teap

Android app for rigorous tea preparation for the connoisseur and the newbie

Human-Computer Interaction Project

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Software for rigorous tea preparation for the connoisseur and the newbie

The development of this software is based on a User Centered Design.

1. Android Application

- manages a list of favorite teas
- preset teas
- sensor with a food thermometer
- steeping timer
- inspire function

2. Web Store (partially implemented)

Design constraints are detected through:

- user requests that emerge from interviews
- evaluation of the prototypes by users and experts
- observation of the interfaces of other competing systems

We collected information about our users by surveys

Our **user profile** is:

age: 18-70

gender: male/female

expertise: smartphone, tea, Internet

PERSONA

Carla is a 64-year-old high school English teacher facing retirement in a few years. She lives in Rome in the house her great aunt left her. She's divorced and has three grown up daughters who now live away with their families, but they often come visit so that Carla can get to know her five grandchildren.

SCENARIO

Giulia is a 22-year-old Philosophy student from Sicily that, in order to live in Milan where she attends university, shares a flat with three other girls. It's a cold and rainy afternoon and Giulia is in the kitchen…

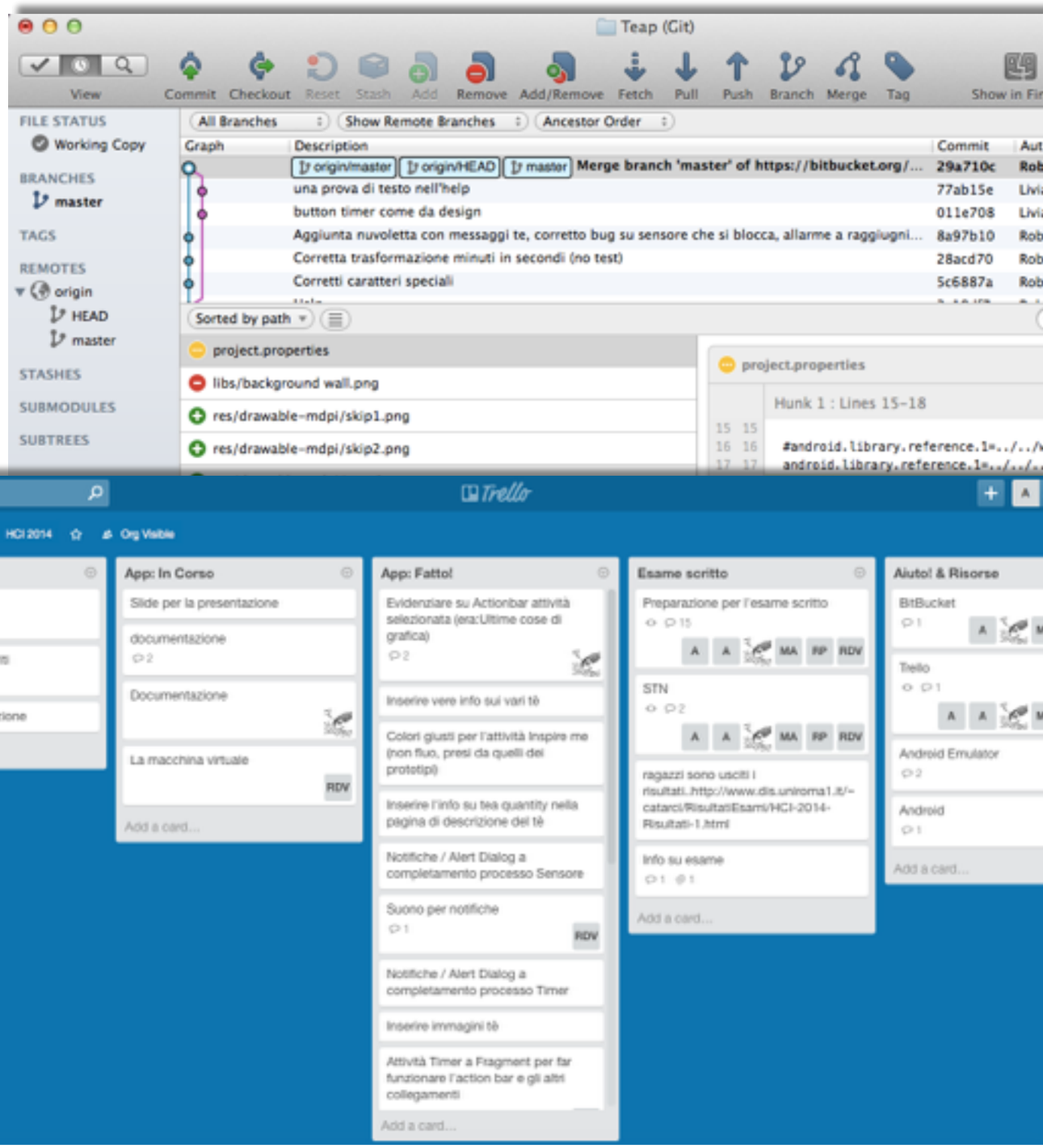
We review them using **Jakob Nielsen's general principles for interaction design**.

Apps from Google Play.

