COZY LUMEN

Smart Sleep Clock Lamp

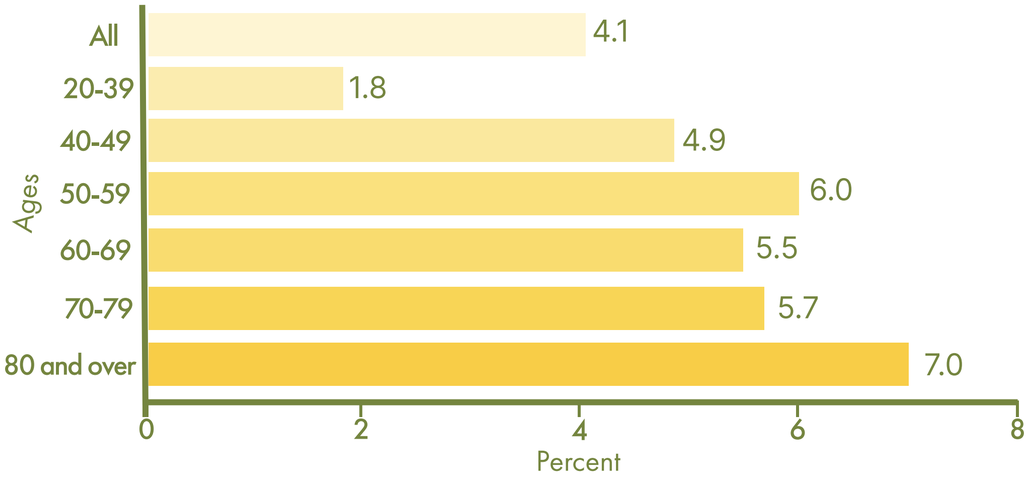
Project overview

Sleep disorder refers to a group of conditions that affect the ability to sleep well on a regular basis, leading to problems with falling asleep, staying asleep, or feeling rested upon waking. It can be caused by a variety of factors such as medical conditions, lifestyle habits, and environmental factors.

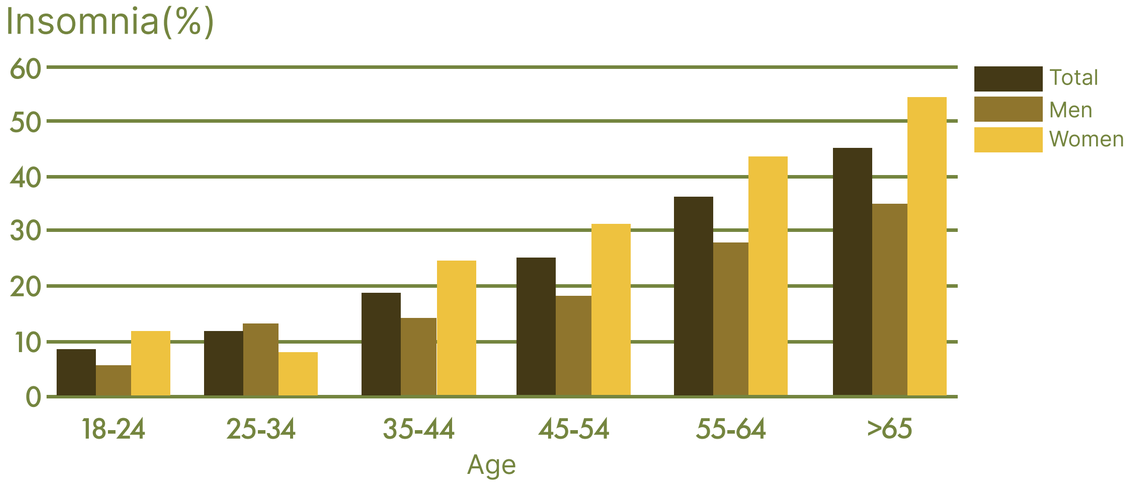
Background

According to the National Sleep Foundation, sleep disorders are more common in middle-aged adults than any other age group. Based on the current global population, up to 237 million people are affected.

