

ALL CODE



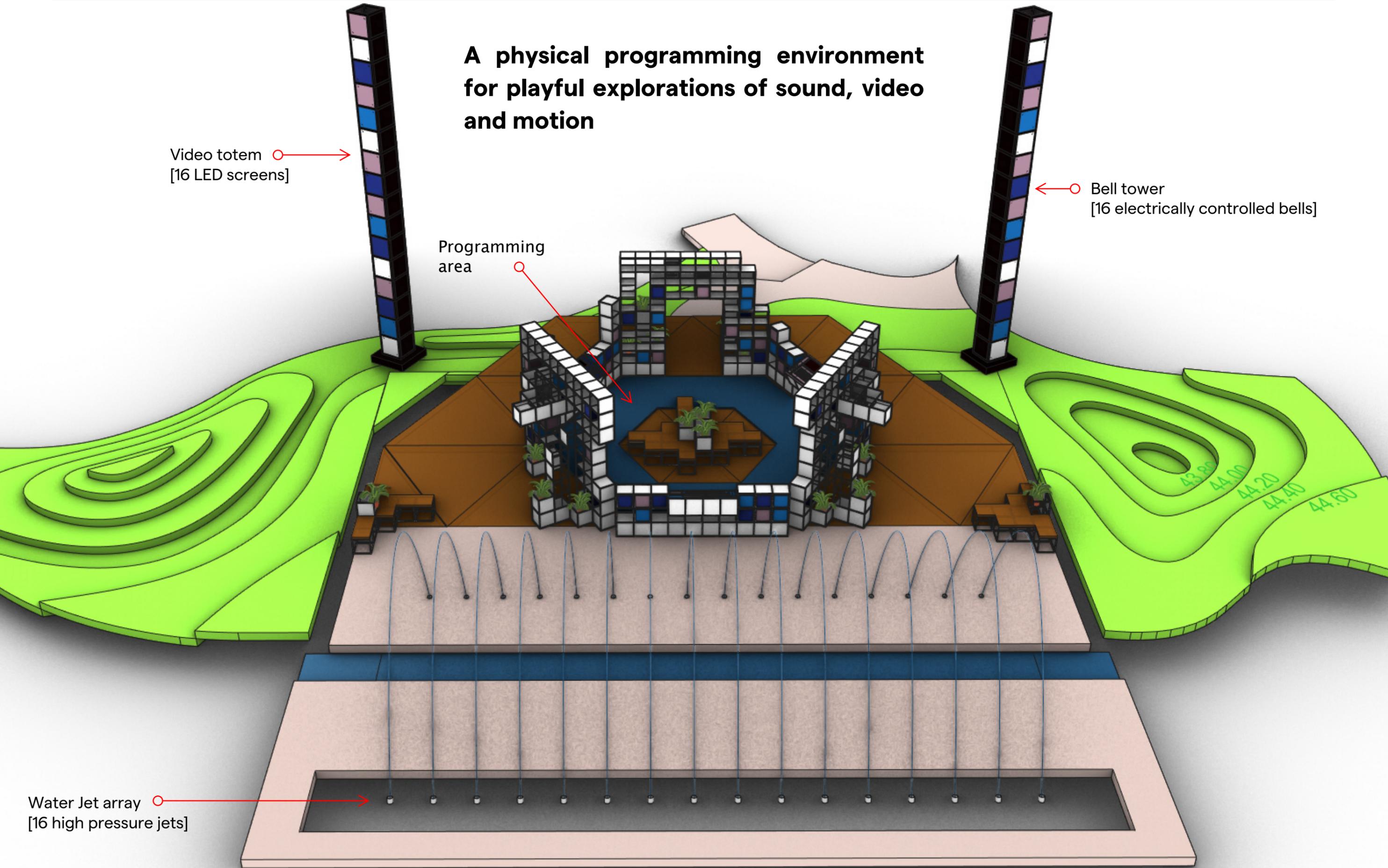
**A physical programming environment
for playful explorations of sound, video
and motion**

Video totem [16 LED screens]

Bell tower [16 electrically controlled bells]

