

USER-CENTERED DESIGN

FINAL REPORT

GROUP 56

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1 Context of use analysis



Characterization of the users

Children aging from 8 to 12, who are still learning about healthy nutrition. They often don't care about healthy food or are just not aware of it. They are very easily influenced (by either their peers or parents). They have much spare time and often pocket money. Lots of freedom regarding spare time and mobility, since there are a lot of bikes in the Netherlands. Their parents often don't have a lot time and sometimes not enough money to eat or cook healthy.

Additional stakeholders

Parents, they are raising the children and giving pocket money.

Teachers, having an exemplary role.

Peers, influence some children by group pressure, they share food (especially easy and cheap food because everybody likes it).

Stores and brands, they make ads and define prices.

Activities that should be carried out

Gaining money in some way (e.g. pocket money). Going to the store, during breaks or after school, to buy food. Choosing what to buy. Purchasing the product.

Bottlenecks in activities of current situation

Going to the store to buy food after school, right before dinner. Children choose unhealthy and cheap food most of the time, because they and the rest of their friends like it. They don't have a lot of money so they buy cheap products and they are usually unhealthy.

Physical, social, organizational and technical environment

Arrangement of products in stores, campaigns, smartphones (e.g. camera), parents/friends/teachers/etc. influence, social media, scannable codes (e.g. QR), DIY scanning, appearance of packing, ...

Experience goals for the target group

Young children lose their interest quickly, so it's important that the action is **exciting** and **rewarding**. They must change their nutrition pattern, so therefore **stimulation** to use the product is important. In order for children to learn something, **interaction** is important. Therefore **engagement** is important. These were the most important experience goals to make a product or service work well for children in our opinion.

Application of notions of effectiveness, efficiency and satisfaction for the case.

Effectiveness: How does the product help in making healthier choices regarding food?

- Providing the right kind of info to raise awareness
- Easy understandable info or feedback
- Applicable in daily life

Efficiency: How has the product to be designed in order to be quick and easy to use, and endure lots of usage without breaking down?

- Simple to learn interaction, without the need of assistance or manual
- Little errors
- Not slowing people down in the activity (in contrast with the activity done without the product)
- Made out of child friendly material. (rubber/shock absorbing edges e.g.)
- Little amount of key-actions needed
- Little amount of buttons needed

Satisfaction: How can the product keep the user motivated in using the product?

- Have the feeling to be in control of the product.
- Usage of the product is attractive (look and feel)
- Noticeable progress so the user sees progress or improvement
- The progress feedback must be a clear indication of progress

2 User analysis

Joint persona hypothesis

Goals:

- Treats (feeling special)
- Fulfill their cravings
- Be healthy
- Acceptance by peers

Roles:

- Children who buy food on their own
- Children who buy food with their parents
- Children who never buy food, and don't ask
- Children who never buy food, but do ask

Behavior variables:

- Frequency of buying food (frequent – infrequent)
- Frequency of buying food with friends (always – never)
- Frequency of buying food with their parents (always – never)
- Desire of sugar/sweetness (addicted to sugar – hates sweetness)
- Discipline to keep at a diet schedule (very disciplined – not disciplined at all)
- Interest in sugar quantity (very much – not at all)

Demographic variables:

- Gender (male – female)
- Age (8 -12)
- Social level (shy – cheeky)
- Race (Dutch – anything else)
- Economical level of parents (poor – rich)

Environmental variables:

- Number of friends (none – lots)
- Location of supermarket to school (nearby – far away)
- Location of supermarket to home (nearby – far away)
- Time parent(s) come home (directly when school ends – after child went to sleep)
- Time of dinner (5PM – 9PM)
- Pocket money (none – a lot)
- Family size (no siblings – many siblings)
- Sort of lunch (healthy – unhealthy)

After we conducted an interview, included in the appendix, we decided to interview both parents and children. The target group is children, think of something to make them eat healthier, but the design case said 'and their parents' for a reason. Parents have a lot of influence on the children and almost decide everything they eat, because they provide dinner etc. That's why we decided to interview a few family's, parents and their children. To observe in what way children are getting motivated by their parents to eat healthy, or the other way around, how they get demotivated. Because almost all the children were very shy, we decided to do a kind of group interview. We've asked kids and parents questions from the interview, but most of the time we just had a conversation.

In this way the kids could talk about themselves and their peers and their behaviour. Not the kids we interviewed had an unhealthy lifestyle but they could tell us a lot about the peers that they have that do have an unhealthy lifestyle. We've interviewed dads and moms and boys and girls. The children were aged between 8-12 about equally divided.

The results of the interviews were quite clear and uniform. Important was that parents sometimes have very little time to cook, especially when the kids need to sport. Almost every child said that they had a friend that is overweight, and a few of them are going to the shop during school hours or just after. Also not everyone wanted to spend a lot of money on the solution, that's also something we're going to think about. At last, parents don't always know what kind of recipe is healthy or what kind of healthy meals they can cook.

We searched for similarities in the interviews and we processed this into the personas, as seen below and on the next page.



BENTE

“I REALLY TRY MY BEST AT BUYING THE BEST FOOD FOR MY CHILDREN.”

Bente isn't very busy with work and therefore she has some time to spend on grocery shopping. She often tries to take her children with her to teach them things about food. She wants to treat her children, but doesn't know how to do so whilst still eating very healthy. She often buys the same products over and over again out of habit, not really knowing what is in those products.

KEY CHARACTERISTICS

- 39 years old
- married
- two children (7 & 9)
- normal work week
- always buys the same
- minimal food knowledge
- average income

GOALS

- buy healthier food
- learn about food
- cheap solution
- change food pattern

QUESTIONS

- Will it be easy and quick to use?
- How much will it cost me?
- Will it be handy to take with me?
- Can my children also use it?

INFLUENCERS

- size
- price
- look-and-feel information

FRUSTRATIONS AND PAIN POINTS

- tries but doesn't work
- trustworthy device
- should be children safe



ELISE

“THERE ARE ALWAYS A FEW ITEMS TO MANY ON MY TO DO LIST.”

Elise is very busy with work and there for doesn't have a lot of time to spend on grocery shopping. This causes her to buy the simple, "safe" and cheap products which she afterwards has her children to eat and take to school. Elise would like to buy better food for her family, but doesn't want to spend more time or money when buying better products.

KEY CHARACTERISTICS

- 41 years old
- married
- two children (10 & 11)
- long work week
- stressed
- minimal food knowledge
- average in come

GOALS

- buy healthier food
- learn about food
- cheap solution
- avoid spending more time

QUESTIONS

- Will it be easy and quick to use?
- How much will it cost me?
- Will it be handy to take with me?

INFLUENCERS

- size
- price
- look-and-feel
- using time

FRUSTRATIONS AND PAIN POINTS

- can't find a solution herself
- trustworthy device

3 Requirements

Functional: The product should clearly inform users of their sugar consumption

Look and feel: The product should look playful and attractive to children from 8 to 12 years

Ease of use: The product should be usable for children from 8 to 12 years

Ease of learning: The product should use simple and clear steps for key tasks that don't need to be learned

User experience: The product should be stimulating for young children

Performance: The product must be shock resistant

Requirement #: 1 Requirement type: 9 (Functional)

Description: The product should clearly inform users of their sugar consumption

Fit criterion: 80% of the users of the target group must know what the information means, and how to apply it

Customer satisfaction: 2 Customer dissatisfaction: 4

Requirement #: 2 Requirement type: 10 (Look and feel)

Description: The product should look playful and attractive to children from 8 to 12 years

Fit criterion: 80% of user within the target group should be curious or attracted to the product by its looks

Customer satisfaction: 3 Customer dissatisfaction: 2

Requirement #: 3 Requirement type: 11a (Ease of use)

Description: The product should be usable for children from 8 to 12 years

Fit criterion: The error rate of performing key tasks should be less than 1 percent for users within the user group

Customer satisfaction: 2 Customer dissatisfaction: 5

Requirement #: 4 Requirement type: 11c (Ease of learning)

Description: The product should use simple and clear steps for key tasks

Fit criterion: After first-time-use, the average time to perform a whole task should be less than 7 seconds per item

Customer satisfaction: 2 Customer dissatisfaction: 3

Requirement #: 5 Requirement type: ? (UX)

Description: The product should be stimulating for young children

Fit criterion: 75 percent of people who use the product for more than a month should've changed their sugar consumption to a healthier amount

Customer satisfaction: 1 Customer dissatisfaction: 4

Requirement #: 6 Requirement type: 12 (performance)

Description: The product must be shock resistant

Fit criterion: The breakdown rate of the product should consider less than 1 percent after 3 months of use

Customer satisfaction: 3 Customer dissatisfaction: 4

Mapping, Affordance, Constraints;

1. Mapping of user interface domain

Good mapping:

A cross to close since a cross through e.g. text means that you want to discard that text.

Bad mapping:

A floppy disk image as a save button. Younger users might not know what a floppy disk is so they aren't likely to immediately see the connection between the two.

2. Affordance

Illuminating buttons at the bottom of the screen imply the ability to press on them.

3. Constraints

Physical:

Earplugs don't fit in the charger hole. There is no "sound output" from the charger hole.

Logical:

"Volume up" is the top part of the volume button, "volume down" is the lower part of the volume button. It is illogical to press the lower part (down) to increase the volume.

Cultural:

A left pointing arrow on a phone means "a step back". From a young age you were taught to read from left to right so it is logical that going left means going back, since by doing so you will read something that you have already read. In case of your phone this will result in seeing something you saw before.

Perception – Cognition - Action Cycle

Perception:

- Users could be colorblind so the product shouldn't merely depend on color.
- If the concept uses text, the letter size should be appropriate for all users within the user group, this could affect the display size.
- The sound, if applicable, should not be disturbing. It is likely to be used in public spaces.
- There should be a clear contrast between different layers. This could be different colors, sounds, vibrations etc.

Cognition:

- The vocabulary of 8-12 year old children is most likely limited so the product shouldn't use complicated language.
- The users are expected to be able to read and speak their local language, because of this the product can capitalize on their linguistic skills.
- Users can also be expected to have experience in using modern technology this means that we can implement for example touch screens in our design.
- Different colors could have different meanings, e.g. red means bad and green means good.

Action:

- Young children often have smaller hands, this implies that we need to keep the dimensions of the design relatively small.
- A child's curiosity can often result in inappropriate usage of for example buttons. We need to make sure that our design can handle these interactions without breaking down or crashing.
- Input could be through buttons/keyboard, touchscreen, scanning, voice, gestures etc. since most children nowadays are well acquainted with modern technology.

4 Scenarios and QOC analysis

Scenario

The family Johnsen consists of four people. The parents Elise (41) and Rob (49), and their children Jimmy (11) and Jane (10). Both parents work a lot, so there is not much time for shopping. When Elise does grocery shopping, she likes to know what products are simple, but also healthy. She doesn't want to serve food her children don't like. Jimmy is very picky with food, so when she goes shopping she enters some details about the kind of food she's looking for in the device, and in that way, she quickly finds the things she needs. Sometimes, Jimmy goes with her, and then he can use the device. He finds it fun to use, and sees what he (or his mom) is buying. The device also gives some alternatives, or variations. Which Elise uses to cook varied suppers.

Concept

A food/product scanner provided by the supermarket.

Use case: retrieve a varied set of products for supper (goal)

1. The system shows a start screen with simple steps to start
2. The user follows the steps
3. The system shows personalized suggestions by default
4. The user chooses a suggestion
5. The system shows total price and nutritional values of the chosen suggestion, with a list of products to buy underneath. (ordered from close by to far away relative to the device)
6. The user confirms this suggestion
7. The system adds all the products to a digital shopping list
8. The user searches the products
9. The user scanned the products from the list
10. The system discards the found products from the shopping list on the device
11. The system keeps track of the total price
12. The user scanned all the products from the list
13. The system shows the personalized suggestions again

From here the cycle could start over again, or a different task can be executed.

QOC analysis

Interaction problem; How can... the system obtain information about the key nutritional values, based on which the user can decide whether to buy a product or not.

1. A portable device than scans the barcode of the product
2. Token that fits in a specific spot, which is connected with a product (keychain). In this way the product knows what product it is, and it won't cost a lot of time.
3. A display on which you can search and select a specific product somewhere in the supermarket.

Clear feedback (5)– Product would be useless if the feedback isn't understandable for the user.

Low user effort (4)– Handling must be quick, and simple, since users don't want to spend much effort in a sub task, when their main goal is to buy food.

Easy to use (2)– Children as well as parents should be able to use this product, without having to learn it.

Flexibility in location (1)– Product shouldn't be bounded to a specific location, since the arrangement of a store often changes.

Costs for the user (2)– According to conducted interviews, not every potential user would want to spend money on a product like this. The more it costs the user, the smaller the target group.

