

Deliverable 2

1. Scenarios describing problems to be solved

SCENARIOS FOR PROBLEMS 1-2

Inconvenience - lack of resources

Peter was living in the countryside for the summer with his family and he was willing to maintain his past habits related to recycling. He wanted to be sure that even in this part of the country he could take care of the environment. He didn't know any places around him where he could recycle the usual materials such as plastic, paper or glass. Therefore, after searching just a little bit, he easily found out about the *R-ECO* application.

- He opened the app and a menu with different kinds of materials appeared on the screen. He selected plastic and in the next screen there was a "Where to recycle" button and under that the symbols for plastic and the steps for recycling this material. As he already knew how to prepare the recyclables, he pressed the button. A map appeared, he pressed on the "find location" button and some nearby places could be seen on the map.
 - They weren't that close to him, but he expected that, so he didn't mind walking 15 minutes because at least he could find those places easily.
 - Peter noticed that two pins appeared on the map and were in different colors. When he pressed the red one some information about a company that offers points for recycling appeared. He thought that it was a good idea to go to a recycling place where he could be sure that his materials are indeed recycled. He pressed the "Ok" button and drove for 10 minutes to arrive in that place. He easily found the spot where to drop his recyclables and received a code from a worker of that company. After entering the code, he received 100 points for his effort.
- He opened the app and a menu with different kinds of materials appeared on the screen. Peter could find out where to recycle a certain material such as plastic, but, knowing that he has to walk a bit more to reach that point, he wanted to also drop other materials in his way. Unfortunately, the application didn't have a filter for the places, in case some places for a part of the materials coincided with other places for other materials. Therefore, he had to search manually for each material which was very annoying and a waste of time.

Time consuming - preparing the recyclables

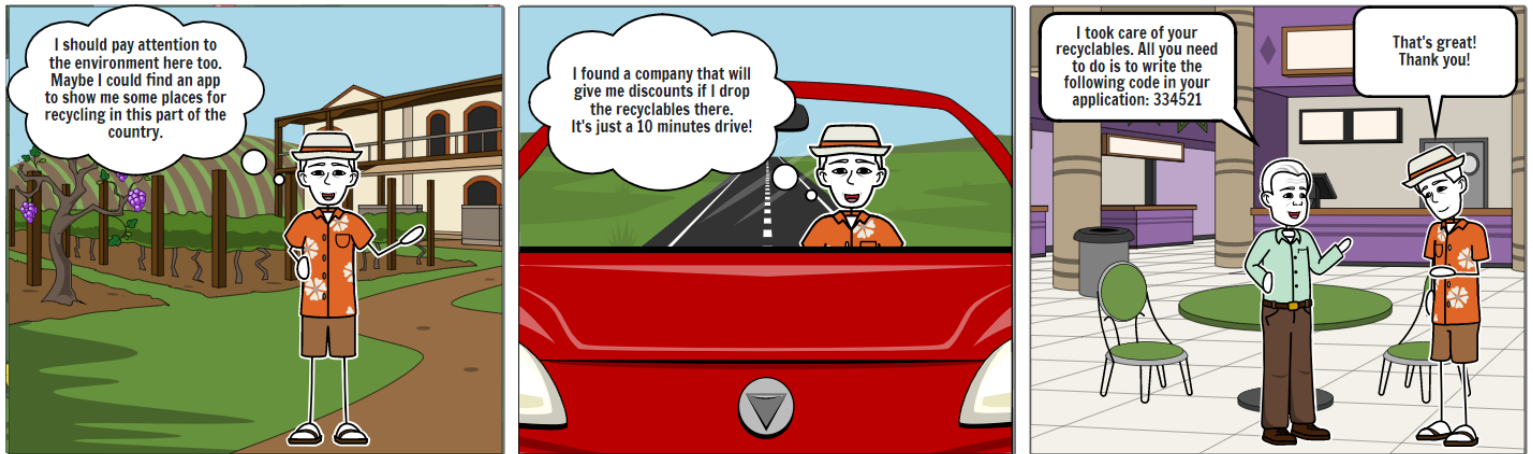
Daniel knew that recycling was pretty important and it was an usual habit for him. Nevertheless, he read somewhere that it is not enough just to throw the recyclables in the right bin, but you should also prepare them. He wasn't sure if he was doing it right, so, to make his effort an effective one, Daniel downloaded an application about recycling. He hoped that he could find the information there as quickly as possible because he was in a hurry and wanted to drop the trash on his way out.

- Daniel had three materials that he wanted to drop out (plastic, paper and metal) and he already knew where to go for that. He opened the application and was surprised how many types of materials can be recycled. The ones that he wanted to recycle were in the first row (being the most popular) and he easily found them on the screen. He pressed the paper button, and then

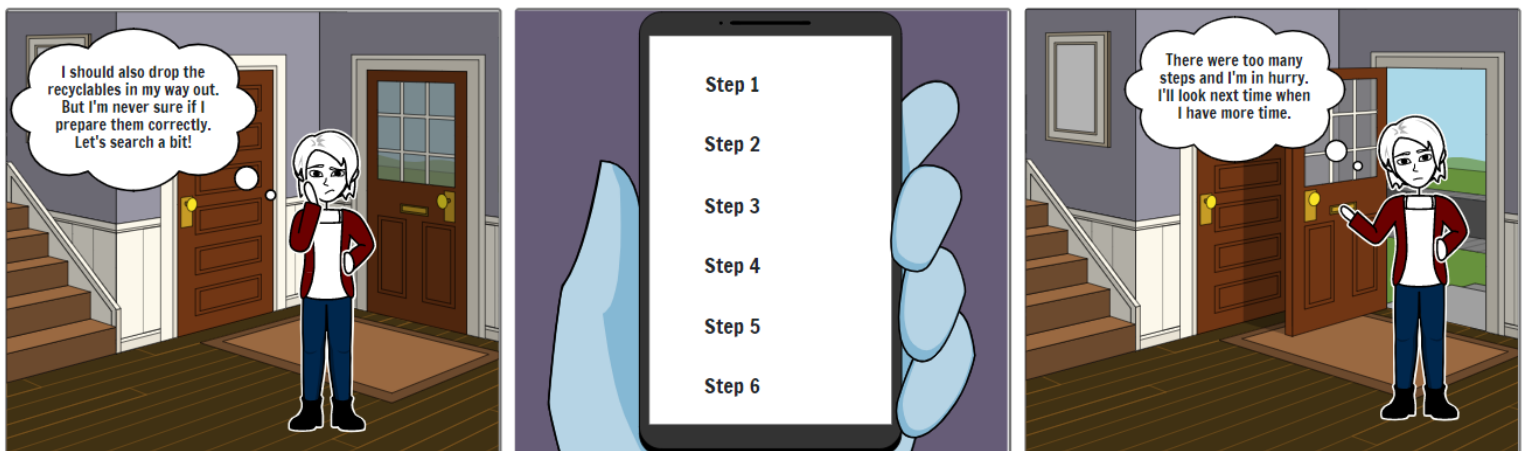
the steps for recycling appeared. There he could also notice a link for “more information”. He didn’t have time to open the link, so he just followed the steps below. Therefore, some important information was ignored because it was a further step ahead.

- He wanted to open the steps for each material. He started with metal and 6 steps appeared on the screen, but the text seemed rather long. That is why, he thought it was too much to read and he would do that next time when he had more time.

Storyboard for scenario 1



Storyboard for scenario 2



SCENARIOS FOR PROBLEMS 3-4

Recycling is confusing for users: they have to know what is recyclable and what isn't.

Paula would like to learn how to recycle. She's 19, it's her first year living on her own, and in her parents' house, they did not recycle. In her new town, there are only 2 bins, one for recyclable products, and the other one for waste that is going to be incinerated. She is ultra-motivated, and decides that she will make more categories, and go to the public garbage containers. She decides to use the *R-ECO* app that her older sister is using. She opens the app and accesses the main page. She wants to know what type of waste categories are there. First, she clicks on the plastic icon. She reads the description, and learns that some plastics can be recycled, whereas others cannot. "That makes 2 categories already". Then, she goes back to the main menu, and selects the glass category. After reading the texts, she clicks on the map, and discovers that there is a glass container not too far away. She will be able to throw her glass bottles in a dedicated container, cool! She wonders if the soda and beer cans can be recycled. She clicks on the "Home" button and clicks on the metal icon. She then learns that cans can be recycled, but there is no special container for cans in her town. "So, they will stay in the classic recyclable bin".

Unmotivated: People don't have the motivation all the time to search for companies or categorize everything in place as they should have. Here we can apply our points and discounts to motivate them to gather as many as they can, hence try to go to recycling companies when needed.

