Farm Ville: Contextual Information Exchange

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Contextual Information Exchange

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Project description

The Non face-to-face communication of social and emotional experiences between individuals now happens through phone or other media like email, IM (Instant Message), webcam and other virtual communications such as virtual worlds.
These means of communication do not support the transmission of contextual information over distance, since neither current technology nor our way of describing it enables us to translate this context, in such a way that it can be "experienced" by others.

Within this project I explored how context is experienced and in what ways it can be captured and communicated. The design goal of this project is to design a system that communicates contextual information seamless across realities, the context of a remote user should be communicated to a receiving person is such a way that he or she is able to experience it.

Method

During the kickoff of this project my coach suggested the 1-100 method, following this method the project was split up in 3 iterations. The 1st iteration (3 weeks), the 2nd (5 weeks) and 3rd (8 weeks) in the first 2 iterations I worked together with two fellow students and handled the project as a team, after this period we continued individually.

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First iteration

Interpretation

During the first iteration there was focussed on the exploration of the project description. For this first iteration we did not focus on our clients wishes but did explore what context meant to us and how it influences our direct environment. We as students within the industrial design community are expected to pick up contextual information and use this to profit and learn from the knowledge and expertise of coaches and other students.

Within this iteration we explored the possibilities of enriching the ID community by exchanging contextual information.

Research

To get grip on the project we did research on the definition of contextual information, which can be described as: Non-spoken language and is a combination of different states which help the receiver too understand the given information. But what kind of states are there? First of all, there is the surrounding, in which the conversation is taking place (physical state). There are the people who are communicating to each other in this surrounding (social state). Furthermore there is the information flow, which can come from different areas like the environment or person (information state). And at last there is the important part of how the information is given and in which circumstances. The information flow is influenced by the way of speech, body language and emotions at the moment of the conversation (Emotional state)

The combination of these states is the context
Context contains thus out of four elements: the user's physical, informational, social and emotional state.

The value of context is that it helps the receiver to understand and interpret the given information. The context, which affect the emotions and the reaction on the received information by the user, plays an important influence when communicate information in a surrounding.

Requirements

This results into the following requirements:
- Improve feeling of community.
- Measure and show different elements of context.
- Improve information flow.

Idea generation

After we formed an impression of context, defined our target group and their problems and needs, we started developing ideas* to solve these problems. We did this by focussing on three different aspects:

- How can the context be a tool for the student?
- How can we make students curious of what is happening in the ID community?
- How can we measure contextual information

This resulted in three general ideas:
- Abstract building with blocks;
  By informing students of activities through out all the ID spaces, they will be triggered to go and explore other spaces and in this way be able to learn from others.
- Light Cube/building;
  Light in different colours and pulse rates gives the possibility to express different thoughts and expressions as well as activity and movement. However we did not jet linked functions to the expressions it was considered as an effective way to trigger students.
- PDP profile on door pass.
  By putting the students personal development plan, skills and personal interest on the industrial design door pass we would be able to show a global 'contextual image' of available knowledge and skills within the ID society.

* An extended version of these ideas can be found in appendix 1.

Idea selection

We chose to work out a concept that focused on the ID community and integrate parts of all three earlier selected ideas. We ourselves find it difficult to check up on different project outside of our own space, with exception of the exhibitions we are not involved in the progress of other spaces. We did a user interview to get information on how other students experienced this and learned that there was a large group of students that felt the same way and experienced the same problem. We wanted to design this product to help students with this problem in an easy and accessible way. So students could keep track of their own development more easily and would know more about their own interests. Development is the most important thing at this faculty after all.

Concept development and Final concept

To provide industrial design students with an overview of; 'what activities happened where' we chose to work with an abstract scale model of the ID building. Within this building activities and available information had to be visualized. After considering different ways to visualize this information we chose to work with light. By using this physical tool the student is able to see the activities in the different spaces and stimulate to check what is happening over there. By triggering the curiosity of the student, he or she will go and explore the different spaces and the projects. This will help the student to develop his or her vision and identity, and a growth in personal interest.

Prototype

The prototype consists of a scale model of the id spaces, each space is enlightened by its matching color. The pulsing rate of the lights is related to the activity within the space. A light sensor is integrated in the lower right corner which simulates a card scanner. The led strips are connected via an Arduino with loaded with a simulation program.
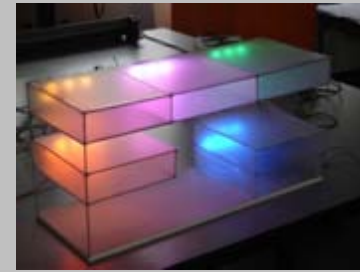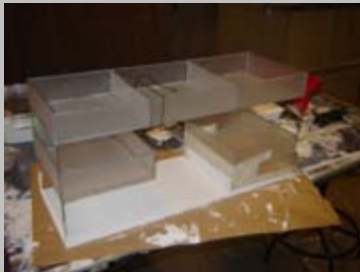
User test

To get a better insight in the perception of students we tested the concept, the user test* was held this is one of the working spaces of ID, located in the main building of the TU/e. For the test, ten ID students (five males and five females) form different years who work in the orange space, where asked to participate to the test.
Each participant had normal or corrected to normal vision.

Primary test
In the first session of the test, the participants don't get any information about the prototype and his functions. This will give a better insight of the first impression and in the thoughts of the participant. Also this will show if the product works intuitive.