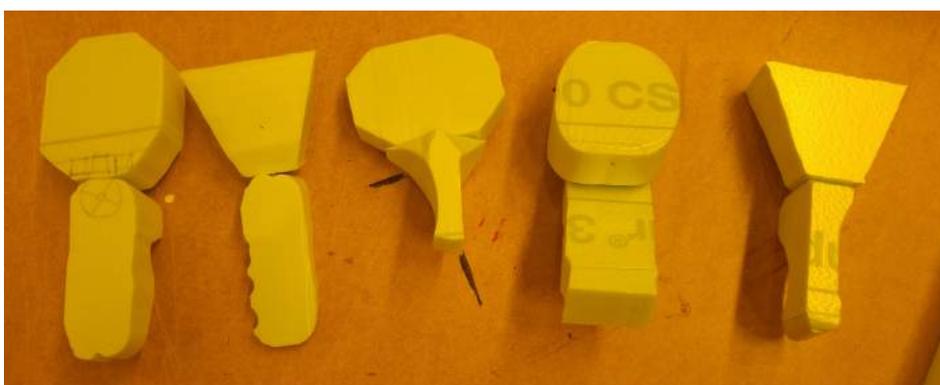
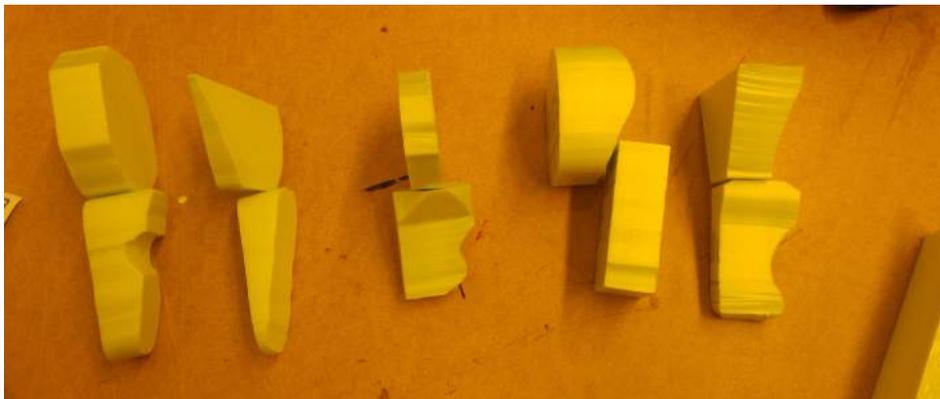
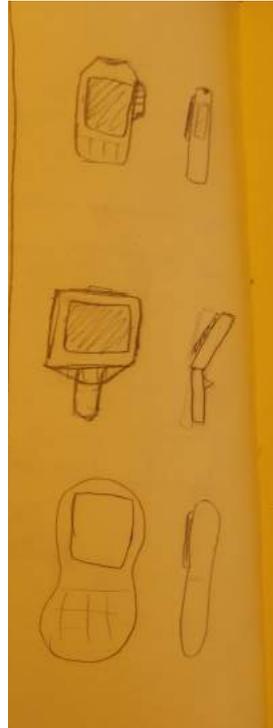
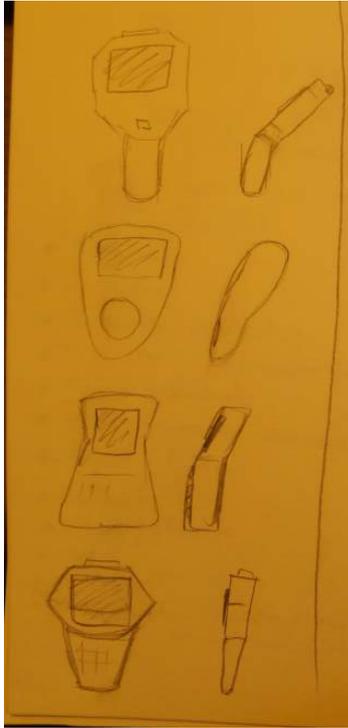
Criteria		Scanner		Token		Display	
Clear feedback	5	Can implement text color symbols. Scanner and display in the same product. More personal. Screen not that big.	4/5	2 products instead of 1. More personal.	3/5	Can implement text color symbols. Bigger screen for more information.	2/5
Low user effort	4	Barcode not always easy to scan. Takes a little more time than the token, but you'll get immediately feedback on your screen.	3/5	Where do you have to stick your token? Fast.	4/5	First you have to search for the display, then for the specific product, therefore takes a lot of time. For every product you have to go to the display.	1/5
Achievability	2	Supermarket doesn't need to change anything to the databases barcode etc. When the user buys the scanner themselves the feedback can't	3/5	A lot of work to install all the chips and when you have fittings, they'll get dirty. You can only use the token in supermarkets	1/5	Less effort for the supermarket because they only have to buy a few screens. When you only have one display in one supermarket it's already useful.	4/5

		get too personal because prices of products etc. are not available for everyone. When the supermarket provides the scanners, the user can use all the information.		where the system is used.			
Flexibility	1	Barcode is widely used, so when anything changes in the products the scanner doesn't need to be updated. Easy to update for bonus product, when connected to internet. Without internet the product won't work.	3/5	Not flexible, since all the chips have to be updated when a product changes. When the setup of the store changes, all the slots have to be relocated as well. Without internet the product won't work.	1/5	The display is independent to the arrangement of the store. Also, when products change, the display can get easily updated through the internet. Without internet the product won't work. Can get connected to cable, that makes the connection more stable.	4/5
Costs for the user	2	A product already has a barcode, so you only have to buy a scanner, or just use when it's a service. There is a database. No change in logistics.	4/5	More expensive to buy chips and/or the device if it's not a service in the supermarket.	3/5	No costs for the user, but for the supermarket there is.	5/5
Total			49/70		40/70		36/70

The best outcome is the scanner. At first we thought that the scanner would win by far because of the ease of use but by using the table we came to new insights, for example the costs for the user. Over-all the scanner is still the best choice because of it's respectively good feedback and low user effort, which are the most important criteria.

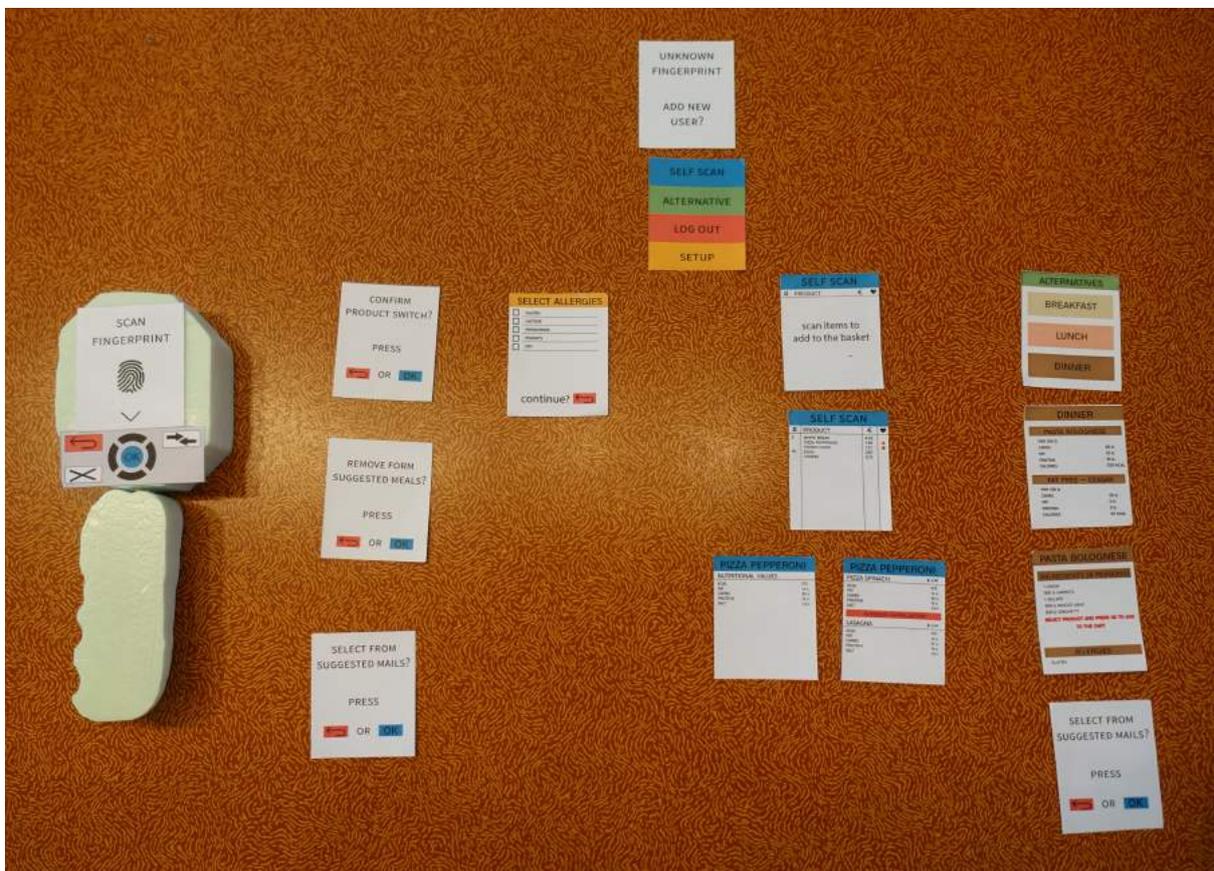
5 Prototyping

We first made some sketches of scanners, after the sketching we made the sketched prototypes out of foam.





We used a paper prototype, and filmed the interview so we could observe the actions more accurately.



The user effort is one of the most important criteria and it is also easy to validate with a tactile prototype.

Possible design questions are:

- With which layout can users achieve their goals with the least number of steps and with as little errors as possible. (role).
- Does the interaction have to be physical or digital to achieve the best results? (look and feel).

Both these questions can be answered with the same prototype.

The prototypes as shown on the previous page are combinations of handles and displays, that we could adapt in all possible ways. By doing so, we found that the most left handle was the best for holding the device. The others were too thick, or big in general, or felt weird. The most left felt the best, and also forms the curves of you grip a bit when holding the device. Furthermore, it happened to be the best form to allow one-handed use, since that's an important requirement for a scanner during shopping.

The next part was where the buttons have to be placed on the prototype, and whether these had to be digital (touchscreen) or physical. The research plays an important role in the placement of physical buttons, since they have to be placed somewhere on the handle or around the display. The display shouldn't be too small, because then the text would become unreadable or buttons would be too small to press. Children can't read very well, so when text is being used, it should be simple and in small amounts. An alternative would be pictures. These options are tested later, in the user tests in week 7.

Task discription

Concept: a food/product scanner provided by grocery stores

Use case: Obtain varied foods to make dinner (goal)

1. The device shows a start screen with instructions to start
2. The user follows the instructions
3. The device shows the shopping list, which is empty at the start
4. The user scans a product
5. The device displays the product in the shopping list and shows if it is a healthy product or not
6. The user presses the compare button
7. The device displays three options; suggested products, scan other product or other product in shopping list
8. The user selects: suggested products
9. The device displays similar products with healthier nutritional values
10. The user chooses a healthier product
11. The device places the chosen product on the shopping list

From here the cycle could be repeated, or a different task could be executed.



Expert evaluation

To be answered questions:

- a. Conceptual model: Do they know what they need to do? Can the customer be expected to try to do this action?
- b. Visibility: Is the control for the action visible? Can they see what they need to do?
- c. Labelling: Is there a strong link between the control and the action?
- d. Feedback: Will the user understand the feedback?

Task description (action sequence are the user's interactions with the system)

Goal A: Login to system to receive personalized options

1. System shows a pop up with instruction to scan finger
2. User scans finger
 - a. Yes, the system tells you
 - b. No, the system doesn't tell you what and where to scan
 - c. Yes, in case b is satisfied
 - d. Yes, the system shows next menu
3. System recognizes fingerprint. If not, a pop-up shows with "unknown fingerprint, add new user?" (in this case the second happens)
4. user presses OK button
 - a. Yes
 - b. Yes
 - c. Yes
 - d. Yes
5. System shows a default menu; self-scan, alternatives, log-out and settings

Goal B: Access scanner function, in order to add your own choice of products. (user already logged in)

1. System shows default menu
2. User navigates to self-scan
 - a. Yes
 - b. Yes
 - c. Yes
 - d. Yes
3. System opens new screen containing an empty shopping list, with indications of: price, "healthy-indicator" (colored dot)
4. System displays text "scan items to add to basket" in empty list
5. User scans a product
 - a. Yes, the system tells you
 - b. Yes, the trigger has a contrasting color
 - c. Yes, you kind of "shoot" the product
 - d. Yes, you see a product being added
6. System adds product including indicated info to the list, and removes the text.

