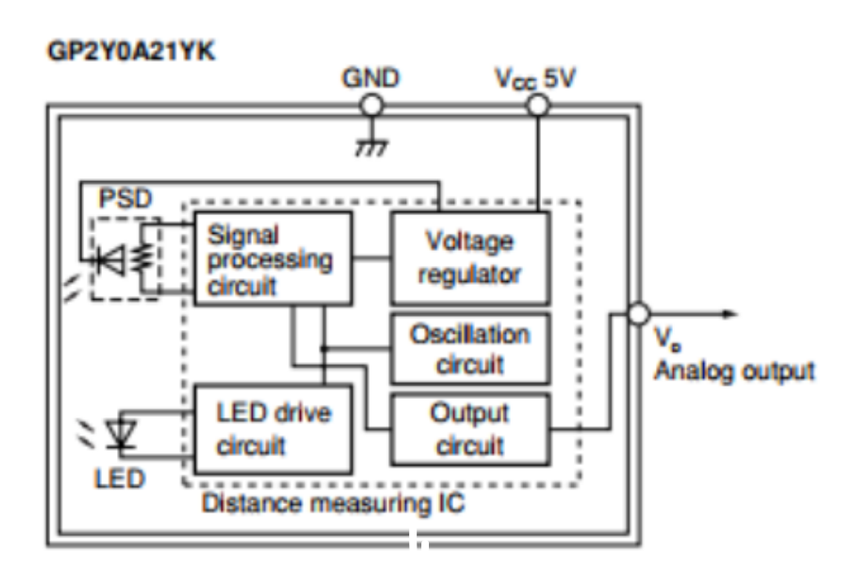
Timothy Thomasson
Owen Coolige
Jack Harrison
Tangible Media
CART 360

