DDB120: Design for the
User Experience

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Table of Contents

CHAPTER 1
INDIVIDUAL

CHAPTER 1 | Human needs & economic paradigms

Marius Ursu | Physical exercise

I. Wearable smartwatch FitBit

Autonomy: Highly customizable, so yes.
Competency: Opens up world of challenges and behavior change, so yes.
Relatedness: Increases access to messaging, so yes.
Stimulation: Medium, because normally does what you configure it to do.
Popularity: It is a novel product, so increases sense of power and popularity.
Security: Connected usually is associated with security. So yes.

Economic paradigm: Experience
Because of the data-driven and cooperation aspect of the product, it think it illustrates the knowledge economy. The "develop your potential" element is very strong, because it is a tool for self-improvement. It empowers people by giving them a coach and friend that is always objective. Everybody is able to pursue their aspiration of setting goals and accomplishing them or not. The customisation element is very strong, because there are different models of the product, and different goals one can set.

The power of the brand is weak, because it is simply an enabler. The real power lays in engagement, because people already have an incentive when they buy the product. But it only becomes stronger when the peer pressure and competition kick in.
The main argument for why this is part of the Knowledge economy is that the brand element in the Experience economy is replaced by the community element. Each person is given power to design their own experience in a creative way and then share it with their peers. Thus it is an open tool that allows users to achieve the need of self-actualisation.

II. Nike+ running shoes

Autonomy: Simple product, with a simple meaning, so not really.
Competency: Opens up world of challenges and behavior change, so yes.
Relatedness: Allows for competition and comparison, so yes.
Stimulation: High amount of play and motivation.
Popularity: It is a novel product, so increases sense of power and popularity.
Security: Not touched

Economic paradigm: Experience
The main purpose of the smart running shoes is to make exercising more engaging. The end user is put in the center of the experience, and the app lets him customise the activity. The "Nike" element in this deal is very important, and that makes the economic driver "Marketing and branding". It may very well be that nike is losing money on the sensor itself, but this changes the image of the company. The breaking of social taboos is strong, because it was a very novel device when it first arrived. The final argument for why we are talking about the Experience economy, is that using the app and commercials, the brand is promoting itself.

III. Complete set for training indoors (dumbbells, horizontal bar, etc)

Autonomy: gives the freedom to exercise in a place one chooses. So yes
Competency: offers the opportunity to increase one's health and stamina, so yes
Relatedness: quite the opposite, it eliminates the social element from sports unless used side by side
Stimulation: moderate amount of customisation relating to the activity, so mildly stimulating
Popularity: not at all
Security: being inside, feeling relaxed and calm rather than exercising outside or in a shared space, so yes

Economic paradigm: Industrial
The quest is to modernise one's life. Bringing comfort, exercising in your own house, rather than outside in the bad weather. The approach follows cultural codes because these kinds of kits for doing sports were becoming increasingly popular. The value proposition is commodity, because it is optional, and it increases comfort. It's main quality is being a product that covers a very specific need: exercising in a designated place while being stationary.
For the company, the economic driver is mass-production, because: it has a simple application, is not complex in construction and requires selling. Therefore, the investment in branding is minimal.

Scaling up
It would connect to an app or smartphone and make it friendlier to use. There would be a platform which would allow for submission of videos and complete exercise plans. Statistics and achievements would open up as well. Possibly even receiving feedback on them.

What would make it more "experience" driven, is if the company would also start to produce food supplements or other associated products. This would fulfil the growth need for the company, and it would make the tangible product into a complete service/ experience.

This is not just a tool for adding comfort to your life, but it allows you to enter a process which makes you healthier at the other end. It has elements from the knowledge economy here, but it is too well defined in production to enable self-development and creativity.

The connection to the end-user made possible by this platform is what allows the product to transition into the next economy. Being comfortable while doing sports is just a need. Combining the device with the service element described above makes it into something that can fulfil aspirations (of being healthy, of being in charge of one's training schedule).

The experimentation element is quite strong, because there are many pieces to the set which can be used in interchangeable ways.

From the business perspective, I propose the product to be branded. As a result, it would also become a product-service mix, the service being coaching and feedback on the progress. The product would cease to be simple and limited, and would become an experience of becoming healthier.

I. Classic radio (Philips L5X25T)

The basic human needs satisfied with this product were competency and stimulation. Competency because it was quite a skill to be able to operate an old radio. For example, the user needed to know where the channels were etc. Stimulation because the user never knows exactly what music is going to come on or what they are going to listen to, this causes coincidence and the feeling of mystery.

From the view of the user the captivating idea of this product is product ownership, the view is global. The quest is modernizing one's life and the effect is productivity and family life. The skill was experimentation, because the users could experiment with listening to different channels and music. And the approach was following cultural codes, everyone got a radio, so you needed to get a radio. From the views of business the economic driver was mass production, the focus was product function the quality was in the product and the value proposition was targeted experiences. It was about the experience of listening to music without buying records. The approach was persuade to purchase and the goal was profit.

Overall this product has characteristics of the industrial economy and of the experience economy, but the most characteristics of the industrial economy, thus it is placed there.

II. Itunes

Itunes satisfies the autonomy, stimulation and security human needs. The human need of autonomy is satisfied, because the users can listen to whatever music they want. The human need of stimulation is satisfied, because the user can find new music, which will be stimulation. And the human need of security is satisfied, because before the rise of itunes, the only way to download music was to do it illegally. This was unsafe compared to downloading via itunes.

Looking at the people's mindset, the captivating idea was experience, the experience of listening to music. The view was global and the quest was modernizing one's life, because it modernized one's life from going to the store to get a CD if you wanted legal music, to being able to download it legally. The effect does not really fit any of the paradigms, because itunes is a leisure product. There is not really much skill required for using itunes, but if assigning one type of skill to it, it would be experimentation. This is because the user was allowed to experiment with listening to different kinds of music, instead of listening to the music that was available in the local record store or on the radio. The approach was following cultural codes, because legally acquiring music is following the cultural codes again, compared to downloading illegally, which is breaking the social taboos.

Looking at the business mindset, the economic driver was marketing & branding, the focus was brand experience and the qualities were a product-service mix. It was the combination of the program itunes which is a product to listen to music, combined with the service of being able to download music through this program. The value proposition was commodities, this product made it easier to get music legal and the approach was to promote brand lifestyle. This approach of promotion can be seen from their commercials (e.g. https://www.youtube.com/watch?v=00vZhIw6Zl8) where the lifestyle being young, and listening to music on your ipod to the music you downloaded through itunes is promoted. The goal of itunes was growth, from downloading music illegally to making it legal.