Goal C: Receive personalized alternatives for dinner (user is already logged in)

1. System shows default menu
2. User navigates to alternatives option and presses OK button
 - a) Yes, it's common sense to press an arrow for the direction and OK to enter
 - b) Yes
 - c) Yes, the button tells you what it does
 - d) Yes, system shows next menu
3. System shows different, in general healthy, meals, with their nutrition values and price, based on previous purchases of the user
4. User navigates to a meal
(optional) In case the user doesn't like this meal:
 - 6.1 user presses remove button.
 - a. Yes, "remove to remove"
 - b. Yes, it's a button on the device
 - c. Yes
 - d. No, system doesn't confirm that the meal has been removed
 - 6.2 System updates personal preferences
- 7 User presses OK button
 - a. Yes
 - b. Yes, it's a button in the device
 - c. Yes, the OK button makes sense if you'd want to add the selected product
 - d. Yes, the system shows a dialog
- 8 System shows ingredients (also common allergy warnings) of meal
- 9 User presses OK button again
 - a. No, its unclear what to do after the ingredients show. Add more info that tells how to proceed
 - b. Yes
 - c. Yes
 - d. No, add popup dialog to confirm change
- 10 System adds products and shows the updated shopping list

Goal D: Compare a product with other products that are somewhat identical. (user already logged in)

1. System shows default menu
2. User navigates to self-scan (see Goal B)
3. system shows empty shopping list (see Goal B)
4. User navigates to a product in the shopping list and presses the compare button
 - a. Yes
 - b. Yes, it's a button on the device
 - c. Yes
 - d. Yes
5. System shows list of products, including nutritional values, common allergy warnings, price, kcal, that are somewhat identical to the selected product
(option 1; going back to the shopping list)
6. User presses return button to get back to the shopping list
 - a. Yes
 - b. Yes

- c. Yes
 - d. Yes
- (option 2; switch the scanned product with a compared product)
7. User presses OK on a selected product
 - a. No, there has to be a hint that that's an option from the system
 - b. Yes, the button is on the device
 - c. Yes, the OK button is the only button that makes sense compared to the other buttons
 - d. Yes, the system shows a pop-up to confirm action
 8. System shows pop-up and asks you to confirm the switch
 9. User presses OK
 - a. yes
 - b. yes
 - c. yes
 - d. no, add a confirmation pop-up
 10. System deletes first item, and adds item from the comparison list.

Heuristic evaluation

Product: 'welcome' screen

Customer: push 'OK' or waits

Product: 'scan card or chose store' screen

Customer: choses to scan card and pushes the 'scan' button

Product: a red laser beam appears for scanning a card

Customer: scans the card

Product: selects the card, the beam disappears and a 'welcome "store" ' screen, after a second continuous to the 'product, overview and scan' screen

Customer: pushes the 'SCAN' button (beam) and scans products, navigates through the overview with the 'UP' and 'DOWN' buttons

Product: the scanned products appear on the overview screen with information on the price, Product and an indication on its nutritional values (visualized with a colored dot/image), when the customer navigates through the overview screen the 'overview' screen scrolls up and down

Customer: pushes the 'SETTINGS' button

Product: transitions to the 'setting' screen

Customer: can select a font size and change the modus to child/adult, selects font size with the navigation buttons and pushes 'OK', pushes 'RETRURN' button

Product: shows the selection of the font size, the font size changes and returns to the overview screen

Customer: selects a product by navigating through the overview screen and pushing on the 'OK' button

Product: shows the nutritional values of the product which is just selected

Customer: pushes the 'RETURN' button

Product: returns to the overview screen

Customer: pushes the 'COMPARE' button

Product: a screen pops-up at the bottom of the screen

Customer: scans/selects a product and selects 'RECOMMENDED' in the pop-up screen/ scans/ selects multiple products and again pushes on the 'RECOMMENDED' button

Product: shows selected products in the pop-up bar, afterwards the comparison screen appears, showing the selected products (recommended) and shows the nutritional values next to each other (per portion/100 grams)

Customer: selects a product which he/she wants to add to the list of products using the navigation buttons and pushes on the 'ADD' button, afterwards pushes on the 'RETURN' button

product: visualizes the navigating with the help of a border around the selected product, adds the selected product to the overview list and returns to the overview screen (the comparing pop-up bar has now disappeared)

customer: navigates through the screen and selects a product pushes the 'REMOVE' button

product: removes the selected product from the overview list

Heuristic violated: #1 Visibility of system status

Description: the user did not know what he/she was selecting with the navigating buttons

Possible causes: the interface did not include an emphasis on the selected product/option which is needed due to the use of no touchscreen device

Expected consequence: 90% of the users will take more steps to finish a task as they keep on selecting the wrong product/option, this will cause frustration and will take more of their time

Heuristic violated: #2 Match between system and real world

Description: the user can get confused by which buttons to use to fulfil a task

Possible causes: some buttons had more than one purpose

Expected consequence: 40% of the users will be confused when using the device in the beginning, 20% of the users will continue to make mistakes even though they have used the concept multiple times

Heuristic violated: #8 Aesthetic and minimalist design

Description: the user can have difficulties with finding the right task or the right information

Possible causes: the amount of information and all the options for tasks which were provided on the basic scan screen, the screen was very full

Expected consequence: 70% of the users will really have to get used to the interface before they will be able to use it fluently, 90% of the users will experience selecting and clicking the wrong option product due to this violation

Heuristic violated: #9 Help users recognize, diagnose and recover from errors

Description: might something break on the device, battery is low or such the user will have no idea on what to do with the device

Possible causes: there is no help screen or advising screen which can help the user when something doesn't work by giving information on where to get help/online site

Expected consequence: 90% of the users will stop using the device once it has broken and 70% will be very angry at the customer service/not recommend the concept to possible other users.

Improvements

- Develop/draw different screens for child modus, use bright colors, images and such.
- Think of short cuts, is it necessary to select a product with the 'OK' button or can we skip that by straight away pushing a different button.
- What is the best way to show the navigation part/the selecting of products? Using a border, thickening the font, changing color of the font/border/image.

Visibility of system status

The screen/product should clearly show what the user is doing and what his or her options in actions are, this is even more important for our product as the screen is not touchscreen. This can be achieved with the help of borders around the objects/words which are selected at that moment, we don't have that yet at this moment.

Match between system and real world

We use a least words as possible. We try to work with buttons which only have one function and words which speak to the users: 'compare', 'recommendation'...

User control and freedom

We have clear buttons to go back to the last screen or to remove or add items to the overview list.

Consistency and standards

We remove confusion with the help of colours and buttons which have only one function, can have an icon on it.

Error prevention

With a simple application as this one, errors won't occur often. We can't find errors at this moment as they don't occur in our paper version, no system errors possible.

Recognition rather than recall

- Do we add a 'help' / 'how do you use this thing' button/option?

Flexibility and efficiency of use

Everyone uses the product at his own speed, the tasks are the same, it is only the applying which you can get used to: knowing where which buttons are positioned and where everything is placed on the screen

Aesthetic and minimalist design

We will only show information which is asked for in a understandable and continuous way: showing the nutritional values per portion, only showing the product, price and an indication if something is healthy or if it may be better do find an alternative product.

Help users recognize, diagnose and recover from errors.

- Error screen

Help and documentation.

- Help screen

The login function has been changed to be used for a user who owns the device. You create your own personal account using your fingerprint to login. This used to be a function which needed a customer card, but not everybody has one, and not everybody goes to the same store every time. Right now, its easy, quick and universal.

7 User evaluation

DECIDE

Determine the goals:

Main goal 1: find out whether users start eating healthier when using this device.

Goal 2: find out whether users would use a device during shopping.

Goal 3: find out what kind of interface, look and feel users are most comfortable with. (display, buttons, look and feel)

Explore questions:

Is the feedback useful?

Do the users know what the feedback means?

Do the users know what to do with the feedback?

Would the users do something with the feedback, or just ignore it?

Can the users read the feedback well? (font-size, time of display, etc.)

Do the users like the feedback?

What do users think about using a device for shopping?

Do they trust the device?

Do they think it's useful?

What kind of reputation does a "shopping device" have?

Would they use the provided feedback?

What kind of interaction does the user like? (speak, gesture, touchscreen, buttons, vibrations, feeling of buttons, etc.)

Do users know how to use the device?

Are the functions of buttons clear?

Is the layout of the interface clear?

Is the function of the device as a whole clear?

Choose evaluation methods:

Usability test: The interface and opinions of users are the things that need to be tested in this evaluation in order to gain the right information about the goals and questions mentioned above.

Three ways to collect the right data to answer the questions. The technique is shown between the brackets.

1) Asking users how they think about the product before using it. (asking opinion - subjective)

2) Asking to perform the tasks that are provided by the product. (testing performance - objective)

3) Asking users how they think about the product after using it. (asking opinion - subjective)

Identify practical issues:

The planned evaluation is a usability test together with a short interview-like reflection from the users.

- The usability test must take place in the same environment, to rule out potential disturbances in performing the tasks. Like other people who cause a concentration disturbance that increases the time taken to finish a task.
- The test persons should perform the tasks as close as possible to the way they would in real life.
- The time it takes to switch to different “display-cards” has to be taken into account, and should be rather consistent throughout each test.
- The prototype shouldn’t break down, or has to be able to be fixed quickly.
- Test persons have to give an honest opinion about the product, before and after usage.
- Test persons shouldn’t be nervous. This increases the time to perform tasks.
- In case a test person doesn’t want to participate, a new test person has to be found.
- Camera’s have to be placed correctly, to get a well view of the scene. Everything has to be clearly visible.
- The environment has to have some attributes and props from a real environment.

Decide how to deal with ethical issues:

- Names of test persons have to be bound with ID-numbers. The ID-numbers are then used in the report.
- Faces have to be blurred out in video and photo if the test persons don’t want to reveal their identity.
- All personal information only exists on the separate document, where the names are bound to the ID-numbers. This information is confidential and may never be disclosed.
- Test persons should be able to contact the evaluators at every moment when they want to retreat from the evaluation.
- Before doing any test, the test person should sign a consent clarifying exact expectations of the test persons and info about their privacy. Only when this is signed, the test may take place.

Evaluate, interpret and present the data:

Reliability: Since the same questions and tasks are used in each test, the reliability of the evaluation is high. In addition, the environment does not change. Different evaluators will get the same results.

Validity: The main goal is to get users to start eating healthier. In that perspective the evaluation gives the right information to accomplish that goal. However, it is not complete, since the product is almost only used in a store. In order to gain information about the behavior of people with regard to the product in that (real) environment, a field study has to be done additionally.

Ecological validity: As mentioned above, the ecological validity is low, since this evaluation concerns a laboratory environment. Also the participants are fully aware that everything they do is noted, and may therefore be nervous, and behave differently.

Biases: The tasks are performed by the participants. An evaluator wouldn’t influence the results of the performed task, since the tasks are objective. The questions about the opinion, however could produce a bias if the evaluator uses a specific tone in his voice, or when he acts nervous.

Scope: Everybody goes shopping, but the target group is children aging 8 to 12 years with their parents. This increases the scope, nevertheless the scope is rather small, since only 12 participants are testing the product. It is, for that reason, important to select the right, representative, participants that.

