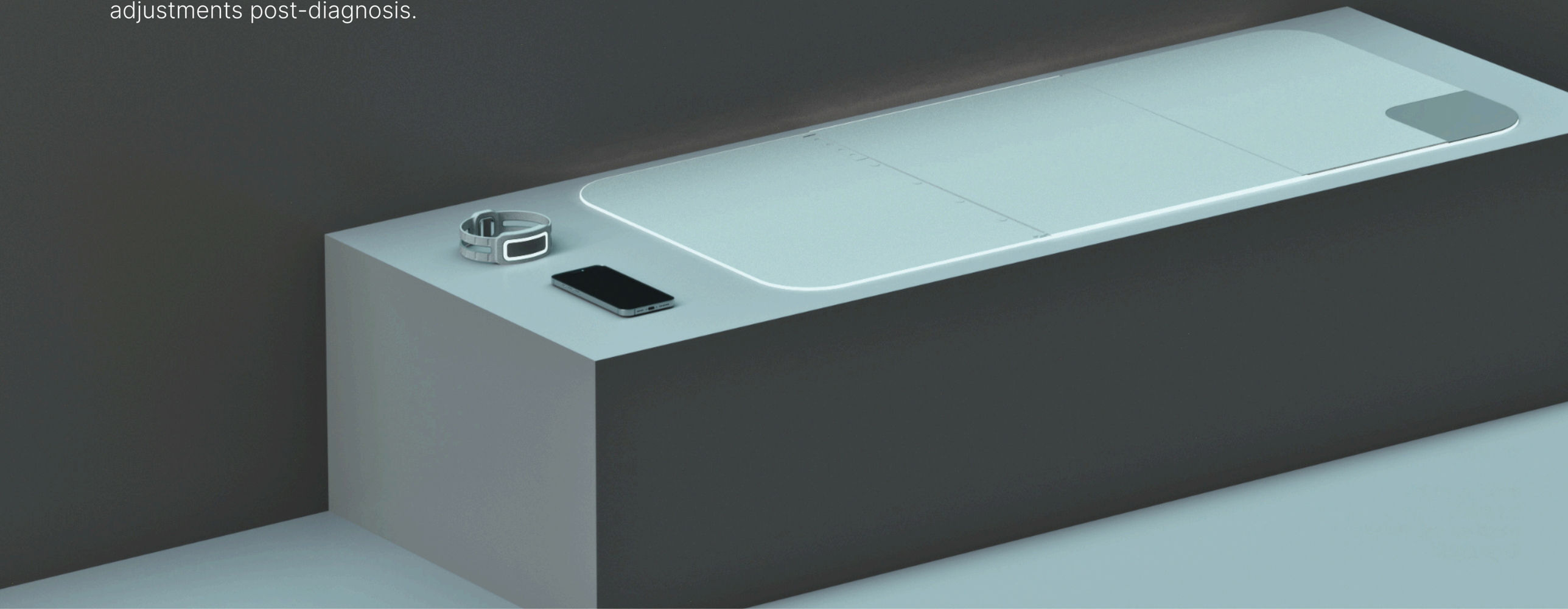
ATT

An ecosystem to track ADHD progress during study and work, enabling better treatment adjustments post-diagnosis.

