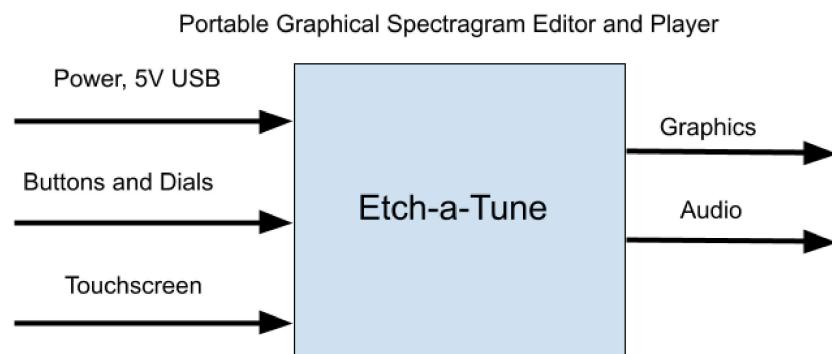


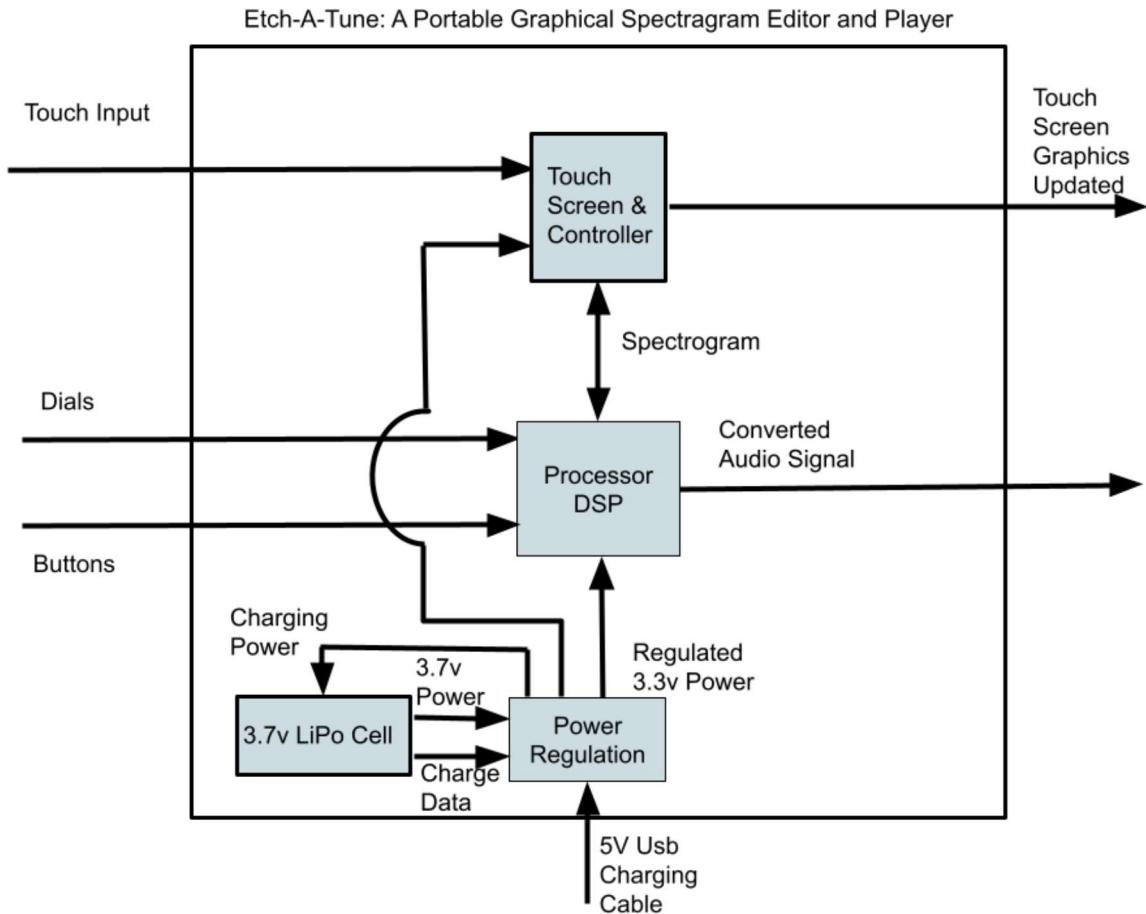
Team 7: Etch-A-Tune Functional Decomposition

Level 0:

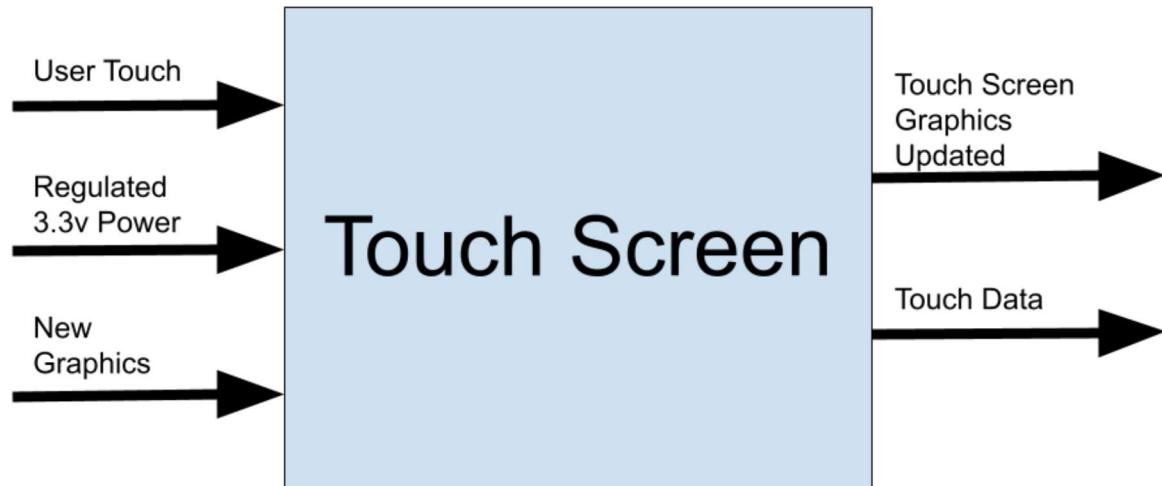


Level 0	
Module	- Etch-a-Tune
Inputs	- 5V USB charging cable
	- Touch screen touch data
	- Control Dial
	- Mode Buttons
Outputs	- Touch screen graphics
	- Converted audio signal
Functionality	Allows the user to draw an image on the touch screen, and updates the graphics in real time. Once the user changes modes using a button, the audio of what they drew will be played, and can be modified using the control dials

Level 1:



Touch Screen



Level 1	
Module	- Touch Screen & Controller
Input	- Regulated 3.3V Power
	- Touch Data
	- New Graphics Data
Outputs	- Updated Graphics
	- Completed Drawing Data
Function	Primary user interface that allows the user to draw a waveform on the touchscreen. The graphics are updated as the user touches it. When the drawing is complete the screen outputs the finished drawing.

Microcontroller



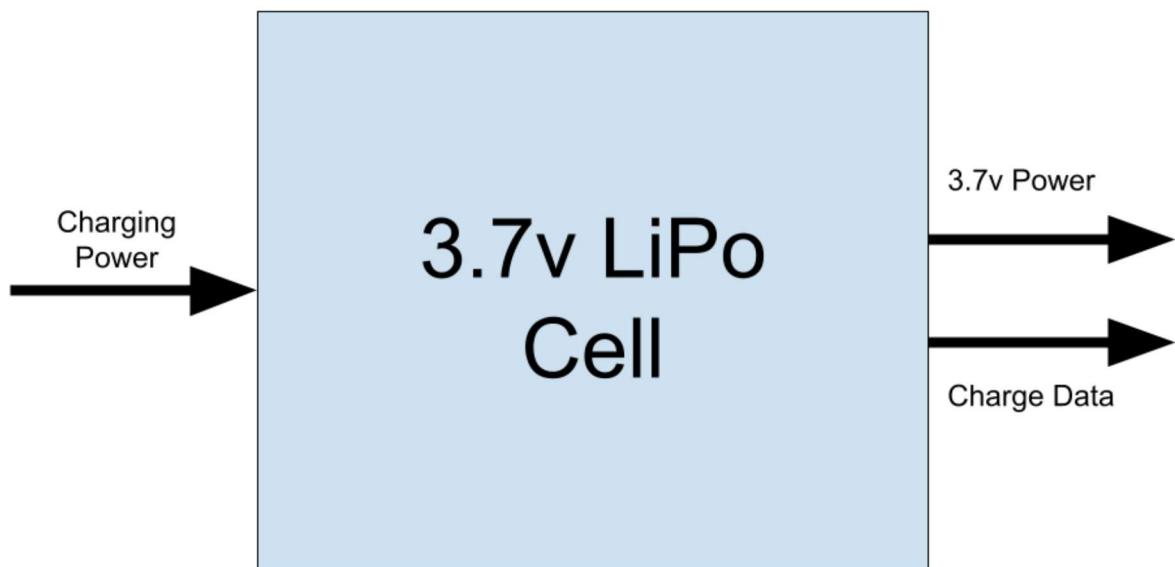
Level 1	
Module	- Processor
Inputs	- Regulated 3.3V Power
	- Dial
	- Buttons
	- Spectrogram
Outputs	- New graphics data
	- Converted audio signal
Functionality	The brains of our product. Collects and processes data from all other modules, and does the DSP needed for our audio.

Power Regulator



Level 1	
Module	- Power Regulation
Inputs	- 5V 500mA input
	- Battery Charge Data
	- 3.3v Power
Output	- 3.3V Power
	- Charging Power
Functionality	Monitors the charge of our batteries, and regulates a 5V USB input to charge the batteries

Battery



Level 1	
Module	- 3.7V LiPo Cell
Input	- Regulated power for charging
Output	- 3.3V Power
	- Charge Data
Functionality	Battery for powering the device when not plugged in. Able to be recharged for longer use.