- none use a temperature sensor
- nor they are connected to any shop selling tea
- wooden-like background that fills the user's vision and not letting it focus to text and other elements (Tea Timer Pro)
- limited choice in type of teas (Tea Timer Pro)
- more steps than necessary to add new tea (Tea Timer Pro)
- some buttons they do nothing (TeeZeit / Tea Timer)
- the system is mostly unintuitive (TeeZeit / Tea Timer)
- too many dialog boxes (TeaTime)

WORKING AS A TEAM

- Sofware versioning: Git, Bitbucket
- Organization: Trello boards, Google Group, Dropbox
- Meetings in real life and on Skype



WORK PLAN

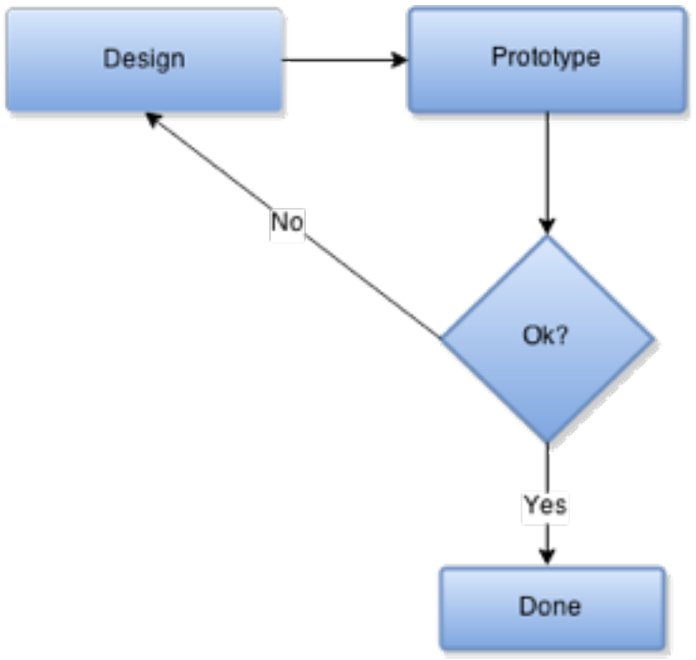
We can divide our implementation in 4 predominant stages:

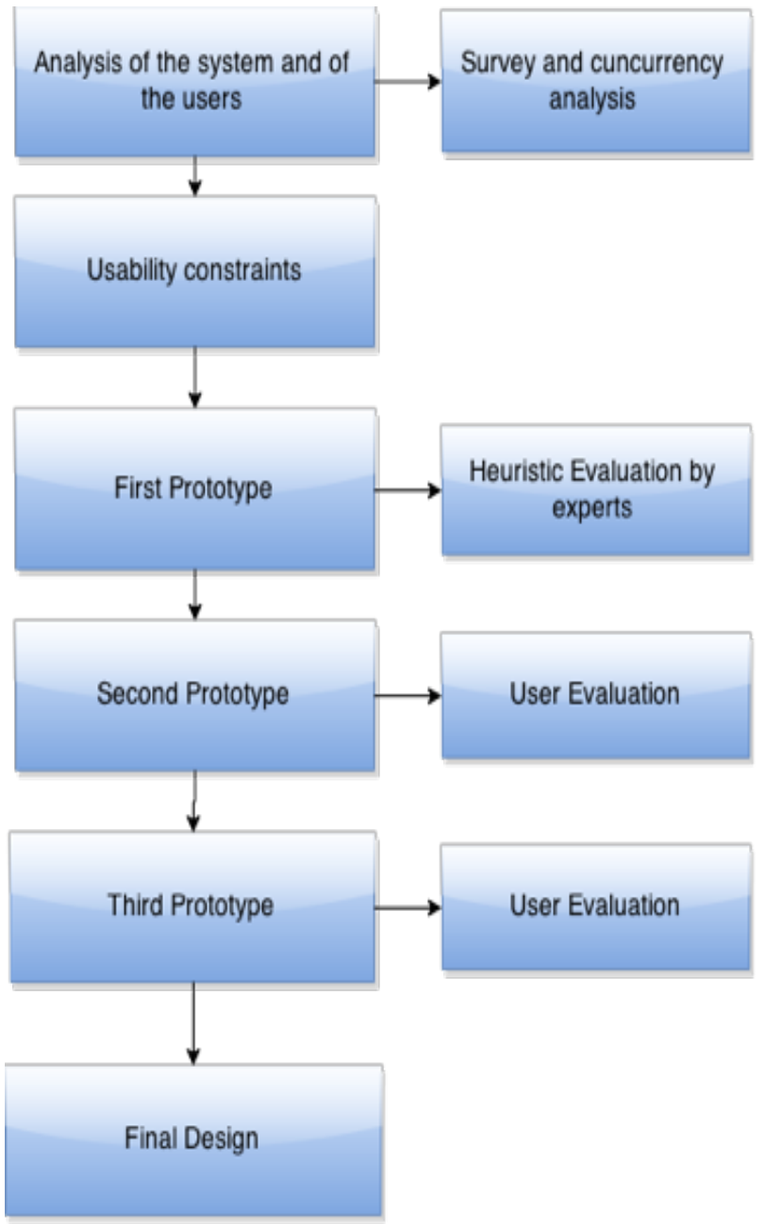
1. Requirements collection

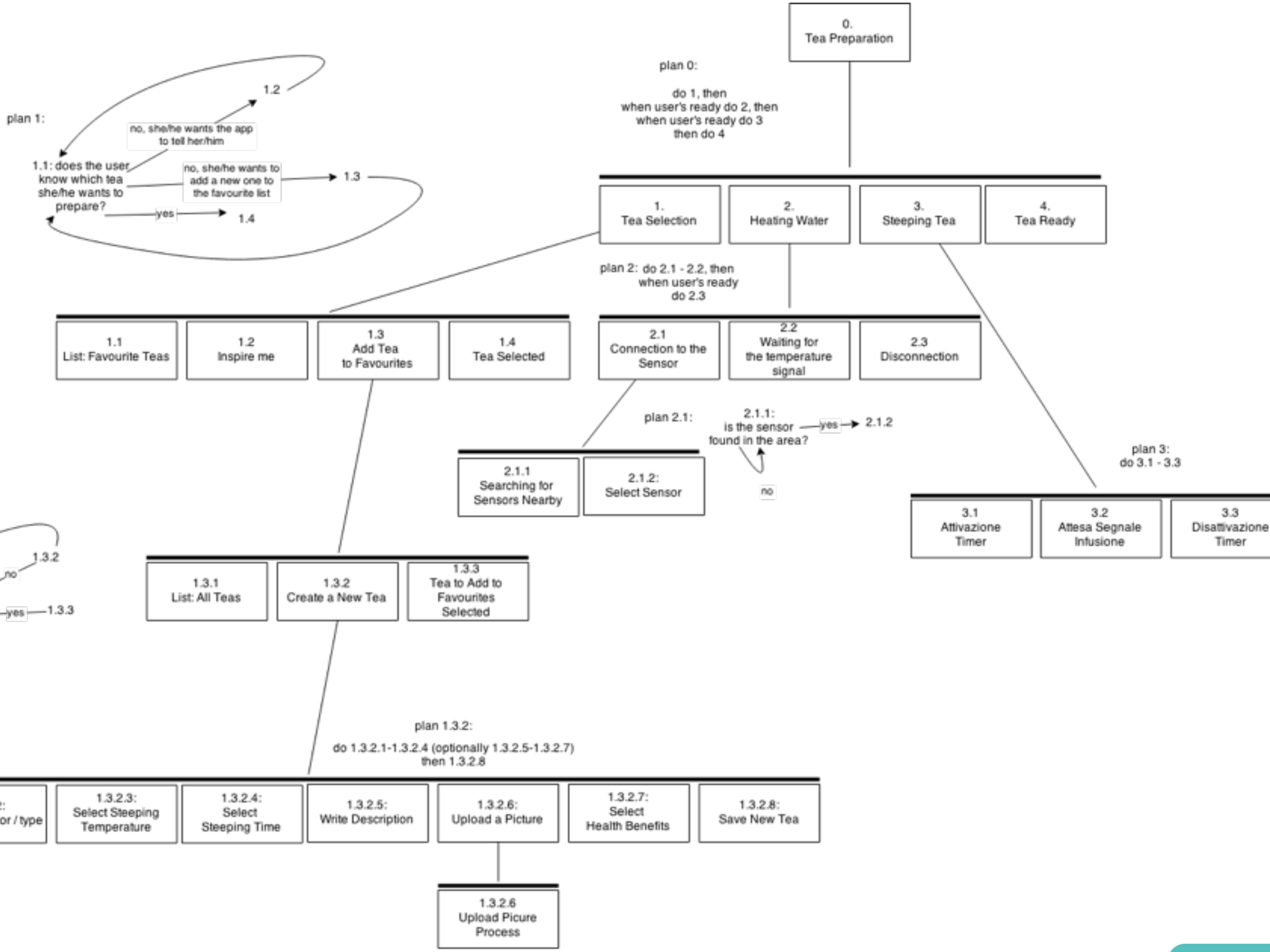
2. Analysis and design (HTA and STN)