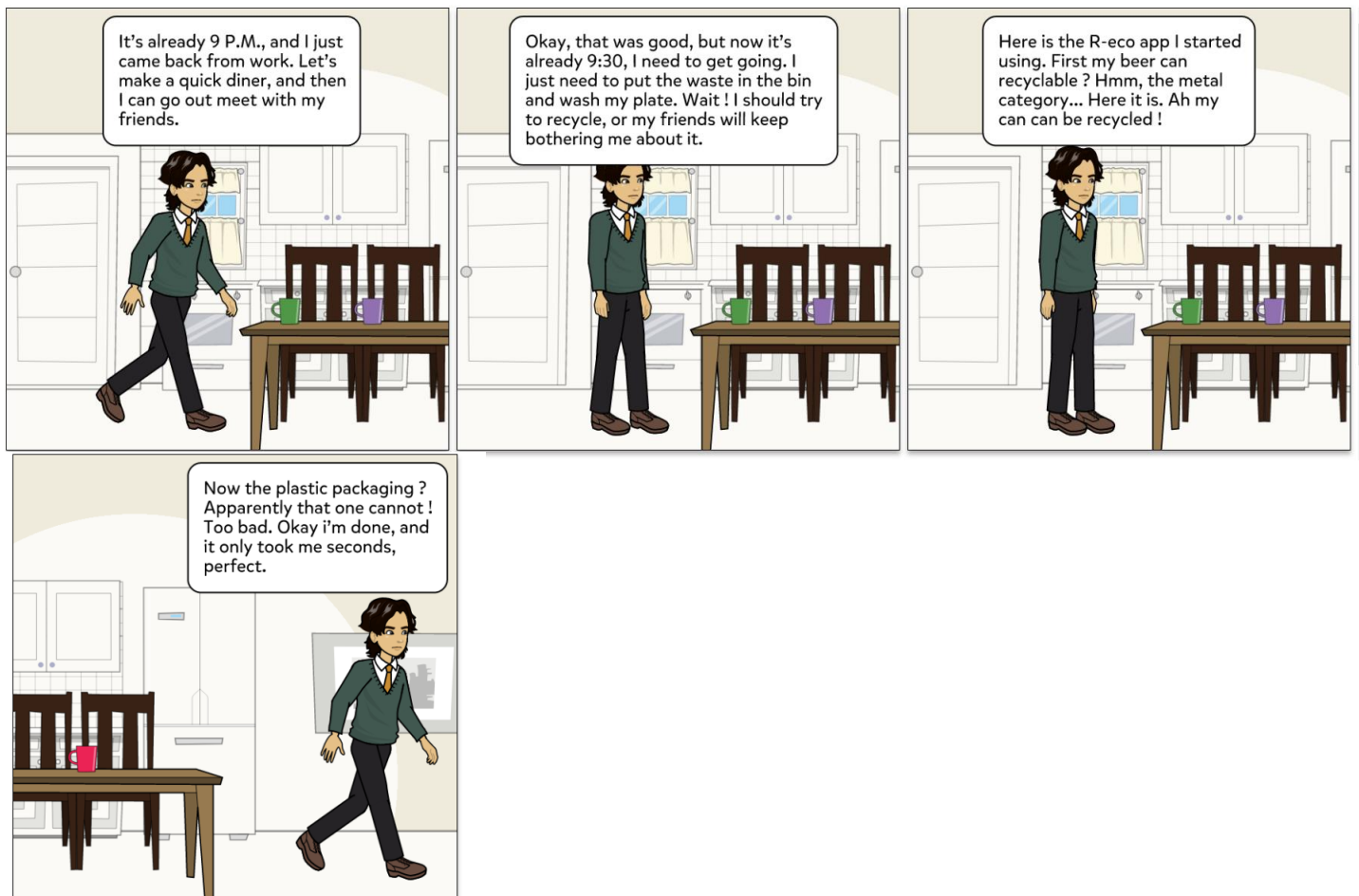
George is 29 years old, he is working in a bank, and he often comes back late at home. Lately, his friends tried to convince him to recycle but he always feels like he doesn't have enough time to do everything. They made him download the *R-ECO* app because "it's the easiest and fastest on" they said. When he's back home, he decides to cook something quick. He cooks some fish and vegetables and drinks a can of beer. When he's finished, he wants to be over with cleaning as fast as possible. He washes the dishes, and then wonders where to throw the waste. He opens the *R-ECO* app. It's not his first connection, so he's already logged in and starts on the main menu. The packaging is mostly made of plastic. So, he clicks on the plastic icon. In the new page, he clicks on the packaging subcategory, and he sees that it cannot be recycled. Then he goes back twice to go on the main menu again. Then, he clicks on metal, to know where to throw the beer can. It's written that the cans can be recycled, so he put it in the recyclable bin. It took him less than 30 seconds, not too bad!

Storyboard for scenario 3





Storyboard for scenario 4



SCENARIOS FOR PROBLEMS 5-6

ELDERS:

Many elders want to recycle, so they download our application, but they do not know how to use it because they are not familiar with mobile applications. This is the case of Pedro, an 83-year-old man who has never had the opportunity to try mobile applications because until now he had used a landline phone at home to make calls to his relatives, but on his birthday, his children and grandchildren decided to give him a cell phone so that he can integrate with new technologies and entertain himself when he does not have family or friends nearby.

Pedro has always been in favor of recycling and decides to install *R-ECO* app, even though Pedro has never used a mobile application, Pedro manages to get familiar with *R-ECO* app because the typography, colors and elements such as buttons, dropdowns and links have been taken into account when designing the interfaces.

When Peter first opened the app, he didn't know what he would see, but after registering and authenticating, he saw colorful images that remind him of all the products he wants to recycle.

When Peter tapped on the item he wanted to recycle, he could choose to learn about the product or choose an area to recycle it.

PEOPLE WITH VISION PROBLEMS

There are people who suffer from vision problems but wish to recycle using *R-ECO* app, such problems can be for example: color blindness, myopia, astigmatism, blindness, ...etc.

An example can be seen in one of our users:

Maria, a 43-year-old woman who has two children but suffers from color blindness, Maria wants to recycle and teach her children how to keep the world clean.

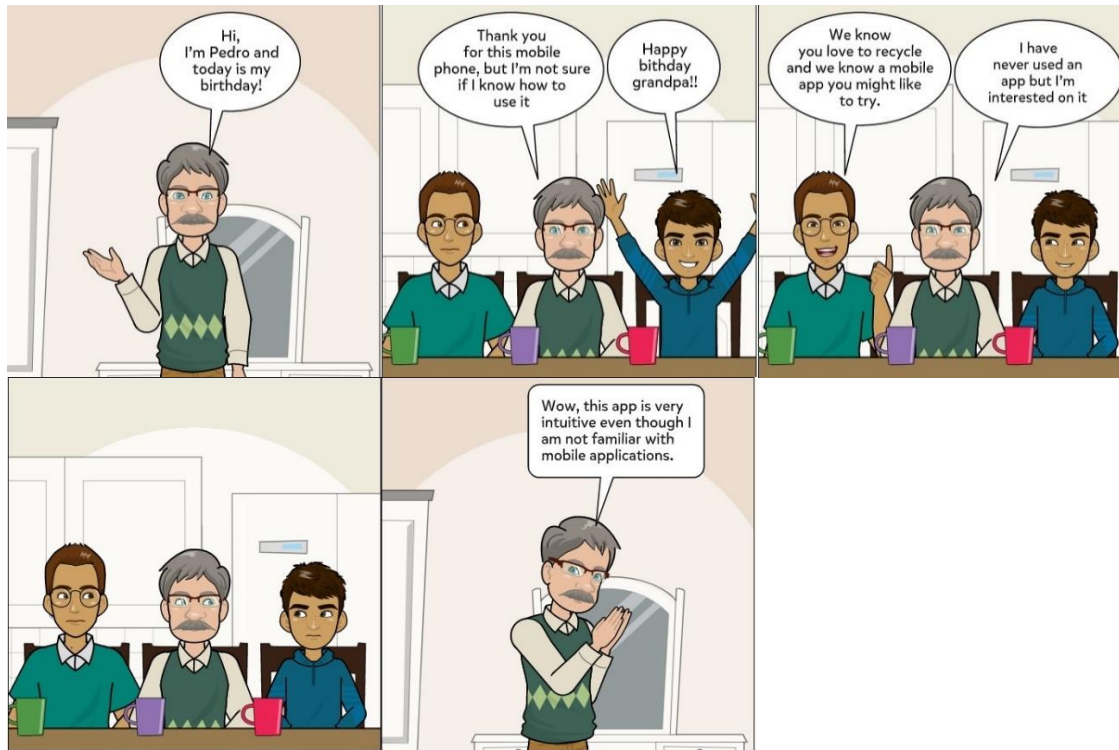
It is very difficult for Maria to use normal applications because it is not common to find applications that have a section for people with color blindness, which is why Maria often feels uncomfortable with the general use of mobile applications.

To try to attract a special audience like Maria, a button will be created that transforms the general interfaces into special interfaces where there are changed elements such as colors in order to improve the user experience with *R-ECO* app.

Another example of a visually impaired person is Laura, a 13-year-old girl who suffers from blindness, for Laura is very complicated to use mobile applications because she cannot see the screen of cell phones, which is why *R-ECO* proposes a voice system that directs the user to the nearest recycling point, thus allowing people with vision problems to recycle.

When Maria and Laura go to register in the application, they will find a configuration button on the top right-hand side of the screen, in the configuration section where they will be able to find their user account, the accumulated points, the language and a drop-down button where they can select the visual disability they suffer from, so the application will adapt to the user's needs to improve their experience.

