FROM IDEA TO BLUEPRINT.

THE CONNECTED PILLOW

TEAM 8
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THE THIRTY IDEAS

In the first week of the course 30 ideas had to be formulated. Through a crazy eight, a scamper and brainstorming, together and alone, 30 ideas were envisioned and written down. These initial ideas can be found in the appendix A. Of these 30 ideas, one idea is going to be picked after multiple rounds of validation. More information about this can be found in the chapter 'Convergence', see below.

CONVERGENCE

After making a list of 30 ideas, our group received feedback from 4 students on the ideas. Our team gave individual feedback as well to other teams. This feedback was for example about the technology, the looks, the creativity, the eventual price, if it was clear for the reader what was meant with our idea, suggestions to combine ideas, about the target group and if it would be useful for the target group. Reading of the feedback was divided, each member of the team read the feedback of 1 student. This feedback gave us new insights about how to approach our ideas. By this, the group learned that some ideas weren't very innovative, while other ideas would not be useful for the intended target group. In the next meeting, the feedback and preference of every team member were discussed. Eventually, the 30 ideas had to converge to five. To select the top five ideas the group began with marking down our choices and the feedback. Afterwards, there were six ideas left. The process of picking the final 5 continued with a discussion of which idea was better by giving arguments to each other why one thought one idea was better than the other one. Finally, these were the five ideas left; the connected pillow, the message system, the mobile cafe, the interactive playground and the board game.

These five ideas were written down in a five-page long document, this way there was one page to explain every idea in more detail. From one of the course teachers, Renee Noortman, the group got some new feedback about those five ideas. She noted down some positive aspects like that our concepts are versatile and tackle different, relevant issues. As well as some improvements like to strengthen the concepts by bundling our strengths. The 30 ideas were divided over all team members and in the way all team members wrote down ideas differently she could see that our group didn't discuss them with each other while writing. After this feedback our teamwork was improved by reading each other's work before submitting, to look over each other's work and discuss the assignment together. Next to her feedback, there was feedback from others; our ideas could improve by implementing societal relevance more and some of our ideas involved multiple target groups, which requires an understanding of all of them.

To improve the feedback on the societal relevance and target group, there was made a business model canvas and a user journey with Lorna, our coach. But this was more at the end of the project when there was figured out which one idea would be proceeded with.

By making the journey and business model there were gathered more insights into what the value is the group wants to deliver to our target group and how they are going to use it during the day. Which made us think of possible improvements to the idea, as the user interface. After presenting a pitch with our two best ideas; Connected pillow and Interactive playground. The group received feedback from the course lecturer, Mathias Funk. One of the things he asked was who the customer on the interactive playground would be. Especially, if it could be turned into a business. His feedback on the connected pillow was to think of other ideas on how you could motivate the elderly to move more. As well as that it would be a good idea to use storytelling in the pitch the next time.

The questions about the interactive playground triggered us to think about how the idea can be turned into a business instead of a charity. Since moulding the idea into a business would have a big impact on our original idea there was decided to go with the connected pillow as the final idea. By implementing the feedback on the pillow by creating more ideas for motivational words from our speaker, which is connected to the pillow. The group came up with motivations like the weather, other users that you can meet, you could randomly bump into a neighbour when you go outside and have a nice chat with them or concerts and festivals that day. For implementing the storytelling in the final pitch, a user journey was used and made with help from Lorna. This way the audience during the pitch could get a better view on how the idea works.

VALIDATION

To validate the idea short interviews with elderly people were conducted. These interviews resulted in interesting insights.

The first insight that will be discussed is that elderly people tend to like harder thin cushions and pillows. The reason for this is that elderly people have problems sitting down and standing up from thick soft pillows.
The second interesting insight is that elderly people would like to be able to turn off the pillow in the evening or while they are taking a nap. The elderly user has certain moments during a day where they under no circumstances would like to be interrupted or want to be moving.
The third and final insight from these interviews is that elderly people made it clear that external motivation to stand up would be needed.

