

TASK: Design and mock-up a prototype interface for two very different smart appliances. (This is intended as an early prototype and that the focus of the work to be undertaken is on the interaction mechanisms and the interface to the technology rather than a fully functional application).

- a. Clearly identify the core and the additional smart functionality that your devices provide.
- b. Develop a profile of three different types of expected users and create a realistic persona for each.
- c. Develop a realistic scenario for each persona using the application to carry out some activity.
- d. Design the look-and-feel of your chosen interface and an interaction sequence, based upon good practice guidelines and reflecting the needs of the users identified by the personas chosen. Provide an initial rough sketch of the proposed interface.
- e. Mock-up your design showing sets of screen flows, user actions and interface elements.
- f. Make clear your design assumptions and explain in detail the decisions you have made, together with your justifications for doing so.
- g. Provide a critique of your design and explain how you could improve on it.

ANSWER:

PART 1. Personas and Scenarios

Question a. Clearly identify the core and the additional smart functionality that your devices provide.

Note: for this assignment smart appliances were presented. 1st – Smart Washing Machine, 2nd – Smart Coffee Machine. Both appliances do not belong to any particular brand but include a functions of the newest products on market.

All information about Smart Washing Machine was created based by knowledge from (O'Boyle, 2018).

All information about Smart Coffee Machine was created based by knowledge from (Zanten, 2019).

1. Smart Washing Machine (WM)

Core functions:

- Laundry weighing;
- Automatic calculation of the washing time, the use of water and detergent;
- Different modes of washing and spinning clothes;
- Notifications on WM display about necessary diagnostics or leakage.

Additional functions:

- Remote control of WM from home and from anywhere in the world (able to connect to a network via WiFi, 3G, Bluetooth);

- Able to connect with other smart devices at home (such as Alexa);
- It will give advice (by voice or send a notification) of which detergent is better to use to clean away stains, clean off wax or chewing gum;
- Checks the purity of the water during rinsing;
- **Smoothing wrinkles with hot steam after washing and drying;**
- Check the weather via Google Weather and give an advice about drying mode; If the weather will be sunny – use less drying time for clothes. If it will be rain or clouds – use more drying time for clothes.

Person can stay at the office, garden or another room and control a WM via app:

- turn on and off the WM;
- select the washing program;
- set the spin mode;
- select the desired water temperature;
- activate the timer;
- postpone the start;
- find out at what stage your wash arrived.

2. Coffee machine (CM)

Core functions:

- Make a coffee, warm milk, boiled water.
- Give a notification on a CM display if some ingredients are finished.

Additional functions:

- Check an ingredients and send the person a notification what needs buying;
- Check a water quality;
- Connect to Alexa;
- Found new coffee recipes from the internet and suggests the person to try it;
- Possibility to invent an individual coffee recipe;
- Connects with Google Weather and analyses the information. For example, if the weather is less than 12 degrees - send a notification suggesting “Maybe a coffee?”;
- Create your own scenarios: for example, make a coffee after 10 minutes “ALARM” is off.

Person can stay at the office, garden or another room and control your CM via app:

- Turn the coffee machine ON and OFF;
- Pre-set a particular time for starting the coffee preparation process;
- Ask to make coffee according to your recipe;
- Ask Alexa to make me a coffee;
- See the consumption of ingredients;
- Create your own scenarios.

Question b. Develop a profile of three different types of expected users and create a realistic persona for each.

Note: For Washing Machine 3 types of users were created – housewife, old person, student. For Coffee Machine 3 types of users were created – housewife, old person, office secretary.

All Personas were created based by knowledge from (Dam & Siang, 2019).

PERSONA 1.



Barbara

Age 45

Zurich

Housewife

Story:

- 2 children, 10 and 14 years;
- live in a house;
- hobby gardening.

The Perfect Time: SPA time with friends in the mountains

Biggest Needs: She needs a way how to organize her time better; she wants to experience in using a smart appliance for home.

Figure 1. Profile of Persona 1

PERSONA 2.



Louis

Age 70

Madrid

Old person

Story:

- Professor of Literature at the University of Madrid;
- now he is a pensioner;
- 1 year ago, he lost his wife;
- living alone in a 3-bedroom flat;
- has a 40 years old son and grandchildren.

The Perfect Time: weekend lunch with his son's family; walk at the University park and talk with students.

Biggest Needs: to find a way how to organize his life without his wife.

Figure 2.. Profile of Persona 2

PERSONA 3.



Claudia

Age 25

New York

Office secretary

Story:

- office secretary at a big optic company;
- ambitious;
- no children and active social life.

The Perfect Time: shopping; cocktails with friends at the Sky bar roof; walking with her dog.

Biggest Needs: to find a way how to be more efficient at work to merit a promotion.

Figure 3. Profile of Persona 3

PERSONA 4.



Lukas

Age 20

Vancouver

Student

Story:

- IT student at the University;
- rents a flat with 2 friends;
- always busy at university.

The Perfect Time: driving a bicycle at park

Biggest Needs: to find a way how to look better (his clothes are often not well presented), but not spend too much time on it.

Figure 4. Profile of Persona 4

Question c. Develop a realistic scenario for each persona using the application to carry out some activity.

Note: For Washing Machine realistic scenario 3 types of users were used – housewife, old person, student. For Coffee Machine realistic scenario 3 types of users were used – housewife, old person, office secretary.

All realistic scenarios for each persona were created based by knowledge from (CAO, 2015) , (ADISESHIAH, 2017).

1.Washing Machine (WM) realistic scenario + Storyboard.

Housewife

Problem:

Housewife in the garden plants flowers. There are clouds in the sky, and it will soon rain. At home, a washing machine washes laundry. The housewife wonders if the washing process is over. However, she cannot go in the house to check it because at any moment it may start to rain, and she does not have time to finish planting flowers.

Action:

The housewife took a tablet with the Smart Washing Machine application to the garden. The housewife taps the “Real Time Process” button and sees at what stage the washing process is.

Value:

Thanks to the “Real Time Process” function in the application, the housewife was able to monitor the washing process of the laundry without having to go into the house and managed to plant flowers before it started raining.



Figure 5. Washing Machine realistic scenario + Storyboard / Housewife

Student

Problem:

The student is going on a date. He urgently needs to wash his shirt and take a shower, he is limited with time

Action:

The student decides to take a shower and control the washing machine by voice. He activates the “Voice” function in the application and, standing in the shower, tells which setting to choose for quick washing and drying his shirt.

Value:

The student used an alternative way to control the washing machine. Because of this, he saved time. The shirt was quickly washed and dried. The date went well.

