

Somnus

Circadian Clock

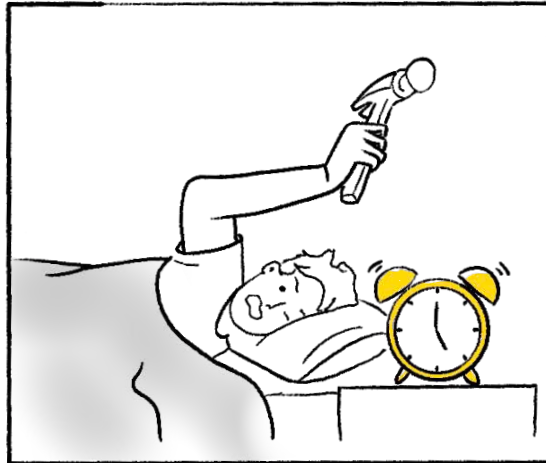
Somnus is a circadian alarm clock that tracks heart beat and respiratory rate to gently wake users during light sleep. Designed to combat sleep inertia, it showcases my strengths in behavioral research, Technical Testing, and user-centered prototyping.

16 Weeks | 1 Designer | Fall 2024

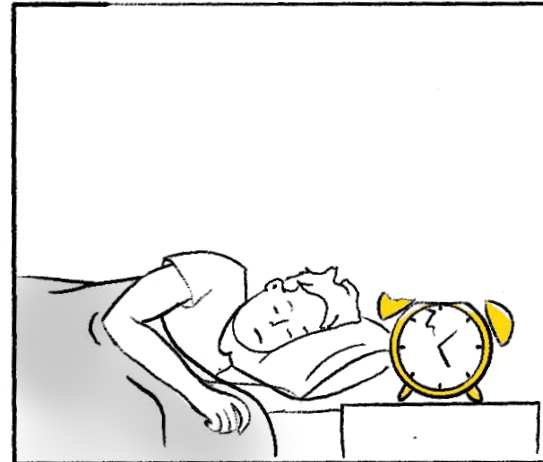


"48% of adults in the U.S. reported not feeling well-rested when waking up in the morning."

- Center for Disease Control



Alarm wakes you from a dream,
groggy and confused



After hitting snooze you fall
back asleep



Now you wake up tired and
angry because you are late



Interrupting REM

Waking during deep sleep or REM can cause **sleep inertia— grogginess and poor performance.** Many struggle to align wake-up times with light sleep, especially with irregular schedules.

Effects

Prolonged sleep inertia is linked to mood disorders like anxiety and depression. Long-term sleep loss impairs emotional regulation, increases stress, and reduces the brain's ability to process emotions. Other risks include cardiovascular issues, metabolic disorders, and weakened immunity.

Target

Contact-induced insomnia is sleep disruption caused by physical or sensory stimuli from another person or source, such as touch, movement, or noise.



Research Insight

An **inconsistent schedule paired with Contact-induced insomnia** leaves users vulnerable to effects of sleep inertia.



Sleep Product Market Growth

The sleep market has grown \$65 Billion (WW) in the last 3 years with an average CAGR(Compound annual growth rate) of 6.3% the revenue forecast for 2030 is \$900 Billion.

The fastest growing sector of sleep related market is **sleep based products**, predicted to take 35% of the market by 2025.

Invasive Tech

Current tech- using sensors for biometrics.
Must wear device.

Accuracy: good



Phone Apps

Phone app- uses micro phones to track movement. Needs a still quiet environment. Limited range, phone must be next to bed.

Accuracy: medium



Physical Reset

The physical method- set alarm before desired wake up time to reset sleep cycle. Diminishes quality of sleep. Still causes long term health issues.

