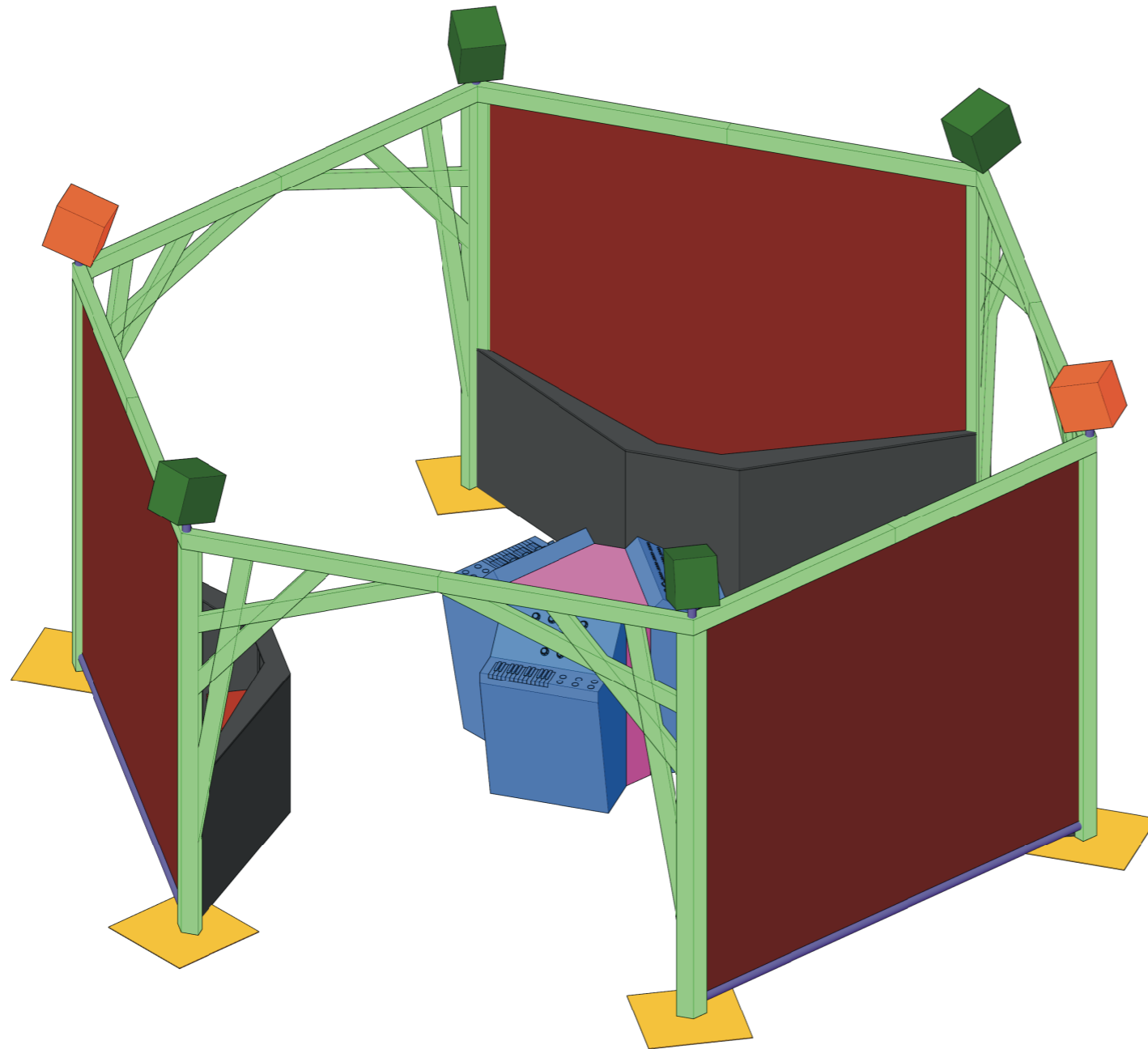
■ The cladding around the steel poles gives the structure a natural look, while reflecting the style of the visuals being projected.

Colour is for key reference only

Site Requirements

- 16amp Power supply.
- A minimum, fairly level area of 6.6m x 6m .
- 2 - 3 days set up time with power.
- Vehicle access.
- A security gaurd overseeing the installation.