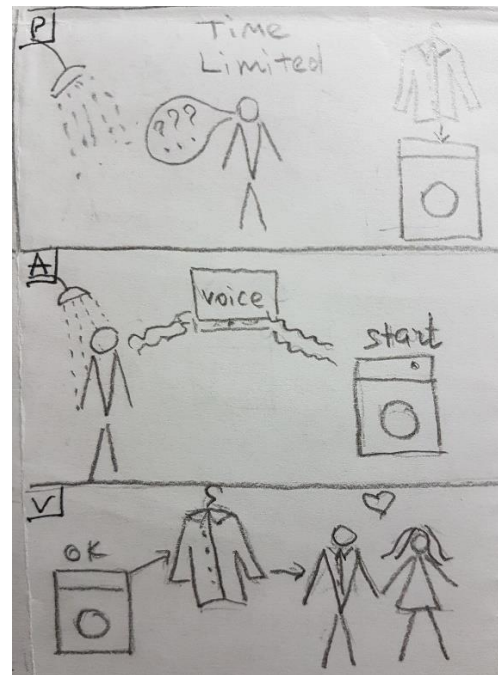


Figure 6. Washing Machine realistic scenario + Storyboard/Student

Old Person.

Problem:

Louis' wife washed and ironed clothes all their life. Now he lives alone and needs to do it on his own. Louis almost figured out the process of washing. But has not yet learned how the ironing process functions.

Action:

In the Smart washing machine, there is a function of steam after washing and drying, so that the clothes will not be crumpled. This is exactly what Louis needs. He selects this function.

Value:

After steaming, some clothes do not need to be ironed at all. There is a big saving in electricity.

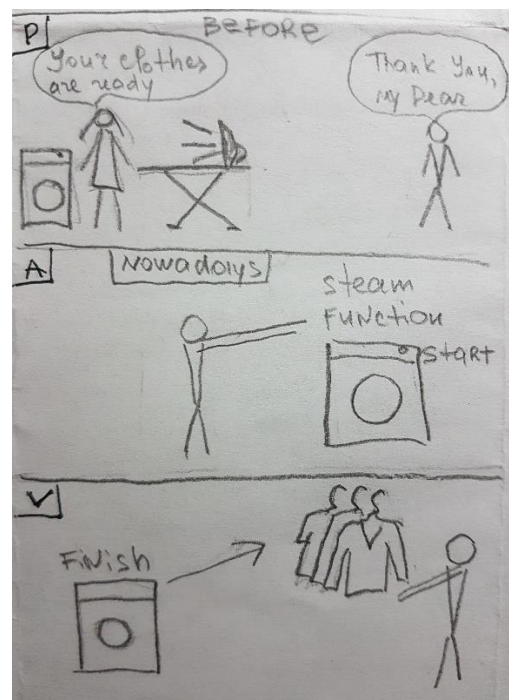


Figure 7 Washing Machine realistic scenario + Storyboard/ Old Person

2. Coffee Machine (CM) realistic scenario + Storyboard.

Housewife

Problem:

Morning. Kitchen. Housewife prepares pancakes for breakfast for the whole family. Her husband and children come in the kitchen. Husband asks her to make him an espresso coffee. The daughter wants a glass of warm milk. The son usually drinks a black coffee, but today he wants a cappuccino. The housewife herself decides to drink tea. Every family member wants different drinks. But the housewife bakes pancakes and they can easily burn if she does not look after them.

Action:

On the tablet in the application "Smart coffee machine" housewife selects all the drinks, puts them as a priority queue for preparing; she continues to bake pancakes.

Value:

All family members get their drinks. Pancakes are ready. The whole family has breakfast together.

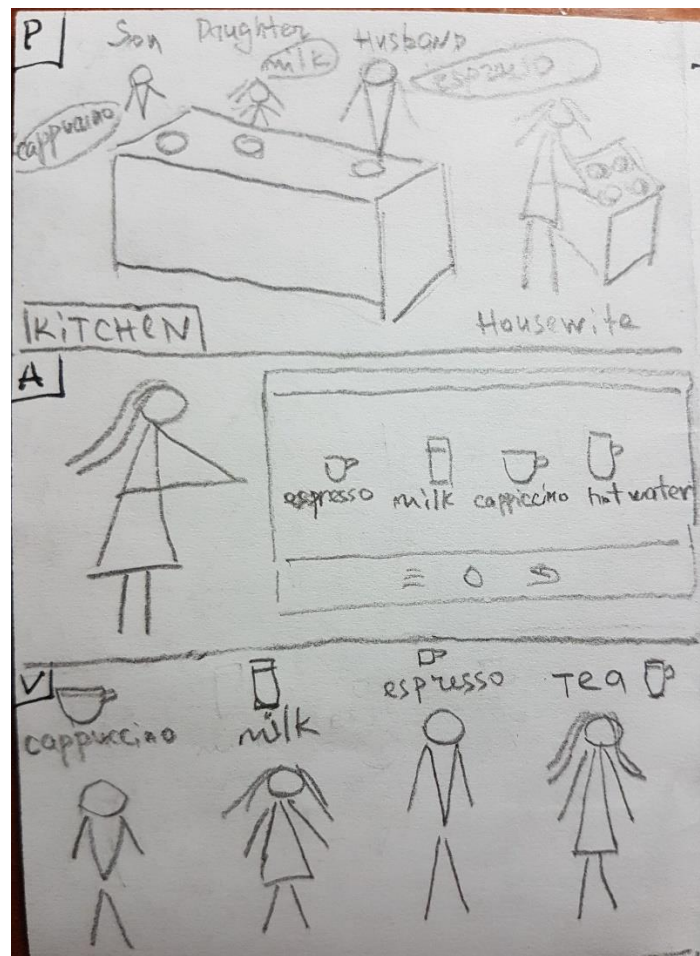


Figure 8 Coffee Machine realistic scenario + Storyboard/ Housewife

Office Clerk

<p>Problem:</p> <p>The boss asks her to make him a black coffee in five minutes time. The secretary must answer an important phone call and finish two urgent emails.</p>	<p>The storyboard for the Office Clerk scenario consists of three panels. Panel P (Problem) shows a secretary at a desk with a laptop, with a speech bubble from the boss saying 'Please, black coffee after 5 min'. Panel A (Action) shows the secretary interacting with a coffee machine screen that displays 'Black coffee' and 'what to prepare? 5 min'. Panel V (Value) shows a checklist with 'emails', 'Phone call', and 'Black coffee', each marked with a checkmark and the word 'DONE'.</p>
<p>Action:</p> <p>The secretary opens the app and selects a black coffee and sets the preparation to start in four minutes time.</p>	
<p>Value:</p> <p>The secretary finished the phone call, answered the two emails, picked up the prepared coffee and delivered it to her boss. By using the application, she increased her productivity at work.</p>	

