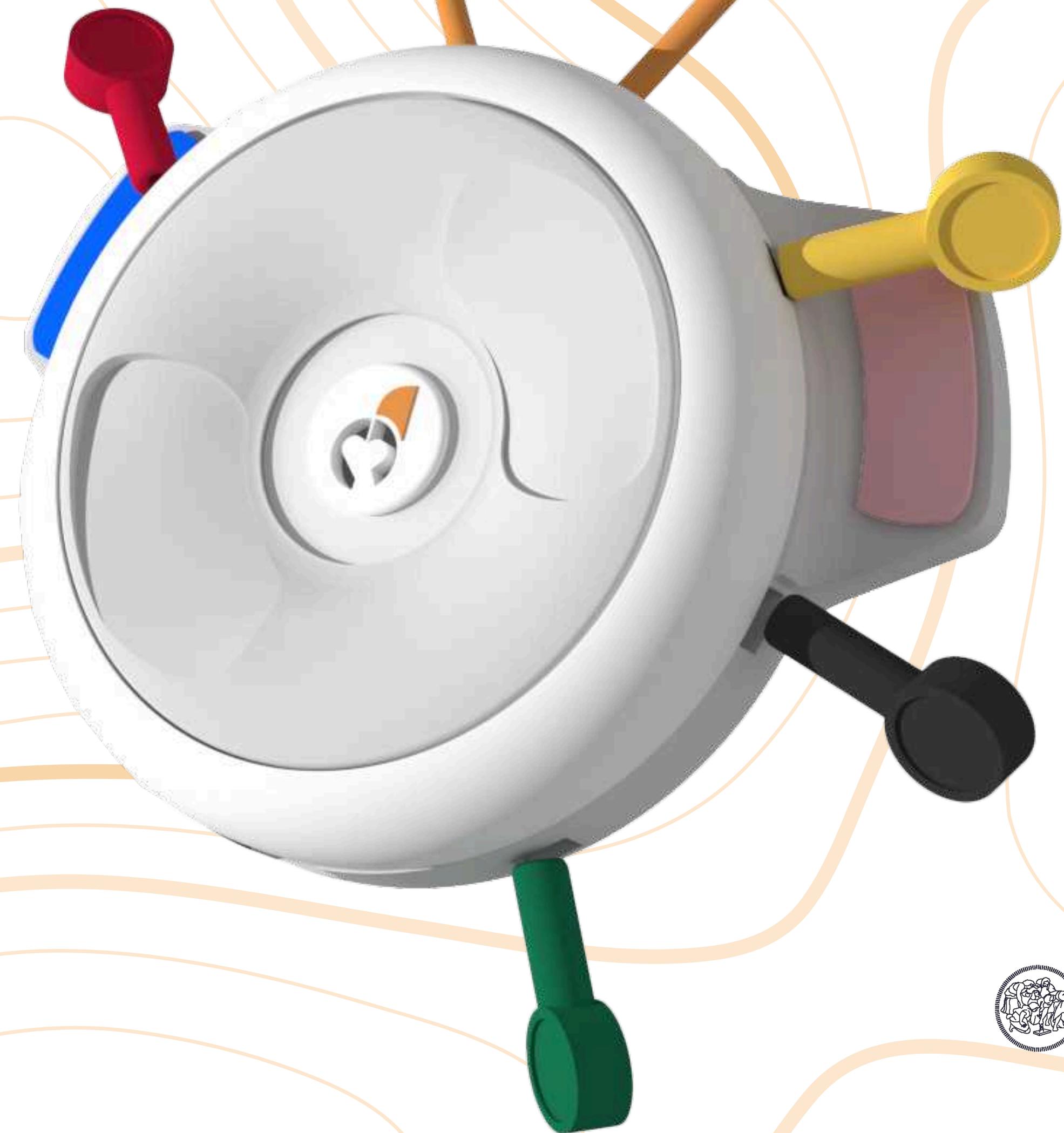


# Redesign of the D-Heart

Group 6

Rui Zhang  
Lantian Liang  
Zheyi Yu  
Ilaria Torcolacci

A.A. 2023/2024



# Persona of primary user



**Name:** Mavis Barry

**Occupation:** Student

**Age:** 23

**Experience:** Novice user of ECG

**Location:** Europe

**Family:**

Family members with a history of heart disease

## Pain Points

- Too shy to ask for help
- No medical background
- Afraid to make mistakes
- Prone to anxiety

## Behaviors

- Easily puzzled by the interaction logic
- Frustrated with tedious user flow
- Frequently express confusion and seek assistance

## Attitudes and Skills

- Tend to be impatient
- Not familiar with medical devices
- Poor skills in technology
- Concerned about her health

## Goals

- Keep track of heart health regularly
- Complete tests conveniently and independently
- Get reliable and fast medical reports

# Design Requirement

## Efficiency

*Provide a clear hierarchy to help users find key and basic functionalities*

*Provide clear requirements checklist and give real-time feedback*

*Give users the freedom to skip some unnecessary steps.*

## Ease of learning

*Point out how to pair the device and provide error recovery approaches*

*Provide understandable conclusion and explanation about the ECG results*

*Provide clear placement guidance before ECG recording*

*Display distinct and intuitive signifiers about different status*

*Provide step-by-step guidance for users to follow easily*

## Timely feedback

*Give simple and apparent feedback on results once a task is completed*

*Clear error messages to effectively guide users toward correct actions*

## Engagement

*Incorporate components tailored to the preferences of young users*

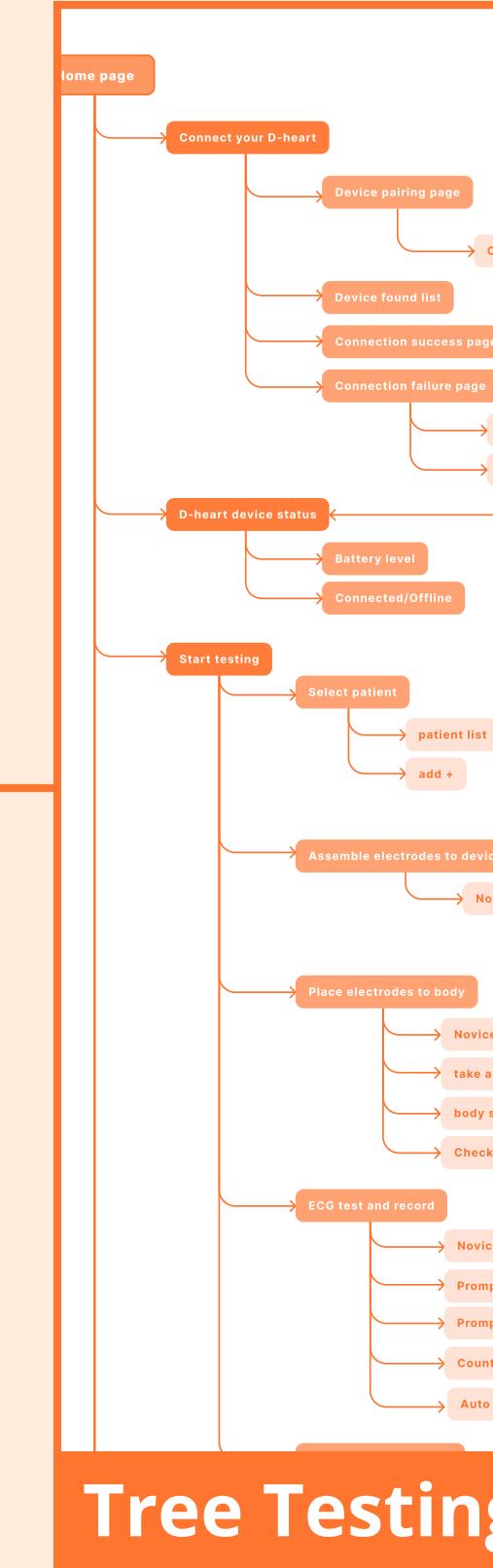
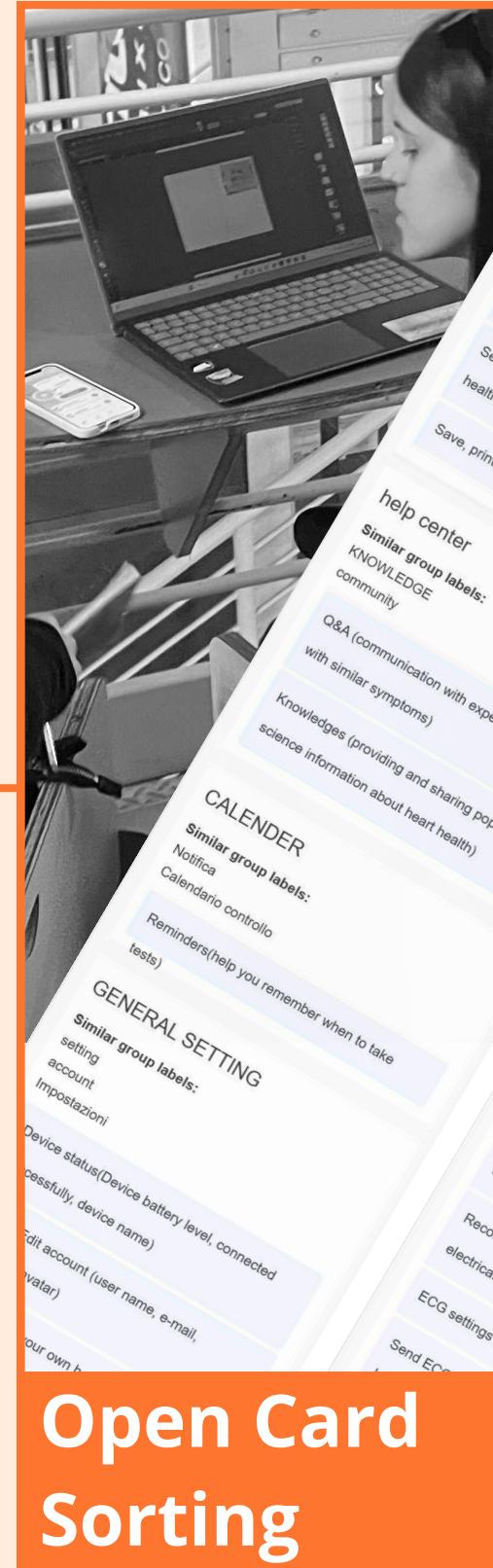
*Improve the level of involvement, interest, and interaction*

*Bridge the gap of users and experts*

*Facilitate communication and interaction among users*

# Methodology

## Information Architecture

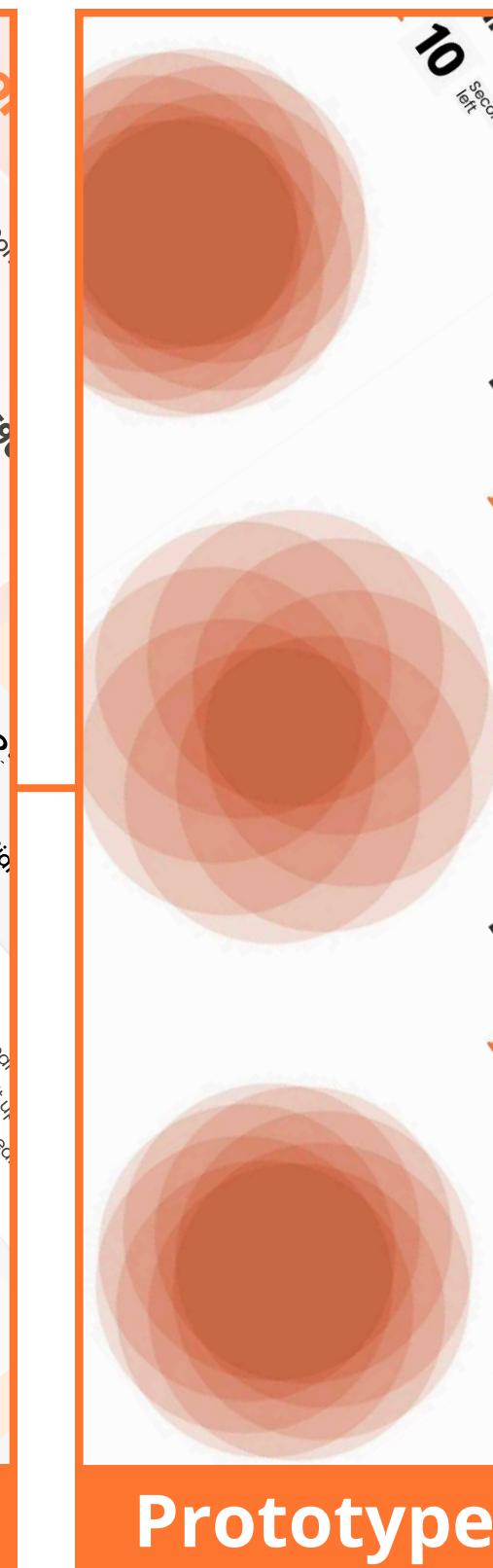
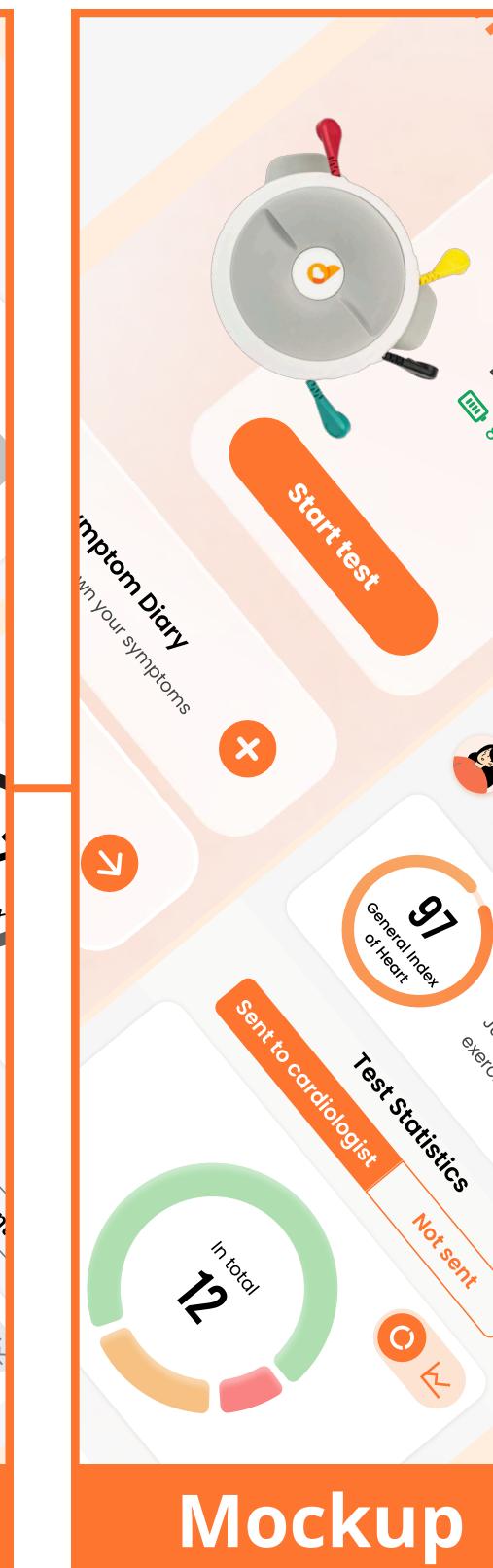
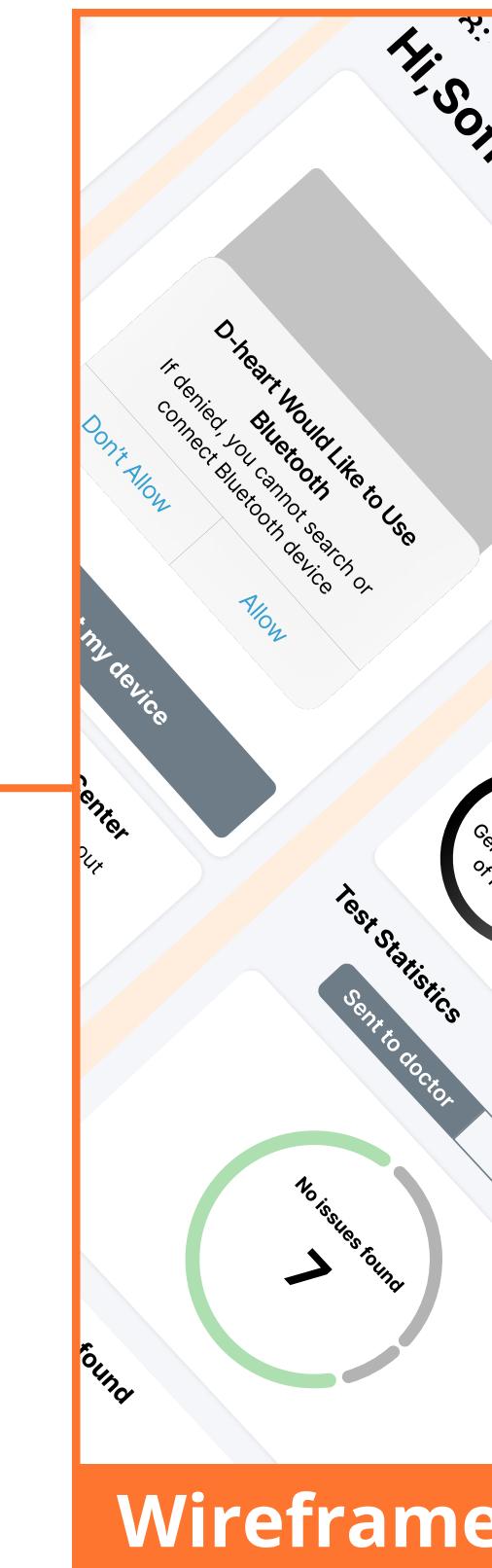


