

A dense forest of tall evergreen trees is shown in the background, partially obscured by thick, white mist or fog that hangs in the air between the tree lines.

EIK
Audio OS

Elk, and why you need it

**Use the open-source Elk Audio OS to deploy
plugins on hardware with minimal effort**

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CTO
Senior Sw Engineer
Senior Sw Engineer

Audio DSP on Hardware



Audio DSP on hardware



DSP chips

+

Cheap

Good for Real-Time

-

Non-portable C / Assembly
Only for DSP



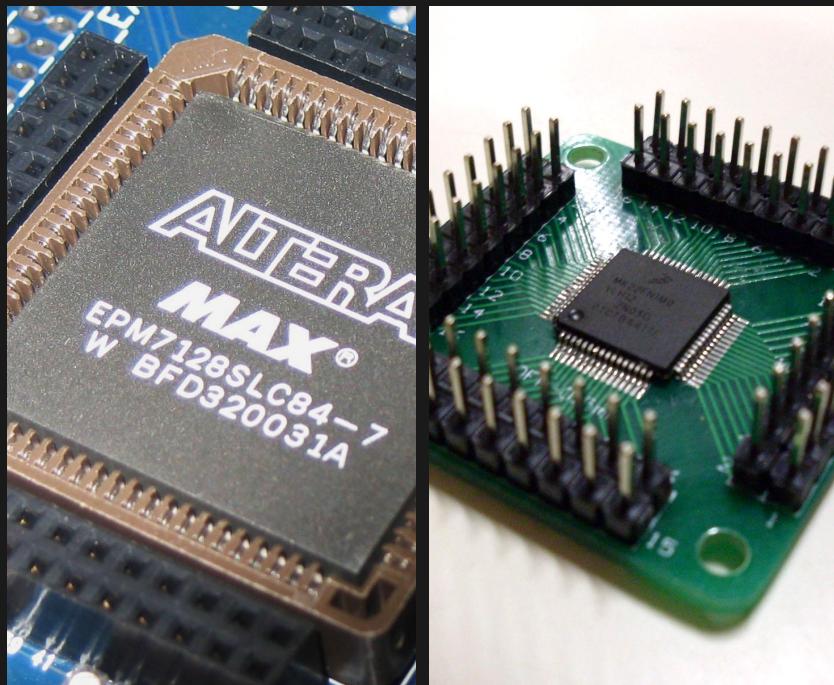
FPGAs, Bare Metal

+

Good Real-Time
Scalable

-

Hard to develop for
Minimal OS support



Embedded Linux

1

Integrated solution
Graphics, Networking
Great dev tools

1

Not a real-time OS
High latency





1ms Latency



Why Elk

Open-source codebase

Industrial-strength products

Full Connectivity

Integrates knobs, LED's & Screens

Portable

Technology

Custom Linux Distribution
Xenomai realtime Kernel
ARM & x86

Connectivity: WiFi, BLE
Plugin support: VST2, VST3, LV2
CV & Gate I/O
Ableton Link

Why Elk

Reduce complexity

JUCE Several platforms and formats

Elk High-performance audio hardware

Focus on what you do best!