Prescription for Sleep Disorder and Insomnia in U.S



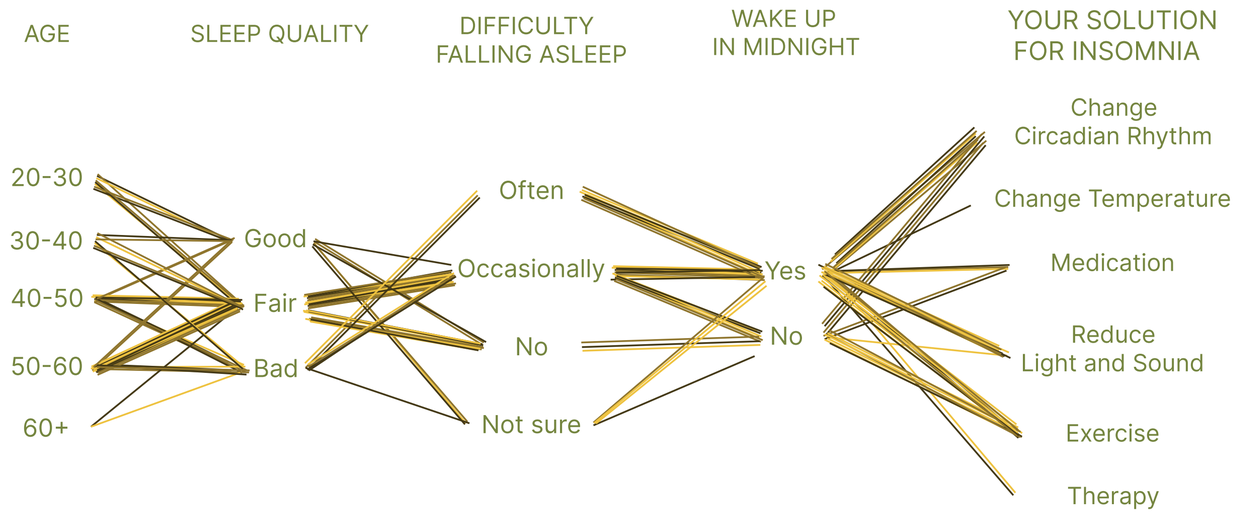
From 2005 to 2010, about 4% of U.S. adults aged 20 and over used prescription sleep aids in the past month. Usage was lowest in the 20-39 age group (2%) and highest in those aged 80 and over (7%).



It is estimated that about 30% of adults aged 55-64 years old have some form of sleep disorder, and this percentage increases with age. Women have more sleep disorder than men.

Background

In conducting a sleep quality and sleep disorder survey with 178 participants, we gained valuable insights into people's needs and identified specific groups that require assistance.



50% **of people choose to exercise or change circadian rhythm when they have trouble falling asleep.**