Storyboard for scenario 5



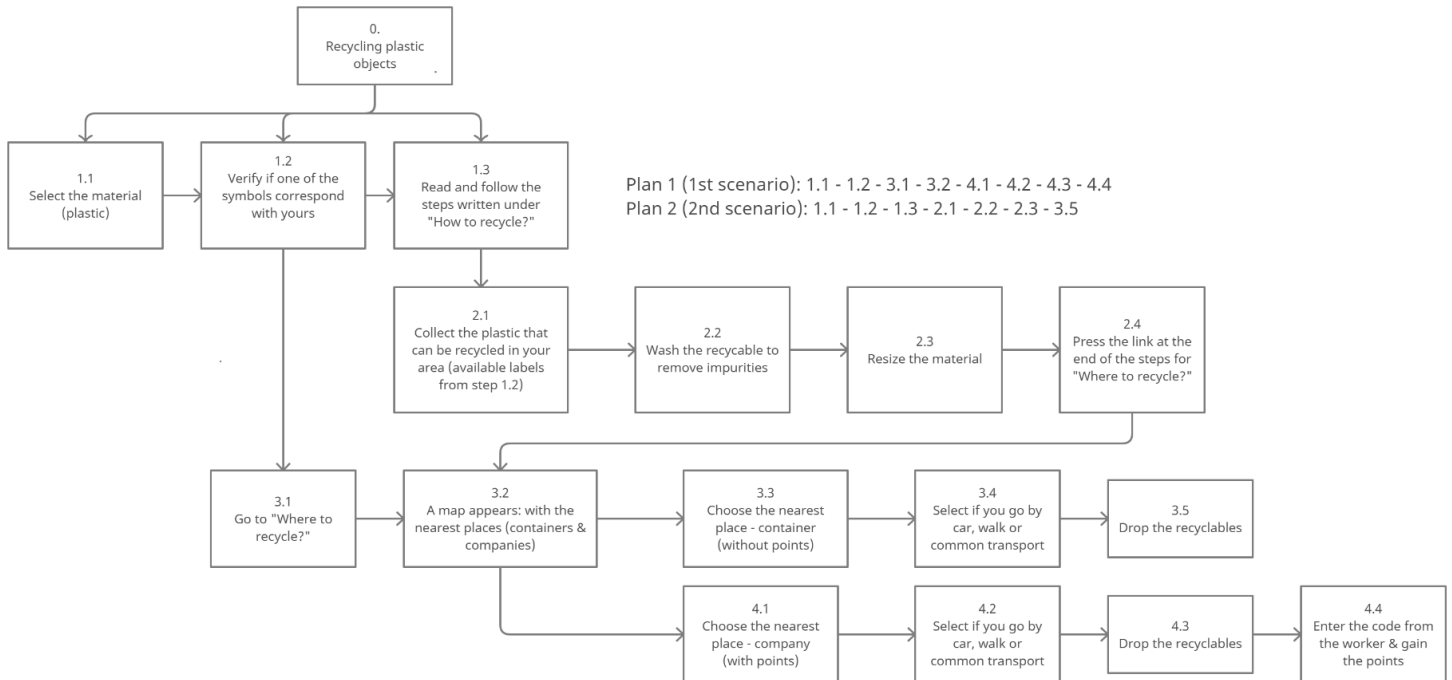
Storyboard for scenario 6



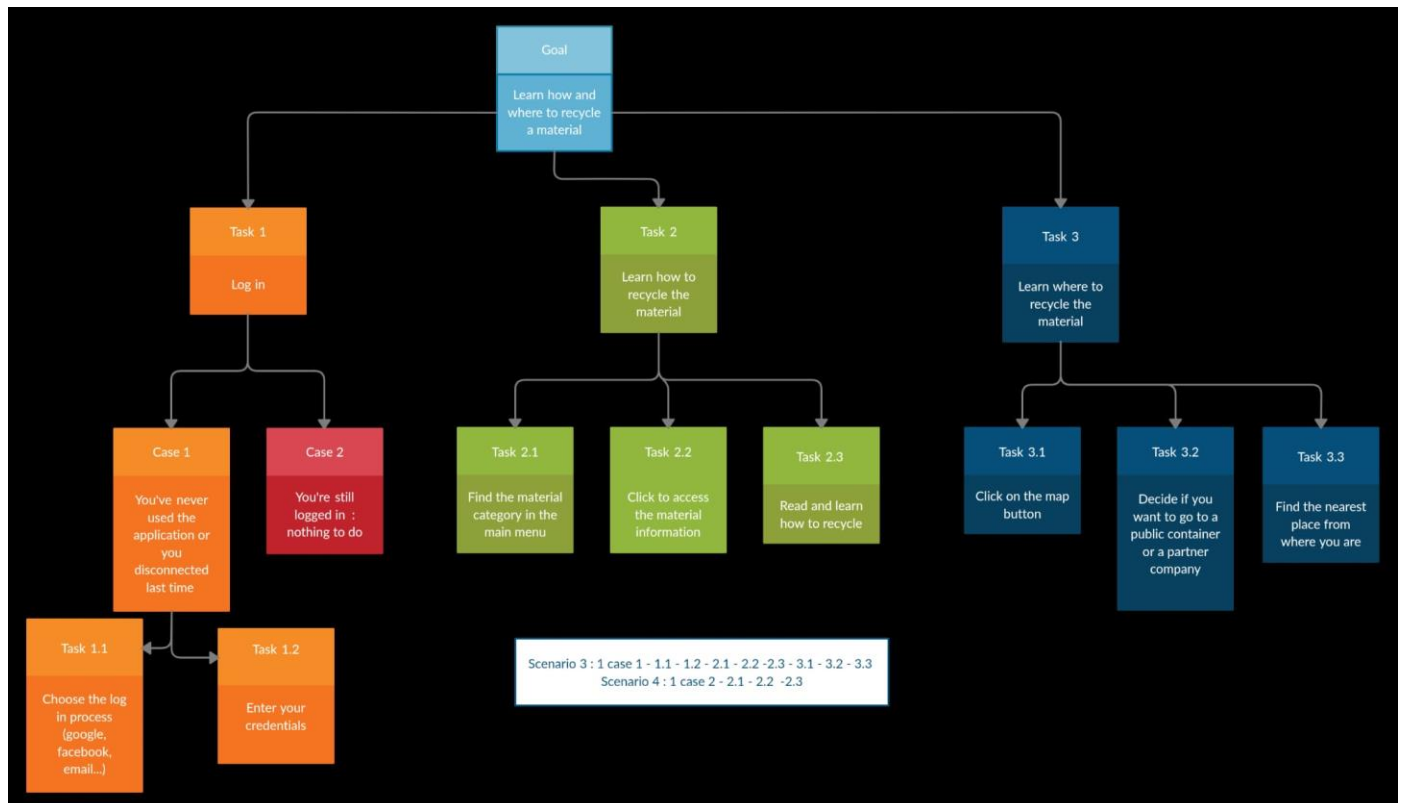
2. Model of the future solution

2.1.Task description (HTAs)

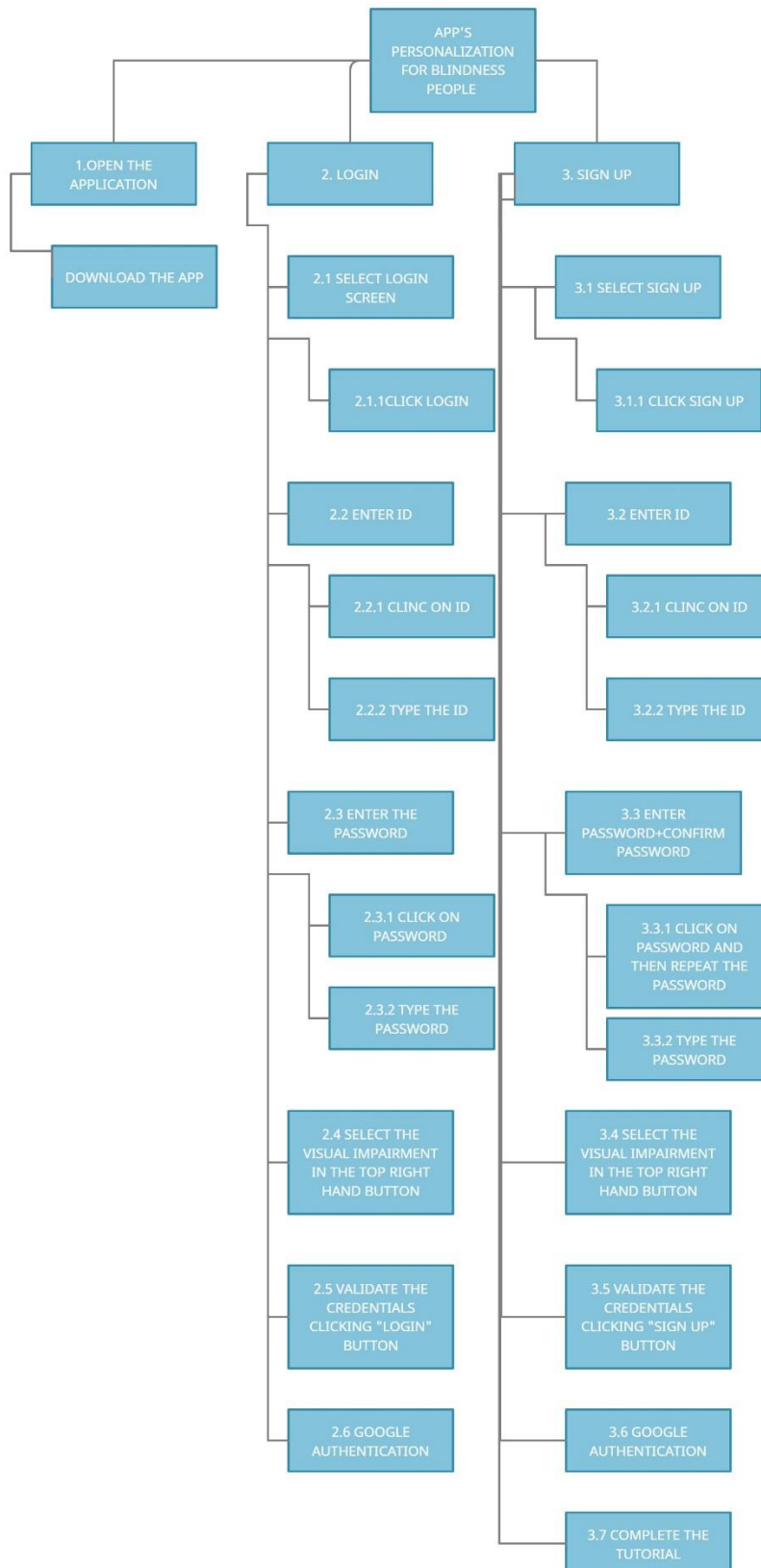
HTA FOR SCENARIOS 1-2



HTA FOR SCENARIOS 3-4



HTA FOR SCENARIOS 5-6



Plan for colour blindness scenario(if the user has an account&doesn't want google authentication):
1.1 - 1 - 2.1.1 - 2.2.1 - 2.2.2 - 2.3.1 - 2.3.2 - 2.4 - 2.5