Secondary test
In the second part of the test, the participants are briefed about the product and how it works. With this information the user asked to fulfil a task. After this, new questions will be asked concerning the task they have fulfil and the feedback of the product to that task

Evaluation

The product designed in this iteration has potential, an increase in information flow related to vision, identity, knowledge and skills will be a valuable addition to the ID community. There are however a few concerns related to the product form and function: The shape of the product was experienced as to abstract, there was found no connection between the ID building and the product. The product was also experienced as an extra none functional object that had to be placed somewhere, where the function of the project could have been integrated in an already functional product.

* results usertest can be found in appendix 2

Second iteration

Interpretation

In the second iteration we focused on the problem description of our client (Alex Juarez Cordova, a PHD student). He wanted us to design a physical interface that could be connected with second life, in the scenario he used there was focused on the relation between elderly and their children. This scenario has also been used in this iteration.

The relationship between elderly and their children is a delicate one; there is a need for communication between these two and they want to be in touch, but don't want to be there all the time. For example, children want contact with their parents but especially want to know about critical events, of course you want to know what is going on at your parent's house but you don't want to check up on your parents all the time.Creating awareness of presence, by giving someone the feeling that you are there without actually being there.

Creating the feeling of presence using a virtual world can be seen as contact and therefore communicating presence could replace actual contact. By integrating the used technology in products which are already integrated in the daily lives of the target groups the thresholds of learning new devices will be avoided.

Creating awareness of presence should be as natural as the reaction on real presence, for example a normal conversation but over greater distance without experiencing this distance as a determent factor. In other words; the result of communicating this presence should be the same as the actual presence of being in the same room together.
By using the physical products that are integrated in the user's environment instead of objects in a virtual world, the users get immediately feedback about each other presence in a natural way.

Input from first iteration

From the First iteration can be learned that the added functionalities should be integrated in an already functional product, and preferably recognizable forms used.

Research

To fully understand the design problem to we made user profiles of both elderly (60-80) and their children (30-50). In these user profiles their interests and commitment within their relation and their experience and interest in using technology is explained. The data for the user profiles was collected via a user interview* set up according to Mayhew's interview strategies, both the children and the elderly where asked to answer questions in the following categories:
-       User category Identifiers
-       Physical Characteristics
-       Attitude and motivation
-       Knowledge and experience of computer technology and virtual worlds
The interviews were taken from 5 users of each category on the central train station of Eindhoven.

From the user interviews there can be concluded that both parties agree they have a positive relation, and most often have regular contact. The common ground for contact is the exchange of information on their activities and wellbeing. Most elderly would not want to be more involved in the life of their children where the children would have a safer feeling if they where more involved in their parents life. However both parties do agree that constant monitoring of the elderly would be a violation of their personal space.

An interesting result in the user interview is that 80% of the interviewed users consider it a violation of their personal space if they where constantly monitored. Since this project is about the exchange of contextual information which requires monitoring of some kind of information, there should be searched for an acceptable solution.

* user interview can be found in appendix 3

Requirements

-        should not observe the user
-        should fit in the users natural environment
-        should communicate via a virtual world

Idea generation

We started with a random thought how to implement the things we learned about our first iteration and implement them into the second one. The main thing we took from the first iteration was that the product should have a meaning on its own, it had to be a used object already present at the targets home. So we started summing up different objects worth exploring, and came up with objects such as lamps, table's clocks and even walls. For all these different objects we simply produces different ideas about implementing a context, focusing on expressing different activities.
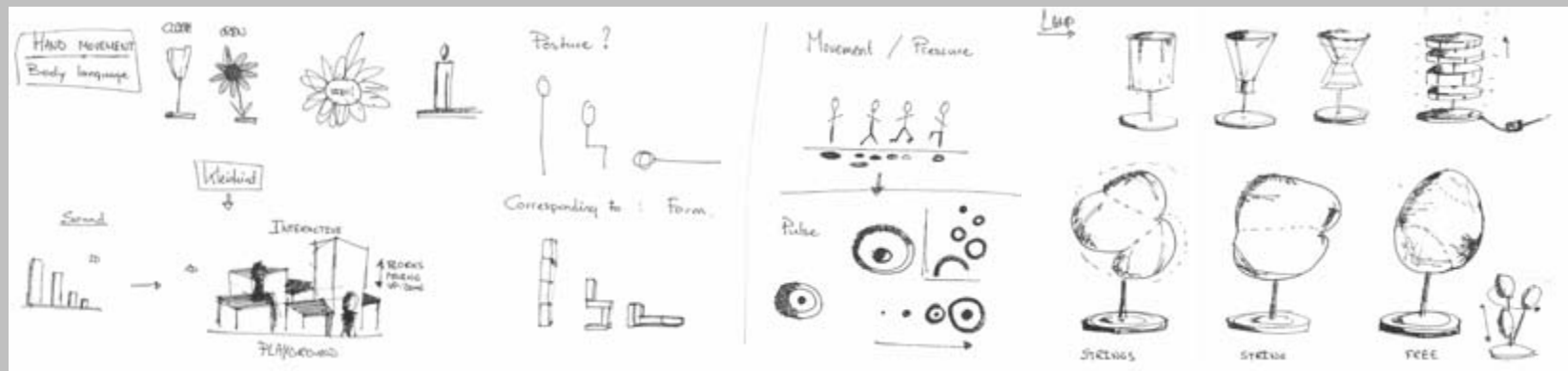
Idea selection

As explained above we had a diversion and a conversion within this iteration, most of our choices were based on practical use and realization. We tried to get under the skin of elderly and their children and distil their true needs. By doing this we got a good view on which prototypes could actually contribute to a better relationship, from our first iteration we learned that we should design a product that would fit in the users living situation and that maintains harmony in the way people interact with products or the environment. Concerning this information we chose to work with a clock since this is a product that is present in most of the living rooms and does already provides the user with 'passive' information. Because both the grand parents and their children agreed that complete monitoring would be an attack on their privacy we developed a system where the intensity of actions where related to the time they took place.