Figure 9. Coffee Machine realistic scenario + Storyboard/ Office clerk

Old person

<p>Problem:</p> <p>Louis misses the coffee that his wife prepared for him every morning. Now he lives alone, but the habit of drinking his favourite coffee remains.</p>	<p>The storyboard for the Old Person scenario consists of three panels. Panel P (Problem) shows a woman saying 'your favorite coffee' to a man, with a speech bubble from the man saying 'Good Morning my Dear! Thank you!'. Panel A (Action) shows the man interacting with a coffee machine screen that displays 'My favorite coffee'. Panel V (Value) shows the man sitting at a table drinking from a cup.</p>
<p>Action:</p> <p>His son helped him to create a recipe for his favourite coffee and added it to the app as "My favourite coffee". Now, every morning, Louis opens the app and selects "My favourite coffee".</p>	
<p>Value:</p> <p>Louis drinks his favourite coffee and it gives him the feeling that his wife is next to him. His day begins with positive emotions.</p>	

Figure 10 .Coffee Machine realistic scenario + Storyboard / Old Person

PART 2. Design mock-up

Question d. Design the look-and-feel of your chosen interface and an interaction sequence, based upon good practice guidelines and reflecting the needs of the users identified by the personas chosen. Provide an initial rough sketch of the proposed interface.

Note: All realistic Sketches and Wireframes were created based by knowledge from (Vyhouski, 2019) , (Mkrtchyan, 2018).