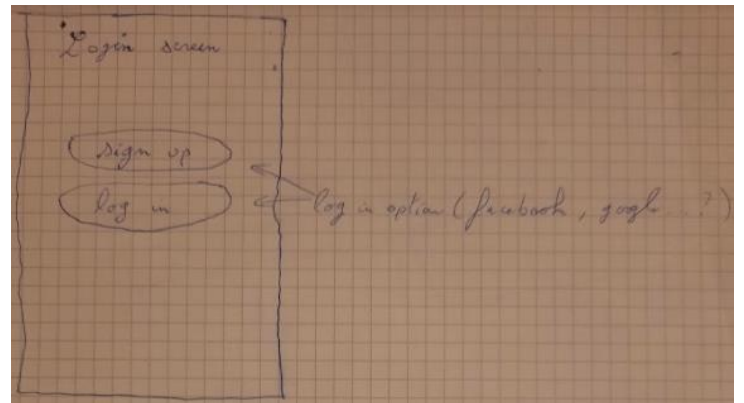
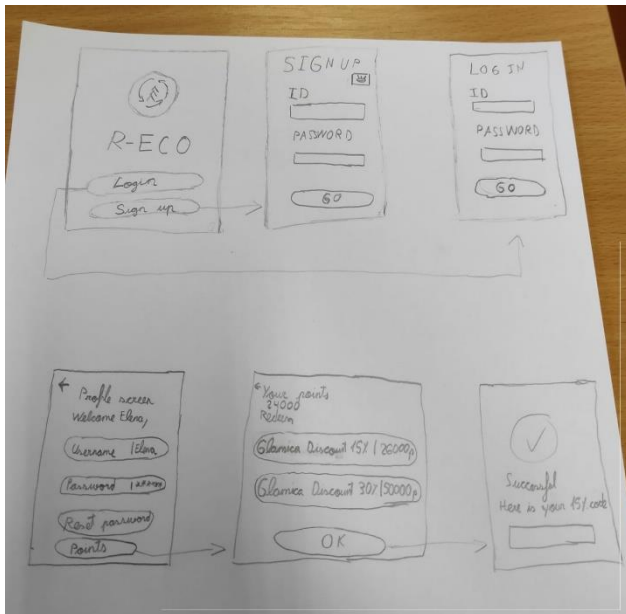
Plan for colour blindness scenario(if the user hasn't an account & doesn't want google authentication):
1.1 - 1 - 3.1.1 - 3.2.1 - 3.2.2 - 3.3.1 - 3.3.2 - 3.4 - 3.5 - 3.7

Plan for colour blindness scenario(if the user has an account&wants google authentication):
1.1 - 1 - 2.1.1 - 2.6

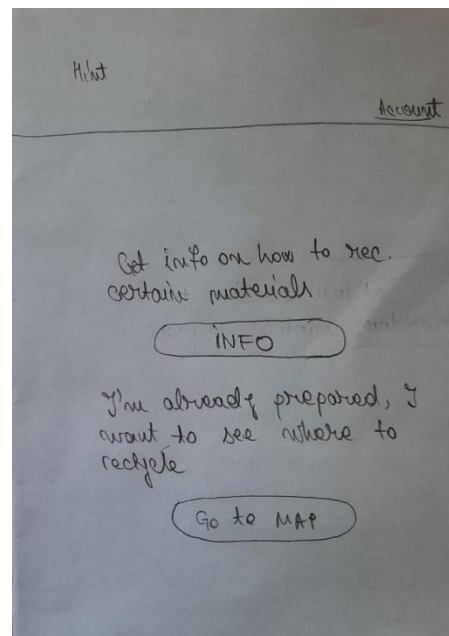
Plan for colour blindness scenario(if the user hasn't an account&wants google authentication):
1.1 - 1 - 3.1.1 - 3.6 - 3.7

2.2. Sketches of main design ideas

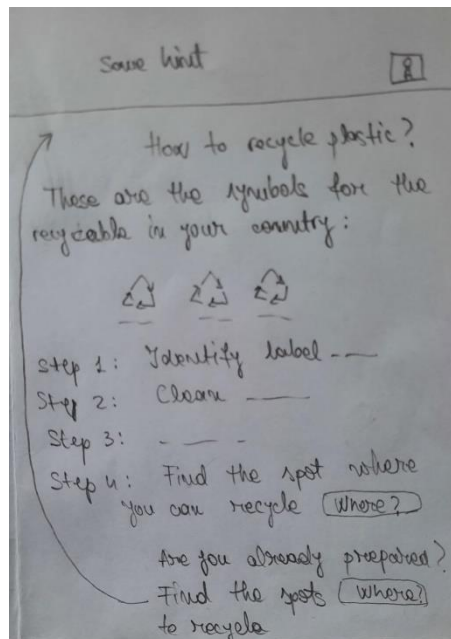
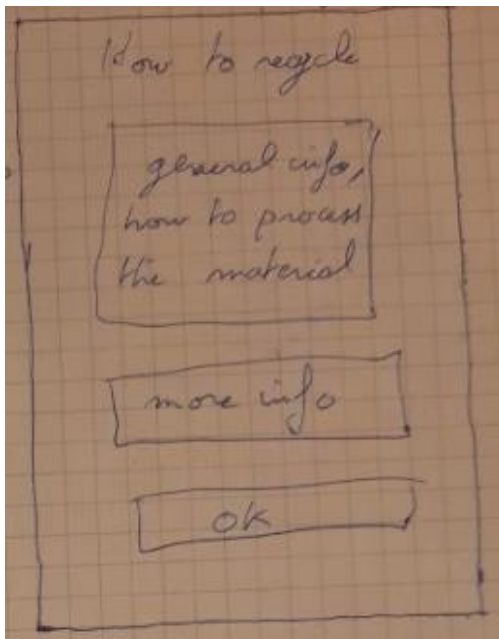
Login/Sign-Up/Account Sketches



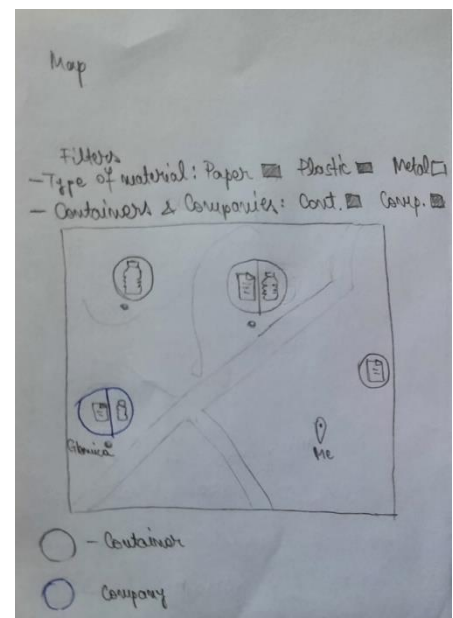
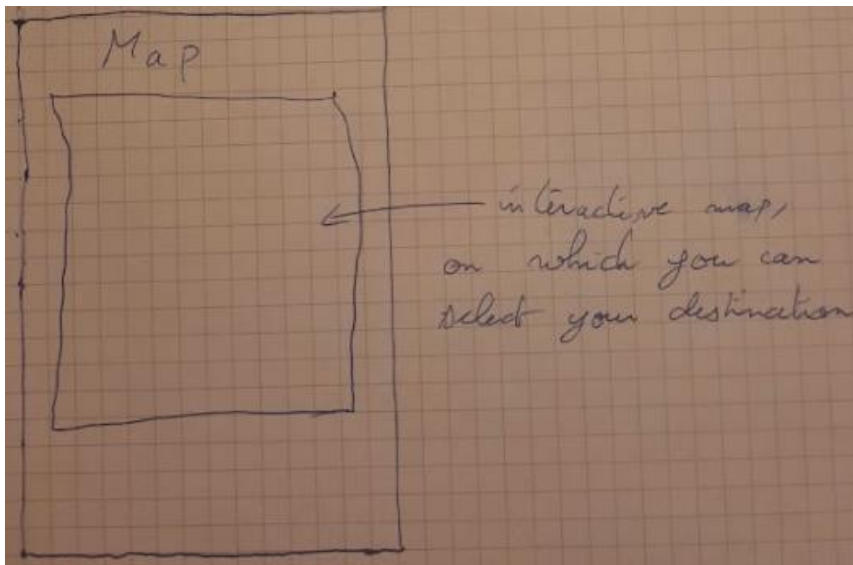
Main screen Sketch