Old features & 6 new features

**20 participants** within our targeted age range to categorize the cards and name the categories

**64 participants** to complete the tasks by identifying the correct path

## Prototyping



Expert tests

5 participants

5-second test & A/B test

12 participants

A/B test & user test

15 participants & showcase

## Redesign Solution



# Key Findings

## 1. Require **intuitive and clear feedback** (not only timely)

Need more clear feedback about **when exactly the ECG recording starts**

Use **multi-sensory feedback**, like sound, to notify users

Hard to notice the **device's battery level when it's not connected** with phone

Enhance **battery level visibility** on the physical interface

**Text explanation alone** is not intuitive enough for electrode incorrect placement.

Use **illustration & animation** to increase the feedback's clarity

## 2. Align with the **actual needs of ECG users**

It's misleading and unnecessary to **note down feelings** for ECG users

Remove feelings, and add the **severity of symptom**

Concern about **after-sales service** of the product in case of malfunctions

Provide **entrance for repair centers**, making it easier for users to access repair services

Want to ask experts **additional questions** about their test results

Add a **premium feature** to increases D-Heart's revenue and also meet user needs

# Key Findings

## 3. Use clear and concise text content to minimize misunderstandings

'Note' misleads users and it's hard for users to associate it with logging down symptoms

Refine its name into 'Symptom Diary'

Be confused about the name of the tab labeled 'Community'

Replace the tab name with 'Explore'

Confuse the term 'doctor' with their family doctor

Modify the term into 'cardiologist'

Be confused about **the title of the tests** with actual results

Modify the term into 'ECG Record & Cardiologist Review'

## 4. Match users' daily usage patterns (fitting into their existing habits)

Be accustomed to the **layout of reminders** on their phones

Reorganize the reminders into a **to-do list** format

Be used to **a trial period** before subscribing to a membership.

Add the **1-month free trial** for the Premium to increase the convert rate

Be used to the **single-column layout** of posts, such as Twitter, Ins

Modify the posts into **single-column layout** instead of two-column

Be used to **notifications** being on the homepage or another **prominent** location

Modify the **position of the notifications** to more obvious

# Key Findings

## 5. Enhance the logical coherence and avoid unnecessary steps

Caregivers have to find **where to create patient profile** for others after registration

Provide a more logical registration path to avoid unneeded steps

Be confused about the two **two countdown timers** during ECG testing

**Combine** the 'Calm down' timer and the 'ECG recording' countdown timer

Be confused about the difference between **Previous Tests** and **Report Statistics**

**Attach** the report content in the tests which have been sent to cardiologist

## 6. Require sense of control

Concern about **data privacy**, ranging from personal to healthy information

Provide the entrance of **password setting** to protect user's data

Tend to **not prepare properly** for the phone's automatic start of ECG recording

Let user **decide when** to start the ECG recording

# Key Concepts



## Progressive disclosure

Guide users step-by-step to prevent information overload and help them understand their progress.



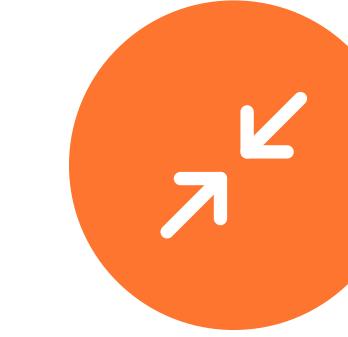
## Sense of control

Provide guidance and explanations to help users learn the interface while allowing them to control their personal data.



## Emotional design

Create empathetic and supportive interactions to boost emotional engagement, satisfaction, and loyalty.



## Simplicity

Remove unnecessary elements and steps, using clear and straightforward language to avoid confusion.



## Timely and clear feedback

Offer immediate and clear feedback after tasks to help users understand their actions and correct mistakes.

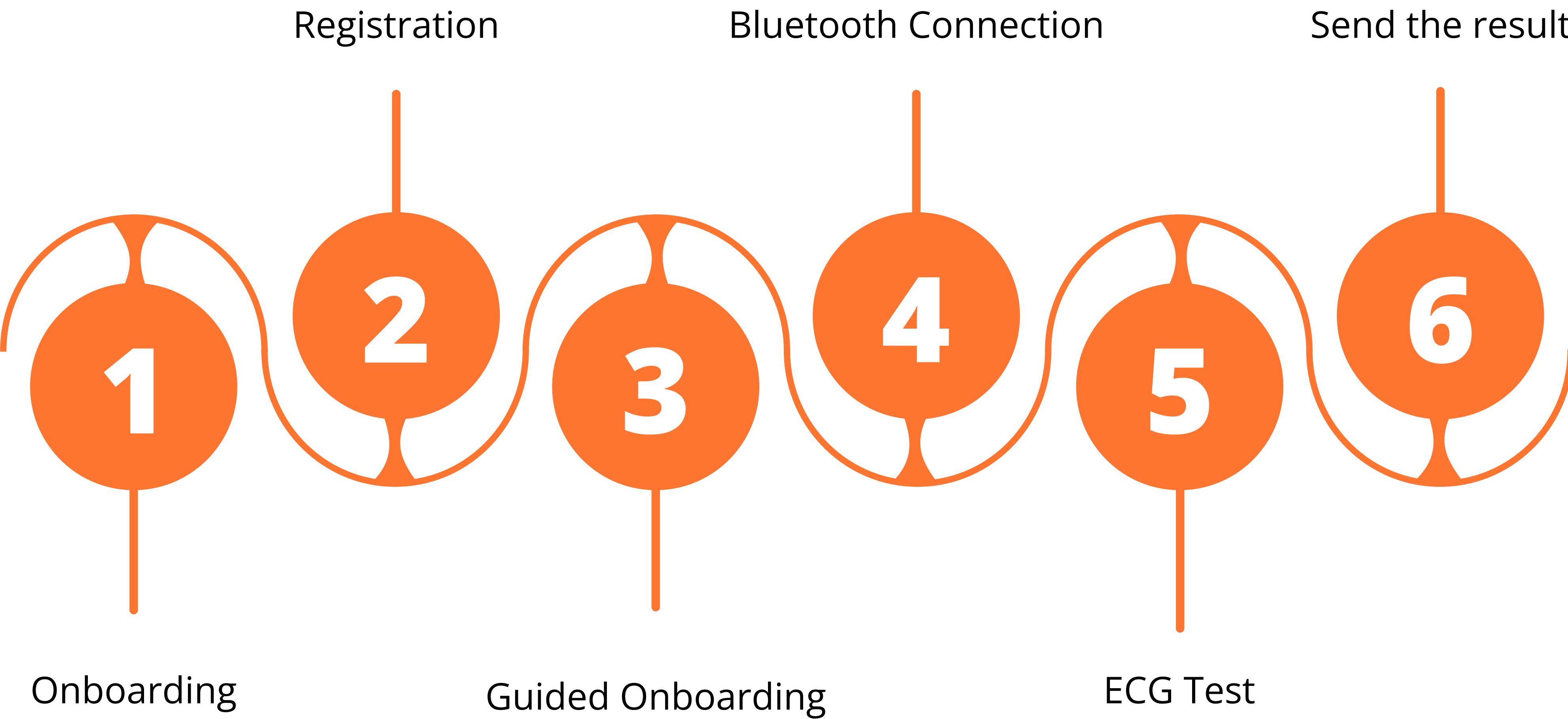


## Inclusivity and communication

Create a collaborative environment for sharing information, expressing concerns, and assisting each other to enhance engagement and trust.

# Main User Flow

of novice users



# Illustration Preference

Onboarding

## KEY FINDINGS



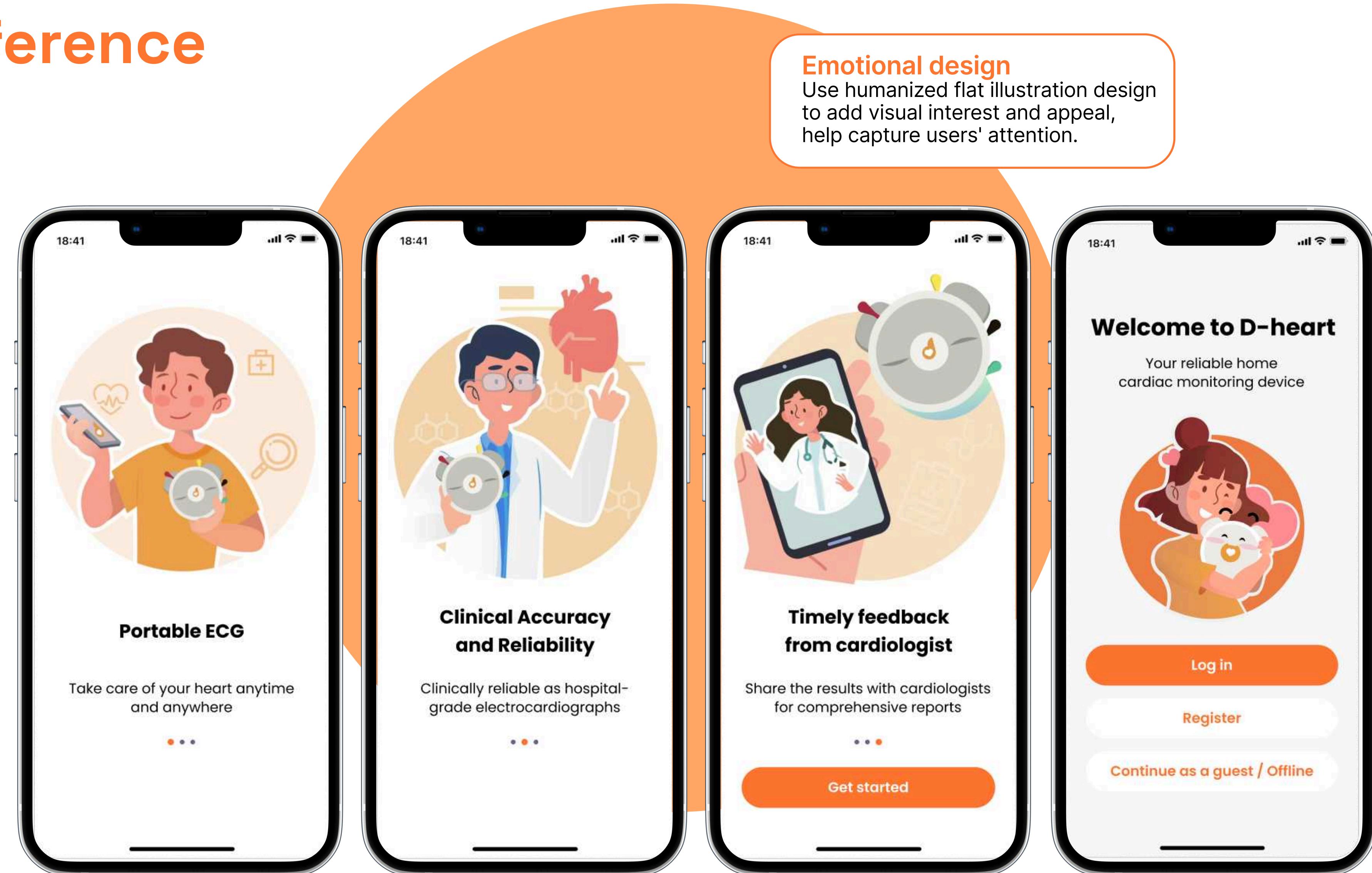
### Minimalism

Most participants indicated a preference for **minimalism and simplified shape**, which utilizes fundamental design elements to create a clean and uncluttered visual aesthetic.



### Humanization

Most participants expressed their preference for **human-like features**, which fosters a sense of familiarity, comfort and profession.

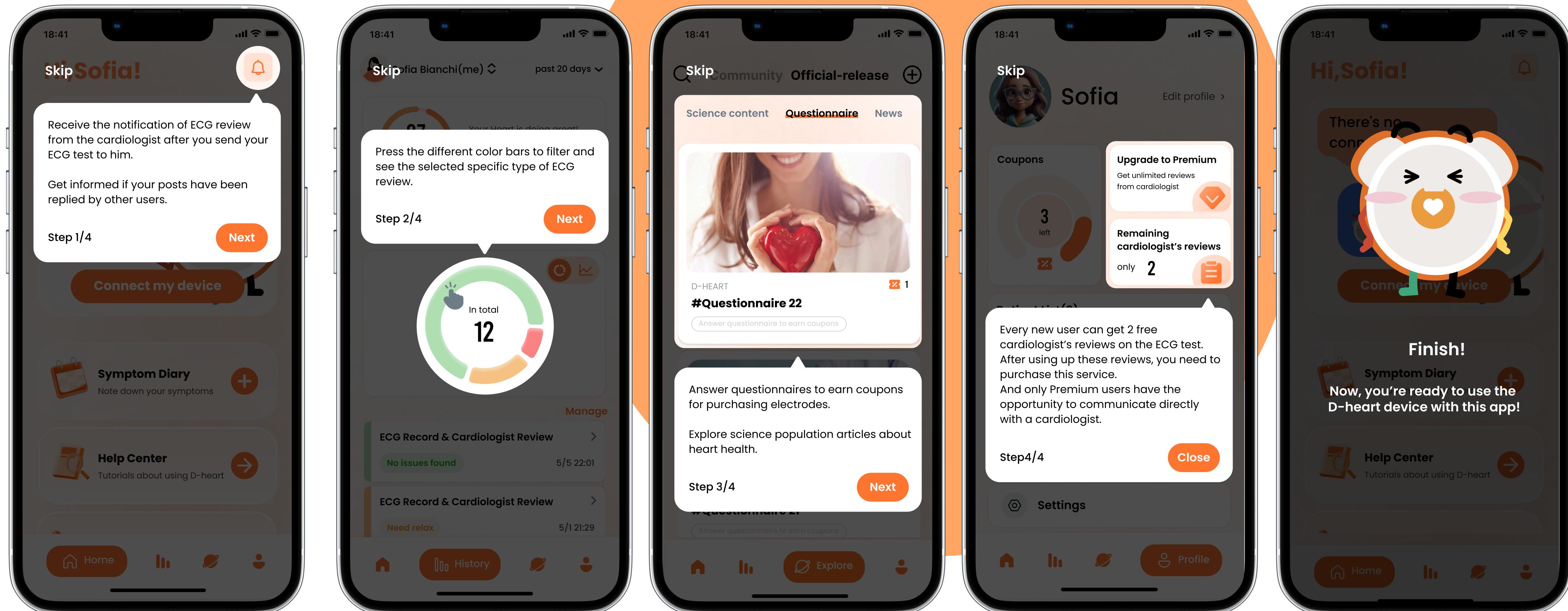


# Progressive disclosure

Onboarding

## Progressive disclosure

Use new user guidance overlay to help novices to be familiar with product's functionality and reduce the cognitive burden



