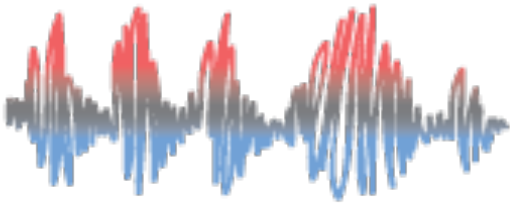
SOUNDSCAPE



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Problem

A lack of awareness about the long-term implications of noise exposure

15% of Americans between the ages of 20 and 69 experience hearing loss that may have been caused by **noise at work or during leisure activities.**

(http://www.nidcd.nih.gov/health/hearing/pages/noise.aspx)

Studies on the health consequences of noise have indicated that noise **elevates heart rate**, **blood pressure, vasoconstriction**, and **stress hormone levels.**

http://www.google.com/url?q=http%3A%2F%2Fwww.nytimes.com%2F2010%2F05%2F02%2Fopinion%2F02prochnik.html%3F_r%3D0&sa=D&sntz=1&usg=AFQjCNGRoFTt83WX3phYHpZw16IAL_-kOg

Meditation produces **long-lasting changes** in brain activity.

Areas involved in **attention, working memory, learning,** and **conscious perception** are improved.

http://www.google.com/url?q=http%3A%2F%2Fwww.webmd.com%2Fbalance%2Ffeatures%2Ftranscendental-meditation&sa=D&sntz=1&usg=AFQjCNEmDWbyFj1PIp7sCoxb5Hk3U919WA

130+ dbs. — < 1 minute

115 dbs. — 15 minutes

105 dbs. — 1 hours

95 dbs. — 4 hours

85 dbs. — 8 hours

70 dbs.

50 dbs.

Noise exposure is **cumulative**;

Awareness is key.

Contextual Inquiry

Very noisy work environment

Some control over exposure levels

Moderately noisy work environment

Lacks control of his noise exposure

Dartmouth student who is exposed to **noisy social environments** multiple days per week

Has control over exposure levels

Takeaways

Users **don't want an external device** that would inhibit normal work tasks

Generally aware of risks, **unaware of implications**

Varying levels of control over exposure

Interested in understanding **patterns of exposure** and knowing implications

Tasks

Measure and Record

Measure noise level at **frequent** and **regular** intervals throughout the day.

Display Current “Soundscape”

Display the **current** noise level and report safe exposure time.

Display Data Over Time

Display noise exposure data over an **extended timescale** (day/month/year). Indicate **patterns in behavior**.