1 a . Sketch of the Washing Machine Application

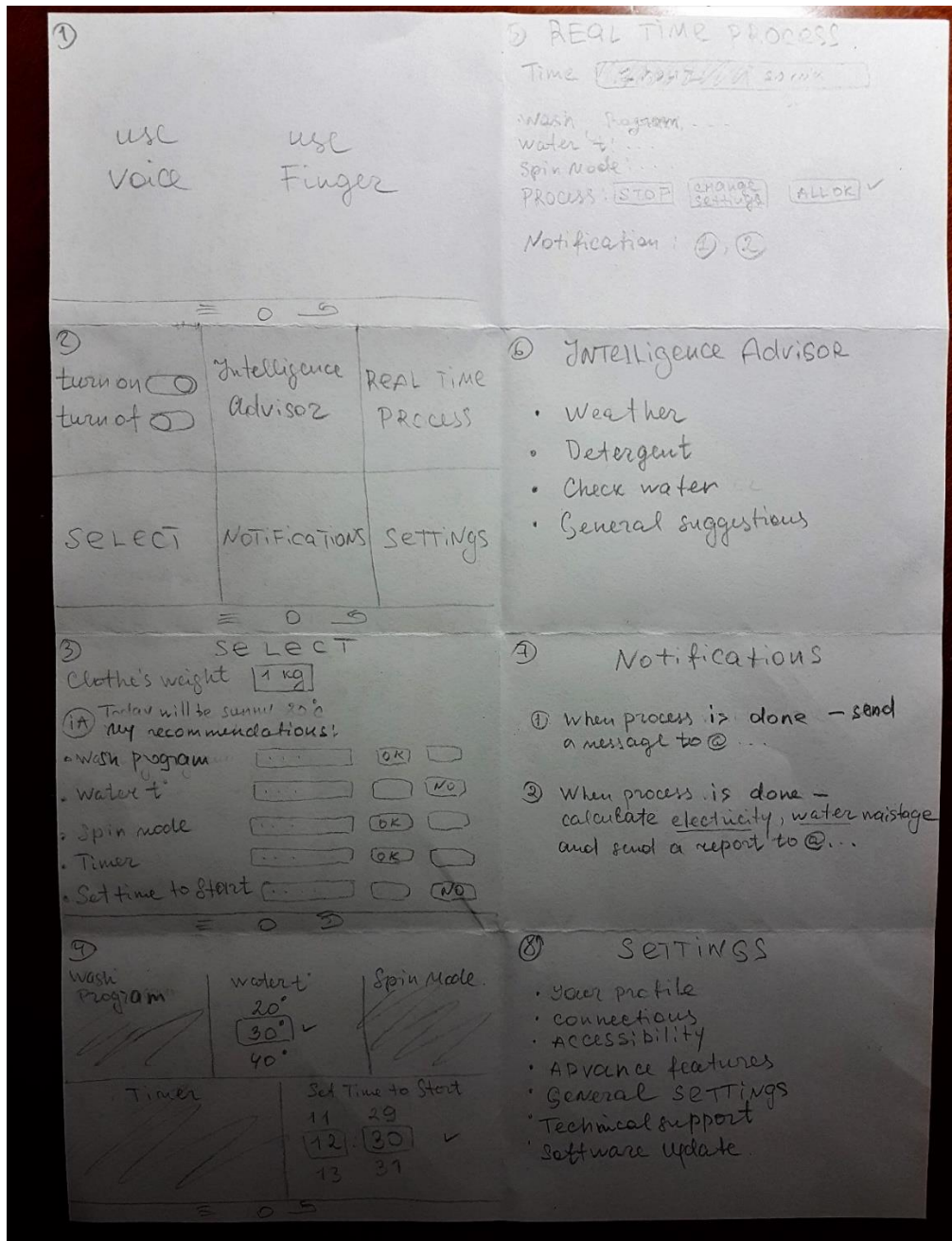


Figure 11 Sketch of the Washing Machine Application

1 b . Wireframe of the Washing Machine Application

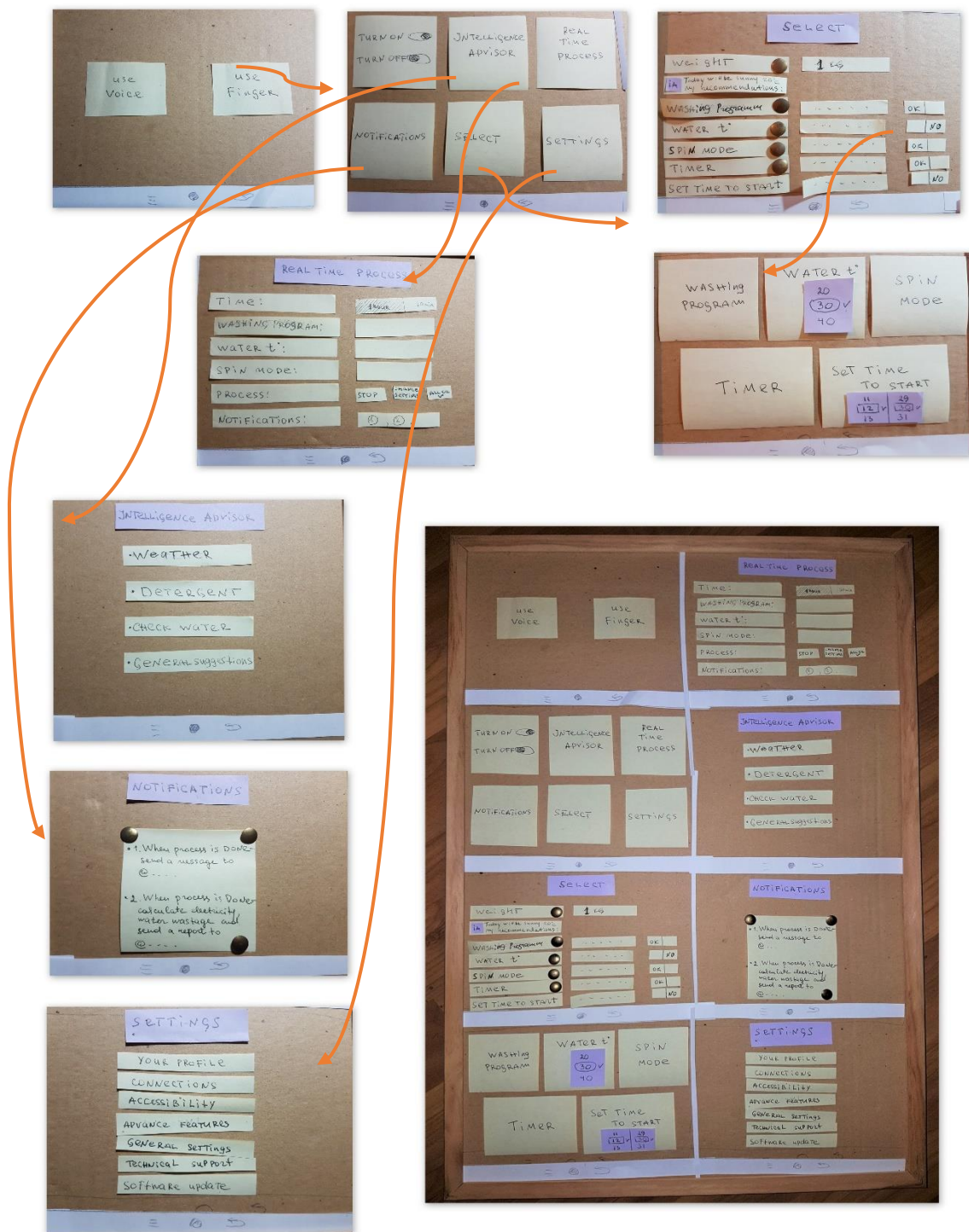


Figure 12 Wireframe of the Washing Machine Application

2 a . Sketch of the Coffee Machine Application

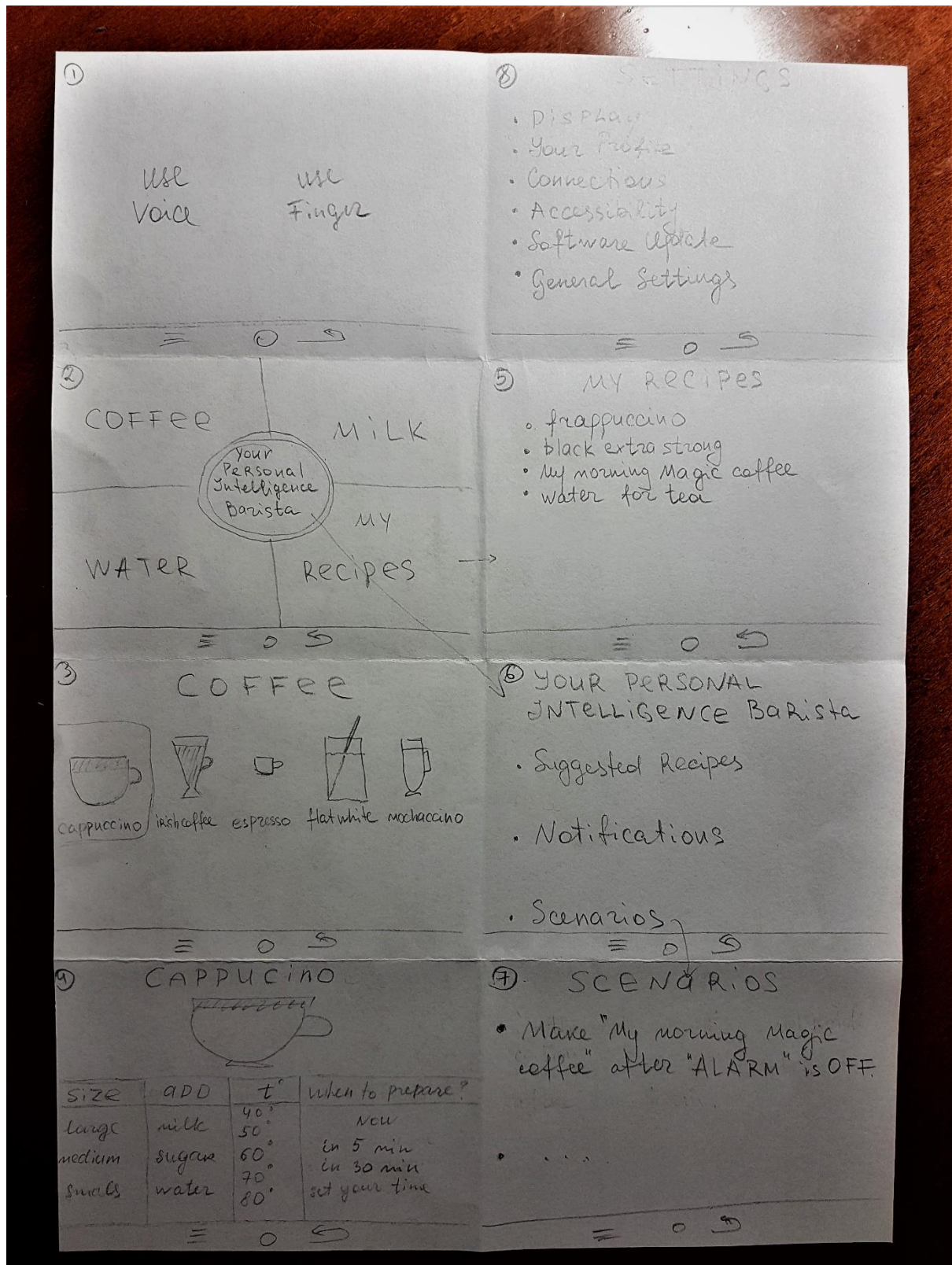


Figure 13 Sketch of the Coffee Machine Application