Elk Development Kit

Elk Pi Hat

Open-Source Hardware

Optional control-board

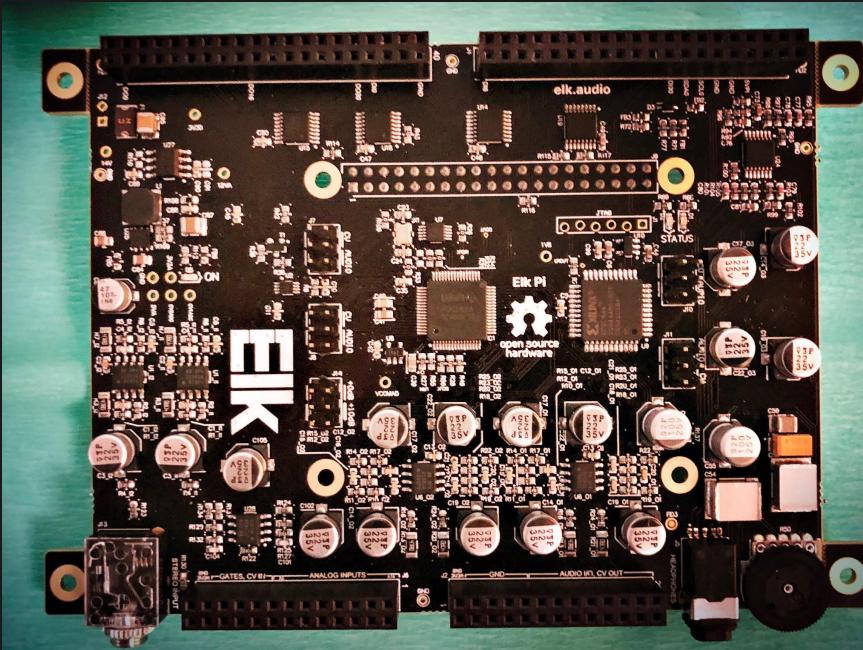
SDK

6 analog In / 8 analog out

CV in/out & gate/triggers

16 sensor analog ins

32 in/out GPIOs



Hardware



Supported CPUs

See elk.audio for complete specs

Intel Atom



Intel Atom X5-Z8350 @ 1.92 GHz