Adapt Behavior

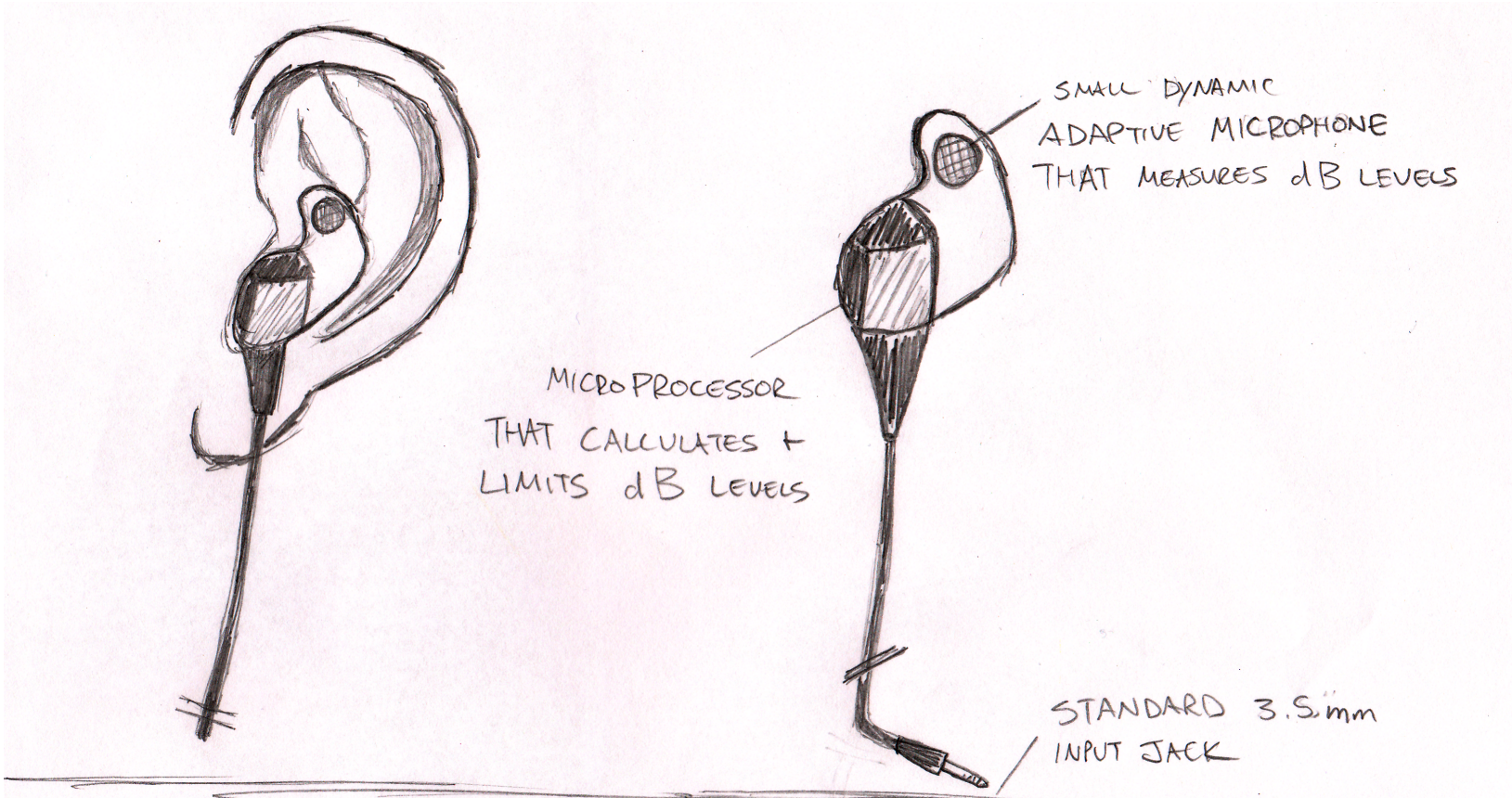
Make effort to **minimize risky exposure** and **maximize “zen time”.**

Integrate crowd-sourced data

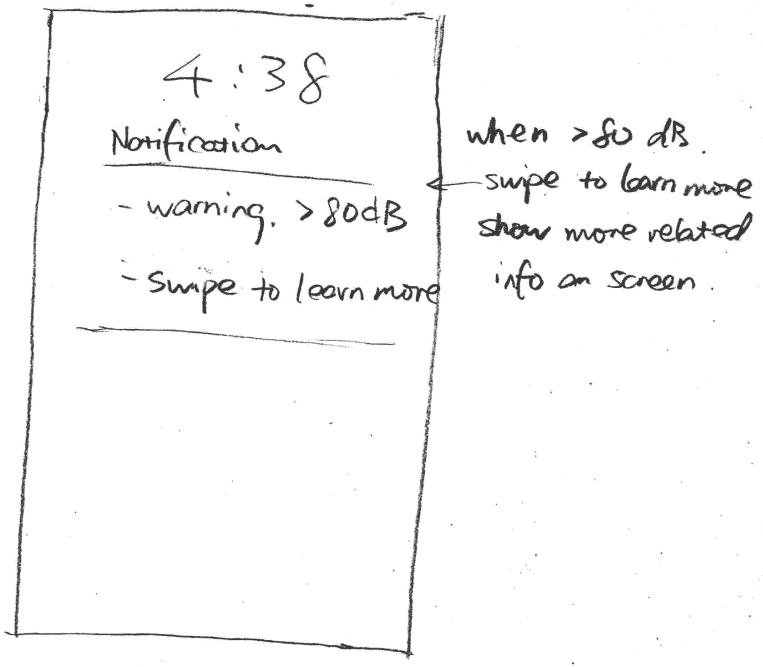
Gain **environmental awareness** using data from user base.

