Building a Ferrofluidic Music Visualizer with Embedded Swift

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About Me

Demo

Implementation Overview

Lessons Learned

About me

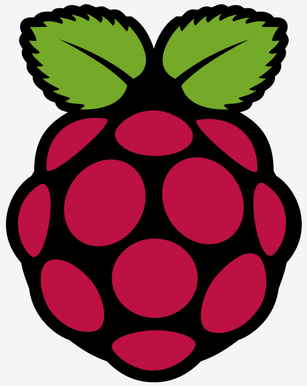
playdate

matter

examples

Swift Embedded Examples

Espressif

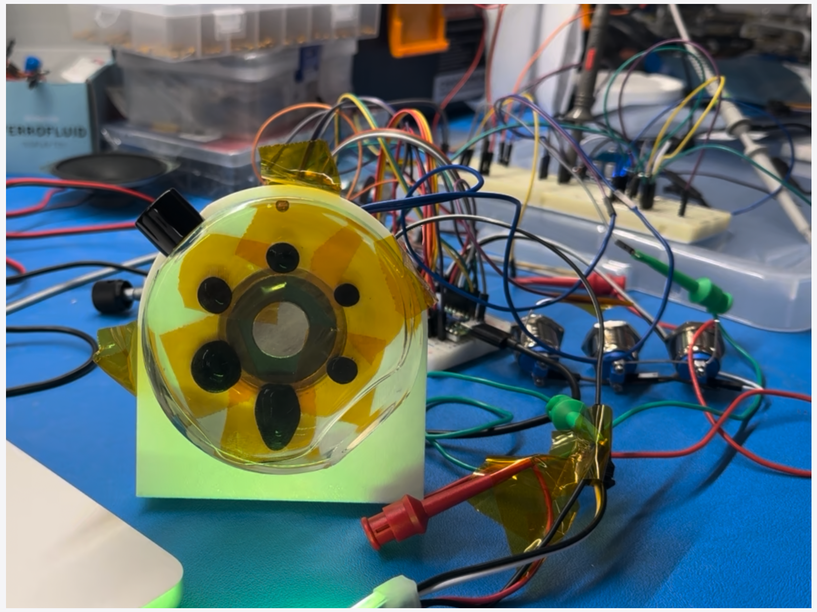


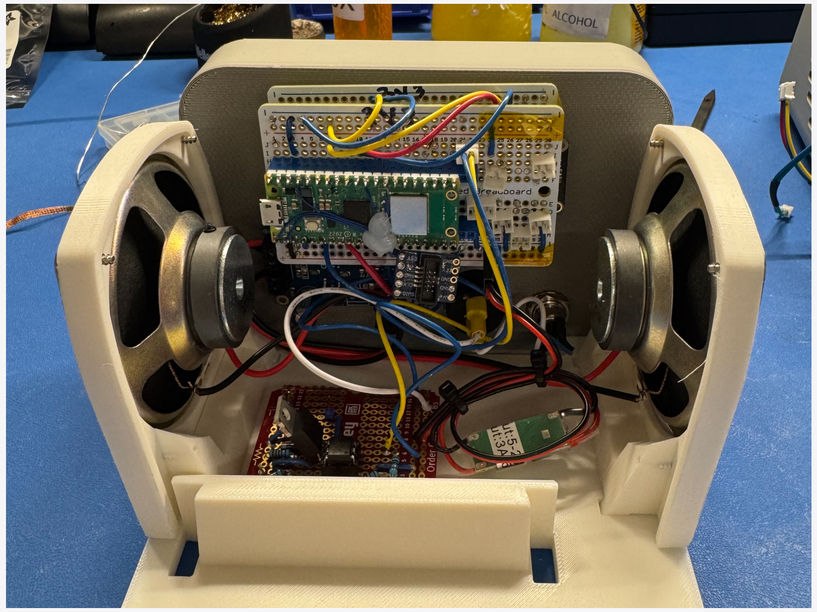
