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OLDER PEOPLE AS EQUAL PARTNERS IN THE CREATIVE DESIGN OF DIGITAL DEVICES

Helena Sustar

This thesis is submitted for the degree of Doctor of Philosophy in Human-Computer Interaction

October 2011

Volume 2

City University London
School of Informatics
Centre for Human Computer Interaction Design

CITY UNIVERSITY LONDON

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1 APPENDIX 1: STUDY 1: EMOTIONAL INTERACTION AS A WAY OF COMMUNICATION

Sustar, H. and Zaphiris, P. (2007) Emotional Interaction as a Way of Communication *DPPI 2007.* Helsinki, Finland ACM, New York

Emotional Interaction as a Way of Communication

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Abstract: The article presents the design and evaluation phase – an example of an emotional interaction for elderly users as a means for interpersonal communication, management with the residence (smart house) and communication with the external environment. The proposed solution suggests using non-verbal communication (care for a garden) with the assistance of sound, colours, materials and shapes for creating an intuitive, fluid and permanent communication. The paper also reports on the evaluation phase of this kind of interaction by investigating whether it is suitable for different age group users. The evaluation phase was focused more on the 60+ year old elderly users. We evaluated this way of interaction in different situations: in communicating with relatives, taking medicine, recording reminders, controlling their home and using different services. Evaluation results showed that our users felt that this interaction is too simple and that older people in their fourth life period (around the eighties) do not appreciate this way of thinking.

Author Keywords: elderly people, interaction design, interface

ACM Classifications Keywords: H5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous; K4.2. Computers and society: Social issues

Introduction

The 21st century is the century of the elderly, because of longer life expectancy and demographic changes. By 2050 there will be more than 2 billion elderly people in the world, and this number will for the first time in history exceed the number of teenagers [9]. This is a large market group with various needs. The tendency of the active and independent elderly person is going in the direction of enabling and including them in society [13]. That is why in the future designers, developers and engineers will need to develop products for a dynamic, heterogeneous age group [11, 7] and this will in turn influence the development of new technological solutions. It is necessary to find technological solutions suitable for different age groups of people, by considering the interaction between the individual's abilities and activities that he/she can handle, and the environment that surrounds him/her [8].

1. What will the Future Technology be like?

One of certain possible answers could be in Stefano Marzano's [10] words. Manager of the Philips corporative design, he sees an answer in IT, which has to be in harmony with the need of the constant development in the field of communication, health and entertainment with the use of highly effective materials. In his opinion, inexpensive technology is opening possibilities for miniaturization and modernization of programmed equipment. He sees the problem merely in the complexity of the environment, which is why it is necessary to think on a conceptual level in the reconstruction of services, collaboration, interaction, and multimedia, but all in the context of use. Philips sees the possible answer in "ambient intelligence" [1, 13]. Furthermore, the Spanish researcher Julio Abscal [1] expects the development into application technology of control, wireless technologies and reduction of controlling and communication functions. Better use of speech, support of the control and location, and automatic actions that are based on the analysis of human biological signals are needed. Intelligent systems can help in an intuitive and transparent way. Future technology will stimulate the user to better use of senses. It will activate mental processes: trigger reminiscences, feelings, smells, touch, and it will take us into the past, when our connections with nature were even more primary. The products are bound to be more adaptable, capable of answering our moods and wishes [16]. They will need to be highly personalized and will learn our preferences and follow our habits. They will become our pets [12].

In society a new trend is being established – the possibility of elderly people living independently at home as long as possible with formal and informal support [7]. The technological progress has accelerated the research work that is connected with the independent residence of the elderly in areas such as smart home, interactive design, "ambient intelligence"[13], and assistive technology [5]. Sandra Howell [17] believes that the elderly have to live in a stimulating and heterogeneous extravert environment that will give them possibilities for physical activity and mental stimulation. It is necessary to develop a flexible, plural service system based on meeting the individual's needs that also takes into consideration his/her privacy, decision-making and independence. The elderly themselves have to choose the form of guardianship that suits them the most.