Results

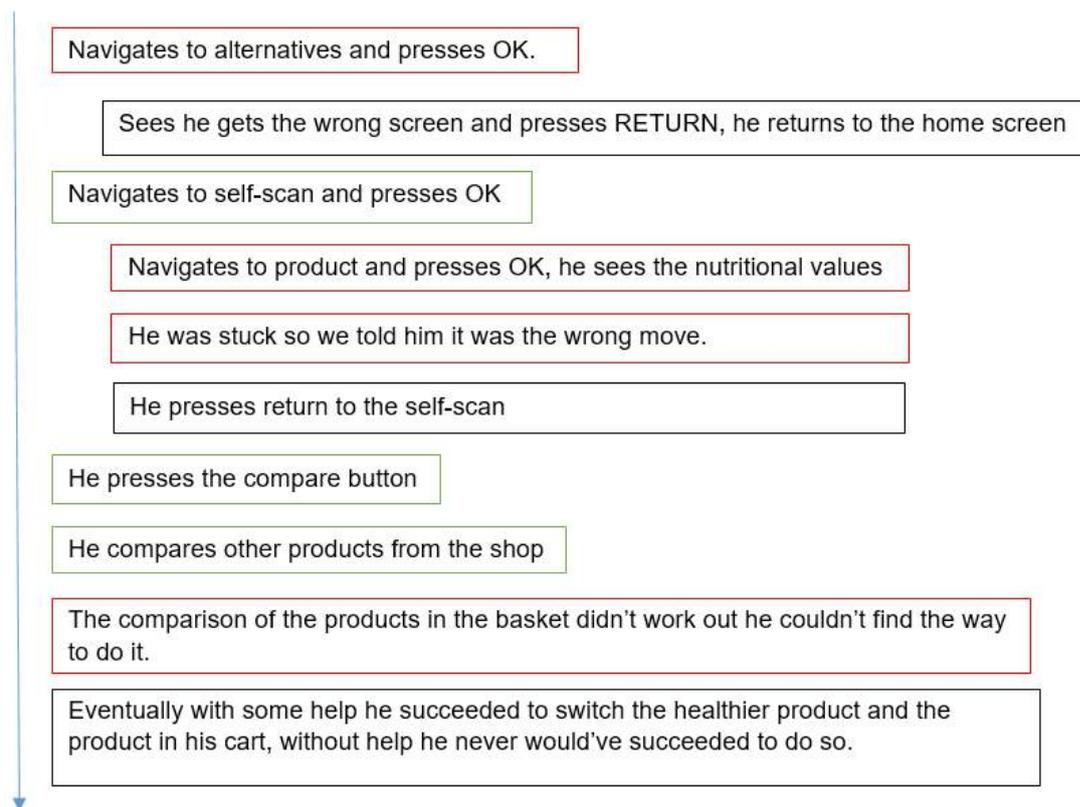
With the prototype we started to do the user evaluation. We interviewed 12 people, 9 parents and 3 children. The ratio male/female was almost equally divided. Also people's living style and the willingness to spend money on the product varied.

We interviewed the people and pointed a camera on their hands to see what kind of actions they carried out. We also thought it was helpful to be able to observe the actions a second time.

Before the interview we gave the participants the information that the screen is not a touch-screen and where the buttons were located. With that information we gave the participants the tasks.

We decided to all use the same format to note down the information. We made a kind of chronological diagram and we noted every action that the user carried out. Some of them were wrong so we made the cell red and others were right so we made the cell green. In this way the info gets visualized and we could spot the errors easily. An example of a task is shown under.

Task 5 compare products



Task 6 insert allergies



We wrote down all the trouble that the participants had with the prototype after every interview and we searched for similarities, first individual and after we conducted the problems. The problems from which we thought they were important are below.

- The fingerprint button is unclear, the user presses the fingerprint icon instead of the OK button. Without the fingerprint, just the arrow, the product would be a lot clearer.
- The word setup was unclear, because the user thought it indicated the setup of the product itself. Settings or preferences would be clearer.
- The comparison was too complicated to find, people were struggling because it is an 'invisible' action, you won't get a choice menu. Actually nobody succeeded to compare a product from the basket and one from the shop.
- 2 participants thought that the icon on the compare button was a bit unclear, he didn't really see what it proposed. And they thought it wasn't familiar.
- 1 participant thought that 'alternatives' was an unclear term.
- Users tend to touch the screen instead of using the arrows, this occurred especially at the first screen. The fingerprint logo indicated a touch-screen where almost everyone touched the icon on the screen instead of the OK button.

Conclusion

The big problem with the product is the comparison option, nobody succeeded to use it without making a mistake. The other problems are minor problems compared to the comparison option. For us the actions to complete the comparison were quite logical, but the user tests told us something completely different.

Although it wasn't always very clear for the users how to find a certain option, they still thought the feedback would be very helpful and they were also quite positive about the comparison. Most of the people said they think they would start eating healthier by using the product. Also most of the people said they would use the device whilst shopping because it's very familiar to the scanners they use at the moment, so it wouldn't be a big step to use our product instead of the already existing system. Despite of the positive reactions 2 participants doubted if they would use the product because they thought it would take them a lot of extra time. All together, the users were quite positive about the product and its functions. For most of the users the purpose of the product suited their wishes apart from the problems they experienced.

Differences between cognitive walkthrough and heuristic evaluation

The heuristic evaluation went in more detail regarding the interface as static image and how data was displayed, but the cognitive walkthrough was more about the tasks, and what was (and had to be) visible, not necessarily how it would look.

More detailed, in the cognitive walkthrough it became clear that there were too little confirmation pop-ups of a completed, or failed, step. The user wouldn't know whether a pressed button did what it was supposed to do easily.

The heuristic evaluation made clear that what was on the display at what time caused some problems in clarity and simplicity. There was either too little or too much data on the screen. Nevertheless, the overall results of both evaluations were the same, which is a good thing. This means that the "obvious" errors were mostly found and could be fixed before user testing.

Changes in the prototype

The common errors in the design turned out to be the buttons choice. Some buttons were almost the same in look or function, or had multiple functions. Also, the number of steps to perform a task could be decreased sometimes, in combination with changes in buttons.

We changed the placement of icons on each display to be easily accessed with the four navigation buttons (up, down, left, right). A different icon was used for the “compare” function, since the current one wasn’t clear. We left out some functions, and modified the way you accessed the most functions, since the number of buttons changed.

The login function has been changed to be used for a user who owns the device. You create your own personal account using your fingerprint to login. This used to be a function which needed a customer card, but not everybody has one, and not everybody goes to the same store every time. Right now, its easy, quick and universal.

We modified the buttons to only OK, delete, back, scan and navigate. To access functions without an own button, you had to navigate to them, starting from the home screen after logging in.

Lastly, we added feedback and confirmations in between steps, e.g. when deleting a product, or adding a new user account, to make sure it was really the intention of the user and not a mis-click.

Redesign

We brainstormed about the problems with the group to think of some redesigns. Some of them weren’t too hard to solve. The common errors in the design turned out to be the buttons choice. Some buttons were almost the same in look or function, or had multiple functions. Also, the number of steps to perform a task could be decreased sometimes, in combination with changes in buttons.

We asked the participants what they would see as a solution for their problems. For example, the word setup. The participants suggested to use preferences or settings instead of setup. The participant that thought that the icon on the compare button was unclear couldn’t think of a better alternative, and we did neither, the same for alternatives. We thought that recipes would be a better word. For the touch-screen problem, we’ve decided to simply remove the icon, because a lot of people got affected by it. For the biggest problem the comparison option, we added a new screen after selecting a product and pressing the compare button. The screen asks the user wheter he wants to compare a product from the basket or a product from the store. In this way the action gets visualized and the user simply has to choose between the 2.

9 Appendices

9.1 Reflections

Individual

Nadine

When this subject started I already knew that this subject wouldn't be the most fun. In general I have chosen this study, because I want to learn while doing creative things. Unfortunately this subject does not really find creativity important. Fortunately I knew that we were going to work on a project for this course, which lightened my spirits slightly.

Once I had read the general overview of the subject I did expect to have learn a lot of terminology and techniques concerning users. I noticed a very long list of assignments and quite quickly became afraid of the amount of work. Now that I have finished this course I can say that it was indeed a lot of work, more work than I have ever put in a project. Nevertheless my amount of work still did not feel satisfyingly enough. Due to the big assignments an little time to make everything perfect, I feel like I have not learned things to my full potential. I have the feeling that there were many steps which I had to hurry through to make sure that my group and I would get behind. I noticed the assignments weren't only quite big, but they were often vague, this might also be caused by my lack of lecture visits. After trial and error and a lot of talking with the group we did manage to finish the project without too much of a hustle.

I think that the most important thing that I have learned from this project is that it is very important for the users to test your product and that you should really try to be very strict for your own product, even though it is a bit of your own child. Due to the many assignments I now do have the hands on skills and the confidence to actually apply the knowledge that I gained with this course. By completing interviews, creating persona's and doing user tests, I know have experience with interacting with users. I also find this a very important learning point for myself as I before didn't really know what information to focus on when interviewing a user.

In the future I am definitely going to use the tools that I learned this course. With many projects upcoming, probably also many different users, my new skills:

- researching your target group
- compiling list of product requirements
- creating persona's
- creating a prototype for user tests
- completing an expert evaluation (heuristic and cognitive)
- carrying out user tests
- processing the information gained through evaluations

... will certainly come in handy.

Paul

This course didn't suit me very well. This was mainly because I couldn't really improve myself on the learning goals I set the previous project. The most important ones in my eyes were improving pitching skills and try to show things in a well-organized way, to make it clear and attractive to other people.

I didn't really improve on the pitching part, because the presentations we had to give were basically just explaining what we did in the past weeks, we didn't had to convince anyone or set a high-quality presentation, it was almost just a normal conversation.

The design and look part of the product was not really the main purpose of the course. Of course we had to design according to the user, but you wouldn't be graded on originality and the looks. I think this is a pity, because we could make a very nice product and present it in a cool way, but on the other hand I understand it because we were just doing one user cycle, so in the end we didn't really had a final product. This demotivates also in a way because from the beginning I had the idea that we were not really working towards a final product.

Furthermore I think that it was unfortunate that we had to work within strict lines, there was not a lot of space for creativity which was another learning goal for me, thinking more out of the box. This not only concerns the idea but also for example in the way we have to test our product with the user. I think there are a lot of ways to do such a test but we had to do it following quite strict lines.

On the other hand, I now know how to validate your idea, and how to find out what the users think. In this way the course helped me a lot. Because otherwise I would just think of something without really investigate stakeholders and their wishes. An example of this occurred in the course From Idea to Design. Our subject was, design something to help blind people travel in public places. We called a blind manx and asked for his opinion. But when we started to design we didn't call him until the end of the project. I now learned how you can satisfy the wishes of the user throughout the project, by doing the same cycle again, and I think that is extremely important. By learning this and following this course I think I did develop a lot in the expertise area of user and society, an area of which I thought I was a little more developed than I actually am. So that is a great benefit from this course.

It also gave me insight that the things that you design can be useful for you, but for the big majority, or just your target group, it might be really useless. I found this out when we made a prototype, which was quite clear in our eyes. But when we looked at the results of the user test, nobody understood the function. I think this is an important step in designing your product, and I'm very happy I made this mistake this time. It really gave me insight.

Overall, this was a project that didn't fully suited me, that was sometimes a little demotivating, but one of which I learned a lot of. Especially in the way of thinking as a designer.

Stijn

For this course we had to execute steps in designing a product catered towards the user's experience with it. In doing this we took many steps where we had to think of ways to create something that is comfortable to use.

Before starting this course I expected to learn several basic things about designing products in a way that they are easy to use. However I never realized how much there is to catering design to the perspective of the user. I obviously did realize that designs should be easy to use and what not, but not to the extent that this course showed me.

It showed me that there are many crucial steps that need to be made when designing a product to make sure that the average user has no problems while using it.

What I didn't expect to learn from this project was how to conduct user tests. Since the time span of this course isn't that long I didn't expect that I would get to do this for this course. I am delighted however that I did this since it really brings you closer to the reality of the work involved in designing something new.

I am quite content with how our group approached this project. From the very start we decided to keep up with the homework. During this project we had to show our tutor the progress that we made, also in total this project consists of a lot of assignments, so spreading it out over the duration of the course makes it largely more doable.

I honestly think that this course is essential for future projects since it gave me a good insight into the methods of designing with the user in mind, and also the importance of it. I believe that having done this course will improve my future designs, mainly in the usability aspect of it.

During this course there were a few problems and inconveniences that appeared. Most of them were the occurrence where the assignments weren't very clear. I know that our group was not the only group that struggled with this. In hindsight I could have prevented this by asking my tutor about this. To do so I should read the instruction of future assignments before the tutor meetings so I would have the possibility to ask questions about them before engaging in the assignment.

Rick

From the title of this course: User centered design, I thought to learn about designing a product while only taking needs of the user into consideration. This is very useful for industrial design, since your product won't sell if it doesn't meet the user's requirements. It also would not work the way you intended it to work if the user isn't involved in the process.

It seemed very convenient to own the skills like knowing your user, their needs and expectations, and how to collect the right kind of data from them. The user is at ID mostly the one you are designing for, and customer is king.

I realized that my ideas often start from purely a function and then try to make that into a design. Right now, I would first identify a potential user.

Now that I know how set-up and conduct an interview, and therefore analyze the user, I can get a better view of what to focus on during the design process. What is important to the user, a simple question that is easily missed when you don't know your users well. What the differences are in design in terms of user -and technical design, since technical design is purely functional and without considering the user. Sometimes this can be useful as well. It depends on the kind of product you are making, what it's main goal is, and who it is designed for.

Using the different methods learned in this course, I am now able to find errors of a concept at an early stage. This is particularly useful for business aspects of the design, since it won't cost much money and time to fix those problems. Fixing mistakes becomes very expensive and time consuming, if you'd find out after implementation of your product.