Raspberry Pi

Nordic

STMicro

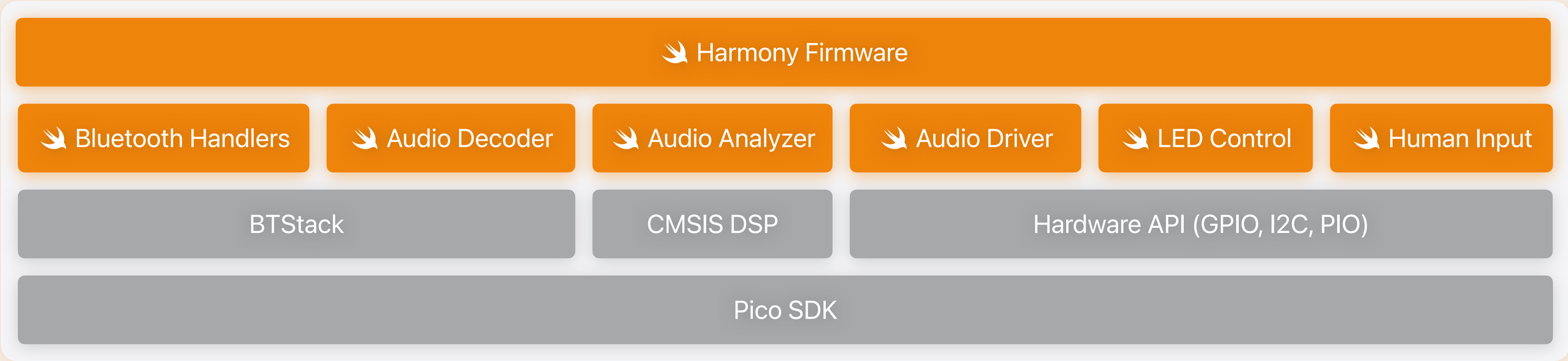
Demo


FERROFLUID

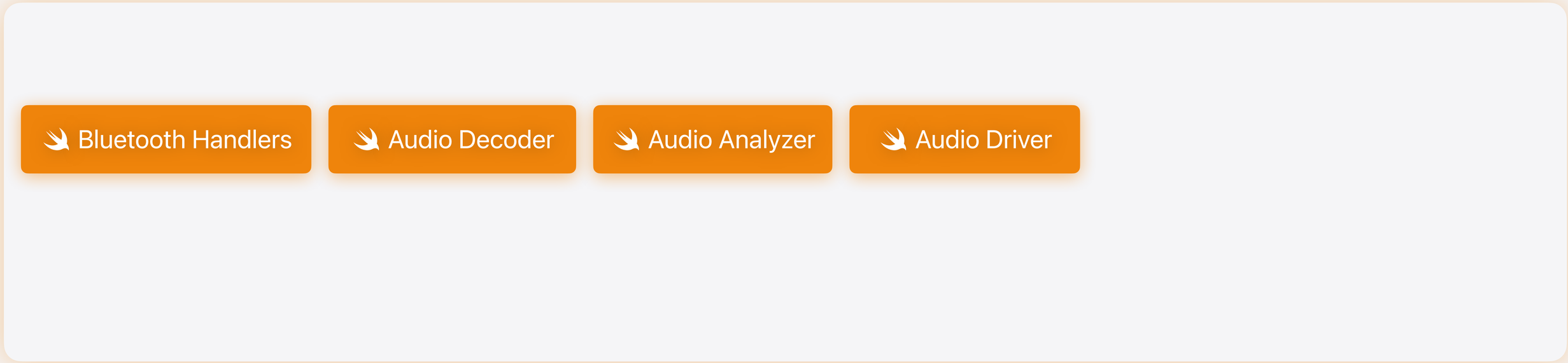

ALCOHOL

Implementation Overview

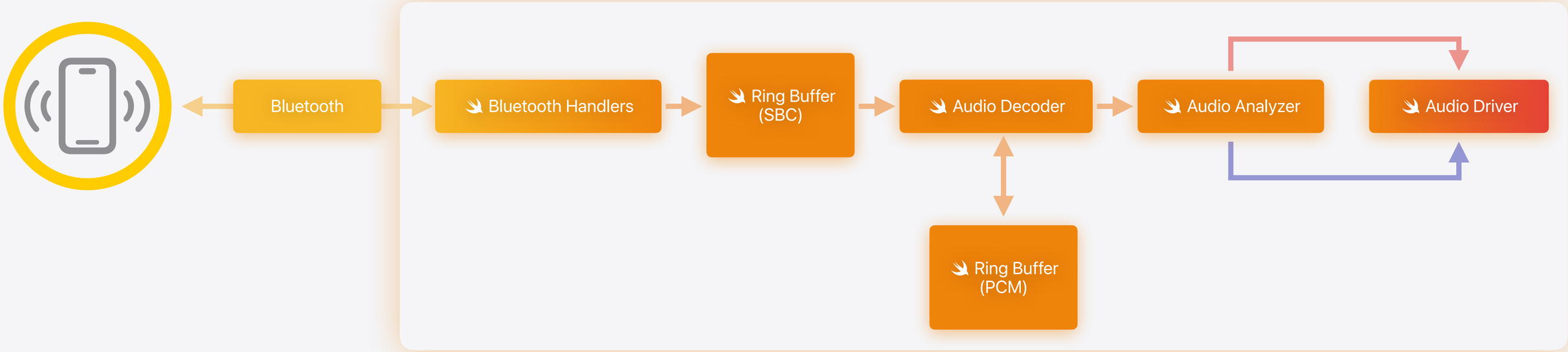
Firmware


Harmony Firmware
Bluetooth Handlers
Audio Decoder
Audio Analyzer
Audio Driver
LED Control
Human Input
BTStack
CMSIS DSP
Hardware API (GPIO, I2C, PIO)
Pico SDK