SENSOR RESEARCH

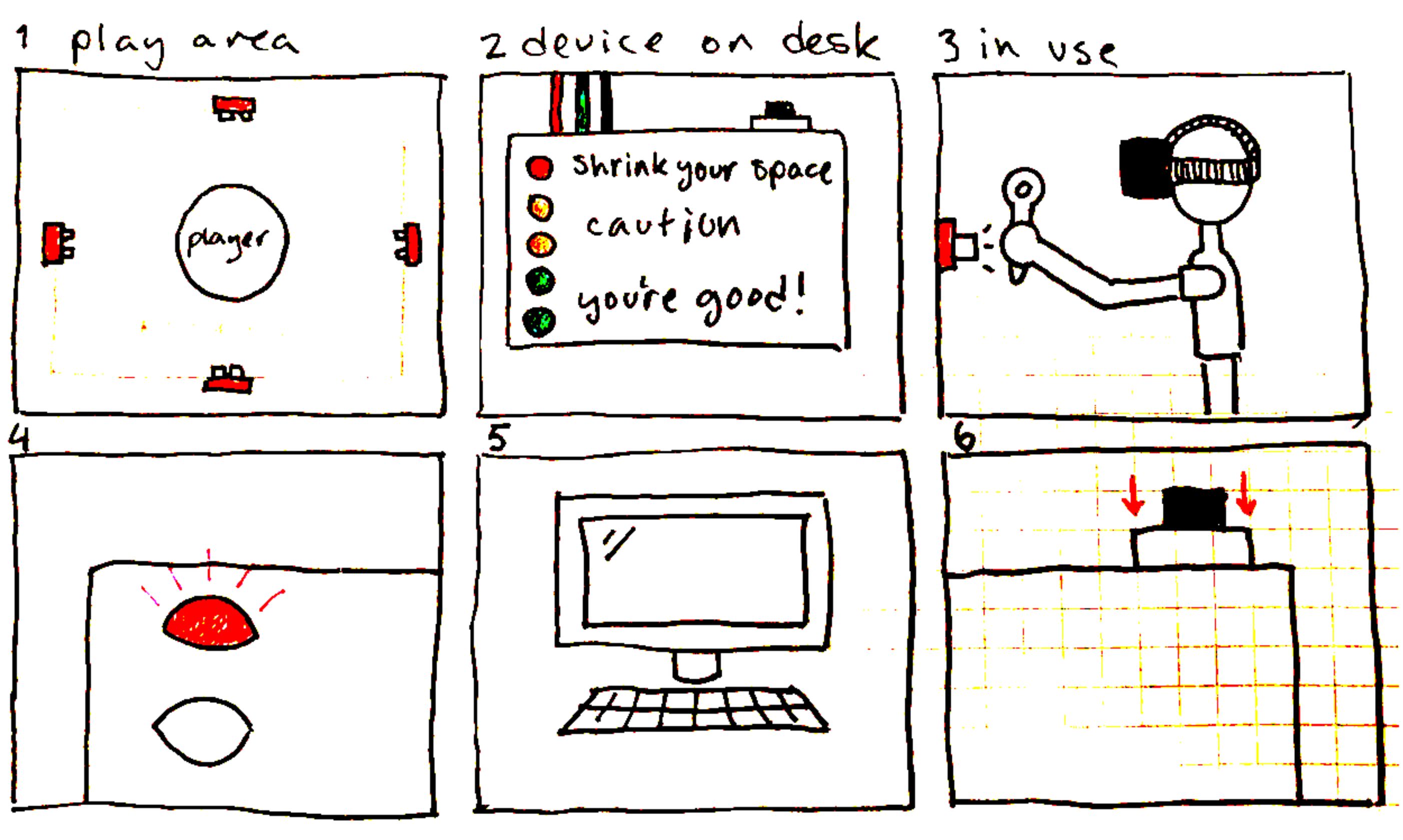
PROXIMITY SENSOR

Range: 10-80cm
Analog output that varies from 3.1V (10cm) to 0.4V (80cm)
Typical Current: 30mA
Dimensions: 13.5 x 37 x 13 mm

Fig.1 Internal Block Diagram



My interaction scenario proposal is a device that accompanies a current gen, computer run Virtual Reality head mounted display. A common issue I have encountered using these peripherals is the constant worry that someone may hit a wall with the expensive hardware. You can set the Chaperone grid (system that allows you to see real walls in VR) to be further away from the wall but this sacrifices space. Therefore I have come up with idea of additional, optional infrared sensors that are placed on each side of your play area, either permanently or temporarily, that will provide you with an indication on how close a player is to the real wall. This would take stress off of the device's owner allowing them to simply watch out for a visual or audible indication that one is too close to the wall. The player could then readjust the playspace to an optimal position after a few trials. Following is a storyboard describing the device in further detail.

