



Three Mobile Apps for Embodiment & Exploration

PdParty, *SpeedPitch* & ShadowPlay

Dan Wilcox, 25 Oct 2025, HKB

Dan Wilcox

Artist

Engineer

Musician

Performer

Astronaut

ZKM | Hertzlab



Motivation

R&D for Humanity

Experiments

Systems for Performance

Silly Things







The Frank-Ratchye
STUDIO
for Creative Inquiry

edp
emergent
digital
practices

ZKM 
Karlsruhe



CHALMERS





robotcowboy

2004



7 Inch Wave

2006

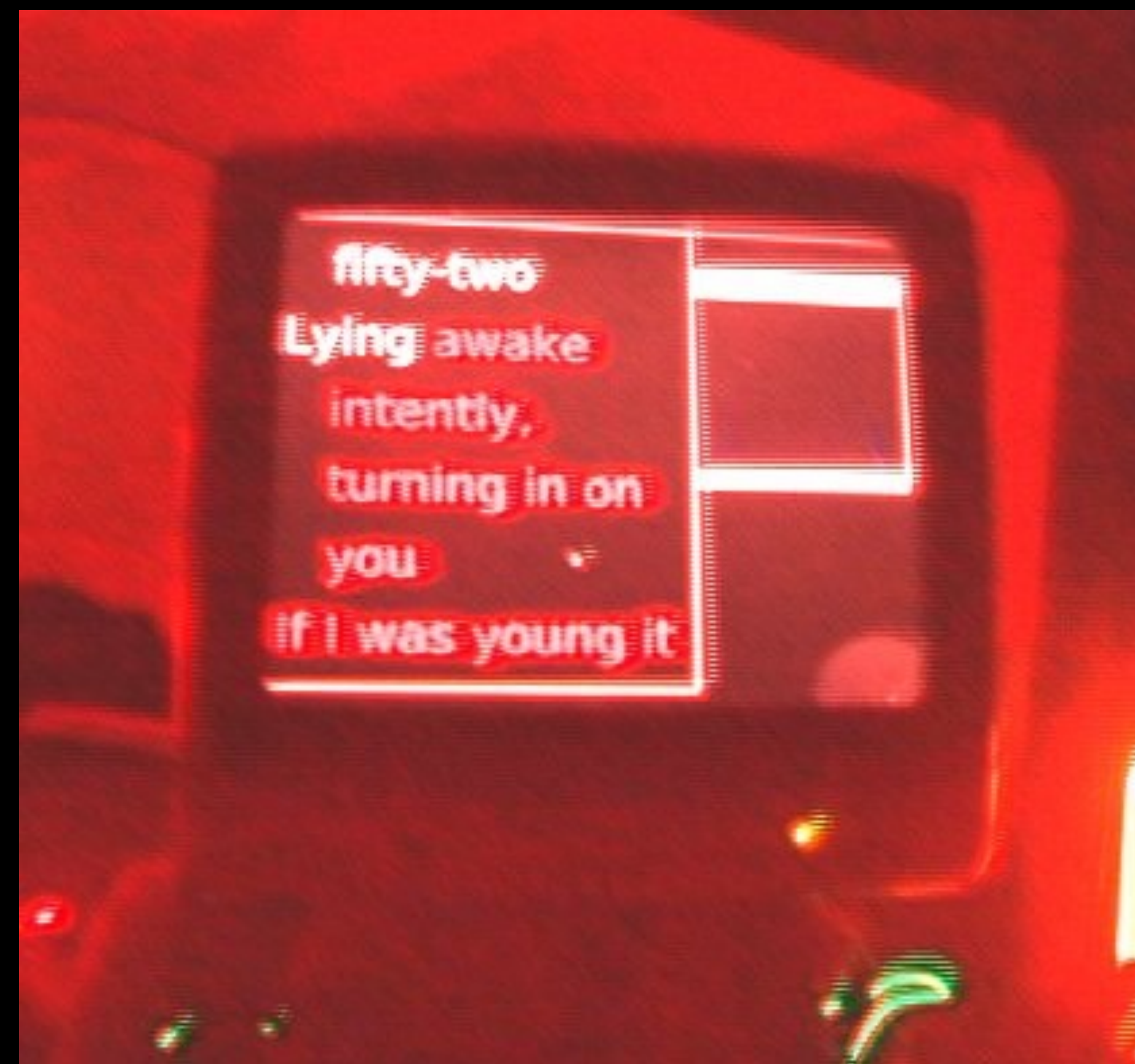
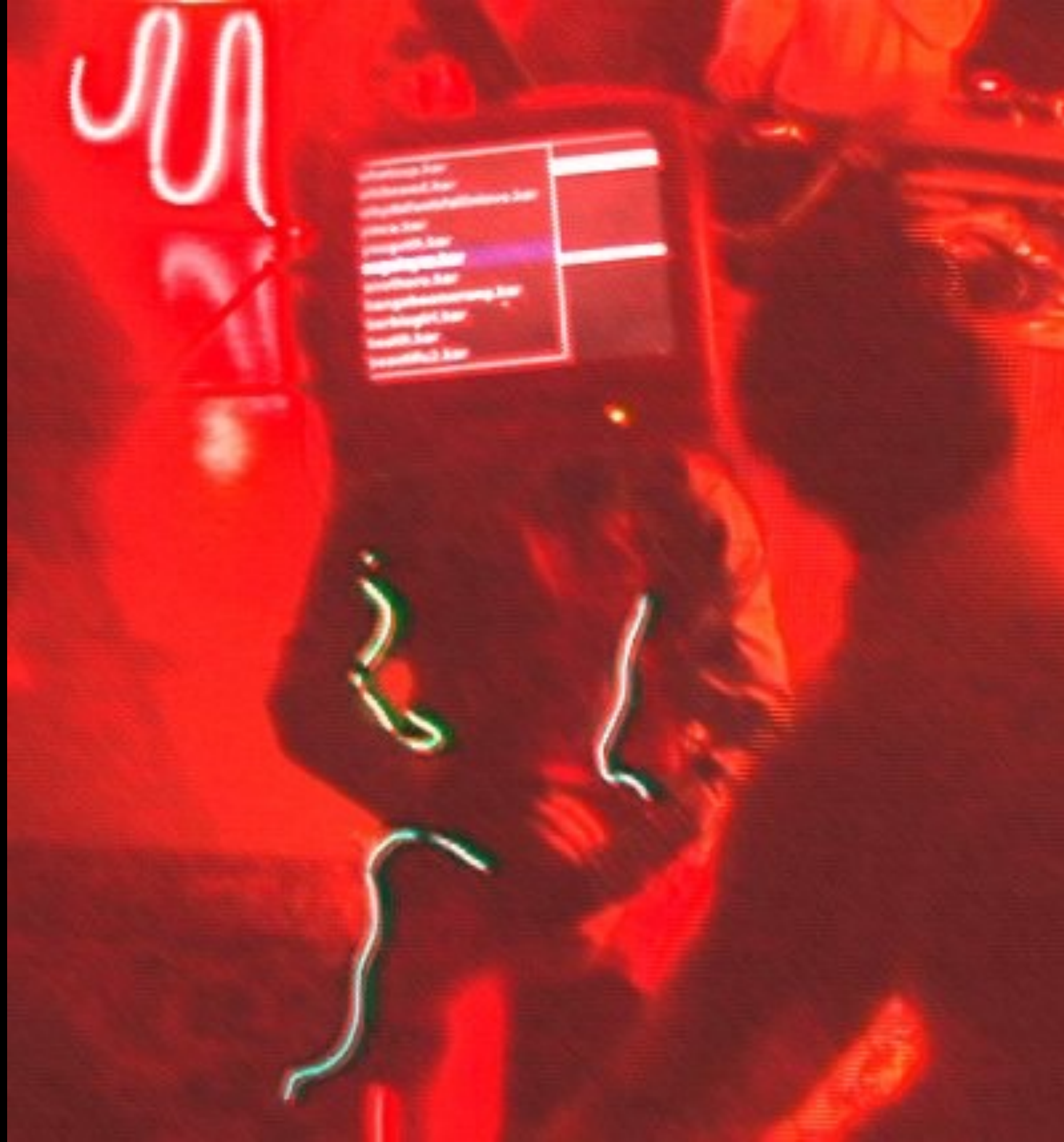
recharge



2006



recharge



The Post-Digital

Breaking the Wall

Critique on performing *with* a computer...

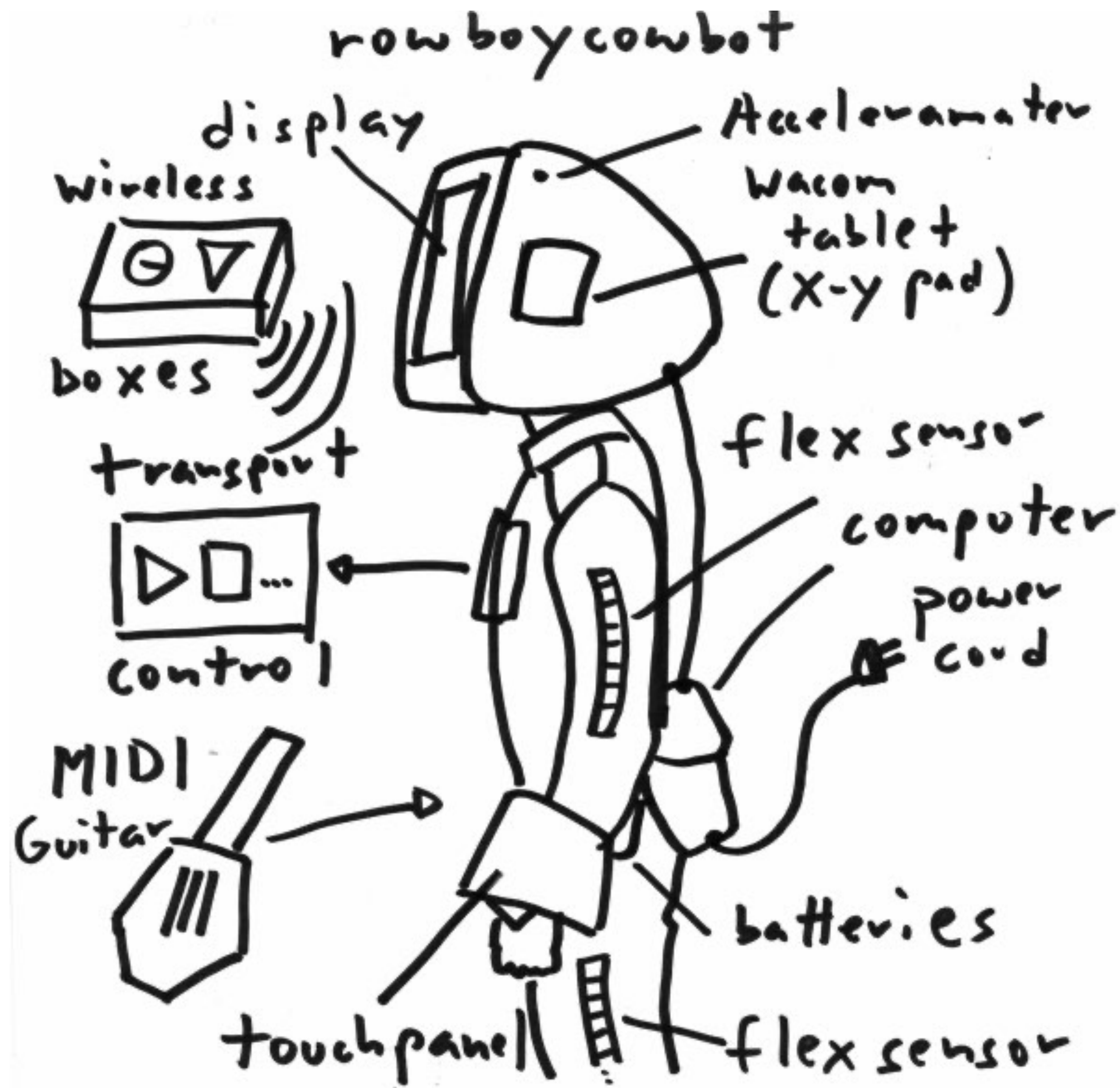
Why not **be** the computer?

Embodiment

Non-Digital Digital Instrument:
No hidden actions -> Show control

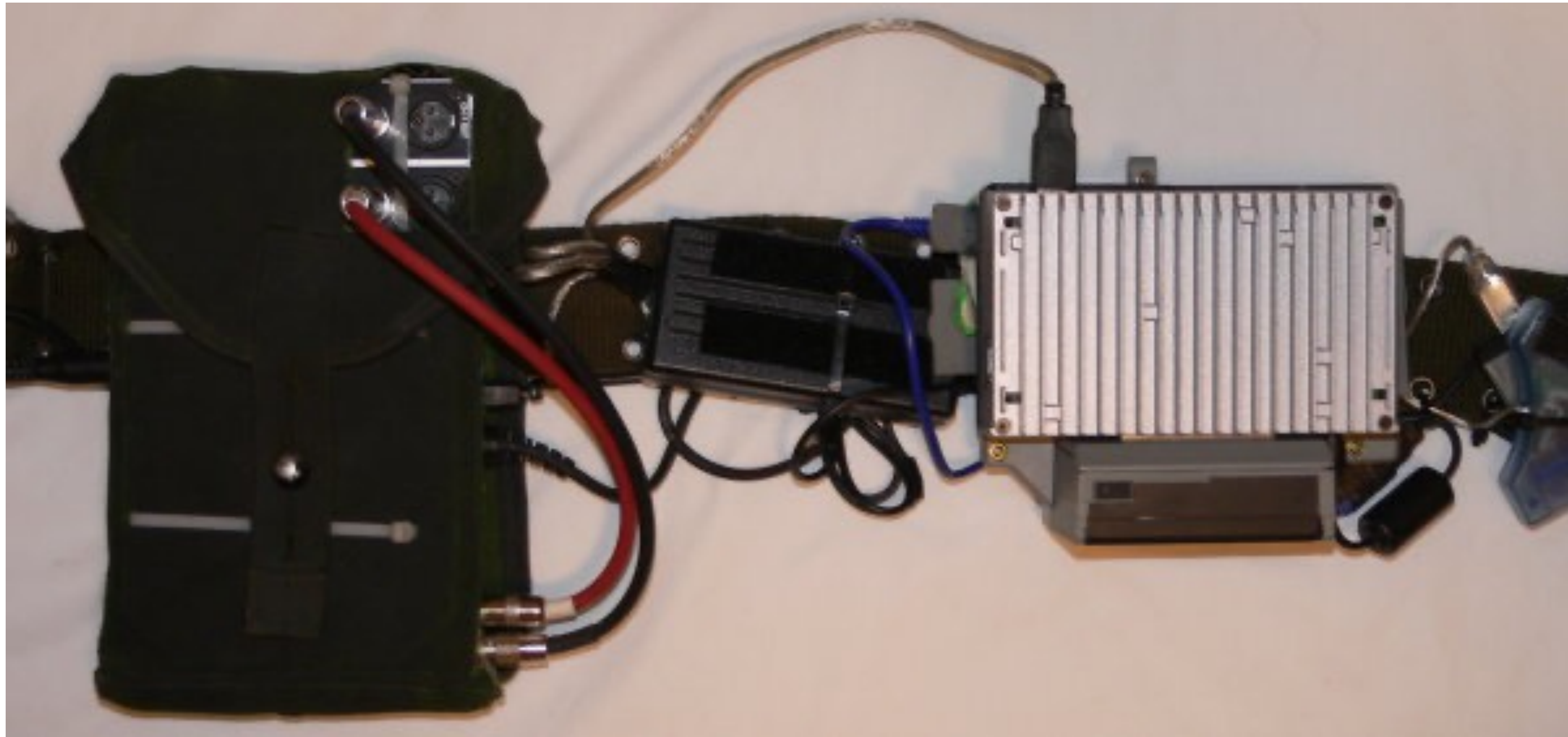
Live emphasis: "There must be room to fail"