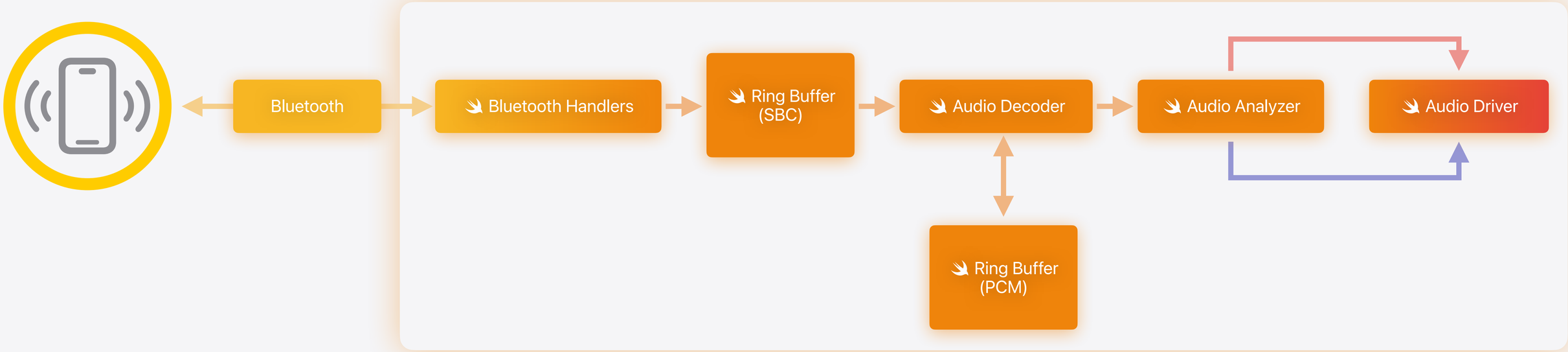
Data flow


Bluetooth Handlers
Audio Decoder
Audio Analyzer
Audio Driver

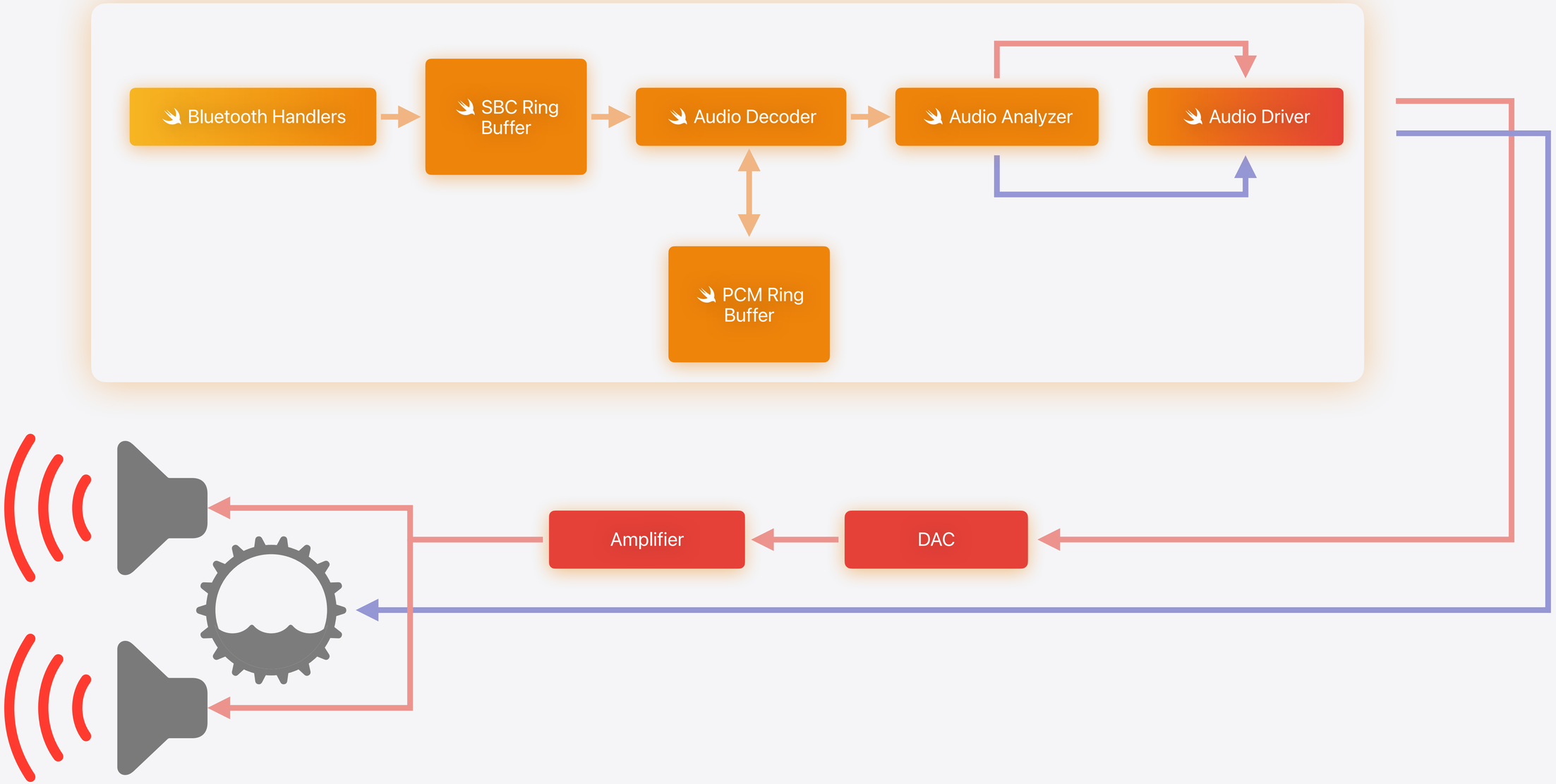
Data flow


Bluetooth
Bluetooth Handlers
Ring Buffer
(SBC)
Audio Decoder
Audio Analyzer
Audio Driver
Ring Buffer
(PCM)