3000

700

6000

6600

Drawing not to scale

Installation Scalability

The project is scalable, it can be adjusted to suit different sized budgets with three different tiers. The most advanced tier is the one you have seen throughout this presentation. It has three projectors on three screens with three stations, providing an immersive 360 degree environment.
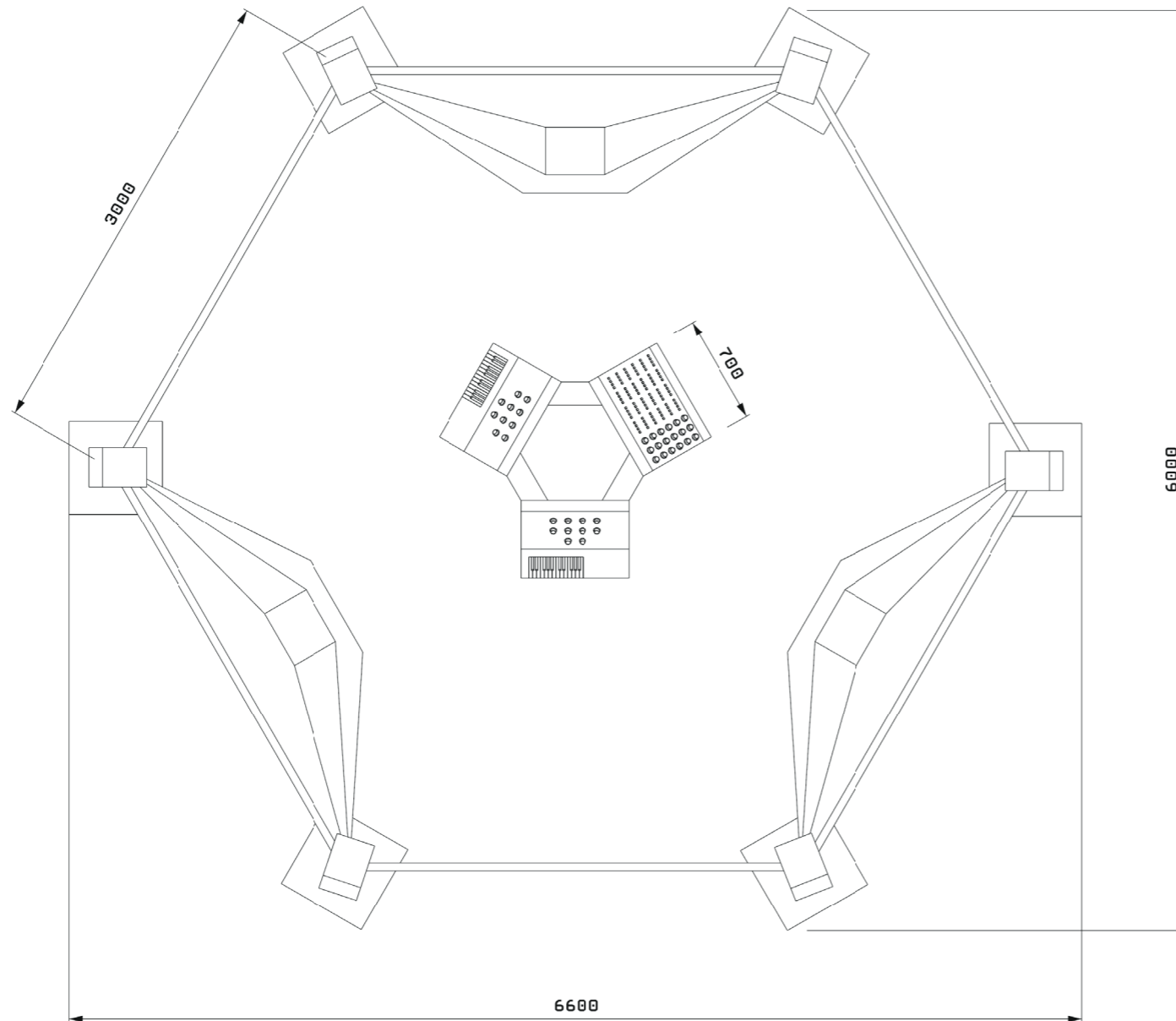
The second tier simply reduces the number of projectors, screens and stations to two. The first tier down to one.