80% **of people aged 40-60 report waking up in the middle of the night.**

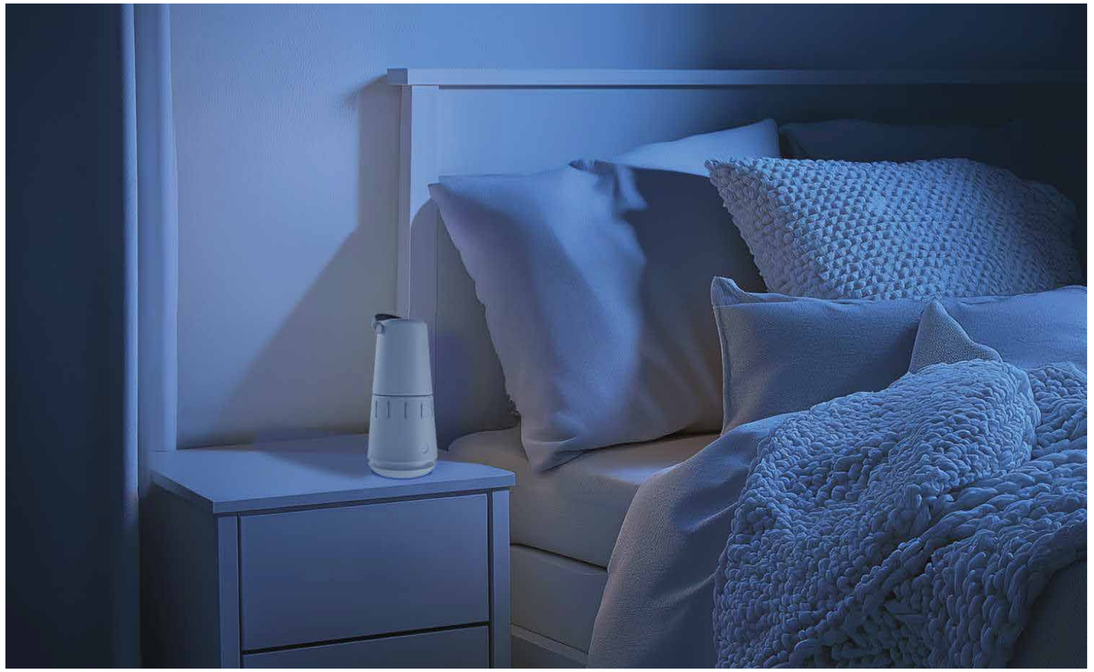
60% **people admit that they occasionally have difficulty falling asleep, and people report that their sleep quality is fair.**

Problem

Many individuals experience irregular sleep schedules, frequent nighttime movements, and difficulty achieving restful sleep due to sleep disorders or environmental factors. Traditional sleep aids often fail to provide a personalized, multi-sensory solution to address these issues effectively. As a result, there is a growing need for an intelligent sleep system that adapts to users' sleep behaviors through tracking, adaptive lighting, aromatherapy, and smart automation to enhance sleep quality.

Design Approach

Developing an effective sleep aid product requires a holistic approach that combines light, sound, and aromatherapy to create a calming and supportive sleep environment. By integrating these elements, the design can address common sleep challenges such as insomnia, irregular sleep patterns, and environmental disruptions.



Light

- Supports circadian rhythm regulation by simulating natural light transitions.
- Reduces blue light exposure, minimizing sleep disturbances caused by screens.
- Provides customizable brightness and color temperature to create a personalized ambiance.

Noise

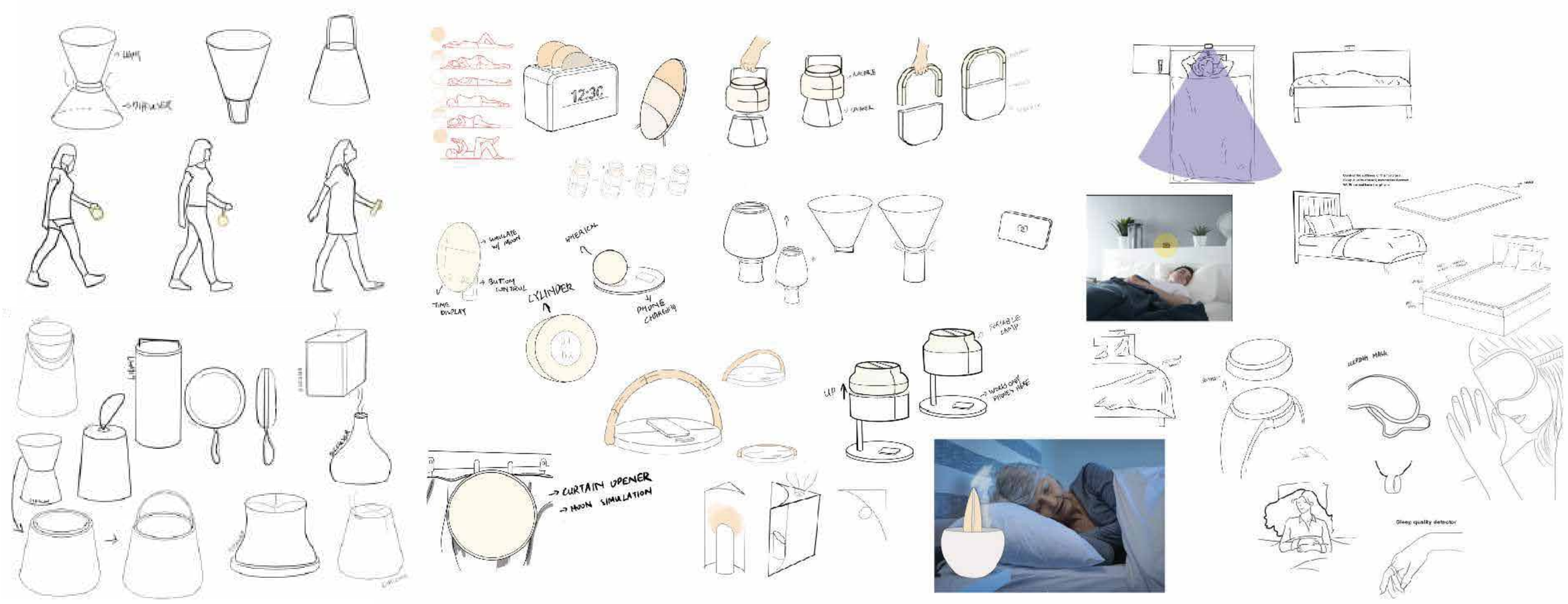
- Incorporates white noise and soothing soundscapes to promote relaxation.
- Uses customizable audio patterns to block disruptive environmental noise.
- Enhances sleep consistency by creating a stable auditory environment.