Overall itunes has charactaristics of the industrial economy and experience economy. But because of the brand focus, the experience economy fits the best to itunes.

III. Apple music

Apple music satisfies the basic human needs of autonomy, relatedness, stimulation, popularity and security. It satisfies the human need of autonomy, because the users can listen to whatever they want, even without committing to that song/album by paying for it. This is also why the human need of stimulation is satisfied; you can easily find and try new music with it. The human need of relatedness is satisfied by the possibility to share playlists, also with family and friends. This is also why the human need of popularity is satisfied, making good playlists can have impact on others. Just as with itunes, apple music satisfies the human need of security, because it is safe, definitely compared to downloading.

Looking from the people's mindset, the captivating idea is experience, because it is about the experience of listening music. The view is global and the quest is individual empowerment, because it allows the user to share playlists and music. The quest can also be seen as modernizing one's life, if the focus is on making it easier to listen to different kinds of music. It depends on what the user uses it for, but the product allows both. The effect is meaningful contribution, because every user can contribute to the available playlists. A good skill for the user to have is creativity, because this allows the user to make better playlists that can be shared. The approach is break social taboos, because it feels like you can listen to any music practically free, because you only pay a small fee once a month. This is breaking the social taboo of the user having to pay for every song.

Looking from the business mindset, the economic driver is knowledge platforms, the focus is brand experience and enabling creativity. The qualities are a product-service mix, just as with itunes. The value proposition is targeted experiences and the approach is enable to participation. The goal is development from older methods of listening music to new modern life methods of listening to music. The goal is not specifically growth anymore, because apple is already a big company and does not have to focus on growth anymore.

Overall, apple music is in between the experience and knowledge economy. It is clear that it had aspects of the knowledge economy, but still aspects can be improved to get it actually in the knowledge economy.

Scaling up
Apple music is kind of the scaled up version of the classic itunes already. The individual becomes more important in the product, but this is still limited at this point. Scaling it completely up to the knowledge economy could be achieved by making it easier for users to upload their own music to apple music, as with soundcloud, because at the moment this is still difficult. Also the individual could be more empowered by informing the users better about the sharing of playlists, because at this moment, some users are still unaware of their playlists being shared and they don't put in effort to make them nice for everyone. Also the shared playlists could be promoted better in the homepage of apple music. To enable self-development better, also a good feedback system on playlists and music could be implemented, allowing the users to take this feedback into account and become better. Allowing the user to connect to facebook could also help scaling apple music up to the knowledge economy, as a way of promoting self-made playlists.

I. dB Technologies speakers

Human need(s) involved: Autonomy. It is hard to connect any human needs to this product as it is a professional product instead of a consumer one. I think autonomy fits it though, as it allows users to do what they want, which is mainly having the power to fill big venues with sound.

Industrial Economy
I. **Specialisation:** Product specifically designed for stages and bigger venues
II. **Product Function:** Brands do not matter, performance and function does
III. **Persuade to purchase:** no lifestyle or participation incorporated, persuading customers to buy yours instead of others

II. Apple iPod Nano 1st Gen

Human need(s) involved: Popularity. The iPod is/was a fashion symbol, people recognize the iPod, and it has a high quality status. This is what makes it a popular product to have, and to be associated with.

Experience Economy
I. **Explore lifestyle identities:** an iPod is more than just an mp3 player, it is a way of expressing your identity
II. **Brand experience:** the Apple brand stands for quality and usability, and their products make you experience this feeling.
III. **Growth:** Brand identity strengthens when more people endorse and use your brand

III. Spotify

Human need(s) involved: Autonomy, relatedness, stimulation, popularity. Spotify gives you control over your music library and how you use it (autonomy). You can share it with friends (relatedness), Spotify let's you discover new artists and songs (stimulation), and gives status and/or recognition to artists and people with popular playlists (popularity).

Knowledge Economy
I. **Individual Empowerment:** create your own account, create your own playlists
II. **Enable to participation:** invite friends to listen to your playlists, see what other people are listening to right now, sharing to other social networks
III. **Development:** continuously improve Spotify with updates

Upscaling Spotify v1.0

Part of Spotify's money goes to charity, or to environmental causes (because of the green logo). For example, for every advertisement people listen to, for every subscription to Spotify Premium, for every song listened to (artists get paid per play), a percentage goes to good causes. This ticks some boxes in the transformation economy aspects, as it addresses collective issues (environment etc.), makes using Spotify a meaningful contribution to global issues (or local, if the money goes to local charities), and it enhances the meaning of Spotify.

Upscaling Spotify v2.0

After receiving feedback, the ideas for upscaling were iterated. Upscaling Spotify should not just be about donating money, it should be more about what Spotify can really do for communities. Instead of donating money to charities, Spotify should use the money to set up local musical events (i.e. workshops, lectures, open stages) to encourage people to make and create music, and to spotlight and scout for new artists and bands.

CHAPTER 2
METHOD &
APPROACH

CHAPTER 2 | Method and Approach

Introduction to case study

The experience of listening to music while driving is something that is happening for most drivers and their passengers. It happens early in the morning, and has a strong tie to the mood of the person during the rest of the day. This brings an opportunity to ease tension and contribute to a good start of the day. The team decided to investigate the experience using contextual inquiry, in order to learn user research for the purpose of gaining insights. The following chapters describe our process, findings and learned lessons.

The outcome was broad, as was the question. At the end of the report we make suggestions for how the results may be used and what would be reasonable future steps.

> **Design Goal |** *The goal of this study is to facilitate in designing an enhanced music listening experience while driving*
>
> **User Research Question |** *Which elements of listening to music while driving contribute to a good or bad experience?*

The study had a broad interest on purpose. Shaping the scope in a narrow way in the beginning would miss aspects that were decided irrelevant on instinct, not from observation. Moreover, the design goal is broad, and this determined what was investigated.

Method | Contextual Inquiry

The contextual inquiry method made sense because of practical implications. Documenting or keeping a diary (the diary study method) while being on the move is very hard or even impossible for participants, while doing it shortly after would decrease the reliability. Using objects (the cultural probes method) even more so. Contextual Inquiry allows researchers to observe the participants, and occasionally ask them questions or ask them to narrate what they are doing. This requires less focus from the participant, focus they need for driving a car, but does give the researcher the opportunity to gather information. The reasoning is further described in the "Motivation and appropriateness" part of Chapter 4.