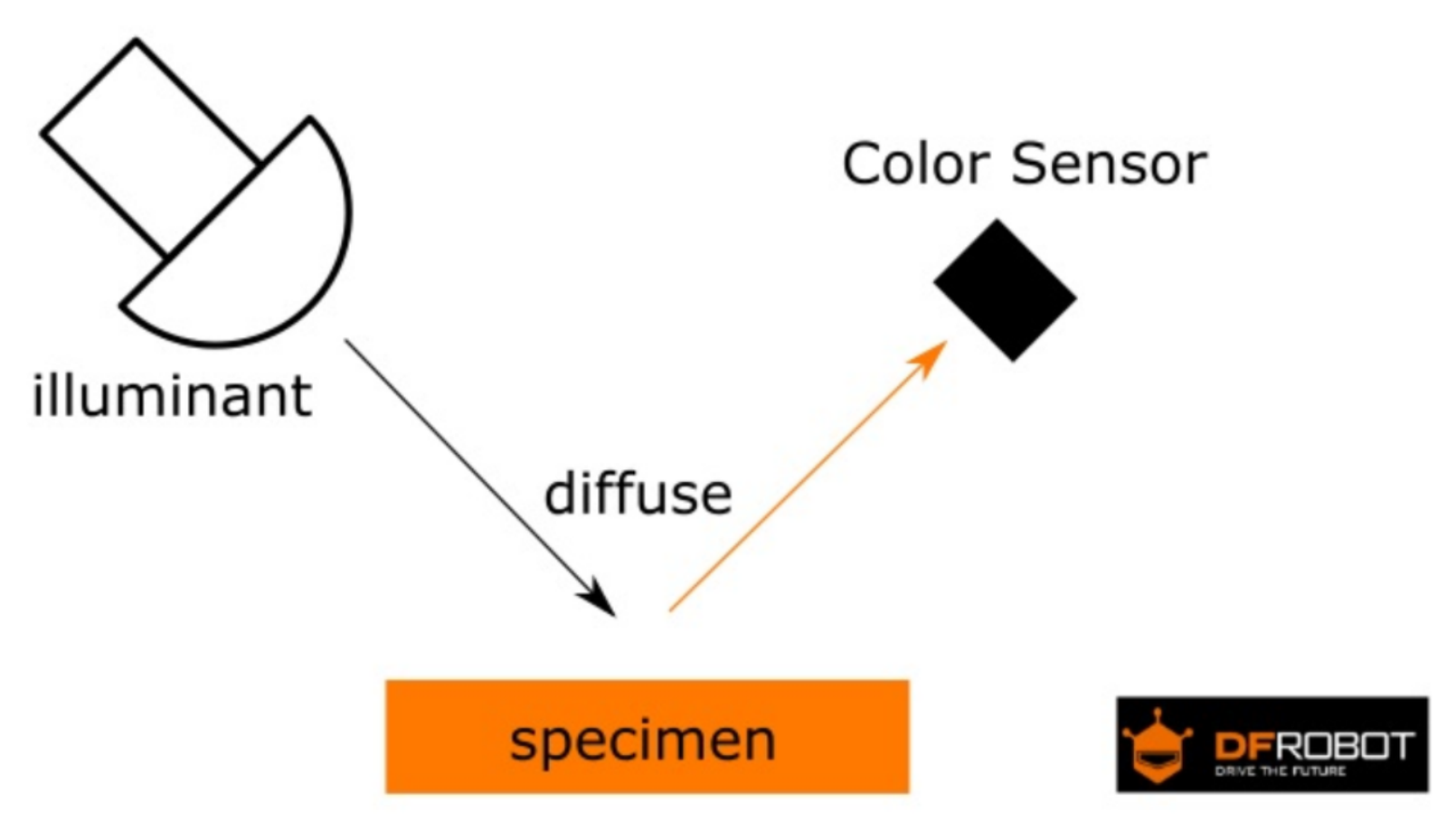


1 .Player stands in center of play area, 4 sensors (red) are placed on each wall.
2. Wires from sensors lead to desk where a small box indicates how 'safe' the hardware is. This is indicated via 5 LEDs
3. LEDs light up based on player's distance to sensors, if they reach a certain distance, next level of LEDs is activated
4. Showing LED indication up close
5. Adjustment made on the computer by player or observer.
6. Once change is made button is pushed to reset the LEDs/device