# Create your account

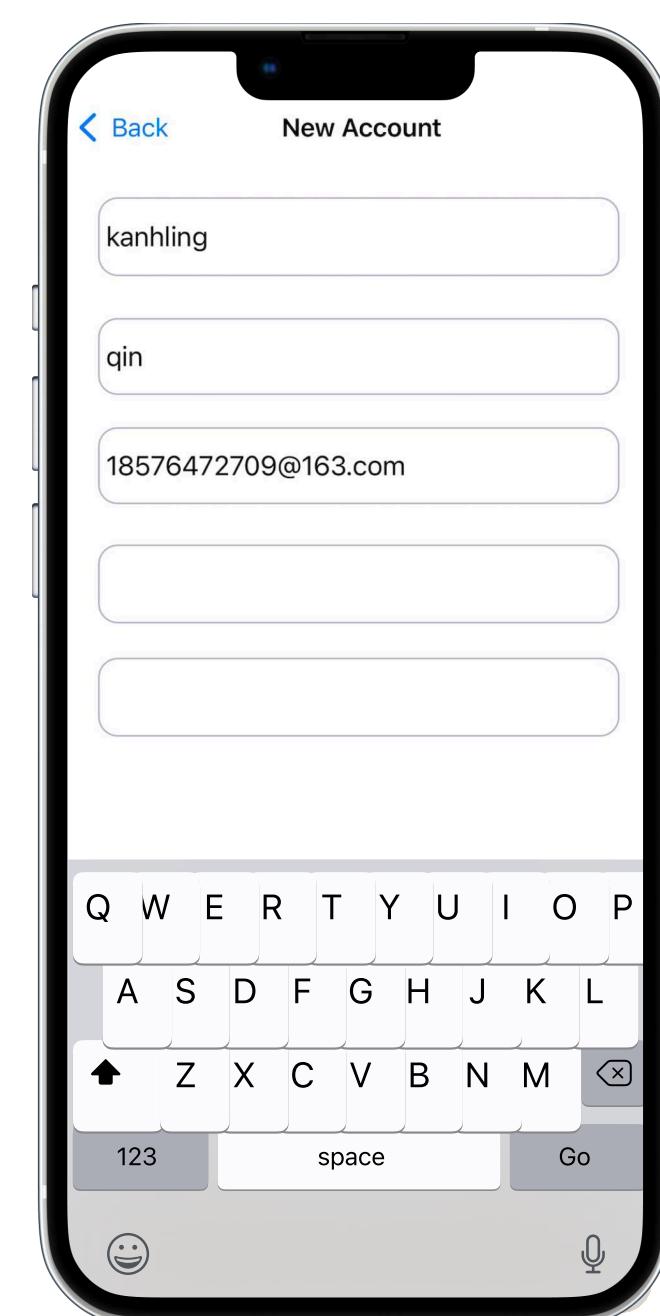
Registration flow

## DESIGN REQUIREMENT



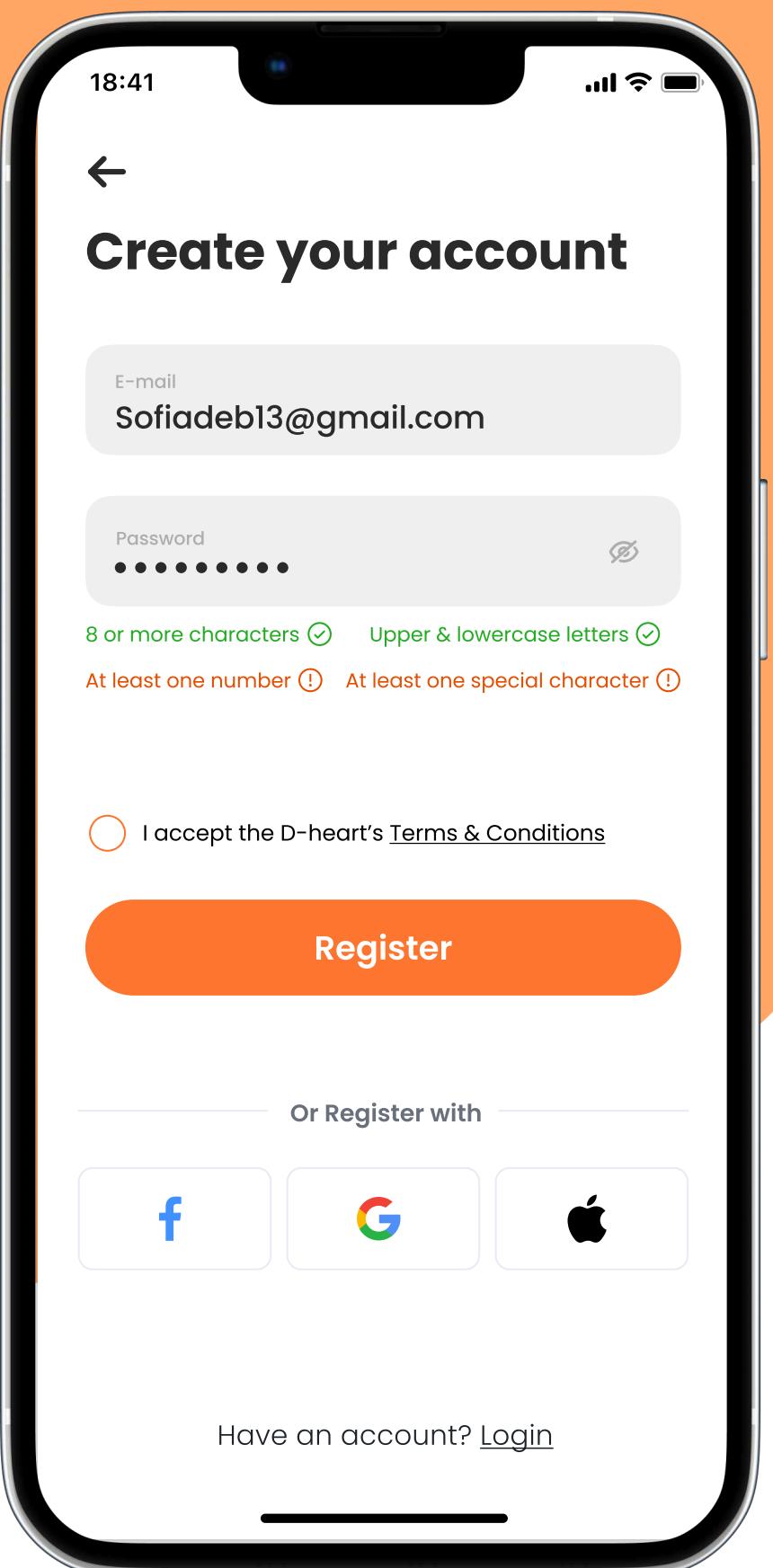
### Efficiency

Provide clear requirements checklist and give real-time feedback for password setting.



Old version

**Timely and clear feedback**  
Prompt Feedback



# User profile

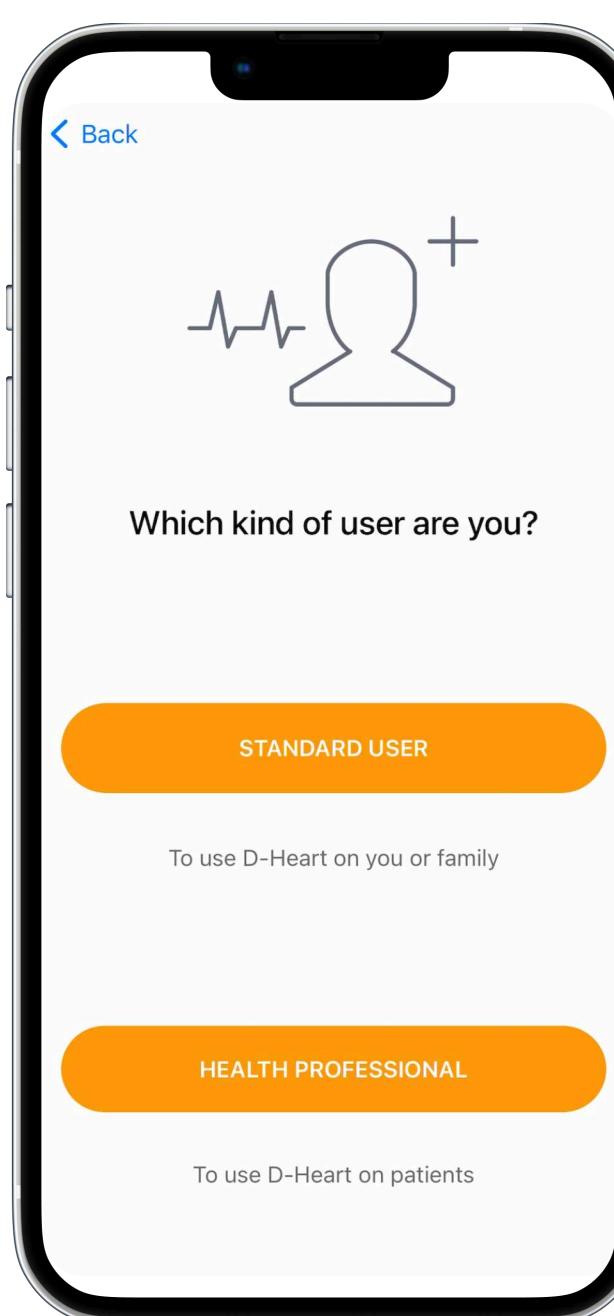
Registration flow

## DESIGN REQUIREMENT



### Efficiency

Progress indication  
Intuitive guidance



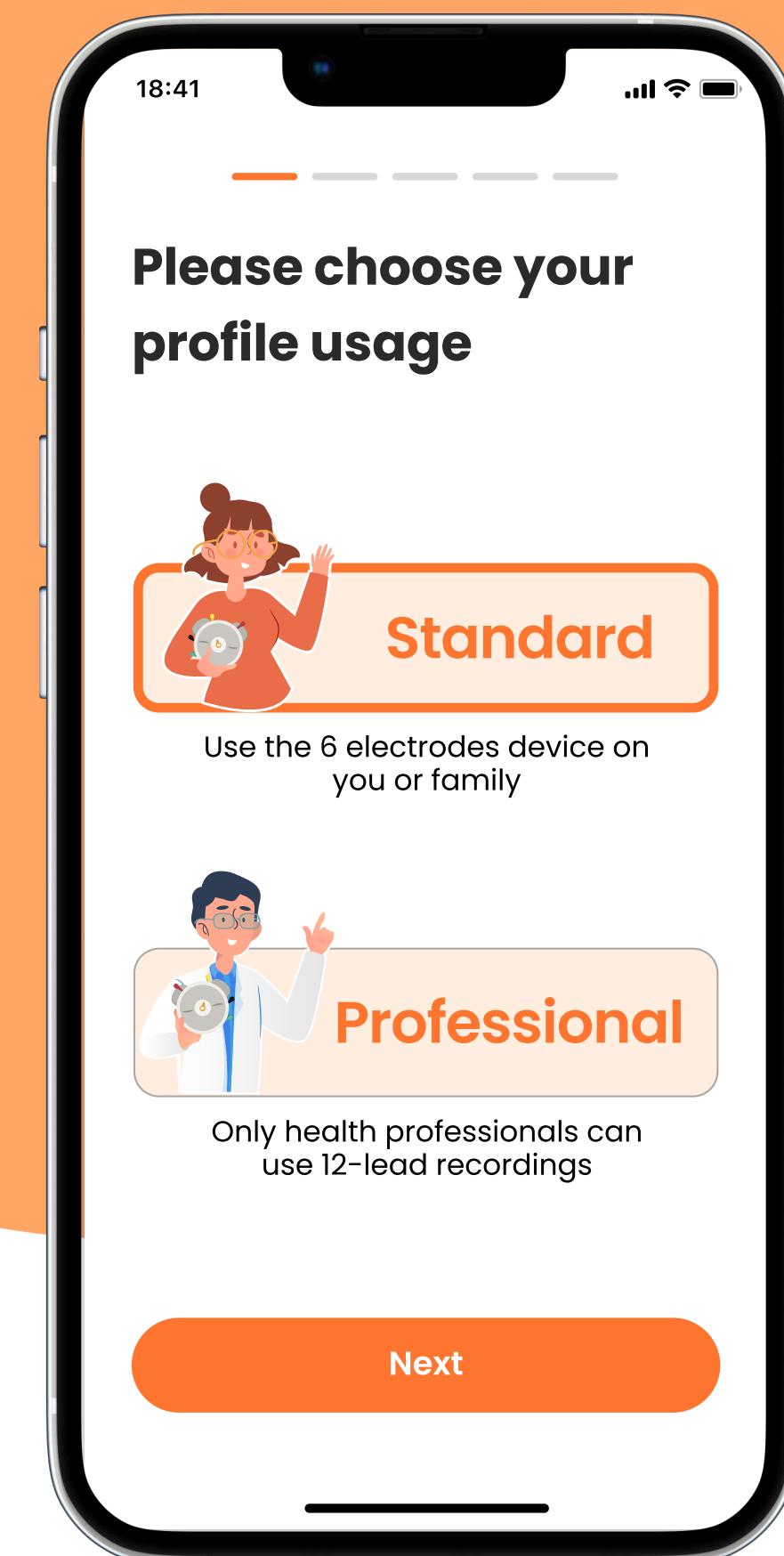
Old version

### Progressive disclosure

Use progress bar to show the profile setup progress

### Emotional Design

Use illustrations to make the interface more intuitively understandable and visually appealing; Also improve the overall aesthetic appeal of the application



# User profile

## Registration flow

### DESIGN REQUIREMENT



#### Efficiency

Provide a more **logical registration** path to avoid unneeded steps

Concern about **data privacy**, ranging from personal to healthy information



Old version

18:41

← -----

Please choose whom you will test

Myself

Others

Next

18:41

← -----

Create patient profile for yourself

Personal data

Health data

\*First name

\*Last name

\*Gender

\*Birthday

\*Phone

Next

18:41

← -----

Set password for the patient just created

Anyone wishing to view this patient's information and ECG data must enter the password to access it.

Password

Done

Skip

#### Simplicity

If the user chooses 'Test on others', he will only fill in the patient data of others. (No need to fill in his own personal/health data.)