Technological designs can react to problems, such as: satisfying the user's need for comfort and pleasure in his or her residential environment, self-employment, caring for them and independently in a creative way. Considering all this, it is necessary that technology offers solutions that are simple on the outside and smart (complex) on the inside [18]. To study these issues we used a user-centred design methodology to design and evaluate a proposed low-fidelity prototype of an emotional system.

2. What Research Methods were used?

Three main research methods were used in the first part of the early development phase. Firstly, a collection of conversations with ten residents of a medium size home for the elderly in Domžale (Slovenia) was recorded. The participants were mostly old ladies between 55 to 85 years old. From the perspective of education, occupation, family status, diseases, hobbies, living, difficulties, disability and connections with relatives, their backgrounds were very different. The main reasons why they moved from their home to the home for elderly people were various: illness, collapse, isolation and so on. At the beginning, the conversation was around differences between living at home and living in the home for the elderly people, and their acclimatization to the new home. Moreover, we had a discussion about their daily activities and social contact with their relatives and carers. Regarding the question of what things they miss the most, one of the participants mentioned that she really missed her garden.

Building on the knowledge we acquired from the interviews we built a number of personas of different possible users [3]. We also wanted possible other users of our design to be from other age groups as well. Considering this, various user groups were chosen, not just elderly people. They were chosen based on criteria like: their natural environment, social network, and occupation background, what he/she was doing in their own extra time, where they were living and what kind of technology they were using. With these in mind, we built different user profiles (personas). For example a profile of an ex-extreme sportsman who became physically disabled after an accident and has become a gardener; a blind granddaughter who is living with her grandmother; a onetime politician who lives alone on a small farm; a young fashion designer who travels a lot and an 80 year old widow who lives alone. All of these personas were somehow connected with gardening, plants or soil.

Thirdly, a brainstorming session was organized mostly from the reason that through the literature review it was difficult to find innovative design solutions that have an ageing focus. All 6 participants of the brainstorming were from different areas that were in some way connected with our research: architecture, journalism, design, engineering, economy and computer programming. There was also one 76-year old woman as a representative of elderly users. First the discussion (about 20 minutes) focused on earlier prepared keywords: smart, simple, independence, mobility/activity, safety/residence and ageing, control and communication. It is interesting those keywords that we considered as the most important were the least valuable for participants: smart, simple, independence were highly important, mobility/activity, safety/residence were for them medium important and the least important were for them ageing, control and communication. These key words participants used through discussion at searching the characteristics that the new gadget needed to have. Through a 20-minute discussion with participants we established that the convenient gadgets for the elderly need to be: socially oriented; interaction between gadgets and elderly users needs to be active; the owner has to care for them, the device could remind the owner to take medicine and so on. In the second part of the brainstorming session the participants worked the last 20 minutes in pairs developing new ideas.

3. What was the Result in the Design Phase?

The new ideas from the brainstorming sessions were included in the process of developing the main idea in the design phase. The design result in these phases was a low-fidelity 3D model/prototype made from plain material such as: wood, foam, fibreglass and plastic that. We named it "Virtual garden". The idea was designed as an interaction interface that tried to be simple and intuitive, with technology and wireless media, those functions on the organization of a "normal garden". If we illustrate how garden interact: with combing with diagnostic tool (4) user (see Fig 1) test if all gadgets in the garden operate. With communication devices users can speak with their relatives or "virtual gardeners"[1], with information recorders can records various information as well smell, sound and picture. The transformers of information detect moisture, light and temperature and show these to user with changing the colour, moving blades, opening (bio weather flower) or voice message. The main interactions happened between the user and "Virtual garden" with touching the "plants" – gadgets, and changing their position in the garden. Some of the gadgets like the communication devices users wearing on the clothes like brooch.