CHAPTER 3
PILOT STUDY

CHAPTER 3 | Pilot Study

Introduction & Setup

A pilot study was conducted in order to test the approach and improve it before performing the actual study. The pilot test was conducted with 3 participants. After the user is acquainted with the test, and the forms are signed, the test begins. From the moment that the participant enters the car, the interviewer spends approximately 15 minutes observing, and then approximately 10 minutes asking follow up questions.

Target group

People who listen to music while driving on an everyday basis.There were no age restrictions on purpose, because it might be interesting to see difference per age group. At least one male and one female. No status and earning restrictions were set, because it was expected to be interesting to see the differences.

Sequence of events

- Meet participant.
- Explain that the participant is going to make a drive with you for approximately 15 minutes and you will ask questions during the drive according to the actions of the participant. Tell the participant to act as if he/she normally would, without you in the car.
- Ask the 'questions to ask before'. (appendix 1)
- Make the drive and ask the 'questions to ask during'. (appendix 1)
- Observe actions regarding to music
- Ask about actions of participant when in doubt about motivation.
- Write down interesting questions for afterwards if any come up.
- Watch emotions of participant.
- Ask 'questions to ask afterwards' (appendix 1)

Analysis

After having performed the pilot study, the recordings were transcribed or actions were memorised as the recorder was not used with all participants. This resulted in the themes and codes below.

Initializing & Finalizing
- Initializing drive
- Initializing music
- Position of controller
- Finalizing
- Switching between the radio and phone

Content
- Changing music
- Radio usage

Volume
- Change in volume
- Volume levels frustration

Conclusions & Feedback

In the pilot study, the routes were not planned before the experiment, this resulted in unclarity where to drive, for both the participant and the researcher. This causes confusion during the drive, which should be avoided as much as possible. That is why the routes were planned in the actual experiment.

In the pilot study, there was inconsistency between the researchers about telling the participants what the study was about. This gives inconsistent results and should be avoided. Both informing and not informing the participants about this has advantages and disadvantages. If the participant is not informed, there will be no focus on this so the participant will not make an attempt to act in a way that is 'good' for the study. The problem with not informing the participant about this, is that the participant might not turn up the music or even turn on the music, because the participant thinks it will make the voice recording less clear. Or the participant will forget the music, because of the pressure of being in a study. If the participant is informed, this is the other way around. That is why the participant going to be informed halfway in the actual study, so the advantages of both informing and not informing are included in the study. There are no disadvantages of informing halfway, because if the participant behaved different before informing, this will be known after informing and if the participant will act different after informing, this will also be known with the data of the part of the drive where the participant was not informed.

Also, the participant was not informed in the pilot study that no attention would be paid to their driving skills. This caused all participants to feel more nervous while driving, because they thought their driving skills were assessed. This changed their behavior regarding music. To make the participant feel more comfortable during the drive, having a normal conversation during the drive when nothing relevant was happening was added to the sequence of events.

In the pilot study, the consent form was not finished yet, so the participants did not sign this. This is necessary in conducting a study, so during the study this form was available.

When analysing the pilot study, it was found that the richness of the data was limited. To increase the richness of the data, a voice recording was added and the participant was asked to explain all actions in the study. Furthermore, making photos and notes of the equipment was added.

CHAPTER 4
FINAL STUDY

CHAPTER 4 | Final Study

Introduction
The real study builds on top of the lessons learned in the pilot study. The structure of the drive was modified in order to make it more natural, expose the driver to the real world driving implications.

Setup of study

Participants
For the actual study nine participants were found of whom eight were driving their own car and one was driving someone else's car. There were no restrictions set on age, because it is interesting to observe the behavior of different age groups, the age of the participants in the study ranged from 18 up until 55. The gender of the participants was restricted by at least one male and at least one female. Two of the participants are female and the other seven are male. There was also no restriction set on status and earning just as with age, also this varied among the participants. The status and earning of the participants ranged from participants that have a steady job and a good earning to students without a job. Each of the researchers conducted the study with three participants. All of the participants were known by at least one of the researchers.
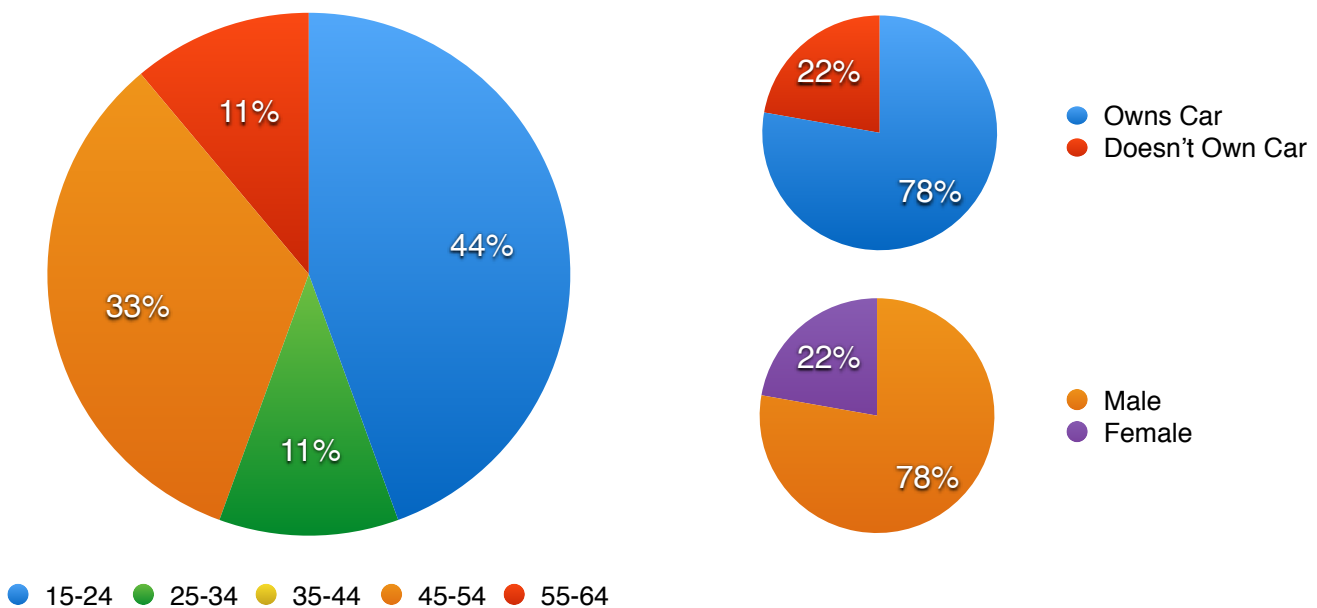