#### Sense of control

Set password to access ECG data, help protect patients' privacy information

# Bluetooth connection

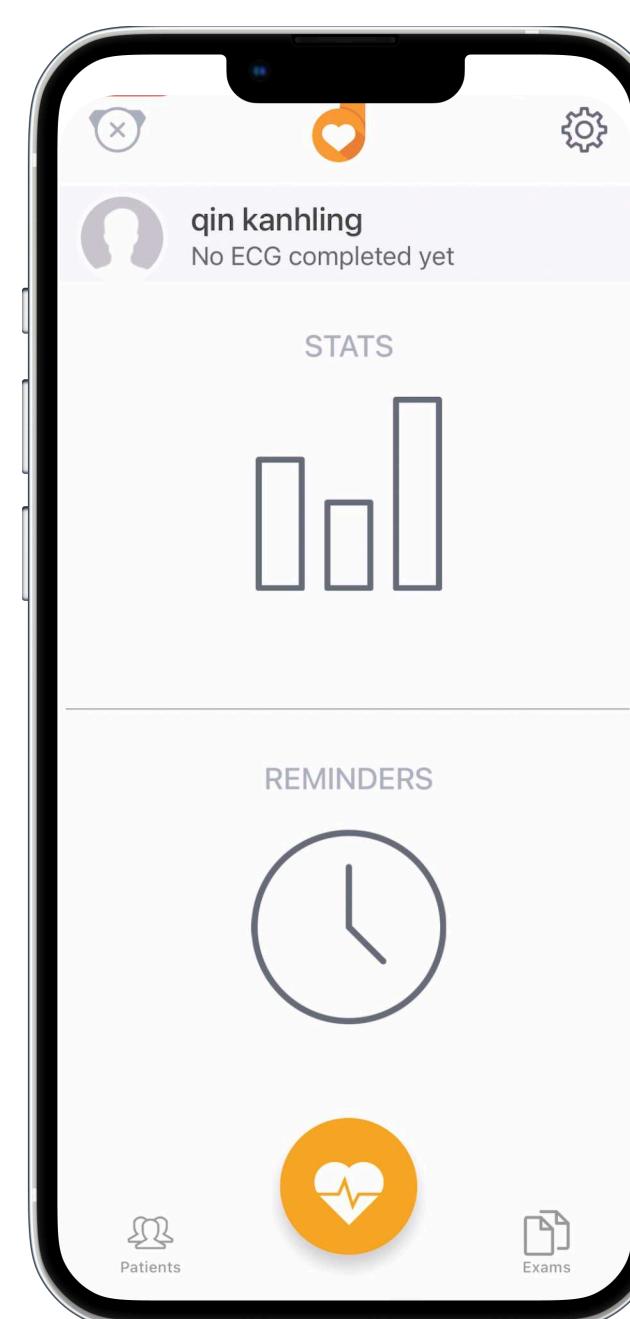
Home page

## DESIGN REQUIREMENT



### Ease of learning

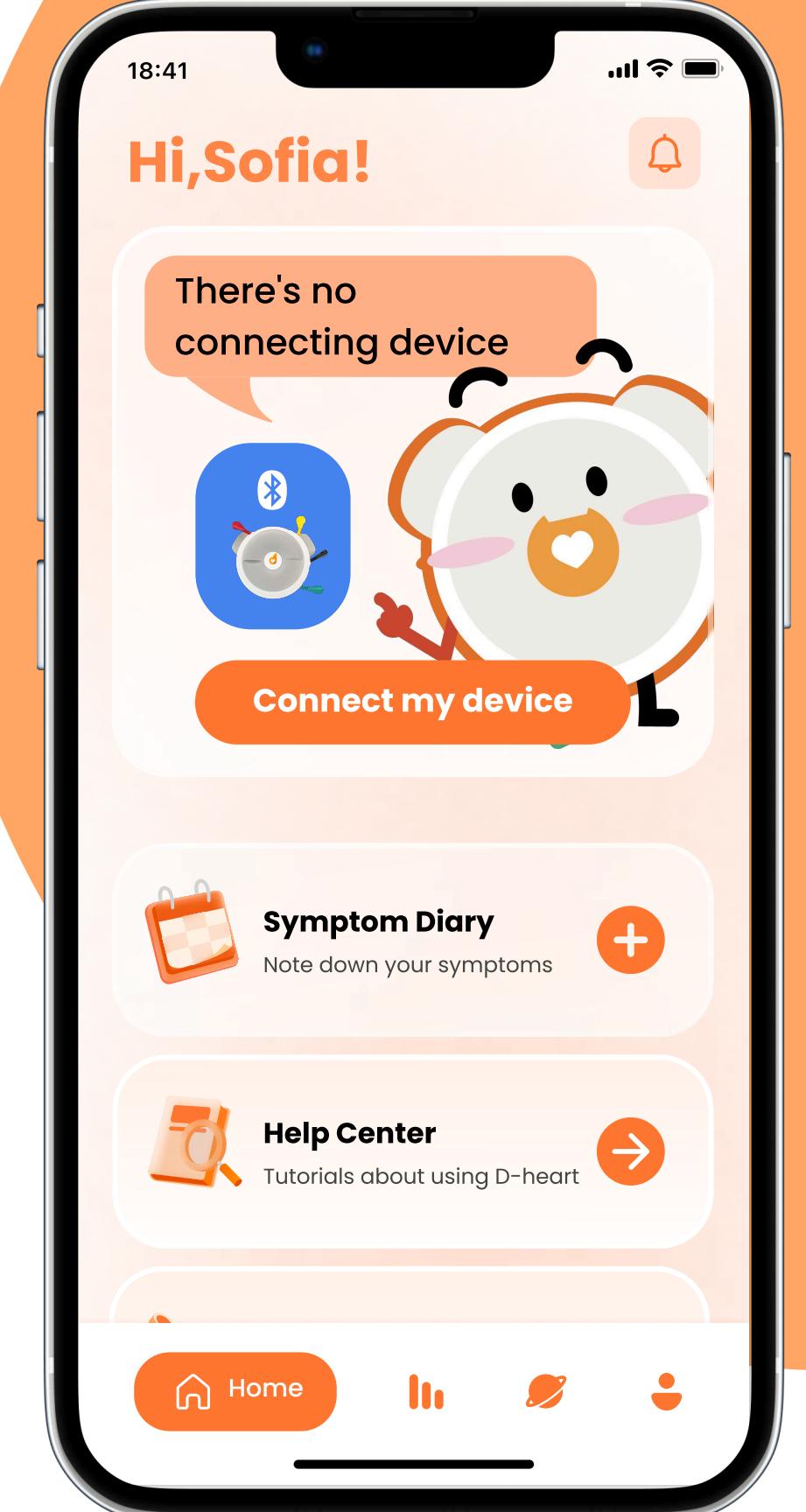
Display **distinct and intuitive** signifiers about different status



Old version

**Simplicity**

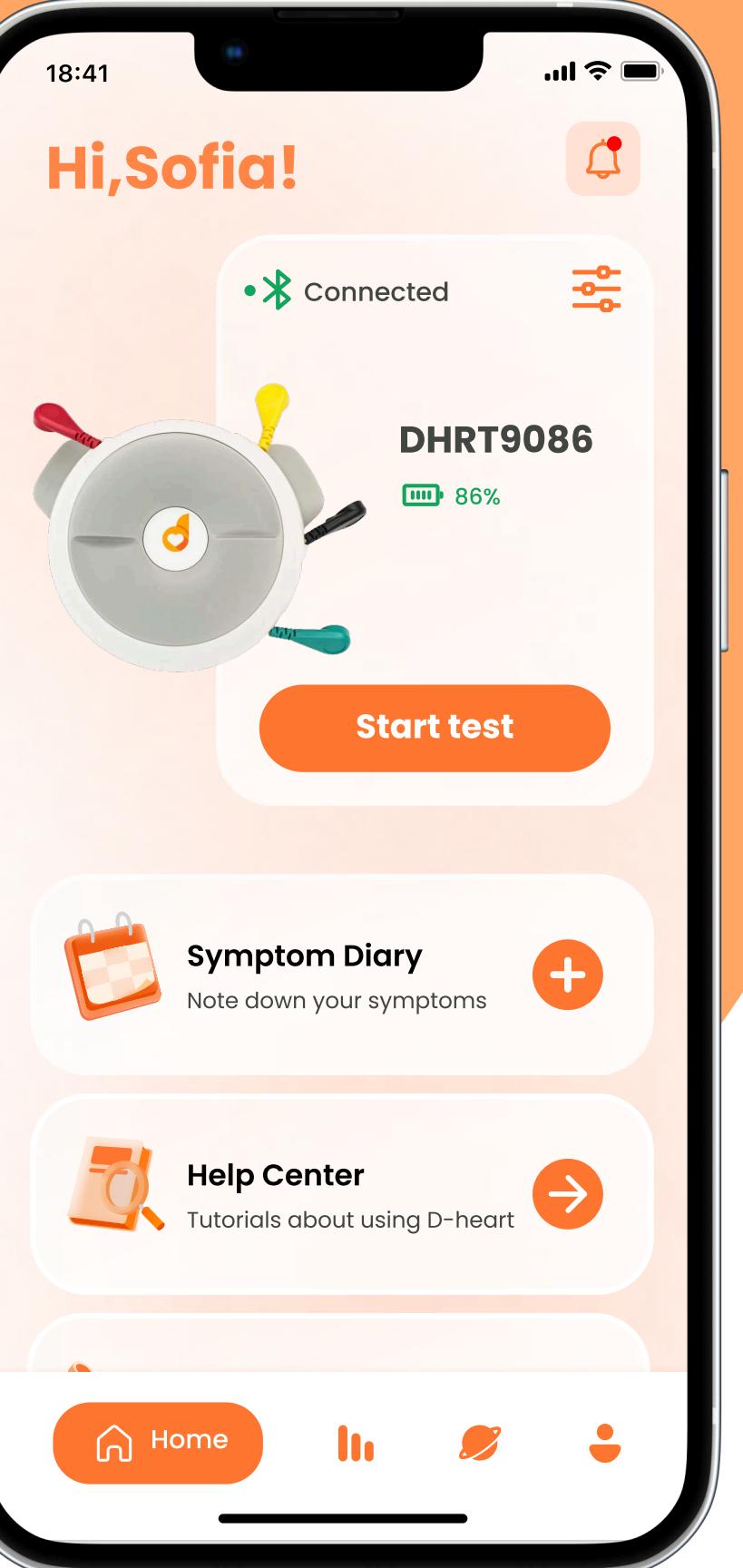
Show the device pairing status separately and directly



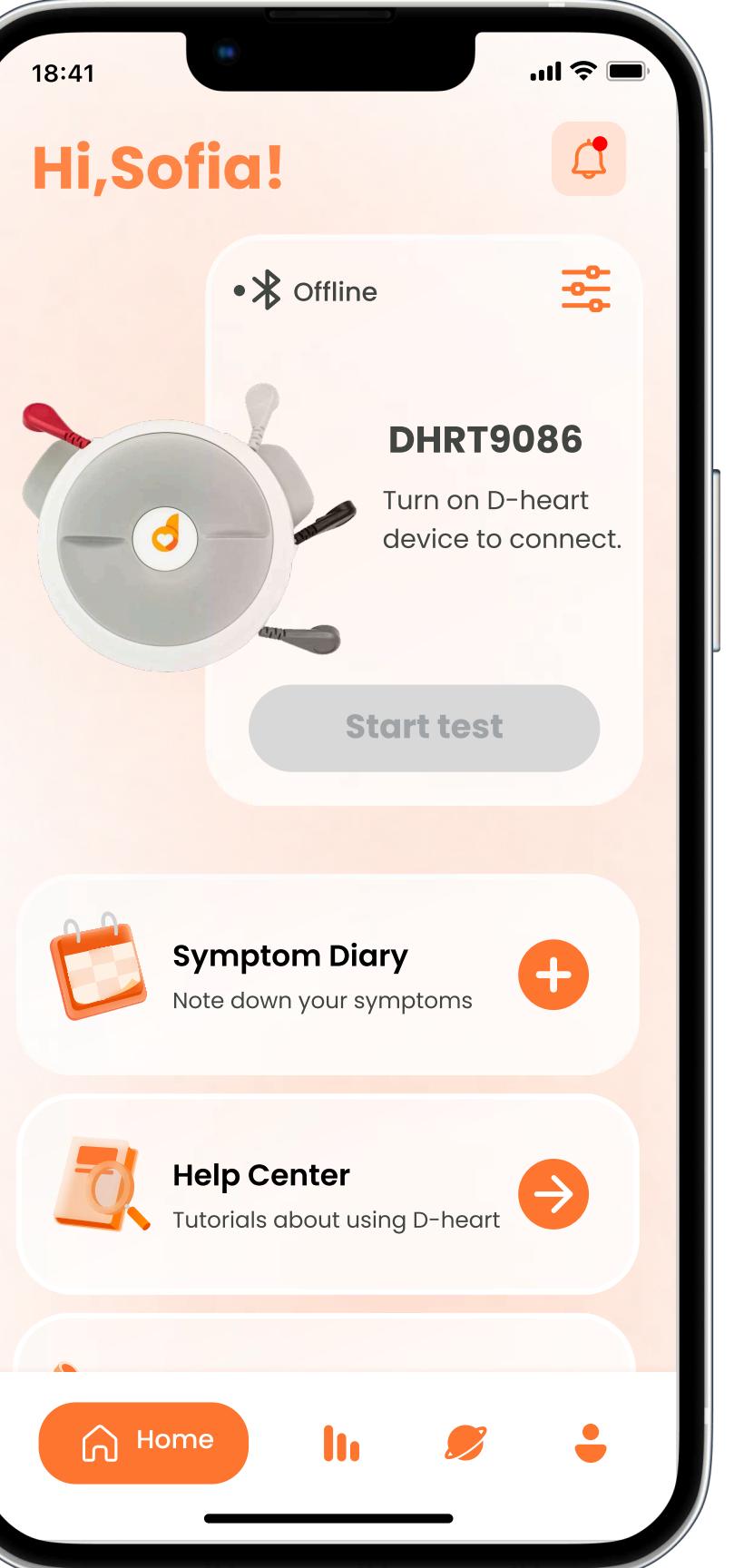
No devices connected

**Simplicity**

Highlight essential function



Connect successfully



Previously connected, device is currently off

# ECG Test

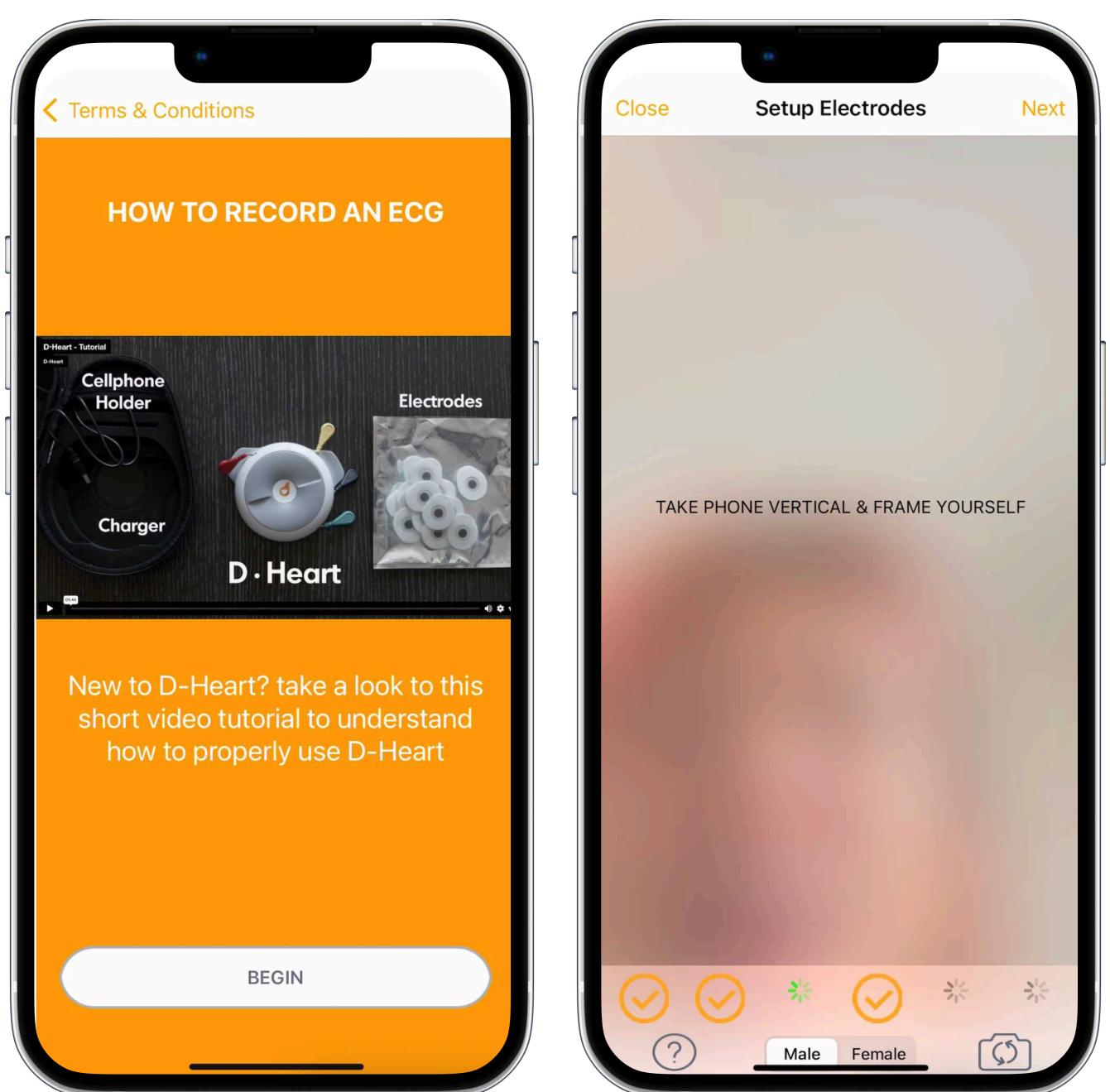
Home page

## DESIGN REQUIREMENT



### Ease of learning

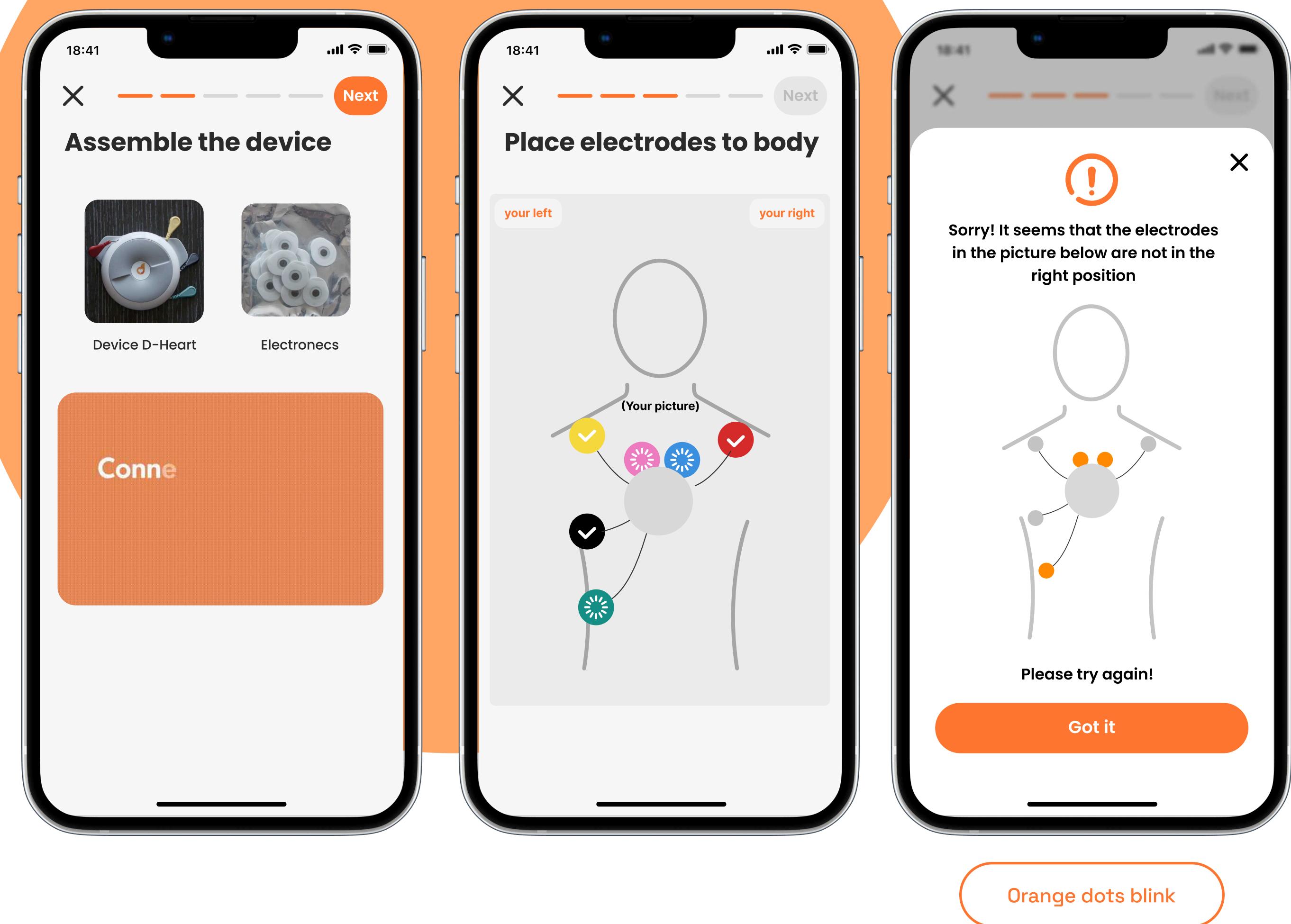
Intuitive feedback about the placement



Old version

**Timely and clear feedback**  
Motion feedback for the placement of electrodes, helping increase the success rate of ECG test