Quad Core

Aeon UpCore Dev Hat

4 audio I/O

Raspberry Pi 3



Elk Pi Hat for Raspberry Pi 3

Broadcom BCM2837

4 x ARM Cortex A53 @ 1.2 GHz

Open Source Dev Kit

6 Audio I/O

RPi 4 support 2020

4 x ARM Cortex A72 @ 1.5 GHz

iMX 7/8



NXP iMX8 SoC

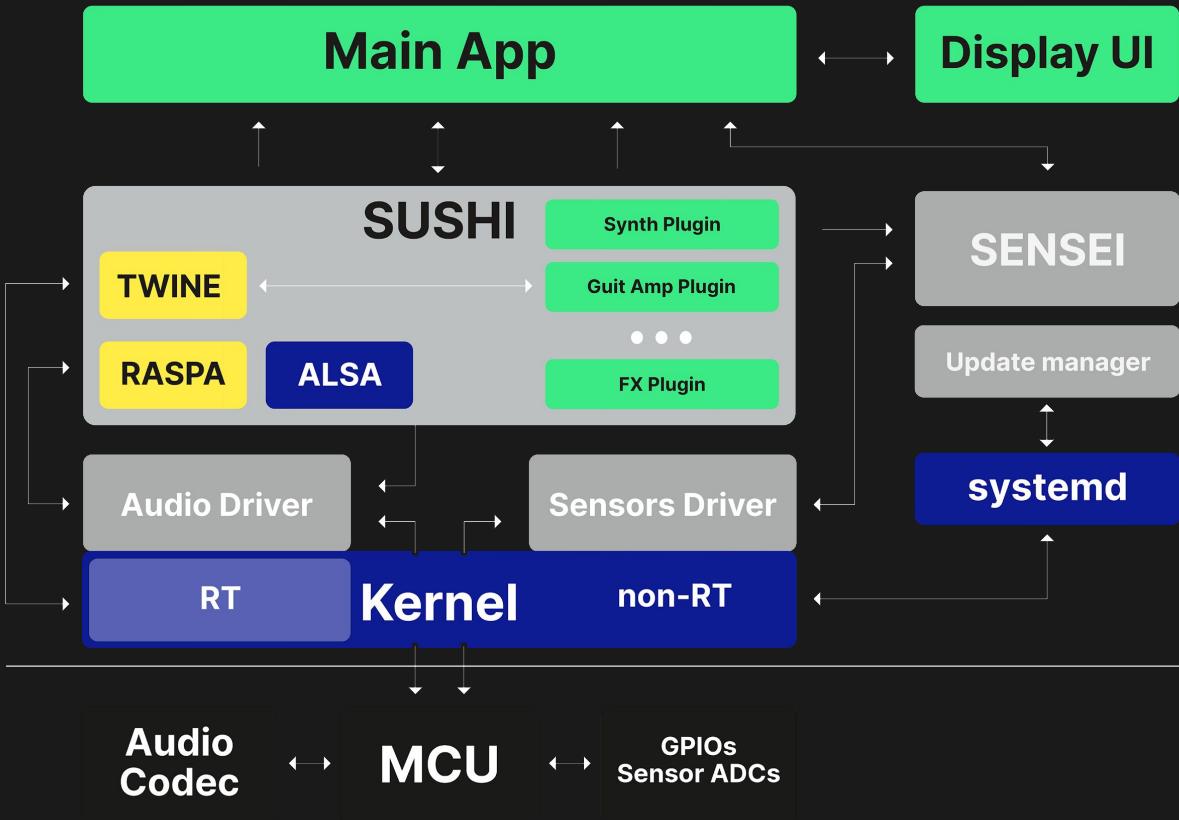
4 x ARM Cortex A53 @ 1.8GHz

1 x ARM M4