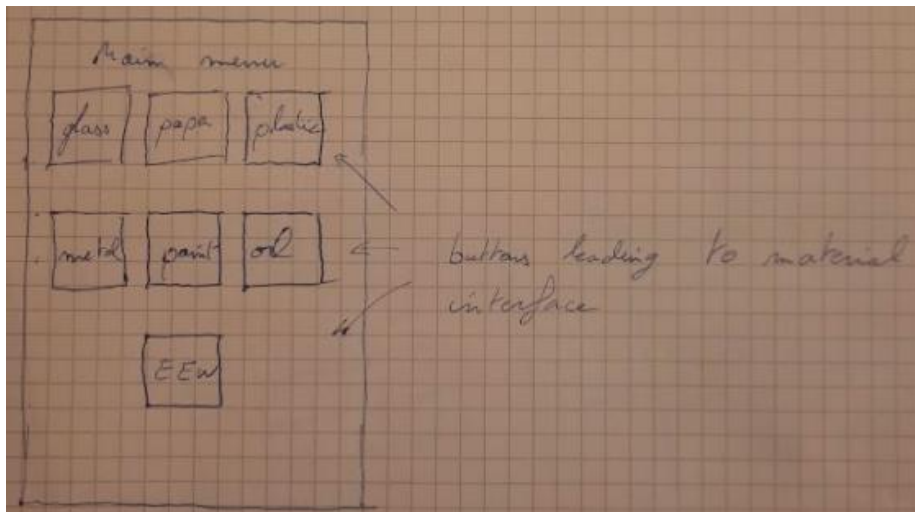
How to recycle/info Sketch



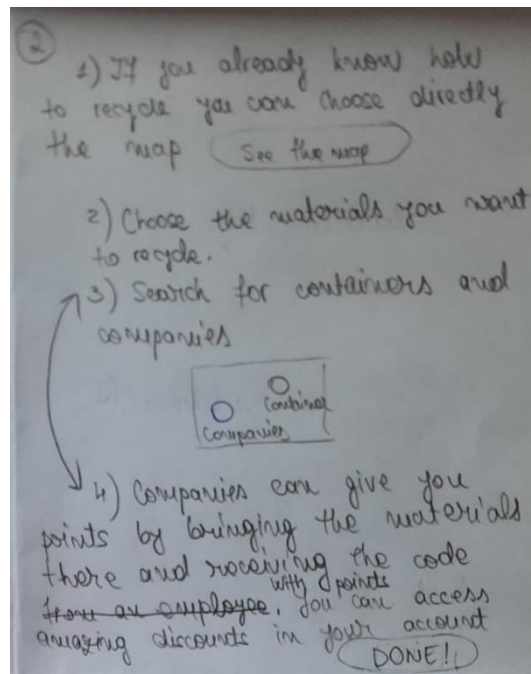
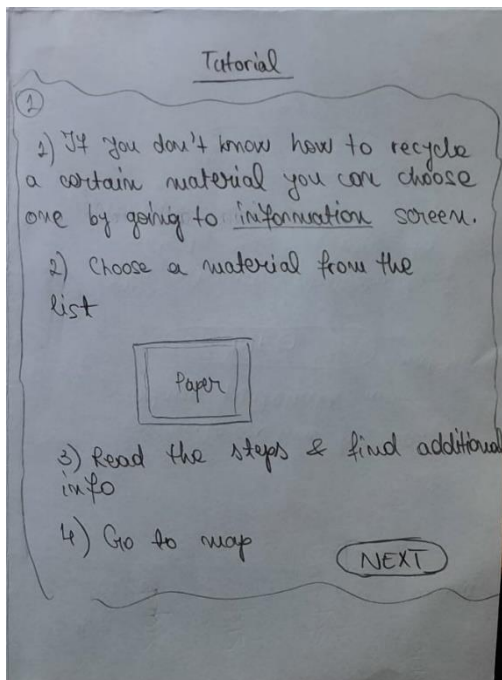
Map Sketch



Menu Sketch



Tutorial Sketches

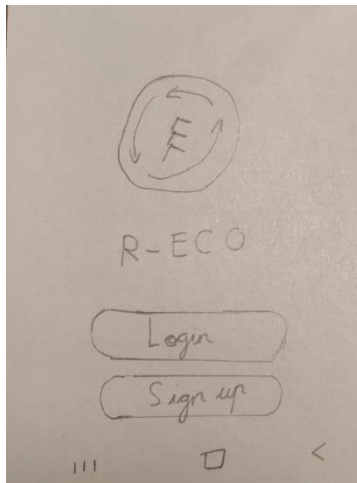


3. Paper mockups of the future solution

In this part we will also include the previous mockups which had been modified during the design process. We will compare them with the final mockups and will also give explanations on how the final part of the design solves a specific problem.

First screen

(final)

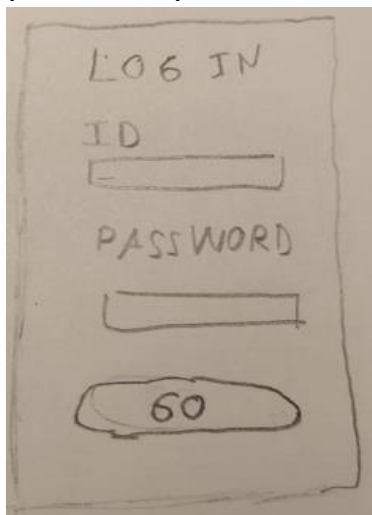


The first screen will include 2 buttons Login and Sign-Up and our logo.

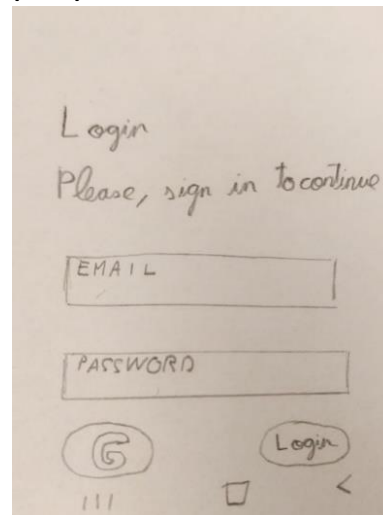
This screen will only appear the first time when you are not logged in yet.

Login screen

(intermediate)

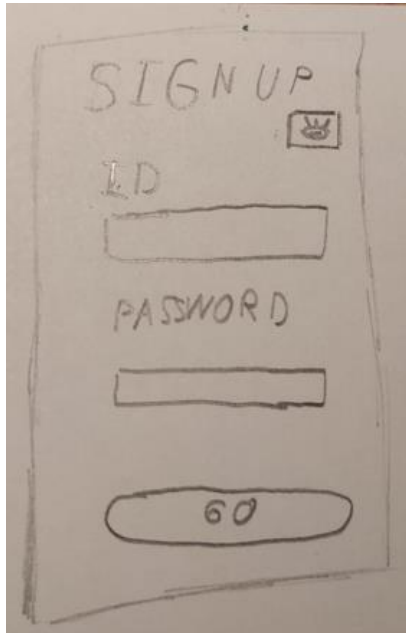


(final)

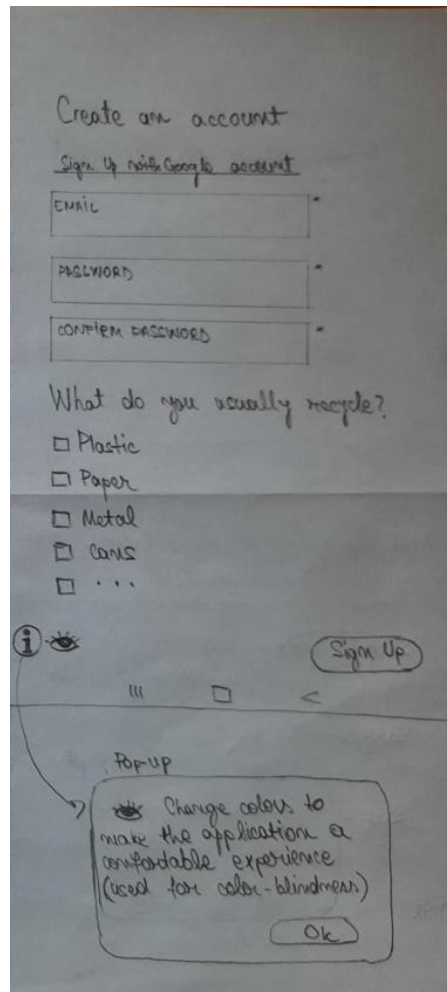


If you already have an account, you can go directly to the Login screen. Also, we added a button for login with the Google account (because we implemented it in the sign up as well).

Sign-Up screen
(intermediate)



(final)



The Sign-Up screen will include the basic authentication details and a simple question about what the user is usually recycling. This will help us personalize its account even before gathering information about its tendencies and history.

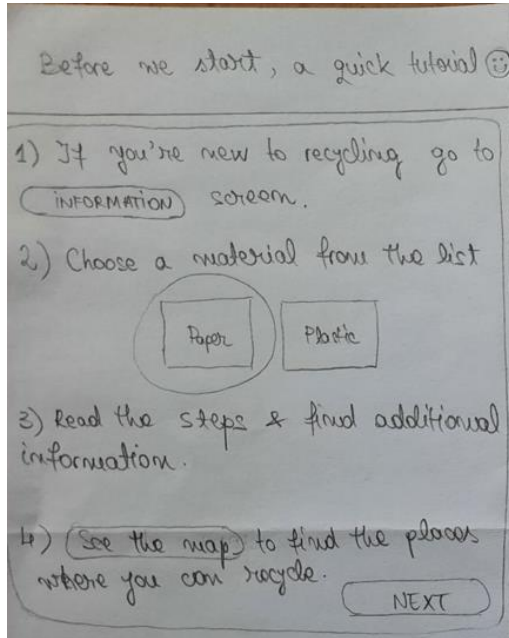
Beside knowing our future user better, we also included a button for the color-blinded people to change the colors for the application before entering. As the sign can be confusing for some, we added an information icon which pops-up the window above and tells the user what the "eye" means.