Programming area

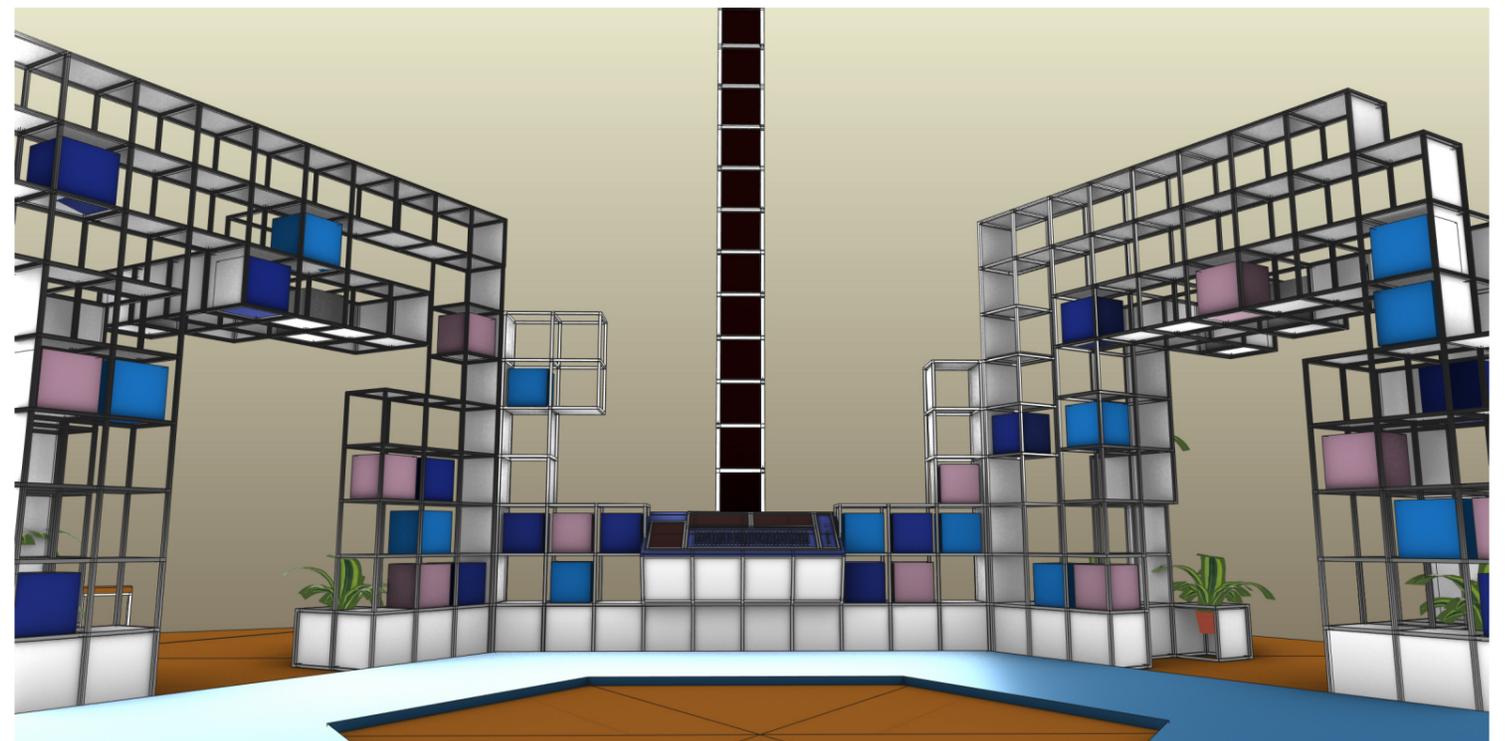
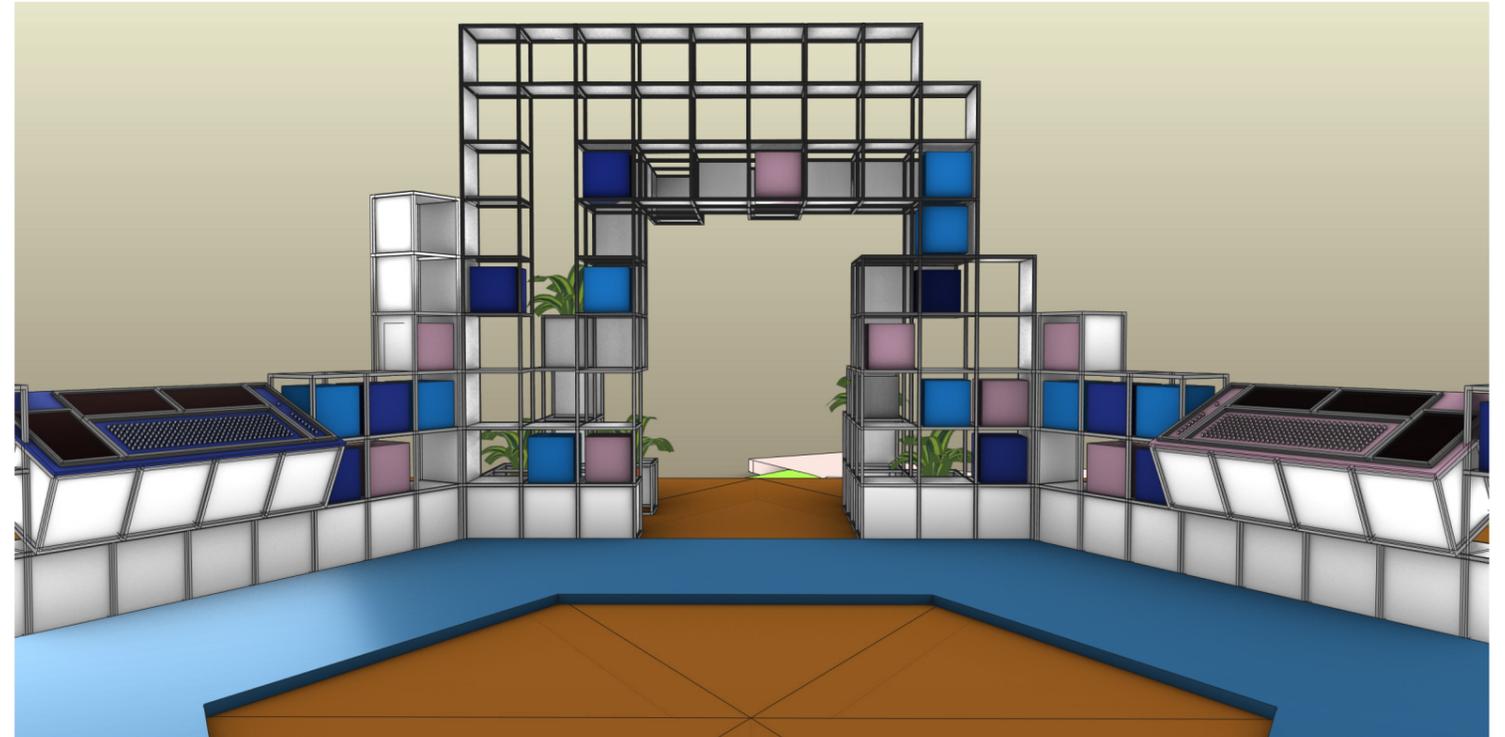
Water Jet array [16 high pressure jets]