We are happy to provide further technical specifications and a detailed cost breakdown and can visit you to demonstrate how this immersive experience will enhance your festival.

Modification During the Creative Process

The Modulator combines two softwares to create the sound and visual artwork. Both of these can be modified to tailor the experience to a specific aesthetic. We can also make alterations to the enclosures in order to keep with your festivals aesthetic or theme of this year.

During the creative process we will incrementally share our progress with you to keep you informed, as well as providing an opportunity for you to share yours thoughts if desired, which we will be more than happy to discuss with you and make revisions.
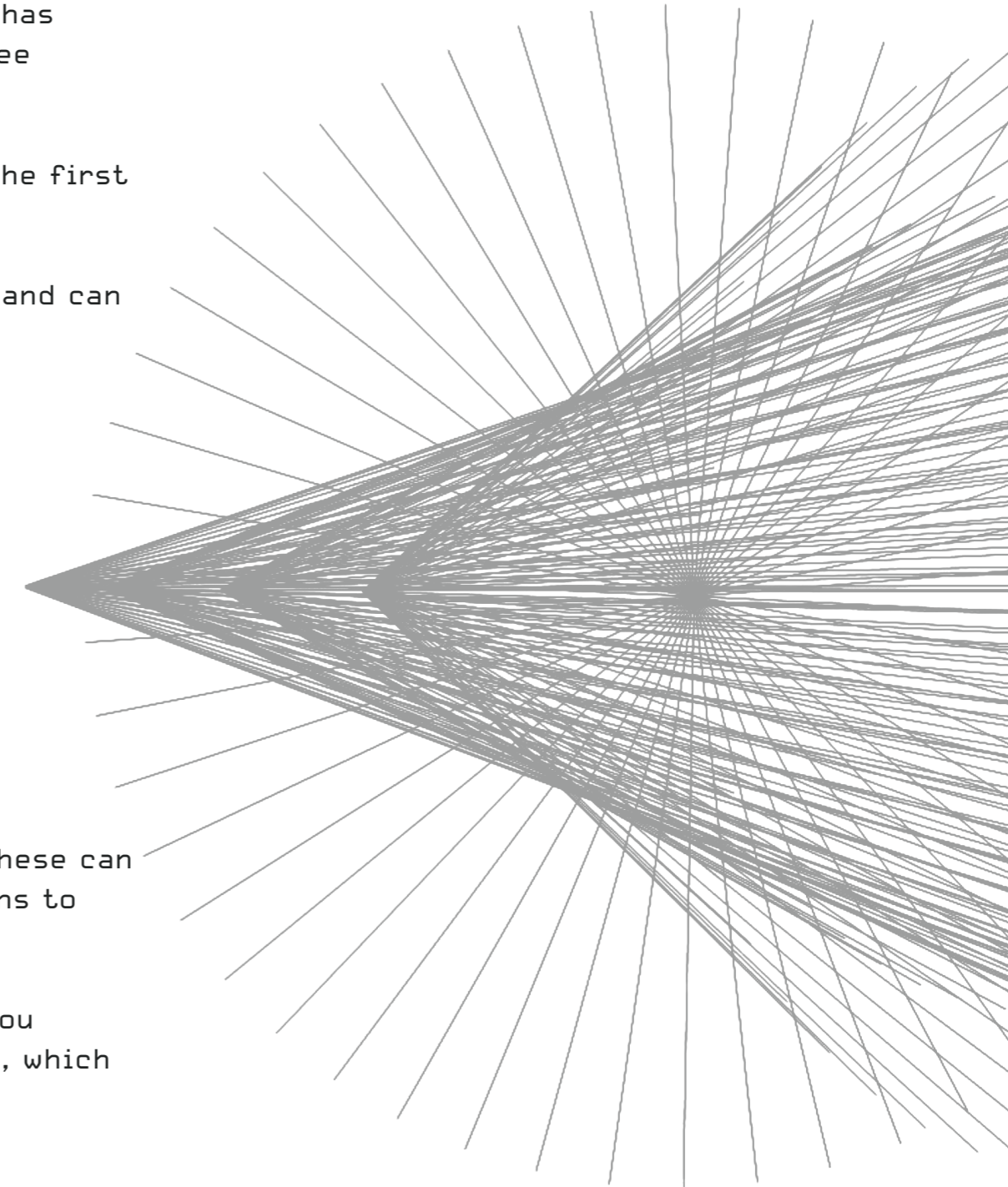
Projection Variation

The artwork being projected and manipulated can be adapted to suit different art styles, that we are open to exploring. Below we have collated a few examples from other artists that we take inspiration from. Their artwork gives an idea of the what could be possible to create.