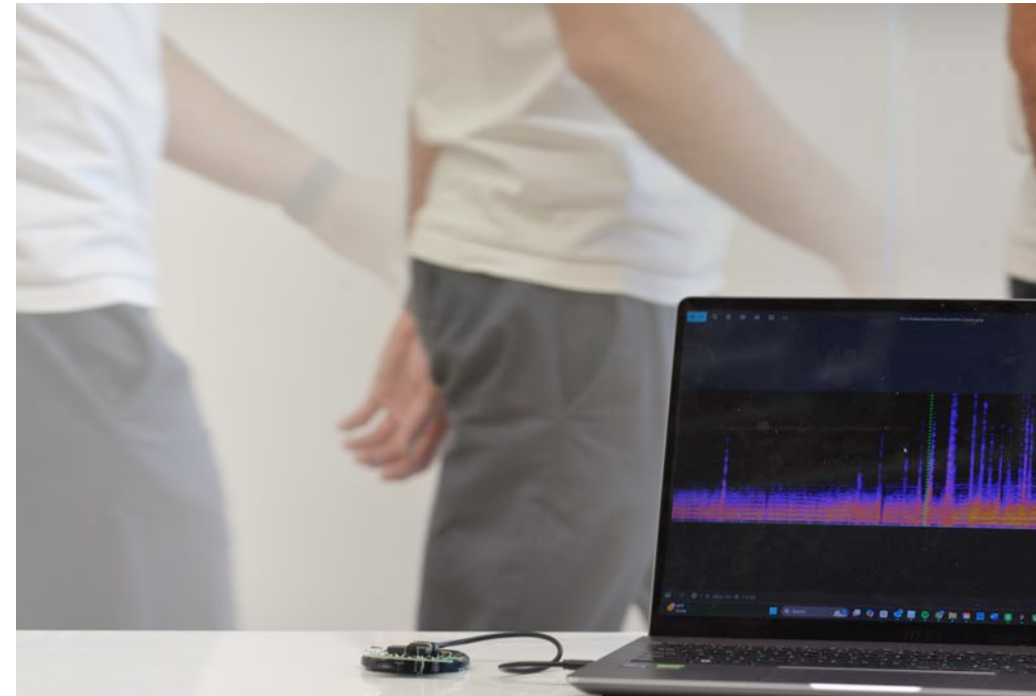
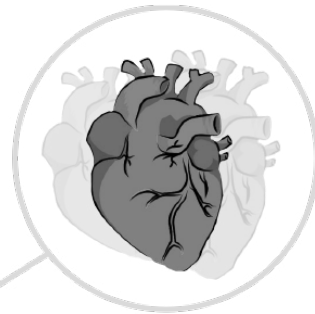
Accuracy: poor



Project Intent

Create a **sleep-tracking alarm** that reduces sleep inertia for people with contact-induced insomnia.

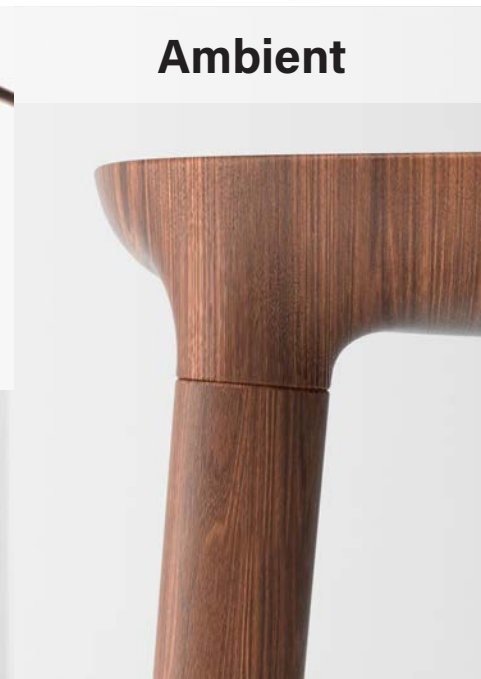
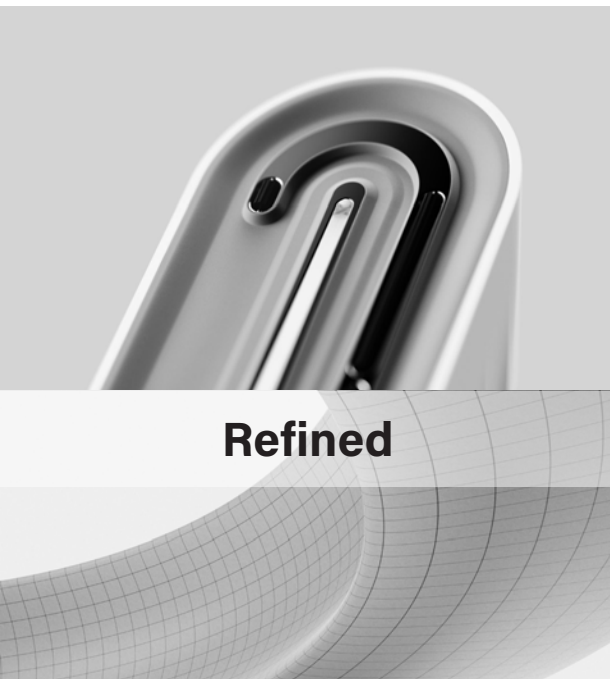
How to reliably measure human respiratory rate and heartbeat (determining sleep stages) with non-invasive health monitoring applications.