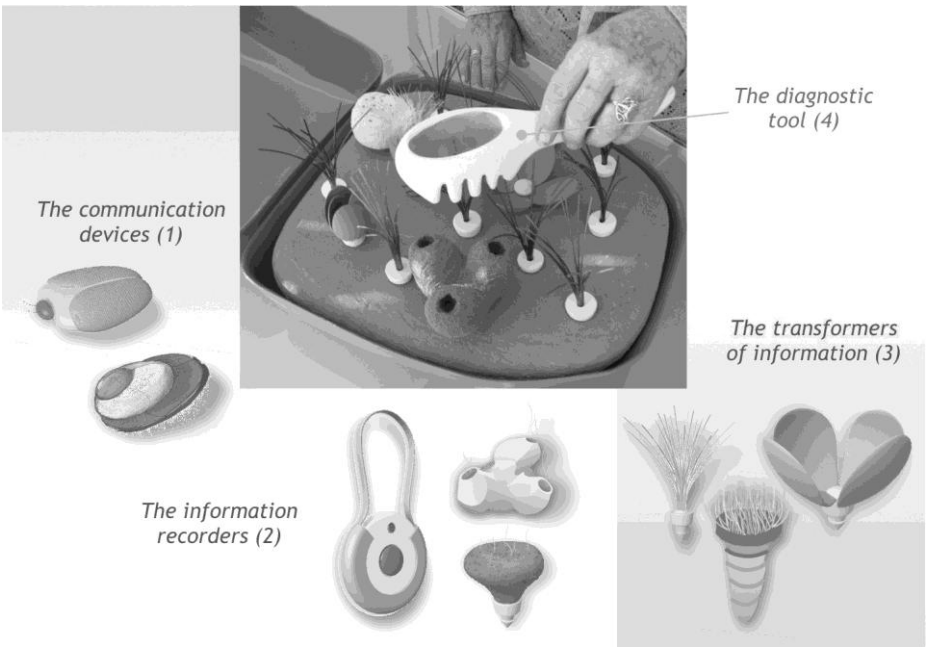

Fig. 1: The "Virtual garden" includes four groups of tools with particular intention: communication between users (1), recording different sense's information (2), communication with user's residence (3) and diagnostic tool for verified of gadgets.

[1] For a better illustration of what the "Virtual garden" is able to do we made a short video which shows how the "Virtual garden" can be used for communication between users, social contact and management matters with smart house.