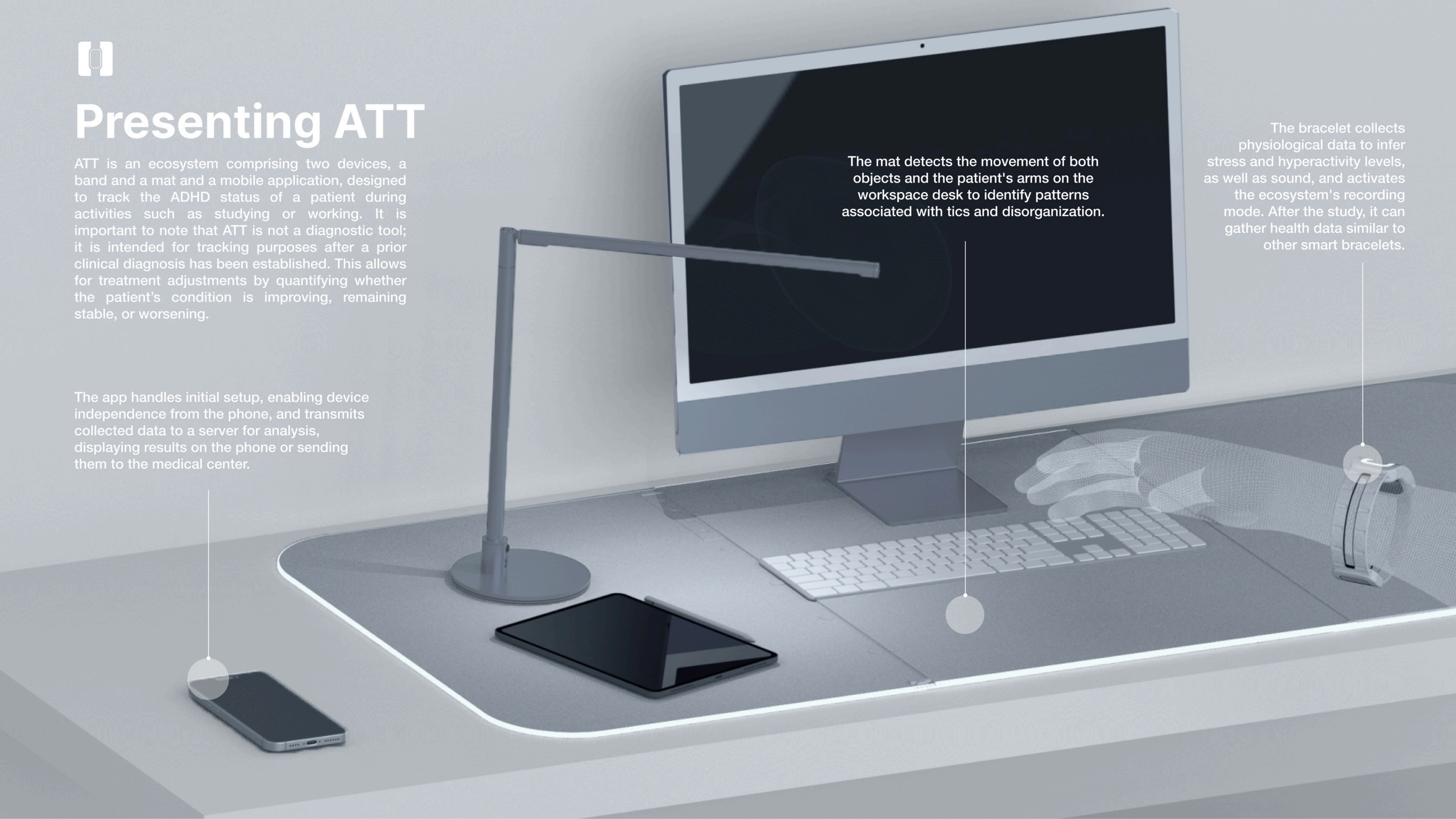
Imperial College London



Presenting ATT

ATT is an ecosystem comprising two devices, a band and a mat and a mobile application, designed to track the ADHD status of a patient during activities such as studying or working. It is important to note that ATT is not a diagnostic tool; it is intended for tracking purposes after a prior clinical diagnosis has been established. This allows for treatment adjustments by quantifying whether the patient’s condition is improving, remaining stable, or worsening.

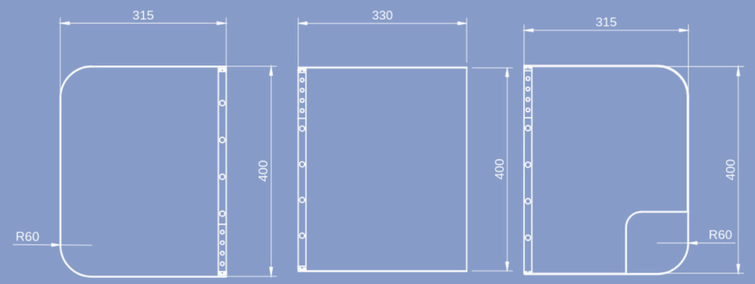
The app handles initial setup, enabling device independence from the phone, and transmits collected data to a server for analysis, displaying results on the phone or sending them to the medical center.