Figure 4.1 | Demographics

Study
To conduct the study, first the researcher conducting the research planned out a route of approximately 15 minutes that preferably included 30 km/h, 50 km/h and 70 km/h routes and a small part of the highway. Then the researcher meets the participant and explains the study partly. The researcher explains the participant that they are going to make a drive in the car of the participant and that the participant is going to be the one driving. Also it is explained that during the drive the researcher will ask questions according to actions of the participant and that a voice recorder is turned on. The researcher asks the participant to act as they would normally would when being with someone in the car. The participant is not informed at this point what the research is about, but is informed that no attention will be paid to their driving skills, in order to make the participant feel more comfortable. Also, the participants is asked to explain their actions in the car.

Now the participant is sufficiently informed about the experiment, it is asked to sign the consent form. Also two preliminary questions are asked in order to get an understanding of the background of the participant. These two questions are "What did you do before the study?" and "What mood are you in now?".

After these questions the participant and researcher go together to the car, the voice recorder is set-up and the participant starts driving while the researcher gives directions according to the pre-planned route. During the drive the researcher pays attention to the actions of the participants regarding music and asks questions about this. Also the emotions of the participant are observed. If interesting questions come up during the drive that are not appropriate to ask at that moment, these are written down and asked afterwards.

Not every moment of the study, interesting events regarding music will happen, at these moments the researcher will make an attempt to have a normal conversation with the participants. This will make the participant feel more comfortable and will make the drive more natural, what will contribute to more reliable results.

Halfway the route, the researcher will ask the participant if the participant is doing anything different during this drive than normally, because the participant knows it is a study. Then the participant will informed about the purpose of the study. The participant will be told that if there was any change in behavior regarding music, because the participant thought this was better for the results of the study (for example not turning the music very loud), the participant does not need to have this change in behavior.

Now the rest of the route is driven and the participant will be observed and asked questions as in the first part of the route. Afterwards the researcher will make photos and notes of the music equipment used, for context. Then the participant is asked what his/her mood is now, to observe a possible mood change, because of the drive. Also the participant is asked how the music was experienced in the drive, what the participant is going to do after this and if the participant is satisfied with the music equipment in the used car.

All researchers followed this approach, guaranteeing consistency in the study.

Motivation and appropriateness

The method used was a contextual inquiry. This was found to be the appropriate method in this study because the participant would be driving and using a cultural probe would be hard and possibly dangerous while driving. A diary study collects data from the memory of a participant and the music in the car is not a very memorable event, thus making the data less reliable than a contextual inquiry.

The method described above gives rich data about the music usage of the participants in the car, because of the contextual questions before and after, the questions during the experiment, the fact that the participant explains their actions and the voice recording. It gives a good picture on the influence of music while driving on the mood of the participant, because one of the focusses of observation is and it includes questions focussing on the emotions and mood of the participant.

It is the goal of the study to find what contributes to a good and bad music listening experiences while driving. This can be observed in the emotions of the participants, and because of this the method of the study is appropriate for the goal of the study.

Analysis

This study was set up to find the factors that contribute to a good and a bad music listening experience and this study was conducted in a qualitative way. Because of this, the study outcome was a rich data set. This rich data set had to be filtered to find the relevant information for making a design. A thematic analysis was performed to achieve this.

The transcribed data gave rise to codes that were ordered to come to six themes. These six themes summarize the data of this study. These themes, with the codes belonging to them, can be found below. The transcribings and raw data can be found in appendix 2.

Initializing & Finalizing
- Initializing drive
- Initializing music output
- Mood before (what the subject was feeling before)
- Initializing music input
- Position of controller
- Finalizing drive
- Finalizing music input
- Switching between the radio and phone

Content
- Choose presets
- Change presets
- Choose song
- Change song
- Choose playlist
- Change playlist
- Asking passenger for help with music
- Radio usage

Inabilities
- Inability to change song
- Inability to change playlist
- Inability to listen to the radio
- Inability because lack of knowledge of equipment

Awareness
- Conversation about music
- Sharing information about current song
- Conversation about not the music (no awareness for the music)
- Singing along
- Expressing associated emotions with current song
- No interest to be aware of music
- Preoccupied

Volume
- Turn up volume
- Turn down volume
- No volume change
- Current volume influences conversation
- Too loud volume causes misunderstanding
- Car louder than volume
- Volume levels frustration: Music suddenly louder or lower than expected

Interruptions
- Answer call
- Send call
- Traffic information
- Commercial on radio
- Phone answering frustration

CHAPTER 5

DATA

COMMUNICATION

CHAPTER 5 | Communication of Qualitative Data

In order to learn how to create moodboards and to create a design, we worked in collaboration with 2 other teams. Being the researcher team, we worked with Benno Thijs, Jona Pisters and Tim Muyrers as a design team in order for them to propose a design. The moodboard created by them, based on our research is presented to the right.

There are some main themes that stand out from the illustrations. Starting from the top left, the theme of awareness is addressed. Volume control is placed at the top toward the middle of the poster. Top right is about the mood theme. In the middle of the poster, the interruptions are illustrated on the left side. In the initialization, clearly illustrated by connecting the phone to multiple speakers. Middle right is content. Bottom left is interruptions, clear for the Dutch speakers. Inabilities hard to illustrate, but can be found in the bottom right and everywhere.

We also worked as the design team building on top of the work done by Rik Baltussen and Art Selbach. The moodboard created by us in order to propose a design is to the left.

The study conducted by Rik and Art aimed at improving the productivity of people by introducing active breaks. The objective presented by the research team was short: "Make people take regular healthy breaks". It discovered that the individuals followed a predictable schedule. First they would work, then feel that they needed a break. The break was often non-active, and at random intervals. This gave them the feeling of being active, but later they would feel drained of energy. This journey is reflected in the three themes "awareness", "break activities" and "productivity throughout the day". This chain of events is also present in the StoryPly papers we filled in, the problem being identified at "inactive and irregular breaks".