2 b. Wireframe of the Coffee Machine Application

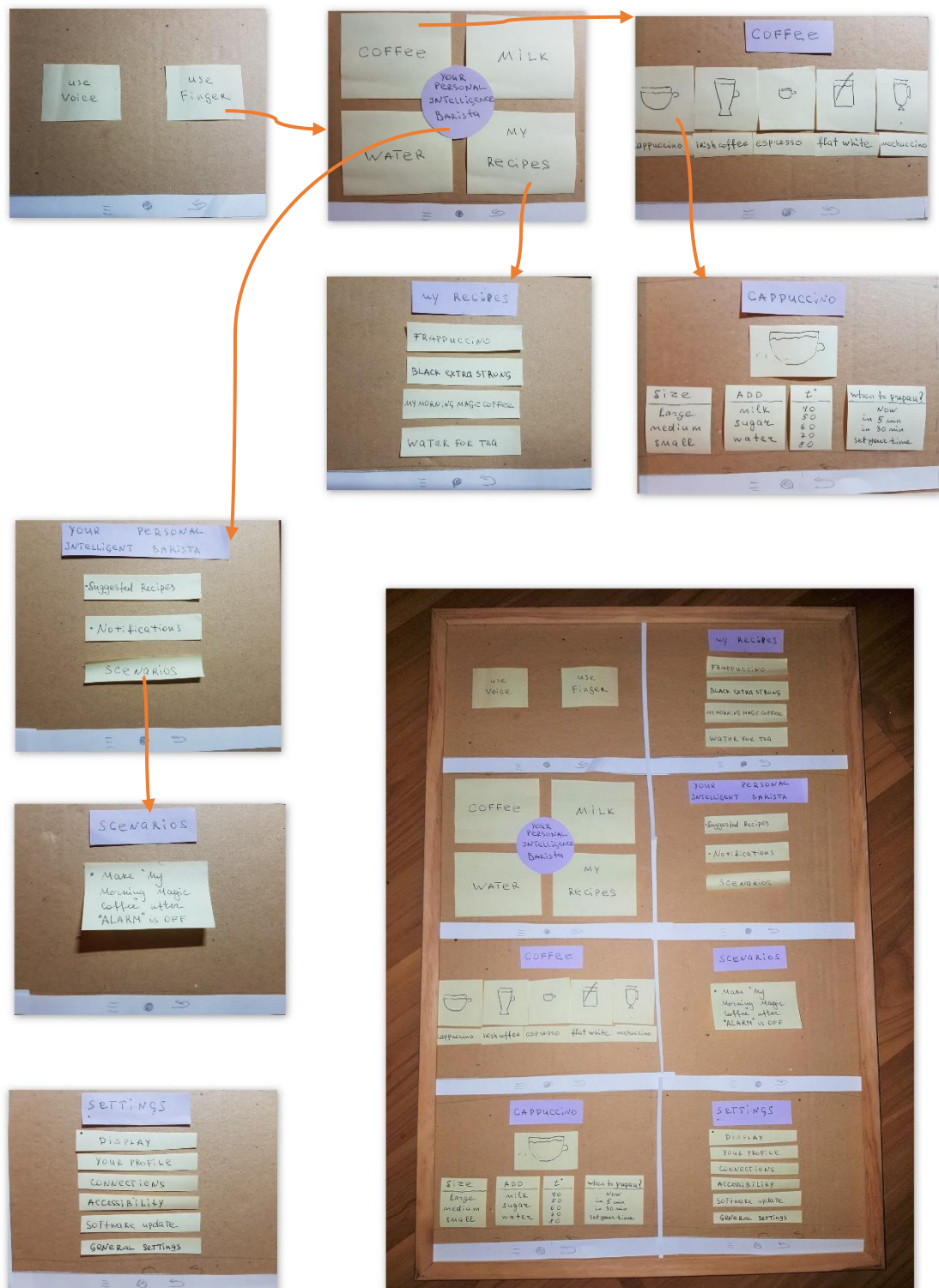


Figure 14 Wireframe of the Coffee Machine Application

Question e. Mock-up your design showing sets of screen flows, user actions and interface elements.

Note: All realistic Mock-Ups and Prototype were created based by knowledge from (Mkrtchyan, 2018).

For designing a Mock-Ups, Prototypes, Interface Elements Lists the following tool were used: **Mockplus** <https://www.mockplus.com/>

