Test Design and Pilot Test: Heart Protecter Application

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1. Preliminary Usability Test Plan

1.1 The Scope and Purpose of the Tests

Evaluate design visualization to discover usability issues and feed that back into the design process. Also to determining whether the's user interface meets its functional, performance, and user experience objectives. The most important function is whether this application can help users to track heart attack; whether it can provide suggestions with good performance; whether application will connect well between software and hardwares.

1.2 The Performance Objectives to be Tested

- Number of Operations and Amount of Time Users Take to Perform a Function:
  The function/request includes:
  Connect a band, complete the questionnaire, find the recommendations, edit profile.
- Application Response: Time The amount of time the application takes to respond to a request.
- System Resource: Utilization Resources such as CPU, memory and database.
- Workload: How many concurrent tasks or users the application can handle.

1.3 What Kind and How May Participants

Hallway Testing, Remote Usability Testing. We plan to have 10-15 participants.

1.4 What Scenarios to Test

We will try several real-life scenario to proceed testing.
A user who assumes to have heavy heart attack and live alone, and someday he meet a sudden heart attack.
A user who assumes to have less sick heart attack and need to go to work everyday.
A user who assumes to have median sick heart attack and need to take medicine everyday.
The test can be conducted in different time in a day. Such as morning, afternoon and night.

1.5 Specific Tests and Documentation

Specific Tests:

- Whether users can perform all of the tasks that the application was designed to enable?
- How long time and number of operations for users to achieve a request ? Example: connect hardware(band)
- How is user's perception and satisfaction with each feature?

Documentation:

- Consent form: Ensure each participant to agree to participate in one or more tests
- Test scripts : The script describes the nature of the test, and any conditions that the participant should be aware of.
- Test Results Worksheet. This worksheet is used by observers to record information about the participant's performance and feedback during the test.

Sample Consent form

Please read and sign this form.

During this usability test I agree to participate in an online session using my computer and telephone. During the session I will be interviewed about the site, asked to find information or complete tasks using the site and asked to complete an online questionnaires about the experience.

I understand and consent to the use and release of the screen and audio recording by (contact name). I understand that the information and recording are for research purposes only and that my name and image will not be used for any other purpose. I relinquish any rights to the recording and understand the recording may be copied and used by (contact name) without further permission.

I understand that participation is voluntary and I agree to immediately raise any concerns I might have.

If you have any questions after today, please contact (contact name) at (email@email.com)

Please sign below to indicate that you have read and understand the information on this form and that any questions you might have about the session have been answered.

Date:_____

Please print your name: _____

Please sign your name: _____

Subject's Signature or eSignature (your name)

Thank you!

We appreciate your participation.

Sample Test Script

Purpose	Connect the application with the band.
Preconditions	User logged in.
Process	1. Turn on blue tooth. 2. Go to the devices page. 3. Pick the device to connect. 4. Connect successfully. 5. Disconnect.

Sample Test Results Worksheet

	Like / Dislike	Speed	Operation Convenience	Feature Satisfaction
Feature A				
Feature B				
Feature C				
Feature D				

1.6 Equipment and physical conditions

1. Set up a quite and private room with a controlled temperature to create a relaxed environment
2. Five or six mobile phones installed with the application to be tested
3. Heart monitoring device for each mobile phone
4. A webcam to record the user's thinking loud comments and their facial expression

1.7 Staff roles during test

1. Moderator: interacts with users during moderated tests, keeping them within the scope of the study, while making the experience realistic by allowing them to drive.
2. Usability Specialist: responsible for the overall test. Usability specialist may also work as a moderator, but that role may go to an assistant while the specialist observes back-stage.
3. Note-taker: responsible for recording the participant's behavior, reactions, and responses, and coding the worksheet. The note-taker is usually a back-stage observer.
4. Designers and developers: sometimes also observe tests as back-stage observers.