It is also possible to have different artwork on different days and times throughout the festival, the installation evolving as the festival progresses.
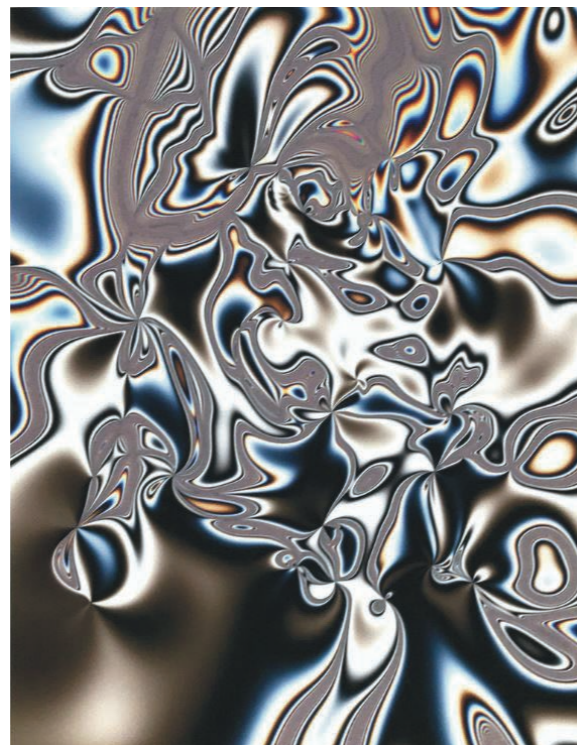