Being able to conduct and analyze user and expert evaluations is a handy skill for an ID student. It doesn't only help you find errors, but it also helps you receive (useful) feedback to improve your design, even if it worked fine already.

It turns out that a design can totally change when working together and evaluate with users. The user has a more objective look on a concept or idea than the person who thought of it, and probably already spend a lot of effort and time into it.

Without the knowledge I required during this course, I wouldn't get the right results from user evaluations. I would have missed a lot of steps during that process, and experience a lot of errors during the implementation phase. However, I didn't find the lectures useful at all. The slides themselves provided more info. The book used different terms than mentioned in the lectures, which was very confusing. I had to ask a lot to other students to get an idea of what to do exactly. I really missed examples.

Reflection on teamwork

Your name Paul Roelen

Write the name of each of your group members in a separate column. For each person (including yourself), indicate the extent to which you agree with the statement on the left, using a scale of 1-4 (1=strongly disagree; 2=disagree; 3=agree; 4=strongly agree). Total the numbers in each column.

Evaluation Criteria	Group member: Rick	Group member: Stijn	Group member: Nadine	Group member: Paul
Attends group meeting(s) and arrives on time.	4	3	3	3
Contributes meaningfully to group discussion.	4	4	4	4
Completes group assignment on time.	4	3	2	3
Prepares work in a quality manner.	3	3	3	3
Demonstrates a cooperative and supportive attitude.	4	4	4	4
Contributes significantly to the success of the project.	4	4	4	4
TOTALS	22	21	20	20

Your name Stijn Wiltingh

Write the name of each of your group members in a separate column. For each person (including yourself), indicate the extent to which you agree with the statement on the left, using a scale of 1-4 (1=strongly disagree; 2=disagree; 3=agree; 4=strongly agree). Total the numbers in each column.

Evaluation Criteria	Group member: Nadine Cutogno	Group member: Paul Roelen	Group member: Rick van Schie	Group member: Stijn Wiltingh
Attends group meeting(s) and arrives on time.	3	3	4	3
Contributes meaningfully to group discussion.	4	4	4	4
Completes group assignment on time.	2	3	4	3
Prepares work in a quality manner.	3	3	3	3
Demonstrates a cooperative and supportive attitude.	3	3	2	3
Contributes significantly to the success of the project.	3	4	4	3
TOTALS	18	20	21	19

Your name Rick van Schie

Write the name of each of your group members in a separate column. For each person (including yourself), indicate the extent to which you agree with the statement on the left, using a scale of 1-4 (1=strongly disagree; 2=disagree; 3=agree; 4=strongly agree). Total the numbers in each column.

Evaluation Criteria	Group member: Nadine	Group member: Paul	Group member: Rick	Group member: Stijn
Attends group meeting(s) and arrives on time.	3	4	4	4
Contributes meaningfully to group discussion.	3	4	3	3
Completes group assignment on time.	1 ½	4	4	2 ½
Prepares work in a quality manner.	2 ½	4	4	4
Demonstrates a cooperative and supportive attitude.	2 ½	4	4	4
Contributes significantly to the success of the project.	3	4	3	3
TOTALS	14 ½	24	22	20 ½

Your name Nadine Cotugno

Write the name of each of your group members in a separate column. For each person (including yourself), indicate the extent to which you agree with the statement on the left, using a scale of 1-4 (1=strongly disagree; 2=disagree; 3=agree; 4=strongly agree). Total the numbers in each column.

Evaluation Criteria	Group member:	Group member:	Group member:	Group member:
Attends group meeting(s) and arrives on time.	Nadine	Paul	Stijn	Rick
Contributes meaningfully to group discussion.	2	3	2	3
Completes group assignment on time.	1	4	2	4
Prepares work in a quality manner.	3	3	2	4
Demonstrates a cooperative and supportive attitude.	3	3	3	3
Contributes significantly to the success of the project.	2	3	2	3
TOTALS	11	16	11	17

1. How effectively did your group work?

At the start of the course we didn't know either the course nor each other, so the start was slow. Once we understood how we had to deliver the assignments and were able to estimate each other's qualities, the group work improved. At the end of the course the whole team was more or less on the same page and working together went way smoother. We all agreed that we worked well and had the same attitude towards the course in the end.

2. Were the behaviors of any of your team members particularly valuable or detrimental to the team?

Rick was the one who kind of determined the quality of the assignments and kept everybody up to date regarding the assignments.

Paul was the one who often "took one for the team", he took care of the details and coherence of the assignments.

Those two team members were significantly important in this group.

The others did what they had to do in general, sometimes there were some differences in the points of the peer review, but this differed throughout the course.

9.2 Other appendixes

Week 1

Nadine



Experience Goals

Enjoyable – if the user would enjoy the experience of using the device/application, the user would use the product more often and don't find the extra steps which they will have to take, unpleasantly

Exciting – whenever the user gets excited about a task or accomplishment, the user will be interested to what the product does next time or which information it shares

Motivating – again this experience goal leads to using this product many times over and over again, when the user notices improvement, he will be triggered to continue usage

Surprising – if the user gets surprised once in a while, it will stay exciting to use

Rewarding – this experience goal fits in with the 'motivating' experience goal, once a user gets a reward after proceeding a task, it will be more appealing to continue using the product.

(important that the user keeps on using the device, he should not get turned off by using it once)

Effectiveness – the user should get information about the products in a clear manner, therefore the chance of changing the buying behaviour of the customer will increase

Efficiency – the user should be provided with the information he/she requested in a quick and easy manner. There should not be too many steps and tasks to fulfil before receiving the information. Not too many extra screens to click through or buttons to push

Safety – the product is meant to improve health by changing buying habits, so it should be safe to use in the first place. It will also be a product which will plausibly be used in public spaces, danger would not only affect the direct user, but might also affect the bystanders

Utility – the product should be recognisable, therefore be easy to use by everyone, the product must be able to handle with one hand for example and should clearly state which functions it supports and how to fulfil a task

Learnability – the product should be recognisable, so it will be easy to learn how to use the product, only a few easy tasks which hold the user from its goal

Memorability – with the help of short easy tasks like clicking a button which only has one function, it will be easy to remember how to use the product, this also comes in handy if you want your product to be used more often

I'm going to the supermarket
bye!



wait daddy
I want to
join



AT THE SUPERMARKET

Hum mille of juice which
all should i choose



Milk and juice both healthy right?..

Daddy is looking at products
while suddenly

The nutritional values say something else.



daddy can I have this



DADDY first wants to know how
much sugar it contains

But he cant easily find the
sugars, the child becomes impatient

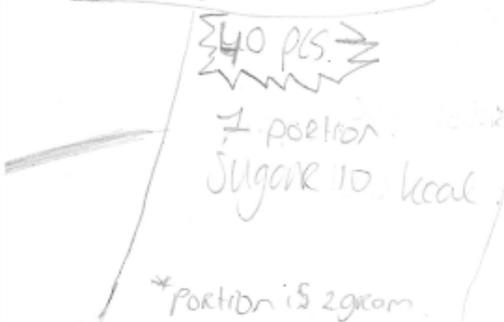
hum lets take a look



I want it now!



Then daddy finds the sugars



this is fine you can have it



But Dad forgets to check the
portion in a hurry.

Dad thinks he shopped
healthily but actually
the product contains
a lot of sugars!

Dad only needs one more product



Let's check the sugars

looks nice only 2 grams

nutrition values	
Energy	210 kcal
Fat	15g
Sugars	2g
Glucose	70g
Carbohydrates	50g
Proteins	40g
Salt	3g

But Dad doesn't know that the
other values are sugars too

Sugars	2g
Glucose	70g
Carbohydrates	50g
Dextrose	40g
<hr/>	
	202 grams!!

In the end dad thinks he
shopped healthy but his product
actually contains a lot of
sugars.

Dad isn't aware of that and will
continue his unhealthier diet

Experience goals

There are a few bottlenecks in the current situation. To get started, there is a lack of information. People can't find the right information on the products, the information is hidden, unclear or misleading. Examples are nutritional values for small portions, or the total amount of sugar is divided in several, for the user, unknown sugars. That's why the product has to be informative and helpful. People have to see that the nutritional values get transparent and insightful by using the product, so they feel it's worth the effort they put in.

Furthermore people want to live healthy. They try to buy healthy products but they often can't manage to do that. They don't have enough time, because they are busy with work. Ease of use is important here because people want to check fast whether something is healthy. When it costs too much time they don't want to waste their valuable time.

Living healthy costs a lot of effort most of the time. But when the effects of the product are satisfying and emotionally fulfilling, so they start to feel better by doing it, it's easier for people to keep up the good work. When they see the product challenges their problems, they are willing to continue using the product.

At last, the product has to be cognitively stimulating. The way people think have to be changed, otherwise they'll stop using the product and start living unhealthy again. Because when you think something works or is going to work, even if it is on the long term, you want to keep on using it. And in that way people can manage to live healthy more easily.

Contextualized definitions for the different components of usability

Effectiveness: Users need a simple product that can tell them whether they have a healthy diet or not. The target group is children from 8-12 and their parents, so both groups are quite familiar with mobile products, their parents may have some more knowledge but the children learn more easily. So a large percentage must be able to complete the tasks.

Efficiency: The users need the product to cost very little time, otherwise they think that they'll have to put too much effort in it, and they won't use it. The less tasks they need to complete and the less time they cost the higher the efficiency. Since the task will be quick to achieve, the product won't get annoying in a short amount of time.

Satisfaction: It would be very nice that people have noticeable progress, so that they know they are doing the right thing, that will keep them motivated and make them continue using the product. They also would feel themselves in control of the product.

Stijn

Experience Goals

Enjoyable

It is important for a product to be enjoyable to its user, when for example a phone or a touch screen in a car is sluggish it can be very frustrating to use. But when something is crisp and works intuitively it will be far more enjoyable to use for the user. The enjoyability of a product has an effect on the mood of the user and can decide if it is used a lot or thrown out the window.

Exciting

When designing a product you want the users to have an interest in the product, a good way of doing this is by making sure it is exciting. If users are excited about a product they will use it more, boosting the success of the design. The users might also overlook some flaws since they are so excited about the design that they don't care if it's not perfect, as long as it keeps exciting them and bringing them joy.

Helpful

More often than not a product or service is designed to be helpful. When I (a customer) is planning on purchasing something I either want it to be helpful or enjoyable (which can also be seen as helpful). If a product or service isn't either of those things, there is no way I'm buying it. One of the biggest conditions for a design to be successful is that it is helpful in some way.

Rewarding

Let's say you're designing a system to solve a public problem like bad parking in parking lots. However good your design is, in some way you are going to need the cooperation of the users, in this case the cooperation of car drivers. A good way of obtaining this cooperation is by making the usage of your design rewarding. If for example users can get credits by cooperating with the design, they are more likely to do so. An example for this is the 'ANWB veilig rijden autoverzekering' (translation: Safe driving insurance) which gives a discount on your car insurance if you drive safely.

Contextualized definitions for the different components of usability

Effectiveness

The effectiveness of a design is solely to what amount the user is able to fulfill his set goals with that design.

Efficiency

The efficiency of a design is how easy it is for the user to fulfill his goals. For example; how many buttons do I have to press to adjust the screen brightness of my smartphone screen. It is not the same as effectiveness.

Satisfaction

With the satisfaction of a design is meant how the user feels about using the design. While the effectiveness and efficiency of a design could be great, the satisfaction could be ruined by for example a misplaced button or display.



Rick

Storyboard in head

Experience Goals

Since the main goal of the product is to raise awareness, regarding the amount of sugar in bought products, it is important to aim for the following experience goals in order to make this product effective.

First of all, the product (or service) should be stimulating, proactive to change your nutrition pattern or habits.

Next, it is important to preserve that motivation using emotionally fulfilling and exciting aspects. The users, who consist of children aging between 8 to 12 years, are often easily distracted and influenced. (this is an assumption, the confirmation of this should follow from research) Therefore it also important that it is satisfying and pleasurable to use the product.

Lastly, the product or service is meant to raise awareness, i.e. inform the user (in this case) about the amount of sugar in a product. The kind of experience that fits this is helpful in a certain way. In short; the product provides a helping service which provides information, that is pleasurable to use and stimulating the user to change their behavior regarding nutrition.

Contextualized definitions for usability (all of its different components)

These components consist of effectiveness, efficiency and satisfaction.

The environment the product is going to be used is a public place, like a grocery store or a place where people can buy food for immediate consumption.

Effectiveness: How does the product help in making healthier choices regarding food?

Metrics:

- Providing the right kind of info to raise awareness
- Easy understandable info or feedback
- Applicable in daily life

Efficiency: How has the product to be designed in order to provide quick and easy to usage, and endure lots of usage without breaking down?