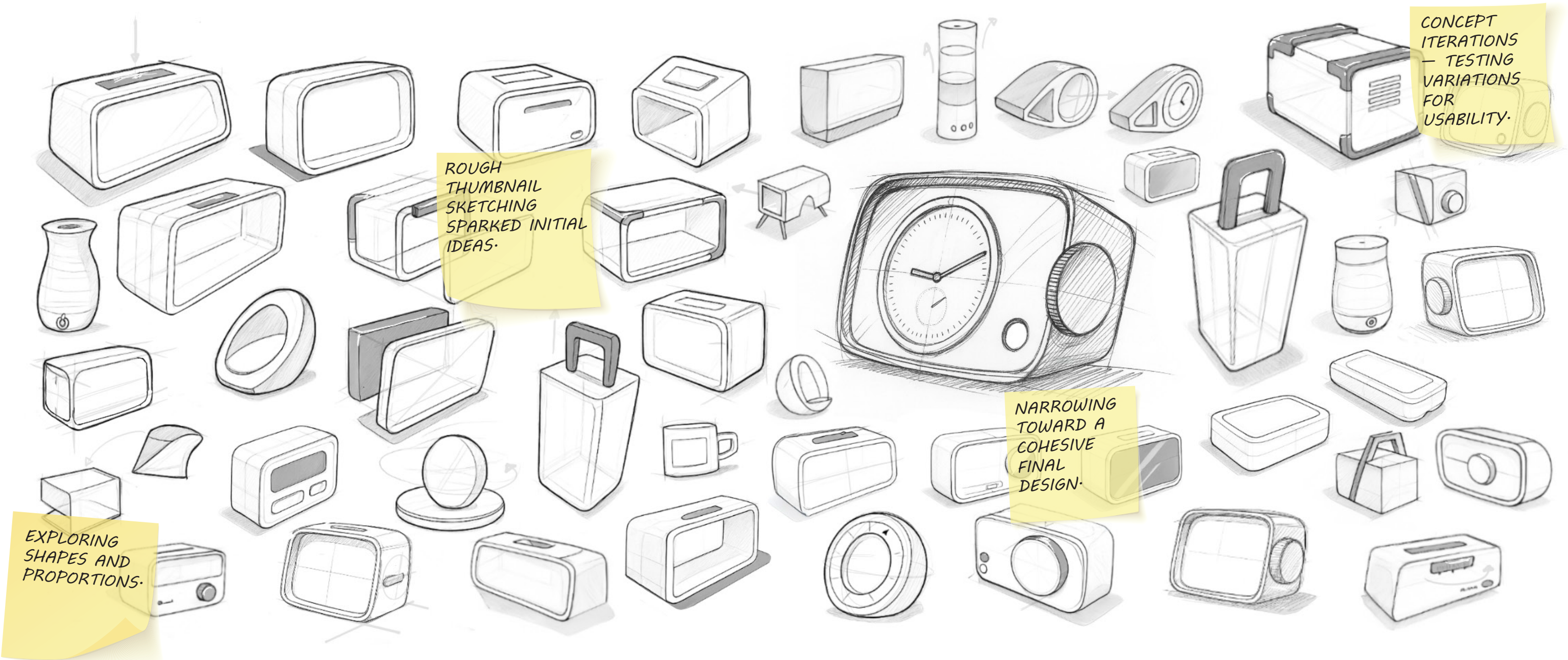


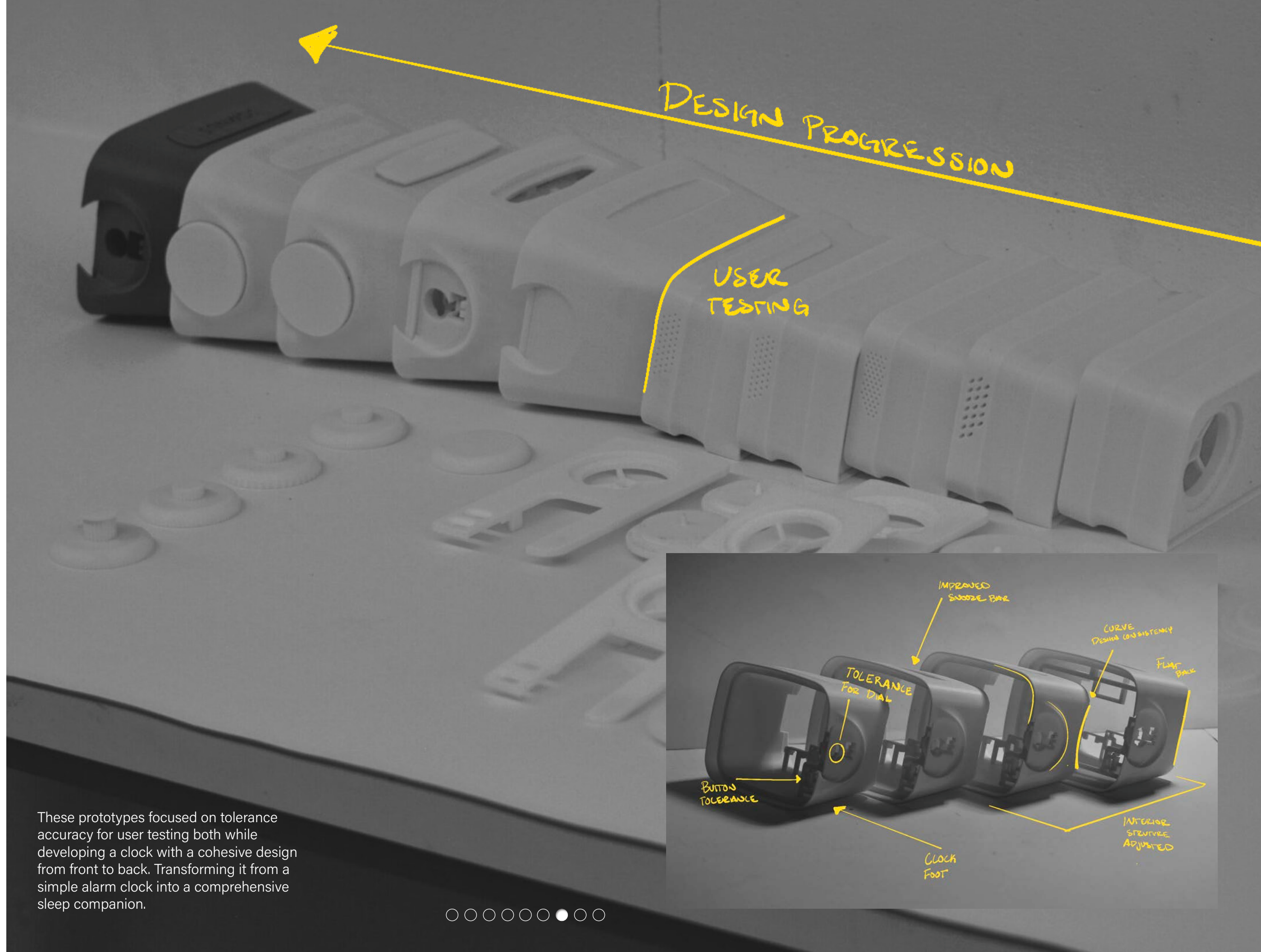
To track sleep without physical contact, I ran small-scale tests using a radar sensor capable of detecting movements. While prior MIT research had already proven the technology's feasibility, my testing focused on scale and range, helping me understand how **sensor distance and placement would shape the size and form.**



Design Goals Inspiration







DESIGN PROGRESSION

USER TESTING

These prototypes focused on tolerance accuracy for user testing both while developing a clock with a cohesive design from front to back. Transforming it from a simple alarm clock into a comprehensive sleep companion.

All touchpoints are crafted from **metal to emphasize precision and permanence**, reinforcing the sense of a carefully made, premium object. Each interaction was intentionally designed to deliver clear tactile feedback, so users not only see the design's quality but also feel it with every use.