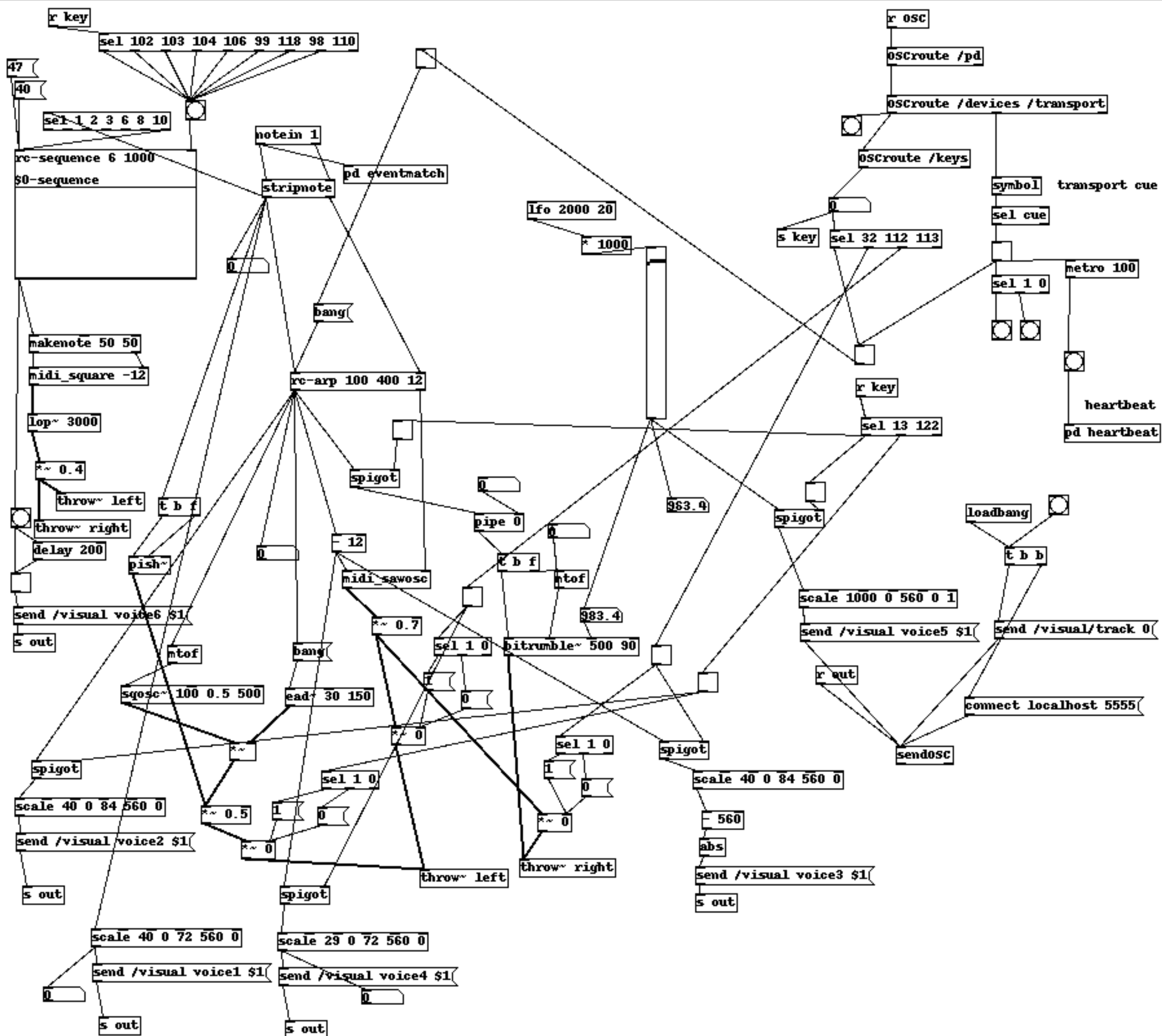




Wearable system

Circa 2008







2010



2008





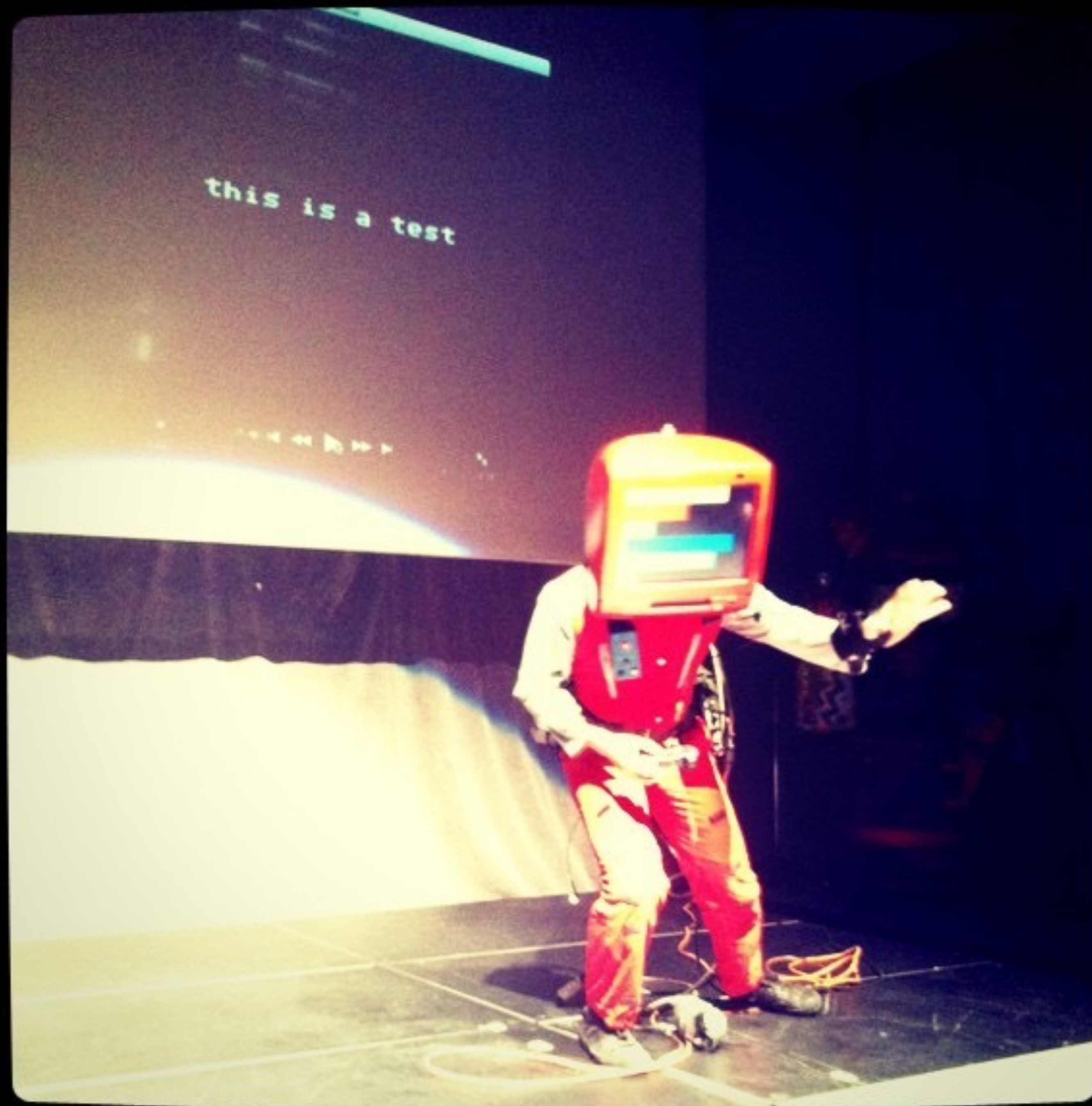
Consoles Afire tour

2010



Close Encounters of the Bit Kind

2011



r o b o t c o w b o y

Onward

to **Mars**

2013



MARS SOCIETY DESERT RESEARCH STATION

MAJOR SPONSORS
THE MUSK FOUNDATION

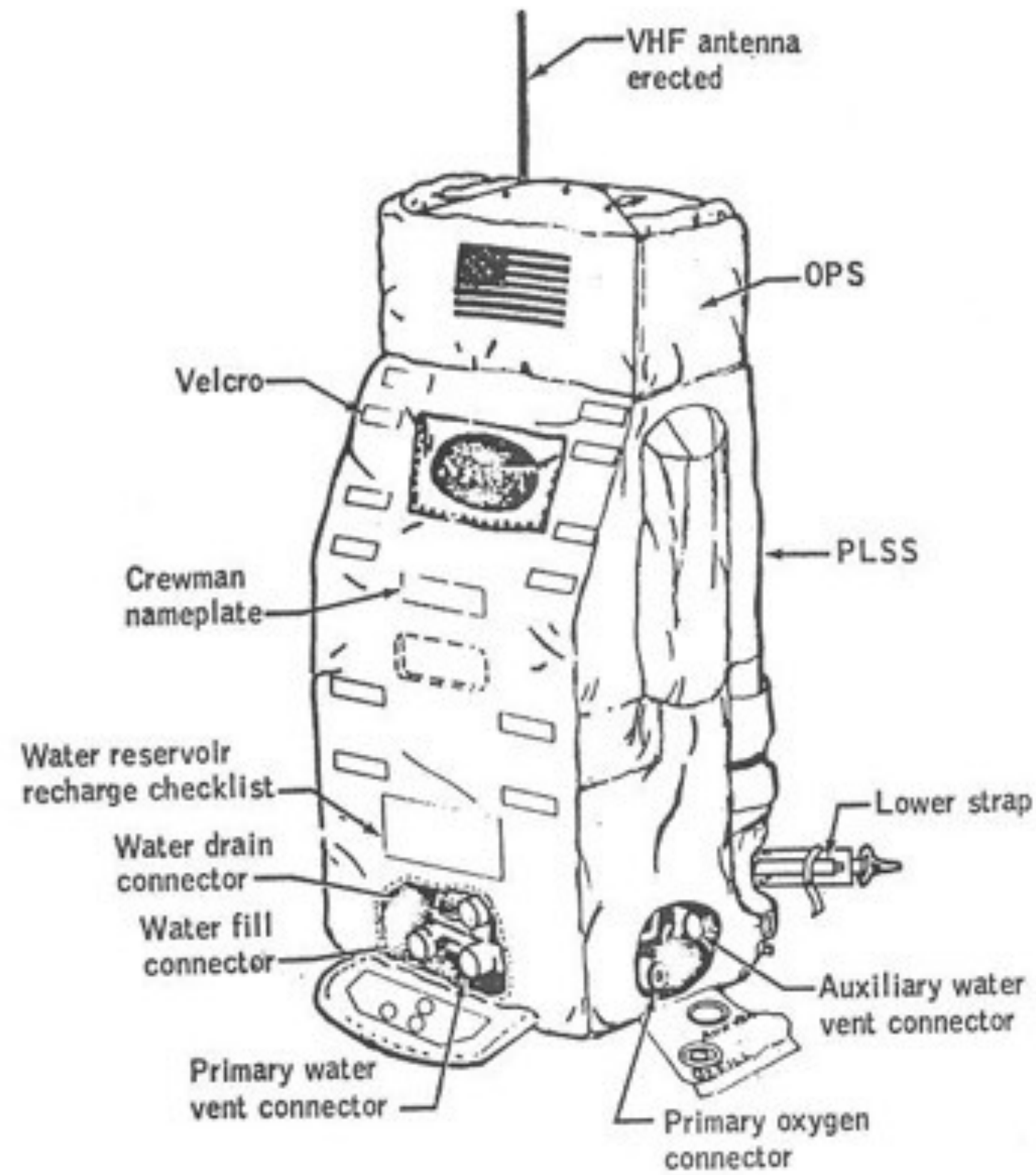
6

4

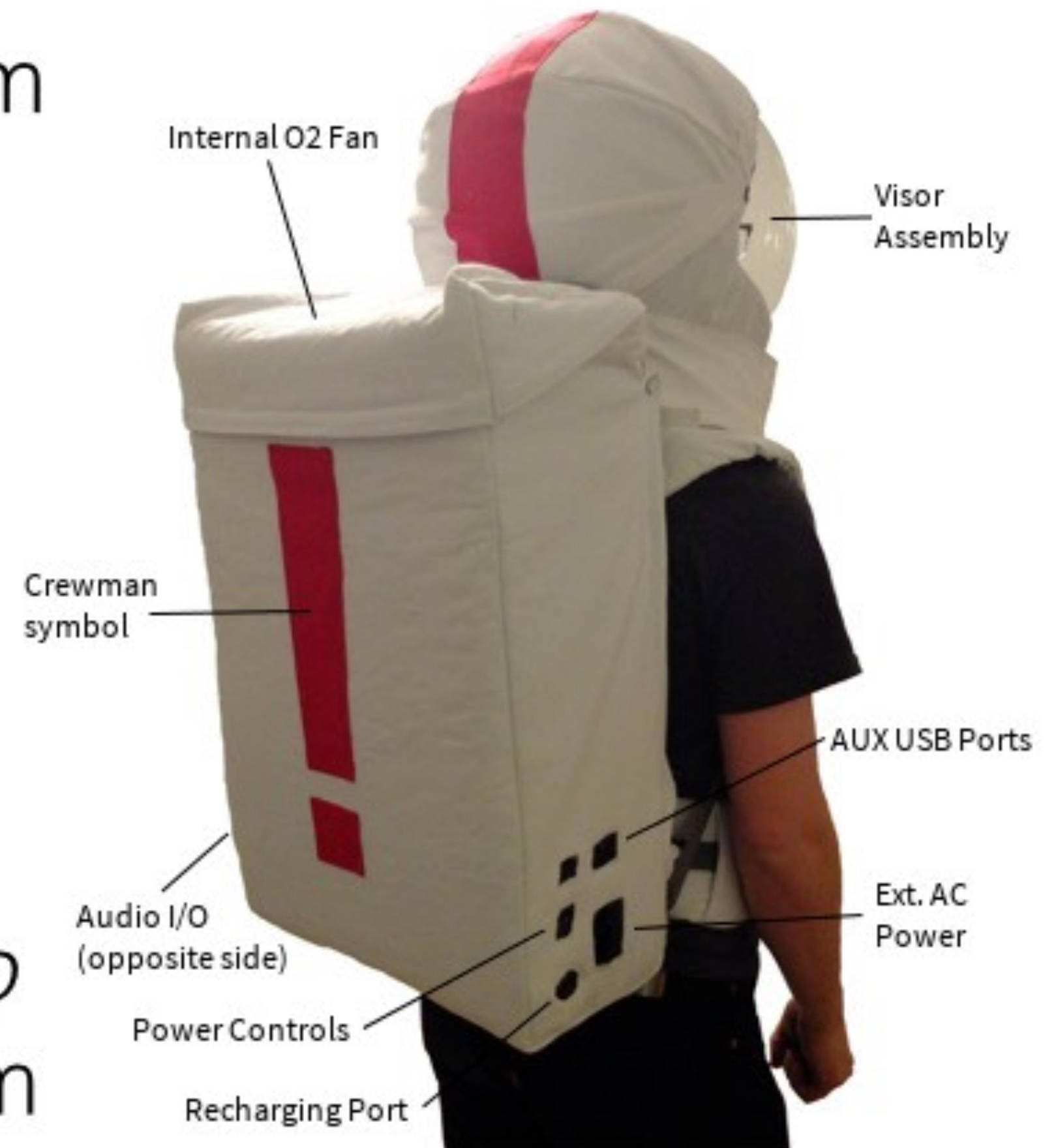




Portable *Life* Support System

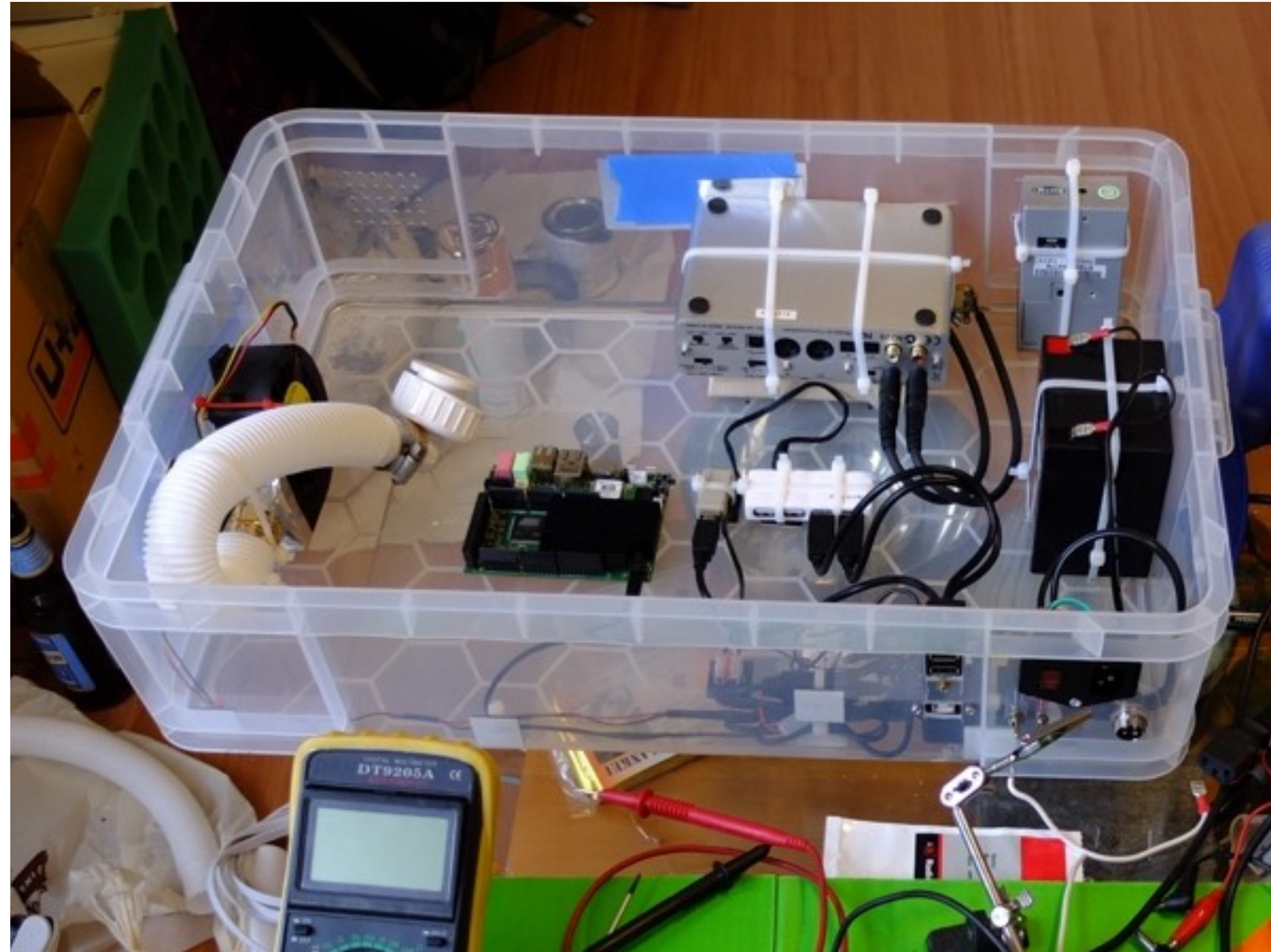


Portable *Audio* Support System



Wearable system

Circa 2014



2014



Wearable system

Circa 2016



**PdParty*



2018





vibration
in progress

status: processing

! Attention!
No Smoking Area!

A platform for performance



Not a phone...*a computer*

**More intimate than the
"Personal Computer"**

We take them to bed with us!

**The embodiment is built in:
think *beyond* the interface**

A platform for performance

bang

until

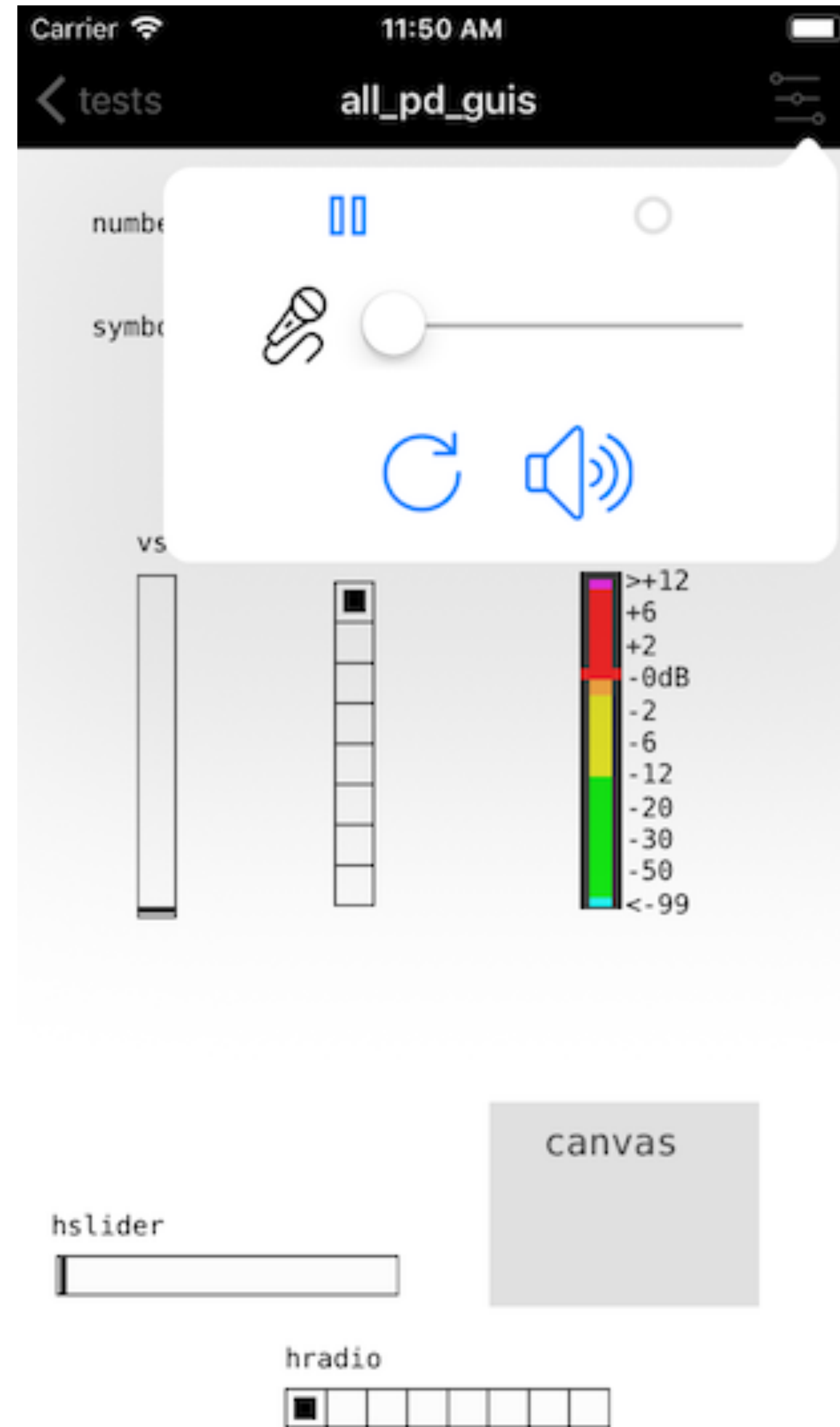
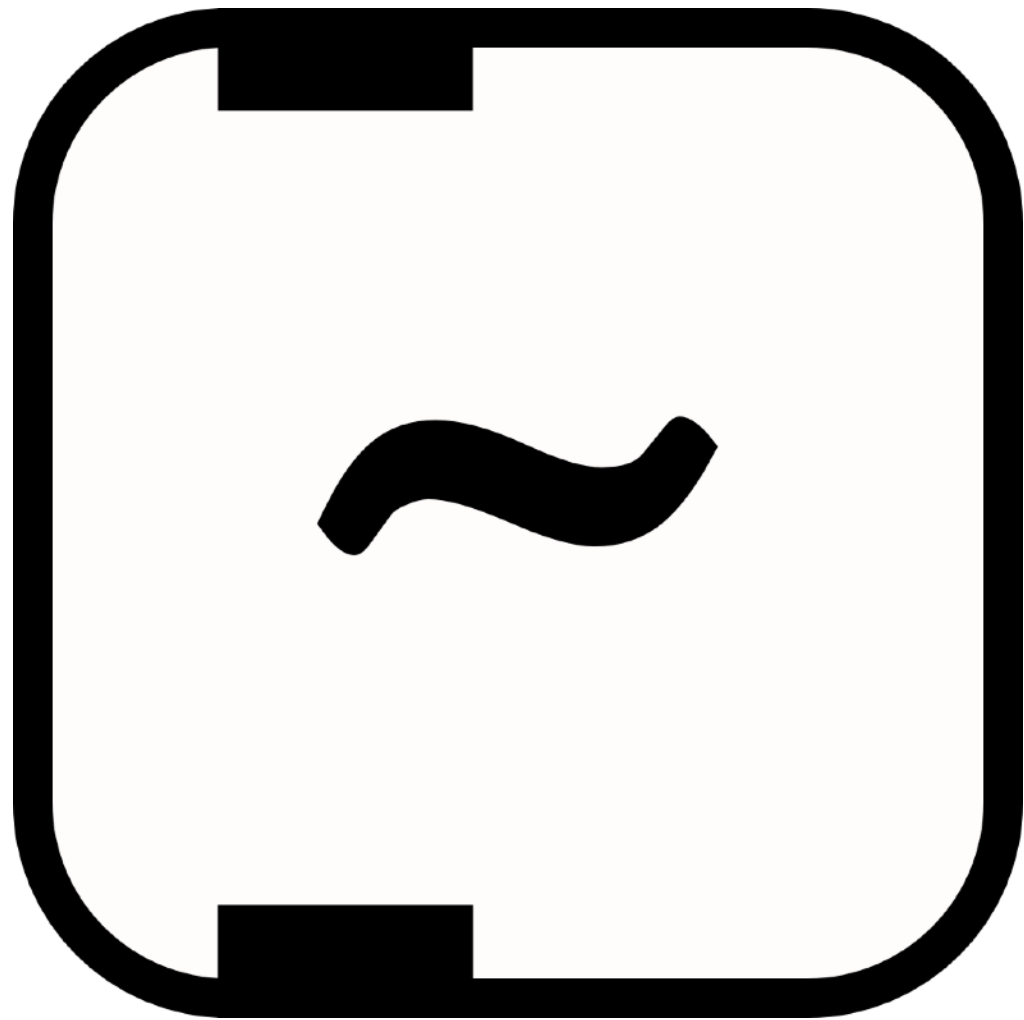
PdParty