Architecture

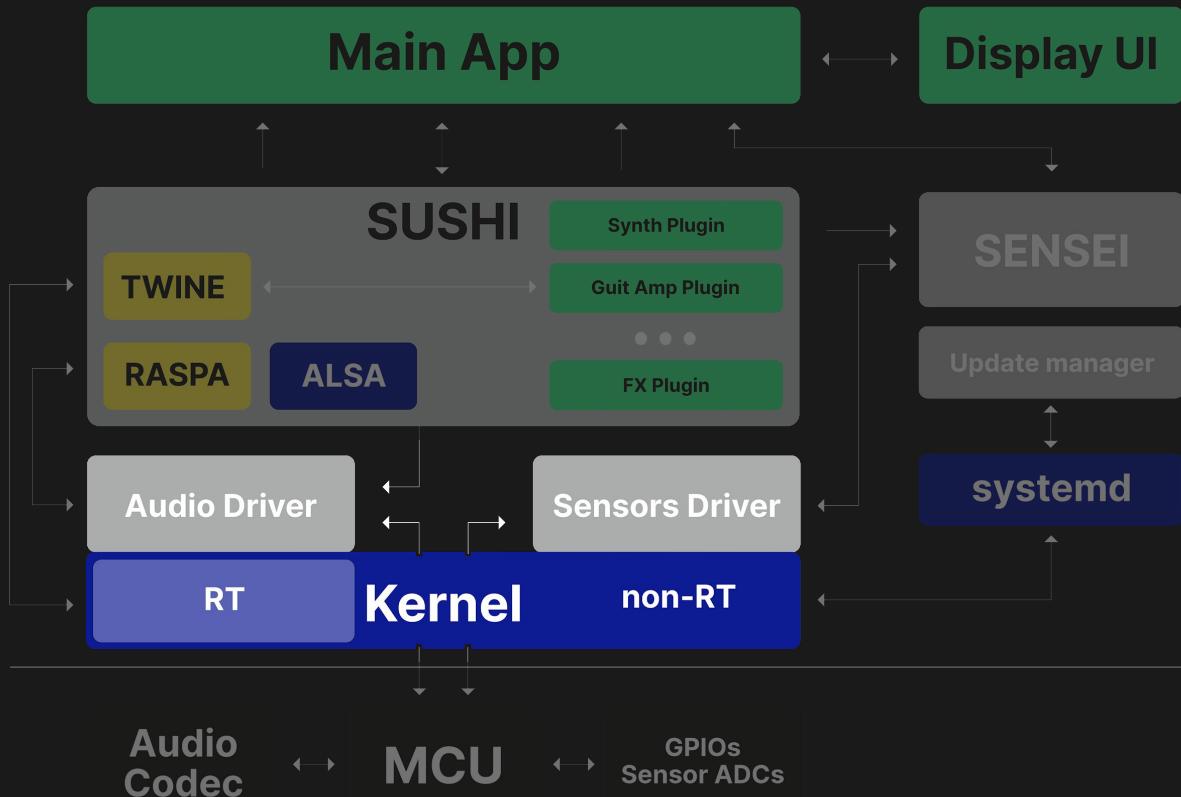


Architecture



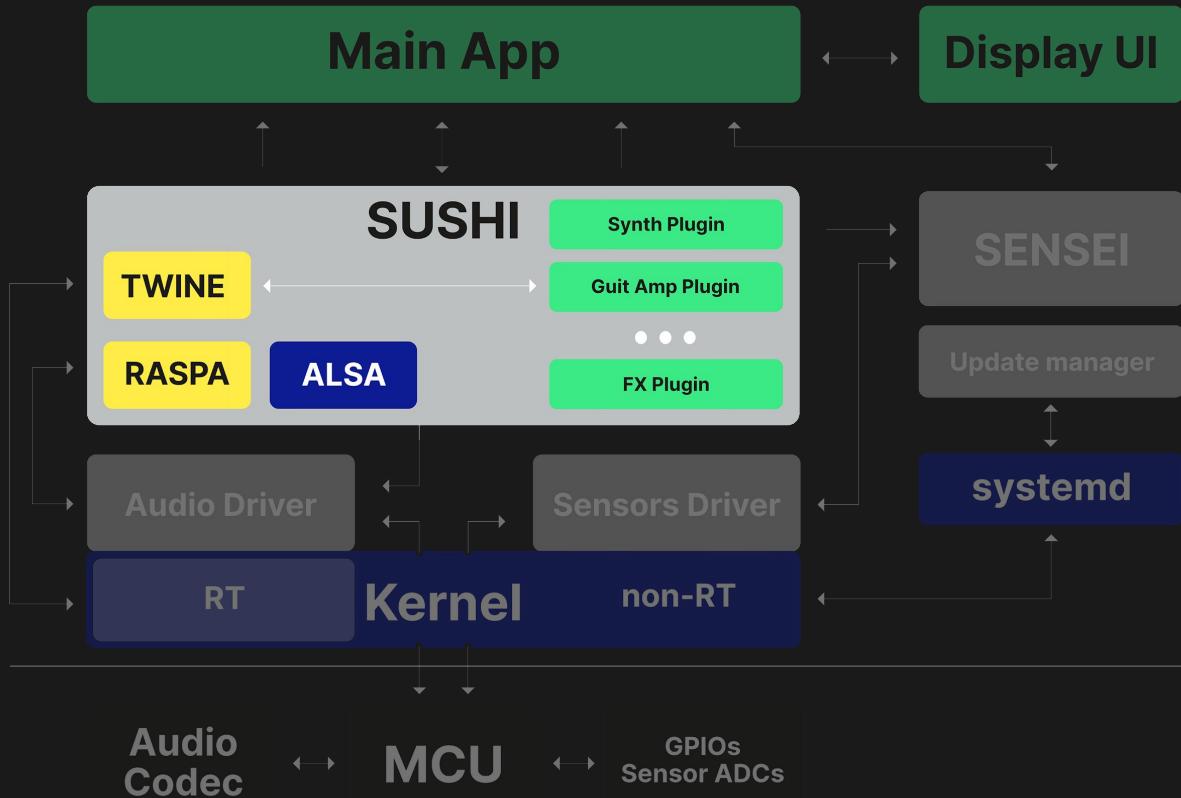
Architecture

Dual Kernel



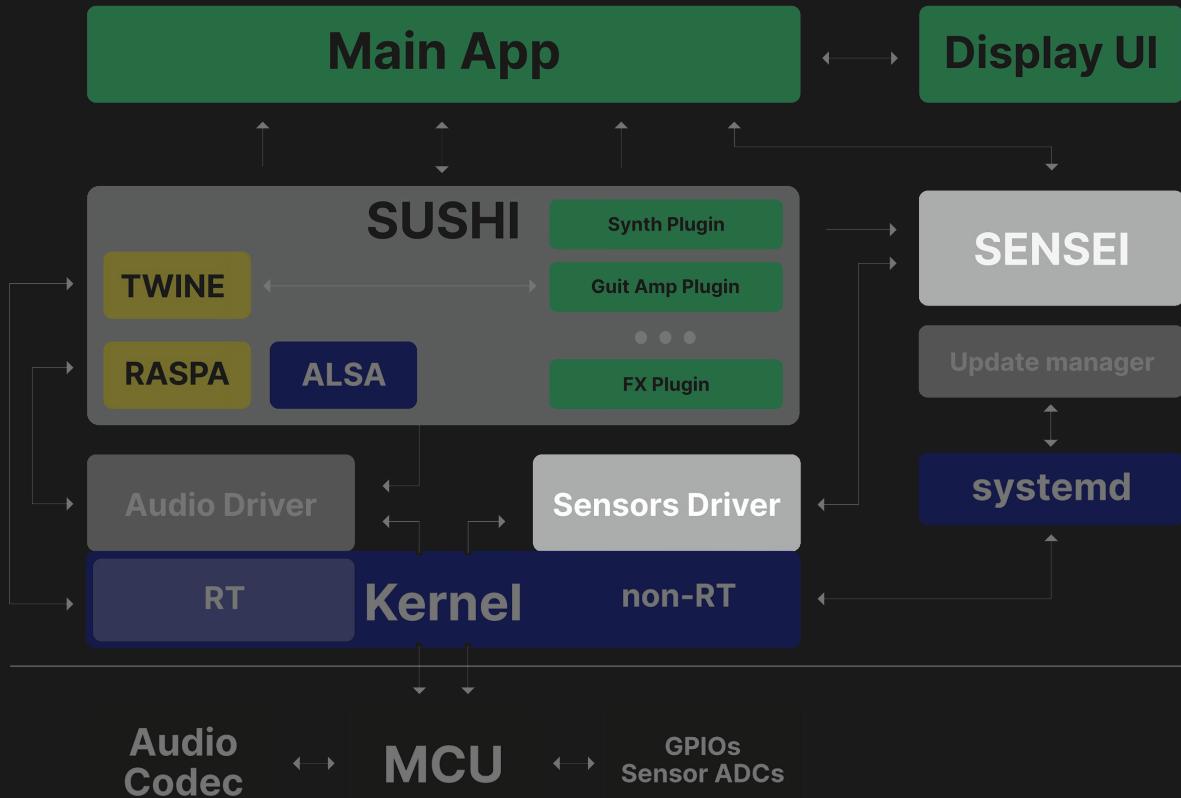
Architecture

Dual Kernel
Plugin Host



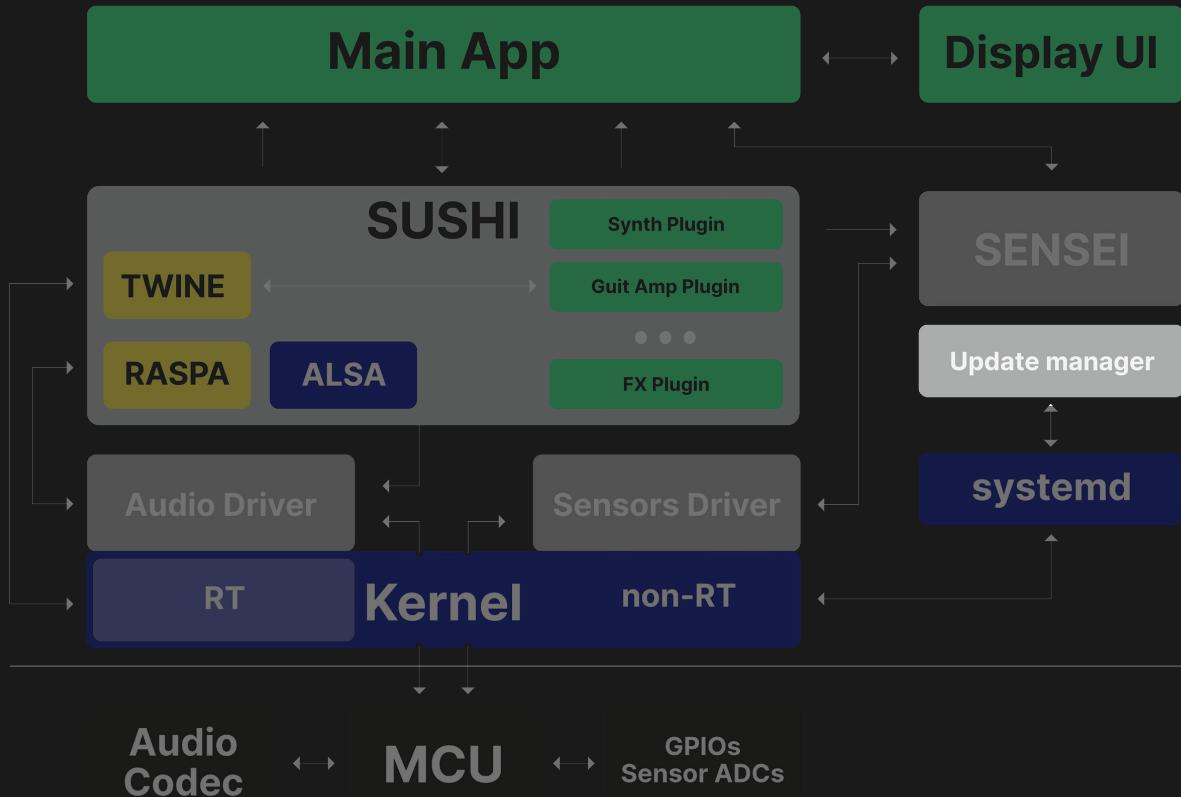
Architecture

Dual Kernel
Plugin Host
Sensor Daemon



