

# MoSCoW chart

## M

### Must-have

#### 1.Arduino Bioelectrical Sonification Device [Signal Encoding Core]

- A custom-built device that captures the plant's real-time bioelectrical signals and converts them into MIDI Note messages. These notes are visualized through the Arduino Serial Monitor, forming the foundational data stream for the entire installation.

#### 2. A Real Plant

- As this project will collect the plant bioelectrical signal, which must have a real plant to reflect its inner signal state

#### 3. Python Sound Engine

- Receives MIDI Note messages and transforms them into audio waveforms using a library such as FluidSynth. This module gives the plant an audible voice through synthesized sound.

#### 4. Simplified 3D form of Virtual Plant Model

- A digital representation of the plant that serves as the visual counterpart to the bio-sonic data. .

#### 5.TouchDesigner Audiovisual Output System

- Combines the sound and MIDI data into a generative audiovisual output. Particle behaviors, colors, and motion respond in real time to the plant's signal-driven sound, completing the immersive experience.

## S

### Should-have

#### High-Fidelity 3D Plant Model

1. To enhance visual engagement and bring the plant's identity closer to its real-world form, a more refined version of the 3D model should have implemented.

- Custom textures based on the actual plant
- Translucent materials to simulate organic light behavior
- Subtle shader-based movement to evoke a sense of "living presence"
- Color gradients mapped to real plant pigmentation

2. A custom 3D plant model can be designed to reveal visual representations of the plant's internal structures, such as stylised cells, vascular systems. These internal elements can be externalised onto the surface or semi-exposed, acting as dynamic visual metaphors for the plant's invisible bioelectrical activity.

- Animated inner membranes, cells, or energy pathways
- A hybrid of botanical accuracy and artistic abstraction

While the installation can function without it, it deepens the interpretive layer and supports the conceptual goal of giving plants a perceivable agency.

## Co

### Could-have

#### 1.Real Evening Primrose as the Living Interface

- The digital 3D model I create for my project is based on the form of an Evening Primrose. which could have a real Evening Primrose plant (natural blooming season between June and August) as the source of bioelectrical signals can strengthen the conceptual and visual cohesion between the physical and virtual layers of the project.

#### 2.Spatial Depth and Environmental Design in TouchDesigner

My project could have a spatial presence within the audiovisual system in TouchDesigner

- Layered 3D environments
- Soft bloom around the 3D plant model, simulating energy emission

#### 3.A custom-designed outer shell

To improve the visual coherence and exhibition quality of the installation, a custom-designed outer shell or container could have for both the Arduino hardware and the plant itself.

- Hide exposed wires, breadboards, and circuitry for a cleaner aesthetic
- Use natural or translucent materials (e.g., wood, acrylic, bioplastic) to echo the organic-digital theme
- Enhance safety and durability for public exhibition contexts

## W

### Won't-have

1.Physical Interaction: The audience won't physically interact with the plant or the installation. There are no touch-based sensors or manual triggers included.

2.Environmental Simulation: an installation that is able to simulate environmental changes such as sunlight variation, temperature shifts, or humanity won't be included. Although this could generate interesting variations in plant bioelectrical signal response, it requires additional sensing, programming, and environmental control systems beyond the current scope.

Multi-plant installation: I postponed the development of a multi-plant and dynamic plant visualisation, which could enrich the ecological narrative in my project but would require significantly more time for 3D modelling and complexity of hardware systems.