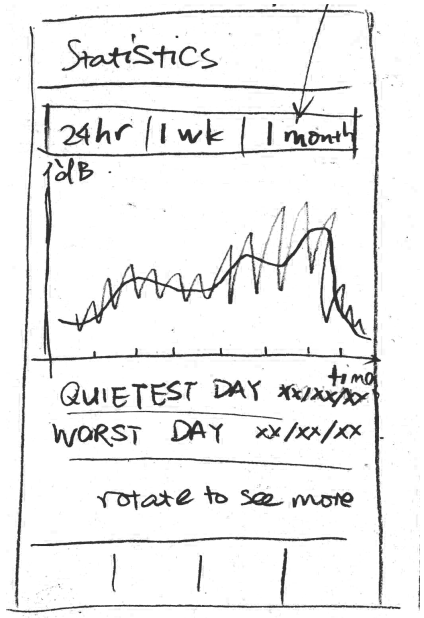
Designs

Design #1


SMALL DYNAMIC
ADAPTIVE MICROPHONE
THAT MEASURES dB LEVELS
MICROPROCESSOR
THAT CALCULATES +
LIMITS dB LEVELS
STANDARD 3.5mm
INPUT JACK
EAR
VOLUME
ENVIRONMENT
VOLUME
EAR
VOLUME
ENVIRONMENT
VOLUME

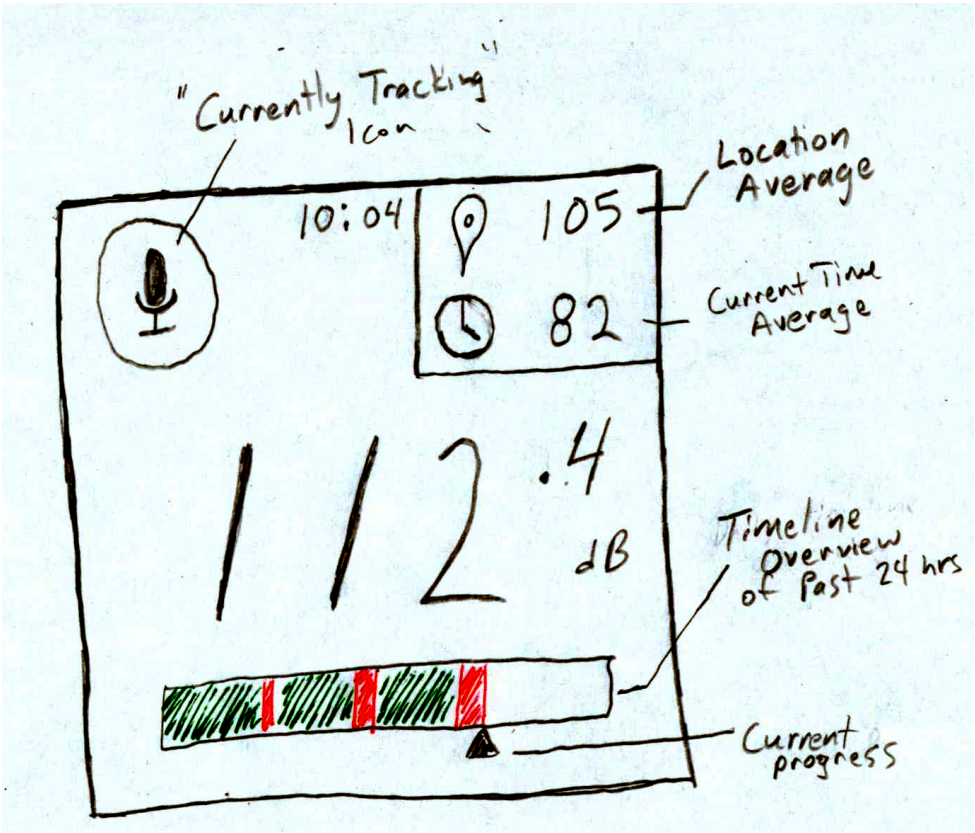
Design #2:

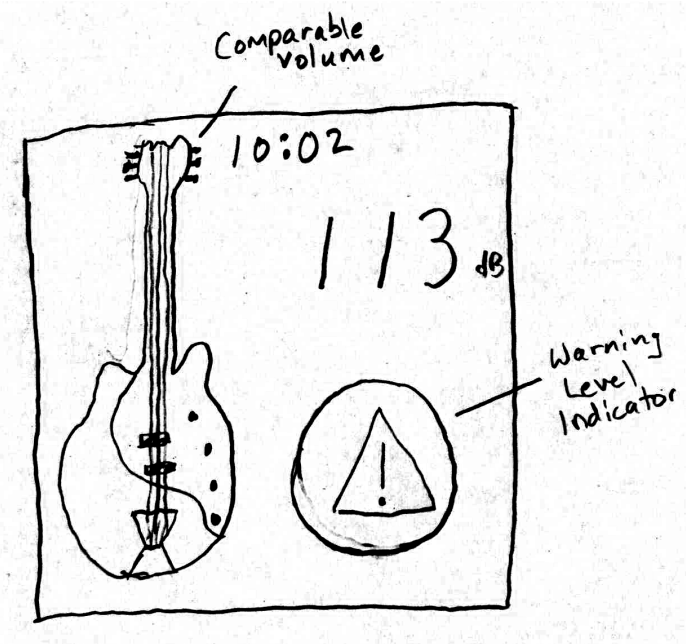

4:38
Notification
- warning. >80dB
- swipe to learn more
when >80 dB.
swipe to learn more
show more related
info on screen.

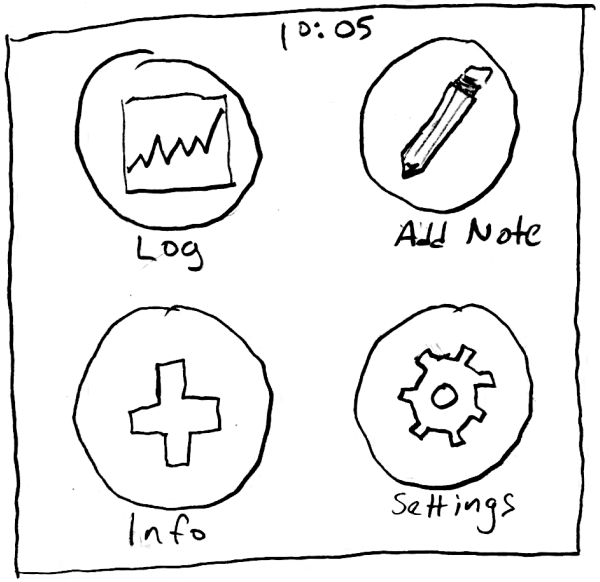

Statistics
24hr | 1 wk | 1 month
dB
time
QUIETEST DAY xx/xx/xx
WORST DAY xx/xx/xx
rotate to see more

Map
select time -
12 | 00 | AM
location
show noise exposure levels
in heated map.

Design #3


"Currently Tracking" Icon
10:04
105
Location Average
82
Current Time Average
112.4
dB
Timeline Overview of Past 24 hrs
Current progress