1.8 Test data collected and data protections

• Test data collected

Subject	Task Completion Time	Errors Made	Input Device
Connect with heart monitoring device			Hand
Fill and submit questionnaire			Hand
Edit personal information			Hand

Subject	Task Completion Time	Errors Made	Input Device
Report health condition			Device automatically

• Data protection
According to rules of Institutional Review Board(IRB), the key responsibility is to keep participants information safe and secret.
There are some measures developers can do to protect them
1. Only collect participant information required for the test.
2. Do not store personally identifiable participant information either electronically or in hard copy.
3. Ensure that information stored about participants is anonymized so it cannot be directly or indirectly traced back to the participant.
4. Do not disclose individually collected data about participants outside the research team. Always present aggregated data when reporting results
5. Do not talk about private information of candidates in any condition

1.9 Qualitative and quantitive test metrics
• Qualitative feedback
consisting of observational findings that identify design features easy or hard to use
1. Is the message displayed on screen confusing or clear
2. Are the instructions for commands or choice confusing or clear
3. Is it easy or difficult for users to connect with heart monitoring

• Quantitative feedback
in form of one or more metrics (such as task completion rates or task times) that reflect whether the tasks were easy to perform, metrics are often numbers
1. Task completion time
2. Task success rate
3. Number of errors during usability test

1.10 How the test metrics will be analyzed
Do pre and post test survey and utilize the System Usability Scale(SUS) for measuring usability

1.	I think that I would like to use this mobile app frequently.	☐	☐	☐	☐	☐
2.	I found this mobile app unnecessarily complex.	☐	☐	☐	☐	☐
3.	I thought this mobile app was easy to use.	☐	☐	☐	☐	☐
4.	I think that I would need assistance to be able to use this mobile app.	☐	☐	☐	☐	☐
5.	I found the various functions in this mobile app were well integrated.	☐	☐	☐	☐	☐
6.	I thought there was too much inconsistency in this mobile app.	☐	☐	☐	☐	☐
7.	I would imagine that most people would learn to use this mobile app very quickly.	☐	☐	☐	☐	☐
8.	I found this mobile app very cumbersome/awkward to use.	☐	☐	☐	☐	☐
9.	I felt very confident using this mobile app.	☐	☐	☐	☐	☐

2. Pilot Usability Test Study

1. the testing session

We performed test sessions on our group members individually.

The performance objectives tested:

Subjects	User Learning Time				Application Response Time	Workload	Errors Made	Input Device
	connecting a band	completing a questionnaire	finding the recommendations	editing a profile				
Subject 1	5s	30s	5s	30s	instantly, <0.1s	app can handle all tasks synchronously	None	Mobile phone
Subject 2	6s	40s	5s	50s	instantly, <0.1s	app can handle all tasks synchronously	None	Mobile phone
Subject 3	7s	35s	5s	40s	instantly, <0.1s	app can handle all tasks synchronously	None	tablet PC

Test scenarios:

Subjects	Test Scenarios
Subject 1	Simulated work environment from 9am to 5pm
Subject 2	Simulated work environment from 9am to 5pm
Subject 3	Home environment from 8am to 8pm

Specific Tests and Documentation

Subjects	Whether users can perform all of the tasks that the app was designed to implement	Satisfaction with each feature(5.0 in total)	Consent form	Test scripts	Test results worksheet
Subject 1	yes	4.5	completed	completed	completed
Subject 2	yes	5	completed	completed	completed
Subject 3	yes	4.0	completed	completed	completed

Equipment and physical conditions

Subjects	Physical conditions	Equipment			
		quiet and private room	mobile phone installed with the app	Heart Sensor	Webcam
Subject 1	healthy	equiped	equiped	equiped	equiped
Subject 2	healthy	equiped	equiped	equiped	equiped
Subject 3	healthy	equiped	equiped	equiped	equiped

Qualitative and quantitative test metrics

	Is the message displayed on screen clear	Are the instructions for commands clear	Is it easy to connect with smart band
Subject 1	pretty clear	pretty clear	pretty easy
Subject 2	pretty clear	need improvement	pretty easy
Subject 3	need improvement	pretty clear	pretty easy

2. What went well with the session

The app handles all tasks synchronously and the users' interactions with the app were pretty well.

3. What did not go well or what was unexpected with the session

We had time delay on data between smart band and mobile app, which might be intolerable for some users, for which we need improvements.

4. what revisions did you make to your usability test plan based on your pilot session

For tests in long term, we should expand the test scenarios to actual life situations instead of tests in closed lab rooms.

Except for observational and objective experimental data, a webcam only captures facial expressions and doesn't provide much information. We need informative feedback from experimental subjects, that's why we handed out several forms for them to fill out and collected data based on how much they were satisfied with the app.

We designed additional procedures to make sure data on smart bands and mobile apps have exact match.