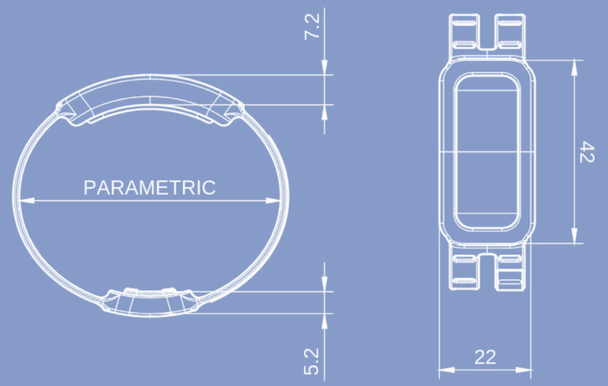


The mat detects the movement of both objects and the patient's arms on the workspace desk to identify patterns associated with tics and disorganization.

The bracelet collects physiological data to infer stress and hyperactivity levels, as well as sound, and activates the ecosystem's recording mode. After the study, it can gather health data similar to other smart bracelets.

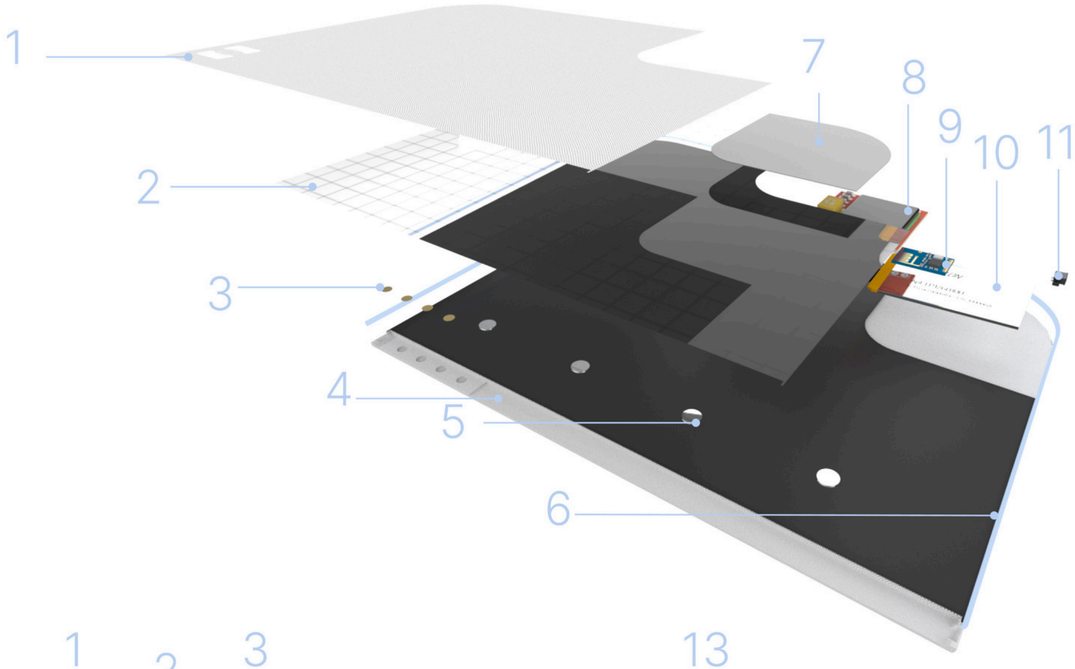
Product architecture





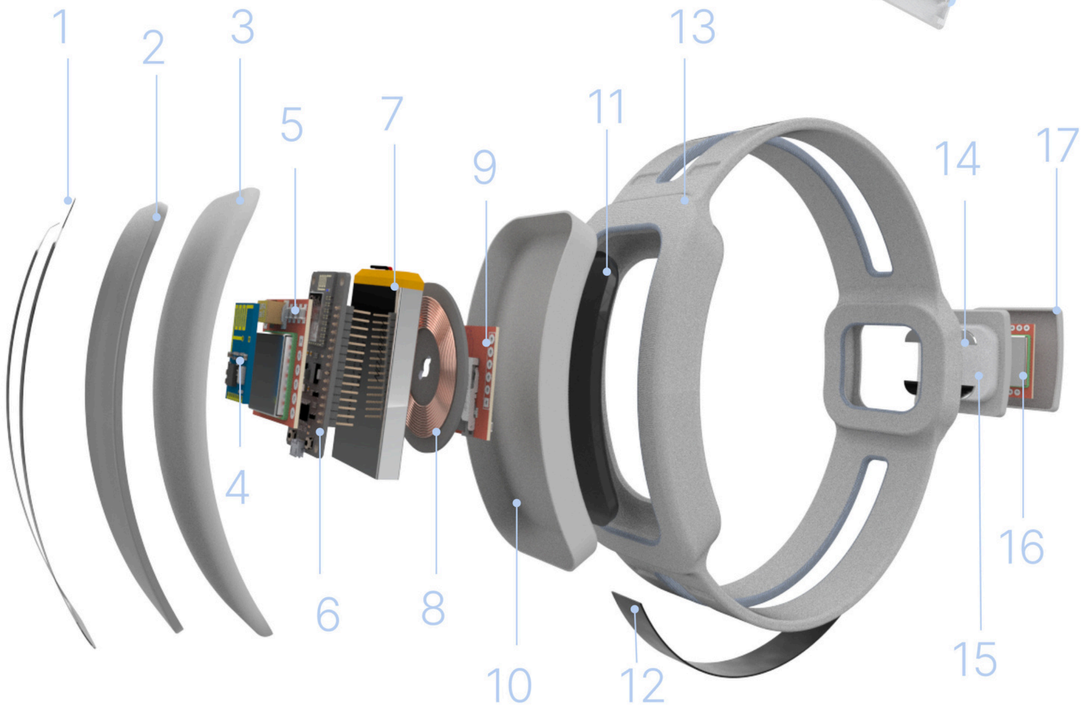
Mat

1. **Flexible Upper Layer**
2. **Velostat Pressure Sensor Network**
3. **Information Pins**
4. **Bottom Cover**
5. **Attachment Magnets**
6. **LED Emissive Band**
7. **Action Touch Surface**
8. **Processing Unit:** Nordic Semiconductor nRF52840
9. **Bluetooth Connection Unit:** Nordic Semiconductor nRF52840
10. **2000mAh Battery:** EEMB LP103450