Data flow


Bluetooth
Bluetooth Handlers
Ring Buffer
(SBC)
Audio Decoder
Audio Analyzer
Audio Driver
Ring Buffer
(PCM)

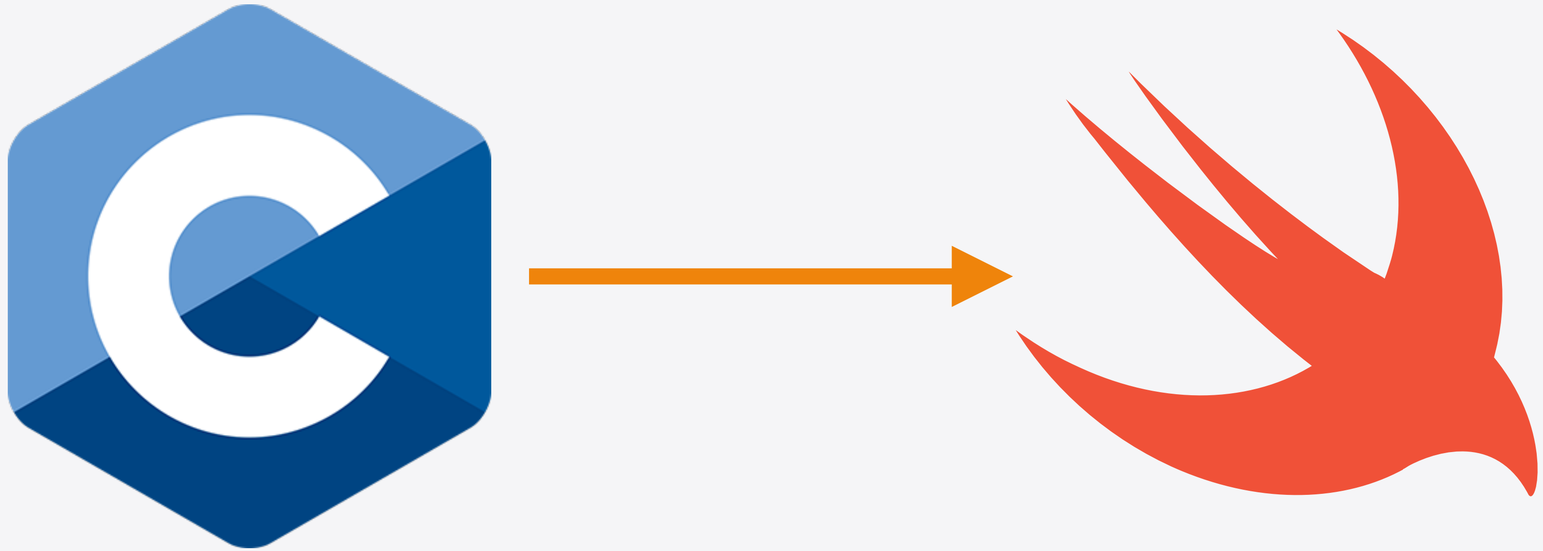
Data flow


Bluetooth Handlers
SBC Ring Buffer
Audio Decoder
Audio Analyzer
Audio Driver
PCM Ring Buffer
Amplifier
DAC

Lessons Learned

Find Great Mentors

Start with something that works



Resources

All resources to build and extend are Open Source!

- Embedded Swift Firmware — available now
- Bill of Materials — available now
- Electrical Schematics — coming soon
- 3D Models — coming soon

github.com/apple/swift-embedded-examples