The 7 main themes were conveniently separated by colors in the results of their work. We found images that portrayed the findings and placed them as the themes they identified suggested. The areas cover the possible causes of taking or not taking breaks, how the activities go, and the results. For instance, a participant may feel slow in the morning. And if they continue that activity level throughout their work, which is usually sedentary, then it would improve their productivity. The need for a break would increase, the type of break would be slow and inactive as well, and therefore their morning mood would continue throughout the day. The moodboard served as the basis for the design presented in the next chapter.

CHAPTER 6
DESIGN CONCEPT

CHAPTER 6 | Design Concept

The goal of the design in brief is to "Make people take regular healthy breaks". The design was based on the moodboard and on the data provided by the other team. The "Storyply" method, developed by Berke Atsoy, was used, which helped in formulating the discoveries and the problem. Based on the moodboard described in chapter 5, the few minutes available at the work session resulted in the following choice.

The design proposal

Main concept: Students have access to foodtrucks that provide free coffee and tea.

Food and coffee would be provided to the students. The purpose is to make the prospect of getting up and moving around more attractive. Free stuff is known to be attractive and motivate people. When the student has a social element involving his friends, it adds to the motivation.

This brings a challenge: who will provide it and who will pay for it. The companies that would provide the goods would get publicity. A new food car may be provided each period by a different company, this would keep it stimulating and manage the costs of the companies.

In case the costs would not justify the venture for companies, the university can be asked for subvention. Or, rather than providing it for free, the companies would provide the products at a discount compared to the day-to-day price or the real cost of the product without a profit margin. The cost or profit question needs more research in order for this concept to become more convincing. It is entirely possible that companies would fight for the privilege to build new customers. It is also possible to offer these deals only at certain time intervals, thus introducing a predictable time element in the breaks.

There will be some risks to this concept. For instance, the canteen would not agree with free coffee from a competitor. This would not be a problem if the alternative solution of discount or timed sales would be used. There might be long queues due to big demand, even from other buildings. This is hard to avoid. The weather might be another obstacle in this challenge. In the case of Metaforum, the roof is covered. However it still influences the student's desire to grab a coat and go outside. For this concept to be applicable to other buildings, it needs revising. It may be posisble to fix this by incorporating the point of sale into the building itself.

A quick search did not return any experiments where this concept was successfully implemented.

2 other concepts
- A funky cantine. The proposal consists of a redesign of the existing canteen in the working space. It would have smaller tables, and different heights allowing for standing up. It may include a temporary exposition that renews constantly, this would stimulate the students with new information. TV's would show relevant information or special lesson material in a challenging manner.
- A productivity meter that charges when you take breaks. It could be hardware, but software would be more feasible. Similar things were tried, even by the TU/e. They used software on the school-provided PCs. This concept was already implemented and thus was not challenging enough from a design point of view, which is why we avoided it.

Tim is 20 years old and studies mechanical engineering at TU/e. By seeing the situation through his eyes, the design team is able to see the real-world implications of the concept and how it solves the users problems. The concept is tailored to Tim's situation. He is not consciously aware that if he took take more active breaks, his health and success in studies would increase.

He has 3 main supporting characters:
- Friends
- Teacher
- Fellow students

The friend or fellow student character is closely tied to the design solution proposed, by giving him a reason to stand up and move around.

Tim's points of tension were found to be:
- Deadlines and workload
- Preparation for exams
- Personal circumstances

The design solution of the food trucks is taking into account two of the student's pressure points, the deadlines and exam preparations. It may seem like it is taking precious time away, but it is in fact increasing his productivity.

The main motivations of the persona are:
- High Grades - Competency
- Finishing education - Security
- Learning new things - Stimulation

The two are already being met by his normal routine. The solution we propose would enhance his third need of stimulation and continuous learning. The cooperation with peers, talking to new people and being exposed to various documentaries and exposition stands would teach and stimulate Tim.

CHAPTER 7
DISCUSSIONS

CHAPTER 7 | Discussions

Marius Ursu

I would like to discuss first my understanding of these methods, and then propose a suitable practical application.

Cultural probes is an inquiry method which provides lots of data. It makes use of tools designed to record relevant data in the hands of the users. It's main purpose is to inspire, rather than be specific. It stimulates not only the designers, but also the user's in doing things they wouldn't otherwise do. It places a big focus on the demographics of the users. It is known for the ability to provide unexpected results. Like diary studies, it has a limit over the target group because of practical implications. It asks a lot from users as well. The effort of the designers is significant as well, as they have to design the probes and then process the large amounts of data.

Some friends of mine are working toward creating cohesion among cultures within a neighborhood in a european country. I believe that this method would help them gain broad insights into what motivates, drives these people coming from such different places. It presents a difficulty of knowing your demographics, but the early stage of this project makes it open for inspiration. The process of creating the probes also provides valuable insights based on the research. They should also think of a way to make sure people will return the probes, as they come from very different backgrounds.

The strong points of diary studies are: that they allow for lasting longitudinal and temporal information. The little intervention from the observers/designers means that the scaling is simpler. Obviously it is used for discovering information out in the field, and this brings the variable of uncertainty. It is very hard to predict what will happen, what will be relevant and what will not be.
A side effect of this method is that you can use it when you want people to remember something, you just have to ask them about it using the study.

After reading through the paper, I see the complexity of choosing the medium of recording, as that also changes the way the user acts and records. The disadvantages are these: as i mentioned before, it expects a high level of prediction on the part of the designers. It limits the control that the designers have, which is a compromise because they don't participate directly. It can be argued that this method asks a lot from the users, which is connected to the fact that it changes the phenomena being observed. It makes the people more conscious and keeps them busy. It also has a limit in the target group: kids or handicapped people can be involved only if their abilities and limitations are taken into account.

A practical example of diary studies would be when you want to observe the people over a longer period of time, and see the progress over time. I think that seeing how people develop in their job would be a good example. A really good application of diary studies would be in one of my projects, where I try to observe if technology can make people age in a more healthy and active way. I would ask them to keep track of important indices, and some of this would be automated because the product itself has the job of recording progress.