DEEPENING OF THE PRODUCT

PROBLEM

It is often the case that elderly do not move enough. The reasons for the lack of exercise can vary a lot, it could depend on the lifestyle to immobility or just the belief that exercise isn't needed or lack of knowledge. For instance, someone who has trouble walking is demotivated to stand up and go for a walk in the park but may be motivated to ride his/her bike.
Old people perceive the world and the time differently (Harvard University blog, 2019). Some elderly believe that they exercise long enough, but in reality, that's not true. It is often the case they can not make good estimations. Moreover, they feel they have a lot of time since they don't have any urgent tasks and that results often in postponing them. Others due to depression or loneliness don't see the point of moving or doing some activity besides watching TV, reading or just looking through the window. Situations vary greatly.

CONCEPT

The main concept of designing the connected pillow is making the elderly move. Readers may wonder why exactly moving. The point is that sitting for too long results in numerous health problems like muscle mass loss, elevated blood pressure and increases cholesterol levels. (Laskowski, 2020) Nevertheless, our team has incorporated ways of motivating the user to move. Which greatly contributes, in a positive way, to depression, loneliness, socializing, meeting new people and interacting with them. According to research articles (Muhsen, 2020) (Landers, 1997) even only the moving or in general any sports activity is estimated to have a positive effect on people's wellbeing. This positive motivation helps to solve the problem of too little movement by the elderly themselves.

UI & UX DESIGN

INTERFACE

The team has come up with four different types of user interfaces for the buttons, which the user will use to answer the questions of the speaker. The mockups of those are shown below. In the figure 4 the buttons are put on the speaker device with a volume switch as well. The second interface is a remote control, especially made for the buttons, see figure 3. The third interface is to make a bracelet that connects to the pillow with the three buttons, see figure 2. The fourth and last interface is to arrange the buttons on the side pillow itself, see figure 1. With the help of the user scenarios, which were made in week 7, the team tested the ideas and agreed upon having the buttons on the side of the pillow.

The reasons why ideas one and two were discarded is because of user comfortability. If the buttons are on the speaker and the speaker wouldn't stand near the connective pillow and therefore you have to stand up constantly, which can be very irritating. Next to that, it is often the case that the speaker or the remote control will be put at random places and lost by the user. In terms of user experience, the bracelet was a good option at first glance, but after some more consideration, the idea was estimated to be more difficult to manufacture. It would mean another object which should be connected to the speaker and

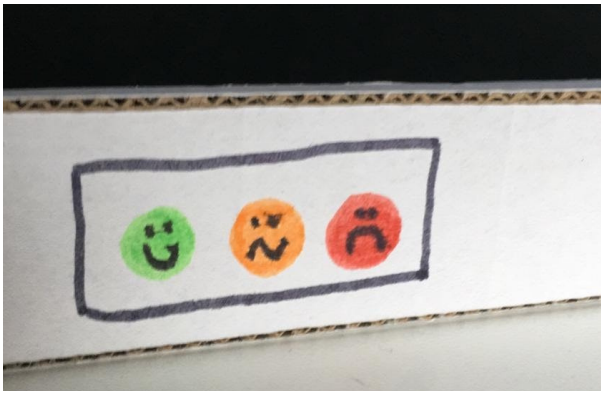

Figure 1: Buttons on the pillow

Figure 2: Buttons on the bracelet

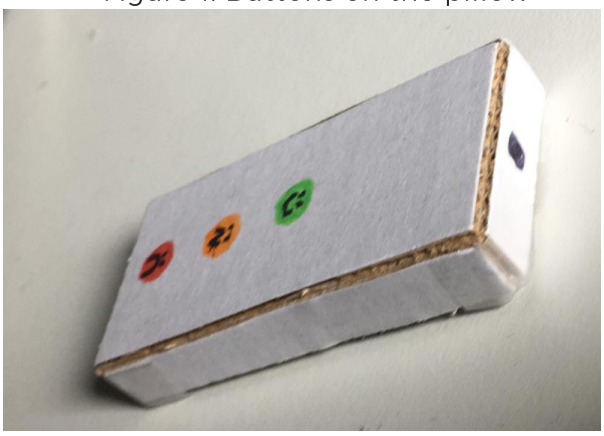

Figure 3: Buttons on the remote

Figure 4: Buttons on the speaker

pillow. That's why the buttons are placed on the side of the pillow. Since most of the technology parts are in the pillow, having the three small buttons on the sides wouldn't enlarge the system too much.
The buttons will be made in different colours that are easy to distinguish, so that the user can just glance at the side of the pillow and press one of the buttons. Next to the colours there can be small engraving on the buttons to recognize them by touch.If the user accidentally presses a button on the pillow, and there wasn't any question from the speaker the answer (the button input) will be just ignored.