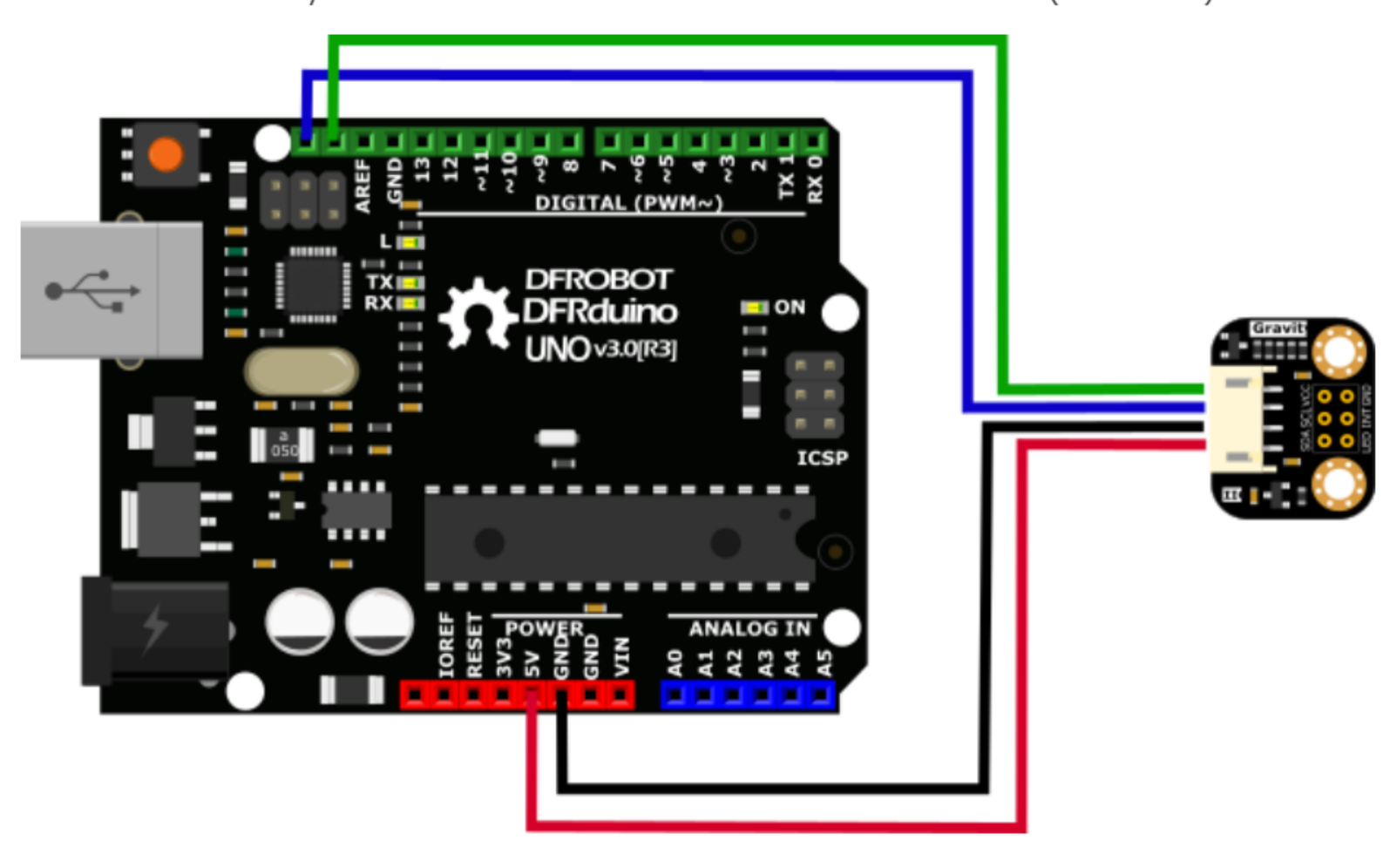
RGB Color Sensor

SEN0212 TCS34725 RGB Color Sensor For Arduino

"After tens of millions of years of evolution, chameleons have formed a biological instinct where they can change the color of their skin to match their environment. This technique has enabled them to avoid detection from predators." (ABRA Electronics)

