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Assignment

[UFB]

[Final Report]

TABLE OF CONTENTS

WEEK 1:

PACT ANALYSIS

P: THE PEOPLE WHO ARE INVOLVED IN THIS DESIGN

- **Children aged 8-12**
- **Their parents** who are involved by helping them
- **The NS**, for handing out the devices, providing the related services like giving information about the routes and sending acquired information from the hiking routes to a website where people can view it back.
- **Companies who develop the product**, for example: needed materials, technology, research.
- **People at points of interest**, like restaurants, musea, monuments and rest places.

A: THE TASKS THEY WILL CARRY OUT

- Take the train
- Use the device
- Walk
- Play (interactive games)
- Look at the map
- Take a break: eat, drink, rest etc.

C: CONTEXT: (PHYSICAL-TEMPORAL, SOCIAL, ORGANIZATIONAL ENVIRONMENT)

- Physical-temporal
    - Nature
    - City's
    - Points of interest
    - Museums, statues, monuments etc.
    - Outside
    - Weather
- Social
    - Families
        - Parents, grandparents
    - Children
    - Groups (school classes, birthday)
    - People at NS (service desk)
- Organizational
    - People will take a rest, eat and drink at the restaurants
    - People at NS (service desk)
    - Hand in the devices

TECHNOLOGY:

- Touch screen
- Buttons
- Camera
- GPS
- Power(supply)
- Can you steal it?

EXPERIENCE GOALS:

- Enjoyable
  - Kids will enjoy walking with their parents even more!
- Exciting
  - Play games, interactive, new
- Entertaining
  - Adds extra elements to a simple walk
- Helpful
  - You can use it as a GPS/Navigation
  - Learn about plants, animals, buildings, history etc.
- Motivating
  - Motivates to move and learn
- Fun
  - Makes a simple walk a lot more fun by playing games and interaction
- Surprising
  - Adds new elements to simple walk
- Challenging
  - Different levels of difficulty
  - Play games
- Enhancing sociability
  - Can help each other with challenges
  - Something to talk about

Effectiveness

"The extent to which users can achieve their goals"

- People should always find their way to the destination
- The compliance of the device to the orders that you give or the actions you do

Efficiency

"The time, effort, number of people etc. to achieve goals"

- Controlling the device needs to be simple and intuitive so you don't spend too much time and effort on that
- Handing in and out devices needs to be fast and simple > OV chipcard

Satisfaction

"The comfort and acceptability of the system to its users"

- Controlling the device needs to be simple and intuitive
- Completing the hiking route should give a feel of satisfaction
- Statistics at the end of the route (time, km, calories etc)
- For kids score(d points)

WEEK 2:

PERSONA HYPOTHESIS

PRODUCT: NS WALKING DEVICE

Behaviour is only in this context of the NS-walk.

CHILD THAT LIKES WALKING

GOALS: Have a good time

BEHAVIOUR: Play games (hide and seek), entertain themselves (counting yellow cars)

ENVIRONMENTS: Hiking trail (in cities, nature, points of interest), train station

CHILD THAT HATES WALKING

GOALS: Persuade parents to not go walking any more, make the best out of it

BEHAVIOUR: Be grumpy, bored, act annoyingly

ENVIRONMENTS: Hiking trail (in cities, nature, points of interest), train station

PARENTS (SECONDARY PERSONAS)

GOALS: Quality family time, make it the hike fun for their kids, physical exercise

BEHAVIOUR: Have a chat, play games with kids, relax.

ENVIRONMENTS: Hiking trail (in cities, nature, points of interest), train station

NS (SECONDARY PERSONAS)

GOALS: People should use the train more often, and in different ways than for getting from A to B, make money out of it.

BEHAVIOUR: Handing out devices, setting up hiking routes

ENVIRONMENTS: Hiking trail (in cities, nature, points of interest), train station

ETHNOGRAPHIC INTERVIEW

It should be a structured interview, because it's about figures now, to create a clear set of personas.

INTRODUCTION

- What's your name?
- How old are you?
- What are your hobbies?
- Why do you like your hobbies?
- Do you prefer playing games inside or outside?
- What kind of games?
- Why do you prefer games inside or outside?