**Progressive disclosure**  
Break down the testing process into separate steps with guidance and clearly indicate the current step stage



# ECG Test

Home page

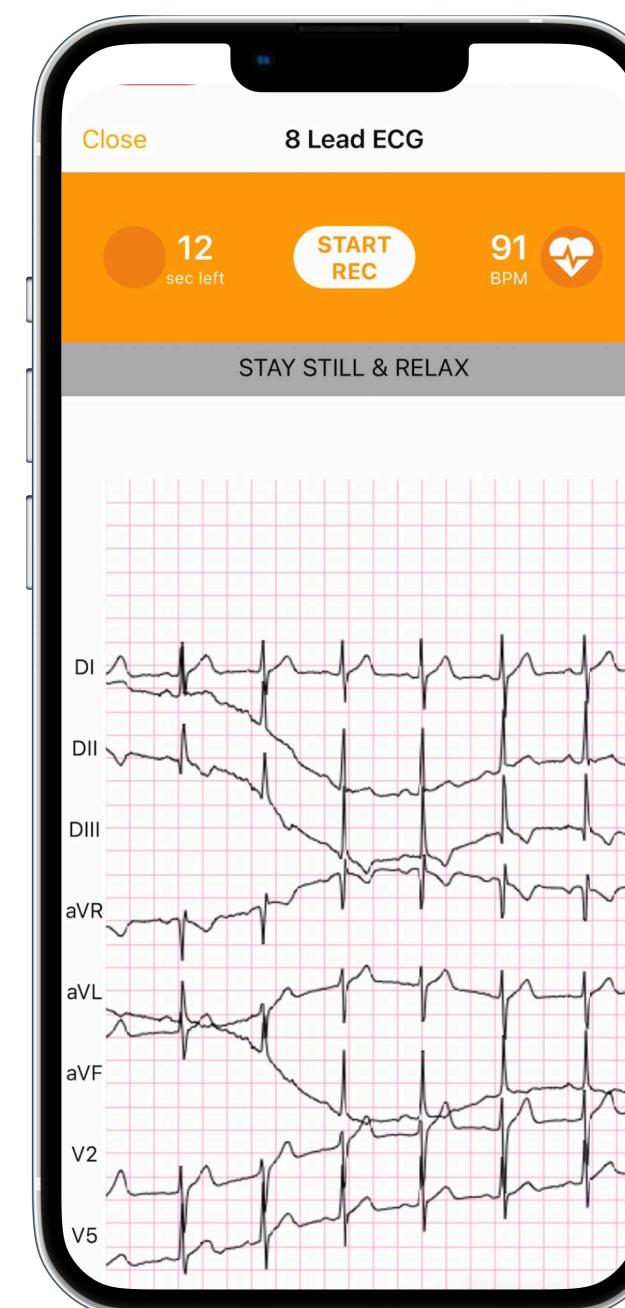
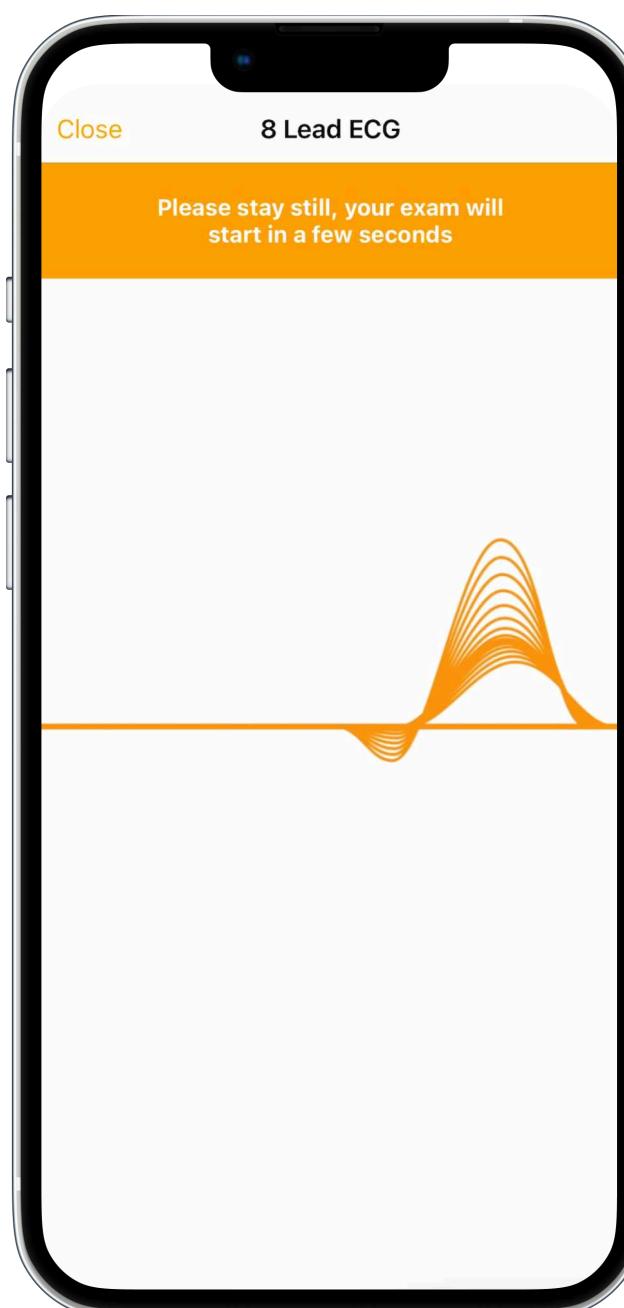
## DESIGN REQUIREMENT



### Timely Feedback

Need to **calm down** when performing ECG

Let user **decide when** to start the ECG recording



Old version

<div style="border: 1px solid #ff9966; padding: 10px; border-radius: 10px; background-color: white; position: absolute; top: 18

# Send the result

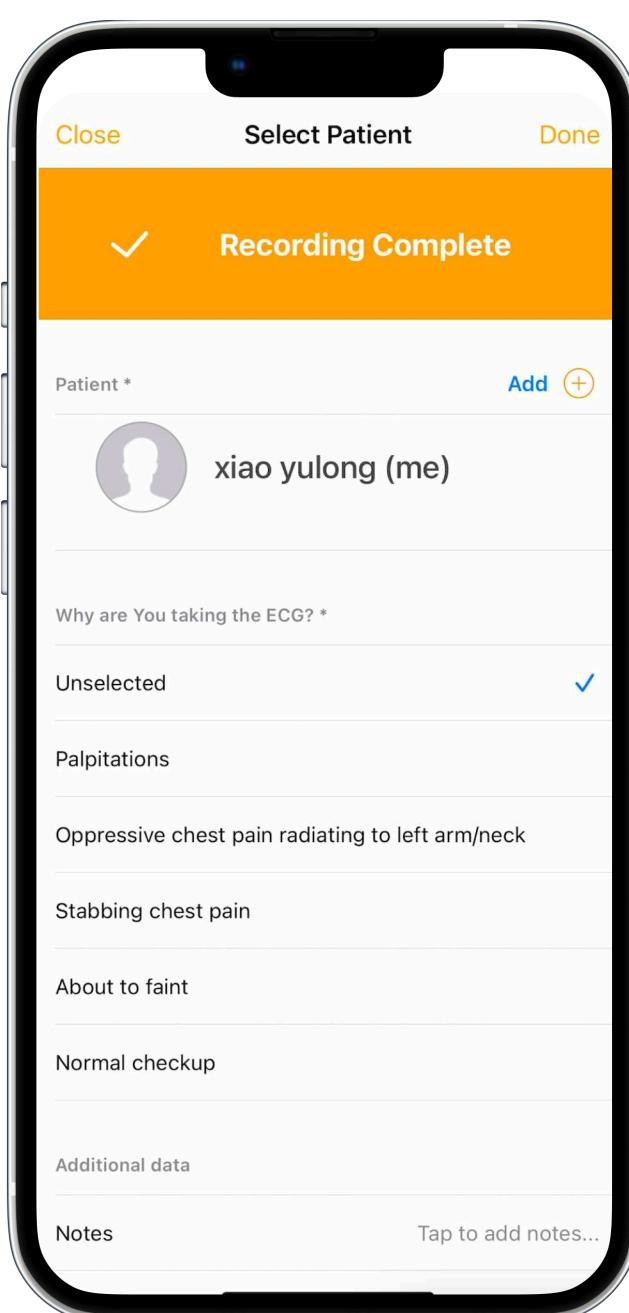
Home page

## DESIGN REQUIREMENT

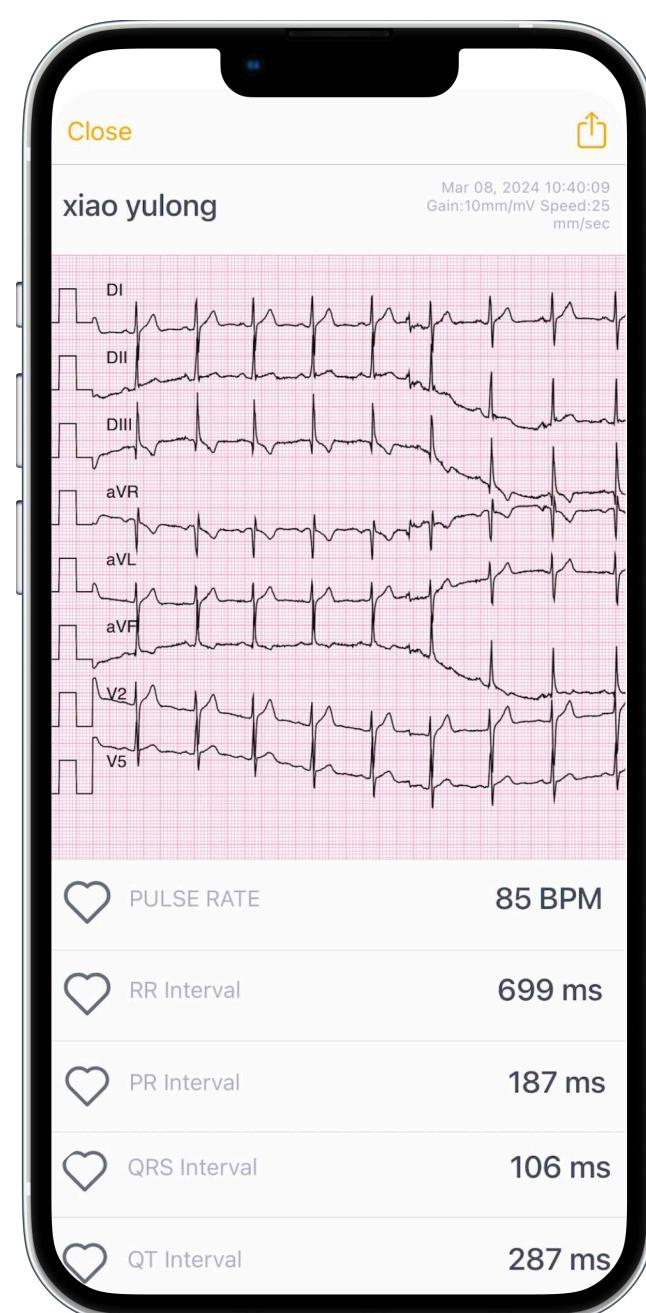


### Engagement

Provide understandable conclusion and explanation about the ECG results



Old version



**Emotional design**  
IP character evoke emotions and create a connection with users; Convey the result of ECG test more effectively

**Timely and clear feedback**  
Provide users with immediate **preliminary ECG result feedback** to reduce their anxiety and encourage their regular detection

**Simplicity**  
**Straightforward word**, Replace "Report" with "Review" for simpler wording that users can easily understand