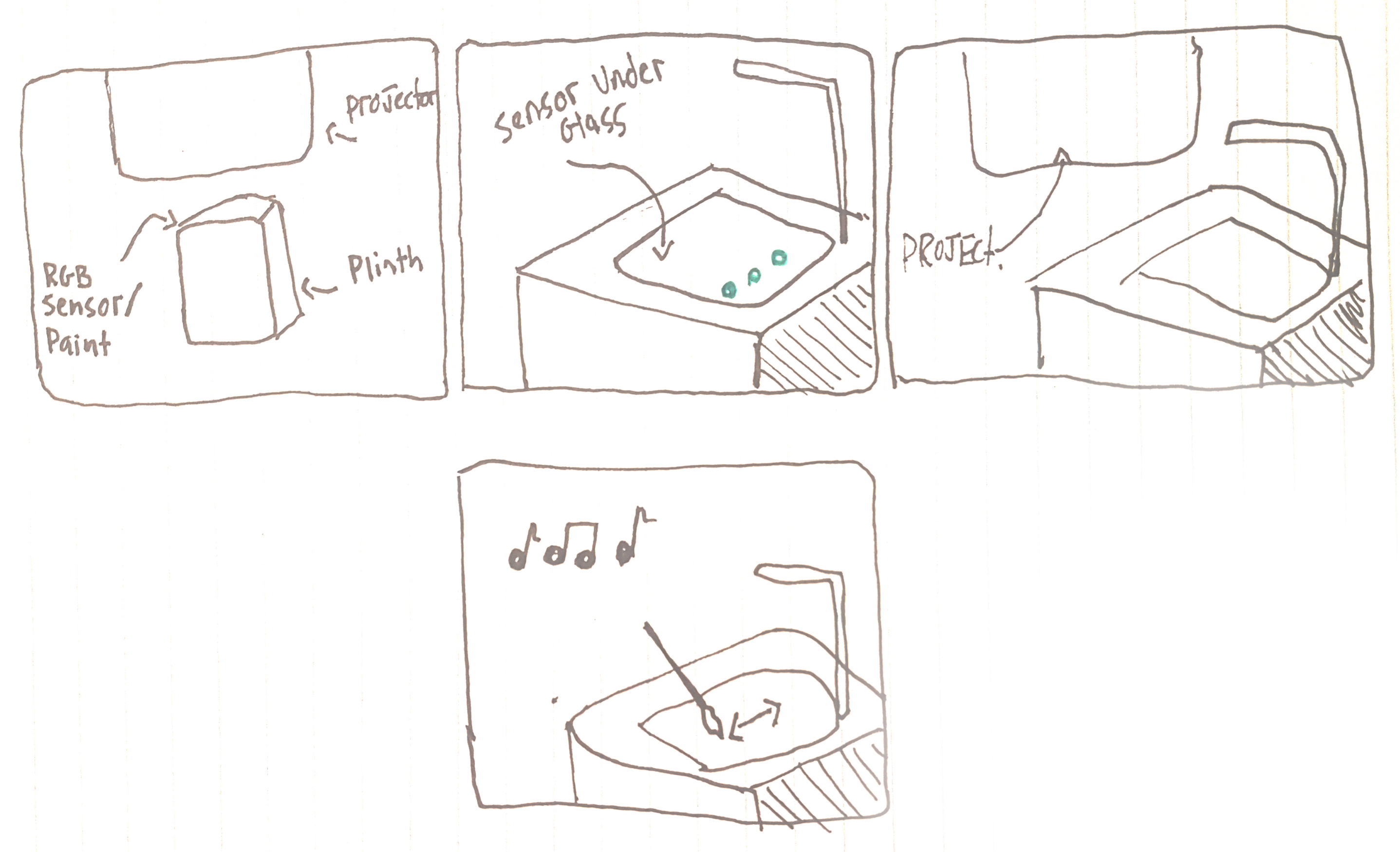


The module works via your Arduino's I2C bus and includes PH2.0-4P and XH2.54 (breadboard) interfaces to meet a range of user scenarios.