WEBSITE

After purchasing the connected pillow in the store or the website, the user or customer can install the pillow at home. With help from his or her family member or caretaker. During the installation, there will be an explanation of how the pillow works as well as some questions to make the pillow more customized for a better end result.
The main purpose of the website is to record the main interests of the users, as well as to connect the designers of the product with the customers and user. The website will be with a simple layout in order to be easy to understand by the elderly and with a small set of features. It will provide a detailed overview. Furthermore, there will be a special place where the users can give feedback on the product and service.
For non-user, the website will give a brief explanation of the product on the homepage, the way it is supposed to be used and how one can buy it.
After buying the pillow, the user has to make his or her own account on it and fill some interests, hobbies and activities. With this information an initial "persona" will come up, like a nature lover or music lover. The user can change the "persona" if they feel it is not a good match for them. The initial persona will be extended with the information on people's preferences through the answers the user gives on the motivation. The three possible inputs are - yes, no and neutral. It will take about three months to completely know a users preference

PERSONA'S

These persona's will initiate the main motivation aspect which we want to incorporate in the pillow.

1. Travelling persona - people who like to shop and visit new places, like city travelling and sightseeing.
2. Nature persona - people who like to work in the garden, who go for walks in the park and the forest.
3. Creative persona - people who like to paint, draw and knit, who like to go to galleries and exhibitions.
4. Volunteering persona - people who like to help and be involved in volunteering activities.
5. Musical persona - people who love music, who are buy plates on the market, who like to visit concerts and musicals

TECHNOLOGY

TThe technology required for the connected pillow can be divided into two parts. These two parts are software and hardware. The hardware can also be split into two parts; electric parts and non-electric parts. The non-electric parts for this project consist of the pillow itself and the casing of the electrical parts. The pillow can be bought from any local furniture store. The casing of the electric parts will have to be designed and manufactured for the pillow specifically. This can be done by 3d-printing, which can be done at the university and/or online 3d-printing services like partsondemand.eu. The electronics would not be too big in order to keep the pillow soft and comfortable.

The electric parts needed for the connected pillow consist of a microcontroller, sensors and a speaker. The microcontroller will need a bluetooth connection and a WiFi connection. Now the microcontroller can send data to the speaker as well as get data from the internet, for example the weather data that is needed. The sensor in this circuit will be a weight sensor, to know if someone set down. To power all the electronics a battery is needed, which needs to be flat and rechargeable. The other device we have is the speaker. The speaker needs a small microcontroller with a bluetooth connection to receive signals from the pillow. The rest of the circuit is formed by the speaker itself and a power source. The speaker also needs a battery, favorable rechargeable and small. These electrical components can all be bought on online stores like tinytronics.nl well within the budget for this project. The software part for this project can be divided into two big parts; an internal part and a part that communicates with the internet.

In order to do something with the data obtained from the pillow, a software system is needed. This system will be able to store the data from the pillow. Besides storing the data this system will take care of alerting the elderly people. This alert will be given through the speaker but the local system will take care of deciding when to give the alert. The system will become aware of the routines of every individual user and create an alert that suits the wishes and needs of the user.

The internet system will be used to gather data from the internet from multiple sources. These sources are weather stations, festival data in the current town and other users who are outside at that moment of movement. This internet system has to be a different system because this needs to be connected to the internet. Since this internet system will act as a scanner and the local system more like a thinking brain, making two separate systems will make this project more manageable.