CORE

- Do you ever do something nice with your parents? What kind of activities do you like?
- What do you think about going on a walk with your parents?
- Where do you walk?
- Why do you or do you not like walking?
- How do you make it more fun for yourself?
- Do you ever go by train? Do you like that?
- Where do you go?

PERSONAS

Bernadette De Breij

Bernadette is a 10-year old girl who is in the 4th grade of elementary school. She lives in Aalst, one of the surrounding cities in Eindhoven.

Bernadette is very fond of reading, because she can go on adventures without having to leave her own room! When she's not reading, she likes to draw and craft, because she loves making things and being creative. You can often find her on the streets making beautiful drawings with chalk, playing hide and seek or tag, with friends.

In the weekends, she likes playing board games with her parents. On Sunday afternoon, they often go walking together in the forests surrounding Aalst. She often likes walking, because she can look at the beautiful nature, get some fresh air, and play with their dog. Sometimes, the walks take a bit too long. Those are the times that she doesn't like walking.

From time to time, she takes the train with her parents to her grandparents who live in the countryside. They pick them up at the train station and take them to their house in the meadows. She likes it when they go walking there, because she enjoys being with her family.

Background:

- 10 years old
- 4th grade in elementary school
- Only child
- Father works full time, mother is housewife.

Attributes:

- Likes reading (adventure!), drawing and crafting (being creative)
- Prefers playing outside to inside
- Has a strong bond with parents and grandparents

User needs:

- Walks sometimes take too long
- Wants to play and share with family and friend

Geert de Jonge

Geert is a 9 year old boy who is in the 4th grade of his school. He lives near Eindhoven in Noord-Brabant. He is just a normal boy who loves soccer and playing games on his Xbox. One of the things why he likes soccer is because he is good at it. He is the top scorer of his team! Although he loves playing soccer, he prefers playing inside on his Xbox for example. He likes playing shooters or FIFA against his older brother. When he is playing outside, he is doing hide n seek or playing soccer with friends most of the times.

Geert likes playing board games with his parents. He likes doing thing with his parents but he doesn't like going out for a walk. He doesn't like it because it's cold outside and he is getting tired of it. He also thinks walking with his parents is boring. But if he could choose a place where to walk, he would choose the forests.

He thinks walking would be a lot more fun if he could be with friends. Also playing games during the walk would make it a lot more fun. Then it would not be so boring.

In school he is just like the other kids. Now he is in 4th grade they are learning new things at Geography like topography and things about nature.

Background

- 9 years old
- 4th grade in elementary school
- 1 older brother of age 10
- Father works fulltime, mother works 2 days in the weekend
- Lives in a neighborhood where there are many other kids

Attributes

- Good at soccer
- Loves his Xbox
- Likes to win, is competitive

User needs

- Being with friends
- Play games
- Doing other activities during the walk

WEEK 3

REQUIREMENTS

FUNCTIONAL

The device should be able to tell where it is, thus where the client is. The device will be giving the client certain actions or information about the specific location, and the device should also show the way to the destination from the location it is at the moment. It should have a GPS in it, and it should be tested if it is accurate enough and whether it works.

Other functional requirements are: This information should be linked to a certain action or notification. It should be able to provide visual and audio feedback. It should be wireless and rechargeable. It should be hard to break. The client should be able to store it elsewhere during the hike (i.e. a backpack). You should be able to choose your language. It should have a camera.

LOOK AND FEEL

It should look like it's easy to use. It should look simple, without too many buttons. This is important because people should get the feeling that it is simple to use, this will attract them to use it a lot more than when it looks complicated. It should be user-tested to see if it actually looks attractive.

Other look and feel requirements are: It should be easy to handle, big grips to hold it steady in your hands. It should have the colours of the NS. It should be attractive to children. It should look and feel organic, without sharp edges.

EASE OF USE

75% of the actions performed by the user group should be doable without help from their parents. Children want to be able to do something on their own and they'll learn more from exploring their selves. On the other hand, the social interaction between children and parents is also very valuable during a hike. An agreed percentage of a test panel of 8-12 year olds should be able to successfully use the product within a specified time.