Concept development and Final concept

We explored different forms and methods in which a clock could communicate the intensity of actions after comparing all options we chose for the change of the outer shape of the clock since this was the most natural and least obtrusive method. The form of the clock would indicate whether action where static or harmonic and the time of the actions would be indicated by subtle lightning. The clock would challenge the user to log in to Second Life to get detailed information on others action.

Prototype

The prototype consists of a clock with 4 dc motors that change the outer shape of the clock, the dc motors and led lights are controlled by an Arduino which is loaded with a simulation program.
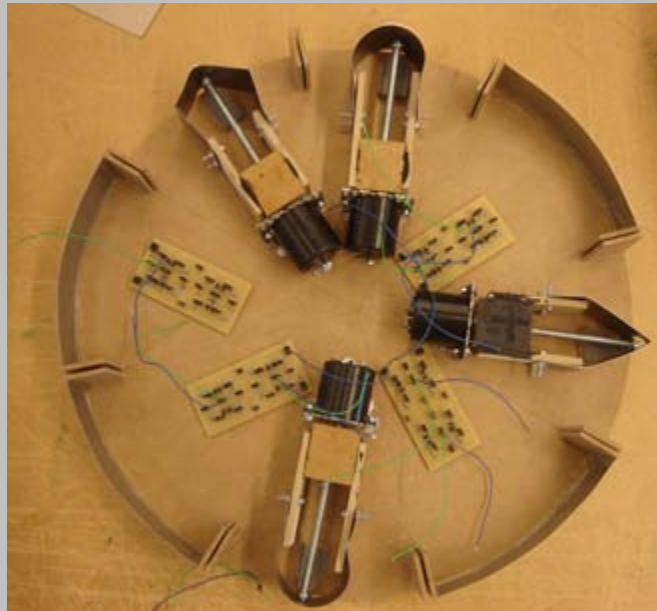
Evaluation

The goal of this iteration was to build a physical interface that could communicate context with the use of a virtual world to improve the social interaction between elderly and their children. This product does provide both parties with contextual information and in this way does trigger communication but does not require use of the virtual world. Next to this the unnatural coupling between the action happening and the unrelated time causes confusion.

Third iteration
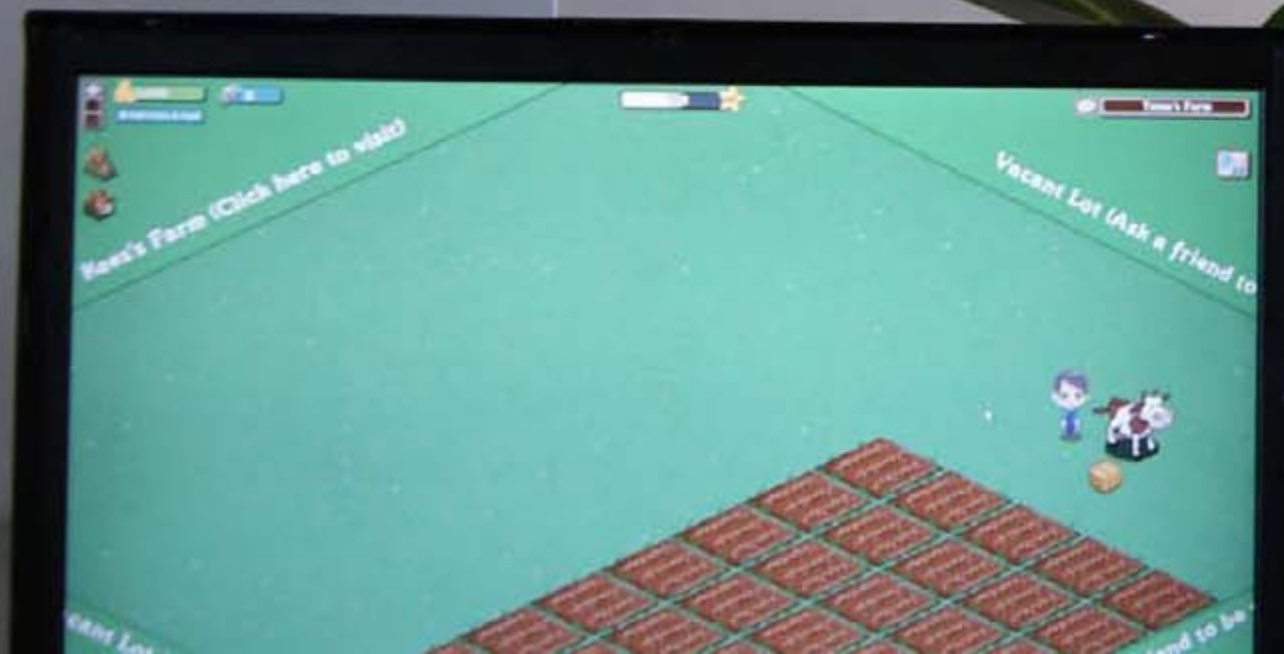
Interpretation

The third iteration has been done individual. During this iteration I wanted to focus on fully integrating the virtual world in the interaction with the product or service, since in earlier iterations this was not a success. As a target group I chose children and elderly, because I see it as a challenge to bridge the gap between elderly and youngsters.