**Run your Pure Data patches on
iOS with native GUIs emulated**

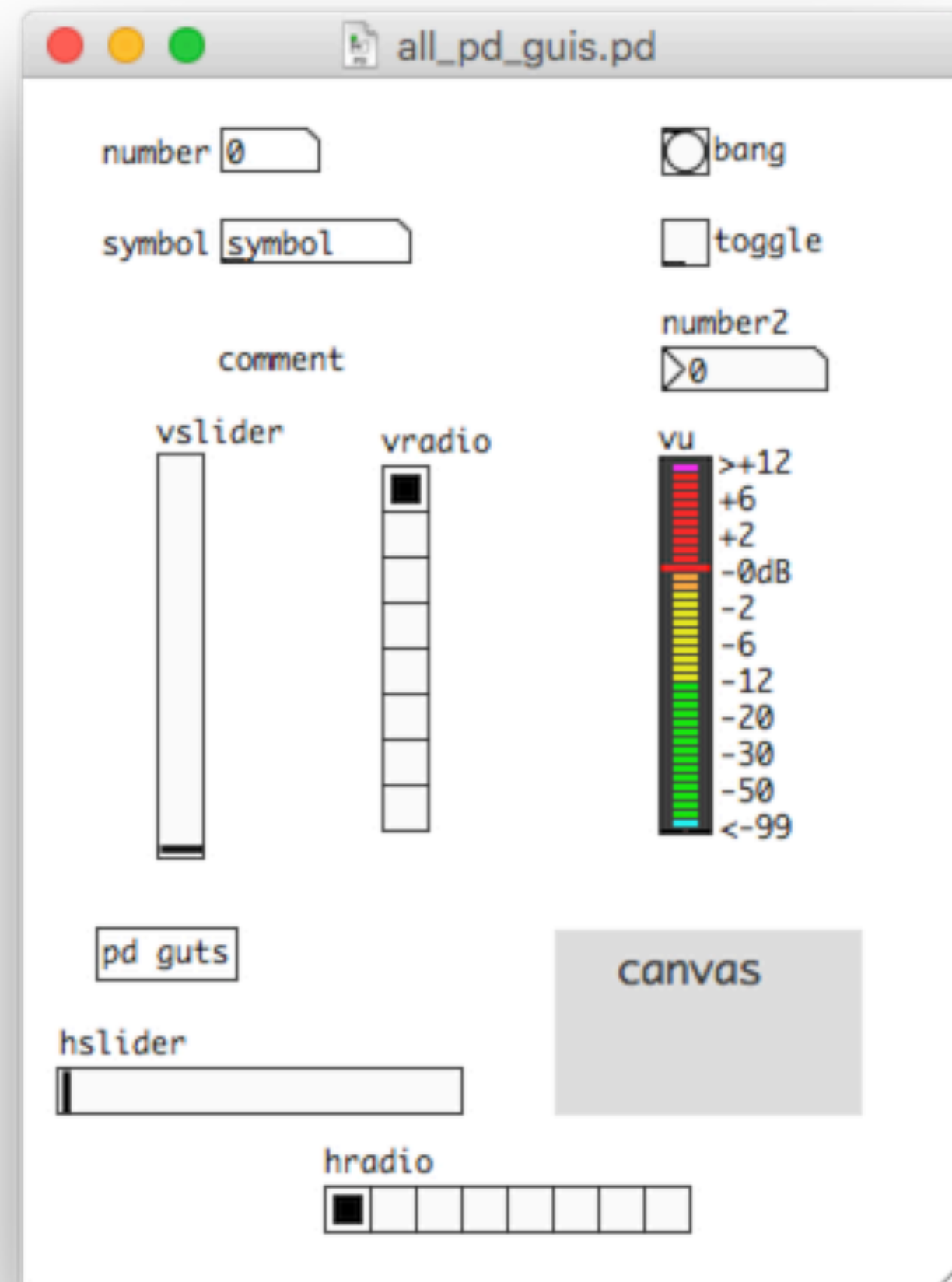
Concept

PdParty

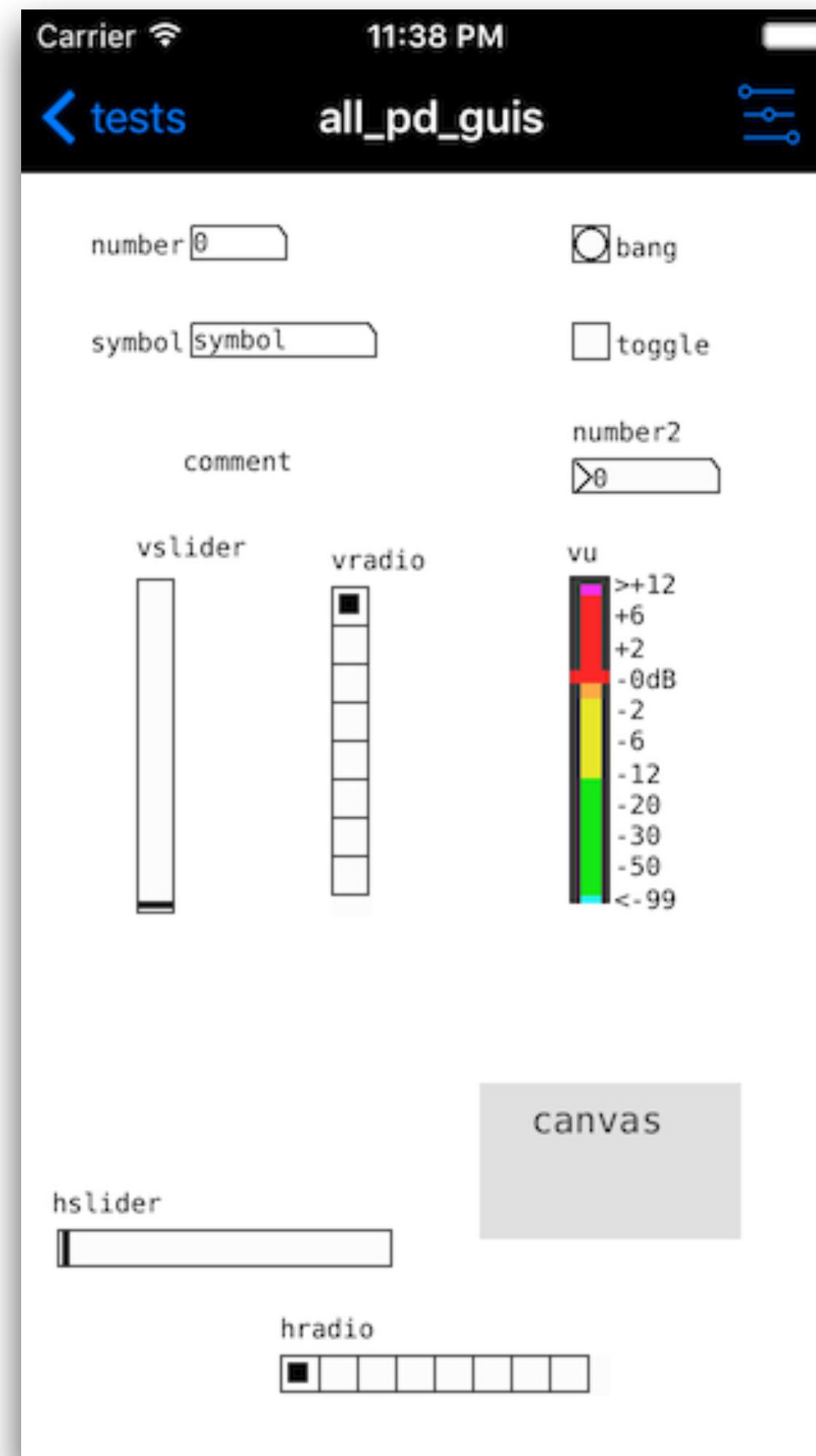
Run patches on iOS



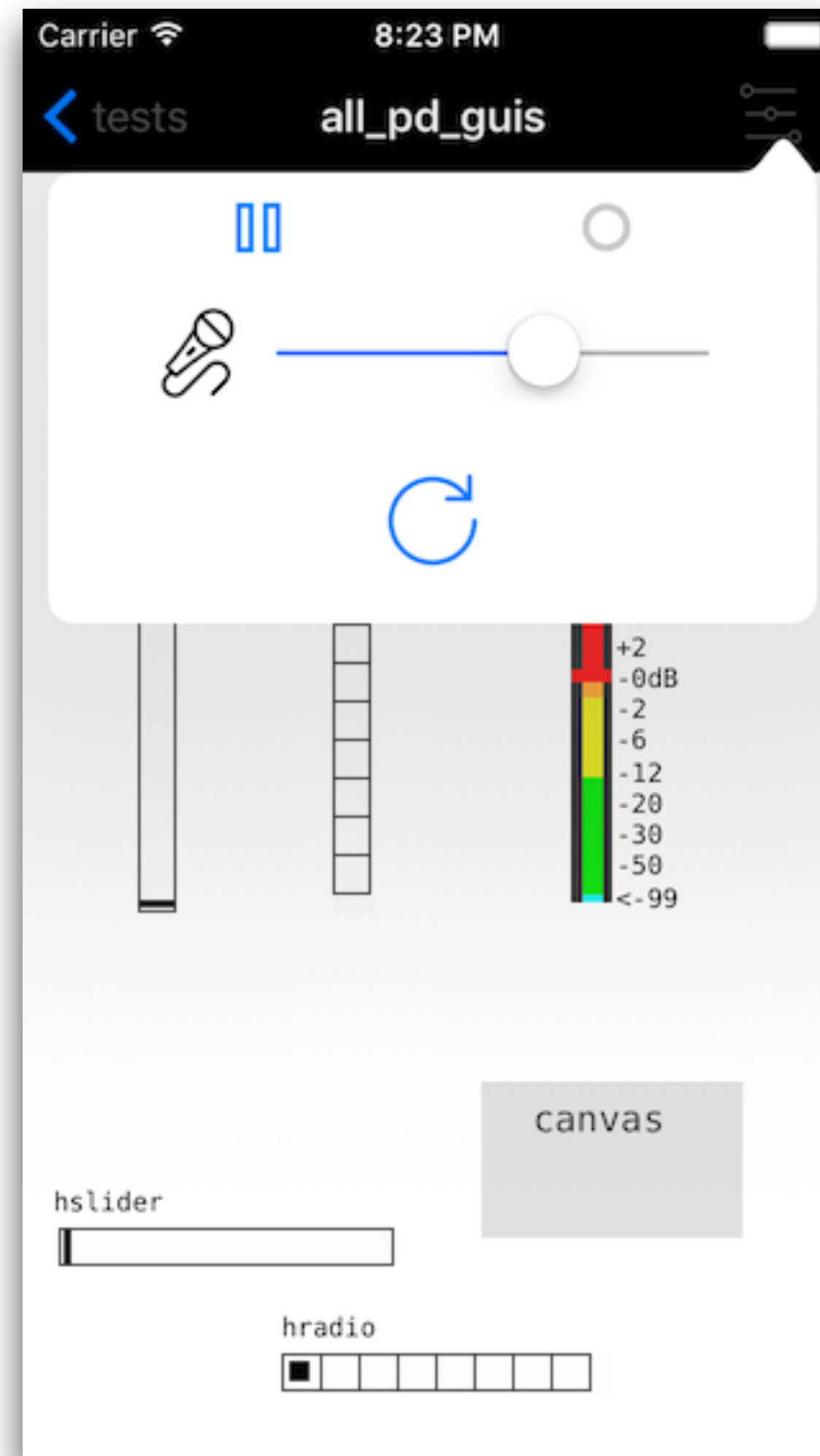
A patch on a desktop system...



...opens on an iOS device



With controls!



Originators: RjDj libpd

- Converting Pd sources into reusable DSP library
- Augmented music app
- RjDj team circa 2010



Originators: RjDj

Archiving

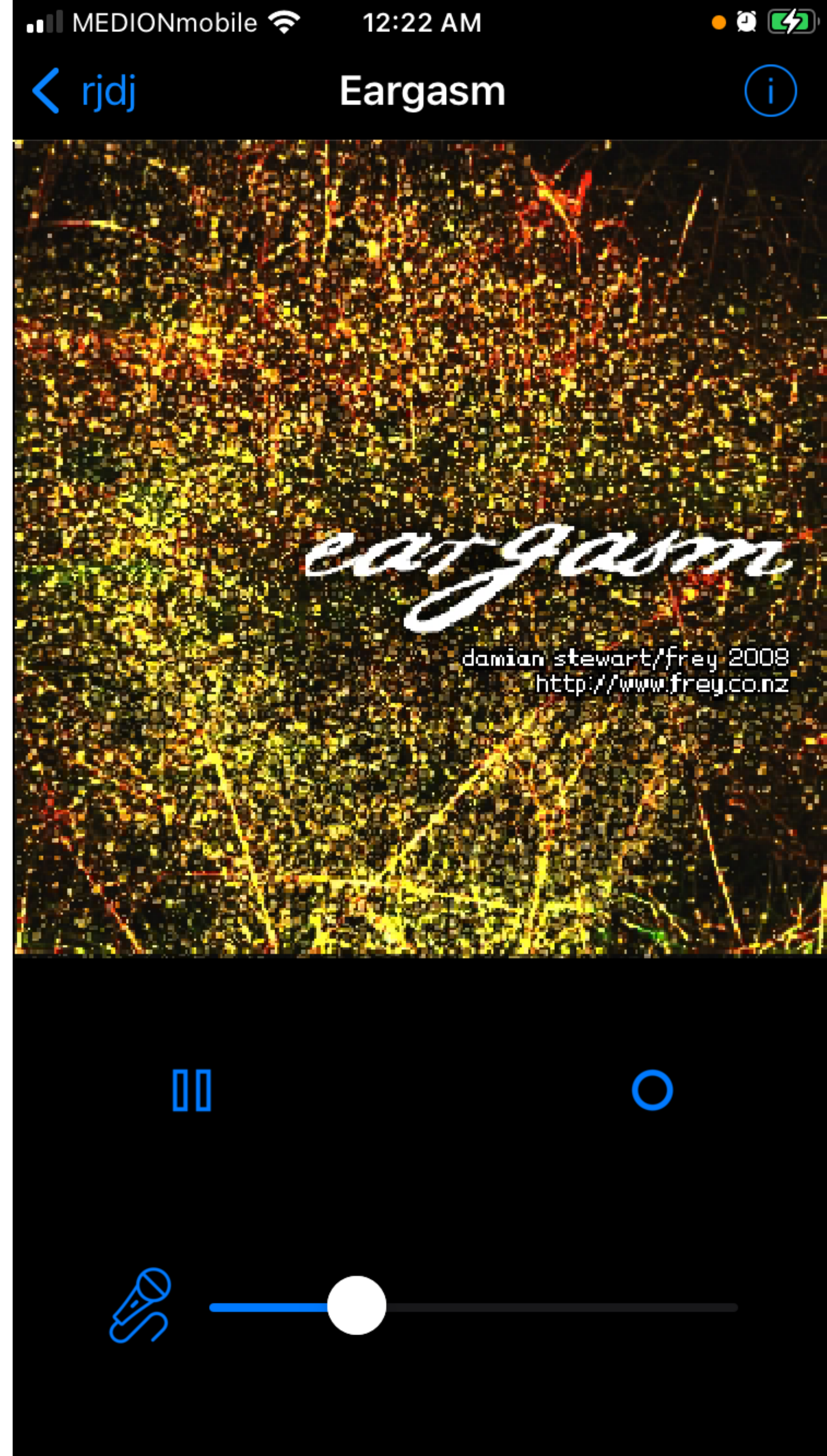
- PdParty supports RjDj scenes
- Sample scenes included in PdParty with permission of original artists:

Frank Barknecht

Georg Bosch

Chris McCormick

Damian Stewart

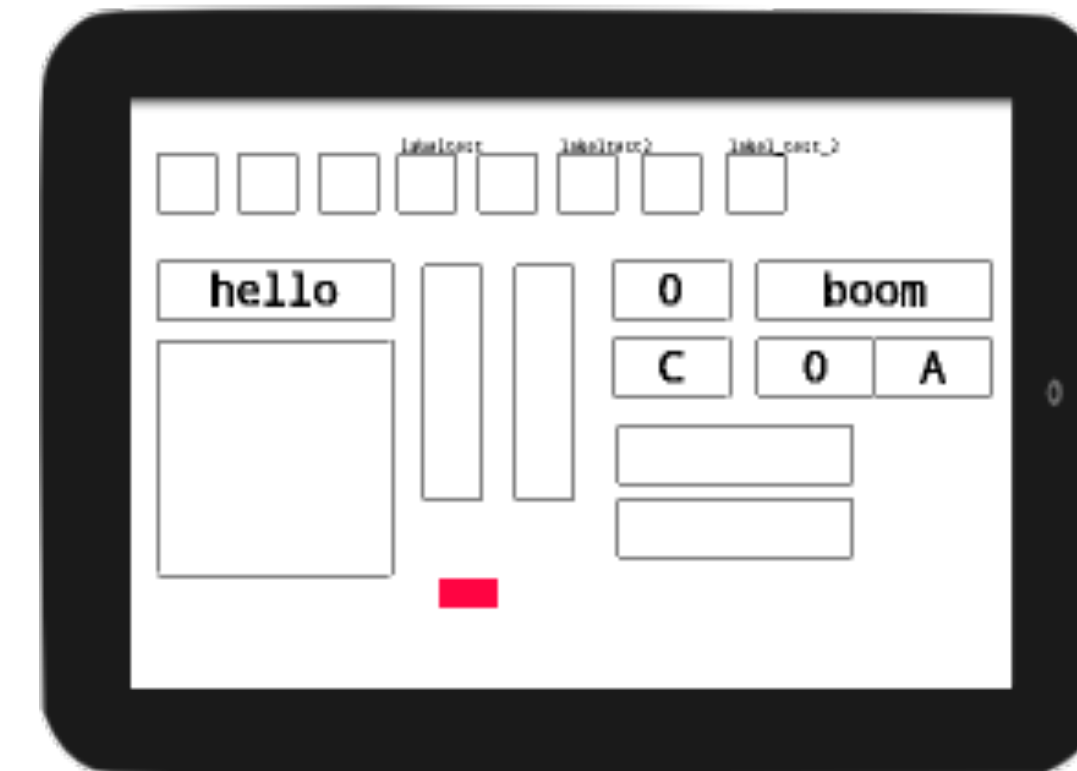
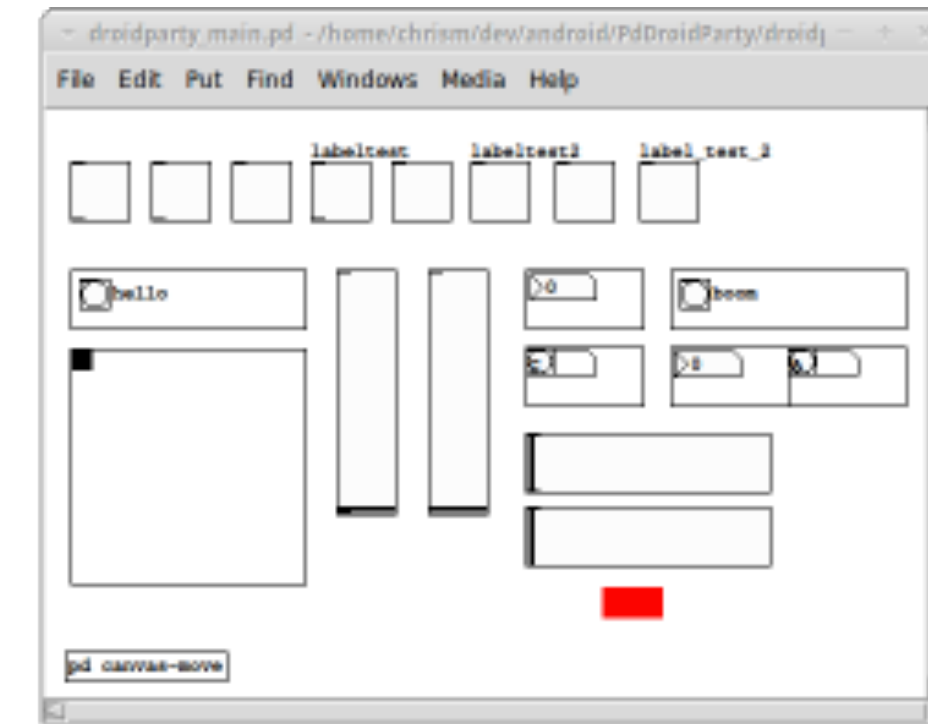


Originators: PdDroidParty

Core Concept

Originated core concepts:
libpd + send/receive GUIs

Chris McCormick circa 2012



robotcowboy

2011: iPad 2

Real Mobile Audio!

- iOS 4.3 had:
 - CoreAudio 🗣️🔥
 - CoreMIDI 🎹🔥
- Android had: fragmented audio between device makers 😞
- Lots of capability compared to DIY embedded devices



Wearable system

Circa 2013



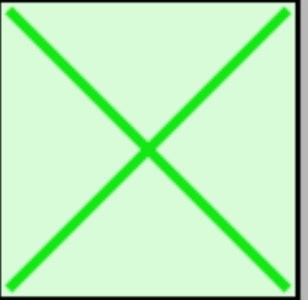
**experimental*

Wearable system

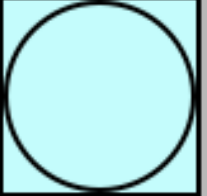
Circa 2016



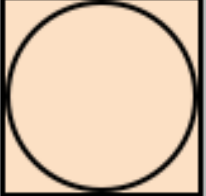
play



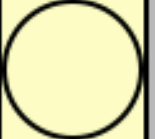
prev



next

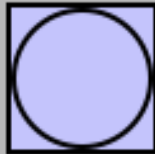



close




Velocipede_v2.pd

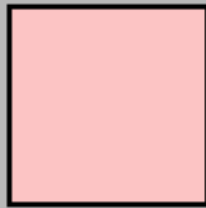
playlist.txt

4 11 pat  lst 

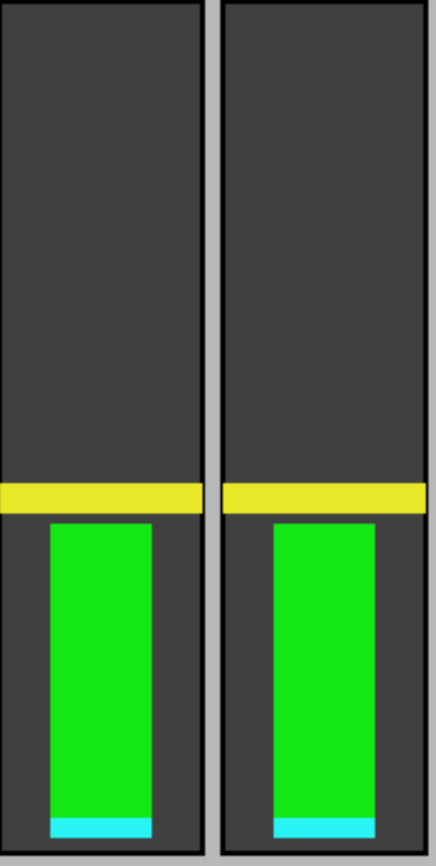

record



arm



vu



>+12
+6
+2
0dB
-2
-6
-12
-20
-30
-50
-99
<

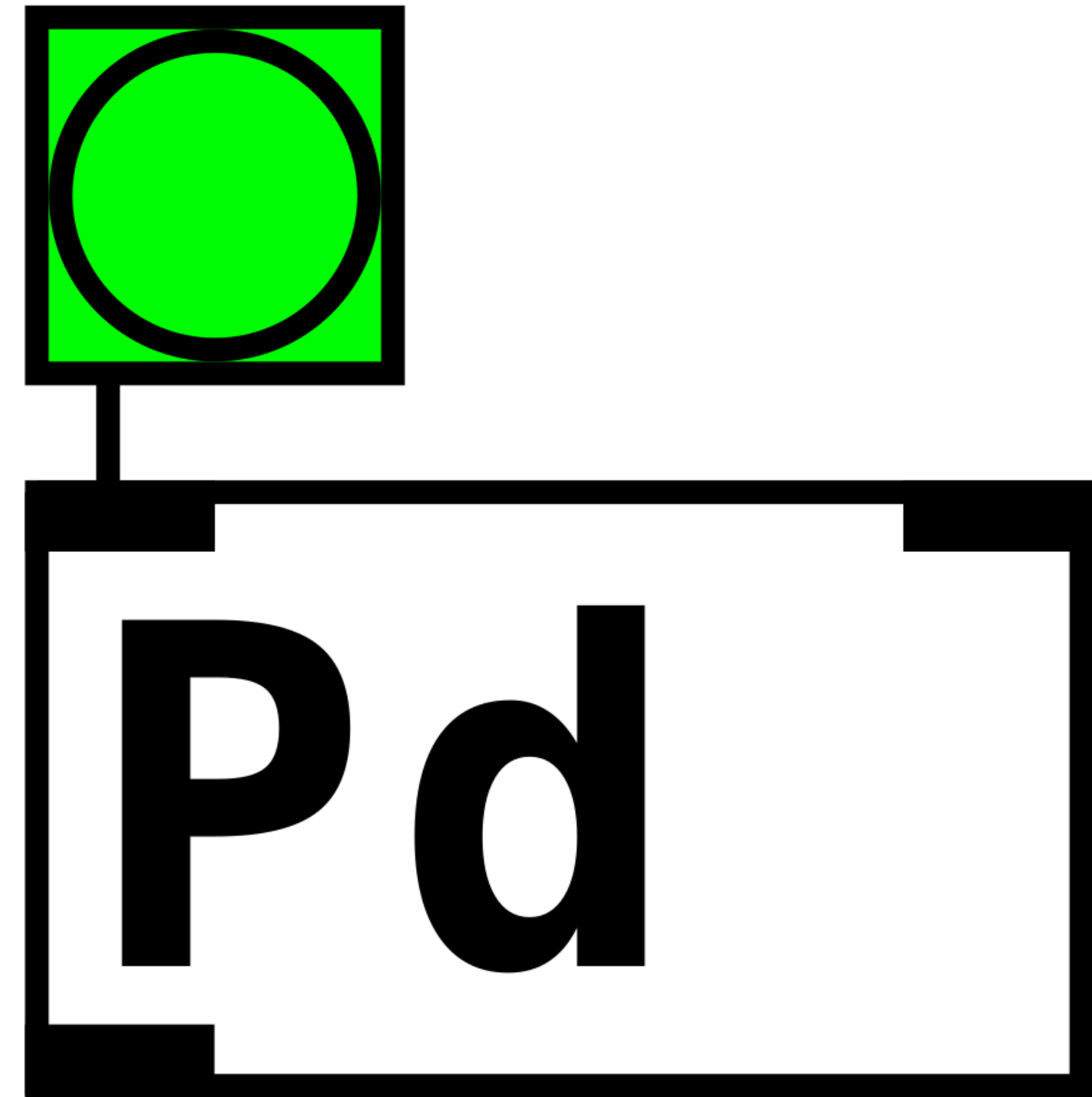
Demo?

Implementation

Implementation Software

[Obj-C]

Native Interface



Audio Engine (libpd)
Scene Format

In focus

WYSIWYG

- Match normal Pure Data behavior as closely as possible
- Make sketching & performing using a mobile, wearable device easy
- Emphasis on audio performance (iOS strongpoint)
- Usability: iOS human interface guidelines, patch console, etc

Out of focus

Not an app framework

- Not an app framework for making your own custom apps
- Fancy, stylized GUIs
- Ableton Link, Audiobus, etc integration -> Not sustainable if I don't use it!
- Other platforms (Android)

Open Source GitHub Repository



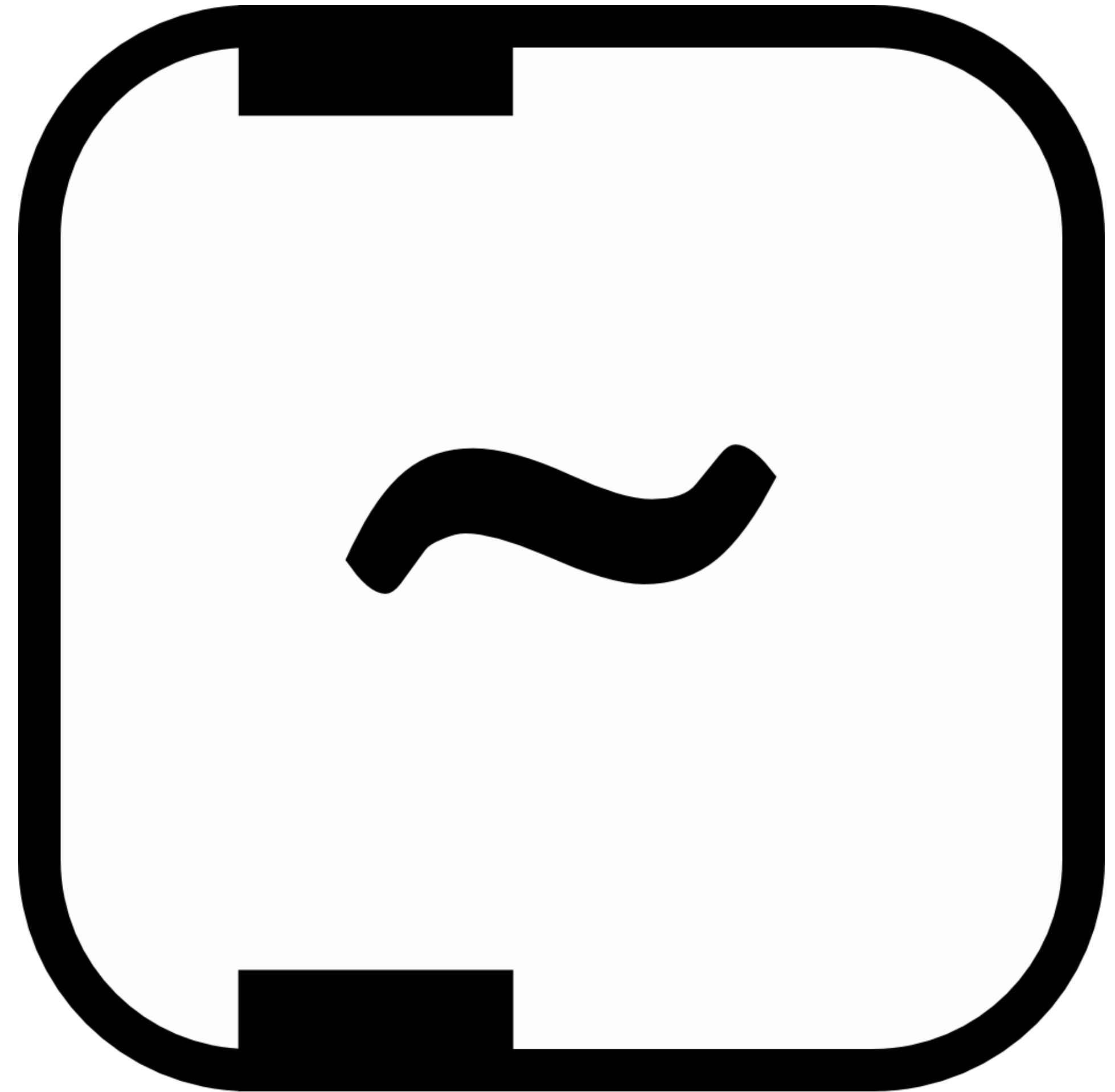
<https://github.com/danomatika/PdParty>

iOS App Store

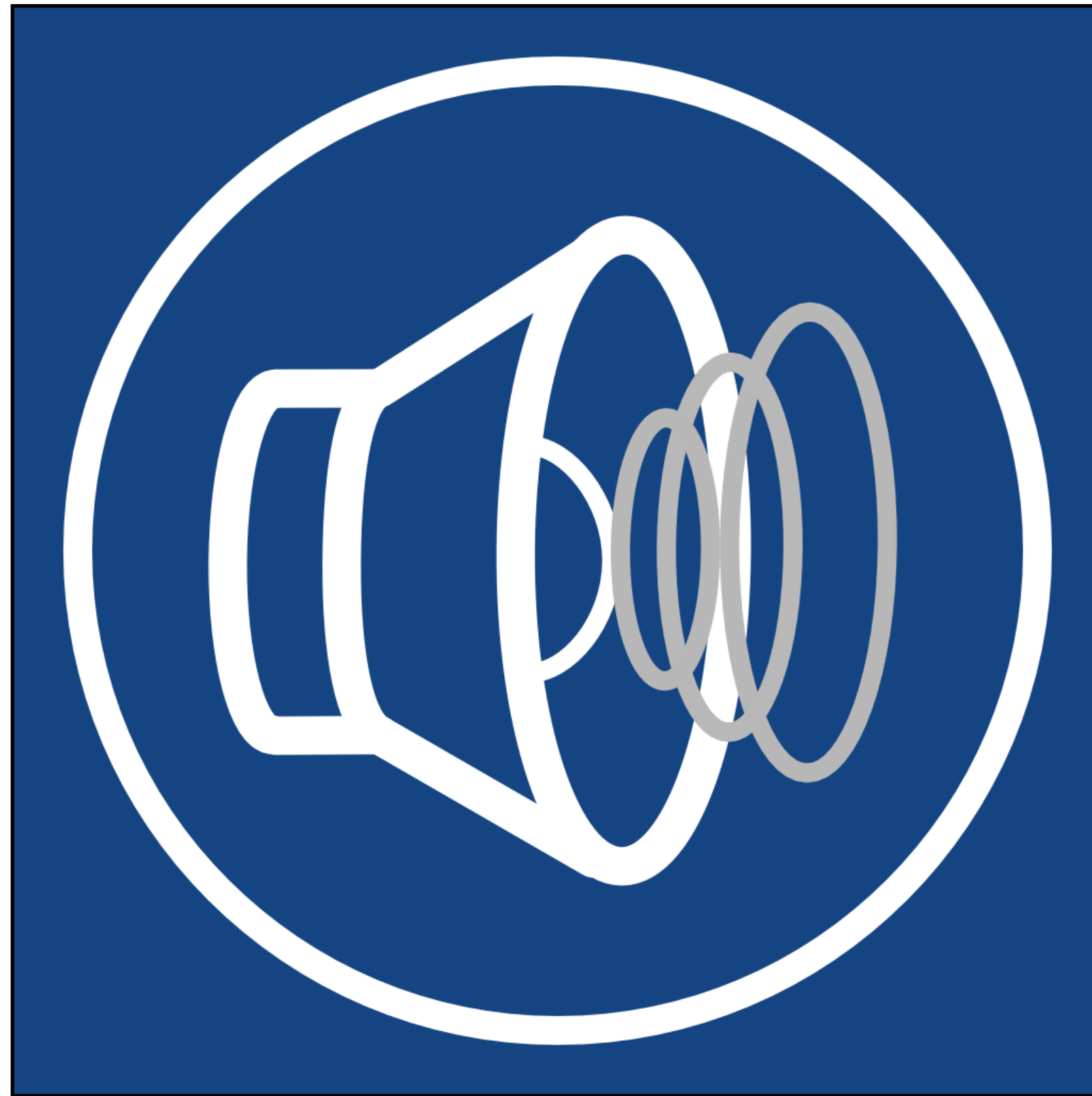
Free Download



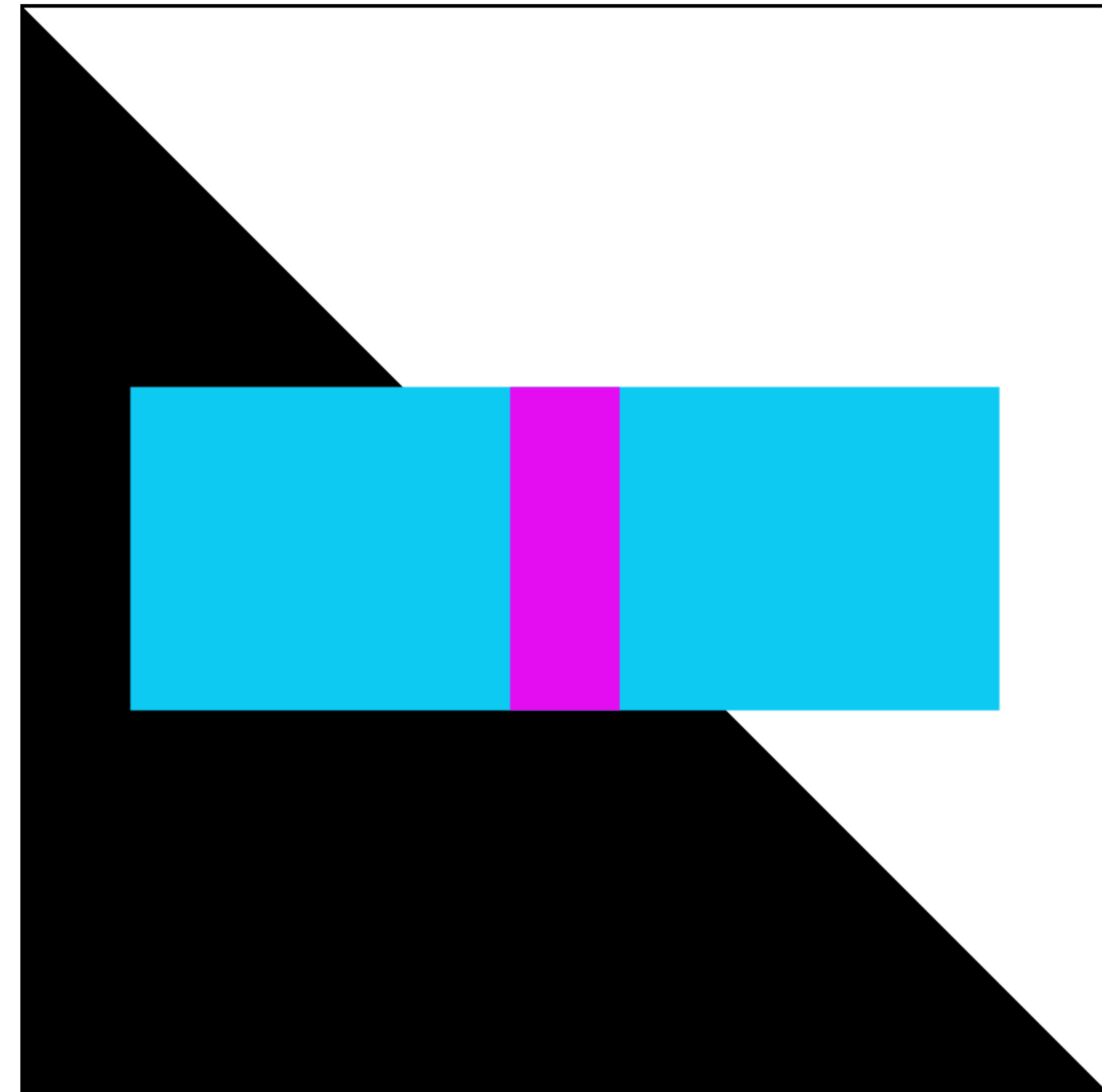
Search for "PdParty"