11. **USB-C Connector**



Band

1. **LED Light Band**
2. **Action Surface**
3. **Casing**
4. **Microphone and Processor:** Knowles SPH0645LM4H-B (microphone) + Nordic Semiconductor nRF52840 (processor)
5. **Gyroscope and Accelerometer Unit:** InvenSense MPU-6050
6. **Bluetooth Connection and Data Processing Unit:** Nordic Semiconductor nRF52840
7. **400mAh Battery:** EEMB LP503040
8. **Wireless Charging Coil**
9. **Blood Oxygen and Heart Rate Monitoring Unit**: Maxim Integrated MAX30100
10. **Bottom Casing**
11. **Translucent Cover for Sensor 9**
12. **Axial Interconnection Cable**
13. **3D Knitting Bracelet**
14. **Electrodes**
15. **Casing**
16. **EMG and Skin Conductance Unit:** Olimex EKG-EMG (EMG) +GSR (skin conductance)
17. **Bottom Casing**



Band Operation

Mat Operation

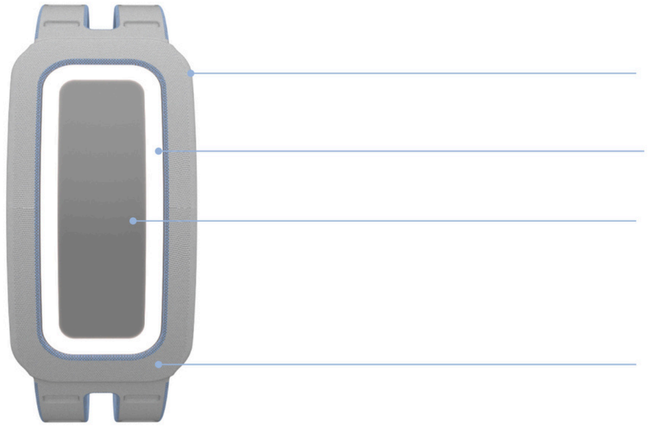
Data

What can it detect?