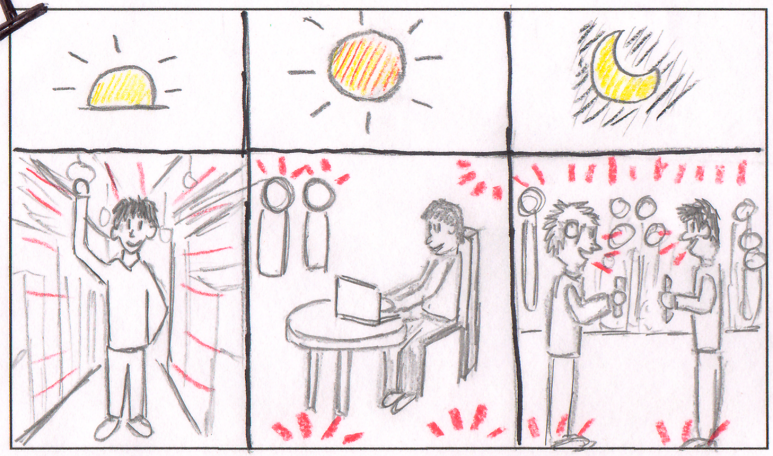

Comparable volume
10:02
113 dB
Warning Level Indicator


10:05
Log
Add Note
Info
Settings

Storyboards

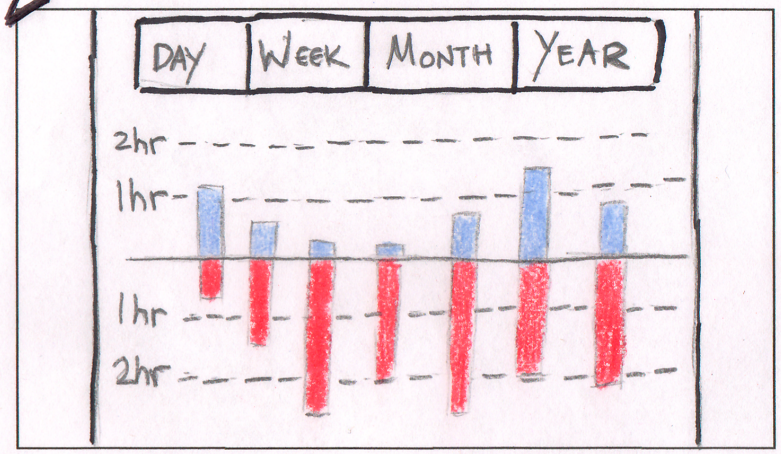
Tracking Zen

1



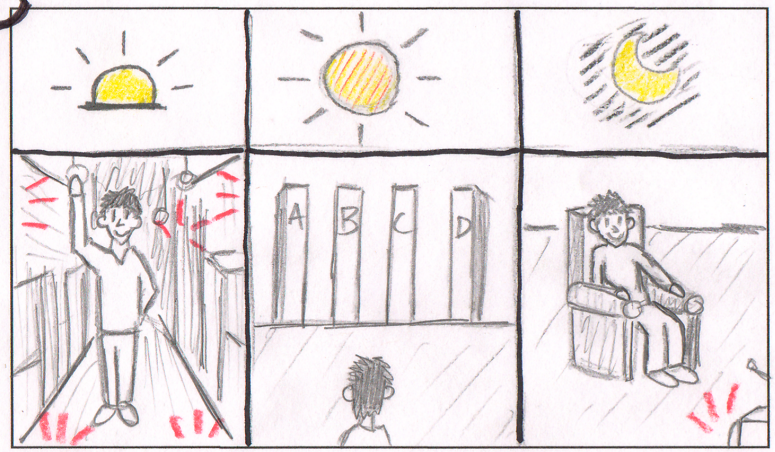
Jimmy goes through his day while passively recording the sound of his environments

2



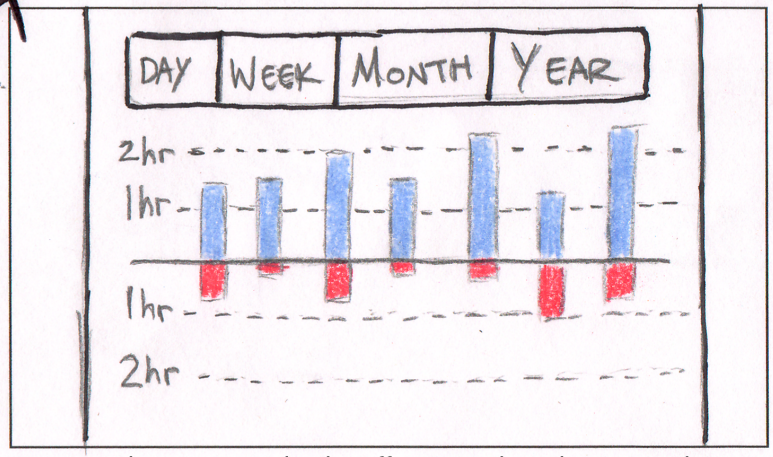
At the end of the day, he checks the data he's gathered and sees he needs to have more "zen" in his day.