# Send the result

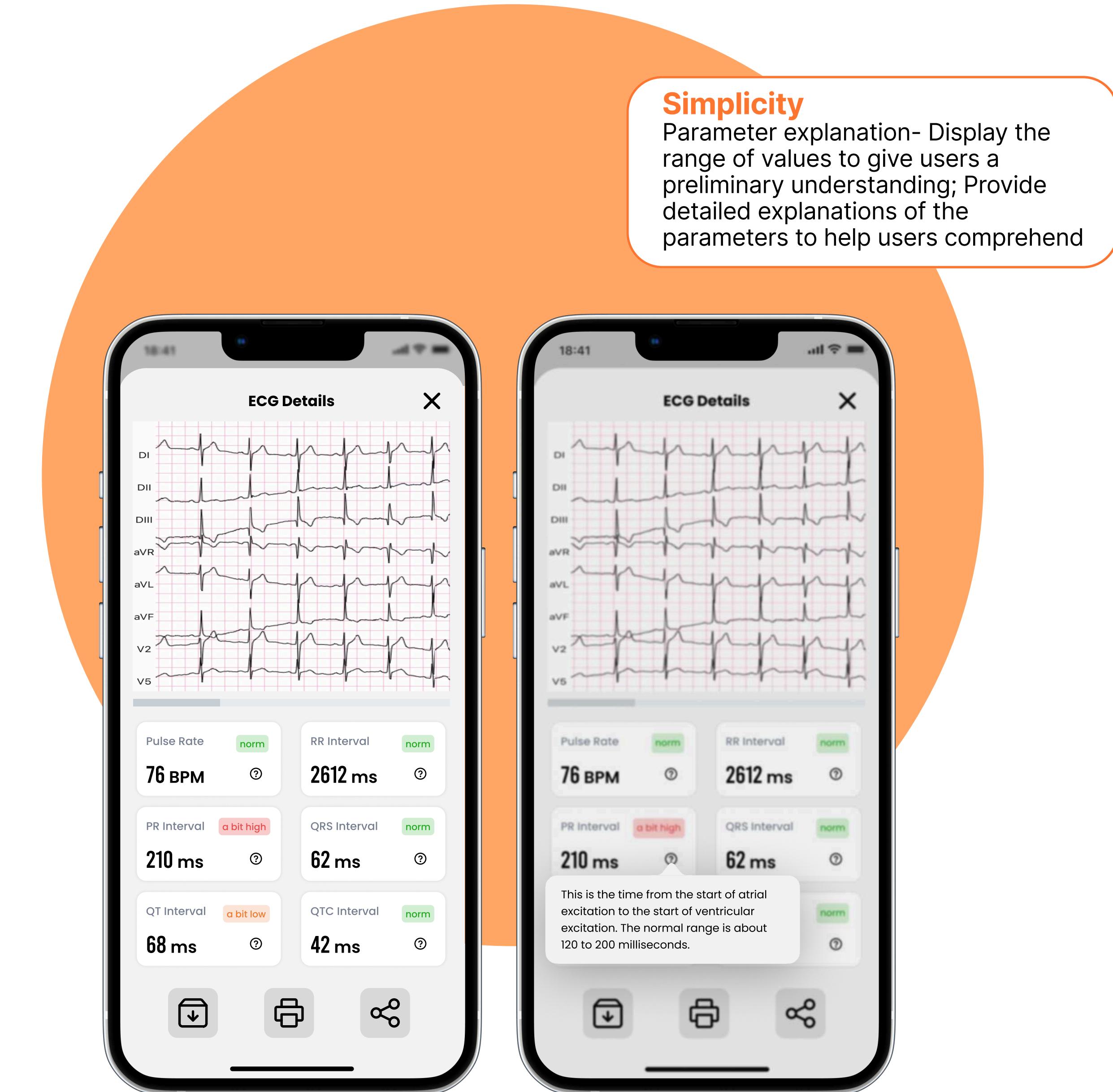
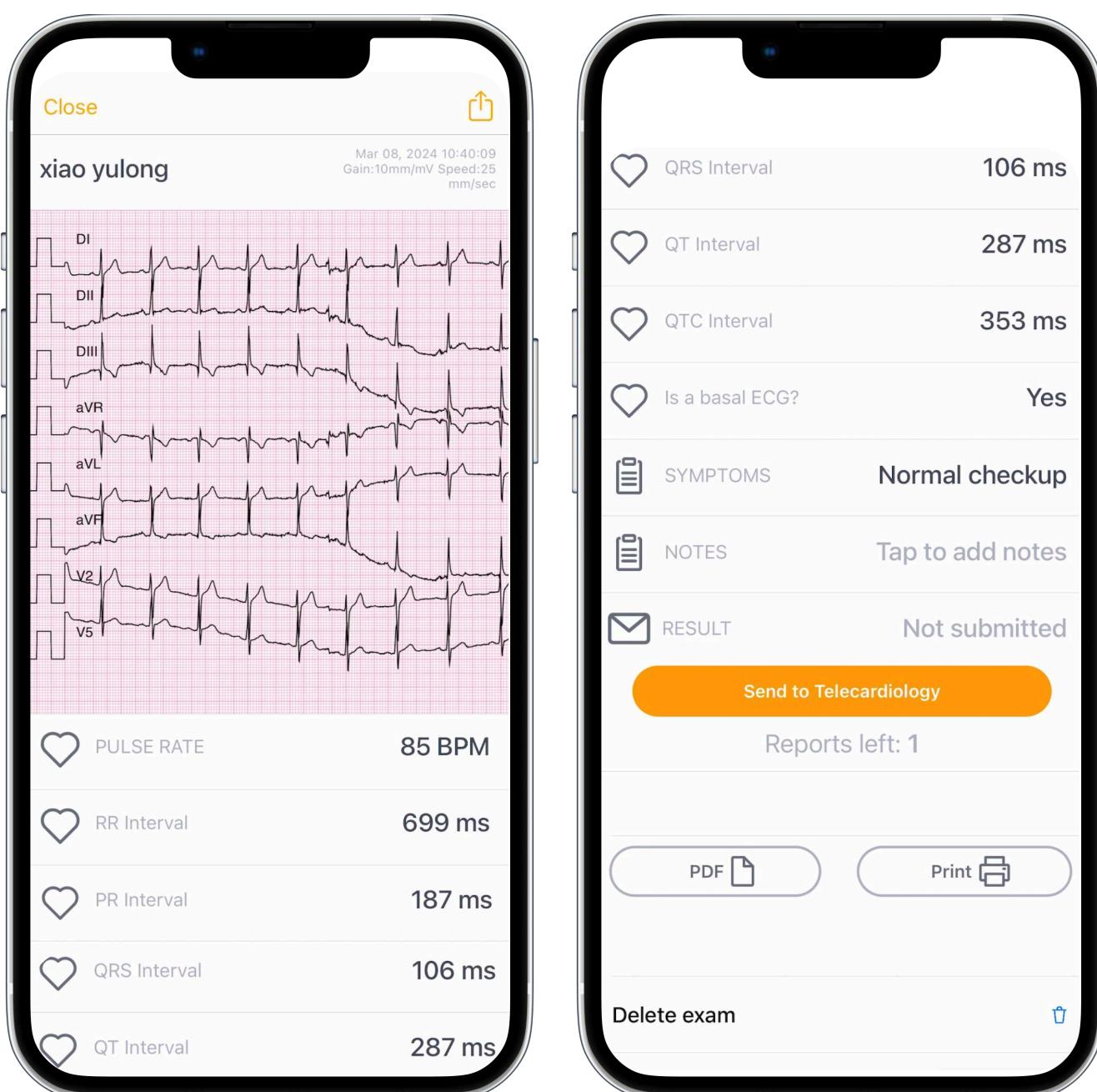
Home page

## DESIGN REQUIREMENT

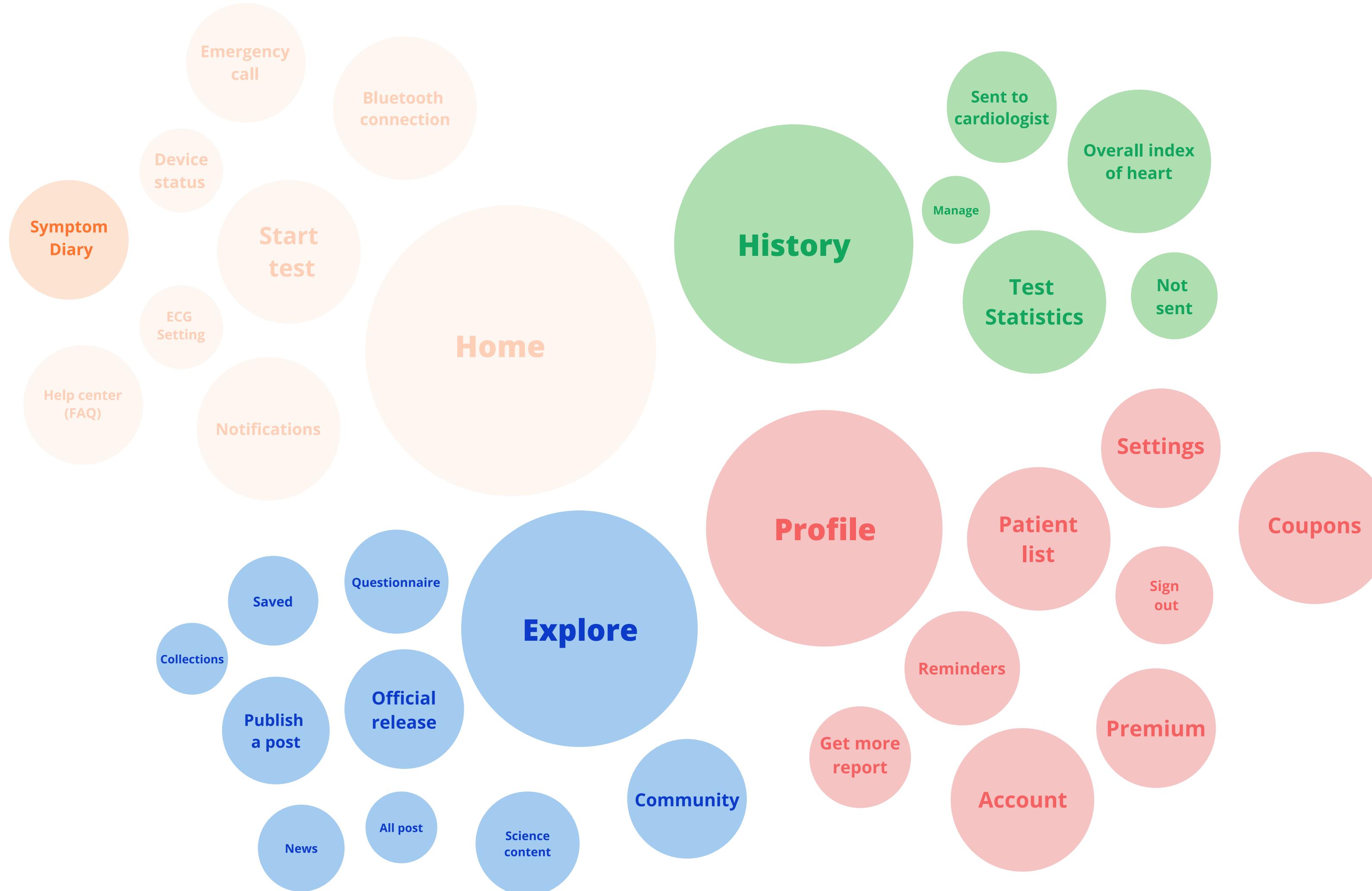


### Engagement

Provide understandable conclusion and explanation about the ECG results



# New Features



# Symptom Diary

New Features

## KEY FINDINGS

XXXXX

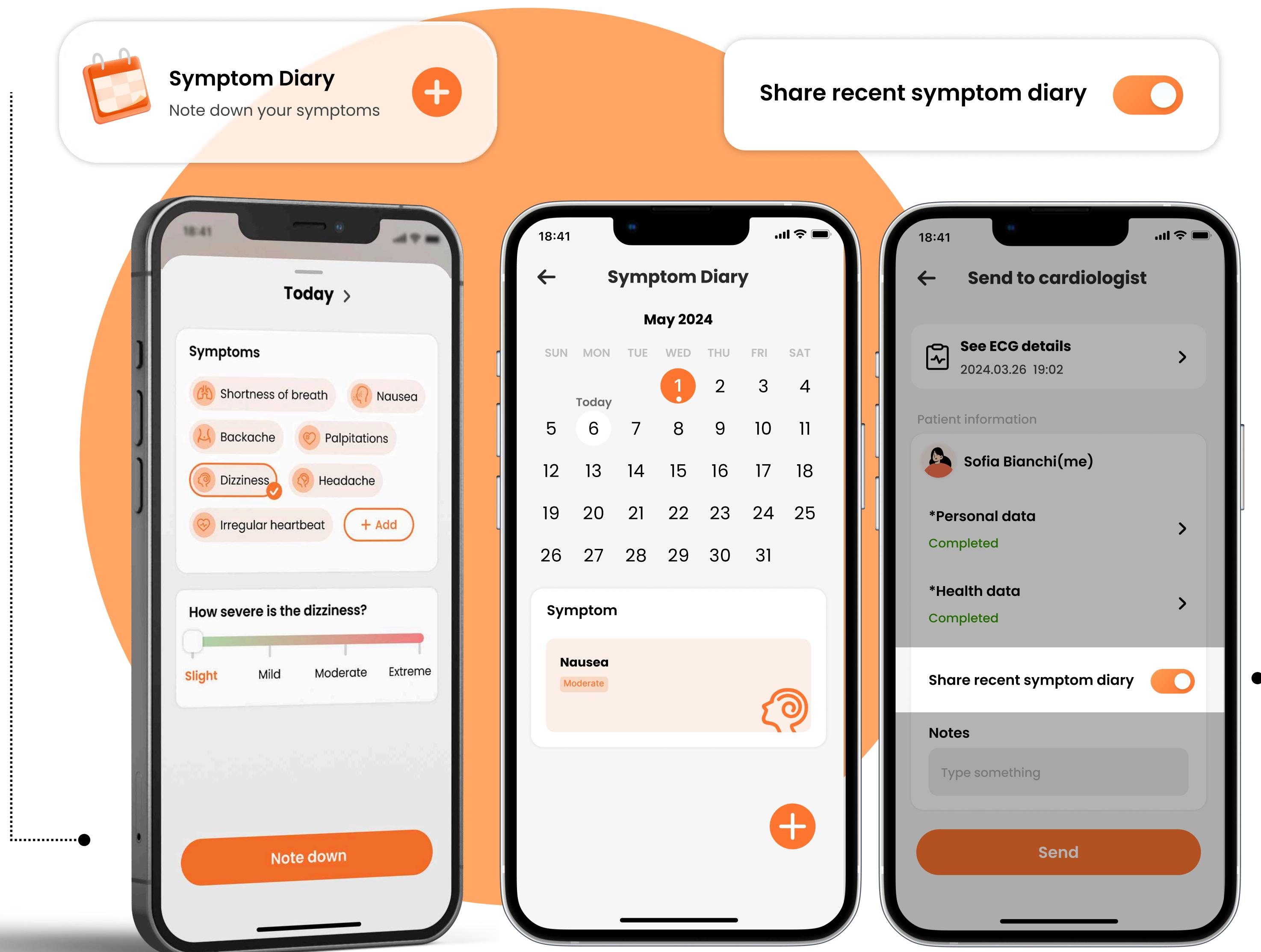
Unnecessary to **note down** **feelings** for ECG users;  
Clear and concise text content

### Sense of control

Help users track their daily symptoms

### Simplicity

When sending ECG to cardiologist, it assists cardiologist in diagnosing more accurately and effectively



# History

## New Features

### DESIGN REQUIREMENT

Provide understandable conclusion about the ECG results

### KEY CONCEPT

#### Simplicity

Switch between pie charts and line graphs

#### Visualize ECG test

Click on the pie chart to filter ECG tests by different review outcomes



# History

## New Features

### KEY FINDINGS

**XXXXX**

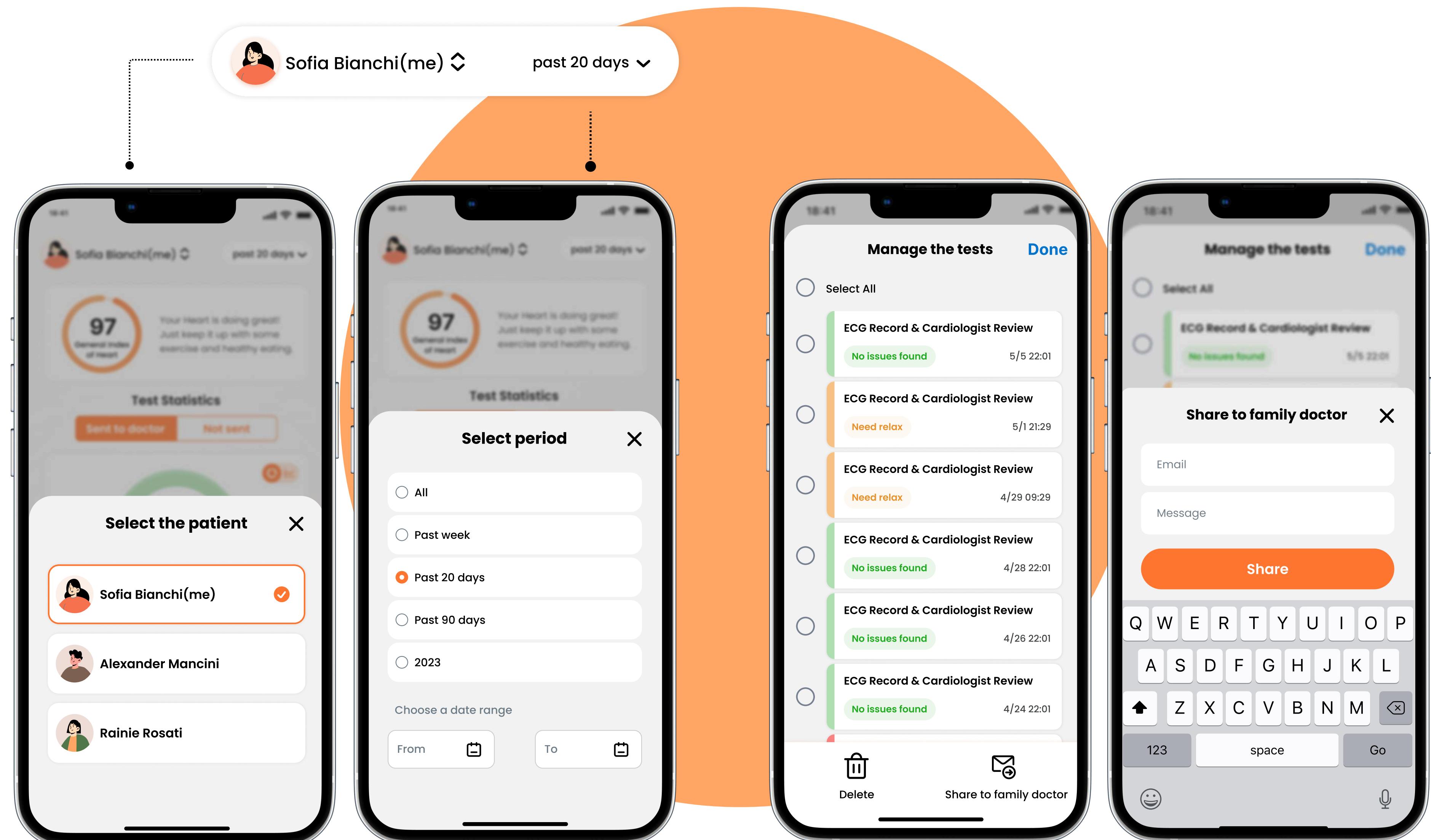
Concern about **data privacy**, ranging from personal to healthy information