PRODUCT VALUE

Most of the product values are already mentioned in the MVP part, but in this section, a concise summary will be made. The main value of our product is to motivate elderly to exercise more. Besides nudging the elderly to move from time to time, the connected pillow strives to establish a habit in the daily life of the elderly to move regularly. Giving various ideas for moving - which could verify a lot from a small set of exercises to big social events would make it more appealing for the user not to stay in front of the TV all day. If the user does not feel like he or she is forced to move but moves on his or her own initiative and feels satisfaction while moving, it would improve the users overall wellbeing, emotional state and mood.
As mentioned earlier, sports generally contribute to a healthier and happier life. The long term motivation of our product is that pains due to oversitting will be reduced. For the short term motivation one of our best values is the social aspect of our product. Last but not least, the team will strive to make a comfortable pillow for our users. See for some more values the business model canvas in the Appendix B.

TARGET GROUP

The target group(C. Newberry, July 8 2020) for this project is elderly people. These elderly people are defined as people born before 1950 meaning they are at least seventy years during this project. They live both in their own homes and in retirement homes in the Netherlands and do not move as much as they could. These people like to be spoken to in their own language. To most elderly people a lot of modern technology is not intuitive; it cannot be assumed the target group can easily use technology without clear explanation. Any product with the Internet Of Things, IoT, in mind should be as easy to use as possible. This means products with complicated user systems are going to be avoided. Therefore elderly people also do not need a product that is constantly updated. Moreover, it is not necessary that new features and customizing are required. Any updates for the product that is going to be designed will therefore be completely on the software of the product while the user will not have to do anything different than before those updates. These updates are going to be required to keep an IoT system safe to use since anything that is connected to the internet could be attacked with malicious intent.
Elderly people are the fastest-growing consumer group in the world (Credit Suisse, August 23 2020). The spending power of this consumer group is also growing increasingly. This means that a potential buyer could be the elderly

people that are going to use the product or service. This target group can pay on a subscription basis or pay once for the full product or a combination of both options.
Also, 64 percent of seniors (65+) actively invest money in a healthy lifestyle(Whitepaper, date unknown). However, the relatives of these elderly people also actively invest money in the health of the elders. The user and buyer do not have to be the same person because of this, the elder is going to be the user of any product that is designed but the buyer will probably be the relatives of the elderly or a combination of the elderly and relatives. Another way to market this product could be that the product is going to be rented. This option might be in favour since the product may outlast the user so renting is cheaper for this target group.
The main challenge elderly people face is to combat the feeling of being alone, bored and isolated from the community (UK care guide, date unknown). Their interests, therefore, are usually things to prevent these negative thoughts.

ETHICS AND RISK ASSESSMENT

Ethics in IoT is closely associated with moral problems related to data. The main ones are regarding confidentiality and availability. Who can access it and the way the data is stored and manipulated. In the following part, three main ethical issues have been discussed: the privacy problem of monitoring people's daily activities and data loss, who owns that data and who should take care of it and the persuasive character of the system.
The first ethical problem with the connected pillow is the fact that somebody's movement within his home will be very closely monitored. That raises a potential risk of compromising the privacy of a person. But that could be easily solved. All the data is kept on the SD card (the memory of the pillow), which will be a local device connected only to the controller (see diagram). Moreover, that data can be accessed only through the user account on the website. It will be made sure that the user uses strong and reliable passwords.
In case of a data loss, the consequences are not that dangerous. A possible scenario when this can happen is if there are some problems with the cables and the information is not transferred properly to the sd card. It could be the case that the sd card memory is full and then the user has to transfer information. It might only cause the timer to reset too early or too late, which might only be stressful for the user (Atlam & Wills, 2019), but if a good guideline with explanations of possible reasons and actions is provided, then he or she would calm down and act as needed.
The second ethical challenge might be that it is very hard to point out an owner of the collected data. Since our target group may experience memory problems or could be completely unable to work with smart devices. It should be madesure that someone close to them can look and maintain their data or help them in case of technical problems. For the technical issues, a service will be provided for our customers accessed through the website.
One option for potential helpers would be the family of the user, but that does not always have a good influence on the person (article). Healthcare workers are