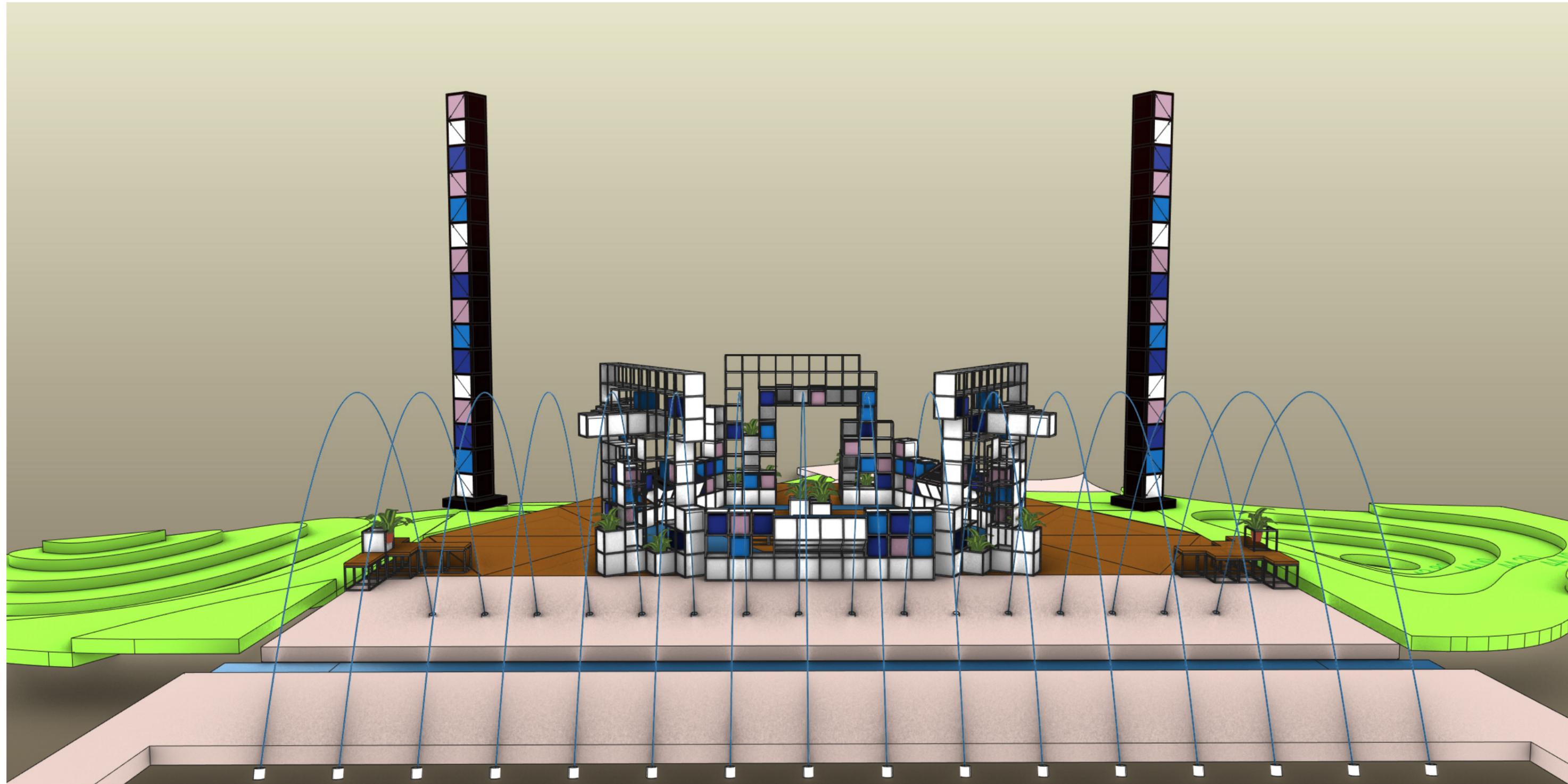
The ALLCODE gallery at the Clore Garden of Science is a physical programming environment for creative coding. It introduces basic concepts in computer programming and signal processing to a general audience, with an emphasis on younger crowds. The installation features a set of physical components that can be freely connected together and adjusted in order to control various devices in and around the compound. These include an array of high pressure water jets, a large LCD display and a set of digital audio devices.

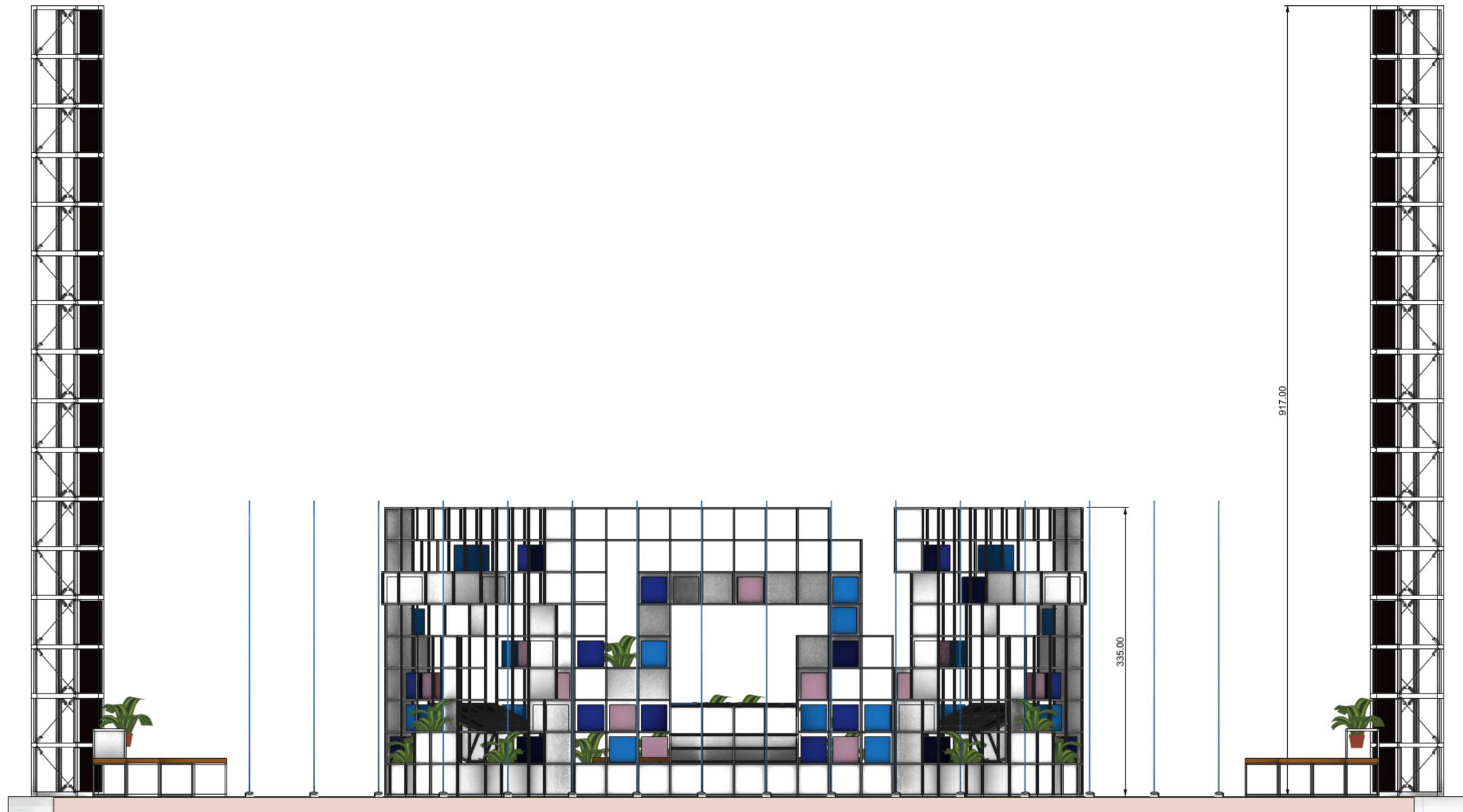
The installation features a custom programming paradigm that has been developed specifically towards accommodating its exceptionally diverse target audience.

