

PROBLEM DEFENITION

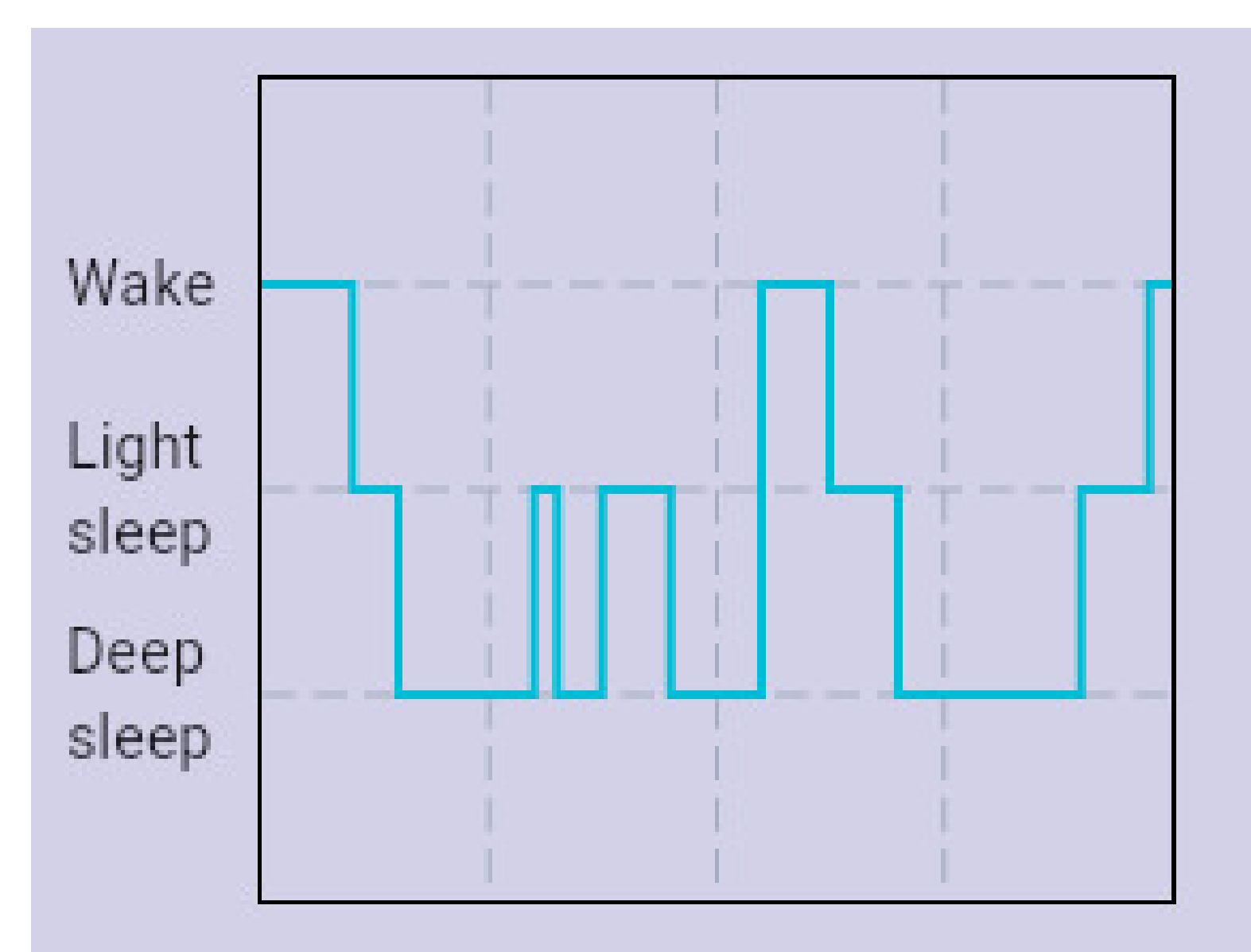
- **Sleep** is necessary for **good physical and mental health**, affecting processes like cell reparation, hormonal balance and emotional control. But many people suffer **with sleep disorders**, such as insomnia, which is frequently caused by **internal** (stress or anxiety) and **external factors** (sound pollution or blue light)

ACTUATORS

- **Bracelet:** using the use of the accelerometer in the, we are able to obtain the heart rate of the person and with that determine in which sleep stage they're in.
- **Headphones:** with them the user can choose what to hear (music or white noise) and block unwanted external noise that may keep the user awake.
- **Lamp:** with the lamp we can try to control the rooms light, to do that we slowly increase or decrease the intensity LEDs.