75% of the people should be triggered to walk more often when using our device. Language should be recognized by voice recognition, or by selecting it manually (i.e. flags).

EASE OF LEARNING

It should be clear how to use it right away. No instructions should be given beforehand. The interface should be simple and intuitive, with only an introduction video to tell you what you can do with the device. This is important because you do it whilst walking, and you want to take in your surroundings as well, so you should not lose any time figuring out what to do. This can be easily tested, we can perceive how long it takes them to start up the device.

PERFORMANCE

Any action performed by the user should not take longer than a second to process. The system should react fast on the actions performed by the user, because you don't want to lose any time waiting for the device to respond. The system should be tested and iterated to achieve the fastest performance.

Other performance requirements are: The product should update the navigation map every 0.5 seconds. The product sends information that the client collected and posts this to a site where the client can view back this information (i.e. photos and highscores) when returned to the service desk, this should take only a couple of seconds. After this the product should reset, ready to be used by new customers.

MAPPING, AFFORDANCE AND CONSTRAINTS

Examples Mapping

Good: The knob for controlling the volume on your speaker. It's often in sight, and reacts immediately to your actions.

Bad: IDcompass, this site is not clear. It is impossible to delete wrong documents within the time students have in a day. It is also not clear where to go for uploading specific documents.

Example Affordance

The home button on your mobile phone is designed to take you back to the start menu, this is an intuitive way of going back (going home).

Example Constraints

Physical constraints: The charger will only fit in the specified connector. Magnetic induction is a more intuitive way of charging your phone.

Logical constraints: Swiping across pages, this works like turning pages.

Cultural constraints: Certain icons represent certain applications. We now associate a blue bird with twitter, for instance.

WEEK 4

SCENARIO

SCENARIO 1: GEERT

On a Sunday afternoon, the parents of Geert de Jonge want to go for a walk. Geert doesn't fancy this, but he heard from his friends that the NS has come up with a new device to make walking more fun (for kids). He persuades his parents to try this out. They go to the nearby train station and pick up this device. Automatically, the device tells Geert what he can do with it. The device lets him choose a desired hiking route, and tells him what to look out for, because that is where they have to go. A quest is created for Geert along the route that he has chosen, with verbal and picture quizzes, interactive games, and points of interests, where sometimes his parents need to help him. When they reach their destination, which is at another train station, he returns his device at the counter, and his answers, pictures, and highscores are uploaded to the internet, which he can look up at home. After an enjoying afternoon, Geert and his parents take the train back to the first train station.

SCENARIO 2: BERNADETTE

Bernadette and her parents are going to visit her grandparents in the countryside by train. When they get to the train station where normally the grandparents would pick them up, they instead pick up their grandparents and take a train further to the next train station. There, Bernadette picks up the NS device, and selects the station nearby their grandparents' house again. The hike goes through forests, her favourite surroundings for a walk. Along the route, she answers questions about nature and animals which her family can help her with. She can also take pictures with her family, because granny loves family pictures. When they reach the train station, she hands in the device, which automatically sends the pictures and answers to the internet. After saying goodbye to her grandparents, she goes home again with her parents, and looks up the pictures of the hike on their computer.

QOC ANALYSIS

QUESTION

How can the device know what the intelligence level of the user (the child) is?

OPTIONS

- **The user can choose his age.** At the beginning of the hike, the user has to select his age and the level of the questions will be adapted to that age.
- **The user can choose easy/medium/hard per category.** If the user knows more about history than he/she does about nature, he/she can choose to answer these questions on higher or lower levels of difficulty.
- **The system can adapt the level to the amount of questions answered correctly.** When he/she has answered a number of questions wrong, the level of difficulty will become easier, an likewise when he/she answers too much questions correctly.