2021: Summer of (Silly) Apps



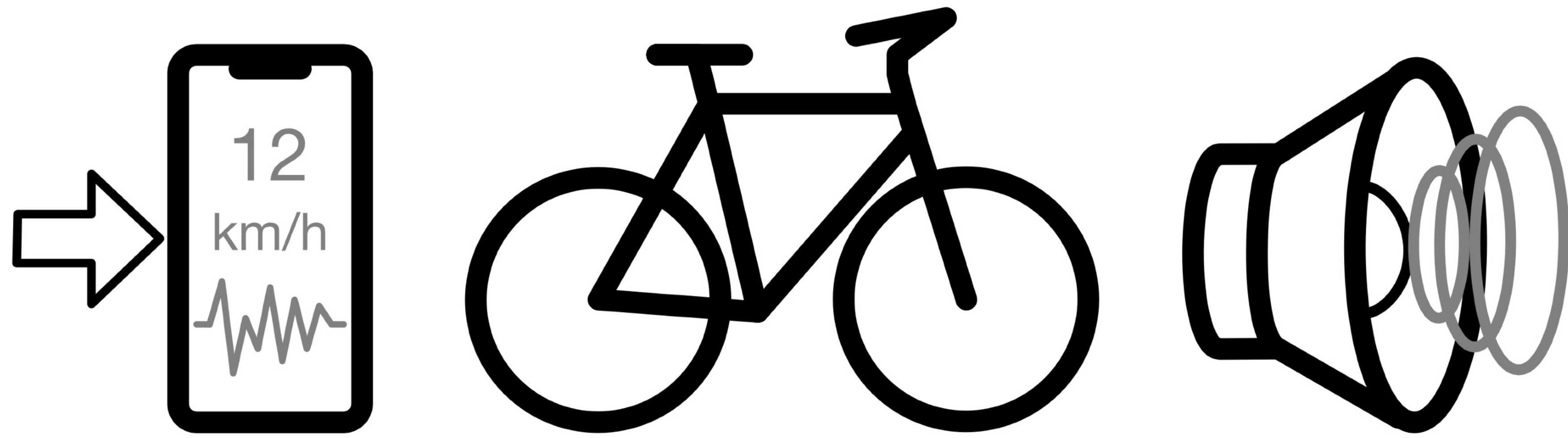
SpeedPitch



ShadowPlay

What are these things, really?

- Media art mobile-device apps (iOS)
... for bicycles (primarily) & bluetooth speakers
- Each developed as part of a funded public art exhibition
- Free on the iOS AppStore
- Open Source
- Localized: English & German



Speed/Pitch

**Augmented sonic reality experiment that
alters music playback speed based on
your actual GPS ground speed**

Concept





Analog



Analog

Turn the crank...



Initial Sketch

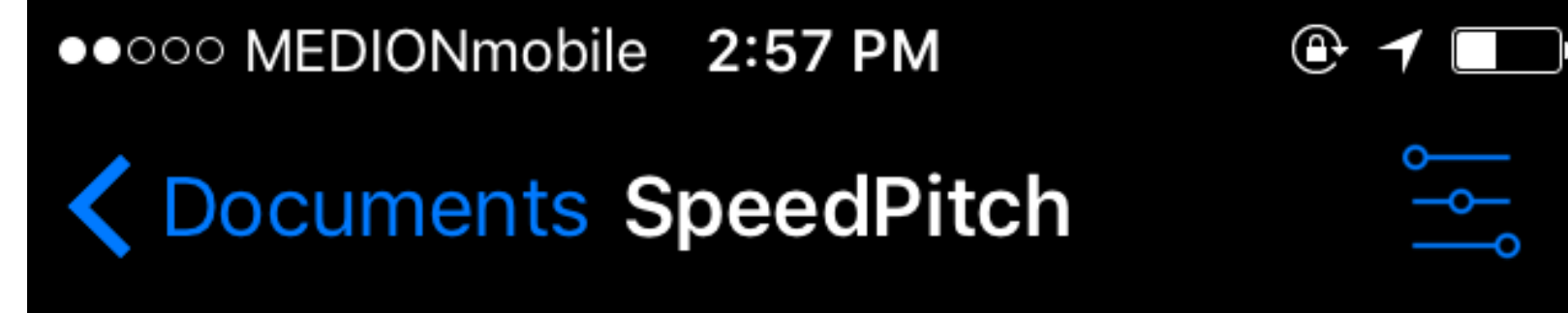
2016-2017

- Pure Data patch in PdParty
- Locomotion tested:

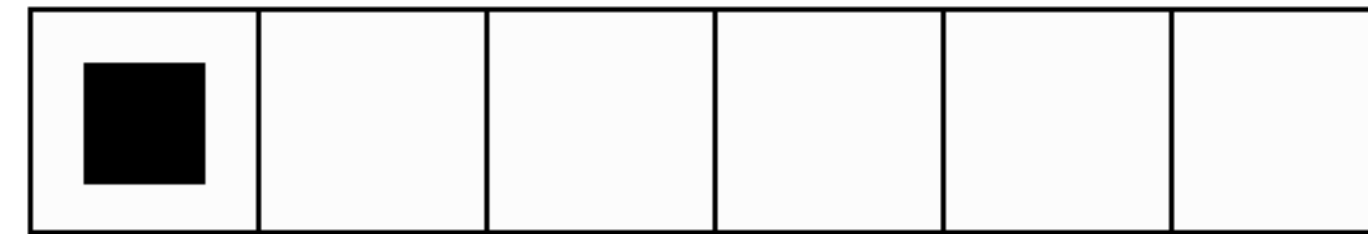
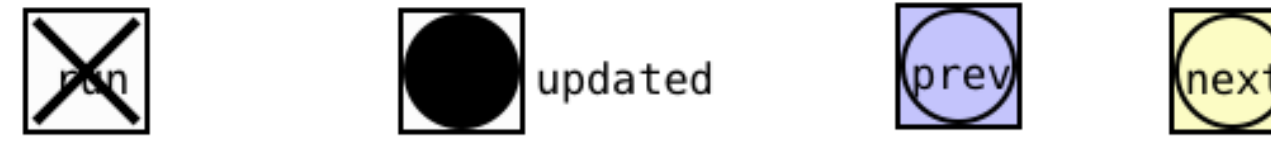
Foot

Bicycle

Automobile

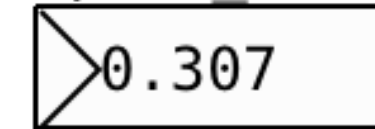


1 mph = 0.45 m/s

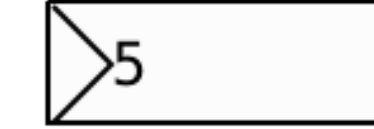


navigation best 10m 100m 1km 3km

speed m/s



accuracy m

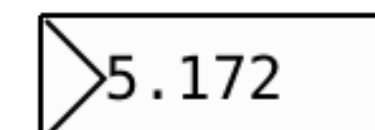
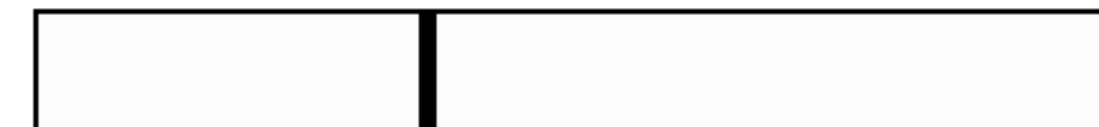


speed_range



foot bike car plane jet rckt

maxspeed_m/s



WARNING
shaky cam

SpeedPitch



Implementation

Implementation Software



Native Interface



AVFoundation
Camera Input & Audio Playback

Implementation

Hardware

- Bicycle
- iOS device
- Smartphone mount
- Bluetooth loudspeaker



Implementation

Hardware

- Bicycle
- iOS device
- Smartphone mount
- Bluetooth loudspeaker

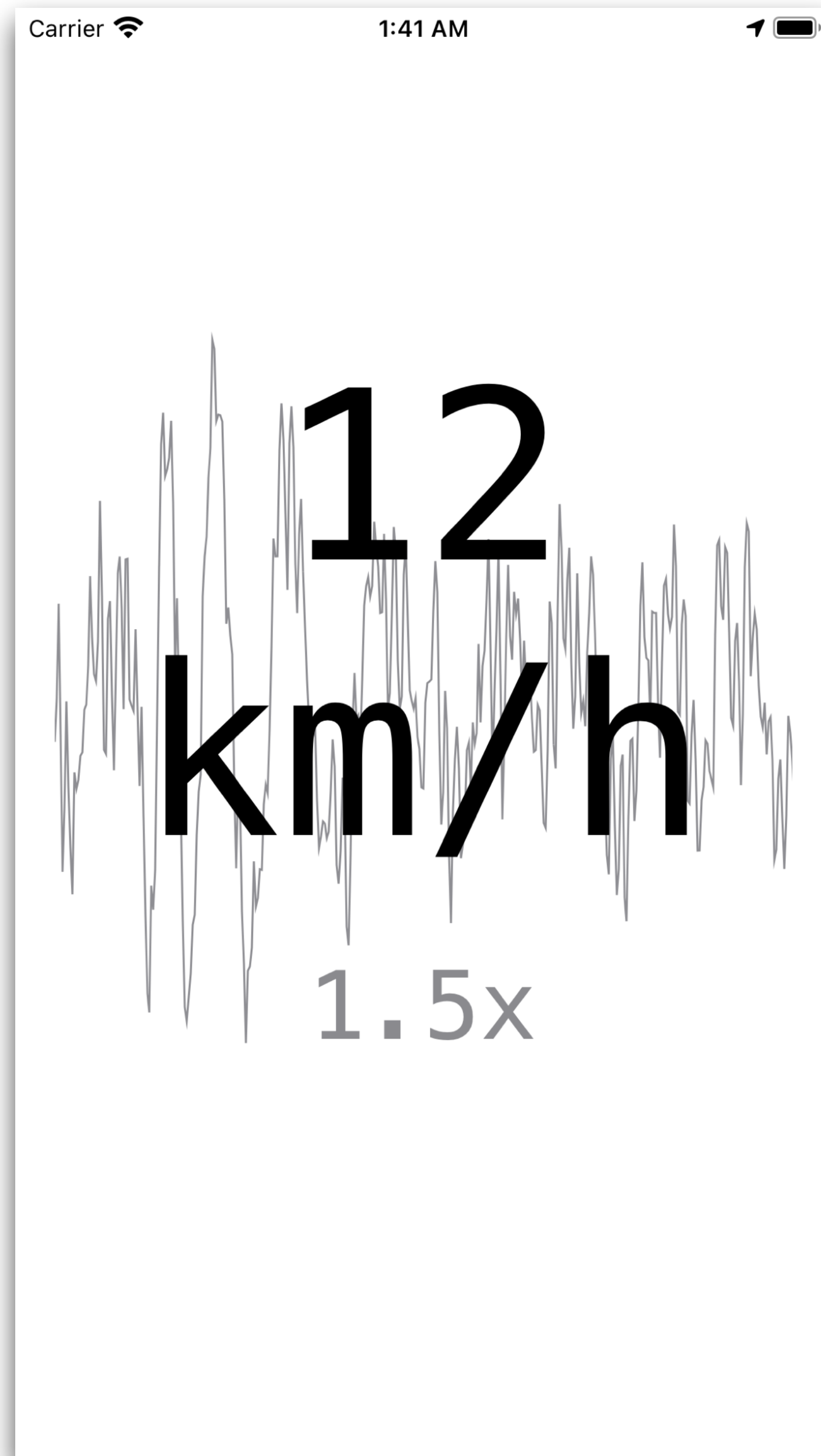
BIG PARTYBOX



Speed Playback

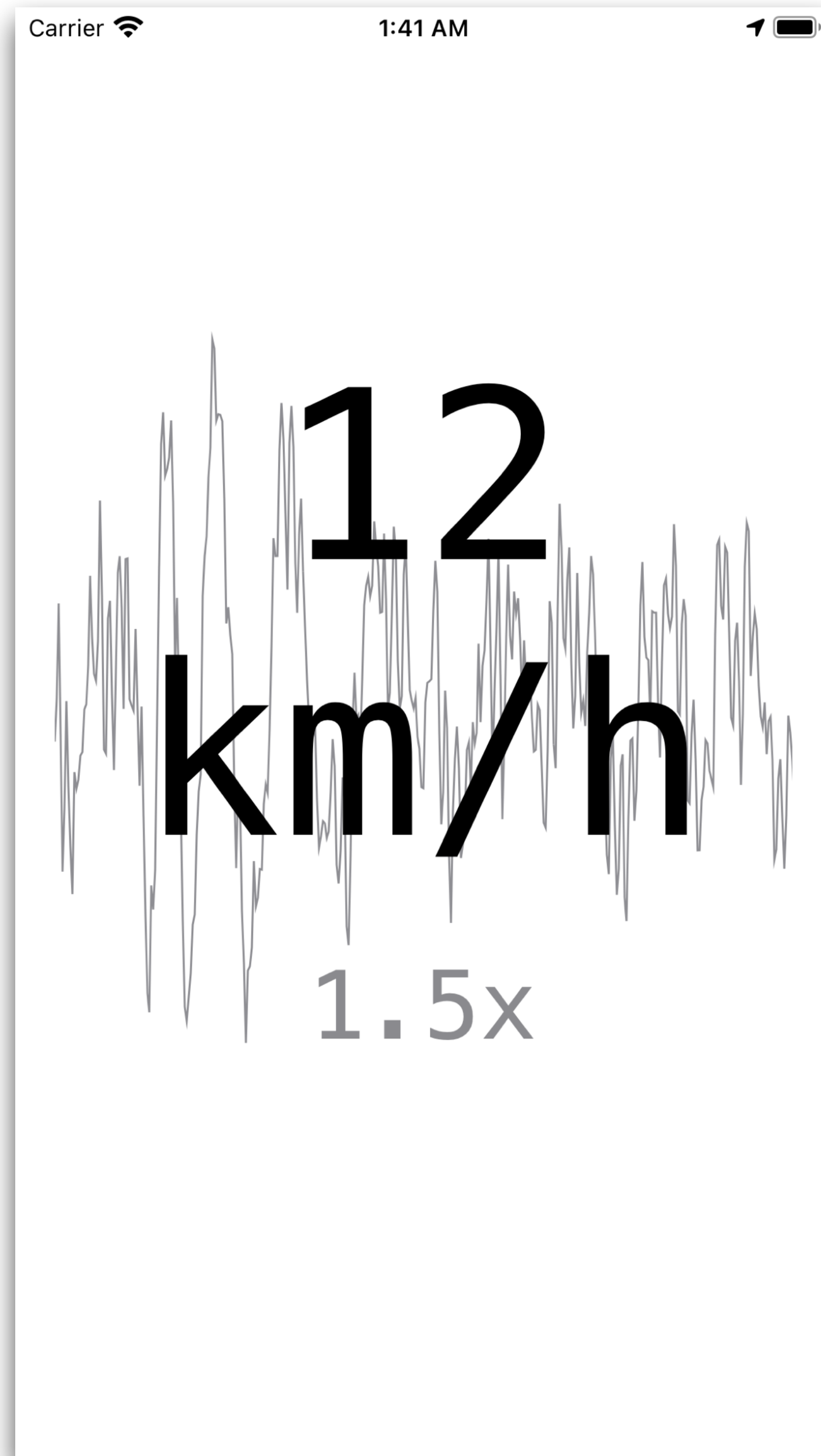
- GPS speed over ground
- Mapped to relative playback speed
... aka "pitch"

Minimal interface shown



Speed Playback

- Pitch interpolation modeled after Pure Data concept sketch & reimplemented in Swift
- Quantizable: match speed with friends!
- Live audio waveform



Speed Limit

- Adjustable on the fly
- Selectable speed range in max km/h:

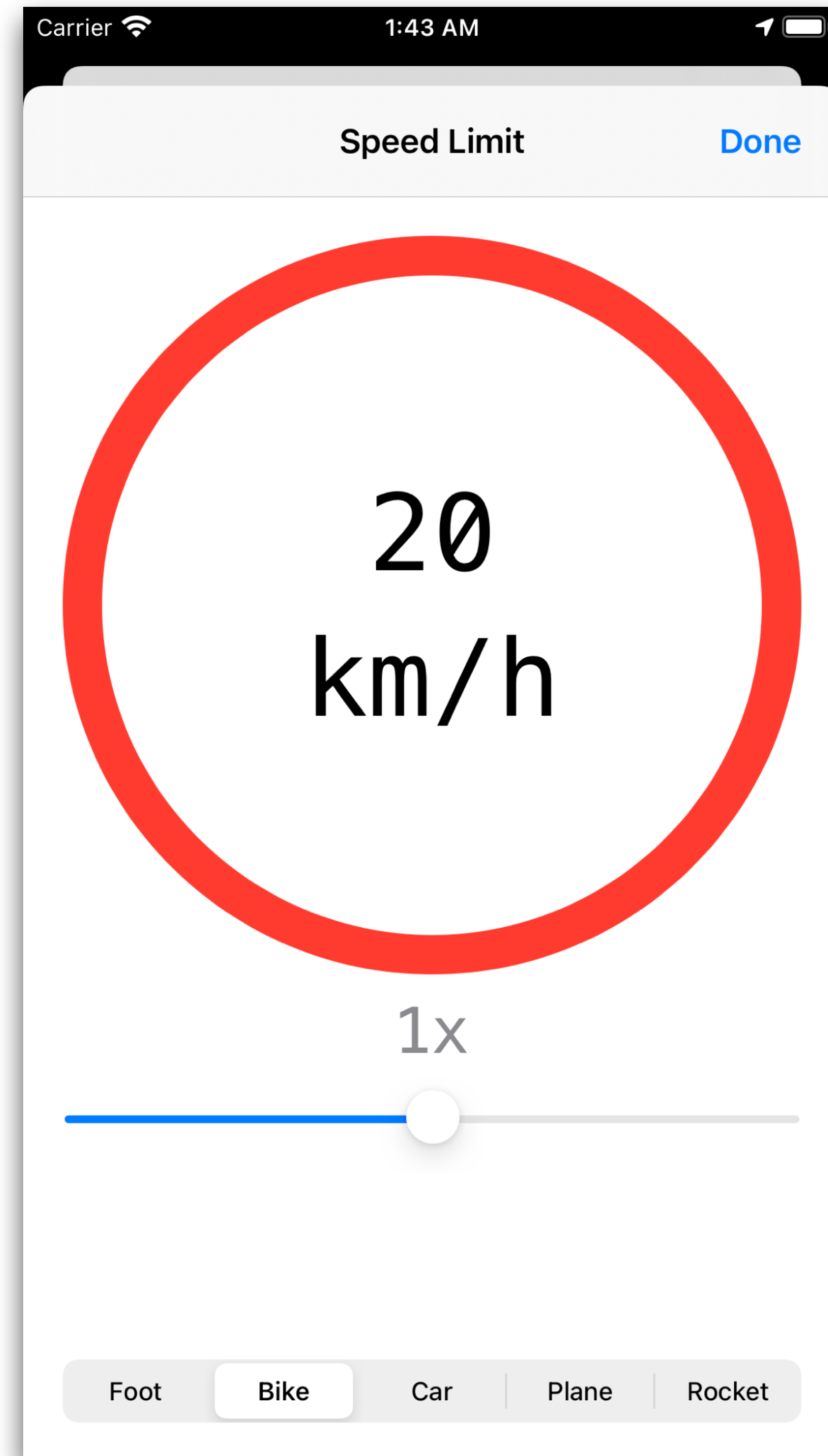
35 Foot: Olympic sprinter

60 Bike: Downhill

200 Car: Autobahn+

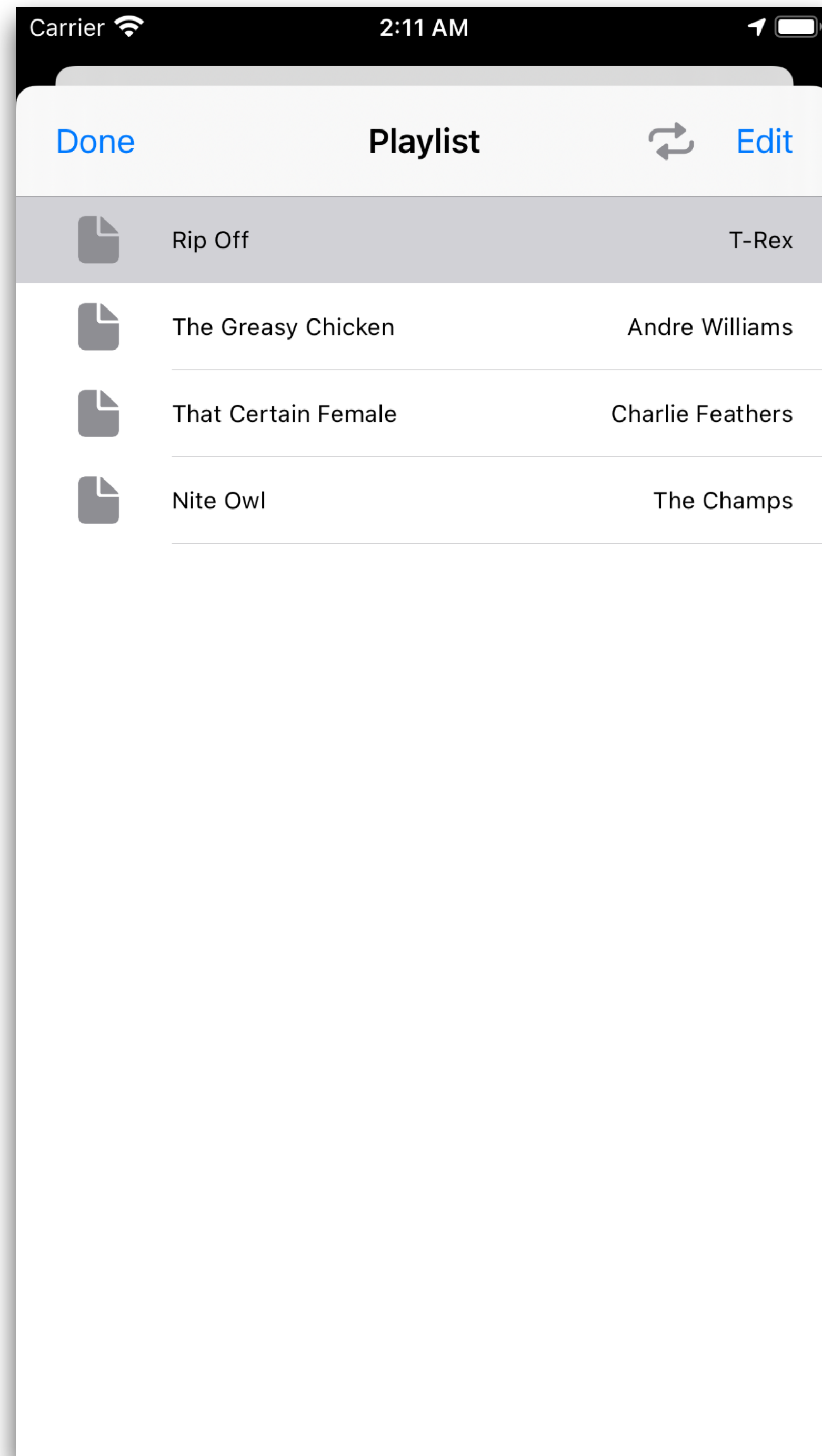
1000 Jet: Transatlantic cruise

28000 Rocket: speed to reach LEO



Sound Playlist

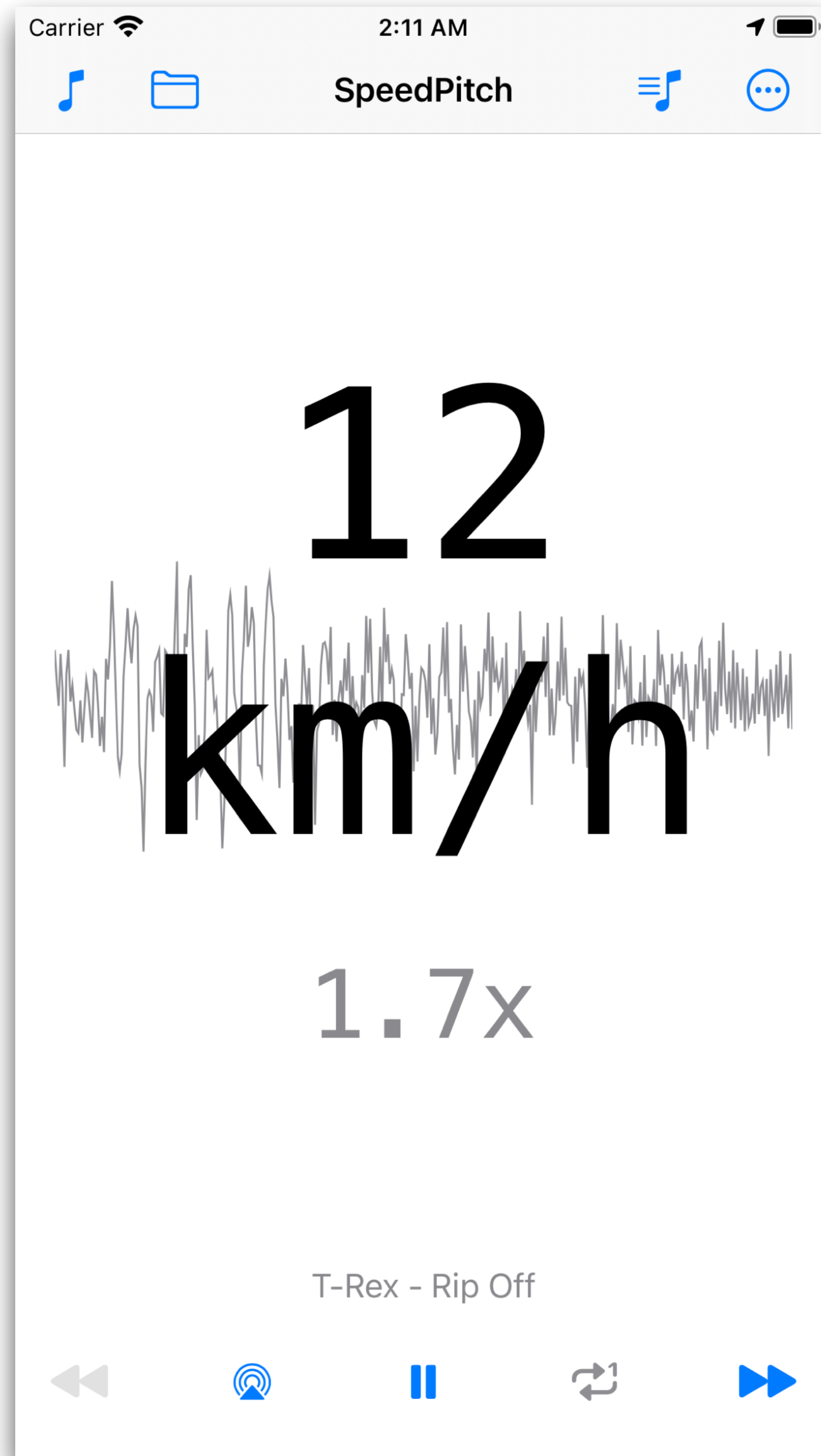
- Build a playlist or loop a single file
- Pick audio from:
 - Music app library
 - Files app audio files



Sound Playlist

- Media controls on main view
- Current filename or artist-title

Default interface shown



Open Source GitHub Repository



<https://github.com/danomatika/SpeedPitch>

iOS App Store

Free Download



Search for "SpeedPitch"



NIX    2.-30.7.21
Karlsruhe

  WIE   

RAUS!   

Fahrrad     Vernissage:
Kunst Freitag, 2.7.21
Sommer um 19 Uhr

Nix Wie Raus!

Jul 2021, Karlsruhe DE

Opening night: Performance

Workshops







Nix Wie Raus!

Jul 2021, Karlsruhe DE

Closing night: Critical Mass





NIX
Fahrrad
Kunst
Sommer
WIE
RAUS!

BASS
BOOST

* G





MFG

BADEN-WÜRTTEMBERG



Stadt Karlsruhe

Kulturamt | Kulturbüro

Supported through the MFG Media and Film Society Baden-Württemberg as well as through the City of Karlsruhe.
Unterstützt durch die MFG Medien- und Filmgesellschaft Baden-Württemberg sowie durch die Stadt Karlsruhe.

ShadowPlay

**An exploration of the architecture and
light in outdoor spaces through sound**

Concept

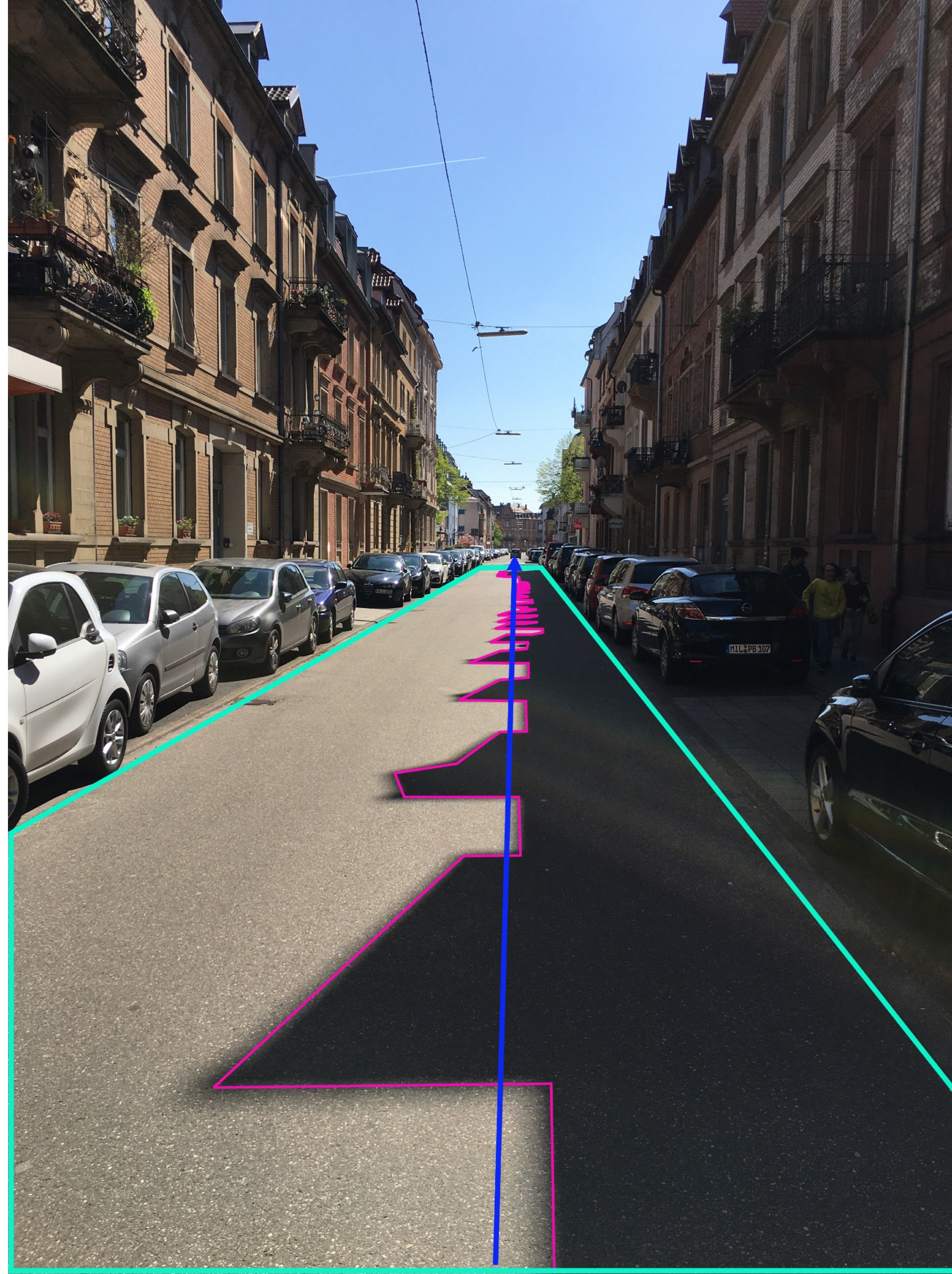
Körnerstraße
Weststadt
Karlsruhe
16:00

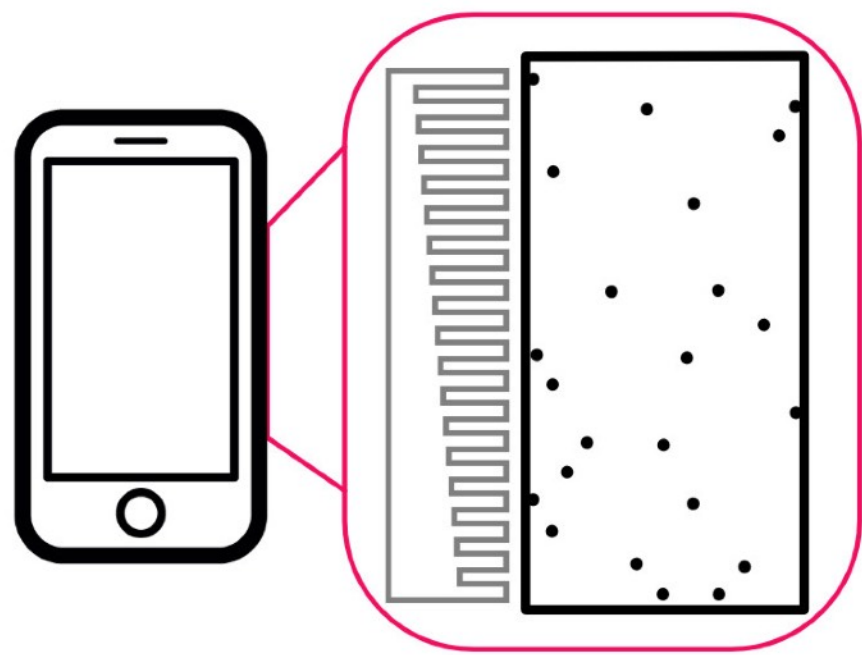
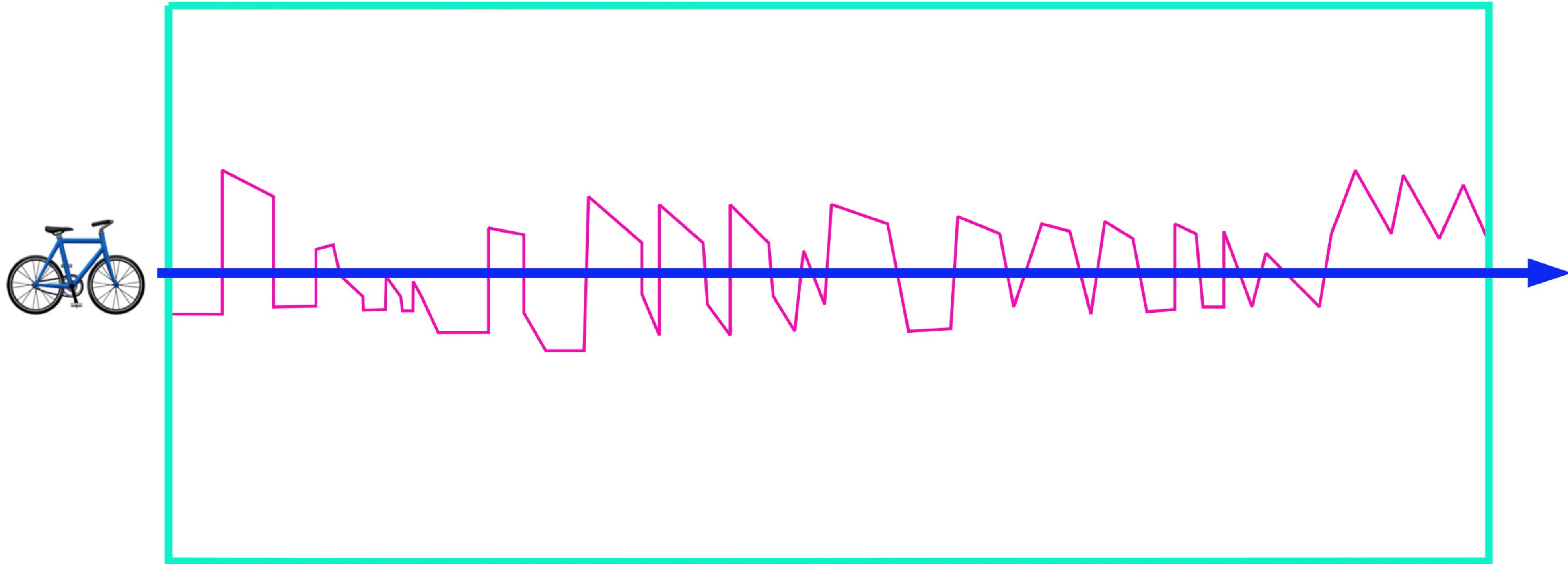