#### Sense of control

Users can filter the test data by Different patient (with password protection, Different period)

#### Sense of control

Share selected tests to family doctors via Email. Contribute to user's heart health; Increase user's willingness to use this software



# History

## New Features

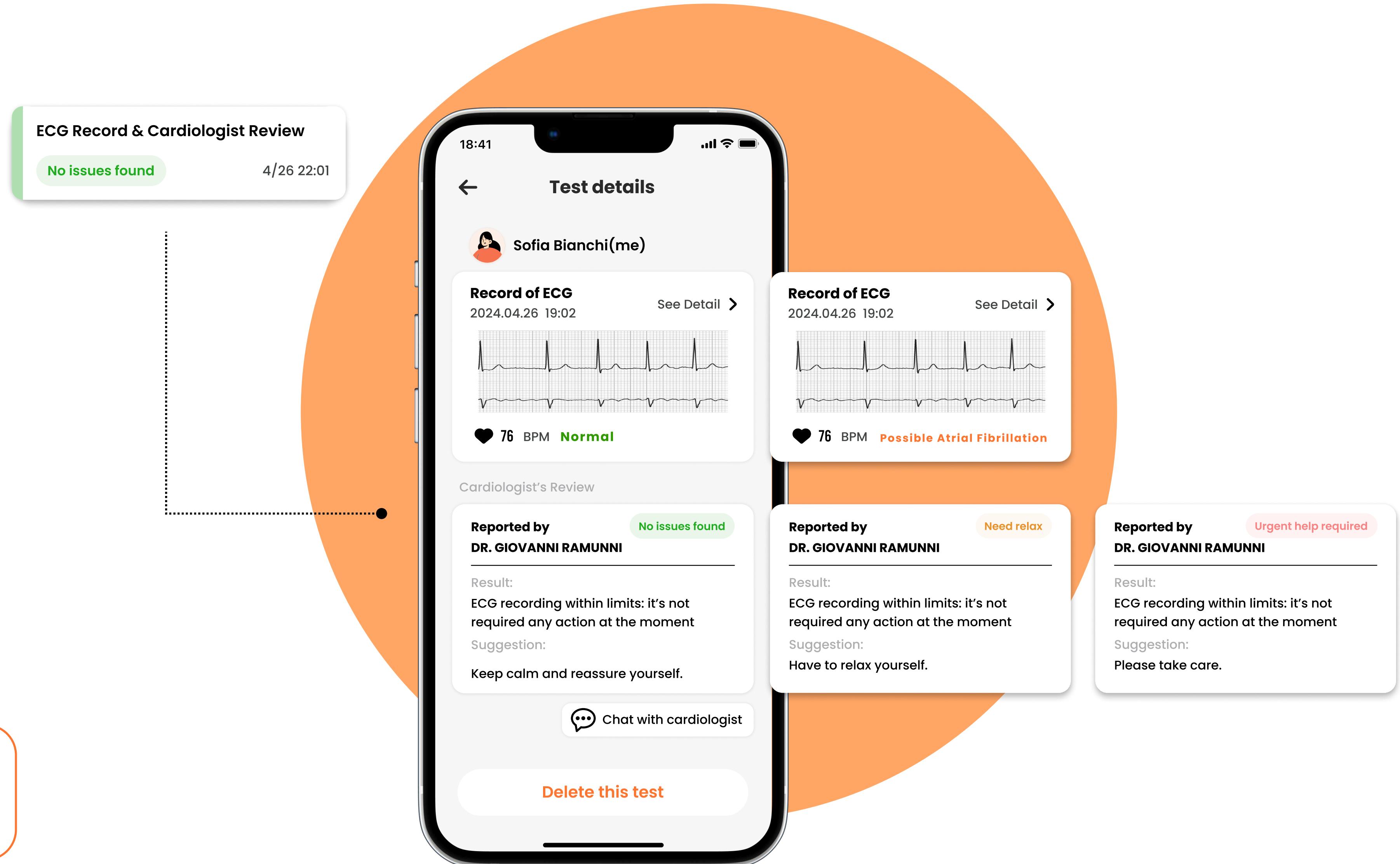
### KEY FINDINGS

**XXXXX**

Be confused about the difference between **Previous Tests** and **Report Statistics**

### Simplicity

Include the cardiologist's reviews of each ECG test in the test details for users to access easily



# Explore

## New Features

### KEY FINDINGS

XXXXX

Be used to the **single-column layout** of posts, such as **Twitter, Ins**

### DESIGN REQUIREMENT

XXXXX

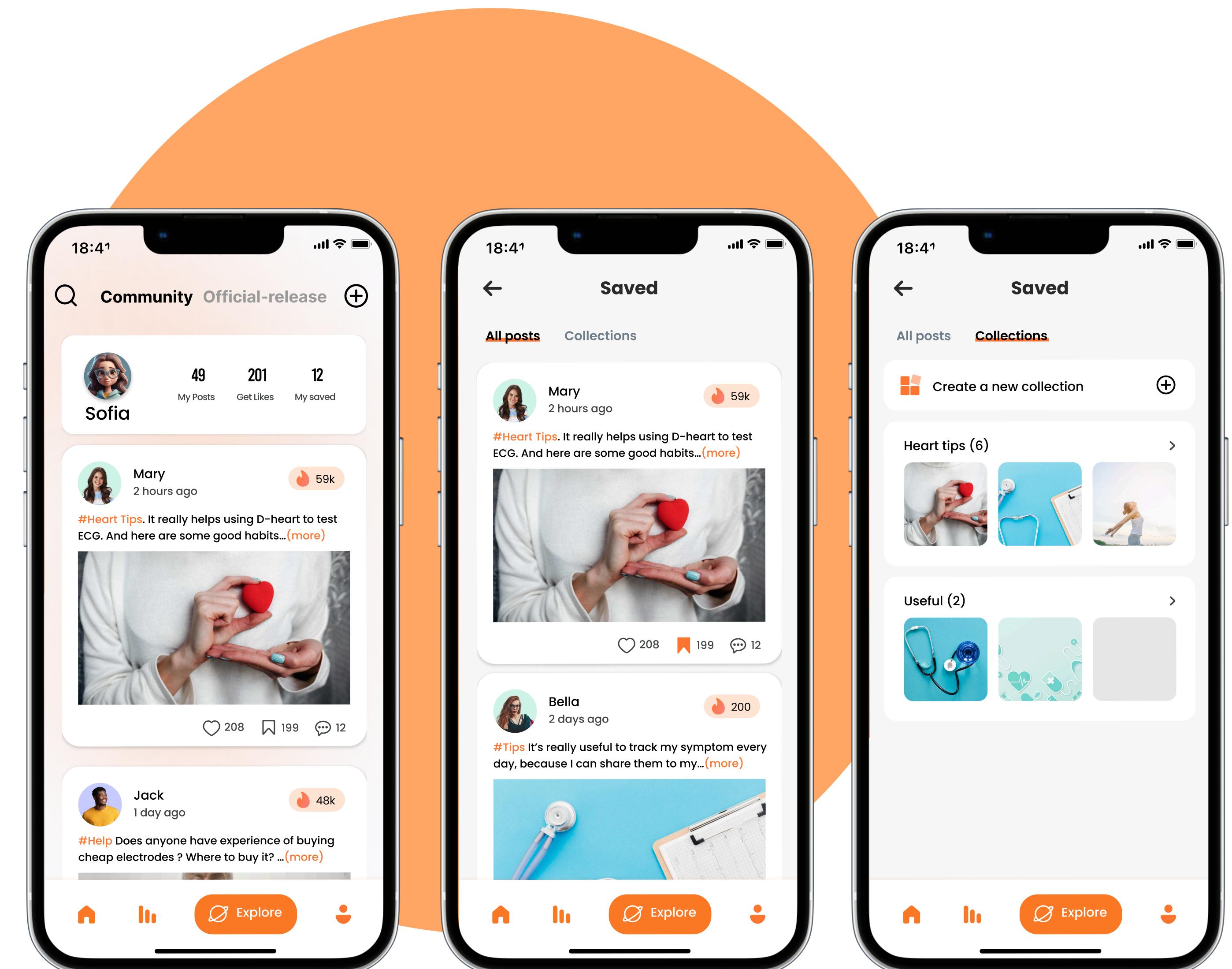
Want to share their own ECG experience and learn from the experience of others

#### Inclusivity and communication

Facilitate communication and interaction among users. Meet users' needs to share their own ECG experience and learn from the experience of others.

#### Sense of control

Manage saved posts. Users can save and organize useful posts into collections. Users can create their personalized collections.



# Explore

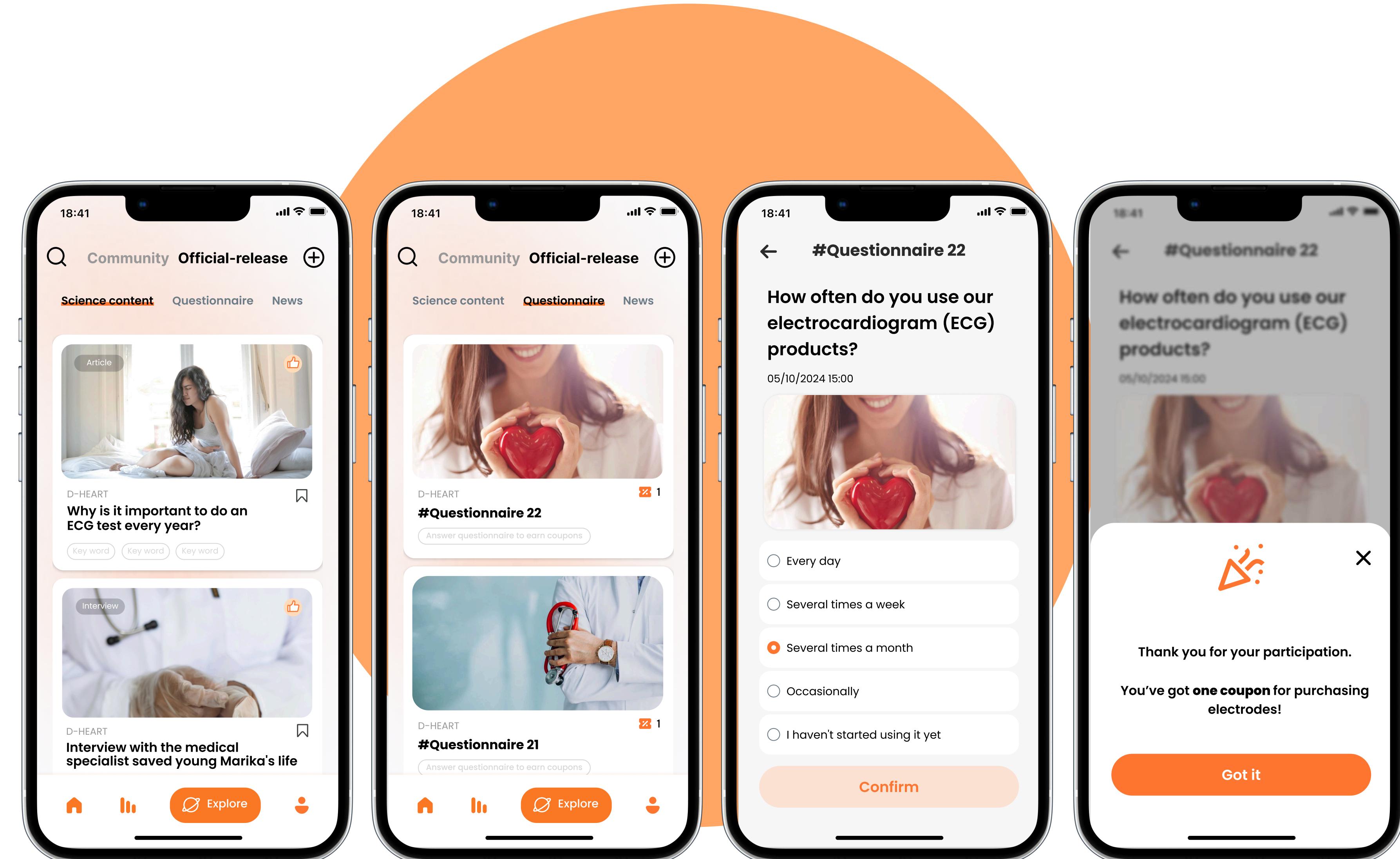
## New Features

### Inclusivity and communication

Facilitate communication between company and users. Users can access expert knowledge in the 'Science content'

### Engagement

Incentivize participation. Company can gather user information through questionnaires. Users are encouraged to answer the questionnaire, as they can get a coupon.



# Premium, Purchase reviews

New Features

## KEY FINDINGS

XXXXX

Want to ask experts  
**additional questions**  
about their test results

### Simplicity

Users have access to ECG cardiologist's reviews at more affordable prices and options.

### Simplicity

Give users the freedom to choose between membership or just review's purchase.



# Coupons

## New Features

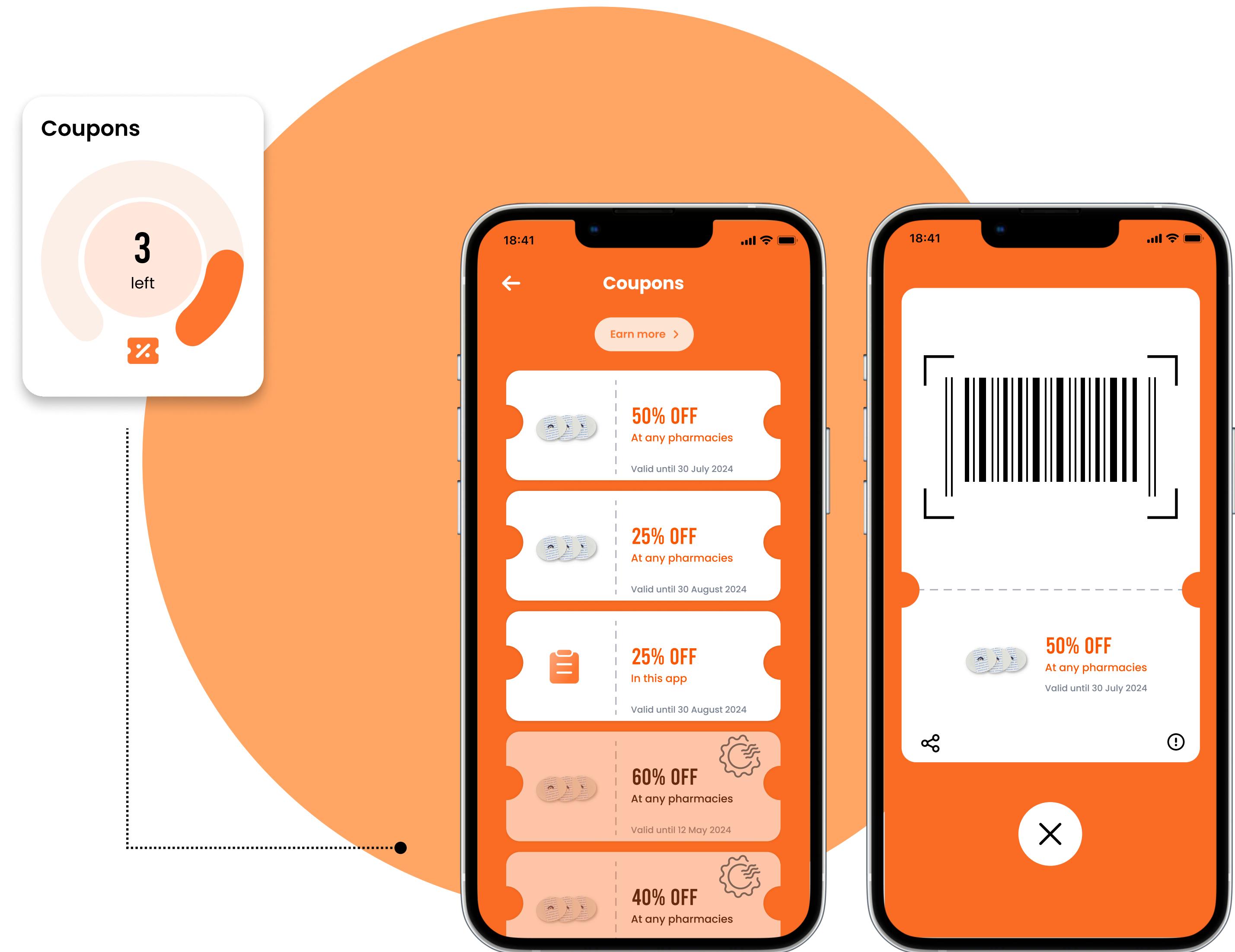
### DESIGN REQUIREMENT

#### XXXXX

Improve the level of involvement, interest, and interaction

#### Engagement

Users can earn coupons by answering questionnaires published by D-heart, which can be used to purchase electrodes or cardiologist's reviews at a discounted price.