Metrics:

- Simple to learn interaction, without the need of assistance or manual
- Little errors
- Not slowing people down in the activity (in contrast with the activity done without the product)
- Made out of child friendly material. (rubber/shock absorbing edges e.g.)
- Little amount of key-actions needed
- Little amount of buttons needed

Satisfaction: How can the product keep the user motivated in using the product?

Metrics:

- Have the feeling to be in control of the product.
- Usage of the product is attractive/appealing (look and feel)
- Noticeable progress so the user sees progress or improvement
- The progress feedback must be a clear indication of progress

*these aspects are from the book "Interacting Design 4th ed., by J. Preece, Y. Rogers and H. Sharp (2015).

Chapter 1.6.2, table 1.1

Week 2

Nadine

Persona hypothesis

our target group, Consumers of food/drinks

Children 8-12

their main shopping environments will be at supermarkets/canteens/vending machines

- 8-10 don't often go buy something themselves, if they do it's with their parents and they will ask for something they normally don't get often "special treat" (or they will get bad food due to their parents standardly buying bad food)
- 10-12 will probably go to a shop themselves more easily, they will buy food to share and possibly to fulfil a craving if they did not bring food themselves e.g.

Parents of children 8-12

their main shopping environment will be at supermarkets/vending machines

- Some parents will give their children bad food because they want to fulfil their craving for bad food: they ask for it or they want to spoil their children (these parents now that this food is bad, but still want to give it to their children)
- Some parents will give their children bad food, due to the fact that they don't think about the food being bad. They see it as normal nutrition or are used to buying the bad food for their children

You can affect a children's answer by for example naming candy 'bad food'

Interview should not take too long (5-7 min), lose their interest (bring snack veggies)

- consume loads of bad food VS consuming minimal amounts of bad food
- differentiate between age groups/class
- go out shopping by themselves or not

Ethnographical interview

Age:

Gender:

Religion

Race:

Role:

Activity characteristics

- Do you ever buy food?
- If you buy food, what do you buy?
- When do you buy food when you do so?
- Do you tend to buy food by yourself or more often with others?
- What do you eat on a daily basis and why?

Physical characteristics

- Do you have any difficulties with hearing, seeing or feeling/holding?
- If you do, to what extend? Ask for examples

Knowledge and experience characteristics

- Do you think you know a lot about food and what is healthy and what is not?
- Where did you get your knowledge from? School? Parents? Other?
- Do you ever read packaging info on products (food)?

Psychological characteristics

- What food/drinks do you like? Why?
- Do you get hungry often?
- Do you feel healthy? Why? (when don't you?)

It is important to proceed asking why after they have answered a closed question, in this way you can receive information which is more detailed and personal. The reasoning behind a decision is a important factor if you would like to change behaviour.

Paul

Persona hypothesis

Children age 8-12 and their parents

Roles

- Children 8-12
- Their parents

Behavior variables

- How much time do the parents have to cook?
- And for going to the supermarket?
- Are the parents interested in food and/or cooking?
- How much money do they have, or want to spend? Biological food f.e. is more expensive.
- Are they patient and willing to spend time?
- Introvert or extrovert?

- The amount of exercise children get throughout the week.
- How much pocket money do they receive?
- What kind of food do they like?
- Do they have time after school, or are they going home straight?
- Introvert or extrovert?

Demographic variables

- Gender
- Age and if they're still in primary school (most of them), or are they already going to a secondary school?
- Conservative, progressive
- Income

Environmental variables

- Distance to nearest supermarket
- Living in the city or the countryside
- Distance to school, at what time are they leaving
- What kind of peers, group pressure
- Unhealthy living style or not

Interview

Questions

Psychological

- Why do you choose a certain product instead of another product?
- Do you know how much sugar you consume?
- Do you think you eat healthy?
- Where is space for improvement?
- Do you want to stick to old methods or is it better to look for a new one?

Knowledge and experience

- Do you always read package information?
- Do you also look how much sugar the product contains?
- Why can't you always eat healthy?
- Do you know where to find healthy recipes?
- Are you good with computers?

Activity Characteristics

- Do you buy food after school or in the breaks?
- What do you buy then?
- Are you going with friends?
- Do you go the nearest supermarket?
- Would you travel further for a different supermarket?
- What do you put on your bread every day?

Physical Characteristics

- Are you overweight?
- Are you able to sport?
- Are you getting fat fast?

Stijn

Persona Hypothesis

Roles: Children and their parents

Children:

- Goals: lose weight, fit in with classmates
- Behaviors: eating less candy, show similar behavior to classmates
- Moments of use: when buying candy

Parents:

- Goals: lose weight, eat healthy, making sure their kids eat healthy
- Behaviors: cook more healthy, giving their kids healthy food, work out, motivate their kids to do sports
- Moments of use: In the supermarket, when buying food in: restaurants, lunch halls, etc.

Interview

Target group: 8 – 12 years old

Topic: Sugar

Stijn Wiltingh

Age:

Gender:

Race/Religion:

Role:

Psychological:

- What kind of taste do you like?
- What sort of food/drinks do you like?
- Do you feel comfortable knowing what's in those food/drinks?
- How much do you care about the contents of your diet?

Knowledge and experience:

- Do you read the package info? What do you look for?
- Can you name some snacks or drinks that are high in sugar?
- Do you know about the negative effects of excessive sugar consumption? By whom?
- Have you ever noticed negative effects after eating unhealthy for a while?

Activity Characteristics:

- How often do you buy food, and with whom?
- What kind of food do you buy often?
- When do you buy it?
- What are your eating habits (breakfast, lunch, etc.)?
- Do you regularly skip breakfast, lunch or dinner and why?
- How much sugar do you estimate you consume in one day?

Physical Characteristics:

- Are you colorblind?
- Are you left or right-handed? Or both?
- Do you need reading glasses?
- Are you tired often? Or the opposite?
- Can you concentrate well? Why (not)?

Rick

*target group are children aging from 8 - 12

Roles/goals: Less sugar is beneficial for:

- People who have diabetes
- People with bad teeth
- People with a sugar allergy
- People with overweight
- People who are hyperactive
- People who sport much
- People who want to lose weight
- People who want/need a healthier diet in general
- People who want to be in control over sugar consumption

People who consume too much sugar can be defined by:

Behavior variables:

- Frequency of buying food (frequent – infrequent)
- Frequency of buying food with friends (always – never)
- Frequency of buying food with their parents (always – never)
- Desire of sugar/sweetness (addicted to sugar – hates sweetness)
- Discipline to keep at a diet schedule (very disciplined – not disciplined at all)
- Interest in sugar quantity (very much – not at all)

Demographic variables:

- Gender (male – female)
- Age (8 -12)
- Social level (shy – cheeky)
- Race (Dutch – anything else)

Environmental variables:

- Size of class (small – large)
- Number of friends (none – lots)
- Location of supermarket to school (nearby – far away)
- Location of supermarket to home (nearby – far away)
- Time parent(s) come home (directly when school ends – after child went to sleep)

Diabetic:

- Goals: want control over sugar consumption
- Behaviors: frequently buying food with parents, sometimes with friend during school, very disciplined to keep at diet schedule, high urgency, very interested in sugar quantity
- Demographics: Shy
- Environments: regular sized class, little friends, parents are home early

Bad teeth:

- Goals: want control over sugar consumption, healthier diet
- Behaviors: Desire of sweetness, high urgency, frequently buying food with friends, not disciplined, not interested in sugar quantity
- Demographics: cheeky
- Environments: parents are home at 6AM, regular number of friends, supermarket nearby school, lots of friends

Sugar allergy:

- Goals: want control, healthier diet
- Behaviors: Likes sugar, buys sometimes food with parents, sometimes alone, doesn't buy food often, very disciplined, high urgency, not interested in sugar
- Demographics: none specific
- Environments: supermarket near school, and near home, a few good friends, parents are home at 4AM

Overweight:

- Goals: lose weight
- Behaviors: likes sugar a lot, buys food frequently, alone, not disciplined, not interested in sugar, medium urgency
- Demographics: a bit cheeky
- Environments: lots of friends, supermarket close to home, parents are home late

Hyperactive:

- Goals: control, healthier diet
- Behaviors: likes sugar a lot, buys food frequently with friends, not disciplined, not interested in sugar, medium urgency
- Demographics: very cheeky
- Environments: parents home early, large class, supermarket close to school

Athlete:

- -Goals: control, healthier diet
- Behaviors: no direct urgency, not interested in sugar, never buys food its own, not very disciplined, likes sugar/sweetness
- Demographics: cheeky
- Environments: lots of friends, parents are home late

Activity Characteristics:

How often do you buy food, and with whom?

What food do you buy often?

When do you buy it?

What are some basic things you do daily regarding food?

What are your eating habits (breakfast, lunch, etc.)? What do you eat and why (not)?

Do you often skip breakfast, why?

How much sugar do you think you consume daily?

Physical Characteristics:

Are you colorblind?

Are you left or right-handed? Or both?

Do you need reading glasses?

Do you have headaches often?

Are you tired often? Or the opposite?

Can you hear optimally?

Can you concentrate well? Why (not)?

Knowledge and experience:

Do you ever read package info? What do you look for?

Can you name very sugary snacks or drinks?

Are you well informed about the effects of too much sugar consumption? By whom?

Psychological:

What food/drinks do you like?

What kind of taste do you like and why?

Do you feel comfortable knowing something about what's in your food/drinks?

Interview

Activity Characteristics

How often do you buy food, and with whom?

What food do you buy often?

When/where do you buy it?

What are some basic things you do daily regarding food?

What are your eating habits (breakfast, lunch, etc.)? What do you eat and why (not)?

Do you often skip breakfast, why?

How much sugar do you think you consume daily?

When do you have dinner?

What food do you take with you to school often?

What time do your parents get home from work?

Do you get a lot of pocket money?

Do you attend sport?

Physical Characteristics:

Are you colour-blind?

Are you left or right-handed? Or both?

Do you need reading glasses?

Do you have headaches often?

Are you tired often? Or the opposite?

Can you hear optimally?

Can you concentrate well? Why (not)?

How many siblings do you have?

Knowledge and experience

Do you ever read package info? What do you look for?

Can you name very sugary snacks or drinks?

Are you well informed about the effects of too much sugar consumption? By whom?

Psychological

What food/drinks do you like?

What kind of taste do you like and why?

Do you feel comfortable knowing something about what's in your food/drinks?

Week 3

Nadine

Functional requirement – the product should provide the user with clear info, which is understandable and applicable

Look-and-feel requirement – the product should look and feel nice and therefore will be satisfying to use

Ease of use requirement – different people, children, elderly should be able to use the product with ease

Ease of learning requirement – the product should be clear and therefore easy to understand and use, also after a long time of no usage

Performance requirement – the product should be sturdy, simply a good endurance

Type of requirement: Functional

Description: the product should provide the user with clear info, which is understandable and applicable

Fit criterion: 70% of the users should be able to understand the information given the first time when using the app, when used multiple times 90% should be able to understand the info given

Customer satisfaction: 4

Type of requirement: Look-and-feel

Description: the product should look and feel nice and therefore will be satisfying to use

Fit criterion: 80% of the users should find the physical usage and looks of the product satisfying

Customer satisfaction: 2

Type of requirement: Ease of use

Description: different people, children, elderly should be able to use the product with ease

Fit criterion: 90% of the users should be able to use the product, simply handling buttons, reading, holding a device, be able to move

Customer satisfaction: 1

Type of requirement: Ease of learning

Description: the product should be clear and therefore easy to understand and use, also after a long time of no usage

Fit criterion: 90% of the users should be able to handle the product and fulfil the tasks to be provided with the requested information

Customer satisfaction: 2

Type of requirement: Performance

Description: the product should be sturdy, simply a good endurance

Fit criterion: the quality of the product must remain the same for at least 3 years of usage

Customer satisfaction: 3

Mapping, Affordance, Constraints

Good mapping – putting the apps you use the most to the place easiest to reach with your fingers

Bad mapping – the screen nowadays gets so big, still many things are put in the top bar of the screen, which is hard to reach for many people with smaller hands

Affordance, a small task like touching the screen to start an application or take a picture

Physical constraint – if you have small hands or are older and have difficulties with holding something sturdy, it can be really difficult to get from one place to another without extra tasks/steps.

Logical constraint – when you get a new phone, people need to get used to the placing of buttons and such, they are used to have them on the left side, but then they move to another side

Cultural constraint – the placing of keys on a keyboard depend on the culture you've grown up with.

Paul

Functional: The product should inform people about the amount of sugar consumption so they can alter their diets to start eating healthier.

Look-and-feel: The product shouldn't look too remarkable, and it has to look discreet.

Ease of use: The product must be very quick to use, it definitely shouldn't take a lot of time.

Ease of learning: The product must be comprehensible for the user.