1 a. Interface elements of the Washing Machine Application

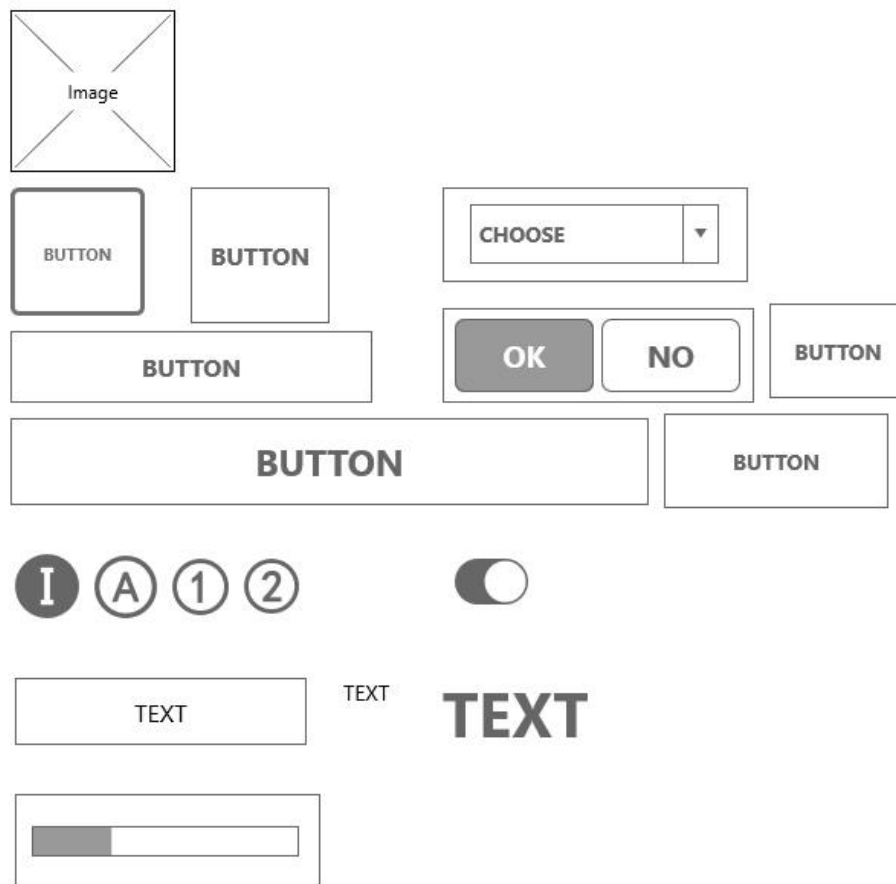


Figure 15. Interface elements of the Washing Machine Application

1 b. The Mock-Up of Washing Machine Application with user flow.

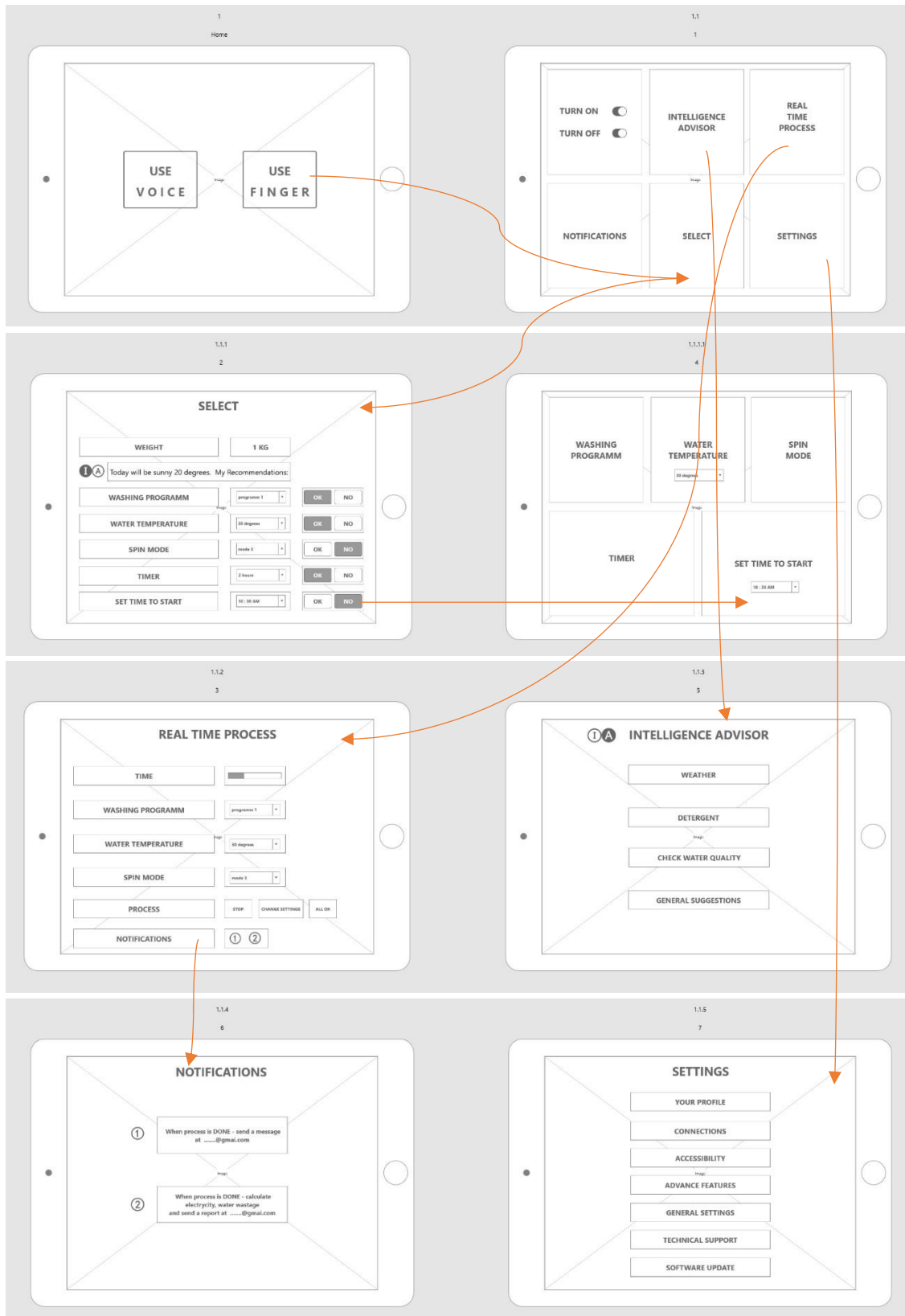


Figure 16 The Mock-Up of Washing Machine Application with user flow.