Contextual inquiry is a method that requires very heavy investments from the researchers. The other 2 tools provide a solution that bypasses this difficulty. The advantages of contextual inquiry is using the judgement of what is relevant in the field, not in the office. And this can lead to things that would otherwise go unnoticed. The presence of an objective observer provides the reliability that the other 2 study methods lack, as they rely on the user recording accurately. I believe that the example we provided for this method is a good application.. Having observed the work done by our team, preparing the studies for the other methods takes a lot more effort. It requires the designer to predict what is of significance and adjust the inquiry accordingly. Contextual inquiry offers the chance for the designer to improvise and shape the investigation while it is already in progress. As we state in the report, i am reasonably sure that the other 2 methods would be unsuitable for somebody driving. The closest we could get is using a diary study, and asking for the driver to make something like a live video blog.

Ward Seetsen

The three methods discussed in this elective were the contextual inquiry, diary study and cultural probe. Since our group performed a contextual inquiry, I would say I got the most expertise in this method, but the other methods I could also perform because of the insights from the other groups. All three methods give insights in the 'normal' behavior of the participants, but all give a slightly disturbed image, because they influence the participant. In the contextual inquiry a researcher observes and discusses the activity of interest while the participant is performing this action. The fact that the researcher is present influences the participant, which causes slightly disturbed data. The big advantage of this method is that the researcher knows what is relevant in the action, so the data acquired is the data that is relevant for the research. Also this type of research gives a rich data set, because all actions of the participant are observed and can be talked about, instead of only the actions remembered by the participant. This type of study does require the most time, especially if the relevant action takes a long time, because the researcher has to be present during the whole action. Actually being there as a researcher is also an advantage if the researcher is also the designer, because of the rich picture the researcher gets, which might not be possible to formulate in words, allows the researcher/designer to get an intuitive feeling of what designs might work and what designs might not.

A diary study has the advantage of no researcher being present, allowing the participant to perform the action without being biased by the researcher. The main disadvantage of a diary study is that the participant might provide biased data, because of the desire to provide the 'right' data. This is something that happens unconsciously, but is not beneficial for the research. This can be improved by choosing participants that have no interest in the outcomes of the research and have no affiliation with the researchers. Also formulating the questions in the diary study correctly can help improving this, ask specific, non-leading questions to get the most reliable result. Another problem can be that the participants answer the questions to the asked questions in the diary.

Also the data provided to the researcher is the data that the participant remembered which already filters and biases the data. Also the fact that the data has to be written down in words limits the data. There is also the risk of participants providing too limited answers if they are not enthusiastic about the research of if they have limited time to fill out the diary.

The advantage of a cultural probe is that the researcher can steer the data that is desired to be acquired with the study. This can also be done with a contextual inquiry and with a diary study, but the least with a contextual inquiry, and more with a cultural probe than with a diary study. The disadvantages are alike with the disadvantages of a diary study, the participants biases the data in the same ways as with the diary study.

The steering of the data can be beneficial, if the study has a specific scope. But if the study does not have a specific scope, the use of a diary study or contextual inquiry might be better.
Summarized it depends on the kind of study that the researchers want to perform, which method they should choose, because there is no single best method, just a best method for a specific study. Whichever type of study the researcher chooses, it should be made sure that the biases due to disadvantages of the type of study are minimalized.

This elective touched upon three research methods; contextual inquiries, diary studies and cultural probes. We as a group used the contextual inquiry method to perform our study on listening to music on the move, as it was best suited for our case. The reasoning behind this is explained extensively in chapters 3 and 4. I will give an overview and discussion of how I experience and perceived these methods during this elective.

I will start with the contextual inquiry method, as this was the method used by our group. Contextual inquiry is a method that is challenging to prepare, quite easy to perform, and challenging to analyse. Preparation is challenging because it needs thorough thinking about what you are going to ask, observe and have the participants do, and how this is relevant for the research. Performing the actual study is quite easy, because everything has been thought out beforehand and you just act out what has been prepared. The only thing that can be tricky, is to not influence the participant in their actions and answers, and this can definitely differ between researchers, if the study is performed with multiple researchers. Analysing the data is challenging, because the study is observed, recorded, and sometimes taped as well. This all combined generates vast amounts of data, which makes for quite some work when coding the transcripts, theming the codes, and deciding on relevance. Contextual inquiries are useful for obtaining a broad understanding of the user; it generates a lot of data and a clear overview of obvious problems and opportunities, it is however difficult to go into depth and uncover latent user needs. Also, the outcomes of the participants in this research method can be influenced by the researcher. The participant is asked to behave as if the researcher isn't there, but people are always going to behave differently when being watched.

After having spoken to other teams about what their experiences were with the other methods, I will provide a discussion on the cultural probes and diary studies methods. This is not based on personal experience, but on the opinions and experiences of others.

The cultural probes method is difficult to prepare, easy to perform, but relatively easy to analyse. Cultural probes is a method that makes use of objects and other physical attributes to ''probe'' the participants, in order to make them more aware of the context in which the research is performed. Deciding on how to shape these probes is very difficult, as an insufficiently designed probe might not deliver any valuable insights, whereas another probe might deliver. This makes preparation difficult, and time-consuming, as the probes have to be produced as well. Performing the study is easy, as the researcher is often hardly involved. The researchers only have to deliver, explain and collect the probes, with the only hazard that participants don't understand it or don't know what to do with it. Analysing is relatively easy, because data quantity is limited, but data quality is very resourceful. This method generally delivers insights quite clearly because the participants often literally write down their own findings, and the method is most likely to deliver surprising results.

Diary studies is a research method where participants are asked to keep a diary of what they do during the day. A diary study is quite difficult to prepare, easy to perform, and challenging to analyse. Preparing a diary study requires a carefully chosen scope. Asking for too little will not provide any insights, whereas asking for too much might annoy and trouble the participant. It is also quite difficult to chose what the participant has to document so that it is relevant for your research. Performing the study is quite easy as there is no researcher involved. Analysing can be challenging if there is limited data generated, and the data are no clear insights, this is up to the researchers to derive. The upside of diary studies is that people write down what is important and relevant to them, the downside is that they might leave out details that are obvious for them but relevant for the researchers.

CHAPTER 8

REFLECTIONS

CHAPTER 8 | Reflections

Marius Ursu

I followed the course "Designing for the User Experience" in order to learn more about user centered design. It was assigned for my pre-master program and I strongly believe that I accomplished that goal. It gives me a starting point in psychology fundamentals related to design, which I can explore further outside the course. I learned a few tools used for insight generation, which is exactly what i was lacking following my applied science background. I believe that a crucial part of the designers job is at the beginning of the project, when the scope and relevant information is collected, therefore i plan on learning more about the early methods of getting relevant data and properly defining the problem area.