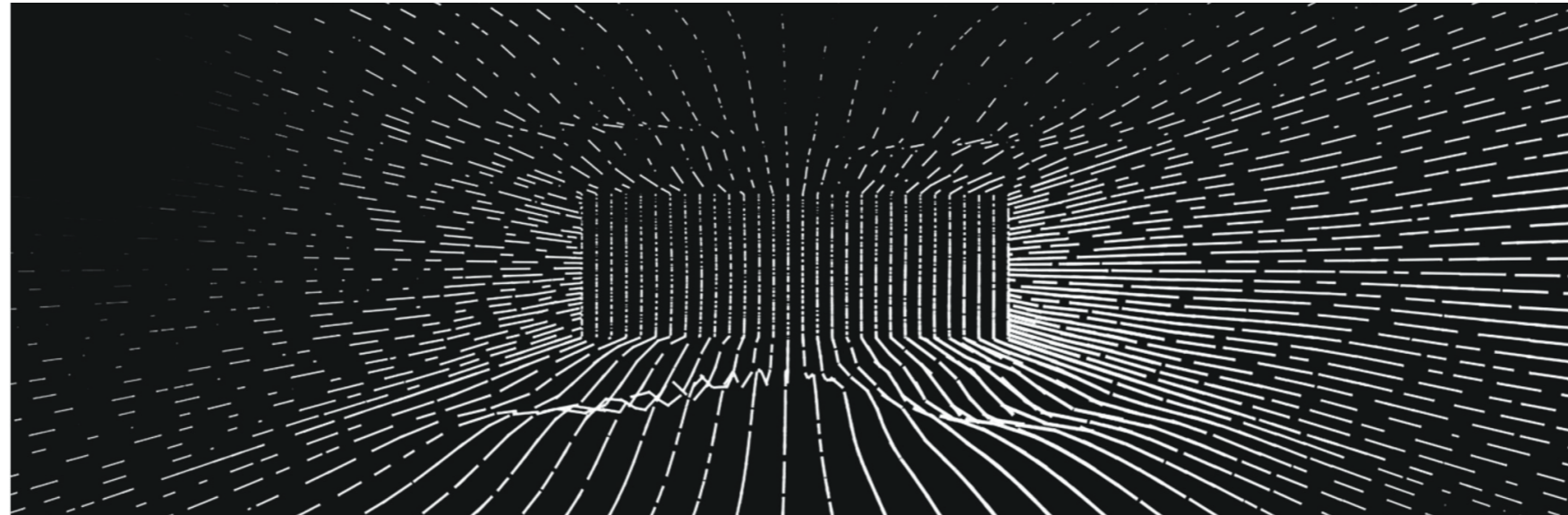Fig 3. Matt DesLauries - N Dimension
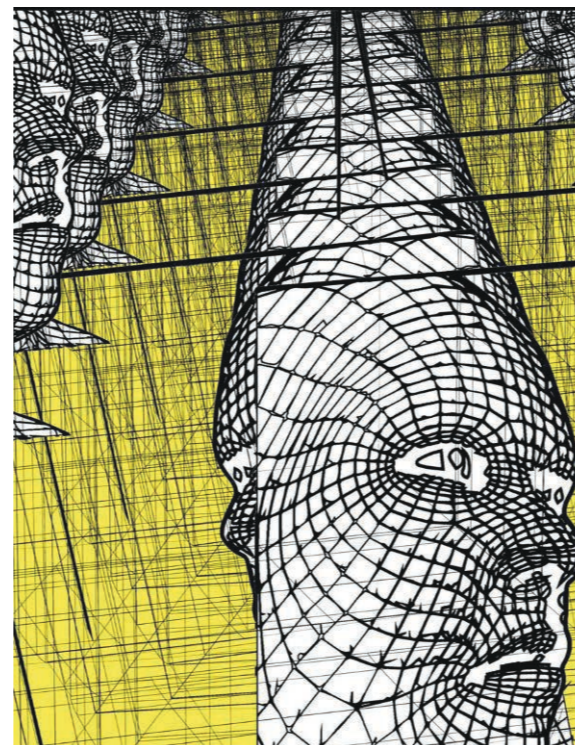
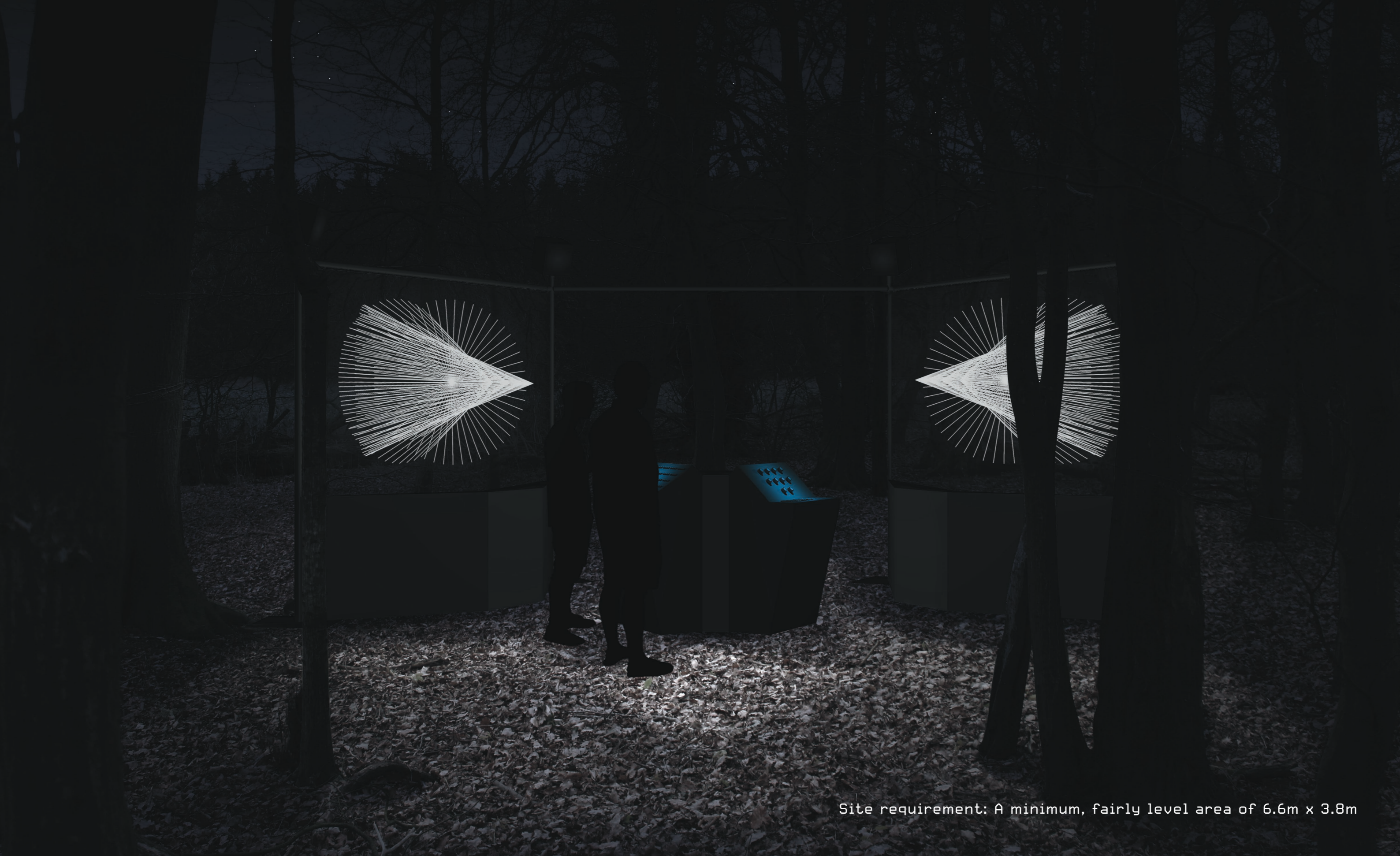