1 c. The Prototype of Washing Machine Application



Figure 17 The Prototype of Washing Machine Application

1 a. Interface elements of the Coffee Machine Application

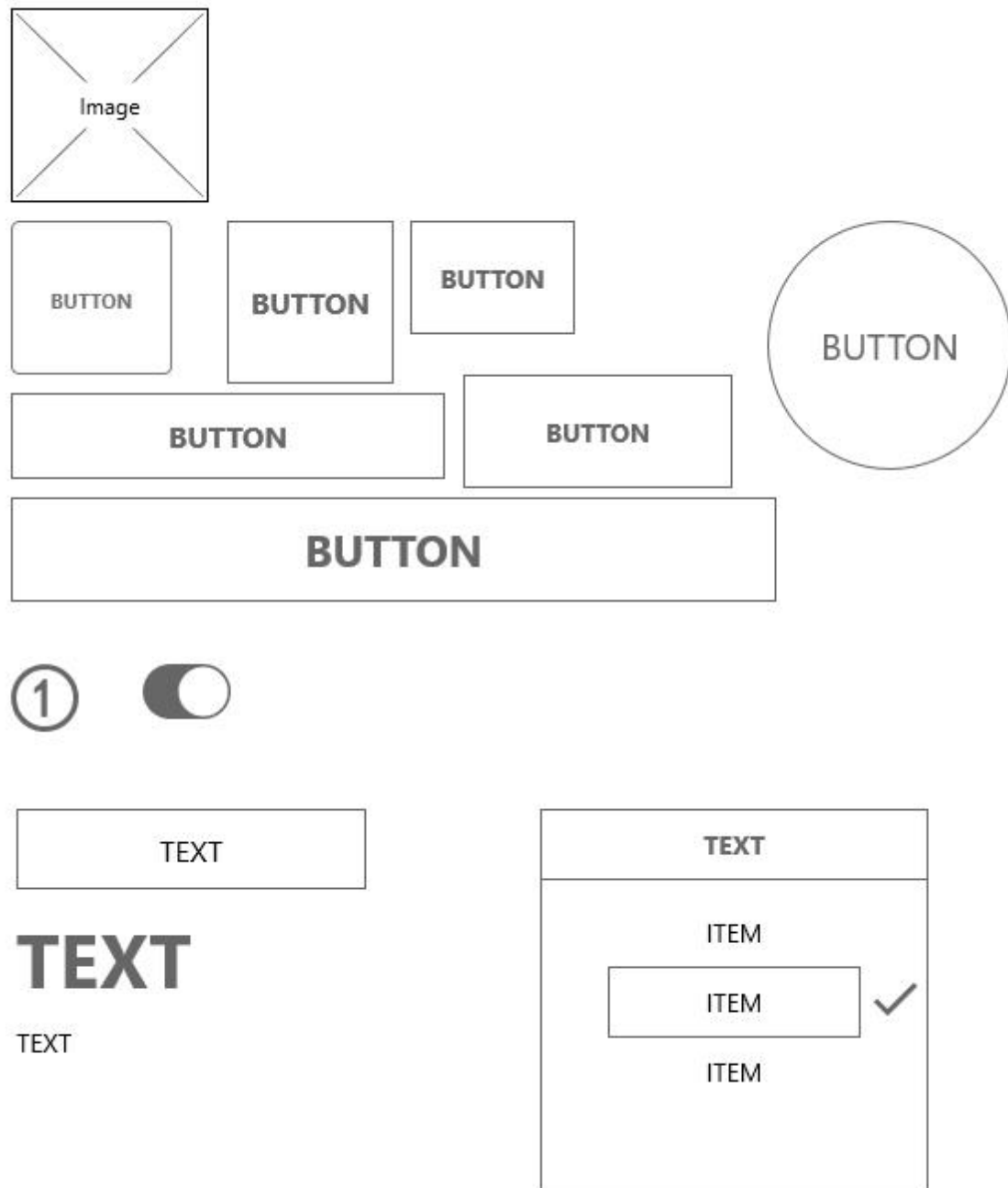


Figure 18. Interface elements of the Washing Machine Application

2 b. The Mock-Up of the Coffee Machine Application with user flow.

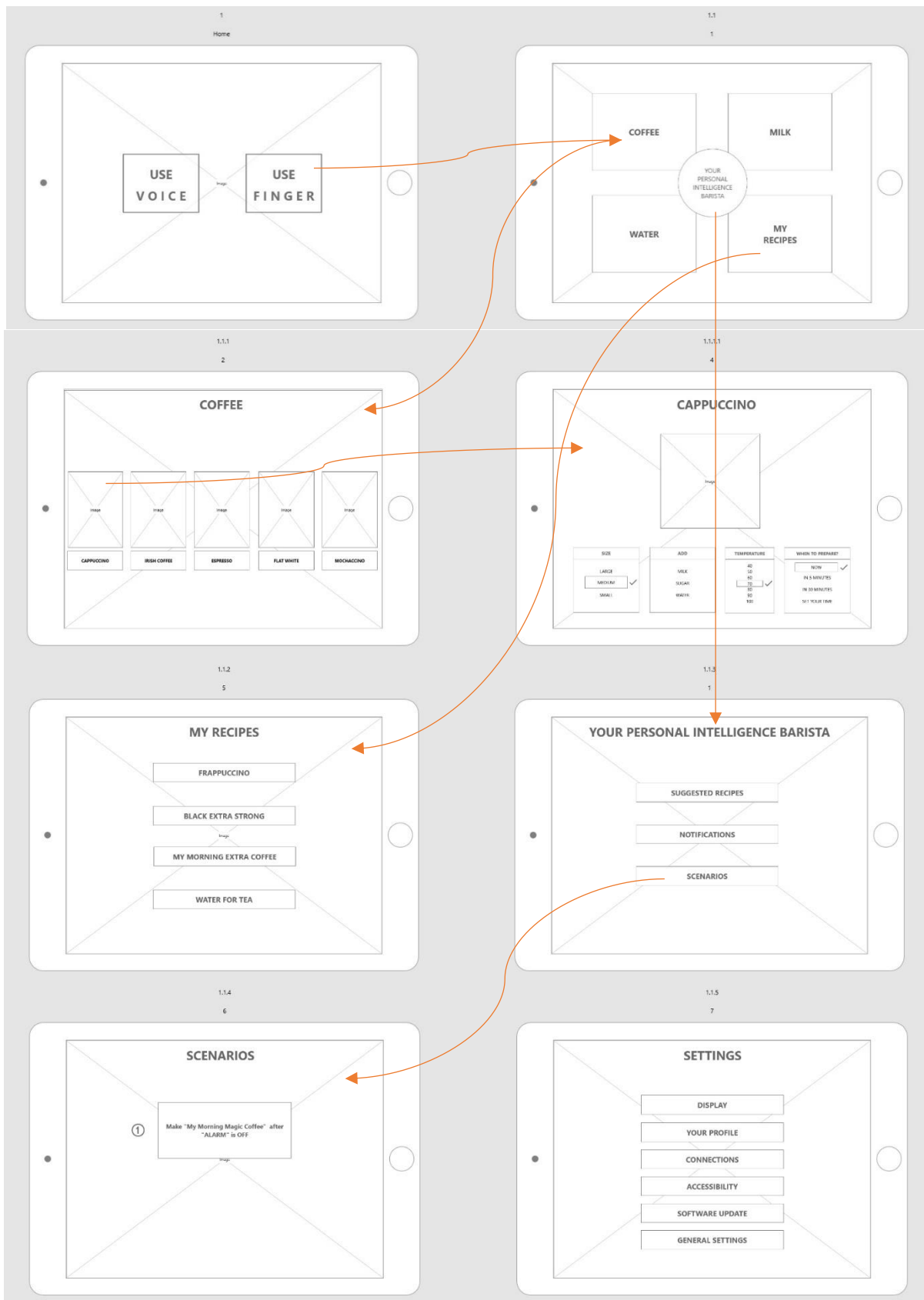


Figure 19 The Mock-Up of Washing Coffee Application with user flow.