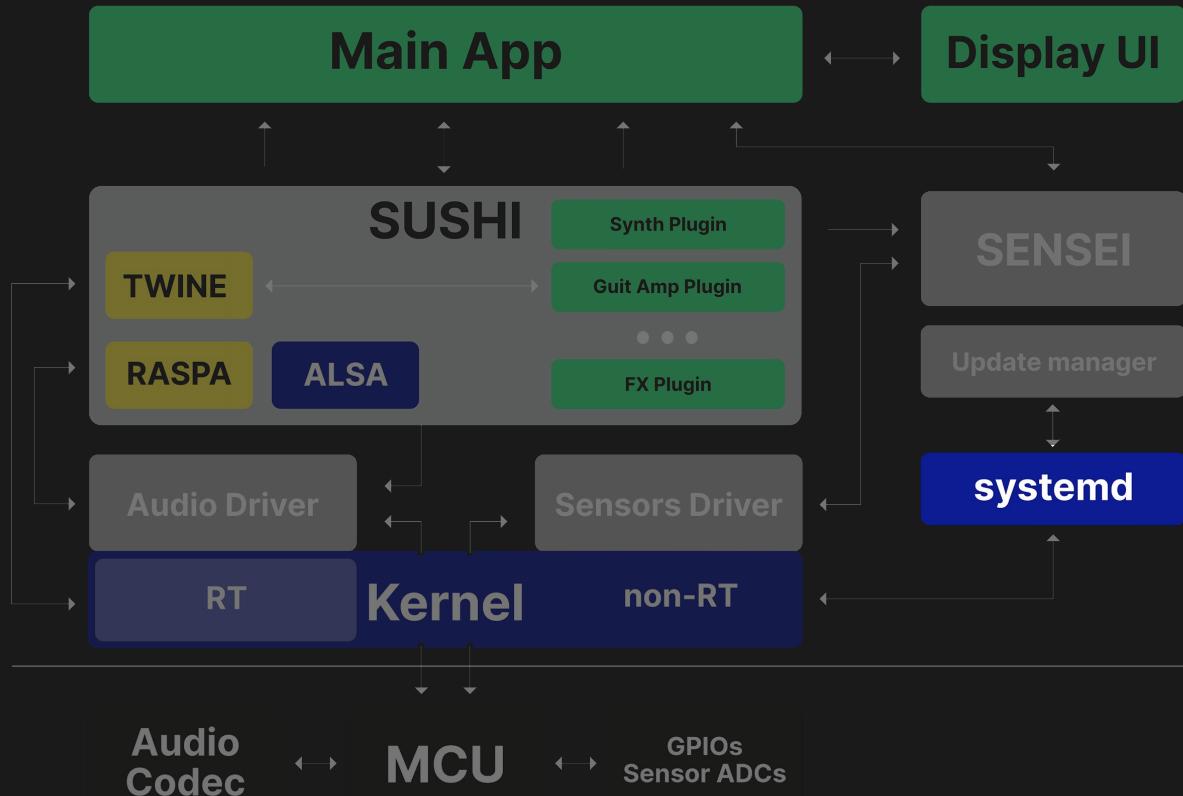
Architecture

Dual Kernel
Plugin Host
Sensor Daemon
Software Update



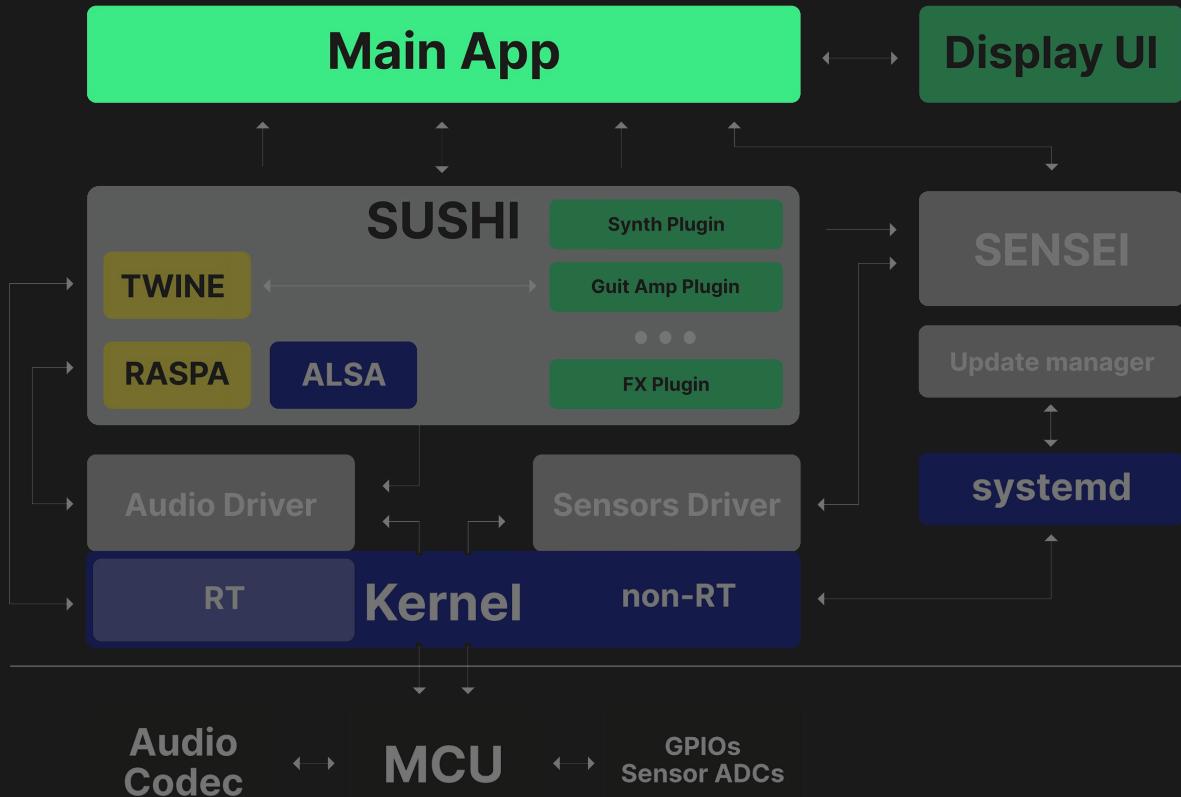
Architecture

Dual Kernel
Plugin Host
Sensor Daemon
Software Update
Systemd



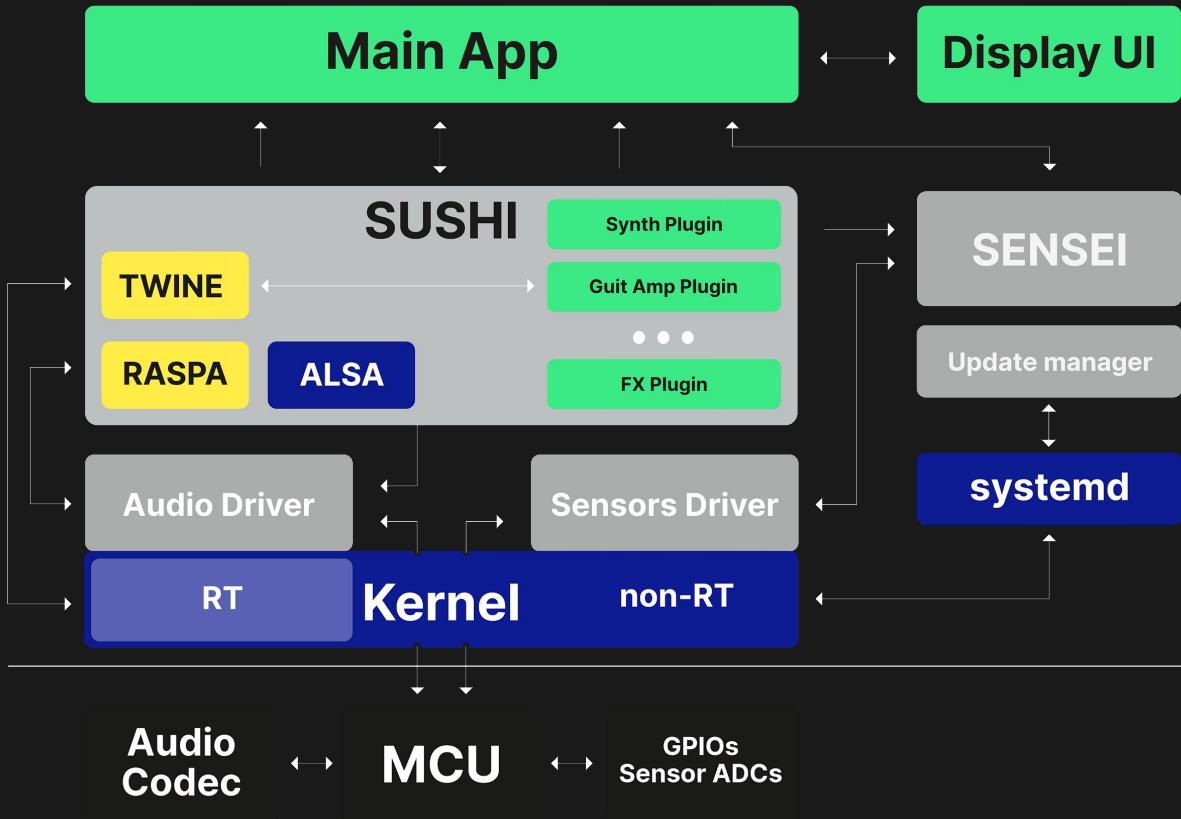
Architecture

Dual Kernel
Plugin Host
Sensor Daemon
Software Update