Fig 4. Zach Lieberman - Noise Study #1

Fig 5. Dan Derham - 909

Fig 6. Zach Lieberman - Blob Pack #2

Installation Scalability - Tier 1

Site requirement: A minimum, fairly level area of 4.5m x 3.9m

Installation Scalability - Tier 2

Site requirement: A minimum, fairly level area of 6.6m x 3.8m

Costings

We have been developing The Modulator since November 2018, writing code, developing its design and manufacturing its components. So far we've spent roughly 13 weeks doing this. To complete the final two stations, we expect to need a further 11 weeks of build time (this can be shortened by using CNC and with help from freelancers).

Our artist fee for the research, development and build of this installation is £30,000 based on these timings. On top of this are material and equipment costs of £7,878, bringing the total up to £37,878.

We understand a fee of this size would make us inaccessible for the majority of festivals and events - so have the following in mind.

We are offering hire of the Modulator's use at your festival. This means we aren't selling exclusive rights to it's use and there are a couple of reasons for this:

- We want to give the widest possible audience the opportunity to experience the potential of digital technology using the modulator, by experimenting with and understanding the principles of sound synthesis and visual art generation - benefiting both the audience attending your festival and the festival itself.

- Due to the amount of time and the costs involved in creating the modulator we plan on hiring it to as many suitable festivals as we can to spread the costs as much as possible, reducing the cost of having our installation at your festival significantly.

We are open to discussion around the hire cost of The Modulator, but to make it easier have broken it down into three tiers. The first is the least expensive, smallest, and easiest to build. The third realises the full potential of the Modulator, is larger, requires more equipment and is hence the most expensive. The second tier is a balanced version between the two.

The hire cost of the tiers is as follows: Tier 1 = £2000, Tier 2 = £3500, Tier 3 = £5000.