The user can also sign up with his google account, in this way, we can gain more information about his preferences.

Tutorial screens

For our first design we didn't include a tutorial. After trying to use the application through our mockups, we realized that some of our features (such as filters for the map, how to gain information on a material, what is the difference between a company and a container and how to have more points) weren't clear without some previous explanations.

Tutorial 1 (final)



Before starting our application, we want to give our users some simple information, that could be written shortly in a tutorial. This will help us not to put too many buttons for information aspects.

In the first page of the tutorial, we explain them how to access the information about recycling.

*Note: The *Information* and *See the map* buttons can't be pressed in the tutorial. They are just images of the button to better emphasize the main screen.

Tutorial 2 (intermediate)

We're almost done...

5) If you know how to recycle, you can directly See the map

6) Select the materials you want to recycle

Plastic ☒ Paper ☐ --

7) Select the place

☐ Company ☒ Container ☒

8) • Bring the materials to a company

- You will receive a code from an employee and gain points
- These points will give you amazing discounts that can be seen in your account.

☐

9) We still want you to find any place where you can recycle so you can go to a container when you don't have time or you don't find an available company.

DONE!

(final)

We're almost ready...

5) If you already know how to recycle, go directly to See the map

6) Select the materials you want to recycle

☒ Plastic ☒ ☒ Paper ☐ ...

7) - You can choose a company for your preferred place.

- Bring the materials there.
- You will receive a code from an employee and gain points.
- These points will give you amazing discounts that can be seen in your account.

☐

8) - We still want you to find any place for recycling.

- You can choose a container when you hurry or don't have available companies around.

9) Select a place

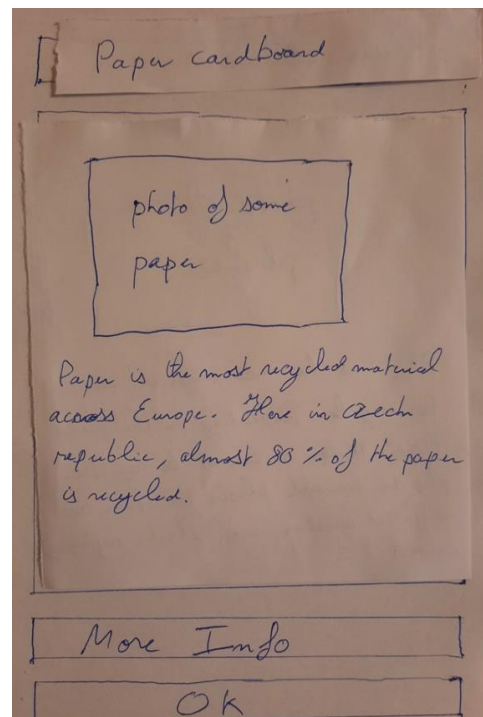
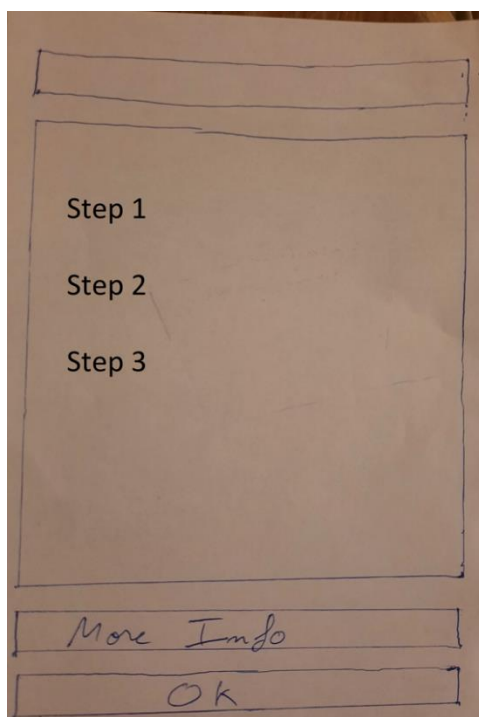
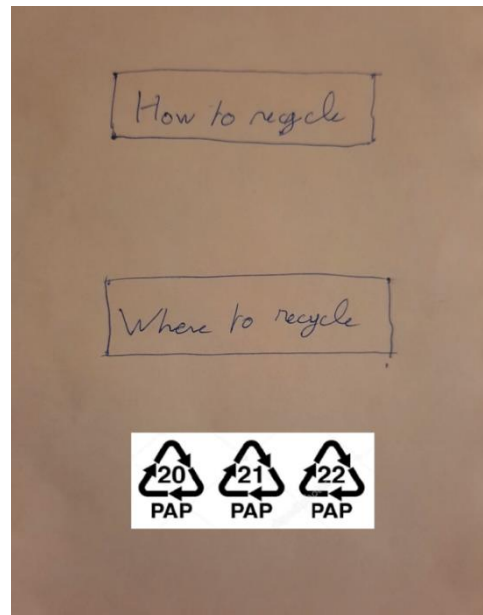
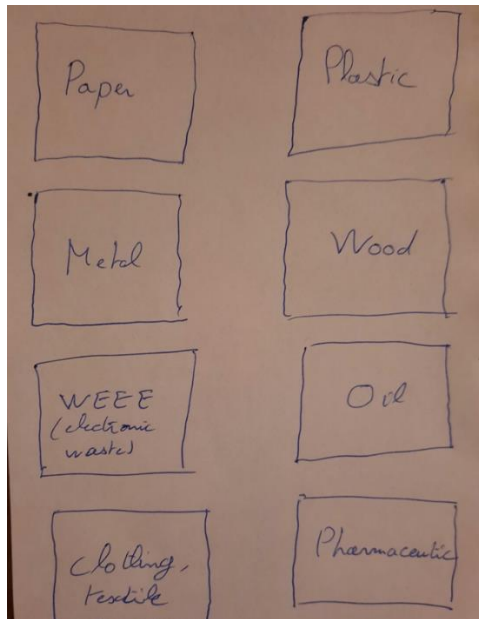
☐ Company ☒ Container ☒

DONE!

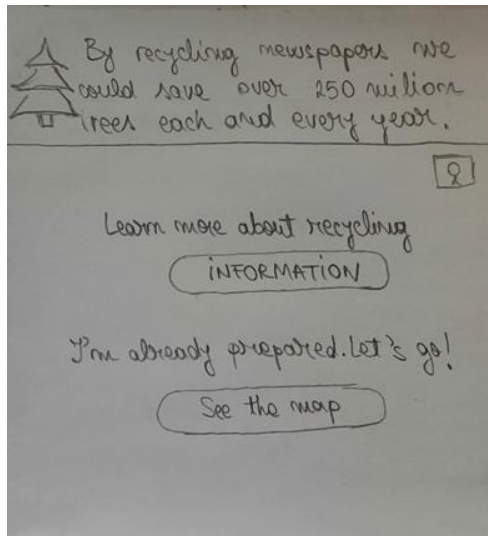
In the second part of the tutorial, we make the user more acquainted with our map (how to choose filters for materials and filters for places). We also help him understand the difference between container and company that appear on the map. We also changed the order of steps from the first try.

Materials/Information screens (intermediate)

For the first design we tried another order for the screens. The user could firstly see the screen with materials, then reach for the screen with Information and Map buttons. The map will show the user where he can find containers for that specific material, and it would have prevented him to choose more materials. Also, he would have had to pass through an intermediate screen (materials) just to access the map which wouldn't have been convenient if the user already read the information about a material and just wants to find a place for recycling.



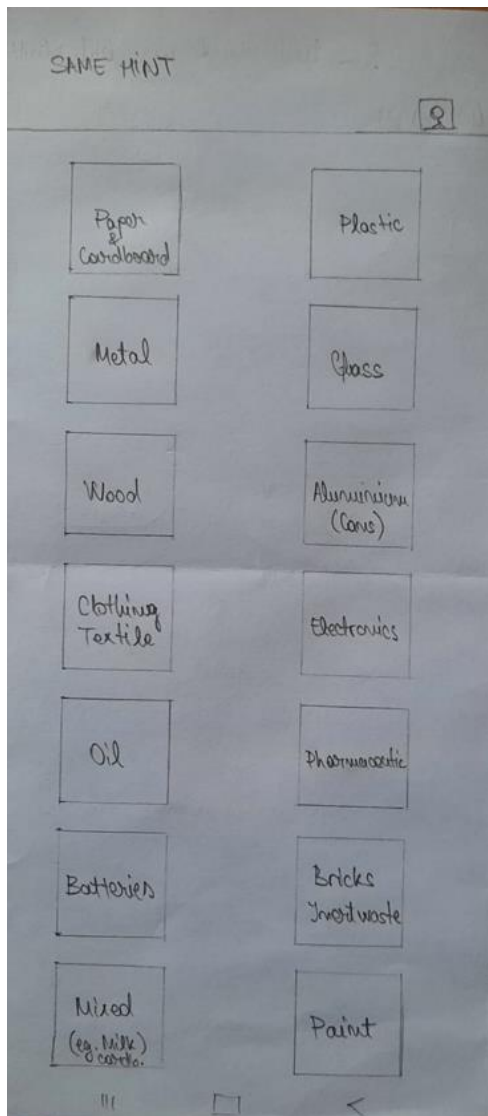
(final)