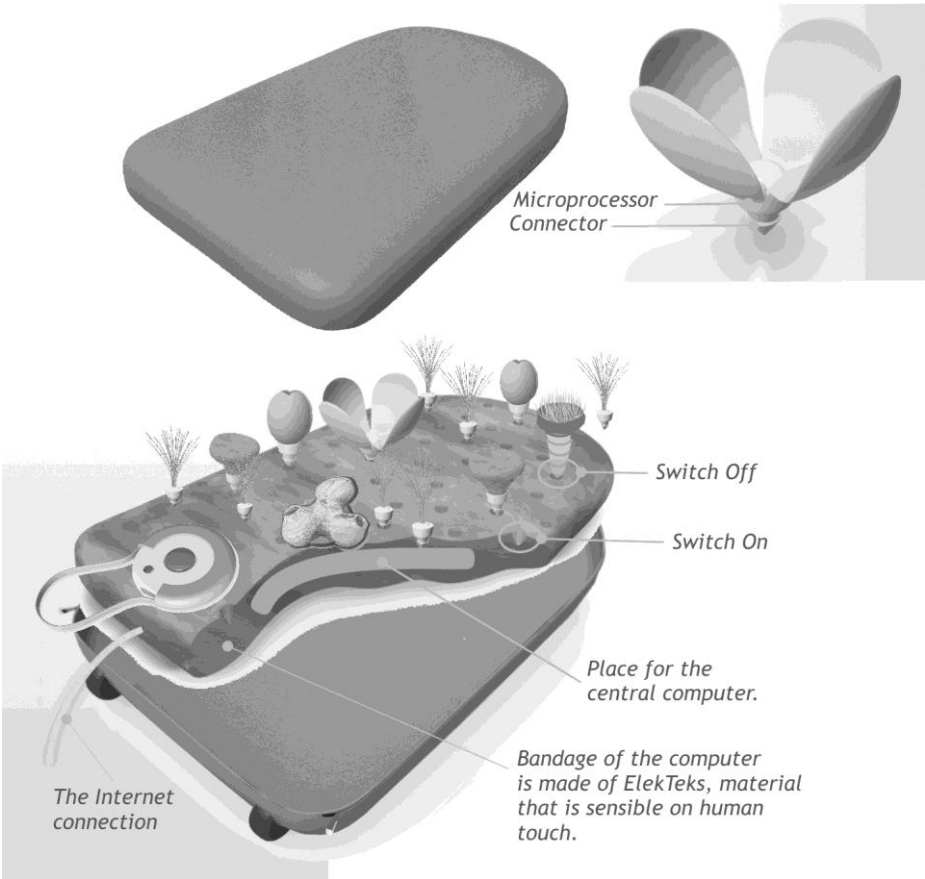

Fig. 2: The central computer in "Virtual garden" is connected with Internet and across that can get different information and interpret to user in simple and understandable way.

4. Is the Interaction with the "Virtual Garden" suitable for Users?

We decided that it was necessary after the design phase to accomplish the evaluation phase and investigate how potential users would accept the gadget. The main goals of the evaluation phase were summarized in four questions: What kind of lifestyle do elderly people have today? Are the forms, colours and shapes of the "Virtual garden" suitable and understandable enough? Is the interaction with the "Virtual garden" appropriate for users? How good is the "Virtual garden" in supporting users' tasks and how easy is it for them to use and learn it? Besides that we want to improve the product: getting new ideas to humanize the interaction and discover new possibilities of using the "garden". For the evaluation phase different age groups of users were chosen, however, we put extra focus on elderly people. With the assistance of standardized questionnaires we investigated issues like: personal

characteristics, residence, health, the use of leisure time, the ways of communicating with relatives (face to face contacts, telephone conversations), and technologies that they already use and so on. We asked the participants if they had any experience of gardening and how important for them certain things are such as feeling at home, independence and simplicity. For the second part of the evaluation phase we conducted a series of interviews with users that were based around the evaluations of the model/prototype. Participants were interviewed in pairs because we realized from previous brainstorming sessions that it is easier and more efficient to search for new ideas when people discuss that way instead of "thinking aloud" alone [4]. In the interviews we discussed with participants how familiar they are with particular parts of the "Virtual garden" and what they think about colours, shapes and used materials. In addition, we asked them to place themselves in different situations, for example having a conversation with a friend, taking medicine, being reminded of daily things, management with the residence (smart house) and think how the "Virtual garden" could provide different services to support these situations [15]. Participants in the evaluations phase were: 11 students (between 21 and 36 years), two mothers (between 30 and 45 years) plus 4 elderly people (60+ years) and 4 more than 80 years old. The evaluation phase lasted from 40 minutes to one and a half hours.