Input from earlier iteration

During our second iteration I learned how hard it is to communicate contextual information via virtual worlds, a virtual world is a place where in many users participate at the same time. Someone who participates in a virtual world has an interactive role and is conscious of its input. When you replace this interactive person with contextual information there no longer is interaction within the virtual world, and so they added value of the virtual world disappears.
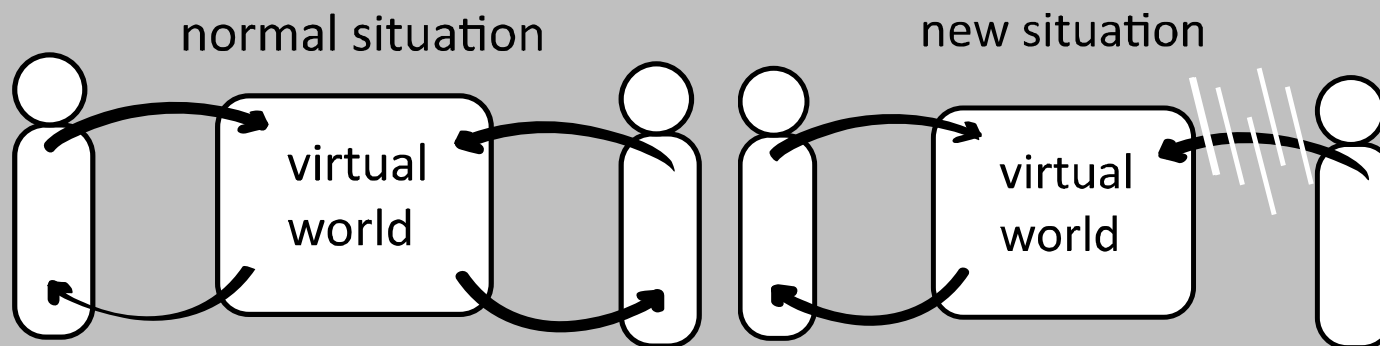
Research

Within this iteration the focus of my research has been on my target group, I also did underpinning research on virtual worlds.
To get an idea of whom my users would be I held different open interviews with elderly and youngsters, points of discussion where their interest, how often they visited/spoke their family and whether they where active in virtual worlds or not.

The outcomes of these interviews are:

Elderly (60-80 years old):
- Saw there grand children less than once per month whenever they where not living in the same city.
- Are interested in more contact with their grand children.
- Do not participate in virtual worlds, most of them don't even use computers and do not feel the need to play an active role in a virtual world.
- Are interested in the development of their grandchildren (skills, interests and social).

Children (10-17 years old):
- Saw there grand parents more than once per month.
- Do not feel the need to see there grand parents more often.
- Are active online platforms like Hyves and Facebook and play social games that are linked to these platforms, or are active on Role Playing Games (for instance World of Warcraft).
- Are interested in the tolerance, warmth and confirmation that their grandparents offer.

From these interviews can be concluded that neither elderly nor children are active in virtual worlds like Second Life, elderly don't feel the need to play an active role in a virtual world and the interest in the frequency of contact is different.

When doing research on virtual worlds I found a publication named 'where virtual worlds once ruled, Farm Ville dominates (26-03-2010 by: Daniel Terdiman for CNET)' He states that 2D kids and Facebook games are way more successful because they are fun, easy and connective, kids and main stream adults don't need 3D environments to get their social needs.

Considering this publication and taking the basic guide lines for a virtual world in account I conclude that Farm Ville and other Facebook applications are virtual worlds and far more attractive to novice users than other complex 3D virtual platforms.

Requirements

Regarding my user group and done research I came to the following requirements:
- Increase interaction between elderly and grandchildren in a not obtrusive way.
- Create an active role for children and passive role for elderly.
- Use an existing easy accessible virtual world.
- Consider the interests of both elderly and children.

Idea generation and selection

In this iteration I wanted to design a product that really integrated the virtual world. With the virtual world as origin I oriented myself on possible ways of interacting with it and communicating contextual information via it. This resulted in a few option from which I chose to continue with the idea in which contextual information (for instance water and electricity use) of the elderly does influence the virtual world with which the child does interact. The actions in the virtual world will be somehow feed backed to the elderly. I chose for this concept because it fits the requirement of a passive and active role which is a necessary condition to make the interaction with the virtual world possible.
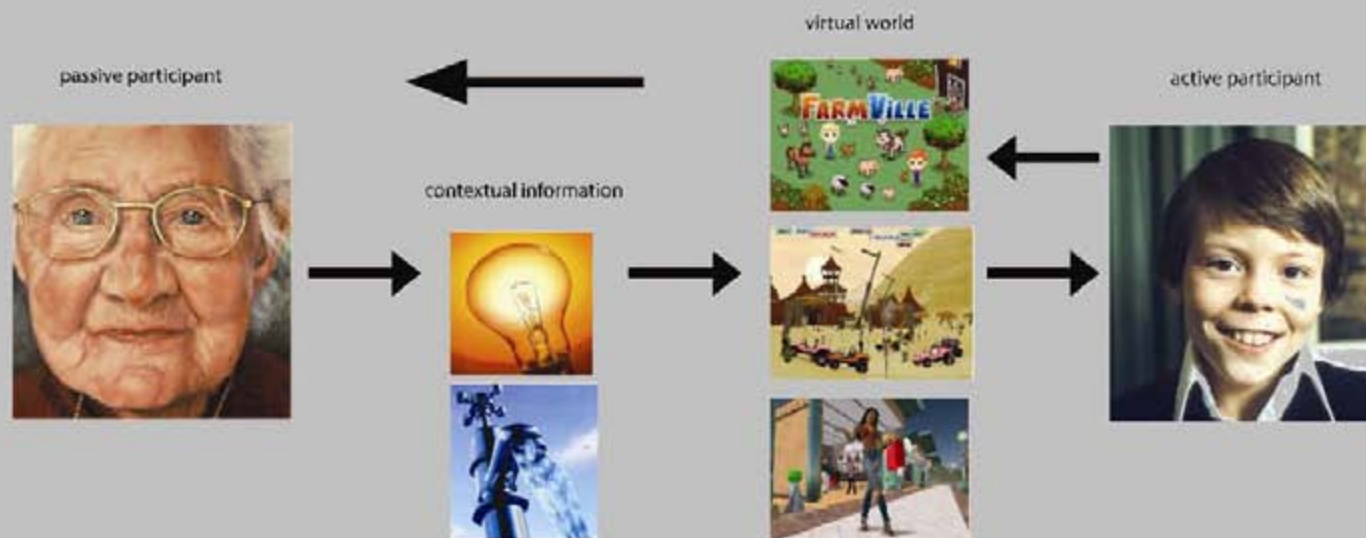
Concept development