User experience: People must see that they actually are doing the right thing, so noticeable results.

Performance: The product should still work when the assortment in the supermarket changes.

Requirement #: 1 Requirement type: 9 (Functional)

Description: The product should inform people about the amount of sugar consumption so they can alter their diets to start eating healthier.

Fit criterion: 90% of the users must know how to gather, find and use the information generated by the product.

Customer satisfaction: 5 Customer dissatisfaction: 5

Requirement #: 2 Requirement type: 10 (Look and feel)

Description: The product shouldn't look too remarkable, and it has to look discreet.

Fit criterion: 80% of the users wouldn't mind using the product in their everyday lives. They won't be bothered by it.

Customer satisfaction: 4 Customer dissatisfaction: 3

Requirement #: 3 Requirement type: 11a (Ease of use)

Description: The product must be very quick to use, it definitely shouldn't take a lot of time.

Fit criterion: 90% of the users must find the product fast to use, and they mustn't be significantly slowed down by it.

Customer satisfaction: 5 Customer dissatisfaction: 5

Requirement #: 4 Requirement type: 11c (Ease of learning)

Description: The product must be comprehensible for the user.

Fit criterion: 90% of the people shouldn't no longer use the product only because they think it's not clear enough.

Customer satisfaction: 4 Customer dissatisfaction: 3

Requirement #: 5 Requirement type: 11 (user experience)

Description: People must see that they actually are doing the right thing, so noticeable results.

Fit criterion: 90% of the users must be able to see what their progress is if they are interested in it.

Customer satisfaction: 4 Customer dissatisfaction: 2

Requirement #: 6 Requirement type: 12 (performance)

Description: The product should still work when the assortment in the supermarket changes.

Fit criterion: The system doesn't need to be changed when the assortment of a single supermarket or multiple supermarket changes.

Customer satisfaction: 4 Customer dissatisfaction: 4

Mapping, Affordance, Constraints

Mapping

The most important actions and options are located in the most upper taskbar. So when you need something obvious you almost immediately check the upper bar, this way you can find a specific option easily. The toolbar located in the lower part of the screen is easily accessible, so you can quickly switch between programs.

Affordance

The different logo's on the home screen represents different services, to get access to such a service it's clear that you have to press the logo.

Constraints

- Physical: When you have a larger phone, you can't hold and use the phone with one hand easily, because your thumb can't reach the further corners.
- Logical: When there is a new notification an app shows a red number in the logo, which obviously means that there is something new there.
- Cultural: There is only one large button on the phone, which doesn't need an explanation, it's just the button to for example unlock the phone.

Stijn

Requirements

Functional: The product should make users aware of the amount of sugar they consume

Look and feel: The product should look attractive to children from 8-12 years old and should not be too big for their hands

Ease of use: The product should be usable for children from 8 to 12 years old

Ease of learning: The product should operate in a simple way and need no training to use

Performance: The product should be shock-proof

Functional Requirement:

Description: The product should make users aware of the amount of sugar they consume

Fit criterion: 75% of the users of the target group should understand the information on packages and adapt their purchases based on it

Customer satisfaction: 3

Customer dissatisfaction: 4

Look-and-feel Requirement:

Description: The product should look attractive to children from 8-12 years old and should not be too big for their hands

Fit criterion: 75% of user within the target group should be attracted to the product based on its looks or feel.

Customer satisfaction: 4

Customer dissatisfaction: 2

Ease of use Requirement:

Description: The product should be usable for children from 8 to 12 years old

Fit criterion: The amount of errors for performing tasks should be less than 5 percent.

Customer satisfaction: 2

Customer dissatisfaction: 5

Ease of learning Requirement:

Description: The product should operate in a simple way and need no training to use

Fit criterion: After first-time-usage, the time needed to perform a task should be less than 7 seconds per food item

Customer satisfaction: 3

Customer dissatisfaction: 4

Performance Requirement:

Description: The product should be shock-proof

Fit criterion: The amount of products that break within 3 months with appropriate usage should be less than 1 percent

Customer satisfaction: 1

Customer dissatisfaction: 5

Mapping, Affordance, Constraints

1. Mapping of User interface domain:

Good mapping: A cross to close, since a cross through e.g. text means that you want to discard that text.

Bad mapping: A floppy disk image for a save button. While this is logical for somewhat older users, this doesn't work very well for younger users since they most likely don't know what a floppy disk is.

2. Affordance:

Illuminating buttons at the bottom of the phone draw attention of the users.

3. Constraints:

Physical: The phone gives the user information via light, sound and vibration because it can't just send data to the user. These means of communication work the best as far as we know.

Logical: The camera and flasher are located closely together since the function of both is mainly to take pictures.

Cultural: A left pointing arrow means "back", from a young age we are taught to read from left to right so it's logical that going left means going back since by doing this you will read something that you have already read.

Rick

Requirements

Functional: The product should clearly inform users of their sugar consumption

Look and feel: The product should look playful and attractive to children from 8 to 12 years

Ease of use: The product should be usable for children from 8 to 12 years

Ease of learning: The product should use simple and clear steps for key tasks that don't need to be learned

User experience: The product should be stimulating for young children

Performance: The product must be shock resistant

Requirement #: 1 Requirement type: 9 (Functional)

Description: The product should clearly inform users of their sugar consumption

Fit criterion: 80% of the users of the target group must know what the information means, and how to apply it

Customer satisfaction: 2 Customer dissatisfaction: 4

Requirement #: 2 Requirement type: 10 (Look and feel)

Description: The product should look playful and attractive to children from 8 to 12 years

Fit criterion: 80% of user within the target group should be curious or attracted to the product by its looks

Customer satisfaction: 3 Customer dissatisfaction: 2

Requirement #: 3 Requirement type: 11a (Ease of use)

Description: The product should be usable for children from 8 to 12 years

Fit criterion: The error rate of performing key tasks should be less than 1 percent for users within the user group

Customer satisfaction: 2 Customer dissatisfaction: 5

Requirement #: 4 Requirement type: 11c (Ease of learning)

Description: The product should use simple and clear steps for key tasks

Fit criterion: After first-time-use, the average time to perform a whole task should be less than 7 seconds per item

Customer satisfaction: 2 Customer dissatisfaction: 3

Requirement #: 5 Requirement type: ? (UX)

Description: The product should be stimulating for young children

Fit criterion: 75 percent of people who use the product for more than a month should've changed their sugar consumption to a healthier amount

Customer satisfaction: 1 Customer dissatisfaction: 4

Requirement #: 6 Requirement type: 12 (performance)

Description: The product must be shock resistant

Fit criterion: The breakdown rate of the product should consider less than 1 percent after 3 months of use

Customer satisfaction: 3 Customer dissatisfaction: 4

Mapping, Affordance, Constraints

Mapping of User interface domain:

- Good mapping: A cross to close, since a cross through e.g. text means that you want to discard that text.
- Bad mapping: Unlock button of mobile. Sometimes on the side, where it makes no sense in unlocking. It could do any tasks on a phone. It is only clear because of the “on-off” sign on it .

Affordance principle for mobile phone: A very possible action for todays mobile (smart) phone is to “swipe” on the screen to unlock, or go from one display to another.

Constraints interaction with mobile phone:

- Physical: Earplugs don't fit in charger hole -> There is no “sound-output” in the charger hole
- Logical: Volume up is the top part of volume button, down is lower part of volume button
- Cultural: A left pointing arrow means “step back”. We are learned to first look left, then right in traffic, so it makes sense to have a left pointing arrow to mean a step back, and if applicable, a right pointing arrow to go a step forward, since “left” happened before “right”.

Week 4

Nadine

Scenario

The chosen product is a scanner with a screen and buttons. The device is supposed to scan a product by its barcode and should look up in a database of the shop, what the nutritional values are of that specific product. when the customer scans a product the product appears on a shopping list. It works similar to the scanners which already exist in grocery stores. When a product is selected on the screen with the help of buttons, the scanner shows the nutritional values of that product in a understandable manner, visualizing the amounts of sugar with the help of for example sugar blocks. The customer can compare products by selecting multiple and pushing a specific comparing button, these will then be compared (per portion). The scanner will also be able to recommend a product, if you want to find a healthier alternative or simply want to try something new.

Task Description

product: 'welcome' screen

customer: push 'OK' or waits

product: 'scan card or chose store' screen

customer: choses to scan card and pushes the 'scan' button

product: a red laser beam appears for scanning a card

customer: scans the card

product: selects the card, the beam disappears and a 'welcome "store" ' screen, after a second continuous to the 'product, overview and scan' screen

customer: pushes the 'SCAN' button (beam) and scans products, navigates through the overview with the 'UP' and 'DOWN' buttons

product: the scanned products appear on the overview screen with information on the price, product and an indication on its nutritional values (visualized with a colored dot/image), when the customer navigates through the overview screen the 'overview' screen scrolls up and down

customer: pushes the 'SETTINGS' button

product: transitions to the 'setting' screen

customer: can select a font size and change the modus to child/adult, selects font size with the navigation buttons and pushes 'OK', pushes 'RETRURN' button

product: shows the selection of the font size, the font size changes and returns to the overview screen

customer: selects a product by navigating through the overview screen and pushing on the 'OK' button

product: shows the nutritional values of the product which is just selected

customer: pushes the 'RETURN' button

product: returns to the overview screen

customer: pushes the 'COMPARE' button

product: a screen pops-up at the bottom of the screen

customer: scans/selects a product and selects 'RECOMMENDED' in the pop-up screen/

scans/selects multiple products and again pushes on the 'RECOMMENDED' button

product: shows selected products in the pop-up bar, afterwards the comparison screen appears, showing the selected products (recommended) and shows the nutritional values next to each other (per portion/100 grams)

customer: selects a product which he/she wants to add to the list of products using the navigation buttons and pushes on the 'ADD' button, afterwards pushes on the 'RETURN' button

product: visualizes the navigating with the help of a border around the selected product, adds the selected product to the overview list and returns to the overview screen (the comparing pop-up bar has now disappeared)

customer: navigates through the screen and selects a product pushes the 'REMOVE' button

product: removes the selected product from the overview list

Paul

Scenario of our concept

With our concept, we build upon the existing system of the hand-scanner in the supermarket to improve it. With the scanner the user can make a digital list of products that are in the shopping cart by scanning the barcode of each product. At the end at the cash desk, you only have to pay the amount of money that the scanner shows. The scanner can be used by scanning a so called 'bonus card'. Our idea is to use the scanner to not only show the scanned products but also show the nutritional values of the product. By scanning the barcode the information gets visible instantaneously. With an extra click the user can see a graph with the daily needs to decide whether the product is healthy enough or not. The competition between companies will be maintained, because it actually show the things that are somewhere on the packaging. The difference is that it's far more clear. Also people with allergies can filter certain ingredients.

When people are in a hurry, they can ignore the information on the scanner. But to make sure users can still receive the information, all the buy-information is send to the account and webpage connected to the 'bonus card'. There they can see all graphs and consumption of sugar etc.

We want the idea to be a service, instead of a concrete product. The service can be a paid service or a free one. It can be used by a supermarket as an extra way to attract customers. The users are the parents of the children aged 8-12. At the moment it can be used at the supermarket that own a scanner system. For the supermarkets without such a system is also an app available.

When the user enters the supermarket, a wall with scanners is in sight. By scanning your 'bonus card' a scanner lights up, you can take the scanner and enter the gates to the products. The user scans multiple products and quickly checks the information on the scanner. The user deletes one product because it unexpectedly contains a lot of sugar. Eventually the user goes to the cash desk and pays. The user was a bit in a hurry so when diner is cooked, the user checks the website of the supermarket one more time, to pay more attention next time.

Task discription

User: Scans a product.

System: Shows product information.

Add the product to a digital shopping list.

Adds up all the prices of the products and shows a total.

User: Presses 'more info'

System: Shows f.e. maximum sugar consumption in clarifying graphs.

Inserts a filter, for example no glutes or less than 100 gr sugar.

Filters out products that correspond to the filter.

User: Presses the minus sign when a product is selected (Select by pressing it on the touch screen).

System: A product gets removed from the list.

User: At the end at the cash desk the user pays with card.

System: Sends the information to the users account and resets itself for the next user.

Stijn

Scenario

The “de Jong” family is a family of four; The parents Benthe (39) and Mark (41) and their children Ilse (9) and Bas (7). Both parents try to have time off work and want their children to eat healthy, but since they do grocery shopping every day they still can't spend too much time on it. Ilse likes to join her parents with grocery shopping where she asks for treats. When Benthe goes shopping she can see whether the products she scans are healthy. If they're not, she can look at similar products the device recommends her and in that way improve her purchases. This way she can still buy healthy foods without having to spend much more time in the store. As she uses the device she will automatically learn about what foods are healthy, so as time progresses she will have to spend less and less time in the store. When her child Ilse uses the device it will teach her about what foods are healthy and, to her, it is also fun to use.