I will continue my study by investigating what other tools are available from a qualitative view and then go into the tools used for evaluation. It gave me great pleasure to play the detective and I wish we had investigated a problem that was part of a practical project, rather than a hypothetical example.

Ward Seetsen

I never used a proper study in the beginning of a design process yet. I have mostly based designs on my assumptions of the target group. To get a better picture of the target group I have visited the target group, before designing, but never with a specific plan and a properly formulated study that was conducted on multiple participants. In the future I will do this in my projects, because I think even though it seems as if it takes more time than just beginning to design, it will safe time in the end. The design has to be less adjusted after testing it and the overall quality of the design will improve. If I have a lot of time in future projects I will plan more time for this stage of the design process and conduct this research more elaborately. If there is less time, I will still conduct such a research, but I will do it briefly. My next project will be my FBP, here I have a lot of time and I will conduct a proper preliminary research.

As I interpreted it, the goal of this elective was mostly to become aware of the importance of involving users early in the design process and to teach how to do this. This course did make me aware of the importance of involving users early in the design process as I described above and it also thought me how to do this as can be seen in chapter 7. In chapter 7 I also described how I would choose which method to use, by weighing the advantages and disadvantages of the different methods. I think this elective achieved it's goal for me.

Jelle Wories

I enrolled for the Designing for the User Experience elective, because I wanted to learn about structured user research methods. I had conducted user research before this elective, but never in a completely structured manner, as was done now. During the elective, I learned a lot about the research methods proposed, one of which in particular, as my team and I specifically chose and performed the research method called contextual inquiries. I will not go over these experiences in detail, as you can read about them in chapter 7, but I do want to add that I learned how to use the data generated in these methods. I learned how to grasp the relevant data from the large quantities of data that we acquired, by transcribing, coding and theming. I believe that this will be very useful for me in the future, as it the method of analysing is widely applicable.

Some other aspects or subjects that were touched upon in this elective were the ''Human Needs'' theory, which talks about products addressing basic human needs and how to design for and add extra dimensions to products and services, and the ''Economical Paradigms'' theory, which places products and services in certain ages according to production focus, product usage and regard for economical or ecological impact.

APPENDICES

Appendices
Appendix 1 | Questions & Observations

What are we going to observe?
- The tools they use. Note whether the tools are being used as they're designed, or if they're being repurposed. What are the brands?
- The sequences in which actions occur
- What kinds of interactions they have. What are inputs and outputs? What is the nature of the interaction? (informational, technical, social, etc.)
- What emotions do people show? Are there situations where the user is showing frustration?
- What platforms they use for listening music (radio, phone app, etc)

Questions to ask before
- What did you do before this?
- What mood are you in?

Questions to ask during
- What problems did you encounter?
- If emotion occurs -> ask where this emotion comes from. (especially if it's related to the music)
- On actions regarding music experience: What did you do? & Why did you do this?

Questions to ask after
- What mood are you in now? If change in mood: what has influenced this change in mood?
- Even though we told you to behave naturally in the car, are there things in your behavior that were different now compared to driving alone?
- How did you experience the music in the drive we just had?
- What are you going to do after this?
- What kind of a music installation do you have in your car? (brand/type/kind etc.)
- How do you feel about the music installation in your car?

Appendix 2 | Transcribing & Raw Study Data

Data participant #1

Event/Observation	Code
Mood is ok, but a bit physically hurt	- Mood before
Removes phone from pocket, place in the tray, connects the Aux cable, starts spotify	- Initializing music input
Using last playlist as in house, random playlist	- Initializing music input
The user rarely changes the playlist or song in this short trip	- Choose song
The volume adjustment is not smart, so it has to be done manually when switching between the radio and phone, makes the user feel frustrated	- Volume levels frustration
The radio is used occasionally, when the trip is short	- Radio usage
The radio is used on weekdays, when the user is in a hurry	- Radio usage
The radio uses preset stations for the radio	- Radio usage

Data participant #2

Event/Observation	Code
Mood is ok	- Mood before
Removes phone from pocket, place in the tray, Bluetooth automatically picks up	- Initializing music input
No music played	- Initializing music input
The radio is switched on by itself, pre-set stations are used	- Radio usage
The user is forced to use an AUX cable when the music is played	- Initializing music input
The volume adjustment is happening by itself in phone calls	- Volume levels frustration
The microphone switches on automatically in loudspeaker when a call is initiated, by using AUX, but the phone must be in listening range	- Phone answering frustration
The phone must be answered from the phone itself, except when bluetooth is used, which is frustrating	- Phone answering frustration

Data participant #3

Event/Observation	Code
Mood is ok, tired	- Mood before
Phone stays in pocket	- Initializing drive
The Radio starts playing when the ignition is on	- Initializing music input
The radio is left to play	- Radio usage
The user rarely switches stations, and when he does, it's because of bad songs or commercials	- Commercial on radio
Commercials often overlap between different stations, so it's hard to find music	- Commercial on radio
The user has a set of stations that are pre-set	- Choose presets
The user does not like to listen to only 1 kind of repetitive music or artist, he prefers something like shuffling among playlists/genres/artists	- Sharing information about current song
The user uses an accessory for taking phone calls in the car, it works fine	- Phone answering frustration

Data participant #4

Event/Observation	Code
Get in car	Inizializing drive
Car starts and music starts automatically where it stopped last time	Inizializing music input
Music is played from usb	Inizializing music input
Song switch during talking	Change song
Talking about study	Conversation about not the music
Volume music lower because talking	Turn down volume
No talking -> volume up	Turn up volume
"Oh this is good, what song is this?"	Conversation about music
Points to screen on radio -> names song (this takes a bit of time because the text on the radioscreen has to scroll (automatically) in order for it to be visible.	Sharing information about current song
Talking about the mixtape that is on	Conversation about music
Volume goes up	Turn up volume
Talking about study	Conversation about not the music
Sings along	Singing along
Talking about study -> louder talking because of volume	Current volume influences conversation
Singing along	Singing along