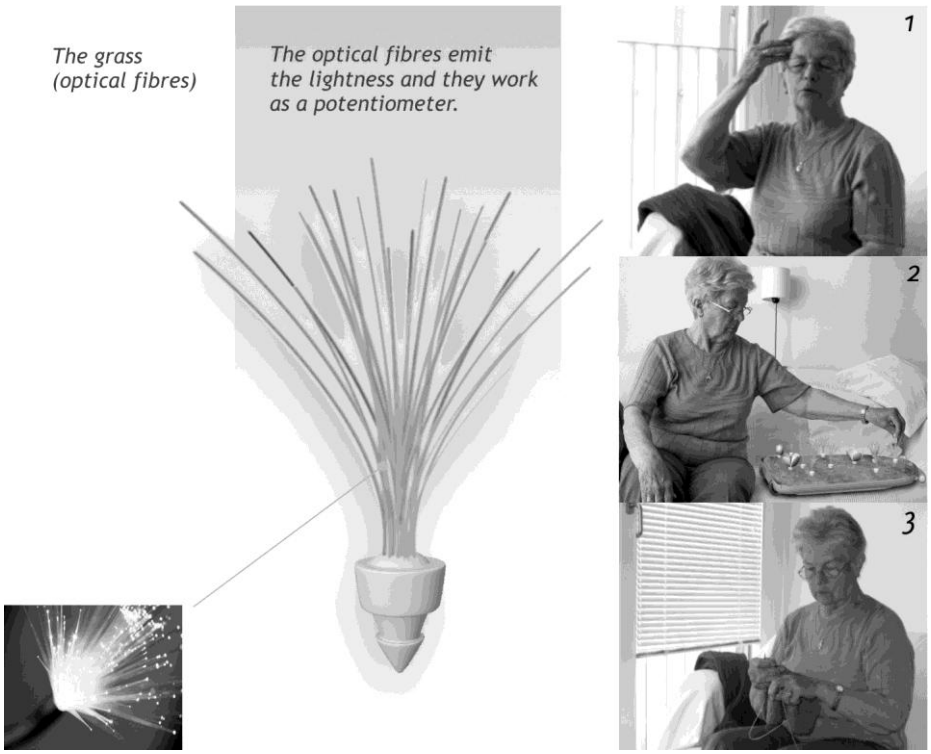

Fig. 3: User with changing the position in the garden can regulation the temperature in the garden.

4. What do the Evaluation Results show?

The evaluation results show that some characteristics are similar for all age groups: all age groups had no problems with recognizing the model as a garden, and that items on the interface presented a mixture of underwater plants and plants in the garden. All of them at the beginning started to interact with the garden with enthusiasm but after they had achieved certain composition or meaning they started to get bored. All of them pointed out that they wished that the prototype could provide more interaction, such as: voice, transformation (growing), smell, glowing, changing of colours. Naturally we identified some differences as well, for example: elderly people 60 and over[2] thought that the garden was too simplistic for them in the sense of interaction. This group wished the "garden" was more realistic with regards to the meaning of colour and texture (for example like artificial flowers). This participant can't imagine their self as a potential user, they rather to talk about others "older" users: children and people with special needs. This is in contrast to the elderly of the fourth life period – individuals of 80 and over – who do not have much desire to accept a different way of thinking that they already have.[3] Most of them had never used IT before and that is why the interaction needs to be as clear and simple as possible. We also identified that between-generation collaboration around such devices might be difficult as the technological knowledge and social gap across these age groups is too big. It might be the case that with age, imagination declines and that might be why this age group cannot see the "Virtual garden" as a useful device.

5. What will the Future Research be?

One probable reason why the product did not satisfy any of the age groups completely is because the designed result was developed by the designer after analysing empirical data from the brainstorming sessions and the interviews. We can see future research in two possible directions: one is improving the design process with major inclusion of users. Higher usability and acceptability could be achieved with the use of participatory design methods. Secondly, research is needed to better understand how low fidelity prototypes could be used as means of data collection from such age groups. It is apparent that older participants had a problem in using imagination in how a low fidelity prototype could be transformed into a realistic and functional device.

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[2] Their characteristics are devotion of one's attention to their family (financial aid to children, baby-sitting grandchildren), higher education and financial standards, better residence possibilities, low-level dependence (advising, prevention), active use of free time and a healthier life and "a second career"[6].

[3] Maybe also because of their characteristics that are: concentrating on themselves and their own state of health, high degree of dependence (multi-illness, dementia) which often results in low self esteem, decline of physical and cognitive skills abilities resulting in lower mobility and doing activities that demand little physical strength (reading, watching TV, listening to the radio) [6, 18].