Since the water and electricity usage of the elderly is not interesting for their grand children and I would not want to support water or electricity spillage that's why I searched for 'passive' input with more added values. To find these I looked at the interests of both elderly and youngsters.

Interests elderly:
Development of grand children
Their social activities
Their interests
Their skills

Interests children:
Confirmation of grandparents
Tolerance
Love and attention

This resulted in a concept in where the kid would be active in an educational virtual world and elderly could monitor their grandchild and support his progress.

passive participant

external party:
online postcard company

active participant

added product:
postcard stand/frame

educational virtual world

Elderly

Grand children
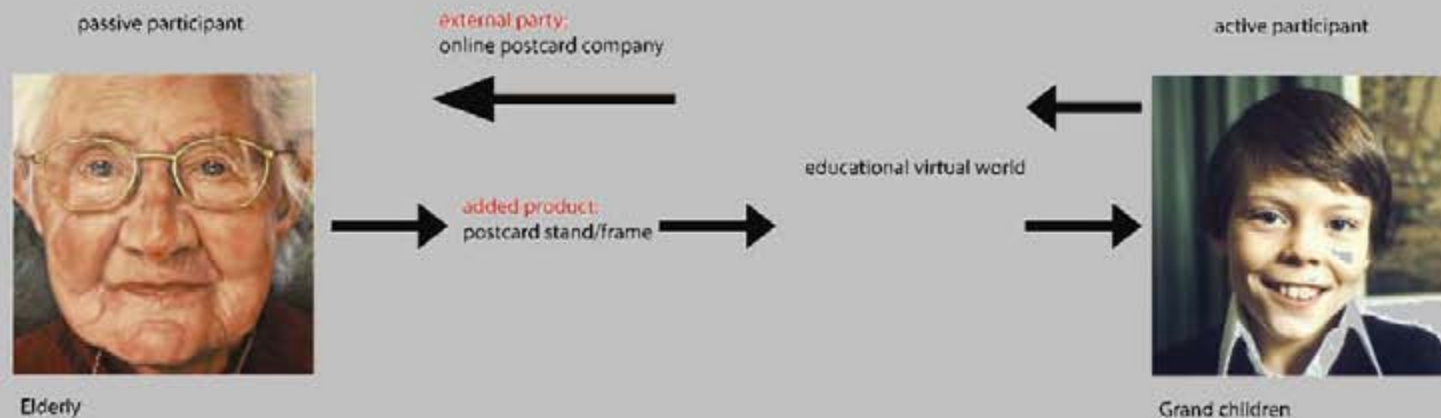
Since this concept required a new virtual world and the transitions would be less natural than in the earlier concept, I adapted the educational activities to social activities with the final concept as the result.