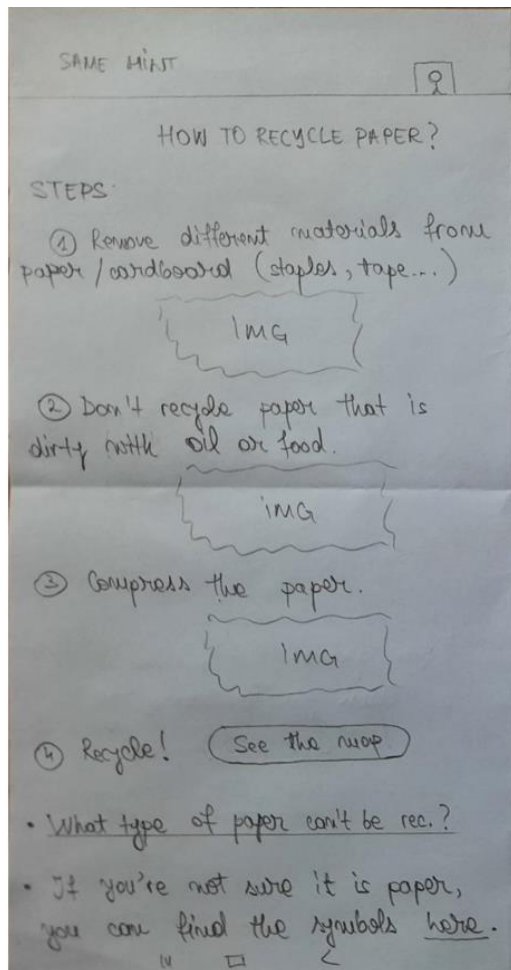
In this main screen, the user can access the information, but, if he already knows about recycling and wants to find the places, he is free to directly see the map.

After entering the account, we can give the users some hints in the top of the screen. Based on his history and experience with the app, we will personalize the messages accordingly. This will be available on some of our screens and will change each day for not making them too overwhelming.

These hints will help us give some important information about the environment without creating a separate section. We will keep them attractive and personalized.

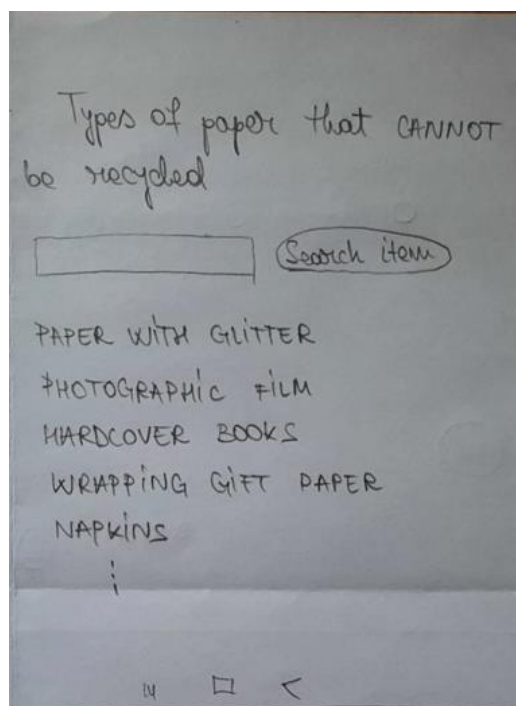


If the user selects the information button, a screen with images will appear for each material that is recyclable in his country. He can select one of these and get the steps for recycling that specific material.

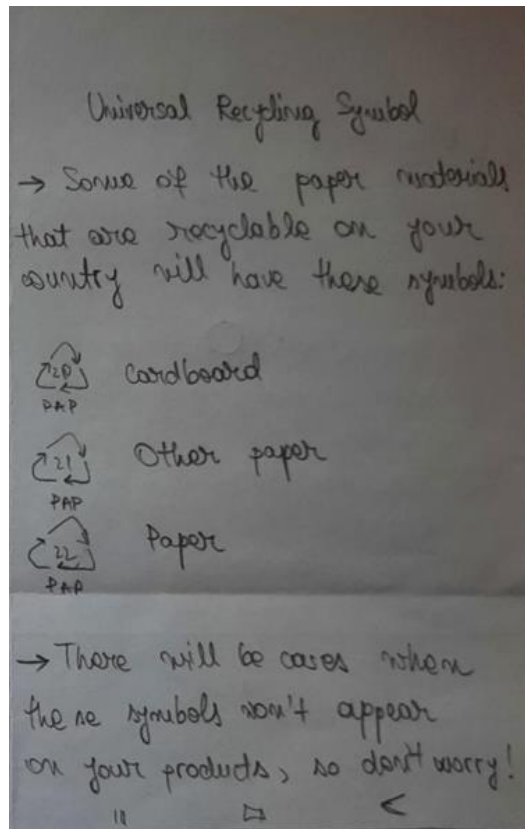


For paper, we can have the following information. We first provided the steps, in this way, if he is in a hurry or doesn't want to read too much (or already knows some things about that material), he can just see the most important part. Here we will give suggestive images for a better understanding of the steps.

If the user wants to read more, we provided two more links at the end of the steps: a list with what types of paper (or that specific material) can't be recycled and some information about the symbols that appear on recyclables.



If we want to find out what types of that material can't be recycled, we will have a list of those items. There is also a text box for searching a specific item.

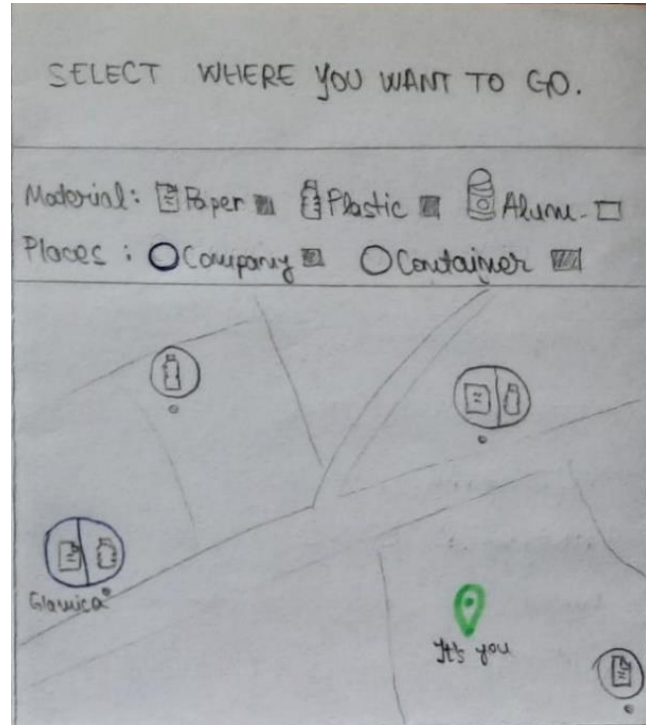


For knowing more about symbols (the ones that are recyclable in their country), we provided a different section with short explanations.

Map screen
(intermediate)



(final)



The map will show the user different filters (if he wants to go in one place for more recyclables) and what type of places exist (in terms of companies and containers). If the user will open the map from the main screen, no filter will be selected. On the other hand, if he opens it after he reads the steps for the specific material, we will select that filter for him.

The map will include icons in the filter and map. In this way, we will avoid confusion (if we would have used colors of symbols). The different colors will only specify if it is a company or a container.

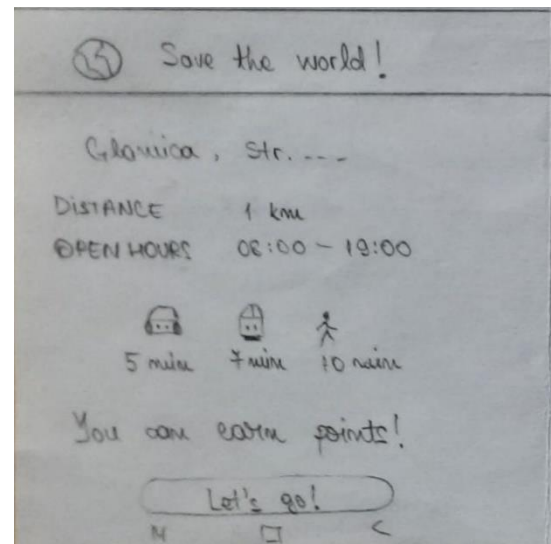
Even if he selected paper and plastic, we still maintained the separate containers in order to avoid a message with “no place found” and still have options.

As it can be seen, the first mockup didn't include any filters and was made just for one material.