# Physical Device

Device Charging Status

## PROBLEM



### Notify user when ECG recording starts

We discovered that many users were unaware that the device had begun recording their ECG



### Enhance battery level visibility

We found that many users are unsure **when the device needs to be charged**. It's also difficult for users to identify low battery levels



### Minimize inaccuracy

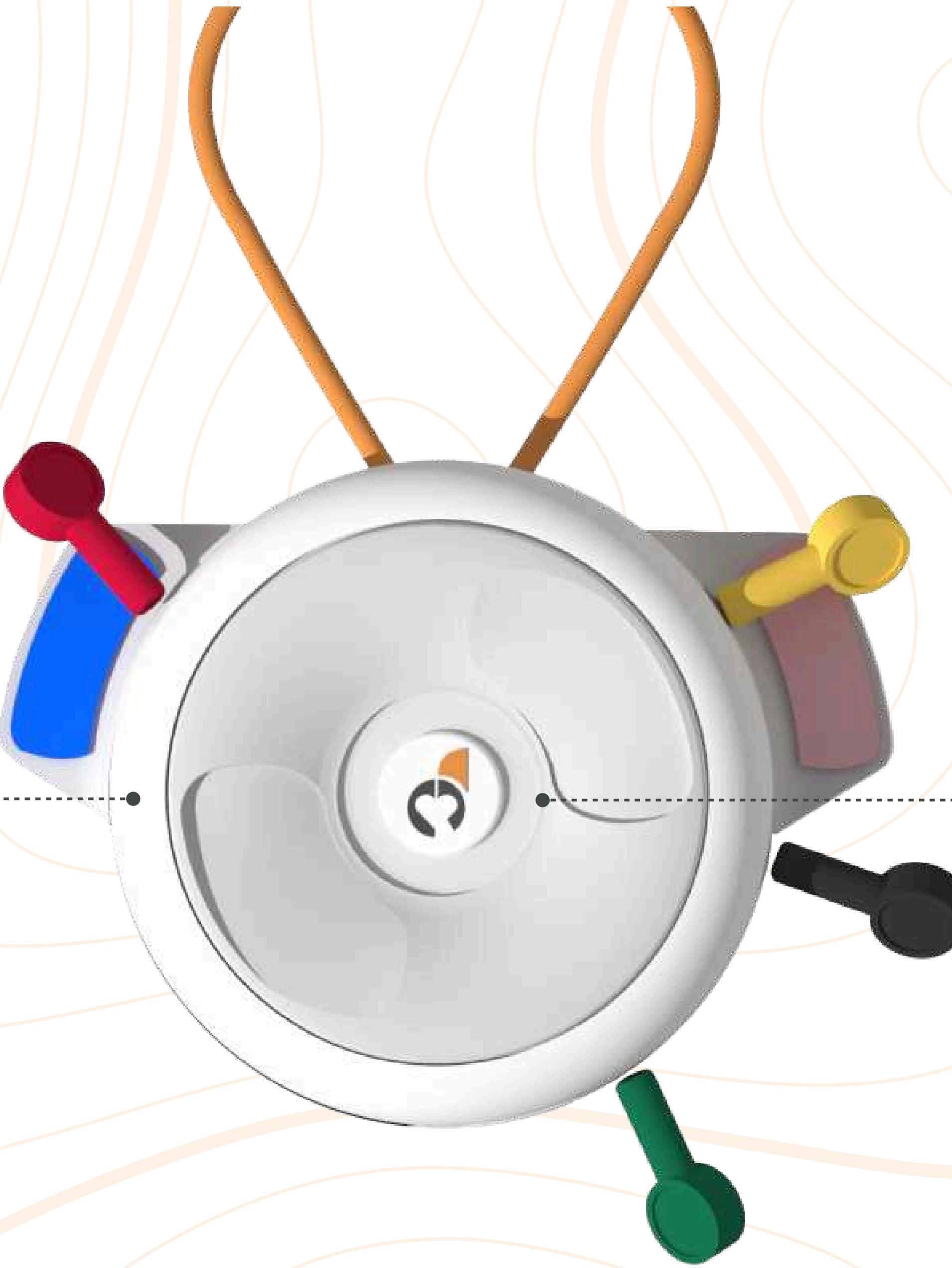
According to user interviews with doctors, body movement to interact with a distant screen can result in inaccurate ECG results



# Physical Device

Device Charging Status

Based on the company's feedback, we modified the rotation area.



## Sound

When the device is **switched on or off**, it plays a sound to provide feedback

# Physical Device

Device Charging Status

Once the device is switched on and fully charged, the LED-ring turns green



# Physical Device

Device Charging Status



Once the device is switched on, and the battery level is below 20%, the LED-ring turns red

# Physical Device

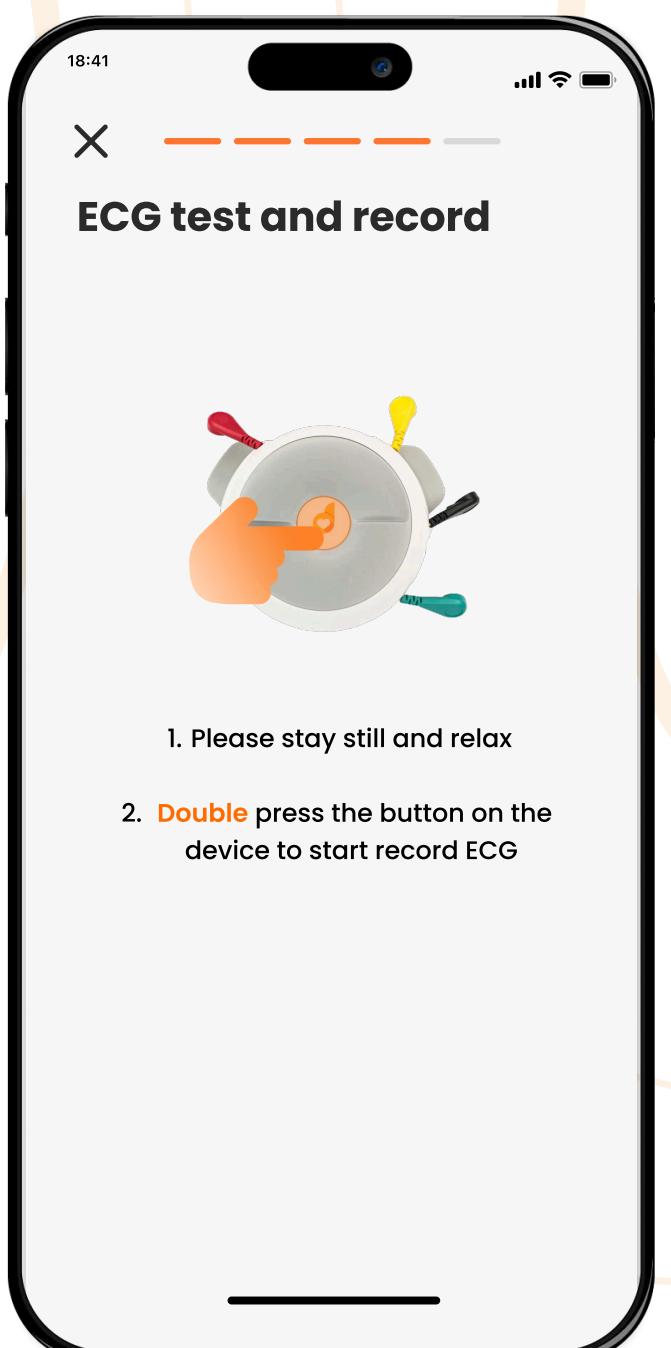
Device On/Off, 'Start Testing' Sound Prompts

After user double press the central button on the device, The light it is going to be stable to indicate the 'start ECG testing'



## Sound

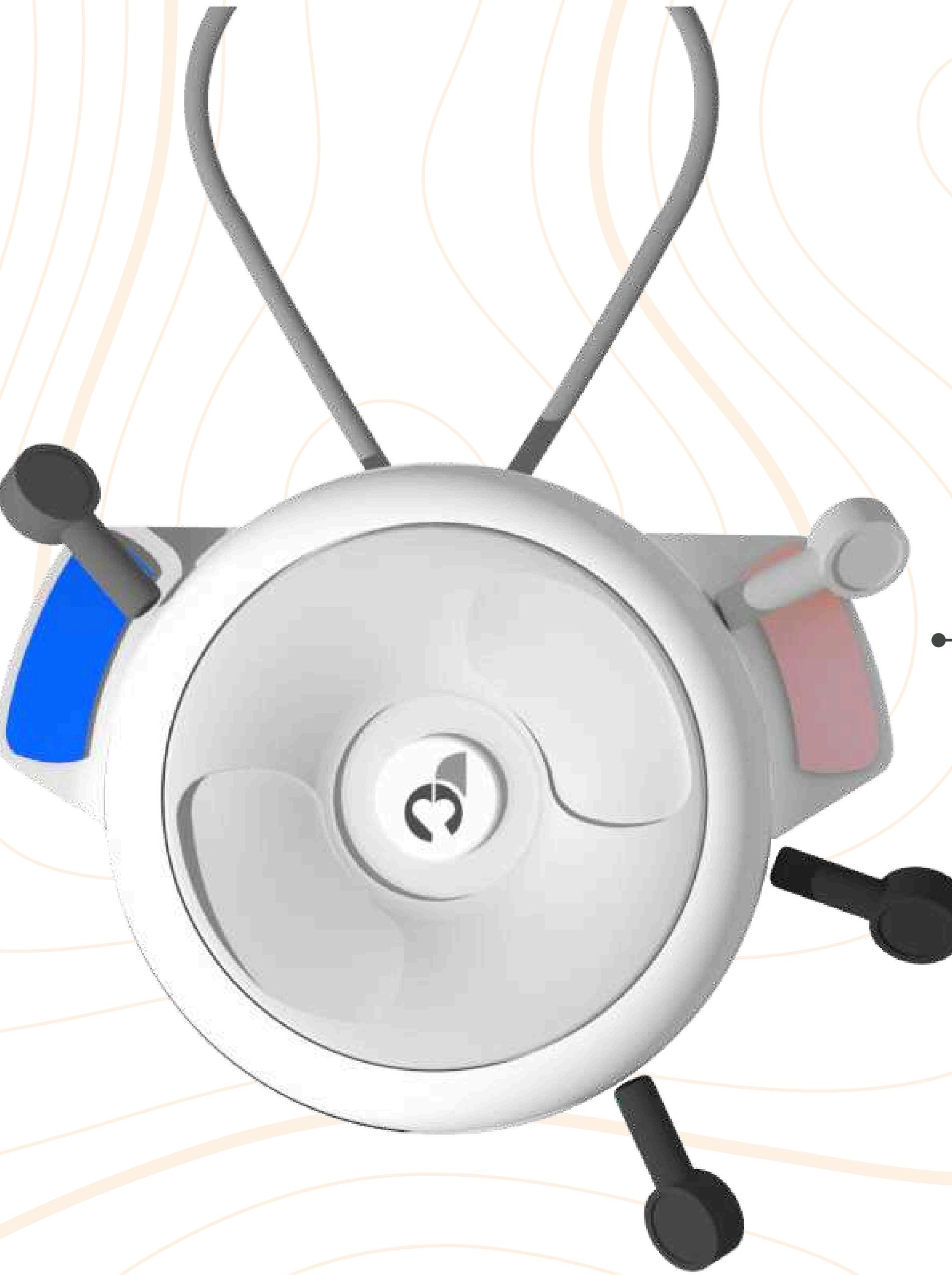
After users double press the central button on the device, the device plays a sound as the feedback of 'start ECG testing'.



# Physical Device

Revised device appearance

These two electrodes  
are colored for more  
obvious identification



These two electrodes  
are colored for more  
obvious identification

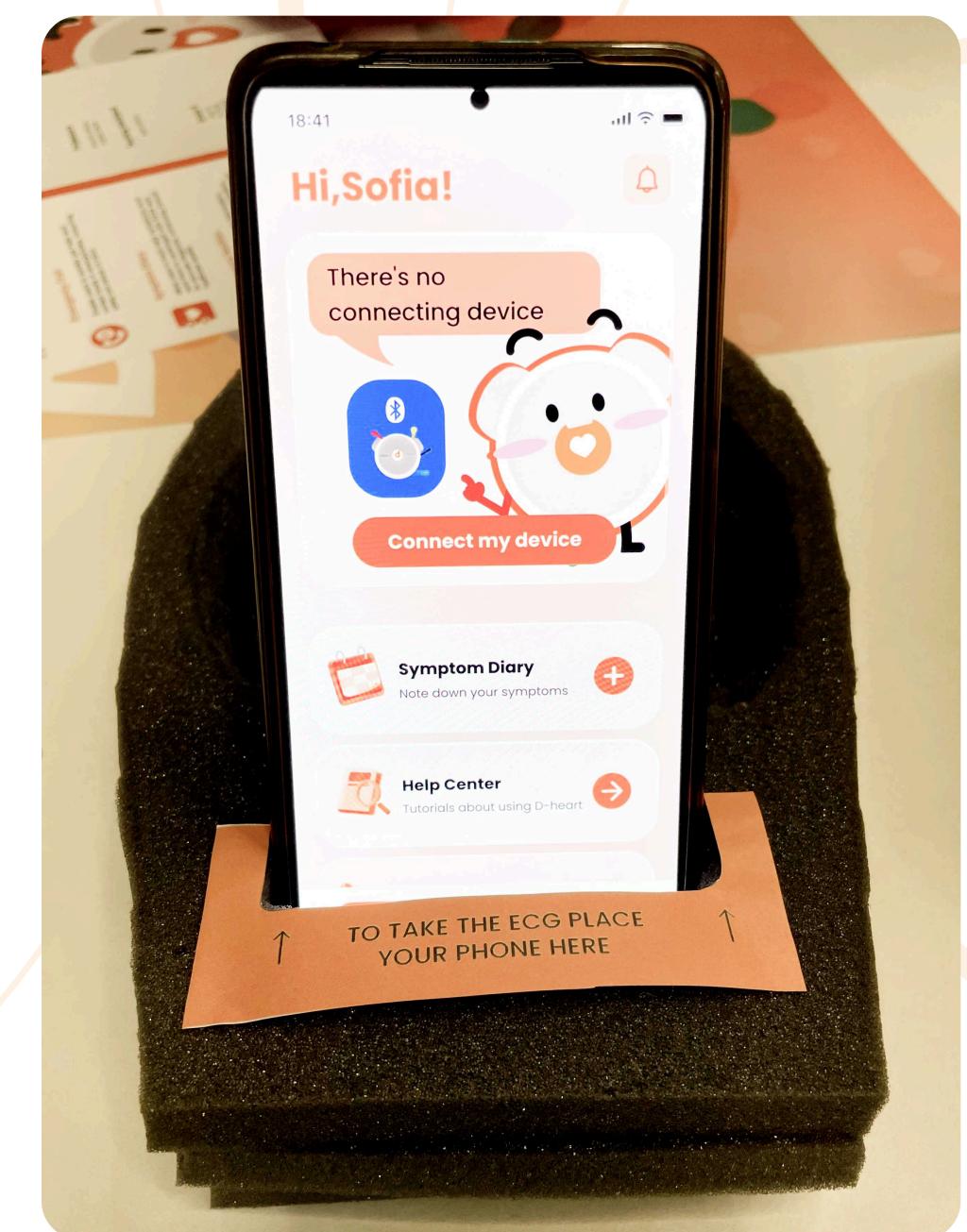
# Physical Device

Revised device appearance



The back of the device  
is added an indicator of  
the Charging Area

The phone insertion hole  
is widened and labeled



**"To take the ECG Place  
your phone here"**

# Thank you

Group 6

Rui Zhang  
Lantian Liang  
Zheyi Yu  
Ilaria Torcolacci

A.A. 2023/2024

Digital Design Studio