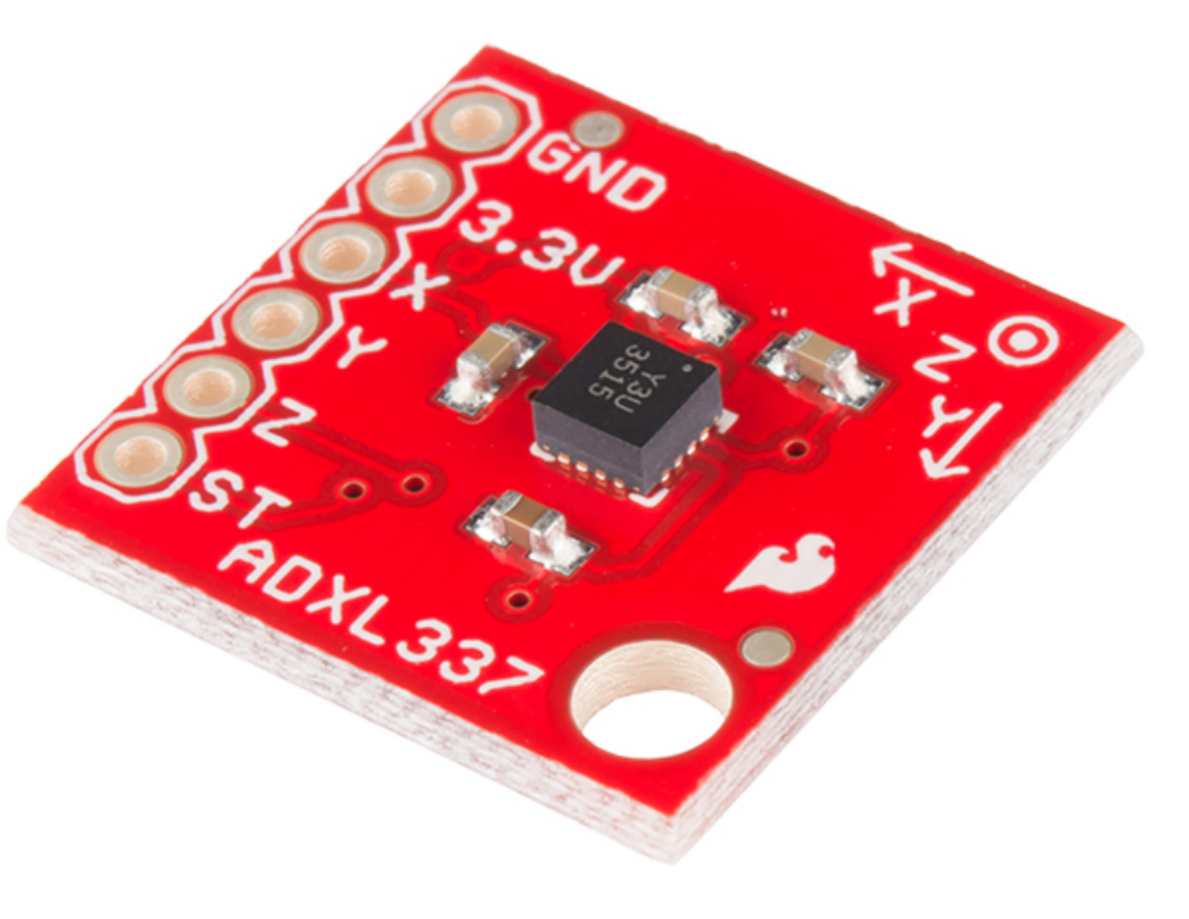
SPECIFICATIONS
Operating Voltage: 3.3-5V
Operating Current: 65 uA
Detection Range: 3 - 10 mm
The Clock Frequency: 0 - 400 KHZ
Interface: I2C
Temperature Range: -30   - + 70
Dimensions: 18.5 x 23 mm/ 0.73 x 0.9"
Weight: 12g

My idea to implement this RGB sensor involves interpreting colour input as an audio output. I would create an installation with a plinth with a glass top. Underneath would be the sensor and a computer. There would be paints on the top of the plinth where users could mix different colors. The colour data ([R,G,B]) would then be relayed into Arduino then fed into Processing via serial to affect the quality of sound being outputted by the computer. Different visual effects would also be displayed on a projector based on what colour is being mixed.