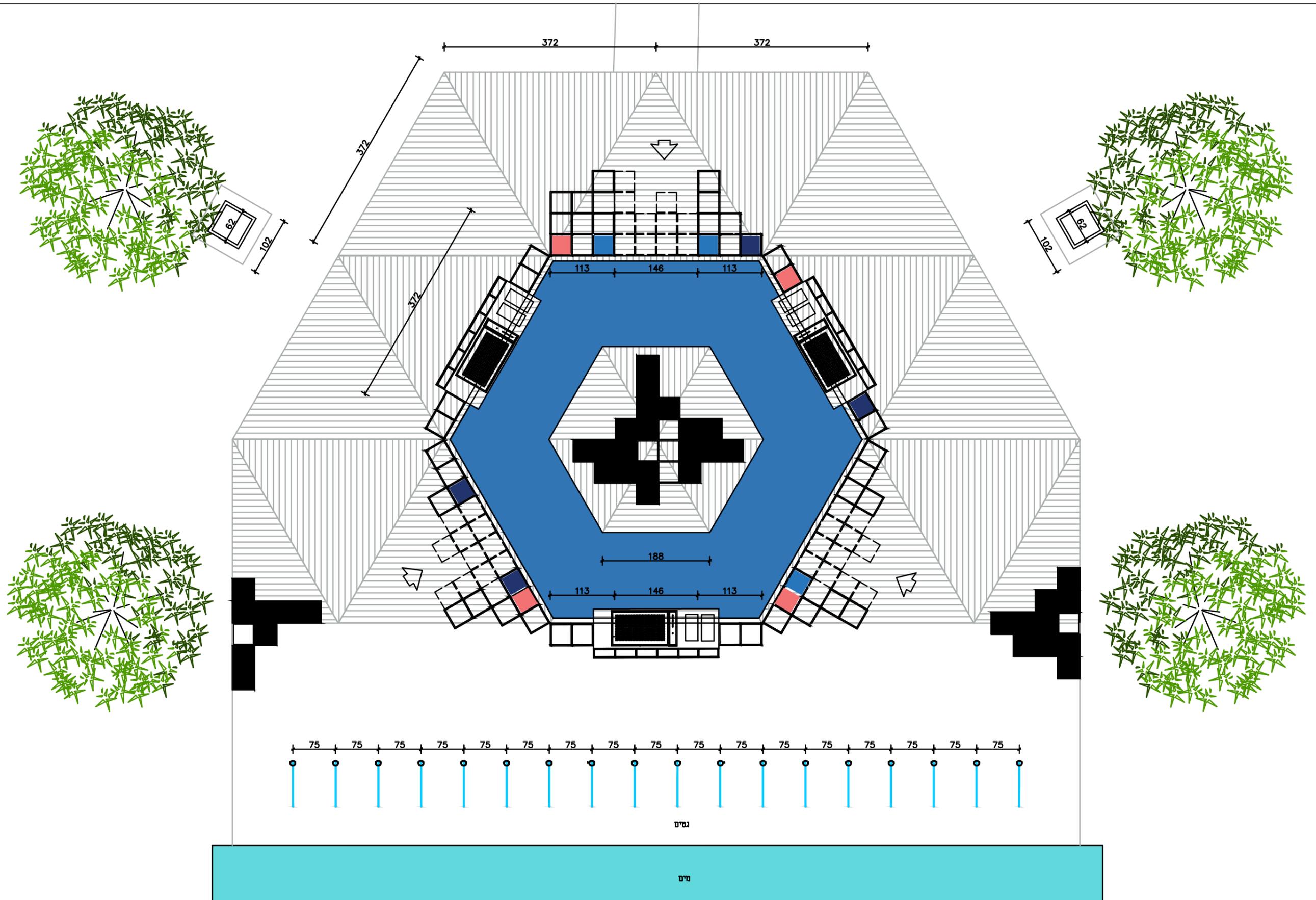
By converting the act of computer programming into a physical experience, this programming environment empowers playfulness, improvisation, creativity and real-time collaboration, properties that are notoriously difficult to achieve through conventional screen based programming environments.