Aroma

- Utilizes aromatherapy to support relaxation and stress reduction.
- Diffuses essential oils that aid in sleep, such as lavender and chamomile.
- Complements other sensory elements to create a fully immersive sleep experience.

Design Approach

- Discovering that most products in the sleep aid market have not yet explored the sense of smell offers a significant opportunity.
- Combining aromatherapy with elements like soothing sounds and light therapy could create a multi-sensory sleep aid, offering a holistic approach to improving sleep.
- Sleep Routine, Light, and Noise are the most fitting treatment methods for our target users.
- Our target user needs a product that offers long-term benefits, effectiveness, and ease of implementation.



Wearable Devices

- Provides valuable insights into sleep patterns and potential causes of insomnia, aiding users in improving their sleep quality.

Portable Devices

- Accessibility and Safety
- In the Survey, 60% of middle age people wake up in mid-night to going to the bathroom.

Bed-related Devices

- Effectiveness in improving sleep quality and addressing insomnia
- Seamlessly integrate
- Understanding and solving sleep issues

Moon-Simulation Devices

- Moon-simulation lights enhance sleep routines.
- They mimic the natural progression of moonlight.
- Create a calming and naturalistic environment for better sleep.

Cozy Lumen System

COZY LUMEN SLEEP CLOCK LAMP

The Sleep Clock Lamp provides a sunset simulation light to facilitate your sleep, along with an aroma diffuser to enhance sleep quality.

COZY LUMEN SLEEP SENSOR

The Sleep Sensor will analyze your movements in bed to provide you with better sleep plans.