CRITERIA

	Choose your age	Choose difficulty	Adaptive system
Flexibility To interruptions and changed intentions	Not flexible, fixed level	More flexible if you can choose difficulty per category.	Very flexible, can adapt very soon to the level of the child.
Pleasure Fun, wow-effect, pride of ownership	Not all kids have same intelligence, so might be too easy or too hard which the child won't enjoy.	If you can choose the difficulty per category, then the difficulty might be more adapted to the child, which will make it more enjoyable.	The difficulty is adapted almost immediately to the child, so it challenges and rewards the child more applied to the level of intelligence of the child, which makes it enjoyable.
Ranking scores Capability of comparing and ranking scores	Per age one ranking of scores, so this is very easy.	Because you choose the difficulty per category, it is harder to compose a score.	A child of 8 years old should get the same percentage of questions right as a 12 year old, which is on another level.
Efficiency Low user effort, minimal number of actions	You only choose your age once, after that you do not have to perform any other actions.	Select a difficulty at every single question/category, so not very efficient.	The system automatically adapts to the child, so no other actions required, which makes it efficient.
Multi-user situations Level of alignment on the user	The level is adapted to the child so the parents do not have to help.	The child might selected a too high difficulty level, and will need some help from his/her parents.	When the parents are helping, the questions automatically become harder, so they will have to help more.

The "Adaptive system" turns out to be the best. It scores the best on all five points of criteria.

TASK DESCRIPTION

BEGINNING OF THE ROUTE AND STARTING THE QUEST

Get your device at the service desk at the train station. After that you have to select the language. After this you have to choose your age. Then you can choose where you want to go and you can choose the route. When the route has been created, you can start the quest. When doing the quest, you can always switch to the map-mode where you can see where you are.

WEEK 5

THE PROTOTYPE

DESCRIPTION

The prototype we build is made out of foam with a real touchscreen (mobile phone). We gave it some curved edges so it will fit nicely in your hand palms. The dimensions of the prototype are 17.5x11x5 cm and it has a 4.7 inch Full HD screen.

We made it this way because in our opinions, a paper prototype would not fit our requirements. We wanted to make the experience for the users more realistic, by spending a little more time on the prototype, hoping to get better results in the user tests. We wanted the opinions from the users on how it looks, how the interface works and if they fancy the idea of carrying this around during the walk.

TASK DESCRIPTION

We wanted the user to try the setup. So from the moment you get the device in your hands until the moment you start your walk. The user needs to choose his/her language, age and destination/route. After you have chosen these 3 things you are ready to go!

User control and freedom

The setup is a fixed path, there is a fixed sequence of actions during the setup. This is because these are some reference point the system will need, to be able to adapt to the user. This won't be a real problem because it will take only a moment, so it won't bother the user.

Consistency and standards

On every page you can go back to the menu and choose the page you want to go to. This will give people more freedom. We placed this button on every page so people will be able to get to the menu whenever they want.

Error prevention

Since we have a voice controlled setup, errors are easily made. That's why we made a page for confirming your input. When the system recognized a wrong input you can type it in manually. One of the possible consequences is that people find it annoying to need to confirm their input during the whole setup. If that is true this will be one of the comments we'll get from the user tests.

Aesthetic and minimalistic design

Our interface looks pretty simple and minimalistic. We did this to keep it easy to use. Some people will find this design too simple and a little bit boring.

Help and documentation

At some point there will be users who don't know what to do. This might be because we tried to keep the amount of textual instructions as low as possible. To get people out of this confusion we made a Help button on pages where confusion might arise.

WEEK 6

EXPERT EVALUATION

DECIDE framework

1. **D**etermine the goals

   Find the user's opinions about the heuristics mentioned in week 5. And find their overall opinion

2. **E**xplore the questions

   What do you think of those sequenced actions?

   Which buttons are unnecessary or which buttons could be added?

   Do you find it annoying that there is a page for confirming after every input? How should you change it?

   What do you think of the design (of the interface)?

   Are there more pages where you think you'll probably need a Help button?

   What is your overall opinion of this prototype?

3. **C**hoose the evaluation paradigm and techniques

   Quick and dirty, using objective (user test) and subjective (questions) measurements.

4. **I**dentify the practical issues

   The voice-recognition which is supposed to recognize your input isn't working yet.