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2 APPENDIX 2: STUDY 1: TECHNICAL REPRESENTATION OF THE VIRTUAL GARDEN

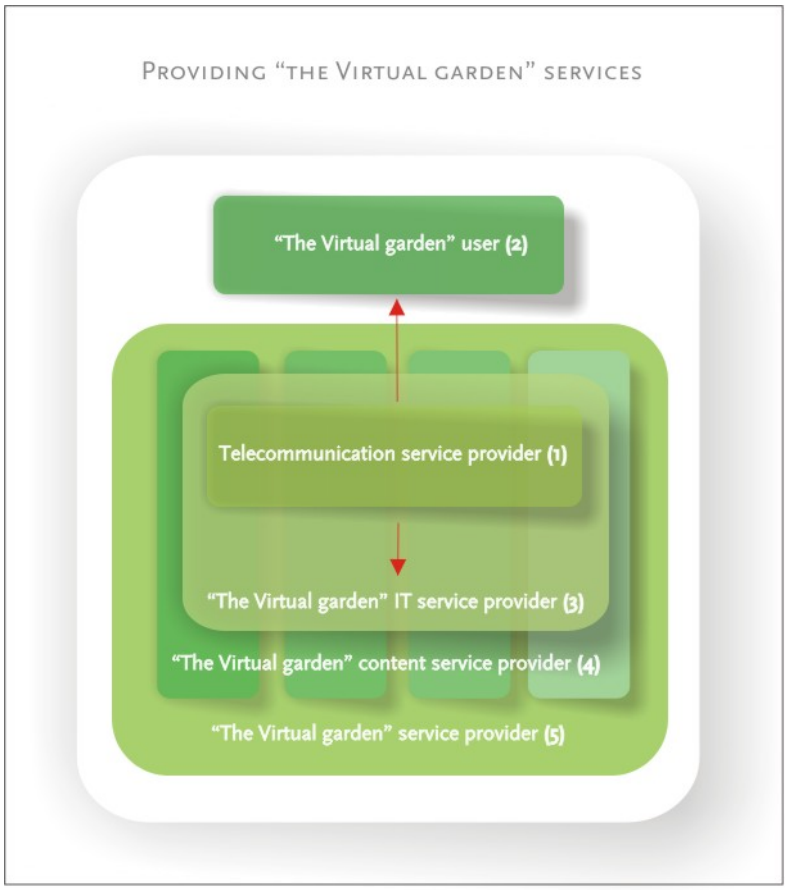

Figure 1: Services are provided as shown in figure (right): 1.Telecommunication service provider (1) is responsible for providing communication between "the Virtual garden" user (2), "the Virtual garden" IT service provider (3) and "the Virtual garden" content service provider (4). 2. "The Virtual garden" information infrastructure is installed and maintained by "the Virtual garden" IT service provider (3). "The Virtual garden" content provider (4) provides the "Virtual garden" services to the user.[1]

[1] Technical solution for "the Virtual garden" was developed in colaboration with Brane Zupan and Slovenian telekomunication company Smart Com (Slovenia).