Task description

Concept: a food/product scanner provided by grocery stores

Use case: Obtain varied foods to make dinner (goal)

1. The device shows a start screen with instructions to start
2. The user follows the instructions
3. The device shows the shopping list, which is empty at the start
4. The user scans a product
5. The device displays the product in the shopping list and shows if it is a healthy product or not
6. The user presses the compare button
7. The device displays three options; suggested products, scan other product or other product in shopping list
8. The user selects: suggested products
9. The device displays similar products with healthier nutritional values
10. The user chooses a healthier product
11. The device places the chosen product on the shopping list

From here the cycle could be repeated, or a different task could be executed.

Rick

Scenario

The family Johnsen consists of four people. The parents Elise (41) and Rob (49), and their children Jimmy (11) and Jane (10). Both parents work a lot, so there is not much time for shopping. When Elise does grocery shopping, she likes to know what products are simple, but also healthy. She doesn't want to serve food her children don't like. Jimmy is very picky with food, so when she goes shopping she enters some details about the kind of food she's looking for in the device, and in that way, she quickly finds the things she needs. Sometimes, Jimmy goes with her, and then he can use the device. He finds it fun to use, and sees what he (or his mom) is buying. The device also gives some alternatives, or variations. Which Elise uses to cook varied suppers.

Task description

Concept: a food/product scanner provided by the supermarket

Use case: retrieve a varied set of products for supper (goal)

1. The system shows a start screen with simple steps to start
2. The user follows the steps
3. The system shows personalized suggestions by default
4. The user chooses a suggestion
5. The system shows total price and nutritional values of the chosen suggestion, with a list of products to buy underneath. (ordered from close by to far away relative to the device)
6. The user confirms this suggestion
7. The system adds all the products to a digital shopping list
8. The user searches the products
9. The user scanned the products from the list
10. The system discards the found products from the shopping list on the device
11. The system keeps track of the total price
12. The user scanned all the products from the list
13. The system shows the personalized suggestions again

From here the cycle could start over again, or a different task can be executed.

Week 5

Nadine

Task Description

product: 'welcome' screen

customer: push 'OK' or waits

product: 'scan card or chose store' screen

customer: choses to scan card and pushes the 'scan' button

product: a red laser beam appears for scanning a card

customer: scans the card

product: selects the card, the beam disappears and a 'welcome "store" ' screen, after a second continuous to the 'product, overview and scan' screen

customer: pushes the 'SCAN' button (beam) and scans products, navigates through the overview with the 'UP' and 'DOWN' buttons

product: the scanned products appear on the overview screen with information on the price, product and an indication on its nutritional values (visualized with a colored dot/image), when the customer navigates through the overview screen the 'overview' screen scrolls up and down

customer: pushes the 'SETTINGS' button

product: transitions to the 'setting' screen

customer: can select a font size and change the modus to child/adult, selects font size with the navigation buttons and pushes 'OK', pushes 'RETRURN' button

product: shows the selection of the font size, the font size changes and returns to the overview screen

customer: selects a product by navigating through the overview screen and pushing on the 'OK' button

product: shows the nutritional values of the product which is just selected

customer: pushes the 'RETURN' button

product: returns to the overview screen

customer: pushes the 'COMPARE' button

product: a screen pops-up at the bottom of the screen

customer: scans/selects a product and selects 'RECOMMENDED' in the pop-up screen/
scans/selects multiple products and again pushes on the 'RECOMMENDED' button

product: shows selected products in the pop-up bar, afterwards the comparison screen appears, showing the selected products (recommended) and shows the nutritional values next to each other (per portion/100 grams)

customer: selects a product which he/she wants to add to the list of products using the navigation buttons and pushes on the 'ADD' button, afterwards pushes on the 'RETURN' button

product: visualizes the navigating with the help of a border around the selected product, adds the selected product to the overview list and returns to the overview screen (the comparing pop-up bar has now disappeared)

customer: navigates through the screen and selects a product pushes the 'REMOVE' button

product: removes the selected product from the overview list.

Paul

Task description

User: Scans a product.

System: Shows product information.

Add the product to a digital shopping list.

Adds up all the prices of the products and shows a total.

User: Presses 'more info'

System: Shows f.e. maximum sugar consumption in clarifying graphs.

Inserts a filter, for example no glutes or less than 100 gr sugar.

Filters out products that correspond to the filter.

User: Presses the minus sign when a product is selected (Select by pressing it on the touch screen).

System: A product gets removed from the list.

User: At the end at the cash desk the user pays with card.

System: Sends the information to the users account and resets itself for the next user.

Stijn in main text

Rick

Task description

Concept: a food/product scanner provided by the supermarket

Use case: retrieve a varied set of products for supper (goal)

1. The system shows a start screen with simple steps to start
2. The user follows the steps
3. The system shows personalized suggestions by default
4. The user chooses a suggestion
5. The system shows total price and nutritional values of the chosen suggestion, with a list of products to buy underneath. (ordered from close by to far away relative to the device)
6. The user confirms this suggestion
7. The system adds all the products to a digital shopping list
8. The user searches the products
9. The user scanned the products from the list
10. The system discards the found products from the shopping list on the device
11. The system keeps track of the total price
12. The user scanned all the products from the list
13. The system shows the personalized suggestions again

From here the cycle could start over again, or a different task can be executed.

Week 6

Nadine in header

Paul

Heuristic Evaluation

Heuristic violated: #2 Match between system and real world

Description: the user has difficulties with completing a comparing task

Possible causes: the compare button isn't clear, not recognisable

Expected consequence: 80% of the people will not be able to compare products with the device (without help), 40% of the users will find it harder to remember the steps to compare products due to the appearance of the button.

Heuristic violated: #8 Aesthetic and minimalist design

Description: the user did not always understand how to navigate through the screen

Possible causes: there was a lot of info on some of the interface screens, these were not only placed under each other but also next to each other. Some options on the screen have its own button, so you can't navigate to that function.

Expected consequence: 40% of the people will make the mistake of trying to navigate to an option on the screen which has its own button. This will cause the user to use more steps and therefor also more time

Heuristic violated: #9 Help users recognize, diagnose and recover from errors

Description: the user will get confused what to do if the device or interface stops working

Possible causes: there is no help screen or advising screen which can help the user when something doesn't work by giving information on where to get help/online site

Expected consequence: 90% of the users will not like to use the device once it has shown a malfunction of reasonable size and 100% will not recommend the concept to possible other users/buyers

Rick in main text

Stijn

Questions:

1. Conceptual model: Do they know what they need to do? Can the customer be expected to try to do this action?
2. Visibility: Is the control for the action visible? Can they see what they need to do?
3. Labelling: Is there a strong link between the control and the action?
4. Feedback: Will the user understand the feedback?

Goal: Obtain varied foods for dinner.

Task description:

The device shows a start screen with instructions to start.

The user follows the instructions.

1. Yes, the instructions are clear.
2. Yes, there are buttons with arrows and 'ok' on them.
3. Yes, the button says what it does.
4. Yes, the device proceeds to the next menu.

The device shows the shopping list, which is empty at the start.

The user scans a product.

1. Yes, scanning products is a common action in supermarkets.
2. No, the control is on the back side, however the user feels it when holding the device and it has a contrasting, bright color.
3. Yes, the button is located like a trigger on a gun, since scanning product, in a way, feels like shooting.
4. Yes, the scanned product will appear on the shopping list.

The device displays the product in the shopping list and shows if it is a healthy product or not .

The user presses the compare button.

1. Yes, the system shows how healthy the scanned product is and there is a 'compare' button on the device.
2. Yes.
3. Yes.
4. Yes, the device shows further options for comparison between products.

The device displays three options; suggested products, scan other product or other product in shopping list.

The user selects: suggested products.

1. Yes, they are given an option, so they need to choose.
2. Yes, the screen displays the options.
3. Yes, they navigate with the arrows and select an option with 'ok'.
4. Yes, the device proceeds to the next screen.

The device displays similar products with healthier nutritional values .

The user chooses a healthier product .

1. Yes.
2. Yes, there are buttons with which they navigate and select a healthier product.
3. Yes
4. The healthier product replaces the initial product but doesn't alert the user in another way.

The device places the chosen product on the shopping list.

Week 7

Nadine

The user doesn't understand how you can add things to your bucket when you haven't found the product/scanned the product yet. Make like a 'find this product' tab, or a tab in which you can see the product that you want but have not got in your cart yet. Compare function is hard to find.

The user had to get used to the fact that he did not have to push OK to select a product or to conduct a certain task. He also didn't understand how to get to the compare screen in the first place, he did understand the compare button though.

Paul

The problems that came out of the test were the following.

Users were tend to use the screen as a touchscreen instead of using the buttons. This was also a problem in the student pilot. It started with the fingerprint at the first screen but also because we use our cellphones a lot we're more used to certain ways of completing an action. So that might influence the test, because they were not our target group. With the user test the same thing happened, but now especially on the first screen with the fingerprint. The users thought this indicated the place where they should place their finger. One of the participants said that it would be a lot clearer when the icon would be removed and only the arrow is visible.

One of the participants said that it was unknown where the cursor in the screen was located. Because it is a paper version, it was almost impossible to show that the selected button is highlighted.

One other said the icon on the compare button was unclear. Because he or she didn't know the icon, it isn't for example on the keyboard.

One other said that alternatives was an unclear term, what was a little bit remarkable in my eyes.

Another participant thought that the blue color matched with the self-scan button on the screen, and found it a little bit disturbing. He suggested a more neutral color, or a color that wouldn't show up on the screen.

The comparison was a real pain of the product. No one succeeded to compare a product. I had to help them before they could continue the action. To one person I explained almost the complete action. This is really a thing that should be changed. I think the difficulty was that you had to do an action that was invisible, so an order of actions that they couldn't see.

A few people thought that the word setup didn't really matched the meaning of the button. They thought settings would be a better word that fits the meaning of the button.

Stijn

The first problem arrives when logging in to the device. The start screen shows a fingerprint icon to make it clear to the user that he/she should scan his/her finger to login. However, most users put their finger on the icon instead of the button. After that they do realize relatively fast that they have to indeed put their finger on the button.

Aside from this, the term “Alternatives” is a somewhat inappropriate to what function it has on our device. Users say that in their minds, the term doesn’t necessarily mean “meal options”, like it does on our device.

Finally, the biggest problem on our device is the functionality of the compare button. While users do understand what it should do right away, the way we implemented it on our device makes it so that using this function is rather counterintuitive. As a result of this, users had trouble completing tasks, that involved the compare button, on their own.

Rick

At first people tried to login with the fingerprint icon on the screen, although I told that the screen wasn’t a touch-screen, people tried to touch it. After they find out that they couldn’t touch the screen, they haven’t used it anymore.

Besides that the terms we used in the menu weren’t not always very clear. For example ‘alternatives’ didn’t indicate another meal following the users. Also, the compare option can be found in the self-scan screen. But the self-scan screen was interpreted just as scan screen, without any other options.

The biggest problem with our device was the compare option, the option itself was clear to everybody, and was received positive. But in what way the user had to use the option and what actions were needed was very unclear. Even after explaining the actions, users said that the actions were too complicated because they couldn’t see what they were doing.

Consent form

Introduction

You have been invited to participate in this user evaluation for a concept of a potential product. The purpose of this research is to find problems in the design and/or functionality of this concept, find solutions for these problems and to receive feedback based on user's opinions on the prototype of the concept.

The research will be executed by Rick van Schie, Paul Roelen, Nadine Cutongo and Stijn Wiltingh, Department of Industrial Design, Eindhoven University of Technology.

Participation and rights

In the participation in this research you will be asked to try to complete certain tasks, given by the researcher, on the prototype of the concept that we created. By doing so, the participant becomes part of the development of a potential product by helping in improving the usability of the product.

At any point before or during the participation you may ask any question or refrain from participation. This will not have any consequences whatsoever.

Participation in this research does not have any additional physical or mental risks for the participant. The participant is not responsible for any damage or errors that occur with the prototype during this research.

Permission and Confidentiality

By signing this consent form the participant indicates that he/she/other allows the researchers to record the performance with the prototype as data for research purposes. The participant also gives permission for video and/or audio to be recorded during the study.

The participant gives permission that media in which the participant is unrecognizable may be used in publications or presentations for a limited audience. The participant understands that obtained data will be anonymous and therefore will not be able to be linked back to the participant. The names of participants will not be named in any reports, presentations, etc.

I have read and understood the above:

Name:

Signature:

Date:

Name researcher:

Signature researcher:

Date:

Participant #: _____