Construction Materials	Website	No.	Cost	Total
Tank Traps	https://shopmtn.eu/p	6	£83.21	£499.26
Voile CS - 100% Trevira CS Scrim	https://www.showtex	3	£100.00	£300.00
SpiraFix	https://www.spirafix.	24	£10.72	£257.28
Aluminium Poles	https://shopmtn.eu/p	6	£28.28	£169.68
Lycra for Projector	funkifabrics.com	1	£81.54	£81.54
Polycarbonate for Projector	cutmyplastic.co.uk	3	£28.00	£84.00
Keyclamp Fixings	https://www.keyclam	6	£5.14	£30.84
Key Clamp inline swivel brackets	https://www.keyclam	12	£2.18	£26.16
CNC Routing	https://shapecnc.con	1	£172.80	£172.80
Acrylic & CNC Laser Cutting	cutmyplastic.co.uk	1	£111.26	£111.26
M6 30mm Hex Bolts x 50 pack	https://uk.rs-online.c	4	£15.43	£61.72
M6 T Nut 9mm x 10 pack	https://www.screwfix	1	£10.00	£10.00
Wood Sheets	Blanchfords	10	£25.00	£250.00
Internals and battening	Blanchfords	3	£70.00	£210.00
30mm x 4mm Wood Screw	Axmister Tools	3	£2.84	£8.52
15mm x 3mm Screws	Axmister Tools	1	£1.69	£1.69
40mm x 4mm Screws	Axmister Tools	1	£3.40	£3.40
Electrical Items				
Projector	Just projectors	3	£1,200.00	£3,600.00
Volt CX220.1 - 8" 150W 8 Ohm	Direct from Volt loud	4	£140.19	£560.76
Computer	Estimate	1	£700.00	£700.00
Keyboards	https://www.gak.co.u	2	£36.00	£72.00
Knob (MF-A05 (45mm)	https://www.ebay.co	50	£1.99	£99.50
Knob (MF-A03 (27mm)	https://www.ebay.co	2	£2.49	£4.98
Arduino Mega	https://store.arduino.	3	£37.41	£112.23
MUX Sheild II	http://mayhewlabs.cc	1	£19.03	£19.03
LED Strip: TruOpto 5m Addressable	https://www.rapidonl	1	£90.00	£90.00
12mm White Buttons	https://uk.rs-online.c	15	£3.90	£58.50
LED driver: Mean Well APV-12-5	https://uk.rs-online.c	2	£13.76	£27.52
LED driver: Mean Well LPV-60-5	https://uk.rs-online.c	1	£47.77	£47.77
Toggle Switches	Estimate	100	£1.00	£100.00
Wiring	rapidonline.com	3	£6.09	£18.27
Potentiometers 6.3	https://www.mouser.	50	£1.80	£90.00
Amplifier	Estimate	1	£200.00	£200.00
				Total
				£7,878.71

Build Schedule

(Day)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53
Control Station 1 (complete)																																																					
Control Station 2 Body	█	█	█	█																																																	
Control Station 2 Electronics									█	█	█	█	█	█																																							
Control Station 3 Body					█	█	█	█																																													
Control Station 3 Electonics															█	█	█	█	█	█																																	
Central Hub Body																					█	█	█																															
Painting																								█	█																				█	█							
Speaker mount & cable routing																													█	█																							
Speaker Box Construction																										█	█	█																									
Wooden Cladding																															█	█	█	█	█																		
Wooden entrance structures																																				█	█	█	█														
Projector housings																																								█	█	█											
Projector barrier																																											█	█									
Coding																																															█	█	█	█	█	█	█

It will take us roughly 11 working weeks to complete the build phase of the two final stations. This time-line can be accelerated if required with help from freelance work, as well as using more extensive computer aided manufacturing.

If you would like to provide your attendees with a fully immersive, interactive installation that gives them a chance to explore sonic landscapes and parametric artwork together, we would love to hear from you.

You can reach us at: contact@parametrica.co.uk
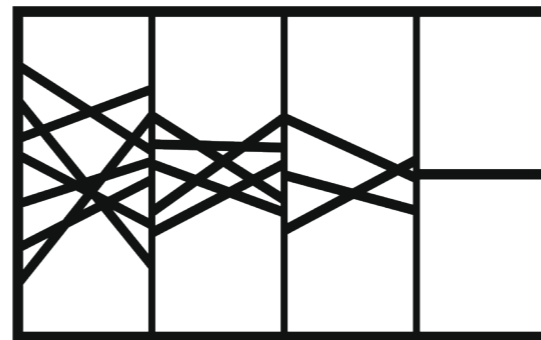
References

Fig 2. https://twitter.com/thierry_coduys/status/51842283
1462645761?fbclid=IwAR3SZaKd3dXDvuj3xnMqgG5qUyrJZK62-
7pyPJqgVOchg5g9c0ViV6mnZCQ
Fig 3. https://www.behance.net/gallery/66922959/N-Dimension
Fig 4. https://www.instagram.com/p/BsvpWGYh4Sg/
Fig 5. https://dderhamideas.co.uk/909
Fig 6. https://www.instagram.com/p/BnDsrjqgYEZ/