Final concept

In the final concept is a module and service connected to the Facebook application Farm Ville, the concept considers two parties; a passive party (elderly) and an active party (children). The active party will log in on Farm Ville and interact with this virtual world. The passive party will not be bothered with the complicated aspects of computers and a virtual world but will know that they support their grand child. They contribute to the game development of their grandchild by taking care of a token this token visualized by a physical and living plant has to be taken care of and be watered regularly, the watering of this plant is translated into the fertilization of crops in Farmville. Growing and harvesting crops the grand child collects points which could be traded in for a physical gift for their grandparents, a grandparent could for instance receive a bucket of fresh grown strawberries 'grown' by her grand child.
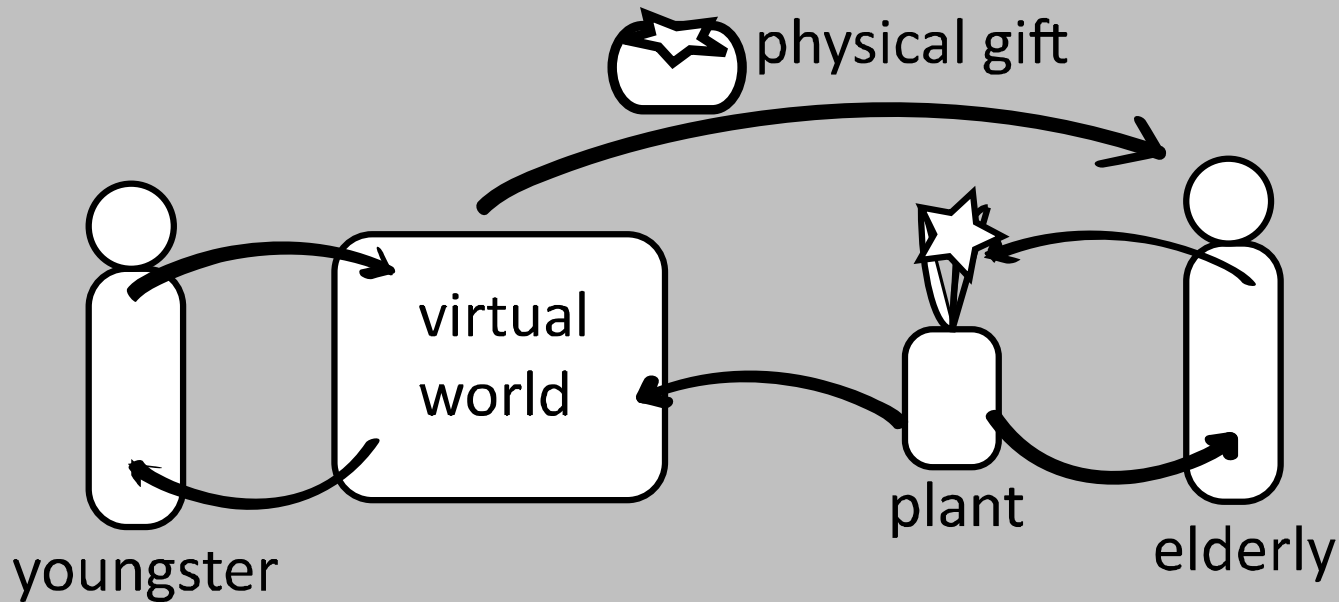
Scenario

Tessa van Waal is a 13 year old girl who is active on different social platforms such as Hyves and Facebook. She interacts with her friends using social games and one of them is Farmville. Tessa visits her grandfather Kees approximately once a month, apart from these visits she has no regular contact with him.

Kees van Waal is a 67 year old man who lives on his own. Kees is relatively active and has little interests in computers and modern technology. Kees does not understand the online social activities of Tessa but would like to contribute to her social development and interact with her on a more frequent level.

Kees is connected with Farmville via a plant, caring for this plant and regularly watering it results into positive game development of Tessa. Subtle lighting in the bottom of the vase provides kees with feedback on his actions. Whenever Kees waters his plant Tessa will be notified that Kees has fertilized her crops.

By harvesting crops and upgrading levels Tessa collects points. These points can be exchanged into a physical gift that will be sent to Kees. Kees will for instance receive a bucket of fresh strawberries 'grown' by his grand daughter.

Prototype

The prototype consists of a plant with a watering sensor; this sensor is connected to a microcontroller which controls two sets of light at the bottom of the vase. Whenever the plant is given water a subtle green glow appears at the bottom of the vase, after 24 hours the glow will disappear to indicate that can be watered again and in this way the grand child can be helped. When the plant hasn't been watered for 24 hours a subtle red light appears to remind the elderly that their action is required.

scheme of watering sensor:
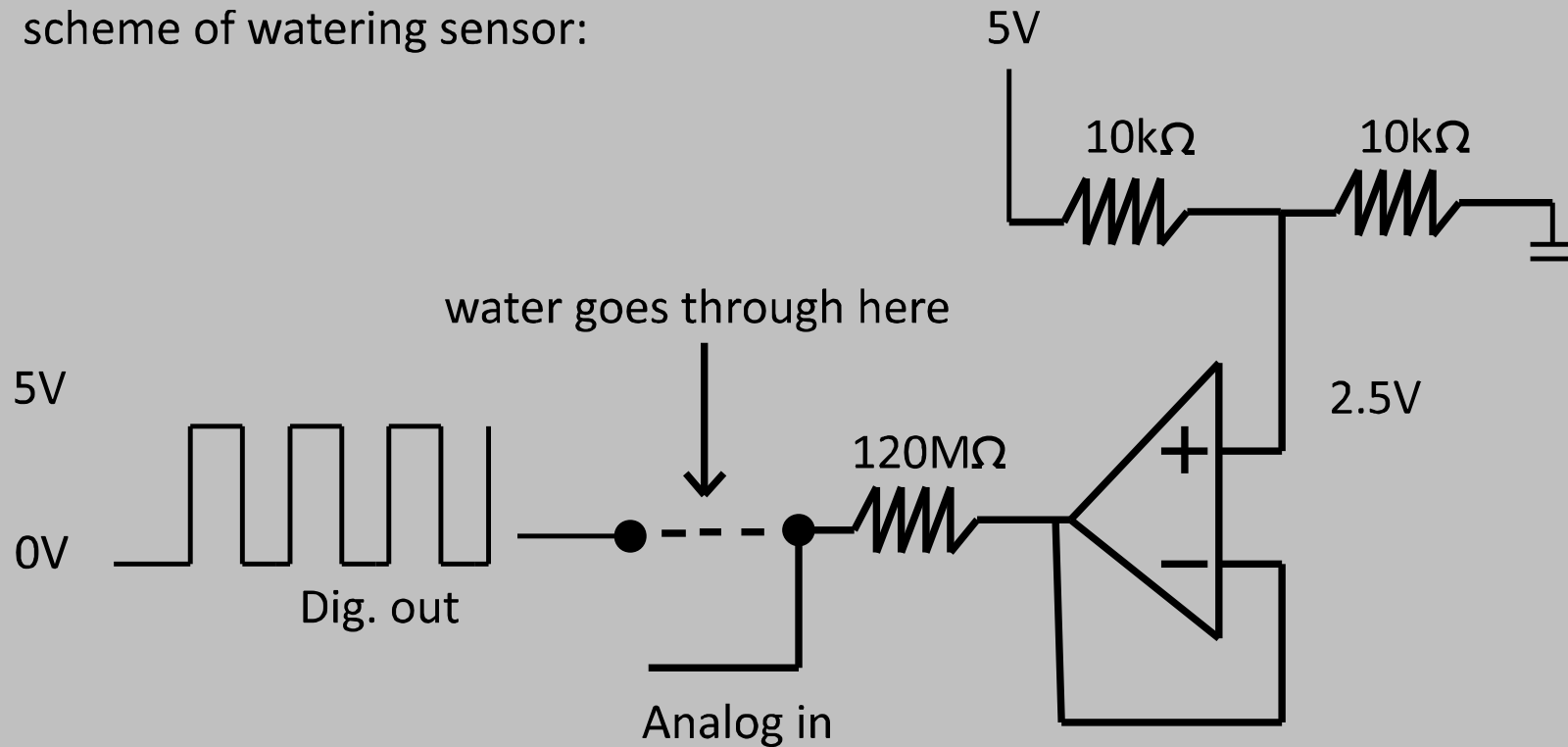
Not included in the prototype are:
- Connection with Facebook, I did research on this and Farmville can be commanded via codes sent to a server, so the signal from the sensor could be sent via a cellular phone network to a central computer that performs the coupled actions (implementation of this will cost approximately one week).
- Service that sells and deliverers physical gifts (for instance fresh strawberries), Farm Ville provides the opportunity to exchange real money into game money (Farm Ville cash). A little amount of Farmville cash can also be obtained by playing the game (leveling up). This money can be used to purchase the physical gift, Farm Ville previously gave players the possibility to donate Farm Ville cash for Haiti and collected over $1.2 million in this way. Other means of financing these physical gifts could be leasing the product to elderly or contact sponsors (for instance supermarkets).