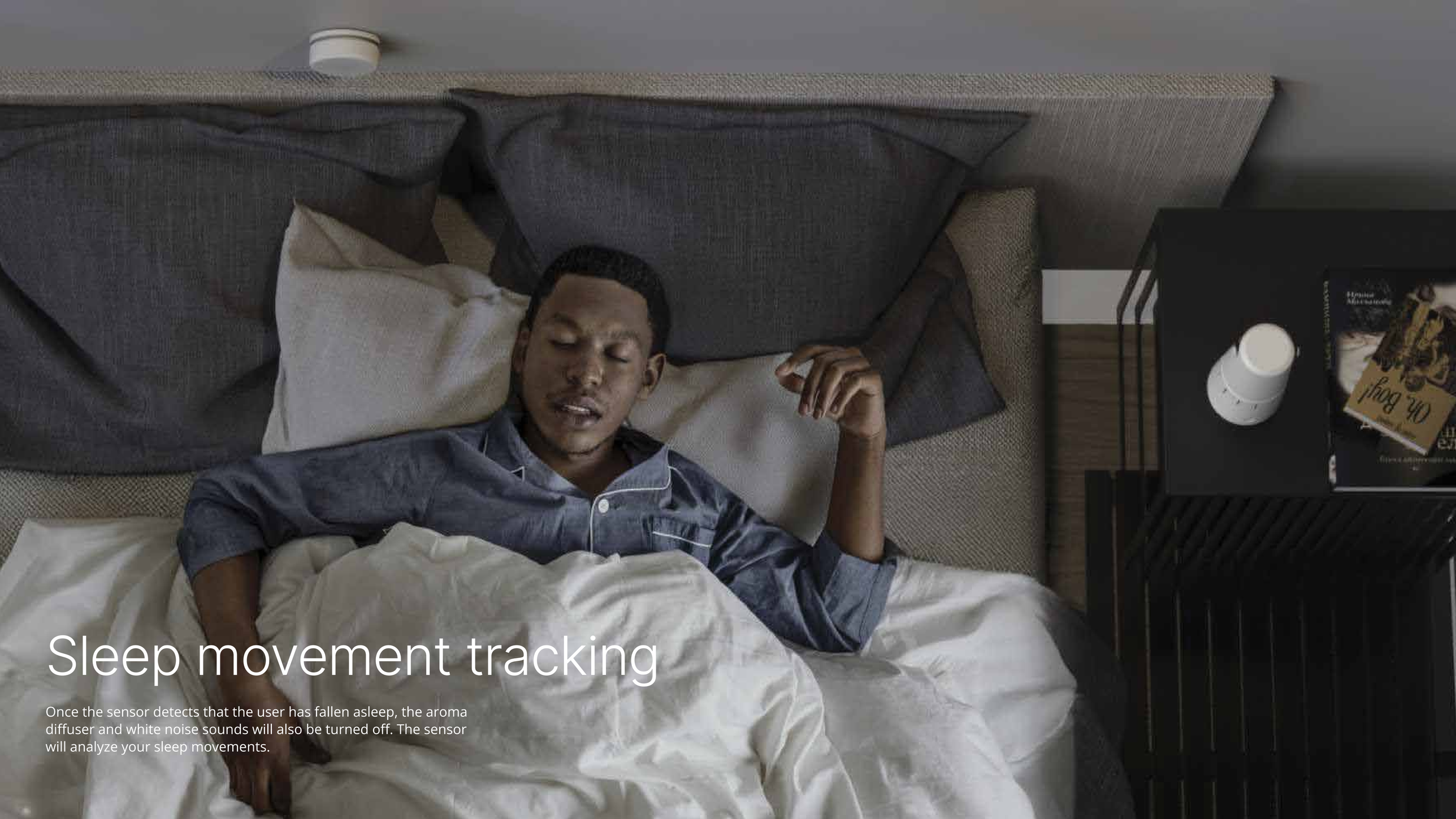
COZY LUMEN SMART HOME APP

The app can be customized to suit your unique sleep plan, enhancing your overall sleep quality.

Structure Diagram

The light turns on with the aroma diffuser triggered by motion.

User control the timer on their app or motion capture to control the light turn-on stages and the time for the aroma diffuser.