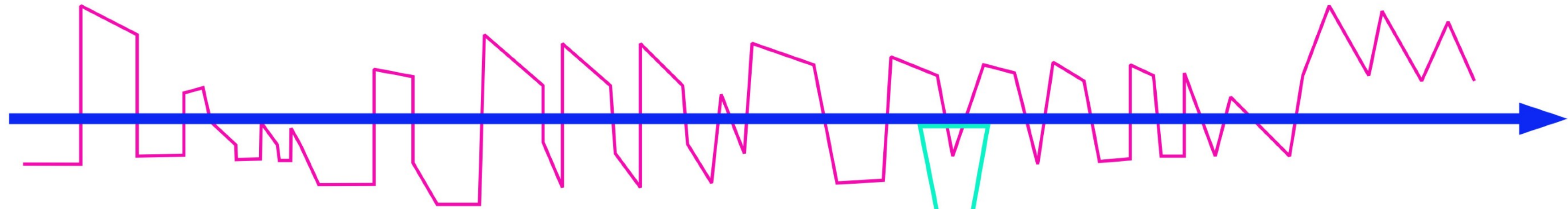
Körnerstraße
Weststadt
Karlsruhe
10:00

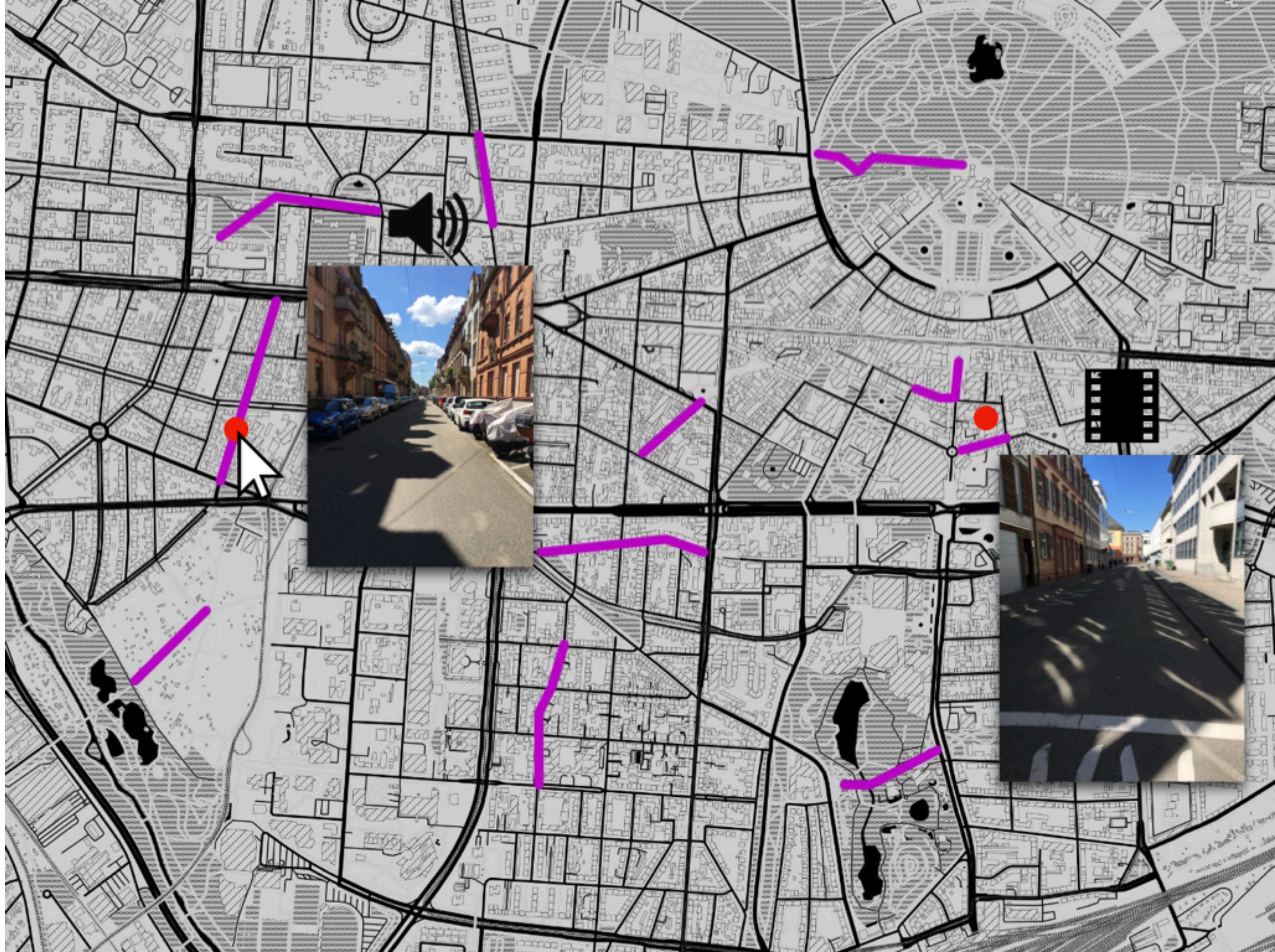


Possibilities...









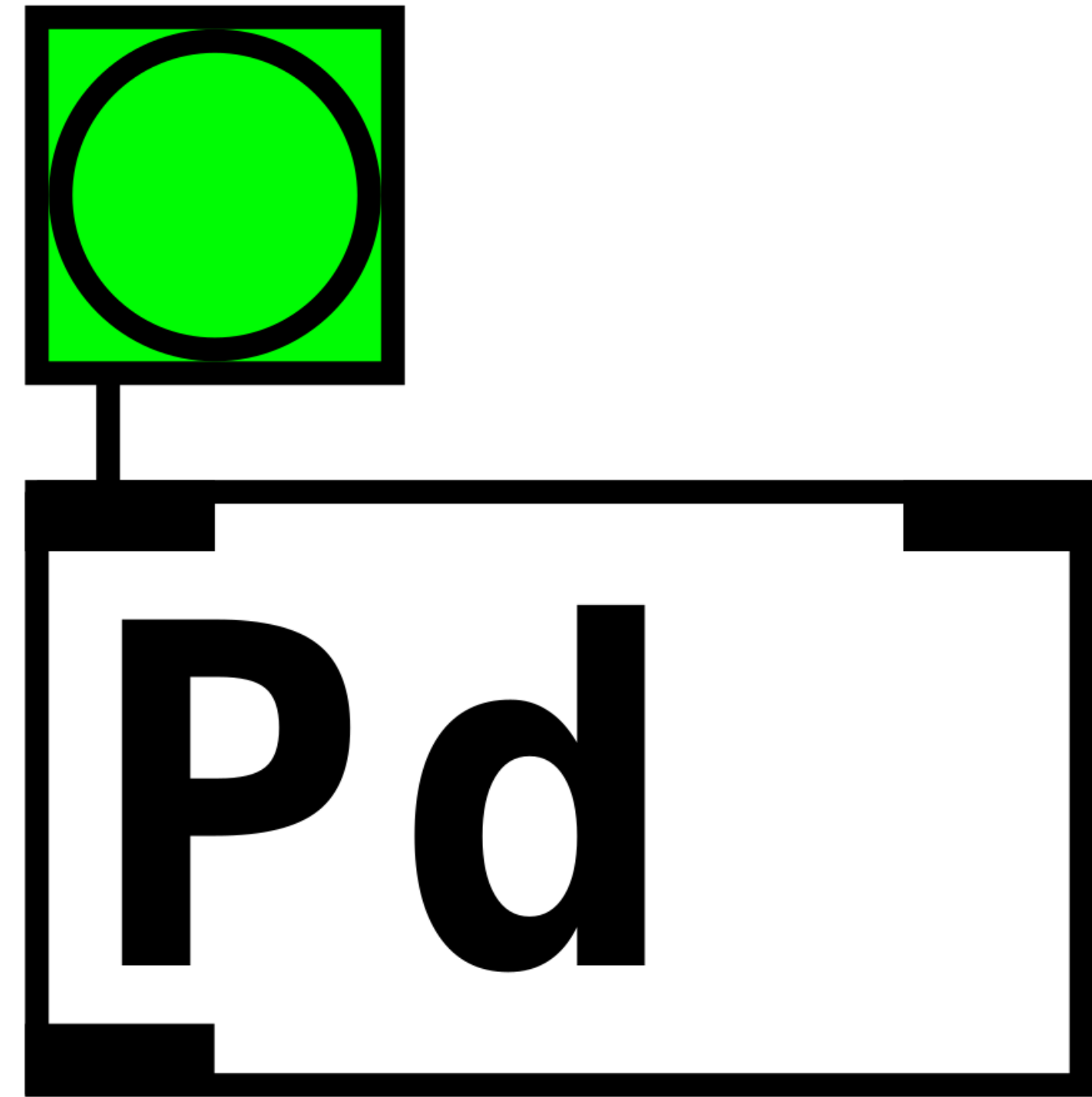


Implementation

Implementation Software



Native Interface

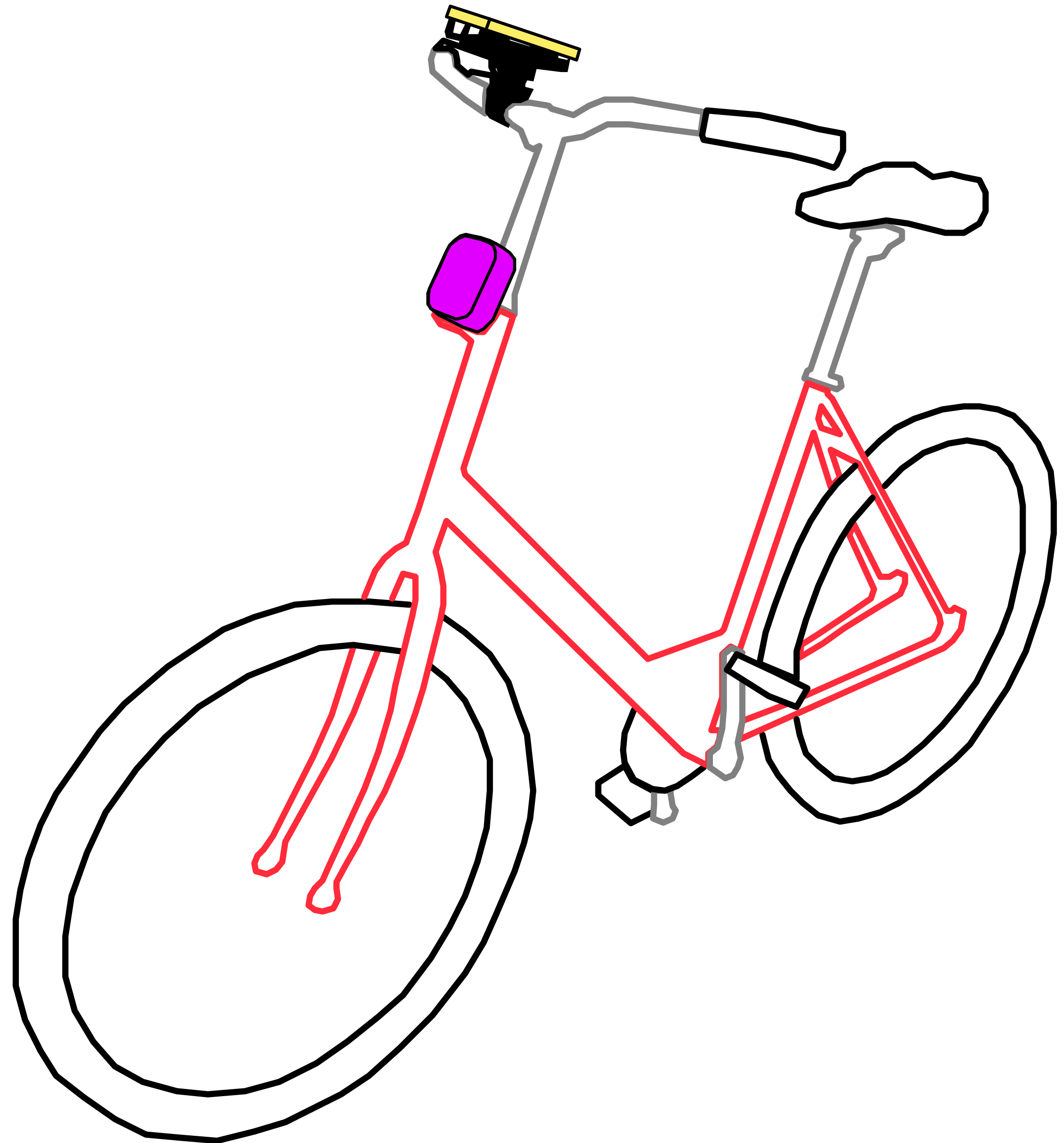


Audio Engine (libpd)
Scene Format

Implementation

Hardware

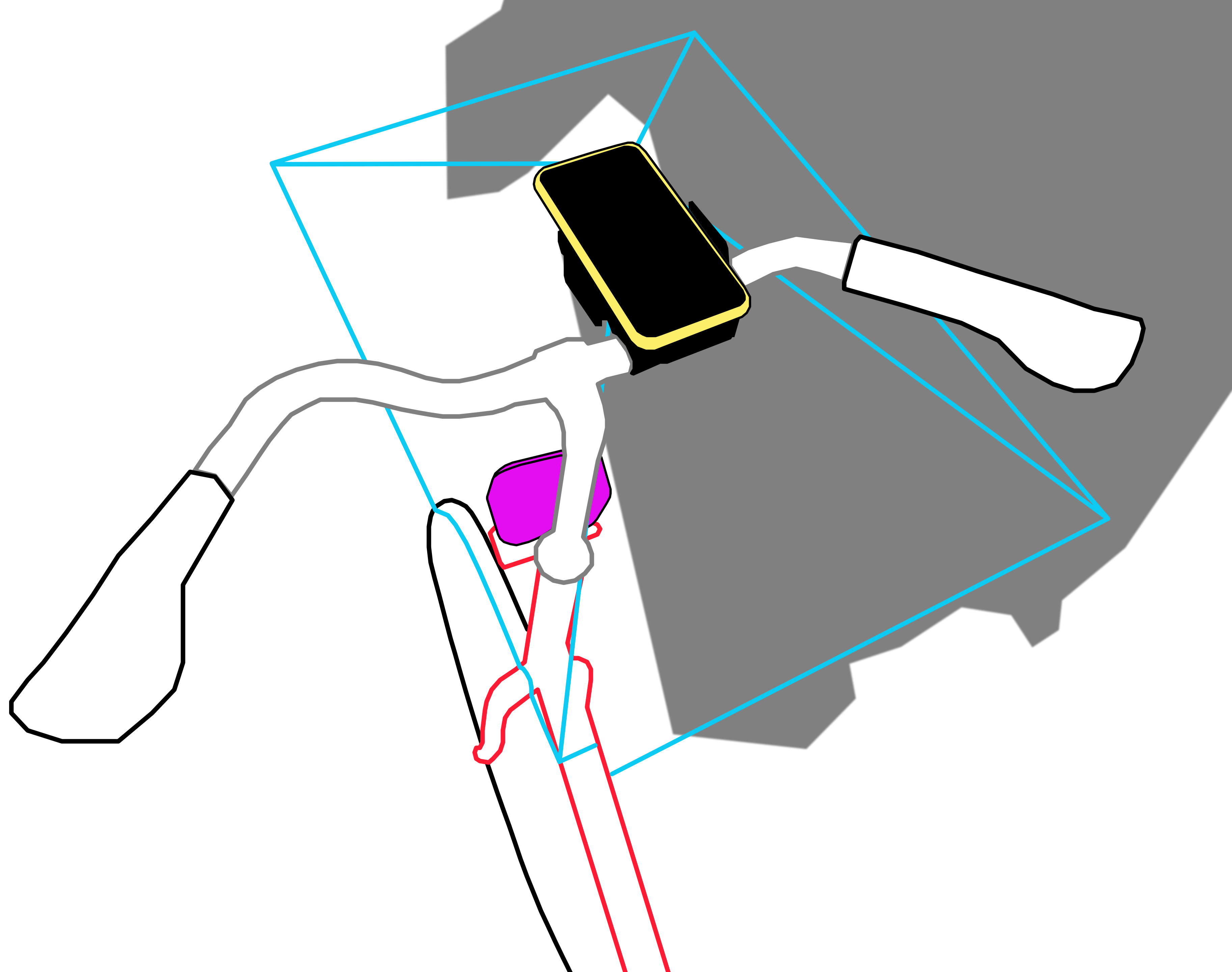
- Bicycle
- iOS device
- Smartphone mount
- Bluetooth loudspeaker



Brightness

Hardware

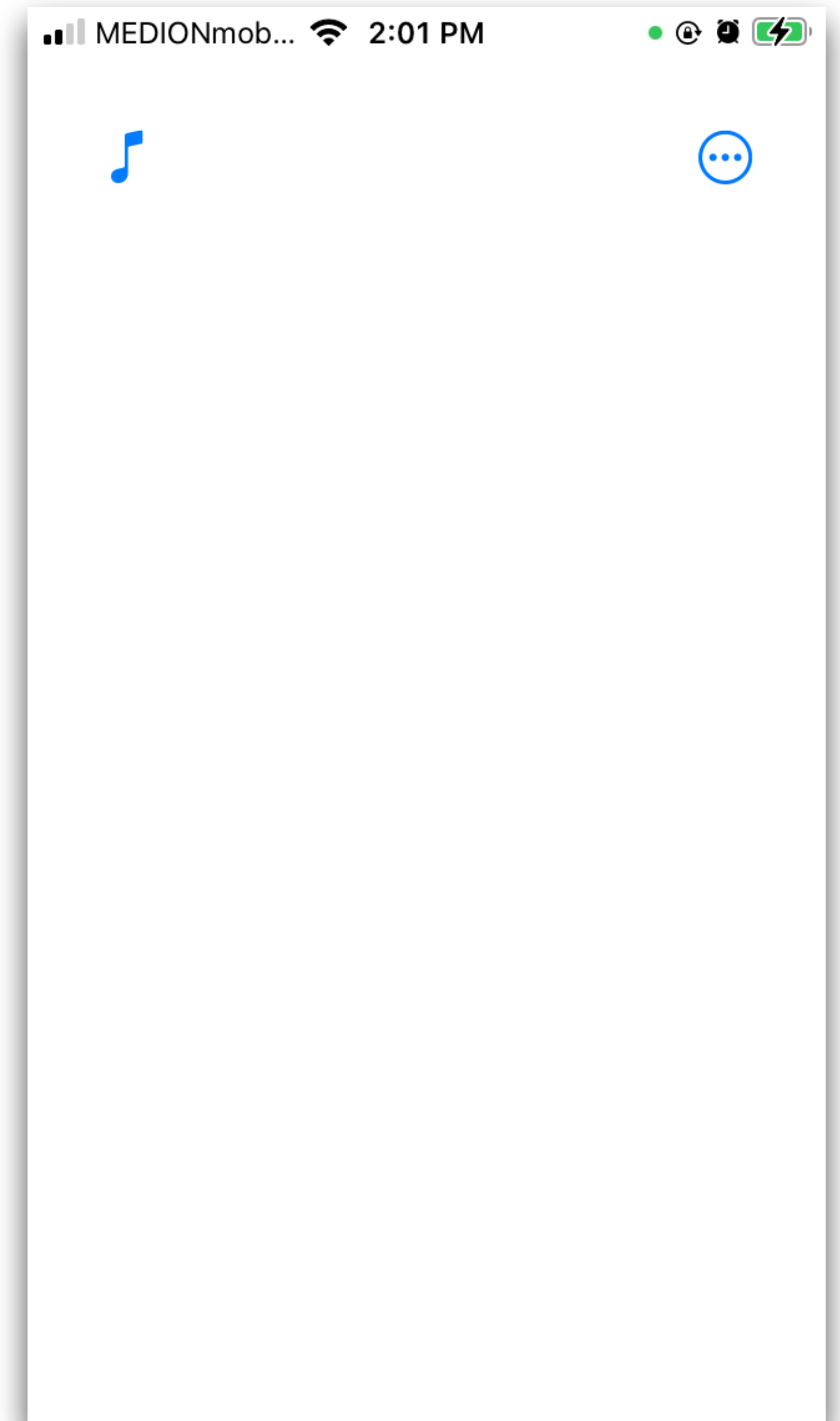
- Camera as simple light sensor
- Per-frame EXIF brightness level



Brightness

Main Interface

- Minimal: show averaged brightness only
- Focus on interplay between light & shadow
- Normal camera view "too busy"
- Differentiate from Camera app



Brightness

Calibration Calibration Calibration!