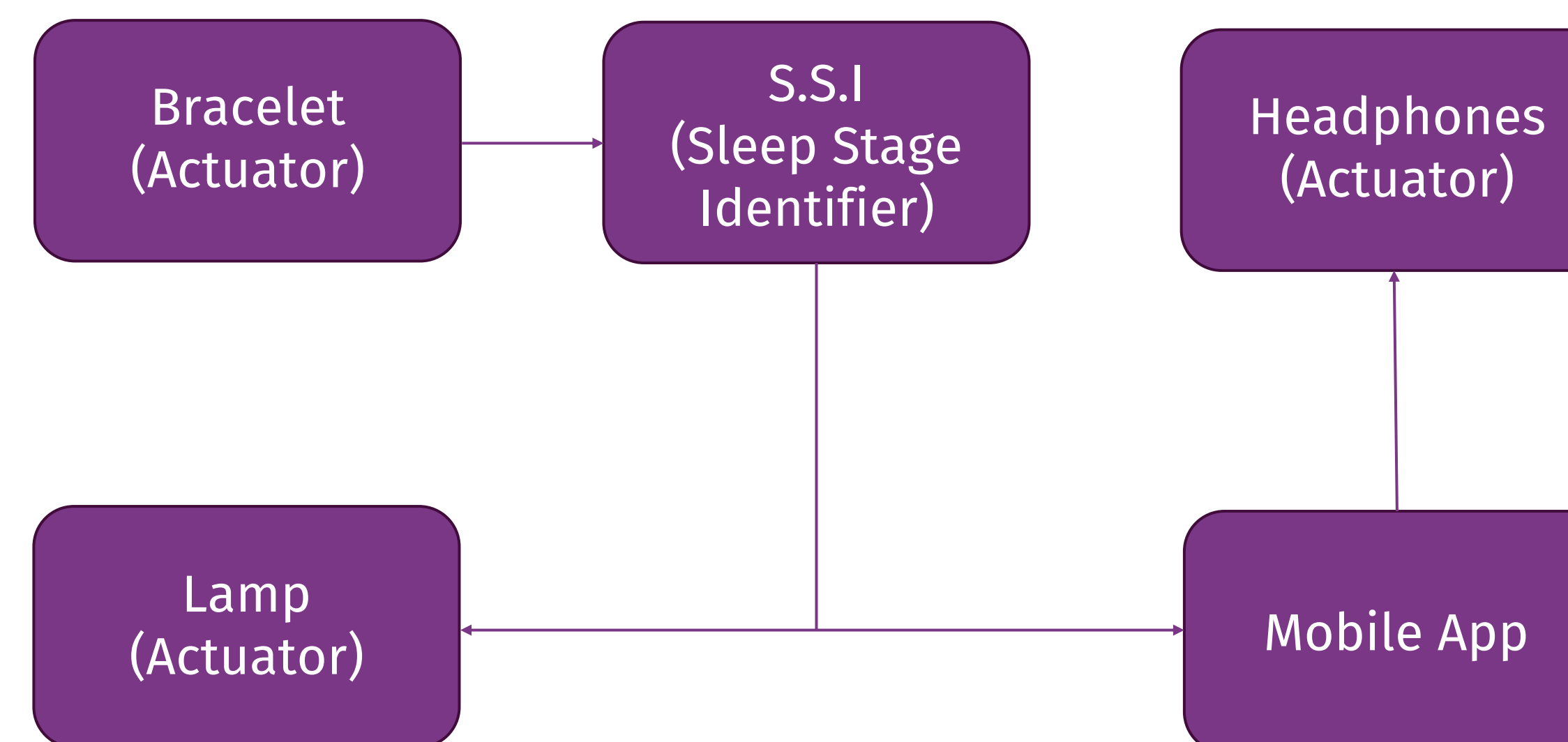
SLEEP STAGE IDENTIFIER

- With the help of the **bracelet**, we can measure the heart-rate and therefore **identify** which sleep phase the user is in.