another choice, but they are on average closer to the elderly in terms of health issues. Nevertheless, caretakers aren't family so giving them complete access to personal data is not a good option (Atlam & Wills, 2019).The last ethical problem is that the system does not act to the need or health of a person. When somebody is very tired, sick or doesn't feel like taking a walk, the system will work the same as when this person would feel well. The result is that it can worsen the user's health (de Saint-Exupery, 2009). To prevent this, the pillow asks the person every morning whether they feel good and have slept well. In case of an answer of sickness, the user would suggest but for sure not insist on doing some activities.
Moreover, the problem of really motivating the user to stand up, not simply forcing him or her, is presented. In other words, it would not help and be beneficial for the user if the connected pillow acts as a stick instead of a carrot in the current design. If people are suggested to take a walk in a very direct manner instead of being rewarded for going outside on their own, the pillow would become a burden (L. Goulden). To deal with such situations, the team will strive to make the pillow in such a way to motivate people to do activities which they do like. This can be done by adding a good system which learns people' interests.

Two risks have been identified using the “acid test” (Bissonette,2016) concerning the connected pillow. The risks could happen if one of the cases is present: overheating of the system in the pillow and hacking of the data. The dangers/risks of our product can be lessened by doing a risk analysis during the idea process. For our risk analysis, the first three steps of the risk analysis are used (Burgon,2020), these can also be (seen in figure 1).When using any sort of data there is always a risk of the data being hacked or data leaking out of the system. In our case, this data means when and where someone is sitting in their house or if they are at home at all. Since the data tracks the habits of the individual and if it becomes available to someone with bad intentions, for example, burglar he/she can easily obtain the needed information for breaking into the user’s house (Prince William County police department, n.d.).
Therefore, using our product could be also dangerous for the user and used against the owner of the product. This risk can be reduced by setting up extra firewalls and/or encrypting the data, however, there will always be a risk of the data being hacked. Nonetheless, this is only possible if a person's account is hacked since the other part of the system is local and will be securely connected to reliable online sources.
As the product is used to sit on, it will logically heat up after a while, this is caused by the body warmth of the user. Too much heat will cause the system to overheat. As a result of overheating the sensors can have a short circuit. The product will then be unusable and could even harm the user in the process. To prevent the sensors from overheating there should be extensive testing. Another solution might be to incorporate a small cooling device, to cool down the electronics if a certain temperature is reached.

MVP

After pitching our MVP (pitch two) we received feedback, together with the feedback that was given on the homework assignment of week 7 we rewrote the MVP as follows;

An MVP is the minimum version of the product which provides a complete solution to our customers’ problem. The problem which we have chosen to work on is motivating the elderly to move more often. This motivation will lead to establishing a new healthier lifestyle of moving more frequently. Our first idea for the MVP was to have the pillow with all its features and technology - the microcontroller, pressure sensors, timer and batteries. But this was not the minimum viable product for our concept.
Our main value in this project is to motivate people to move. Motivation for only the long term benefits will not be enough to motivate the elderly to stand up. Therefore we try to motivate people to stand up with short term benefits. These benefits are giving elderly options regarding places of interest, good weather, events in the neighbourhood, and most important to meet other users as well as learning the interests and habits of the user. This gives the user good reasons to stand up and go out.
There are different ways to do an MVP (Burgon, V. C. A. P. B. R. (2020, 2 March)). We choose to do a concierge MVP because it best suited our product and goal. Our MVP would consist of a normal pillow and a person from our service who will call them every two hours. The call will be motivated by saying; ’Hey do you want to go for a walk? I see it is nice weather at the moment outside, I am going. Talk to you afterwards.’ The person who is calling will be “connected” to weather information, other users in the area as well as festival data of the area via the internet. The user will subscribe to our service by signing up on our site with the information; name, address, interests/hobbies/religion and phone number. The site will also include some questions regarding their lifestyle for example sleeping rhythm and weekly plans/appointments. In the morning the caller will ask you if you’ve slept well and what your plans for the day are. The motivation and calls for the rest of the day are going to be decided on this information. The motivation consists of events, social activities, taking a walk and weekly plans.

The main idea of designing the MVP is to see whether the product is worth making since MVP is just a demo version for our product. If it is worth making, the MVP can also indicate if certain aspects of our product will work as expected or have to change. The first aspect we want to have user feedback on is the interface between product and user. For example, if placing three buttons on the front of the pillow would be enough or that there should be a way to give intricate answers. The other aspect is if the connection between users is useful. We want to test whether a connection between the users will encourage and motivate them to follow more willingly the advice and suggestions which the system gives.