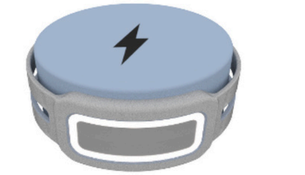
- Movement → **Hyperactivity** **TICS** [7]
- Physiology → **Anxiety** **Stress** [8]
- Sound → **Distractions** **TICS** [8]

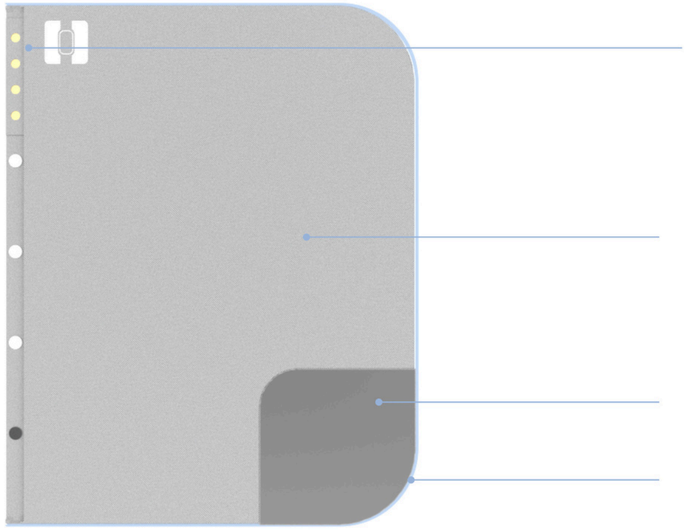
- Weight and dimensions → **What object it is** [11]
- Movement → **Hyperactivity** **Distraction** **TICS** [11]
- Dynamic pressure → **Desk organization** [13]

Functionalities

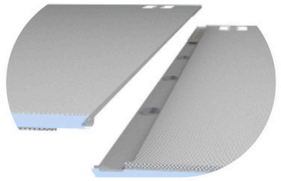


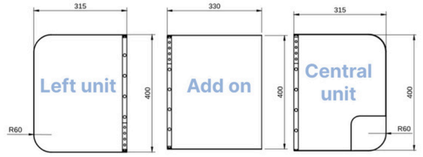
- **Wireless charging**
- **LED strip**
- **Action surface**
- **Removable electronic components**

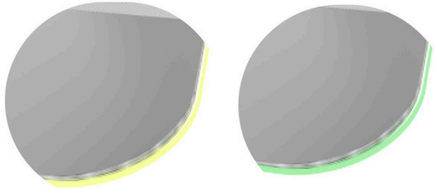




- **Magnetic connection**
- **Pressure sensors**
- **Action surface**
- **LED strip**







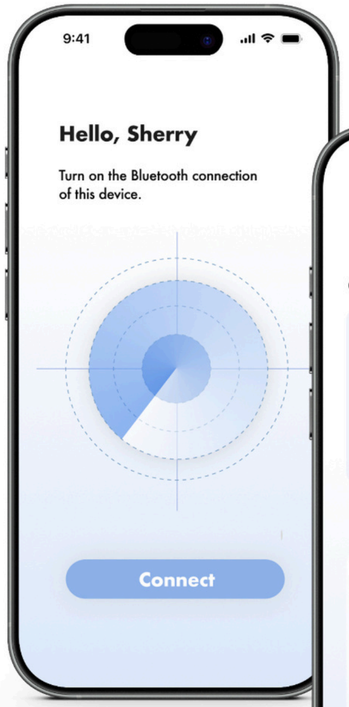
System Design

The user uses the AI chat function to explain to the product system what he is doing, so that the product system can better understand why the user wants to record this piece of data

APP

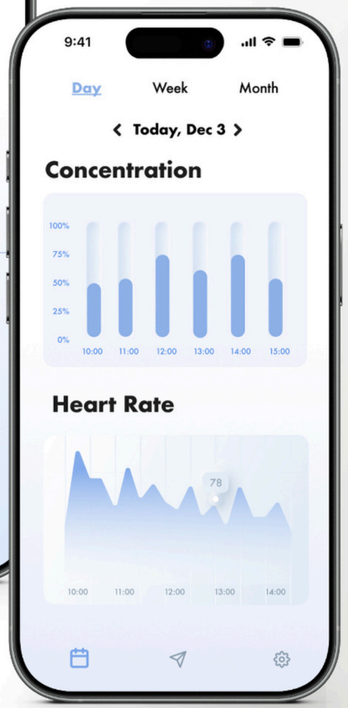
Receive data

Store data in the cloud, analyse it, organise it by AI



Connect Page

Connect and match devices



Data Page

Real-time status monitoring

Mat

Collection of desktop data

Transfer data through Bluetooth to APP

Band

Collection of hand data

Transfer data through Bluetooth to APP

Action Surface

One touch means active focus mode (it starts recording the movements and activates the matt recording)