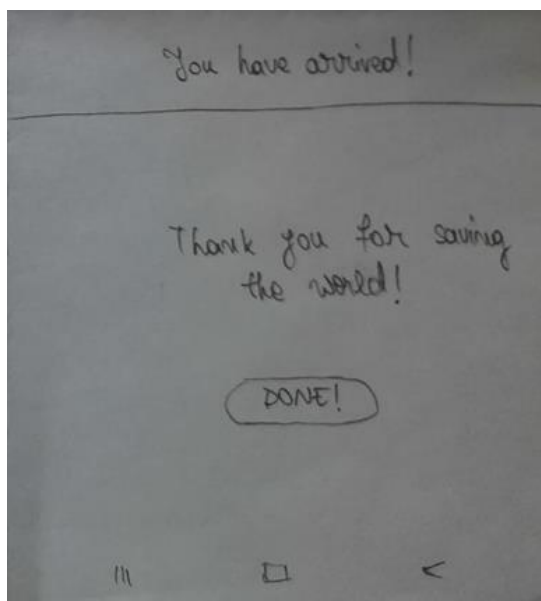
For the next screen (the map features) we didn't change anything, so these are the **final** ones:



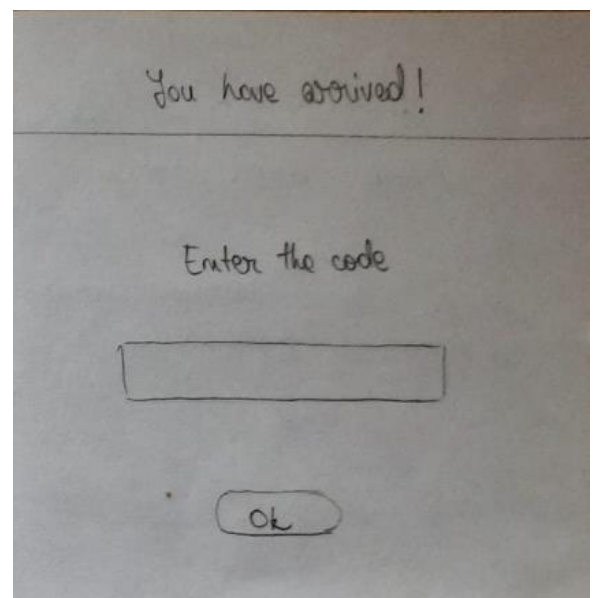
When a container is selected, we will give information about distance and will let him choose if he wants to drive, go with common transport or walk to his destination. After he clicks the *Let's go* button, the route will be displayed.



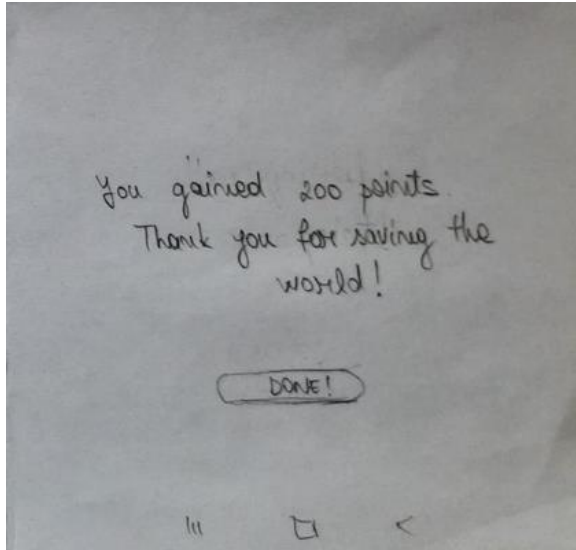
When a company is selected, all the information mentioned before will be displayed along with the opening hours of that company.



When the user arrives at the container, this message will be displayed.

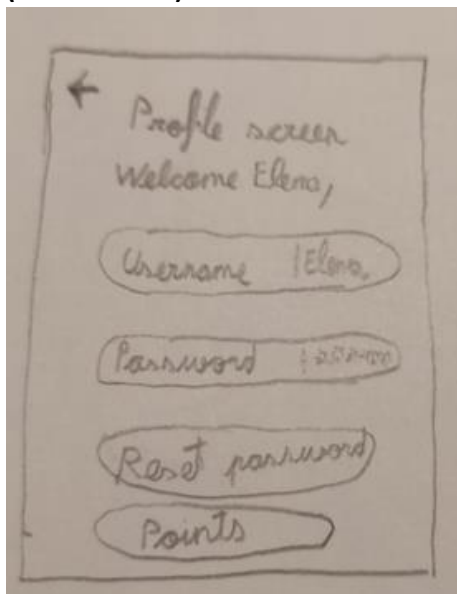


When the user arrives at the company, we will let him enter the code give by the employee.

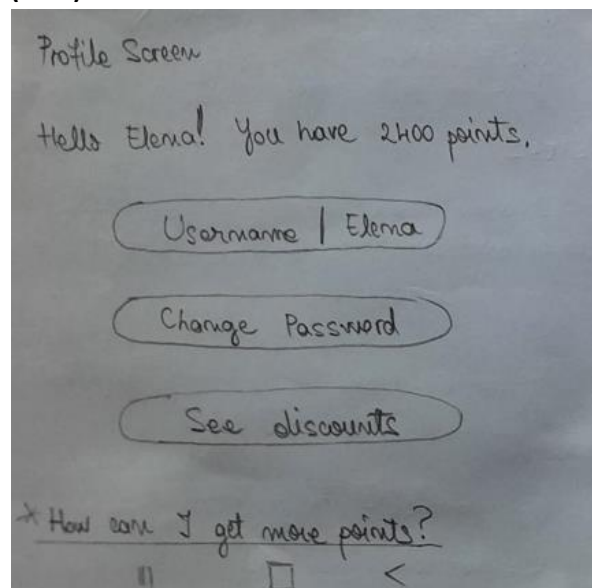


Afterwards, he can view how many points he received from his recyclables.

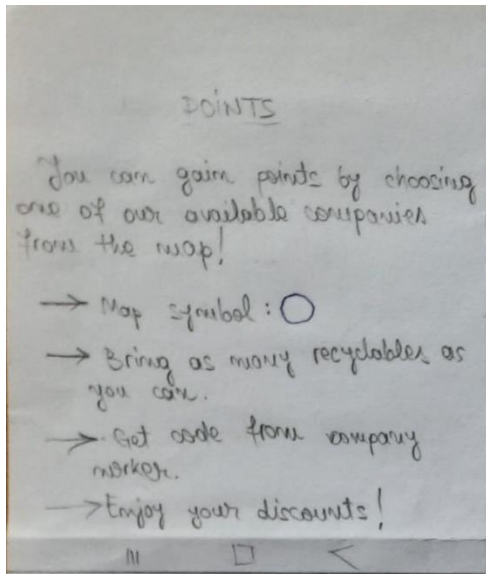
**Profile screen
(intermediate)**



(final)

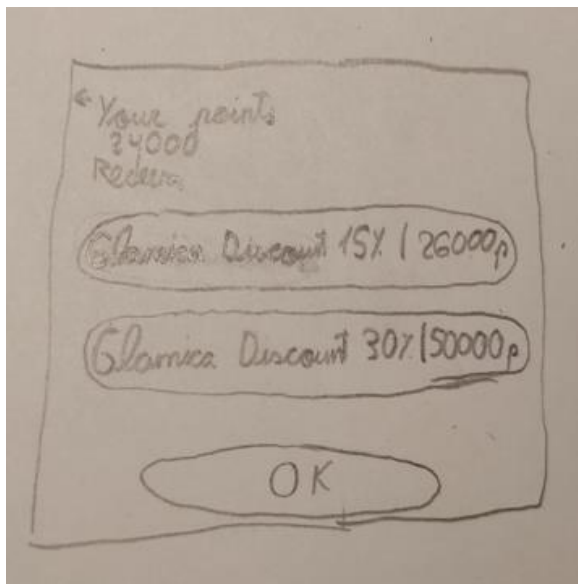


My account screen can be accessed from several screens throughout the way by clicking on the picture icon. Here we can change our username, password and see the available discounts. We can also choose a link that we'll explain once again (beside from the beginning tutorial) how to gain points.

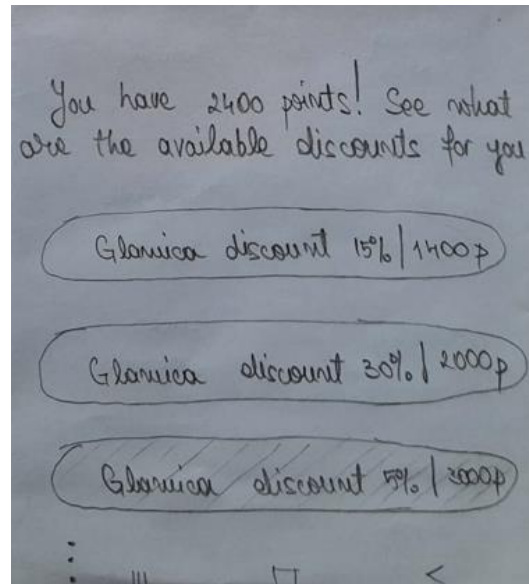


In this screen we can visualize the information related to points.

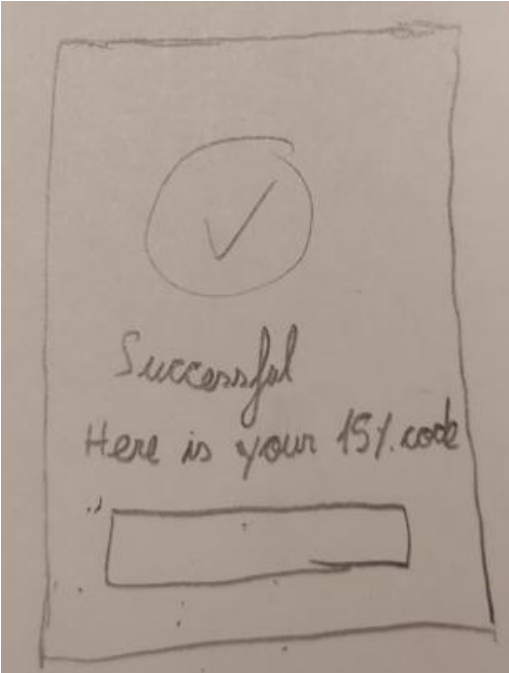
**Discounts screen
(intermediate)**



(final)



These are the available discounts for our user based on his number of points. He can also see the unavailable ones which can't be selected.



After selecting one of the discounts, we give our user the code for his discount.