FUTURE PLANS

The connected pillow is now ready to be introduced to the market. This will be done during the two following courses. A prototype of the pillow will be made and a beta version of the website that will be used to gather information of the users. This will lead to a lot of research about the hardware and software components that need to be used. After the development process, the working prototype can now be advertised. A marketing plan for the connected pillow will be constructed in the third course.
But when the connected pillow is introduced to the world. What can be done to make it even more desirable? After the pillow is available on the market for about a year questionnaires will be sent to the current users. These questionnaires contain questions about how the users like their product, what the struggles were and what they would like to add to the pillow. With this information, the connected pillow will be altered so the struggles of the users will be resolved and will contain a few more extra gadgets that were mentioned in the feedback of the questionnaires. This will lead to what the pillow will become although a few options are given below.

First, the number of personalities within the pillow can be extended. This can be done by adding more personalities or making a subgroup of the already existing personalities. For example, a personality like music lover can be divided into the subgenres of the music they like. These personalities can be chosen by implementing questions within the questionnaire about what kind of personalities the users would like. They could also be determined by looking at future customers and sending a questionnaire about the personalities or sub-personalities to them.

Second, the interface of the feedback of the user can be altered. Now this feedback is given through three different buttons, yes, no, maybe. These buttons can be extended by five buttons that range from totally agree to totally disagree like shown in the picture, this gives more range within the feedback. The feedback interface could also be extended even more by removing the buttons and adding voice recognition. For this, a test phase needs to be implemented to see if the elderly are able and like to use the pillow with voice recognition. This can be done by selecting a few existing users that filled in the questionnaire that they would like to give more extensive input to the pillow.

At last, the connected pillow algorithm can be made smarter. This can be done by implementing a self-learning algorithm that learns the routine of the user. This leads to a more accurate approximation of the amount of physical activity that the user has in their daily life. This will lead to a higher motivation and less annoying experience for the user.

GROUP PROCESS

Our group consists of two Industrial design (ID) students, two electrical engineering (EE) students and one computer science student. Everyone in the group gives everything he or she can do within his or her limits. The dividing of the tasks can be hard as not all skills can be suitable for each task, but during this course we improved in this, especially without the meetings at university. The balance in the group was shortly disrupted as one of the team members was assigned to us in the second week. Looking back at this course we believe that our team can be more balanced in the next courses. Some should take some more initiative, others need to pick up more work within the group and others should release the reins a bit.

Regarding our teamwork on making the assignments, overall we believe we have done our best and delivered good work. As the team is from different studies we often are in disagreement about certain parts of the design or assignment. These arguments are resolved by either making a compromise or thinking about a different option. One of the things we noticed is that if the assignment is split up and made by different persons it is necessary to go over it again together. When we go over an assignment we give constructive feedback and try to make it look like one person wrote it. This was also feedback given to us in one of the first assignments, during the rest of the curse we already worked on this point and improved the coherence of the assignments. For the next courses we should work on interpreting the assignments correctly as well as asking for help if we are unsure about how to interpret the assignment. This does not always happen and has had some influence on the content of the assignments.