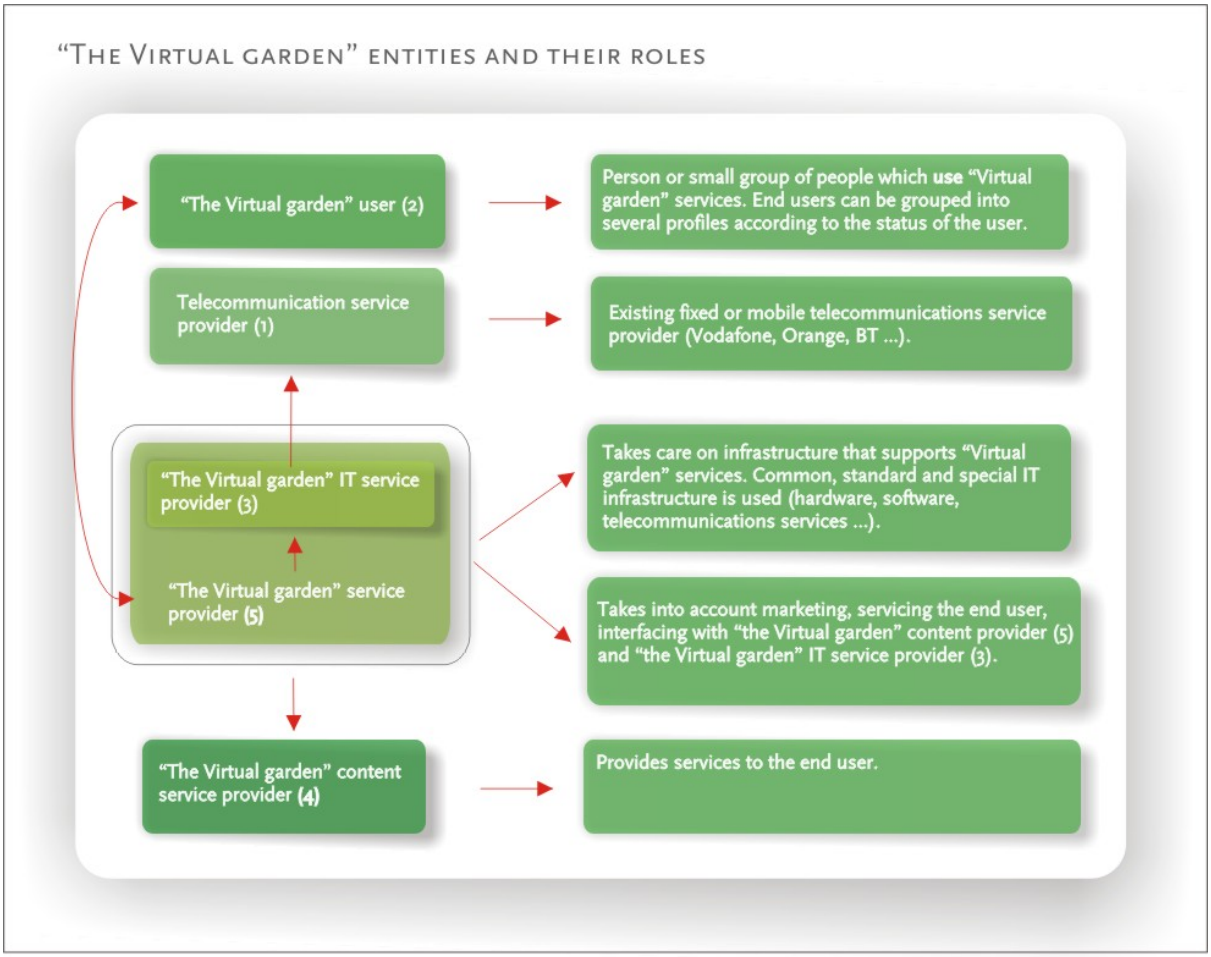

Figure 2: "1. "The Virtual garden" user (2): person or small group of people which use "the Virtual garden" services. End users can be grouped into several profiles according to the status of the user. 2. Telecommunication service provider (1): Existing fixed or mobile telecommunications service provider (Vodafone, Orange, BT...). Telecommunication services are based on TCP/IP technology. 3. "The Virtual garden" IT service provider (3): takes care on infrastructure that supports "the Virtual garden" services. Common, standard and special IT infrastructure is used (hardware, software, telecommunications services). 4. "The Virtual garden" service provider (5): takes into account marketing, servicing the end user, interfacing with "the Virtual garden" content provider (4) and "the Virtual garden" IT service provider (3). 5. "The Virtual garden" content service provider (3): provides services to the end user.