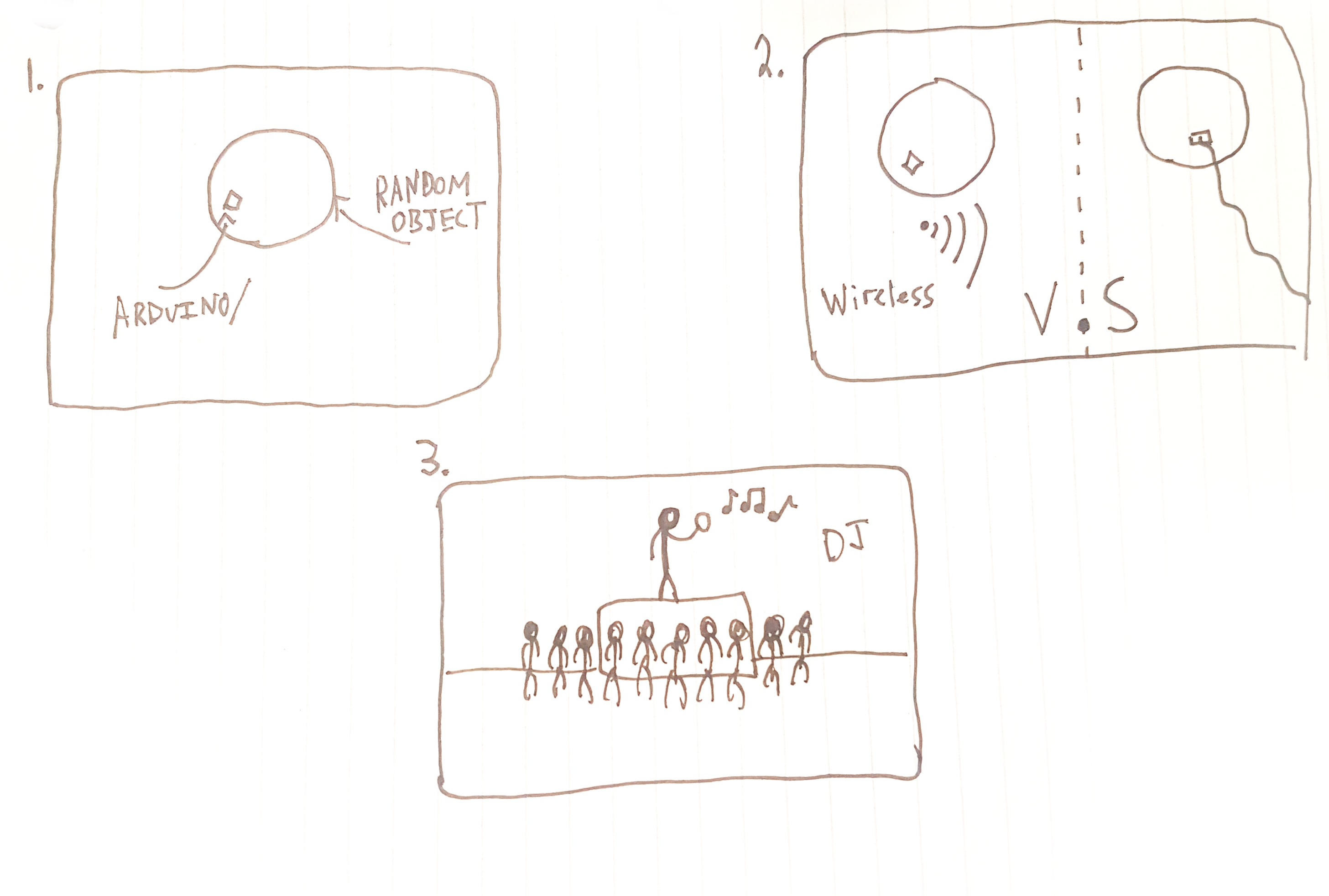


ACCELEROMETER

Triple Axis Accelerometer Breakout - ADXL337



SPECIFICATIONS
Operating Voltage: 1.8V - 3.6V
Typical Current: 300 µA
Range: ±3g
3-axis sensing
Bandwidth adjustment with a single capacitor per axis
1x Mounting Hole



The idea behind my use of the accelerometer is to make an instrument from a random object. I would read the inputs of X,Y, and Z to manipulate different frequencies and create a performative instrument. The electronic sounds would react to the motions of who ever uses the object. Conceptually, this would transform an otherwise ordinary object into a strange instrument. The accelerometer would relay data with serial in max msp and there the audio output would get adjusted by being fed serial data.