"Wow, this is really good"	Conversation about music
Volume goes up	Turn up volume
No talking, just singing along	Singing along
Focus on music -> laughing	Expressing associated emotions with song
Volume up again	Turn up volume
Singing along	Singing along
"I haven't heard this for so long"	Conversation about music
Volume up	Turn up volume
"This can become very good (about music)"	Conversation about music
Volume up	Turn up volume
Singing along	Singing along
Talking, but volume too high for normal conversation	Current volume influences conversation
"Explaining experiment"	Conversation about not the music
"What?" -> not understanding eachother	Too loud volume causes misunderstanding
Misunderstanding	Too loud volume causes misunderstanding
Volume down	Turn down volume
"The most important thing for me is good sound quality"	Conversation about music

"The speakers are the most important".	Conversation about music
Singing along	Singing along
Participant: "The father of my girlfriend has a car with the really fancy system that if you walk in, the radio connects to your phone and starts where you finished last time".	Initializing music
Participant: "Also it has these buttons on the wheel for next, previous, higher volume and lower volume"	Change song & turn up volume & turn down volume
Participant "The danger with music is, if you start searching for songs on your phone while driving. The best are the cars with wifi, where your playlist is imported from your phone in the radio and you can just switch songs with the buttons on it or with voice control. Then you can also use if you don't bring your phone."	Choose song
Talks about traffic	Conversation about not the music
Talks about recording	Conversation about not the music
Talks about car	Conversation about not the music
Volume down	Turn down volume
Talking about work	Conversation about not the music
Car stops	Finalizing drive
Continue talking	Conversation about not the music
Music stops	Finalzing music input

Data participant #5

Event/Observation	Code
Getting in car	Inizializing drive
Car starts	Inizializing drive
Music continues where it stopped last time (middle of the song)	Inizializing music input
Current volume is the volume of background music	No volume change
Talking about car	Conversation about not the music
"We're going to the freeway"	Conversation about not the music
Music is almost to low volume to hear	Car louder than music
Volume up	Turn up volume
Talking about normal things	Conversation about not the music
Silent, but volume doesn't go up	No volume change
Talking about car	Conversation about not the music
Talking about daily business	Conversation about not the music
Talking about the road	Conversation about not the music
Talking about the neighborhood	Conversation about not the music
Researcher: explaining what study is about	Conversation about not the music
"Haha, the radio is on, and that's it"	No interest to be aware of the music

"In Limburg I can't receive radio except Q-music Limburg and that's it. So I'm listening to SLAM FM up until Weert and then it stops and I don't have radio anymore."	Inability to listen to the radio
Researcher: "but don't you have an aux cable"	Initializing music input
"No, so then I listen to music with my ipod"	Initializing music input
Researcher: "with headphones?"	Initializing music output
"Yeah, Q-music Limburg is not my thing."	Conversation about music
Talking about where which radiostations are receivable	Conversation about music
Talking about friends&work	Conversation about not the music
Talking about the weather	Conversation about not the music
Commercial on radio -> no volume change (automatically louder, but no manual volume change)	Interruption: Commercial & no volume change
Talking about work	Conversation about not the music
Talking about traffic	Conversation about not the music
Car stops	Finalizing drive
Radio stops	Finalizing music input
We get out of the car	Finalizing drive

Data participant #6

Event/Observation	Code
Researcher: Hinting turn on music before driving	initializing music
Participant: "Can I ask you to turn on music?"	Asking passenger for help with music
Researcher: "I can't do it"	
Participant: "How does it work?"	Asking passenger for help with music
Researcher explaining how it works and he turns on music	Asking passenger for help with music
Participant asking direction	Conversation about not the music
Music begins -> very loud	Music suddenly louder than expected
Turns volume down -> volume is background music volume	Turn down volume
Talking about driving	Conversation about not the music
Talking about road & directions	Conversation about not the music
Participant's wondering about experiment	Conversation about not the music
Participants: "Music, how do I change it?"	Asking passenger for help with music
Participant switched to aux, but there was no device connected	Change presents
Participant switched back to USB	Change presents
Participant turned up the volume (a couple of times) because the volume of this song	Turn up volume

Event/Observation	Code
was too low	
Conversation about the road	Conversation about not the music
Participant turned up volume again	Turn up volume
Conversation about the car	Conversation about not the music
Researcher telling him what the study is about	Conversation about not the music
Participant: "I acted different from usual, because I never drove this car and I never drove in the netherlands yet." "I had to think of something else"	Preoccupied
Participant payed attention to getting to know the car.	Preoccupied
Talking about road	Conversation about not the music
Talking about traffic	Conversation about not the music
Participant: "I didn't really know how the radio worked, so I didn't to much with it"	Inability because lack of knowlegde of equipment
Song comes on and the volume is too loud for talking.	Too loud volume causes misunderstanding
Participant turns down volume	Turn down volume
Talking about road	Conversation about not the music
Parking	Finalizing drive
Music turns off	Finalizing music input

Data participant #7

Event/Observation	Code
Turns on car, radio starts playing	Initializing drive/music
Volume is too loud, turns it down	Turn down volume
Doesn't like music, changes presets (1/6) until she finds a better radio station	Change in preset
Changes presets couple of times when she doesn't like the song, or when the reception is bad.	Change in preset
She also changes volume according to preset.	Change in volume

Data participant #8

Event/Observation	Code
Turns on radio	Initializing music output
Switches from radio to aux	Initializing music output
Aux kabel —> phone —> music app on phone	Initializing music input
Choses & shuffles playlist he created on his phone	Initializing music input
	Choose playlist
Puts phone in tray between front seats	Position of controller
Turns on car and starts driving	Initializing drive
Good song/bit of song, turns up volume	Turn up volume
Continues conversation and turns volume down again	Turn down volume
Wants to skip song, is not able to	Inability to change song
Turns down volume	Turn down volume
Stops at traffic light, quickly takes phone out and skips songs	Change song
Turns up volume because he likes the song better	Turn up volume
Gets bored of playlist, wants to change it but can't reach phone	Inability to change playlist

Data participant #9

Event/Observation	Code
Gets into car and opens storage between front chairs	Initializing drive
Connects phone to charging cable	Initializing drive/music
Turns on car, music starts playing automatically	Initializing
When conversation becomes more complex, he turns down the music.	Change in volume
He gets called twice, this shows up on the touch screen where he can accept or deny the call, which automatically pauses the music.	Interruptions
When a song comes up he doesn't like, he skips it using buttons on the steering wheel	Change in music
When a song comes up that he likes, or a specific part in a song, he turns up the volume using buttons on his steering wheel	Change in volume