- Normalize from EXIF brightness min/max?
Too wide...
- Normalize to current conditions: the range bar
- Usage: start calibration and point phone at light & shadows
- Future: auto-calibration



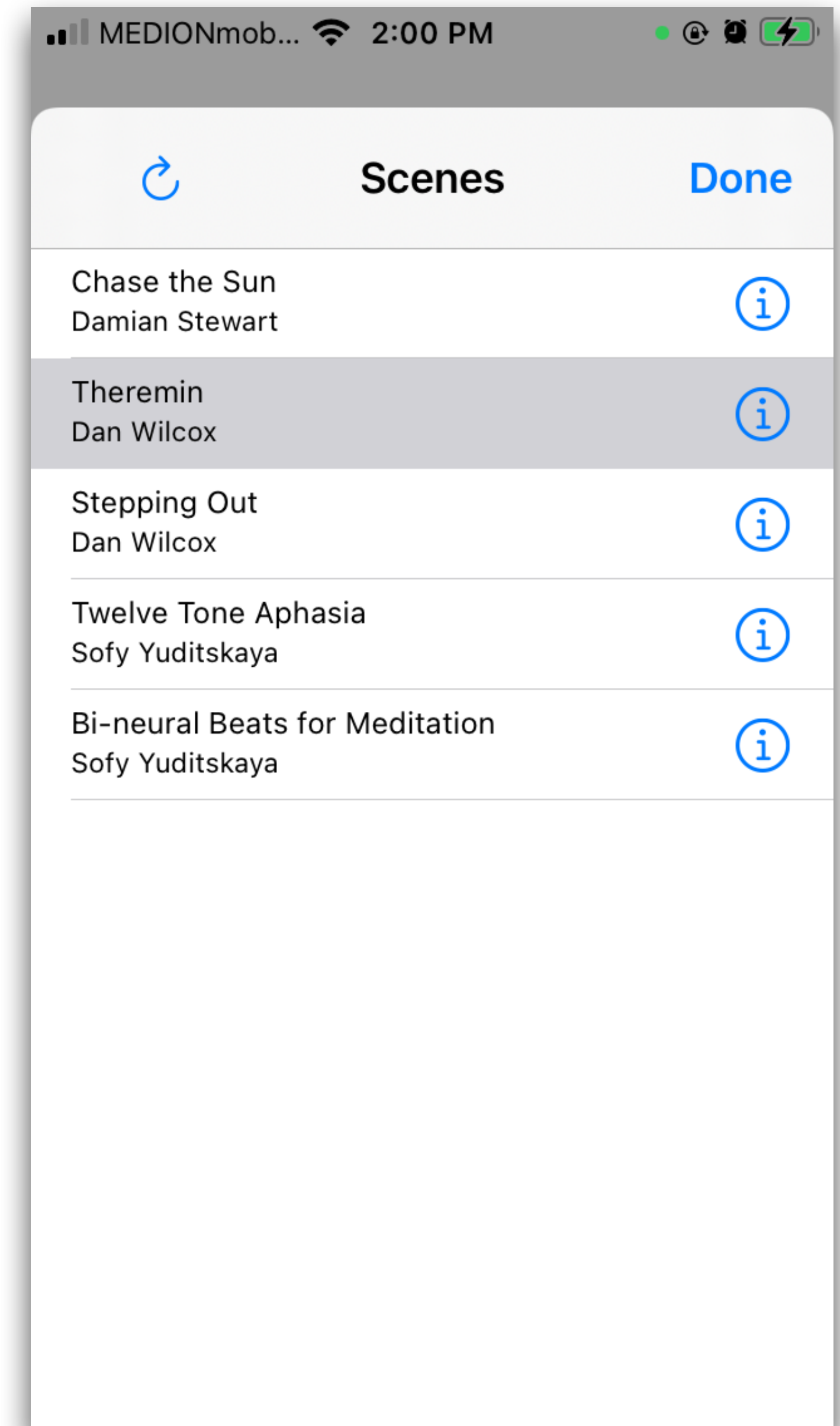
Sound Scene Selection

- Curated selection of sound scenes
- A scene contains usage & attribution info
- Contributions by:

Sofy Yuditskaya (New York, USA)
<https://www.yuditskaya.com>

Damian Stewart (Vienna, AT)
<http://damianstewart.com>

You?



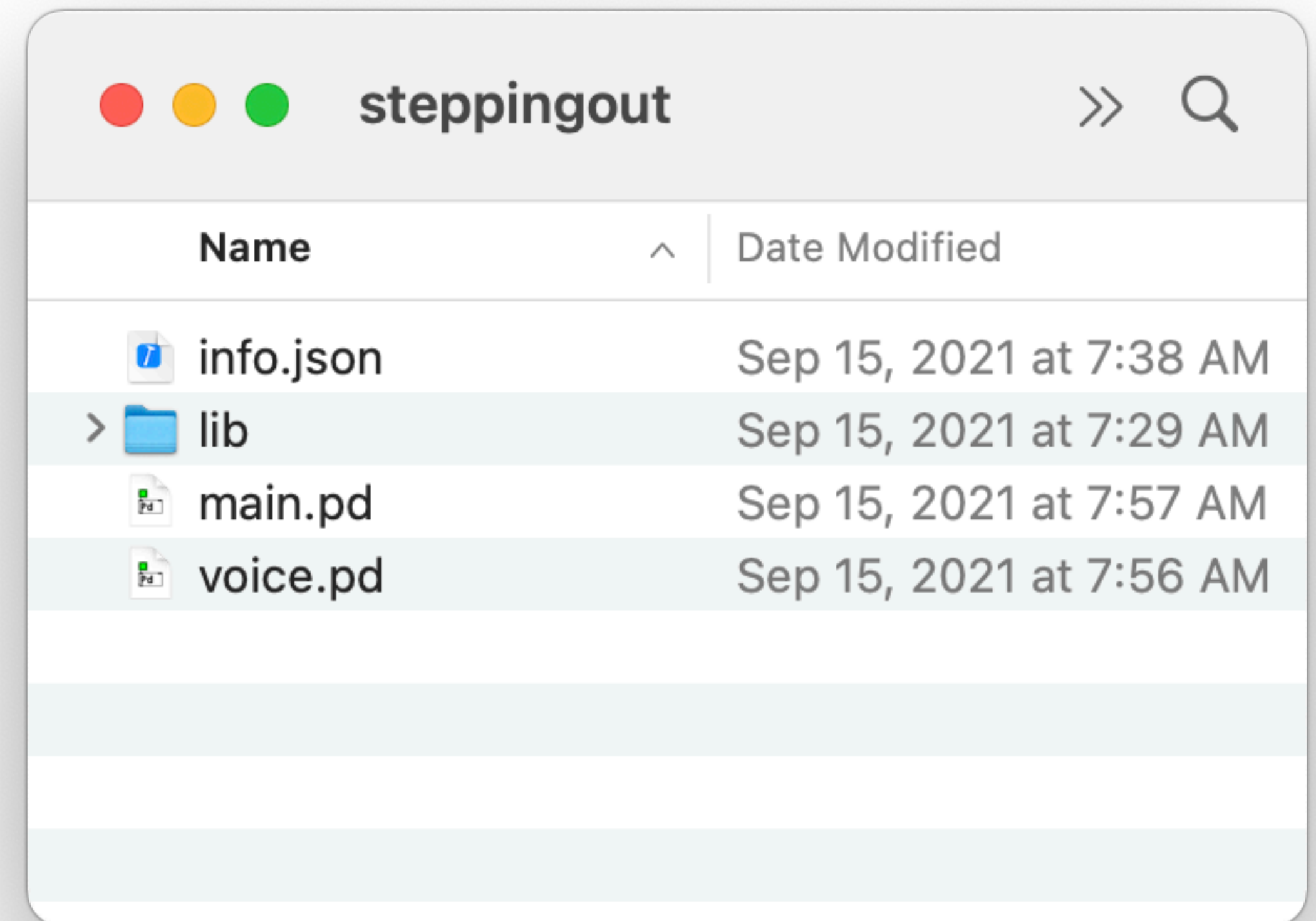
Sound

Scene Layout

RjDj-style folder with:

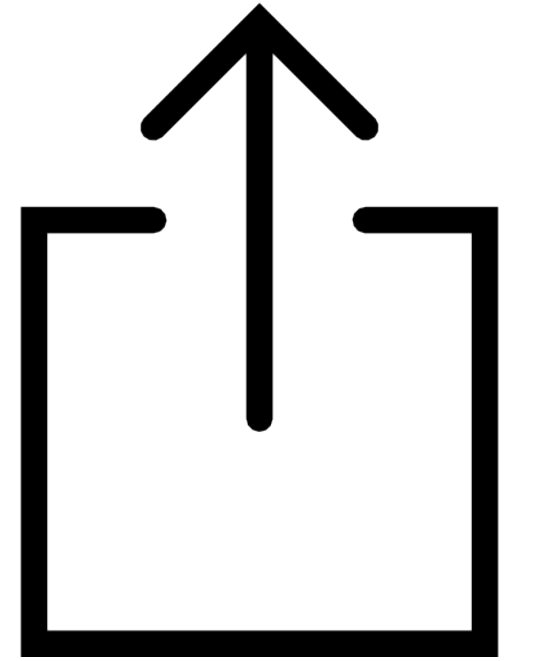
- main.pd Pure Data patch
- info.json metadata (optional)
- cover.png thumbnail image (optional)
- additional abstractions and resources

Download composer pack for
templates & patching info



Sound

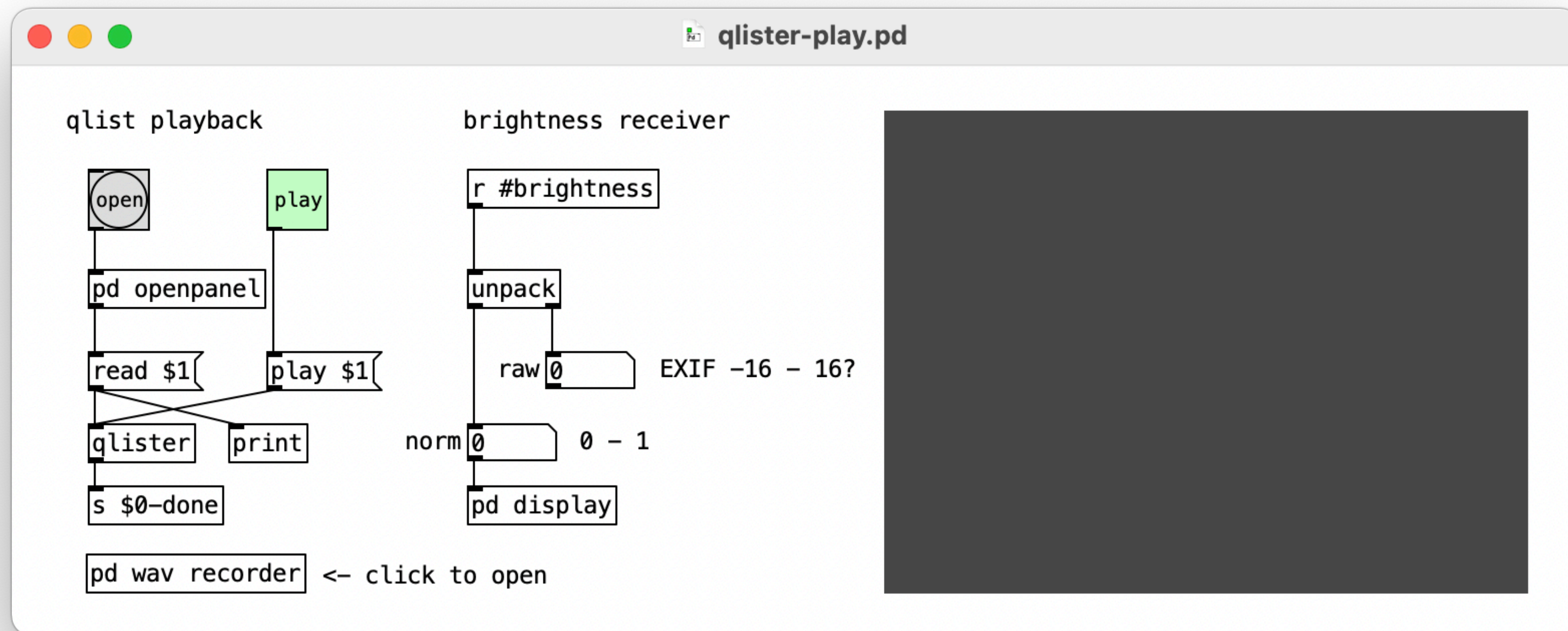
Scene Creation



Making your own scene:

1. Create new folder using scene template and edit patch
2. Transfer to iDevice using AirDrop, the Files app, or iTunes/Finder file sharing
3. Place in ShadowPlay Documents folder
4. Open/refresh scene selection and choose new scene
5. Experiment and enjoy!

Recording Playback



Play back qlist using qlister-play.pd patch included with composer pack

Open Source GitHub Repository



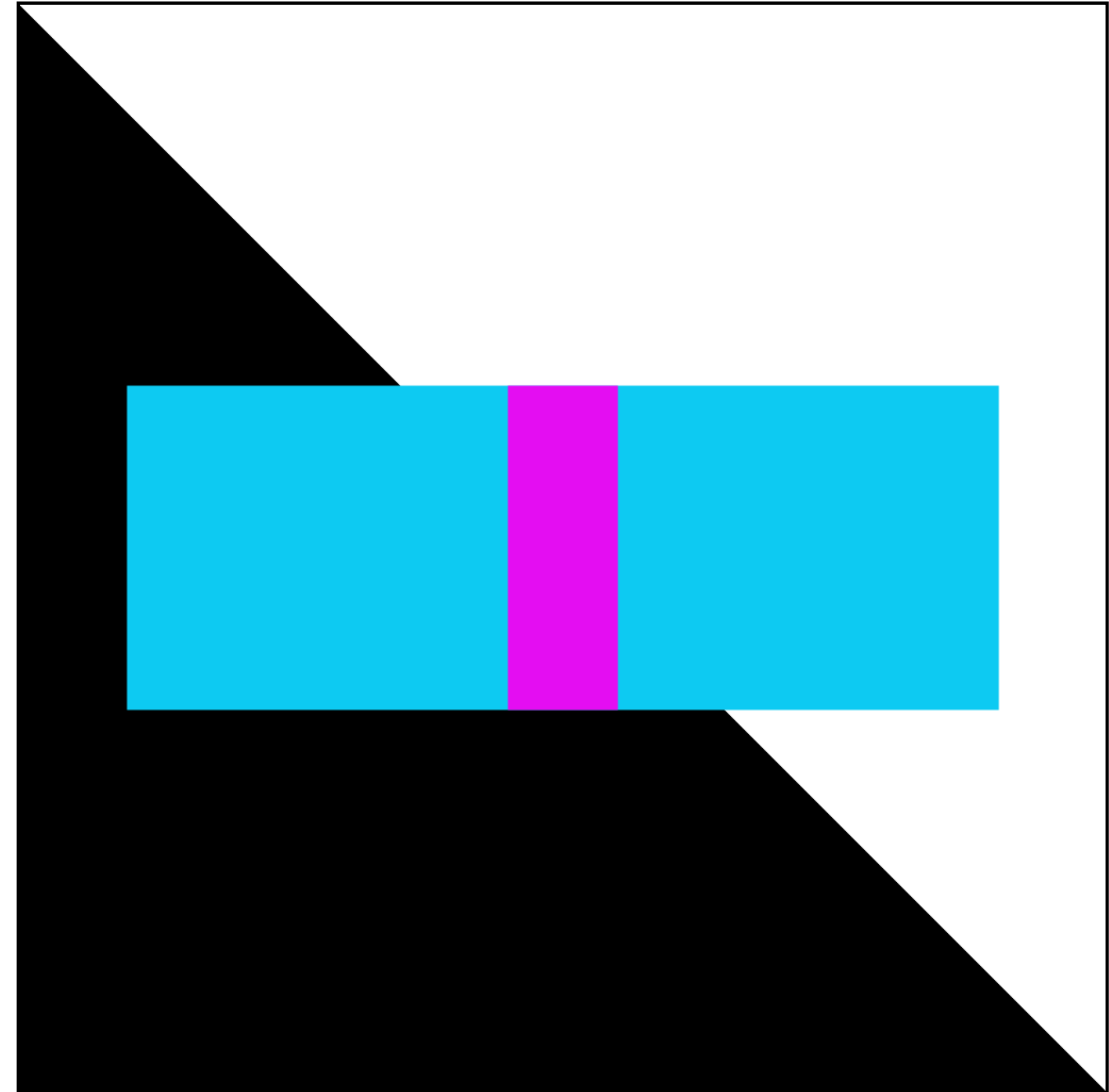
<https://github.com/danomatika/ShadowPlay>

iOS App Store

Free Download



Search for "ShadowPlay"



Seasons
of Media
Arts

Connected
Future

Seasons of Media Arts 2021

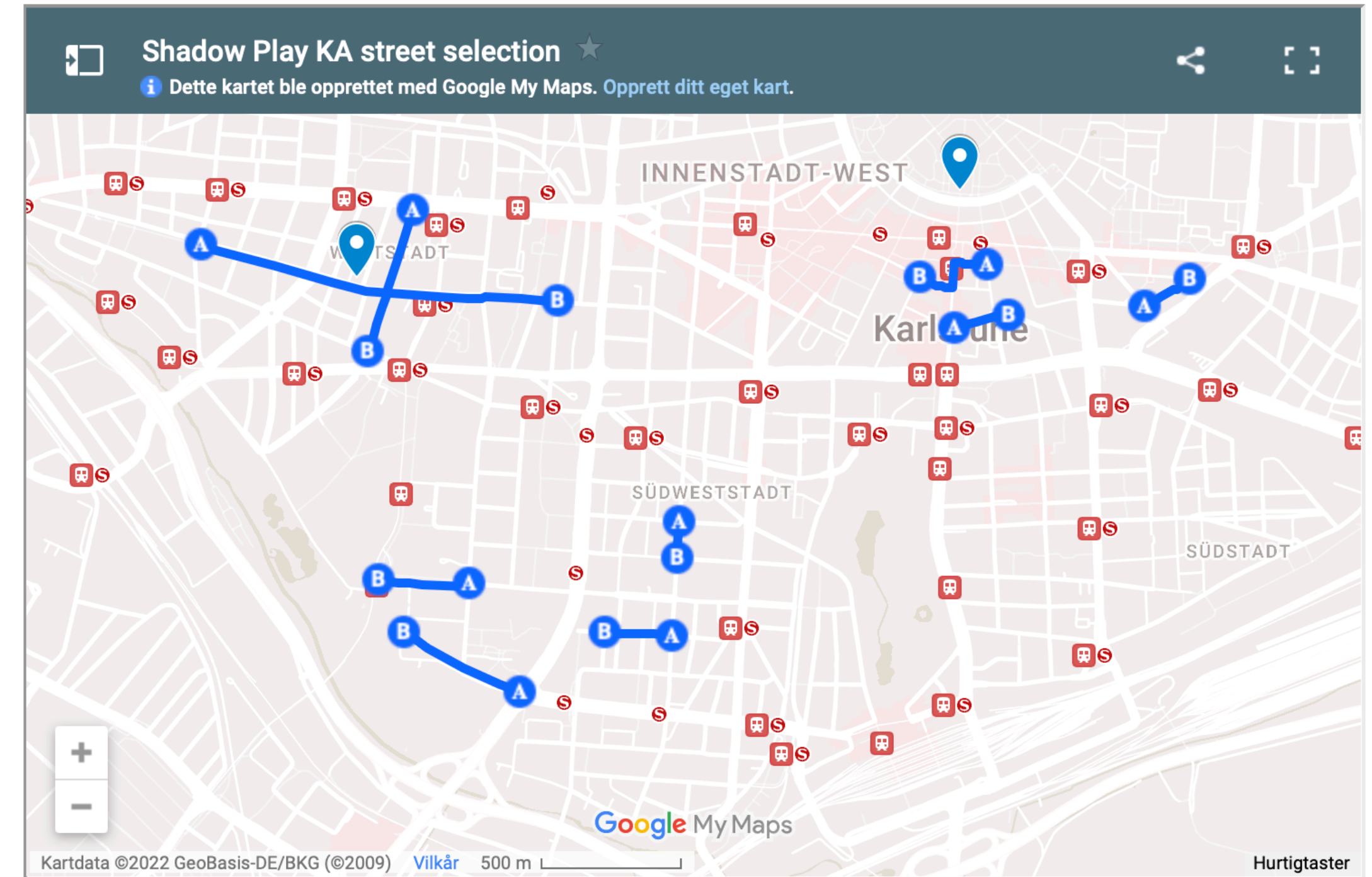
Sep-Oct 2021, Karlsruhe DE

Presentation formats:

- self-guided
- guided bike tours by ZKM staff

Map with marked streets & signs with project info

QR code to project page & download link





KARLSRUHE
UNESCO CITY OF MEDIA ARTS

Supported through the UNESCO City of Media Arts Karlsruhe as well as through the City of Karlsruhe.
Unterstützt durch die UNESCO City of Media Arts Karlsruhe sowie durch die Stadt Karlsruhe.

Thanks!

Questions?

PdParty

SpeedPitch

ShadowPlay

Dan Wilcox 2025

danomatika.com

robotcowboy.com