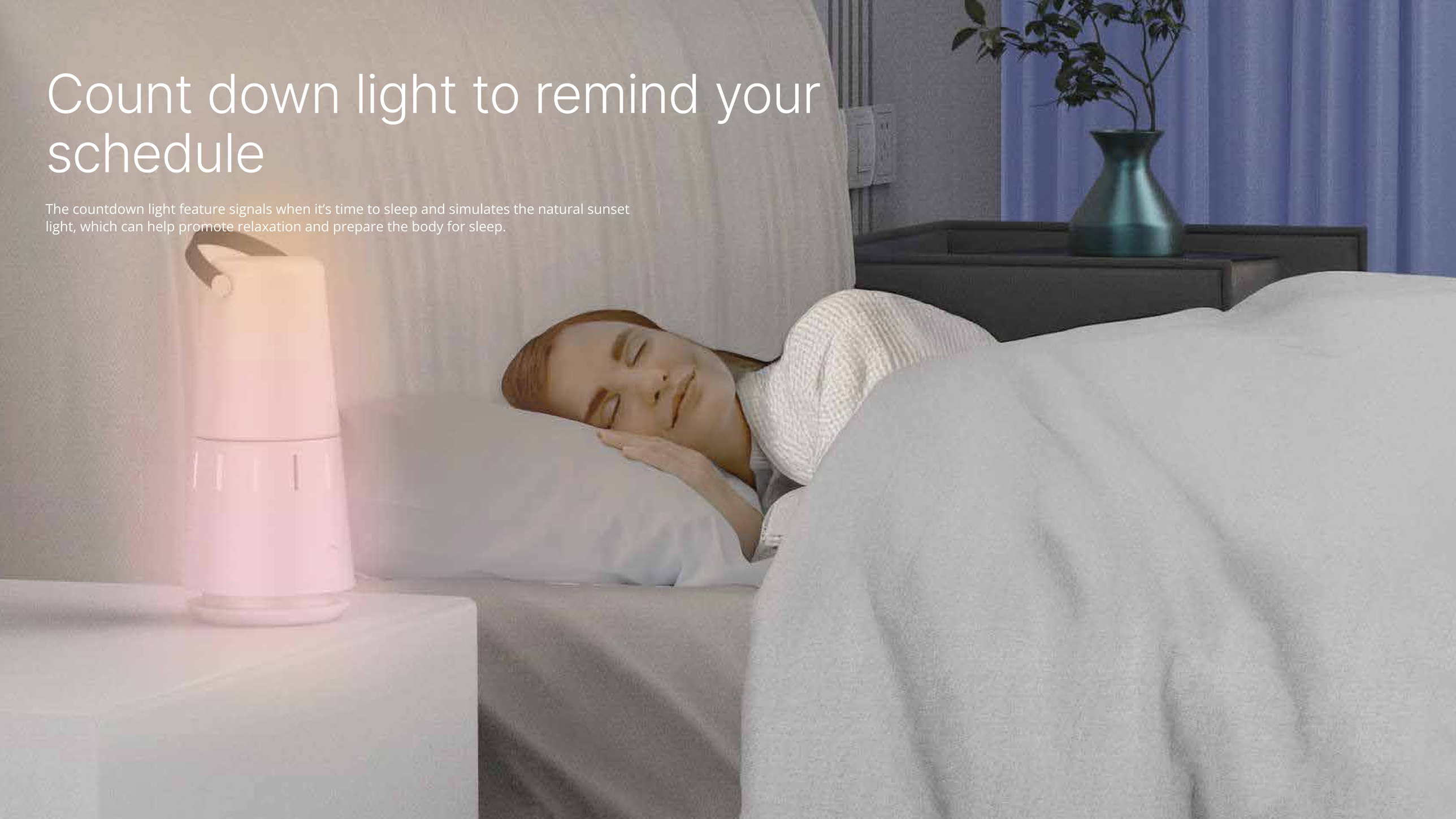


Sleep movement tracking

Once the sensor detects that the user has fallen asleep, the aroma diffuser and white noise sounds will also be turned off. The sensor will analyze your sleep movements.

Count down light to remind your schedule

The countdown light feature signals when it’s time to sleep and simulates the natural sunset light, which can help promote relaxation and prepare the body for sleep.



Portable Night Light

The lights will be turned on automatically when it leaves the station, and it will guide your way in the dark.

Smart home system

The Cozy Lumen app offers customization light and aroma diffuser settings for your sleep preferences, along with white noise sounds to help you drift off to sleep.

Thank You