2 c. The Prototype of the Coffee Machine Application

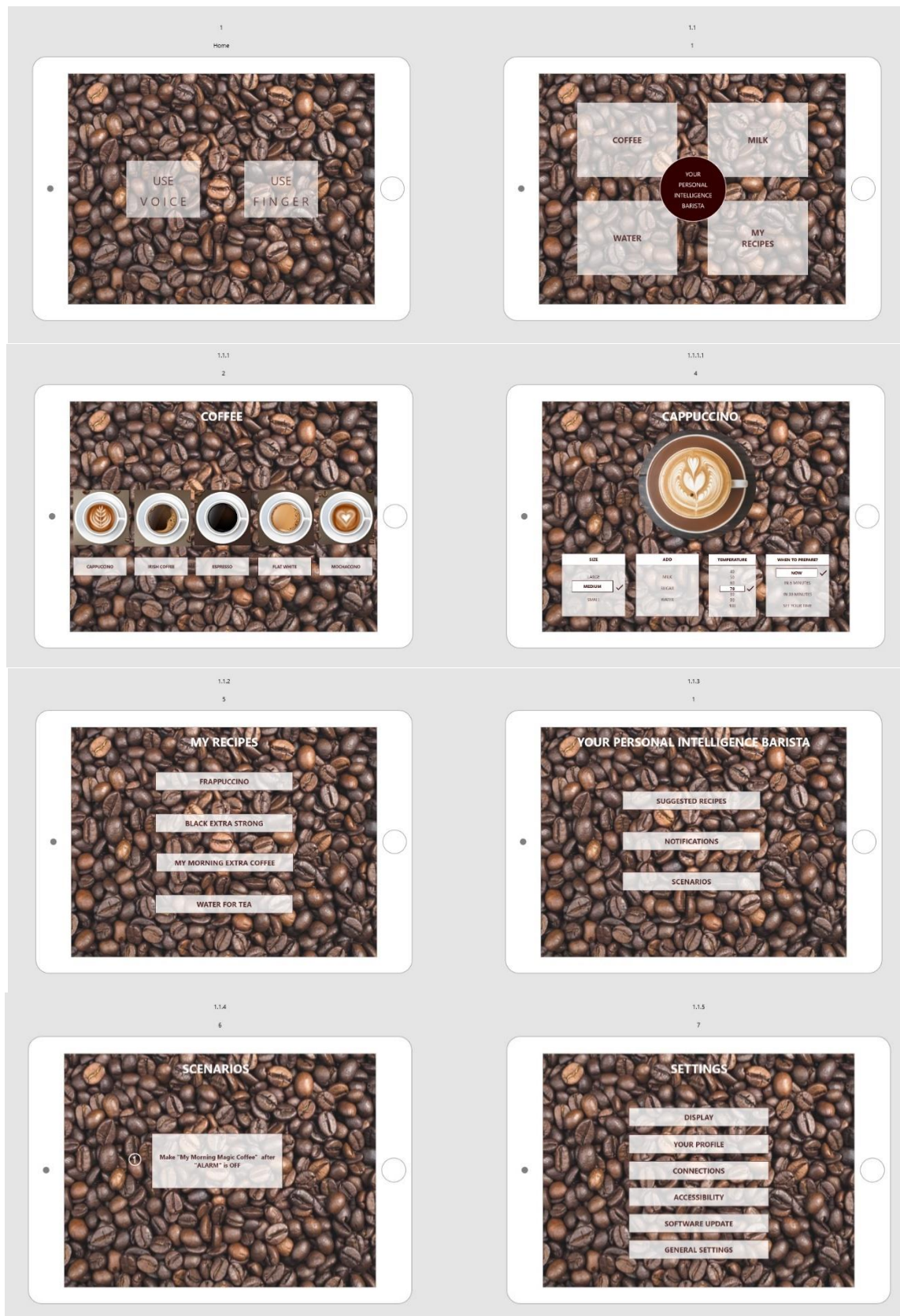


Figure 20 The Prototype of the Coffee Machine Application

PART 3. Design justification

Question f. Make clear your design assumptions and explain in detail the decisions you have made, together with your justifications for doing so.

Assumptions:

I took into consideration that:

- WiFi, 3G, Bluetooth, internet connection are always working;
- User are not colour blind, not deaf and blind.

Justifications about my decisions:

I discovered that all Personas I have created has a different experience and knowledge about technology.

An Old Person is very poorly versed in modern technology, market updates, and mobile applications. It is difficult for him to remember the pattern of actions, to understand how the system works.

It is easier for a Housewife to understand how a mobile application works. She spends her day organizing a family life, reads many instructions for home appliances, drives a car. She has children who already have a gadgets. It helps her more or less to understand how to use a smartphone, tablet, computer.

The Student is a young generation. Every day he uses smart headphones, smart watches, sports trackers, smartphones, tablets, laptops and other modern gadgets. For him it is an extremaly easy to find a way how new application works.

Therefore, I tried to create an application that users of different levels can use without feeling a discomfort.

For example, on the main page of both applications there are 2 buttons: "USE VOICE" and "USE FINGER".

"USE VOICE" button is designed for voice control, as well it can work in collaboration with modern smart home assistants such as Alexa and etc. This feature can be used by an experienced user (student) for fast commands; by a middle-level user (housewife), if her hands are busy during food preparation; by an inexperienced user (old person), if it is easier for him to talk with an application, it will tell him what to do and how.

"USE FINGER" button is designed for manual control of the application.

Each application has help in the form of "INTELLIGENCE ASSISTANT / ADVISOR". This feature allows an inexperienced user to ask for information at any time and get a detailed answer.

Also, this function independently connects to the Internet, collects and analyses information, and gives its recommendations to the user.

For example, if today is sunny and 20 degrees Celsius, then the spin mode of drying clothes in a washing machine can be reduced. Or, if a new coffee recipe has been published on the culinary website, the coffee machine application offers the user to try this recipe.

In the application, I did not use the GO BACK button, since on the tablet this button is already built into the control system.

PART 4. Critique

Question g. Provide a critique of your design and explain how you could improve on it.

This part of the coursework was written after two days. I made a decision to take a break, to start doing another coursework, so that two days later I would look at my work with a fresh eyes.

Some flaws have been founded:

1. It was necessary to Implement a buttons like GO BACK, THE MAIN PAGE, MENU. This had to be done for the convenience of the user.
2. It was necessary to do a survey among users of such applications and process their feedback.
3. It was necessary to let the application be tested by several people from the focus group I have created (housewives, 40, office secretaries, 25, elderly people, 70, students, 20).
4. It would be possible to change the design if I had more experience in its feild.

References

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