Evaluation

Within this iteration I wanted to fully integrate the virtual world within the user interaction, I think I succeeded in improving the interaction between elderly and youngsters via this virtual world, in my concept the accessibility of the virtual world really contributes to this interaction. Through the whole project I had difficulties with the added value of virtual worlds in communication with friends or family in the real world. After the first two iterations I understood that the added value of virtual worlds and social networks has to be searched in the accessible way of none obligatory social interaction, and I think I managed to exploit this insight within my last concept.

Appendix 1: idea generation 1st iteration

How can the context be a tool for the student?
- Context can help them by choosing new projects.
  (See the development of projects in other spaces, which are interesting for the student.)
- Context can help the student to set goals.
  (Competency areas that are used in a project, which the student also wants to learn.)
- Context can help the student to make decisions towards his final goal.
  (What kind of designer the student wants to be and what direction fascinates the student?)
- Context can help them to talk with other students.
  (Try to find out what the students are doing in that project.)

How can we make students curious of what is happening in the ID community?
- Using light effects.
- Using sound.
- Using moving objects.
- Using video effects.
- Welcome a student to a space when he uses the door key and provide student some statistics
- Show differences between spaces by different sizes.
- Using blurred images.
- Making a model of the TU/e and show the spaces.
- LCD pass, which adapts the context information on front.

How can we measure contextual information?
- Clustering of students in the space.
- Extreme sound change in relation to its environment.
- Unusual movements.
- The amount of students that log-in on the internet.
- The amount of students that log-in with the swap pass/door pass

Appendix 2: Results usertest 1st iteration

Summarizing the result, we can say the following things.
The answers for the representation of the shape of the model could be divided in two groups.
5 participants thought it was a building and 5 participants thought it was some kind of storage container.

This means that shape has an important influenced of how people will interpret the device and what is should do. Because the shape of the building was quite abstract, people were searching for a match with a product which the already knew. So when communicating a context the shape has an important part for quick understanding of the context.

When the participants where asked what the thought what the lights where for, the answers were influenced by the first questions. Nevertheless, the main result was that people thought that the lights indicated different spaces or representing the content of a storage box.

The participants didn't recognize the colours as the ID spaces, but it was clear that the use of different colours made a separation between the content of the five spaces. So the people are linking different information to different colours.

The meaning of the different pulsation frequencies of the lights was for every one the same. Every participant gave the same answer. The fastest pulsation communicates a high activity and the slower pulsation a low activity. Also there was said that the fastest pulsation was getting the attention of the participant and they thought that, that space would probably be the most important space of them all.

So we can say that people have the same idea of what a fast pulsating light and a slow pulsating light would mean. Therefore the use of different pulse frequencies is a powerful tool to communicate a context to a person.

After we explained the concept we asked the participants to use their ID-card and scan with the scanner of the device. This resulted in one highlighted area with a white colour.
The students where asked why they thought their was an card scanner integrated.

The conclusion was that everybody found it difficult to answer the question because they didn't had the background information of the digital student profile, which communicates with the device. Some say it indicates their position in the building, other thought it communicates your last position, others thought is shows which storage box is yours, One thought it shows the place where you have to go and four people really didn't know the meaning of the highlighted area. For the white light the most say is was a neutral colour so it could be used for al the spaces

This last part of the user test shows that people need to have some background information to interpret the context, given by the device, on a right way. This means that the user should know already what the product could do and what the output will be when the user communicates with the device.