3. Prototyping (mockup, simulation, second prototype, third prototype)

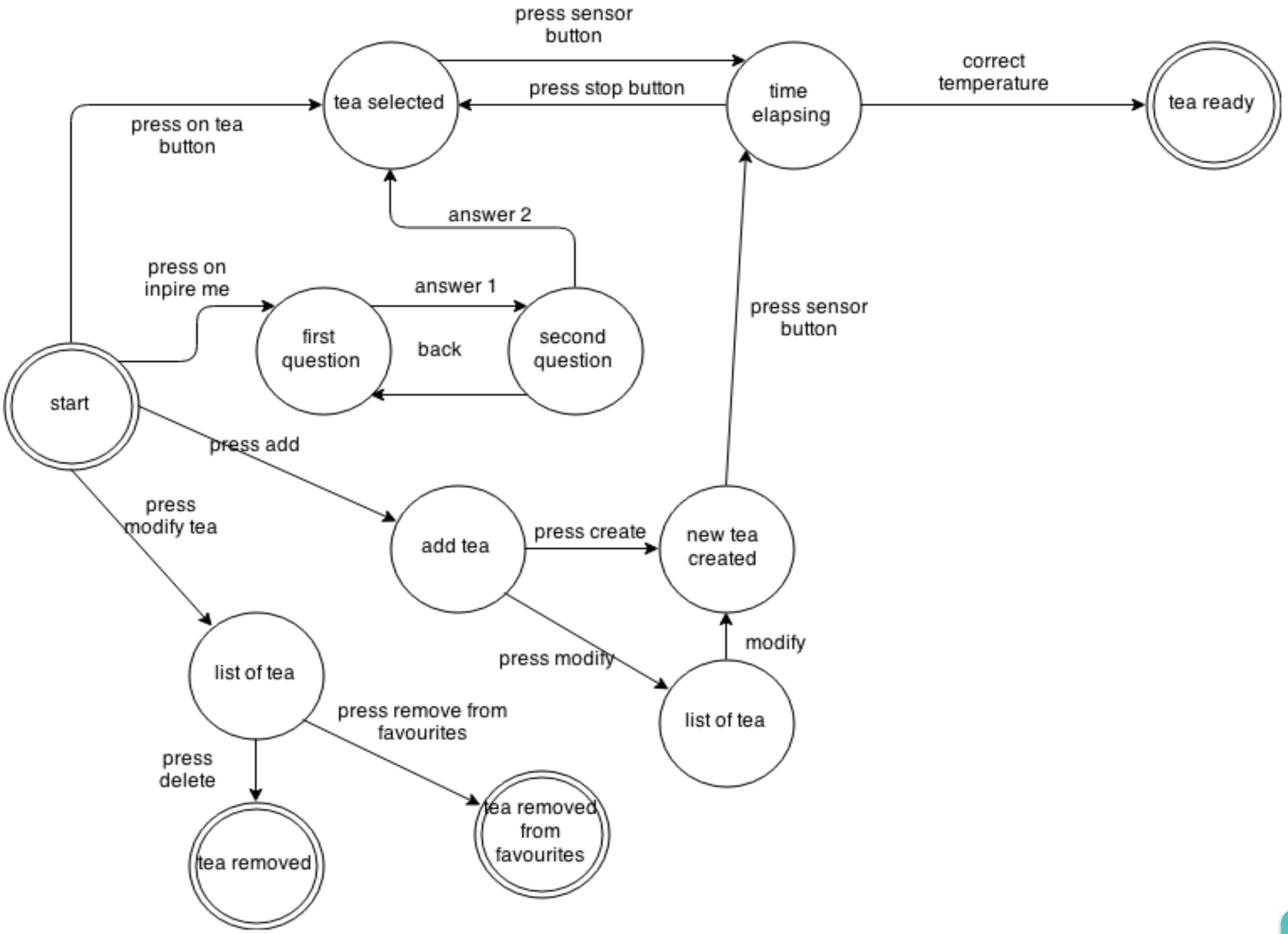
4. Documentation






0.
Tea Preparation
plan 0:
do 1, then
when user's ready do 2, then
when user's ready do 3
then do 4
1.
Tea Selection
2.
Heating Water
3.
Steeping Tea
4.
Tea Ready
plan 1:
1.2
no, she/he wants the app
to tell her/him
1.1: does the user
know which tea
she/he wants to
prepare?
no, she/he wants to
add a new one to
the favourite list
1.3
yes
1.4
1.1
List: Favourite Teas
1.2
Inspire me
1.3
Add Tea
to Favourites
1.4
Tea Selected
plan 2: do 2.1 - 2.2, then
when user's ready
do 2.3
2.1
Connection to the
Sensor
2.2
Waiting for
the temperature
signal
2.3
Disconnection
plan 2.1:
2.1.1:
is the sensor
found in the area?
yes
2.1.2
no
2.1.1
Searching for
Sensors Nearby
2.1.2:
Select Sensor
plan 3:
do 3.1 - 3.3
3.1
Attivazione
Timer
3.2
Attesa Segnale
Infusione
3.3
Disattivazione
Timer
plan 1.3:
1.3.2
no
1.3.1:
is there a tea
the user wants to add?
yes
1.3.3
1.3.1
List: All Teas
1.3.2
Create a New Tea
1.3.3
Tea to Add to
Favourites
Selected
plan 1.3.2:
do 1.3.2.1-1.3.2.4 (optionally 1.3.2.5-1.3.2.7)
then 1.3.2.8
1.3.2.1:
Choose a Name
1.3.2.2:
Choose a color / type
1.3.2.3:
Select Steeping
Temperature
1.3.2.4:
Select
Steeping Time
1.3.2.5:
Write Description
1.3.2.6:
Upload a Picture
1.3.2.7:
Select
Health Benefits
1.3.2.8:
Save New Tea
1.3.2.6
Upload Picure
Process

STN


press sensor
button
tea selected
press stop button
time
elapsing
correct
temperature
tea ready
press on tea
button
answer 2
press on
inpire me
answer 1
first
question
back
second
question
press sensor
button
start
press add
press
modify tea
add tea
press create
new tea
created
modify
press modify
list of tea
list of tea
press remove from
favourites
press
delete
tea removed
tea removed
from
favourites

1ST PROTOTYPE

The first prototype was realized using mock-up.

- Essential graphic UI
- Graphics over text
- Relaxing colors commonly associated with tea
- Familiar icons
- Create a new tea by filling out a form with the new tea information
- Animated timer
- Visibility of system status with icon of current section highlighted
- The tea preparation process shares the temperature information
- The timer can be stopped and restarted
- Each tea has individual page with picture, description and properties
- A default list of tea is offered for the newbie

1ST PROTOTYPE _ EVALUATION

Frame	Heuristic violated	Severity	Description / Comment
All	Help and documentation	4	Help and documentation is needed
All	Match between the system and the real world	2	If the same type of tea (for example black tea) could have different preparation time depending on brand it will be useful to have the indication of the brand
Make it	User control and freedom	3	It must be possible to start the chronometer also without using the sensor
Ready	Flexibility and efficiency of use	3	It could be useful allow the user to add a textual note (for example to remember the brand he prefers, or some additional information)