   The target group we are supposed to test our prototype on is children. Due to time problems we are not able to test the prototype on them so we have to test it on students.

   We'll need a mobile phone to fit into our foam model

   To make notes we'll need a pen and paper

5. **D**ecide how to deal with the ethical issues

   The system asks personal data. He will use this data to adapt to the user and to upload the information to a website. This won't be a problem since we are only testing the setup and the data will not be uploaded to the internet.

6. **E**valuate, interpret, and present the data

   The results are shown below.

USER EVALUATION

SUMMARIZED TEST RESULTS:

What do you think of the sequenced actions?

Some people found it nicer if they could use it right away. When we explained that this was needed for the system to adapt to the user, they said it was a good thing. They did say the actions were clear and didn't take too long so it wasn't annoying.

Which buttons are unnecessary or which buttons could be added?

A "go back" button should be added. We have already been thinking about that but we forgot to put this into our prototype.

Do you find it annoying that there is a page for confirming after every input? How should you change it?

For only one time (during the setup) this wasn't a problem for people. It would be if this would come back with every with action they did.

What do you think of the design (of the interface)?

The map should look differently, more like a TomTom or streetview. The overall look of the interface is a bit boring. Since it is a device for kids it should be more colourful and playful.

Are there more pages where you think you'll probably need a Help button?

Help button should contact the service desk that will help you. Also an FAQ sheet is an option. The info shown when you tap the question mark can be shown all the time or for a few seconds/minutes.

What is your overall opinion of this prototype?

Great that it already works with a touchscreen.
It isn't really designed for kids (in looks), it could be more colourful and playful.
Other input: When you need to choose your destination you could also give possible routes instead of typing in a station. Since you probably won't walk more than 20 km.

The test results are at many points the same as we had expected from the expert evaluation. By doing the user evaluation you get more detailed results and you get some input from the users on how to improve your concept. So user tests are more useful than expert evaluations but expert evaluation is a nice way to see what you can expect from the user tests.

SUMMARY OF THE DESIGN

DESCRIPTION OF THE DESIGN

The NS Walk Device we designed is meant for children ages 8-12. They can pick this up at the station and use it during the walk. You first have to go through the setup to choose your language, age and destination. You can do this by telling the device your age and where you want to go, it voice controlled. We made it playful for the kids by integrating a quest, with all kinds of questions and assignments. They will also learn about nature, history, buildings etc. This will make the walk with their (grand)parents a lot more fun! The level will be adapted to the age of the user, and this level will be automatically adapted if the questions are too easy or too hard. Of course you can always take a look at the map so you know where you are, or take a nice family picture with the built in camera. At the end of the walk you can hand in your device and all the data (photos, answers, walking route etc.) will be uploaded to a website where you can look them up when you're at home.

SPECS

The design is inspired by the kidizoom. It will have rounded edges so it will fit nicely in your hands. It will also have a cord so you can hang it around your neck. The device will have a touchscreen so it will be easy to control.
There will be a build in GPS to know where you are and a camera to take pictures wherever you want.

REFLECTIONS

REFLECTION ON PRESENTATION

We had to do quite a lot on the presentation at the last moment. But due to the other pair in our group, who were a couple of weeks behind, we had to wait until the last moment to prepare our presentation, because we had to reflect on the differences between our designs. Therefore we weren't as good prepared as we had hoped.

Despite this we have tried to prepare our presentation as good as possible. Some of the feedback was that we should have been focusing more on explaining our design in the presentation. We thought we had to focus more on the actual research behind our product which we thought was the core of the assignment. We did not spend a lot of time on the prototype because we thought it was not the intention of this assignment.

REFLECTION ON THE ASSIGNMENT

Because we focused more on the research part we did learn more about creating a user group, setting your experience goals and working from those goals. We were not allowed to start thinking about a concrete product until the end of the assignment, which made us focus on other parts that we would usually do during our project(s). Therefore the focus was more on the users, which we thought to be the intention of this assignment. We learned a new approach to designing a product, which in our opinion was a very useful lesson.

APPENDIX

HANDOUT PRESENTATION