3



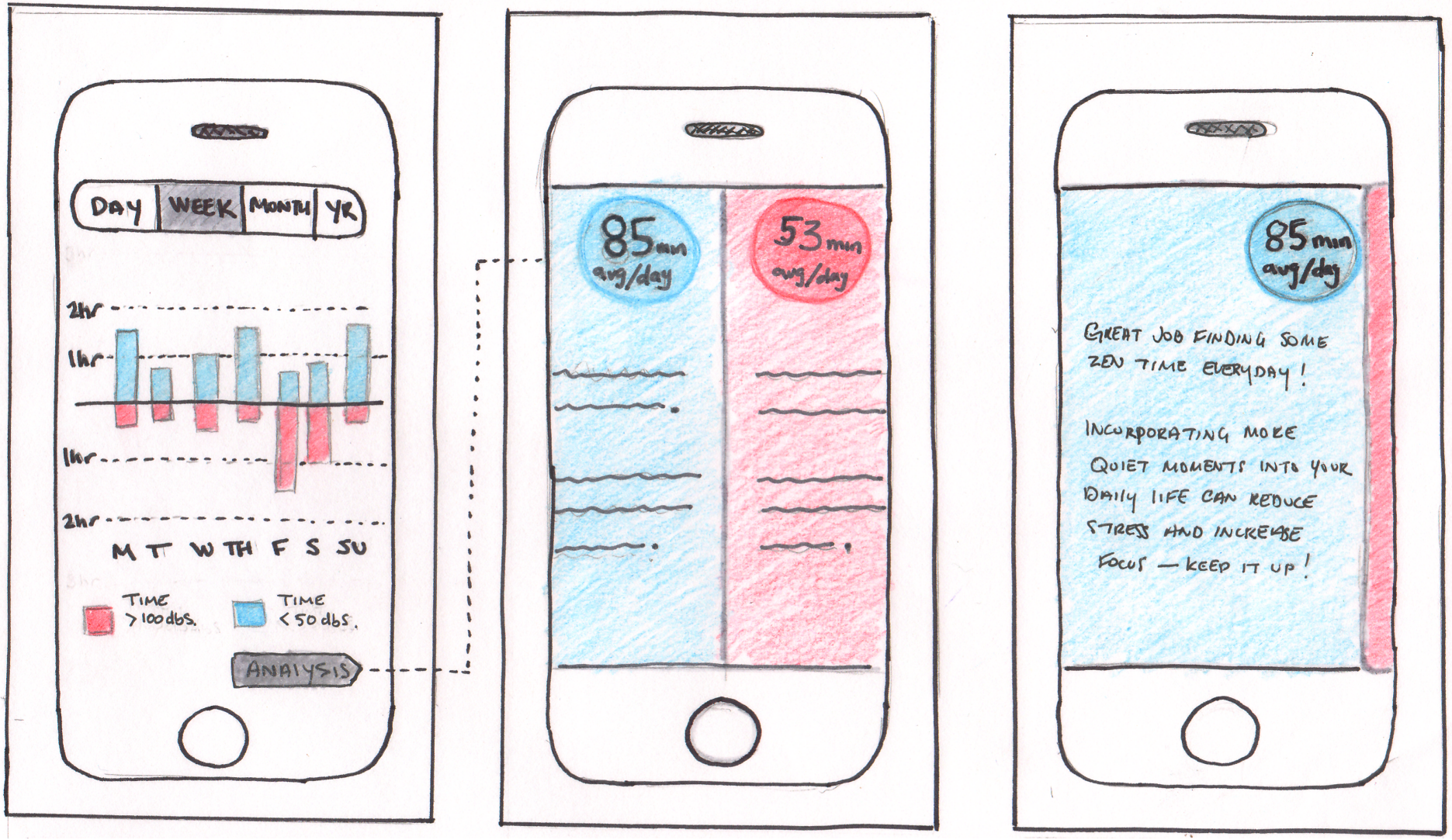
Jimmy makes some adjustments the next day in his routine to lessen the amount of noise he encounters.

4



He is happy to see that his efforts to reduce the noise in his environment have paid off!

Exposure Analysis



Questions?