Graph with different sleep stages

PROPOSED SOLUTION

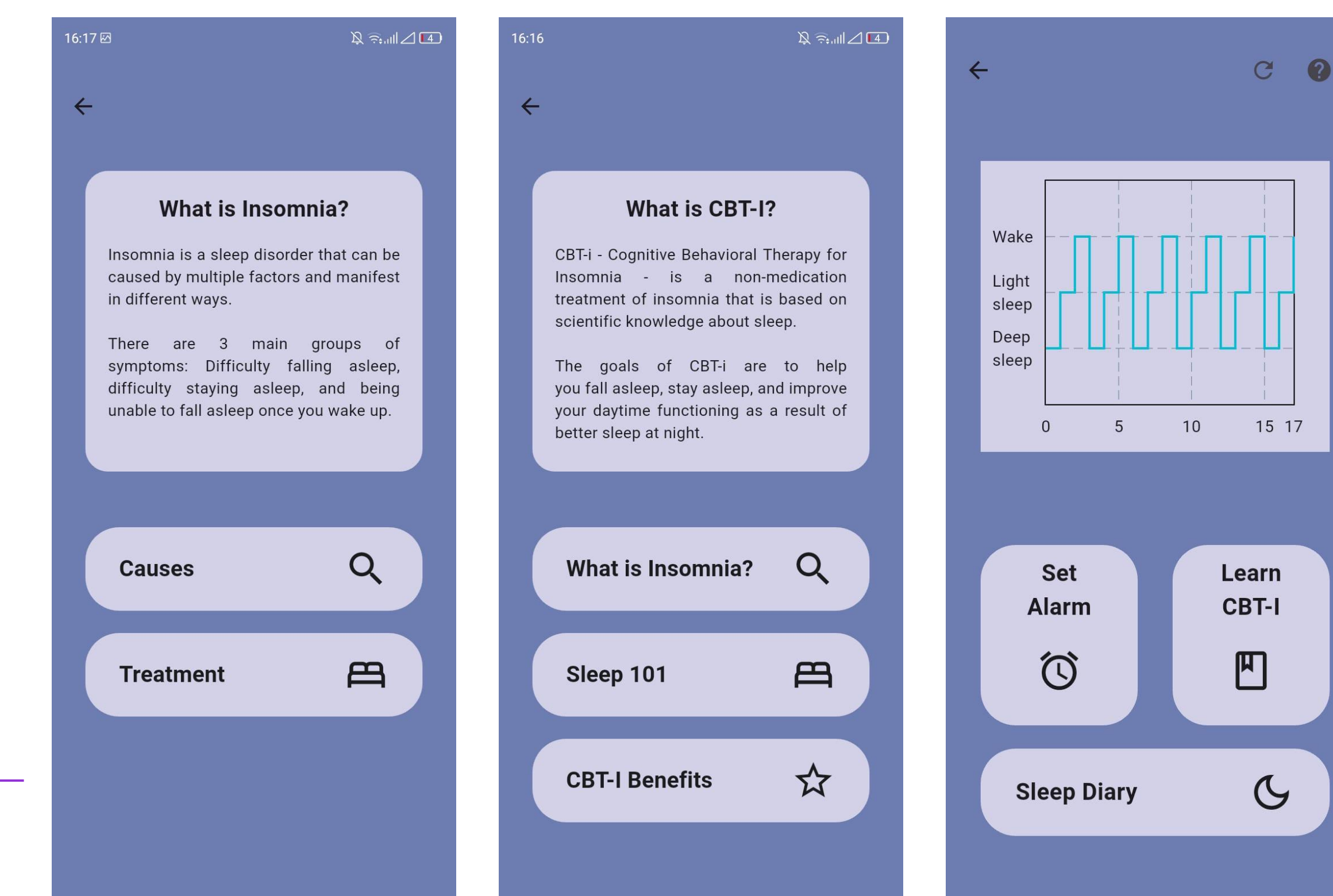


Architecture of the technological solution

- In this work, we present a technological system that helps **to reduce insomnia symptoms and improve the quality of sleep**. Using sensors, headphones and a lamp controlled by an S.S.I (Sleep Stage Identifier) and a mobile app. The Insomniaint tries to **identify the sleep stages, isolate the external noise** and be **a comfortable, discrete and customizable** solution for night-shift workers, or residents in loud areas.

MOBILE APP

- With the mobile app we **store the information** recovered during the sleep, and we later use that information and data to **develop a customized sleep schedule**. With the number of hours required for the user to sleep and the **recommended hours** for the user to go to **sleep and wake up**.