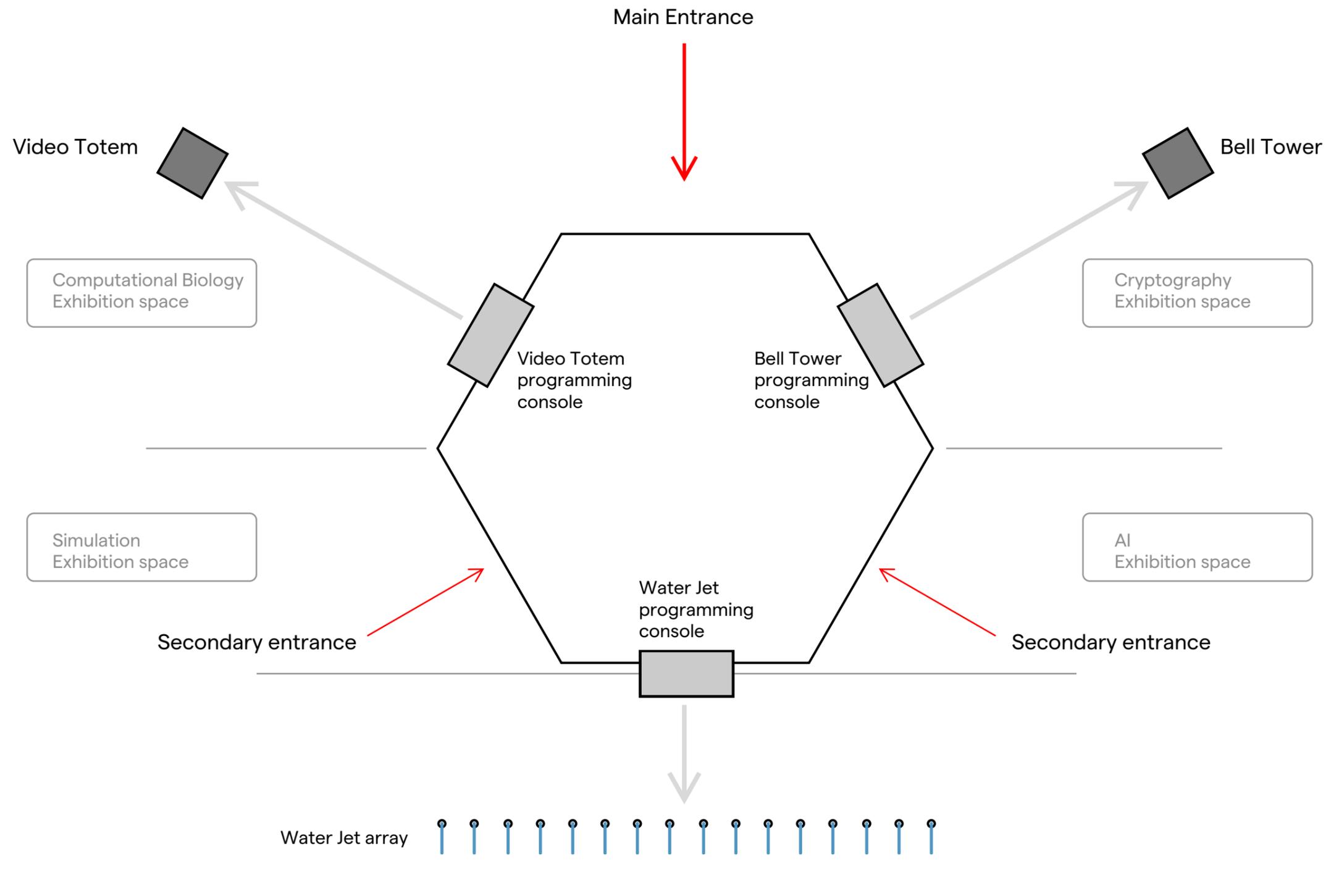


ARCHITECTURAL DESIGN



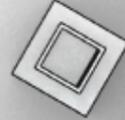






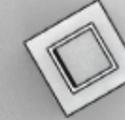
Video totem

16 Outdoor LED screens



Bell Tower

16 Electronically controlled bells
Arranged from low to high notes.



Water Jet array

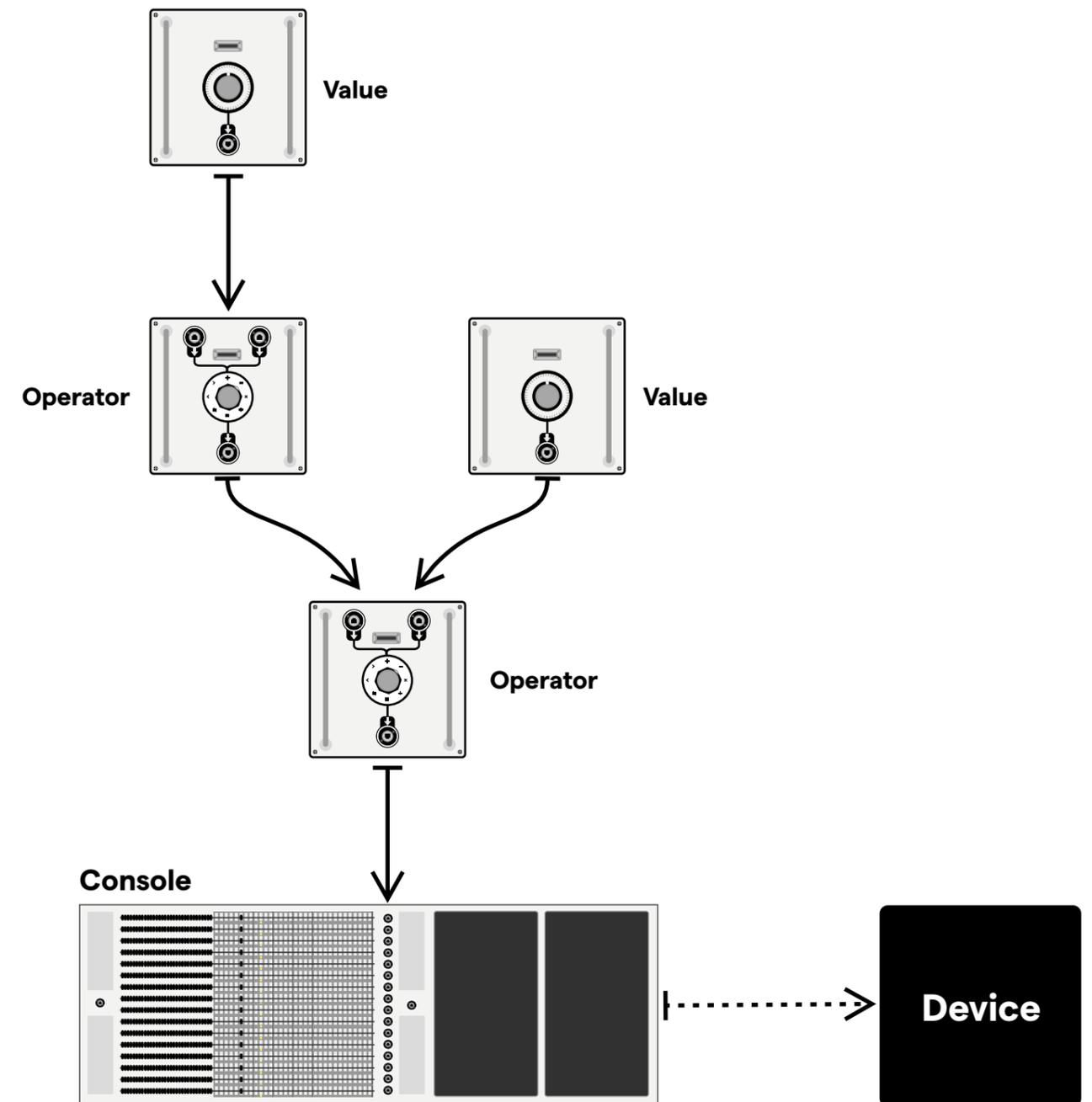
16 high pressure water jets

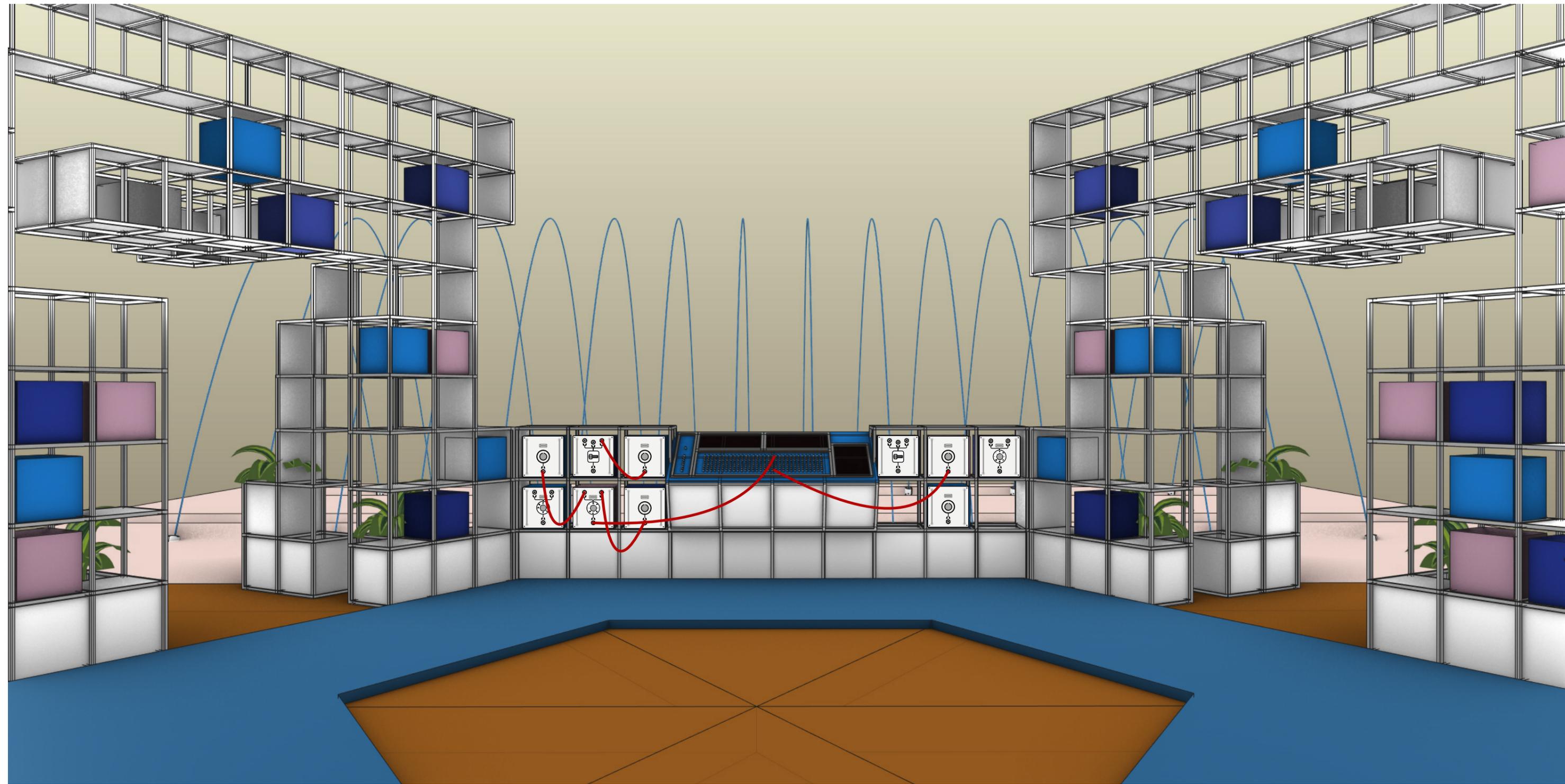


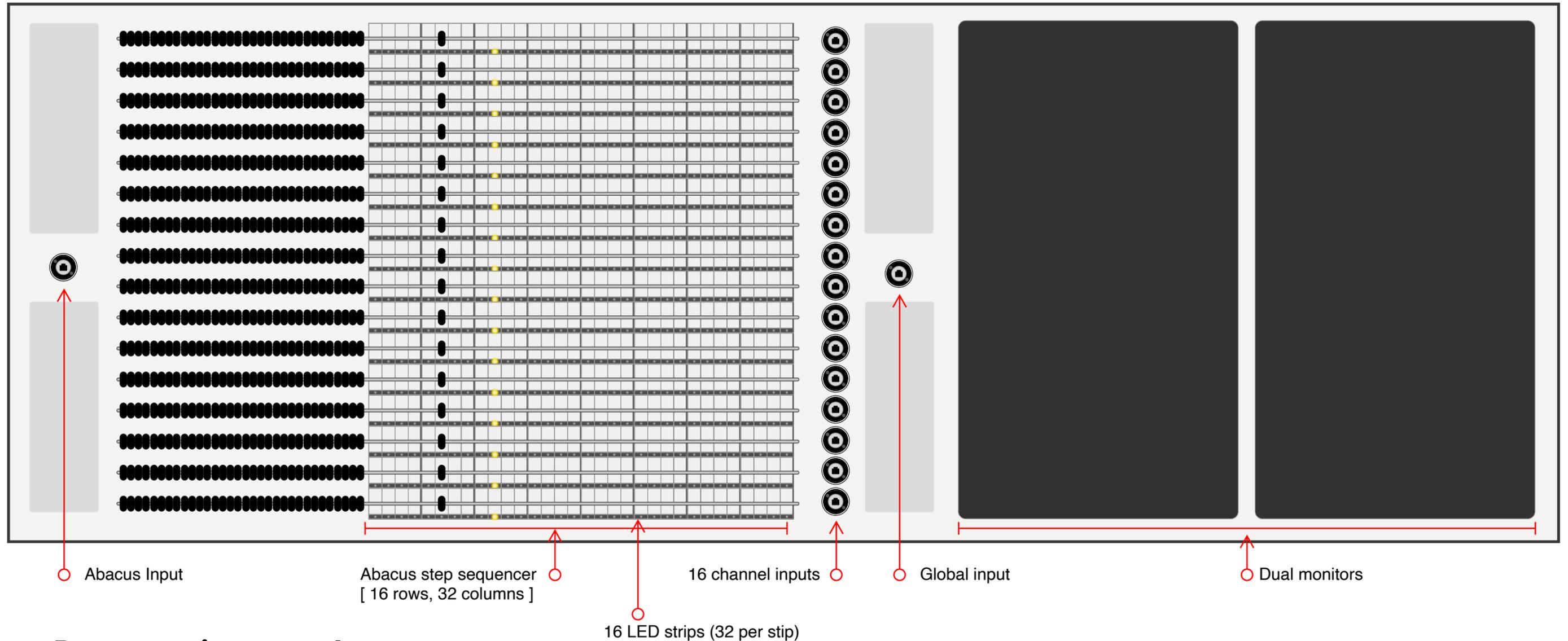
PHYSICAL CONTROLLERS

Programming in the compound follows a data-flow programming paradigm, where the algorithm is structured as a directed graph in which data continuously flows towards the root, producing the program's output. The computer program is thus articulated as a sequence of elements (called nodes) that are chained together. There are three main types of nodes:

- **Value nodes** are elements that translate a signal from a physical controller (ie: a knob or a sensor) and output a numerical value
- **Operator nodes** are elements that receive a value (from either input nodes or from other operator nodes), perform a calculation using it and output the result
- **Consoles** are the connection point between a program and an output device. There are 3 consoles in total for controlling each of the 3 primary output devices.
- **Output Devices** are physical elements that that can be programmed or controlled directly via the console. The compound consists of three primary output devices (detailed in the next page)