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APPENDIX

Appendix A - The initial 30 ideas

1. Hologram/Wizard's glass ball on the table to eat together when you cannot see each other in real life.
2. To let the elderly move enough during the day we have a pillow on the chairs that measures the time they set down and will become redder within every half an hour. After two hours it will start to make a sound and only stop if you move for at least half an hour.
3. Set up a service for the elderly to deliver their food, which is connected to the hospital to see their diets. The elderly can order with a touchable menu, this way the family does not have to do that for them.
4. Modify the alarm/pager for the elderly if they are homebound and fall or something. Most elderly forget they have a pager to call caregivers, so let the pager react to the user by sound or light. Asking for permission is very important. What will trigger the pager; Cannot put endless sensors in it.
5. Board Game that is partly online and partly physical. The board with the pawns will be physical and the movements will be detected and sent to someone. The person will know now where the opponent's pawns stand.
6. App for neighbourhoods with elderly in it. The elder can send certain colour codes (like blue means physical help needed) that the rest of the neighbourhood receives and they can help that person.
7. A system (Like an app) where the elderly can input their hobbies and find other people with the same interest. This way they can meet new people that they don't normally come across.
8. Message system for in care homes. When someone wants to for example play chess, he sends a message and other elderly can respond to that and play chess with him/her.
9. Medical box; the box will be divided into sections and the old person will put the pills by himself. It will connect with the patient online medical records and give the right pills at the right time. It will be indicated by some light on the lid of the section or/and noise for a reminder. The medical records will be maintained by the patient's personal doctor.
10. A tiny sensor that could be attached to daily accessories (for example glasses, keys). This sensor will be to help the old people (but could be used by young people as well) find their things when they have forgotten where they have put them. There will be a noise (bumps) and light once the old person has called/connected to the sensor. The connection with the sensor could be made by any wireless machine. For instance, if the phone is connected to the sensor.
11. Interactive picture of a human body; the old person could press a part of the picture where he/she is in pain, then a number of small, easy exercises will be offered, which could heal the pain in the mussels or joints. It could also offer a number of ointments. The interactive board will search for the things either online or will contact the personal doctor of the patient since he/she is also aware of the medical state.

APPENDIX

12. To do lists which could be maintained by a few people, for example by family members. It could also be filled from a distance by the children of the older people.
13. Games table that can be set in height, due to buttons, with all kinds of games for the elderly in it. It is meant for the care homes of the elderly. With grips on the side where they can hold themselves if needed, so the game will not be disturbed.
14. A hand (pictured on an armchair) that you can hold when you feel lonely, that simulates a hard moving of a friend or family. It will be inside the arm of the chair and will be filled with air when the user lays his hand down on it, to make it like a hand shape.
15. A lamp that reacts to your emotions. When you feel lonely it will automatically go to a brighter, lovelier light, etc. It will measure this by a device, which is a kind of watch.
16. A message chair where you can leave messages for the persons sitting on the chair later. For elderly homes for example.
17. A card games table in the park from a transparent material or electronic where the elderly can play card games with each other or alone if no one else is there. Or a game on the ground which they can control with their walking device or feed.
18. An app or device that has a game for the elderly. The elderly can watch out their window and take pictures of birds or other objects to win points. A game to play against another elderly sitting in their room.
19. A couple of chairs sitting together in the park, where the elderly can play with children and children with the elderly. On the chairs, there are buttons to light up a place or get a waterfall out of a spot.
20. Board where you can write on. It will be in every elderly room, whenever the user draws on it the neighbour or friend user will see the drawing. The board will be like a painting.
21. Sticky-notes that are making sounds or lights to remind people with dementia. The sticky-note has a screen so it will also be connected to family members who can make a grocery list or something.
22. Mobile cafe, coffee car, take tables with you. To connect the elderly in the house and around the house in the neighbourhood. They don't have to move far.
23. Arts and craft kit that grandchildren and their grandparent can use together and make things. There can be multiple themes that each kit has (Ex. knitting, painting etc)
24. VR moments or a 3D screen that can replicate the experience of going to public places like the zoo. This way the elderly can go to the zoo within the comfort of their own home.
25. The mini telephone which is specially designed for old people with a few buttons. It will be simplified so that they can easily call and answer someone.

APPENDIX

26. Sensors outside telling the old people what the current weather is - humidity, wind. The sensor will be connected to a phone which will display the data. It would be also able to connect other sensors nearby and tell the current weather in these areas.
27. “Moving and drawing” - While walking people will be able to draw pictures on some board that could be connected to the ground where they are moving. This could encourage old people to stand up and move.
28. “Feel the year” - A special equipment or device which can be put or worn so that young teenagers and people can feel how the old people struggle in certain situations. This will help innovators and designers to design technology not only for the young and active people.
29. An app that finds your activities and events in your surroundings and creates a list. On this list, you can see what kind of event it is, at what time, which day and the place of the event.
30. A tree in the room of the user. The room will get leaves with the messages friends or family send to them. The tree gets a leaf that lights up, an easier way to see the messages than on a phone.

APPENDIX

Appendix B - The business canvas