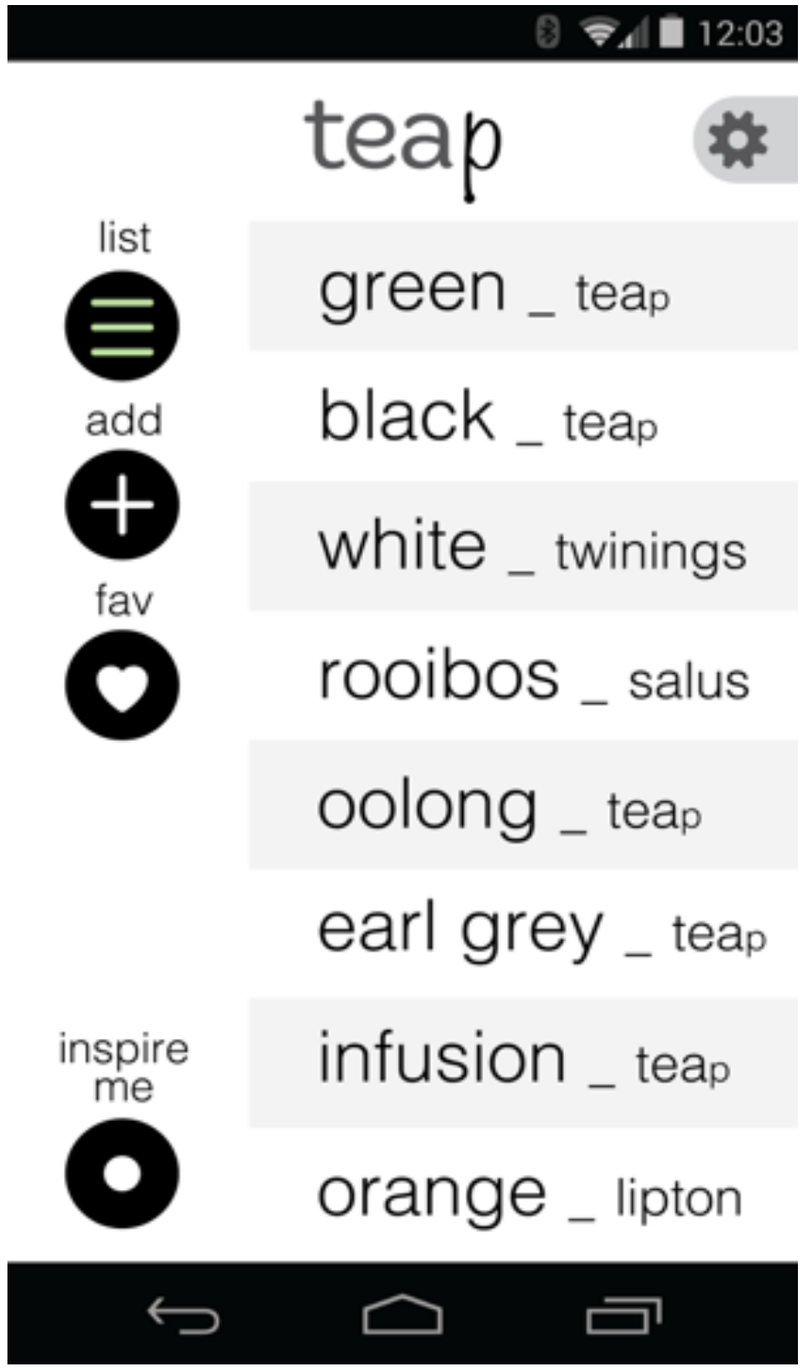
The heuristic evaluation was made by experts.
In this case the evaluation was done by our professor Valeria Mirabella.

2ND PROTOTYPE

The second prototype was realized using a simulator and the Mock-up.

Changes from the previous:

- information about the brand
- added an help page
- added timer button
- at the very end of the process added a note, share and favorite functionalities



2ND PROTOTYPE _ EVALUATION

Implemented and evaluated as an html simulation

7 users interviewed with think aloud variant cooperative evaluation

Task: tea preparation.

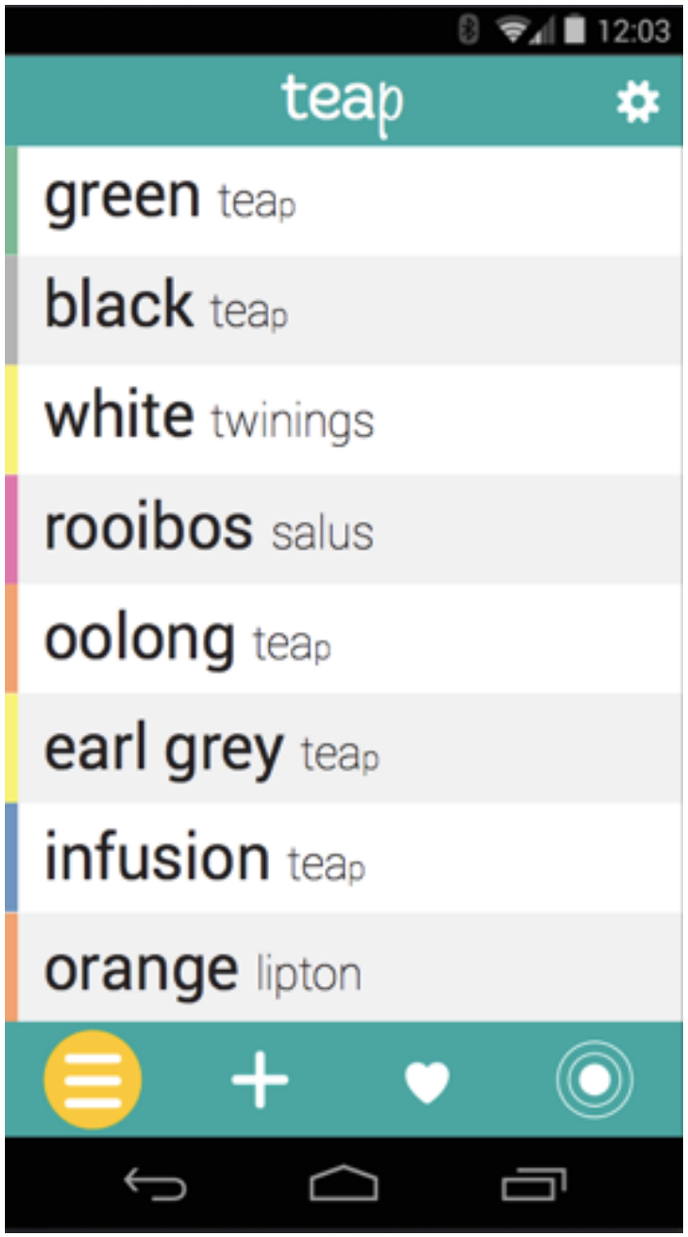
A summary of the responses:

- Absence of color (also a problem in Visibility of System Status)
- Some confusion in visuals and controls
- Lacks the possibility to edit tea properties
- Waiting time could use some entertaining elements

3RD PROTOTYPE

Changes from the previous prototype

- Brighter and more vivid colors
- Menu moved to the bottom, more space for content
- Home screen reachable from every other screen
- Better clarity in controls and visuals
- Visual aids for tea making
- Waiting times now hosts a rotation of tea health facts
- Edit tea functionality added



3RD PROTOTYPE _ EVALUATION

Implemented and evaluated as Android app on emulator

8 people interviewed with think aloud, variant cooperative evaluation

14 people responded to usability survey

Responses:

- Inspire me lacking clarity
- App too much iOS-like
- Take a note is not clear enough, also redundant
- Lacks information about tea quantity (loose leaves)

FINAL DESIGN

We implement the final design as a functioning Android 4.4 app.

Features:

- Situation labels in Inspire Me section
- Notifications when water reaches temperature and when timer ends
- Dismissable notifications
- Instantaneous response to adding a tea as favourite
- Tea quantity information added
- Better consistency of the app for the platform standard (back button also works)
- Error prevention by allowing only numeric values in some fields
- Error prevention by notifying the user the Bluetooth is disabled or the sensor is not found
- Help section implemented as an app tutorial with additional information on tea making

STORYBOARD

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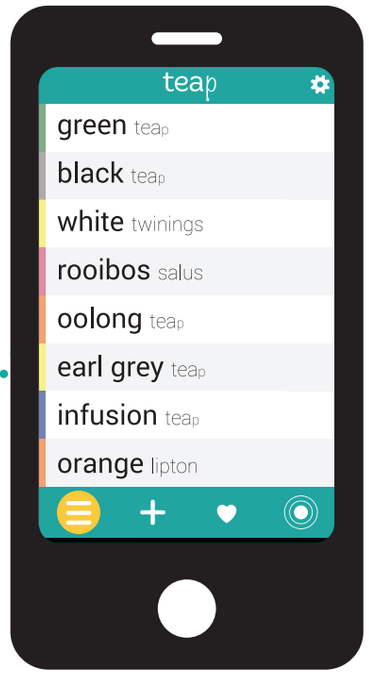
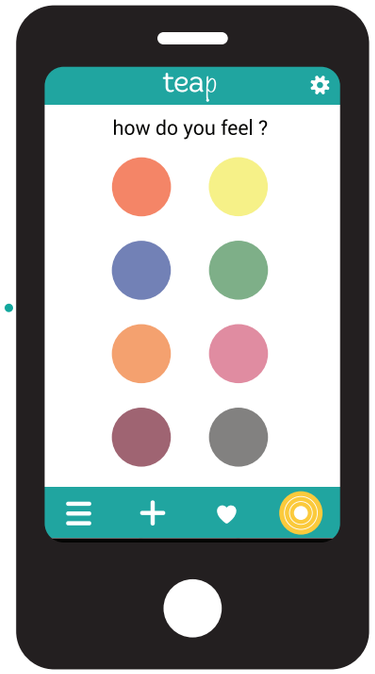
1

TAKE YOUR PHONE
&
OPEN THE APP



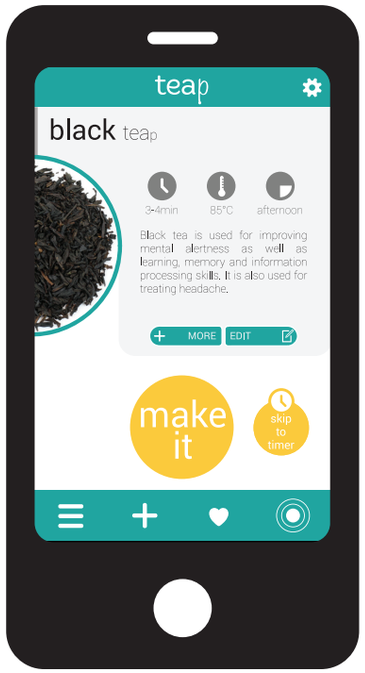
2

SCROLL THE LIST
AND CHOOSE
YOUR TEA



3

IF YOU DON'T
WANT TO CHOOSE,
GET INSPIRED!