Systemd
Main App



Architecture

Dual Kernel
Plugin Host
Sensor Daemon
Software Update
Systemd
Main App



Building Plugins for Elk



Tools



JUCE

SoundFont

LV2

HISE

FAUST

cs
csound

Plugins for Elk

Linux

Headless

Real-time Safe

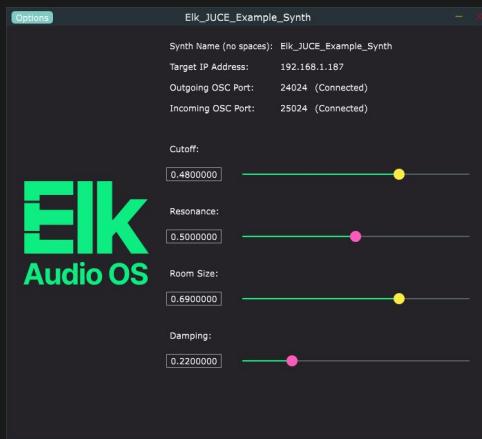
Twine Utility Library

Example plugin

Created using only JUCE
Polyphonic sample playback
Lowpass filter
Reverb
Cross-compiles unmodified



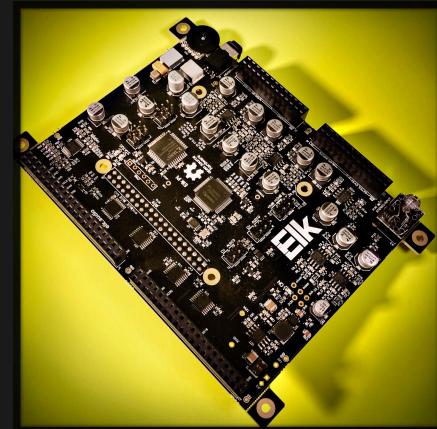
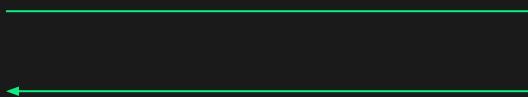
Example plugin



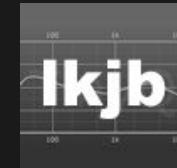
Bidirectional OSC Communication

Control plugin on Elk from desktop,

and vice-versa.



500+ open-source plugins



Licenses

Dual Licensing

Open Source (Affero) GPL 3.0

Commercial For closed-source products



Free as in Freedom

Demo!



Demo

OB-Xd Synthesizer

Open-source VST instrument

Cross-compiled after a minor change



Questions

Thank you!

Website elk.audio

Forum forum.elk.audio

Code github.com/elk-audio