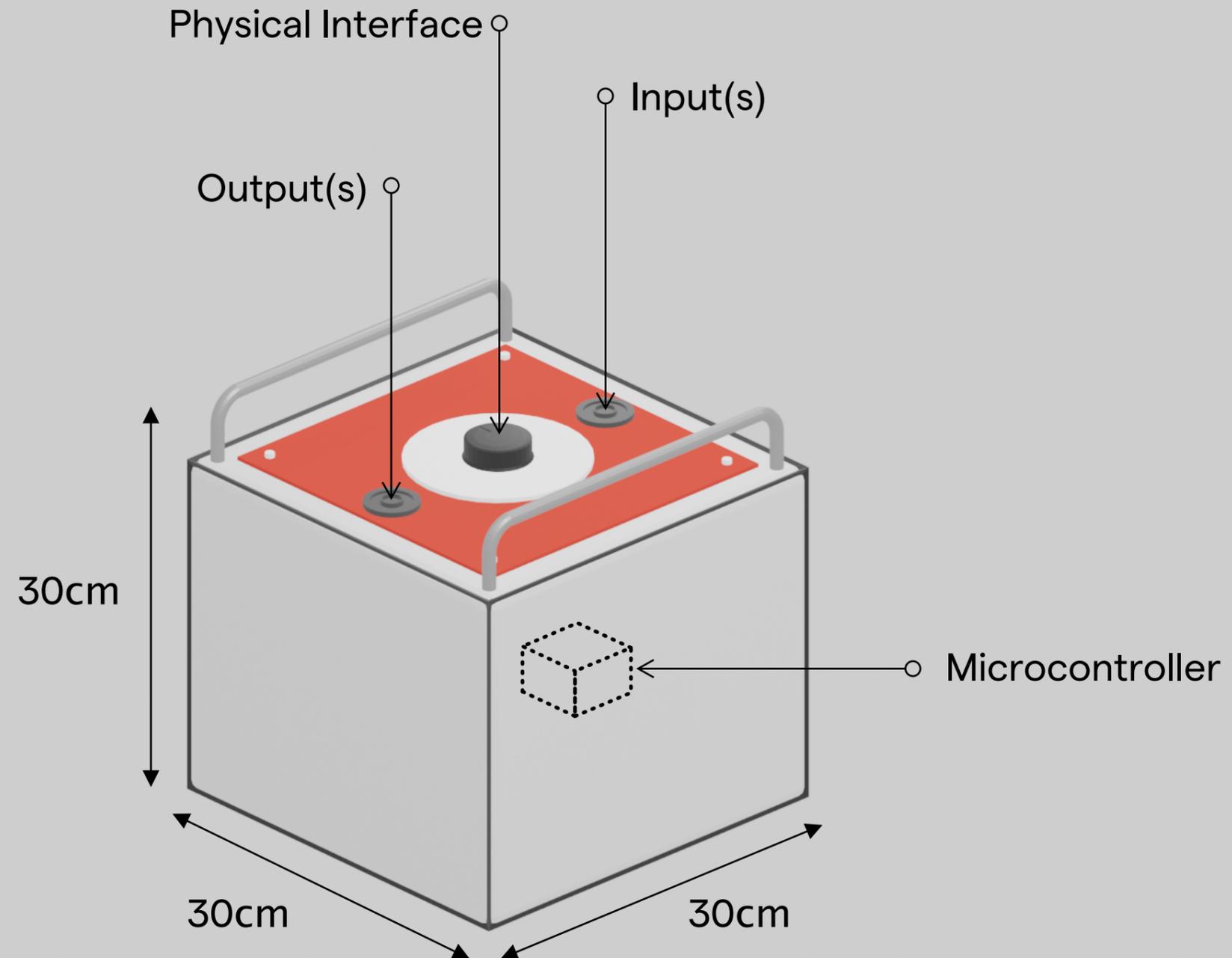


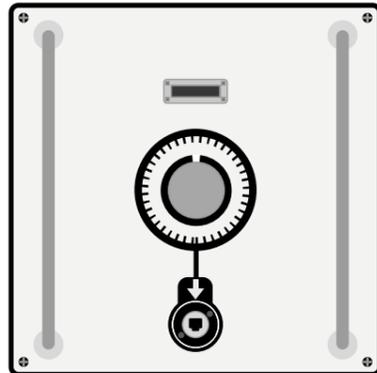
Programming consoles

The compound features three terminals each controlling the three main output devices (LCD totem, bell totem and water jet array)

All three terminals are identical and feature the following components:

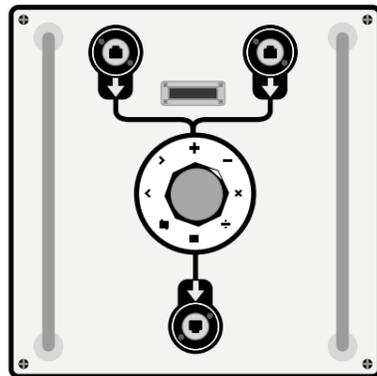
- An **abacus** step sequencer with 16 rows and 32 columns (set positions for beads).
- **Dual LCD displays** for real-time analysis of both the program and its output values
- A set of **inlets** and custom controls for specific devices functions





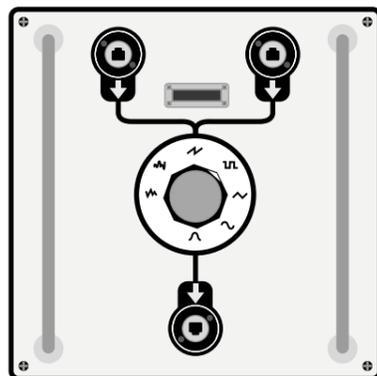
Value

- microcontroller
- rotary encoder
- LCD screen



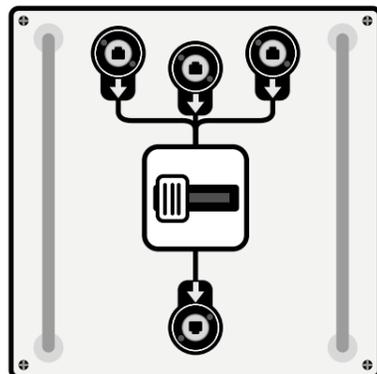
Operator

- microcontroller
- 8 pole mode selector



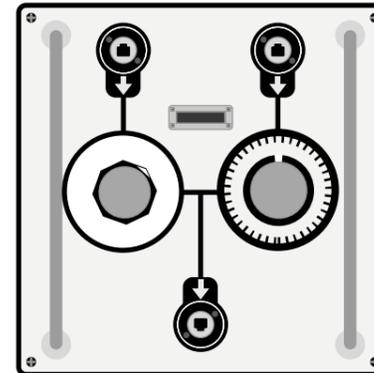
Wave

- microcontroller
- 8 pole mode selector



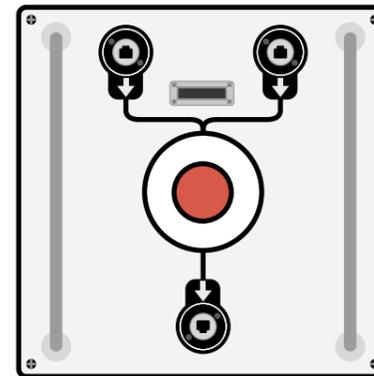
Switch

- microcontroller
- 2 state switch



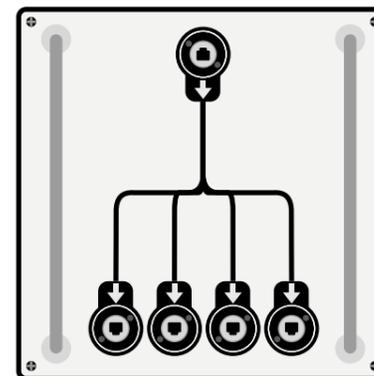
Effect

- microcontroller
- rotary encoder
- 8 pole mode selector



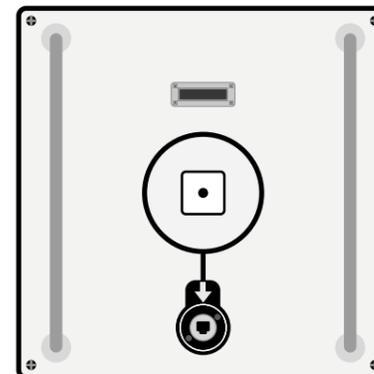
Memory

- microcontroller
- LCD screen
- large push button



Split

- microcontroller



Sensor

- microcontroller
- LCD screen
- microphone
- distance sensor
- accelerometer
- mode selector



ALL CODE