Appendix 3: user interview 2nd iteration

Question list   1.   For the elderly between 60 - 80
User category Identifiers

* What is your living situation
    o   Single
    o   Married

* How many children do you have?
    o   …..

Physical Characteristics (Delete in interview)
*   Are you
    o   Male
    o   Female

* Are you
    o   Right-handed
    o   Left-handed
    o   ambidextrous

* How old are you?
    o   60 - 65
    o   66 - 70
    o   71 - 75
    o   76 - 80

* Do you some kind of colorblindness
    o   No
    o   Yes, describe ……

* Do you wear glasses or contact lenses?
    o   No

o Yes

* On which volume you mostly set your TV?

    Silent   o o o o o o o o   loud

* Do you have any physical problems?

    ……

Attitude and motivation (delete in interview)

* How often do you have contact with your Children?
    o Every day I speak to one of them
    o Every week
    o Only few times a month, but I often call them.
    o Other   ……

* Who usually initiates this contact?
    o I often make a call.
    o Usually my daughter or my son calls me..
    o Other   ……

* What is mostly your motivation to contact your children?
    o A chat. Inform about their activities and wellbeing of my children
    o Being there for them
    o If I need some help.
    o Holding the family together
    o Other   ……

* In general, what do you think about your contact with your children?
    o Good, we discuss the daily activities, how she/he is feeling and more.
    o Good, but I have to ask the questions the most of the time.
    o Ok, but I have to ask how they are doing.
    o Bad, we hardly discuss anything.
    o Other   ……

* If possible, would you like to be more involved in your children's daily lives?
    o Yes, I want to be updated every day about their activities and wellbeing
    o Yes, if something important occurs I want to be updated immediately
    o Yes, but we discuss everything when we see each other.
    o No, Only if something bad occurs or they need my help.
    o No, It is hard for me to memory everything
    o Other.

* In general, how do you feel about a direct access with your parents on a children?
    o Great, It would give me a safer feeling about their wellbeing.
    o Ok I guess. Can be handy when they don't answer the phone.
    o I don't know why I should have direct access.
    o Don't need it. They live nearby.
    o I don't know if my children want to.
    o Other   ……

* Would you consider it a violation of their personal space if you were constantly monitoring
  your parents.
    o Yes
    o No
    o Maybe, do they notice it?
    o Other   ……

* If you've capable to monitor your children constantly, does this influences your
  behavior in any kind of way?
    o Yes, I will check my children wellbeing more often.
    o Yes, but it makes me also more anxious
    o I don't know, maybe when I know it's not going well.
    o No, I will call
    o Other   ……

* In general, what is your opinion of technology in your home?
    o I like it.

- It makes my life easier and more pleasant.
- Don't like because it uses often a lot of energy.
- Don't like it. It never matches with the interior.
- Other   ………

* In general, what is your opinion about technology, which keeps you informed about your Children wellbeing?
- It makes my life easier and more pleasant.
- Don't like because it also will use energy
- I don't like electronics
- I've it hard to operate electronic products
- Other   ………

* In general, could you adapt to use these monitoring technologies?
- Yes
- Yes, because this device informs me about a family member.
- Probably, because I have too. It's important an important device.
- No, I think I'm not able to do it.
- No
- Other   ………

* Will a monitoring device contribute to a positive relationship with your parents?
- Yes
- I don't know, probably
- No, I've already a positive relationship with my children
- No
- Other   ………

Aiming on Second life (delete in interview)

* In general, do you have experience with working with a computer or other electronics like a video recorder.
- Yes
- No

* In general, how do you feel about working with a computer?
- o I don't like working with computers.
- o I've never worked with a computer.
- o I have no strong like or dislike working with computers.
- o I like it.
- o Others ……

* How often do you work with computers?
- o Every day.
- o Few times a week.
- o Once a week.
- o Less than 5 times a month.
- o Never
- o Other   ……

* For what kind of activities do you use the computer at home?
- o E-mail
- o Office programs
- o Internet
- o Professional programs
- o Photo's
- o Other   ……

* Is the amount of time it takes to learn new software applications usually worth it?
- o Yes, it helps me in my daily tasks
- o Sometimes, I don't use a lot of different software programs
- o No, Computer systems are usually not useful enough to justify the training time
- o Software?
- o Other   ……

* Do you enjoy learning how to use new software applications?
- o Yes, because
- o Sometimes, because

- No, because
- I don't know.
- Other ....

* Are you in interested in computers?
    - No, I'm not interested and would avoid using them if I could.
    - Yes, because ....
    - Only if the computer helps me to do my task better
    - I'm interested in computers in general
    - Other ....

* Are you using other computer based devices like game consoles or mobile smart phones?
    - Yes, What ....
    - No

Knowledge and experience (Delete in interview)

* What is your experience with computers programs?
    - Expert   (Daily base)
    - Experienced   (Weekly base)
    - Novice   (Less then once a week)
    - Other ....

* What is your experience with programs, in which you make an avatar such as buddy poke on Hyves, SIMs, Second life, Habbo Hotel or other virtual world.
    - Novice. I'm familiar with the term avatar
    - Experienced. I have experience with similar programs.
    - Expert. I have an avatar in a software program
    - What is an avatar?
    - What is a virtual world
    - Other

* What is your native language?
- o Dutch
- o English
- o Deutsch
- o Other   ……

Please name all the software applications you currently use

Application

……………………………………………..   ……………………………………………..
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