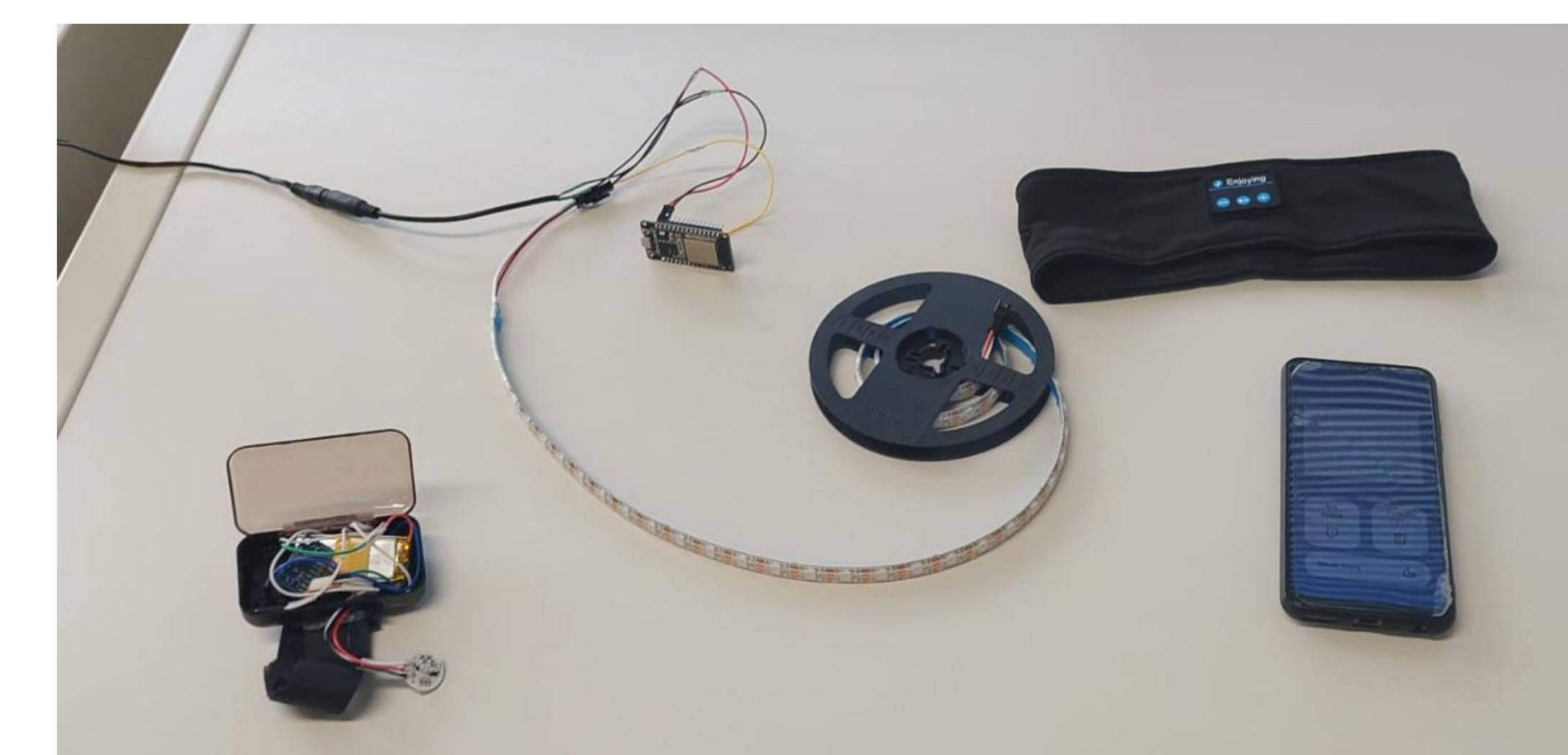


Layout of the mobile app - initial screen and educational screens

ADVATAGES

- Allows a better **user personalization**;
- The **light** and **sound** are adjusted to the user's **sleep stages**;
- It acts in the **environment's light** and **sound**;
- Can be adjusted to the user's **habits** and **sleep stages**;
- The user can learn more about how to **prevent insomnia** and to **improve their sleep**.

FINAL PROTOTYPE



Final prototype with the bracelet, lamp, headphones and mobile app