4

READ ABOUT
YOUR TEA
AND START!

5

TAKE YOUR TEAP
THERMOMETER
AND TURN IT ON

STORYBOARD

teap

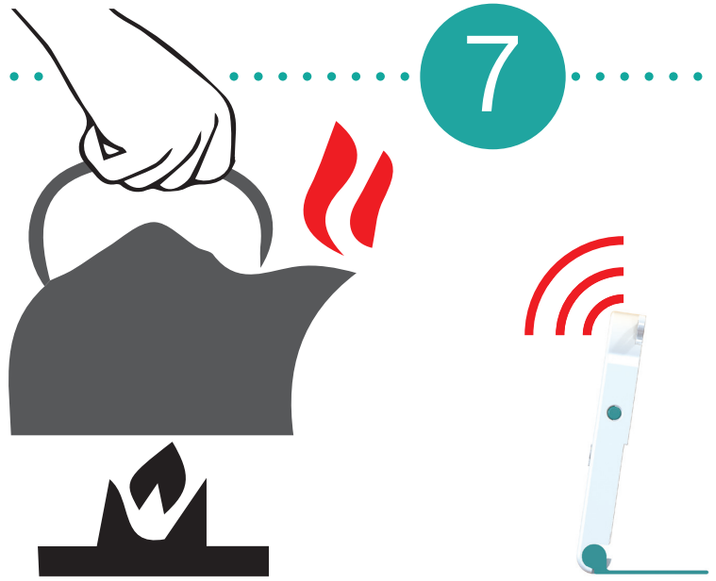
5

WAIT FOR THE CONNECTION ATTEMPT TO COMPLETE

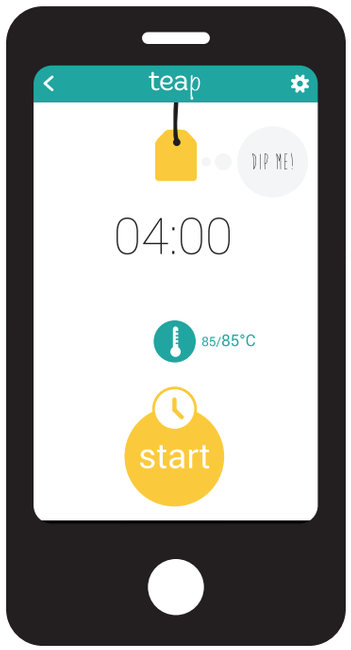
6

PUT THE SENSOR NEXT TO THE POT AND ADJUST THE ANGLE

7

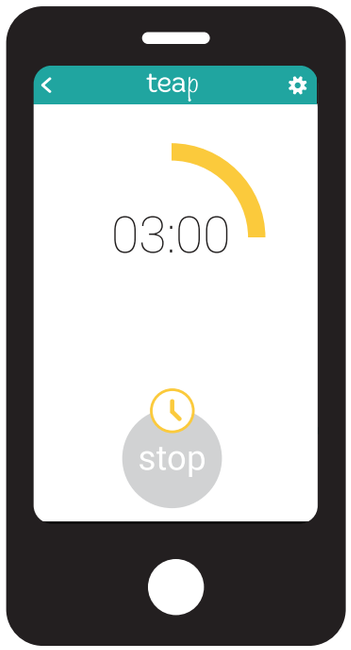


WHEN WATER REACHES THE RIGHT TEMPERATURE, YOUR APP WILL NOTIFY YOU



TAP START AND DIP THE TEA BAG

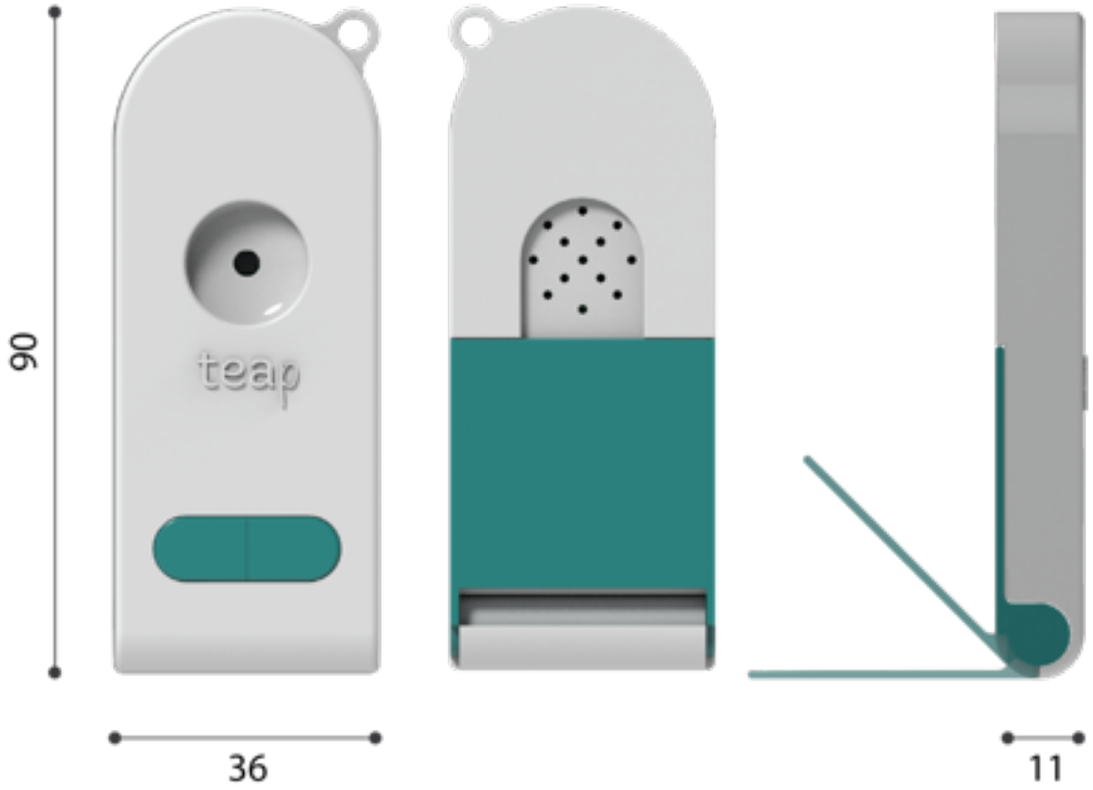
8

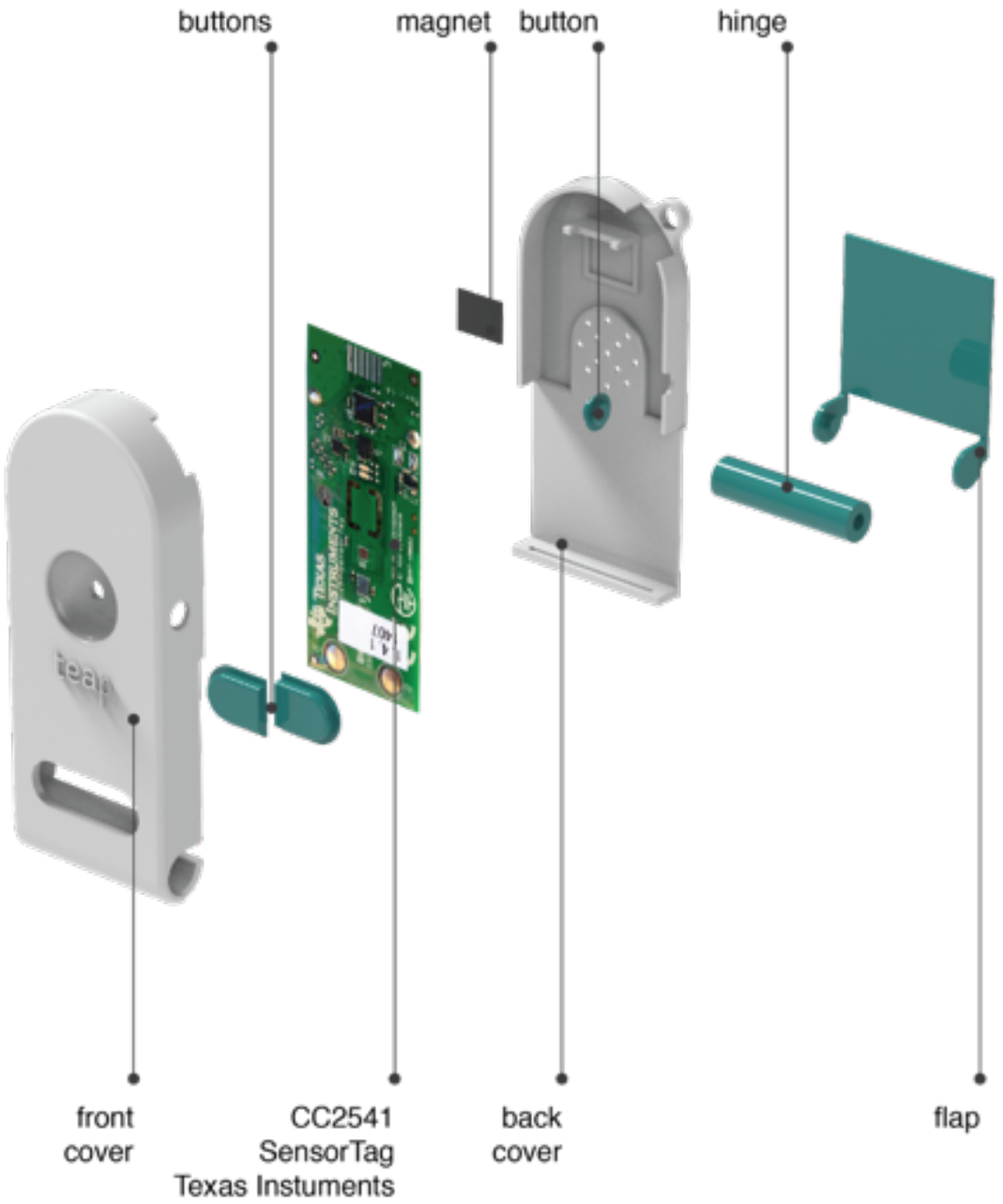


WAIT...

ENJOY YOUR TEA!

STORYBOARD


90
36
11


buttons
magnet
button
hinge
front cover
CC2541 SensorTag Texas Instuments
back cover
flap

FUTURE WORK

- better inspire me with more teas to choose from
- better customizability for the user (deciding whether to open directly on the fav)
- Implement Multi-threading
- improve Generalizability / Consistency with Android suggested UI implementations
- improve Task Migratability: offer default data to fill the create tea form with once the type of tea is chosen
- Improve recoverability: the system automatically set default tea quantity, steeping time and temperature if the data entered is incorrect

teap

your perfect tea.