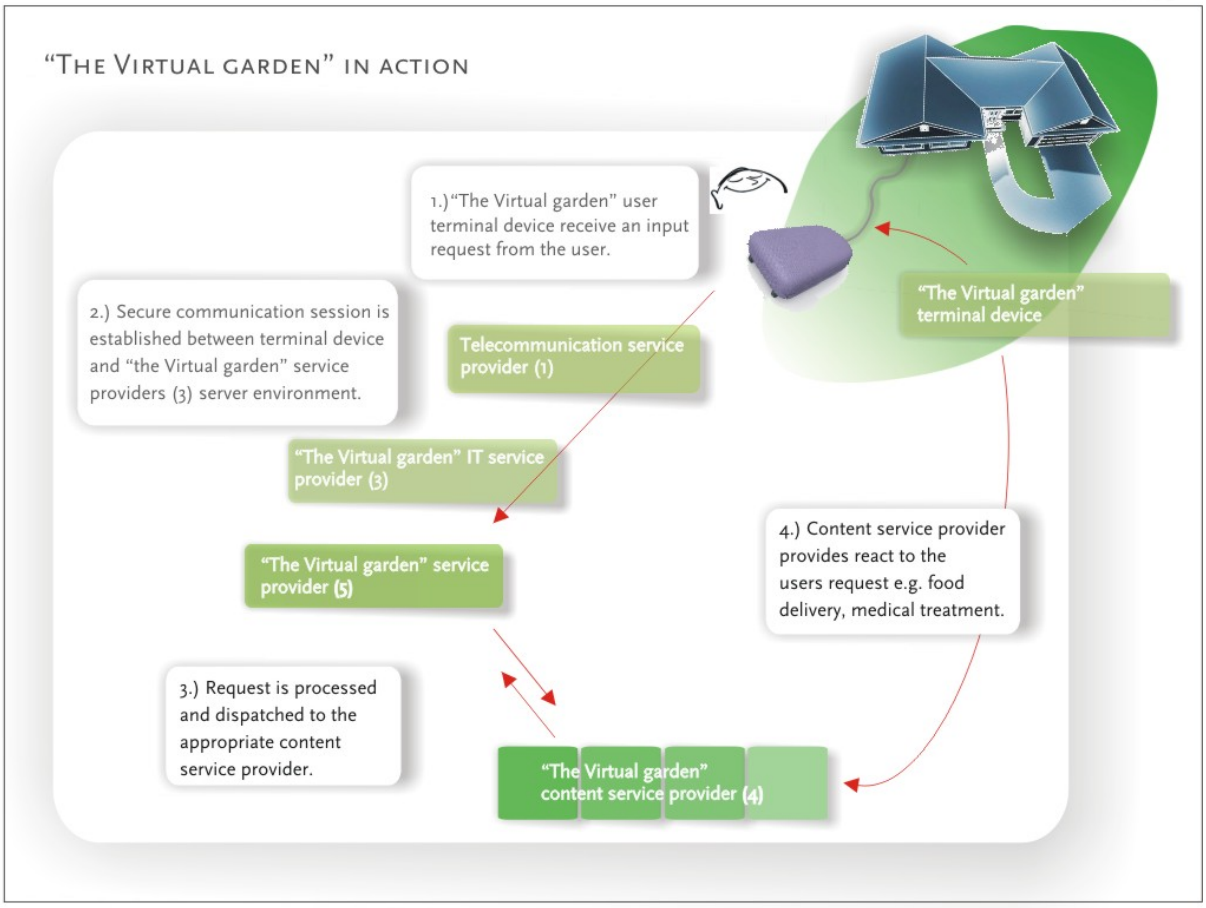

Figure 3: Figure above illustrates sample of "the Virtual garden" activity: 1. "The Virtual garden" user terminal device receive an input request from the user. 2. Secure communication session is established between terminal device and "the Virtual garden" service providers' server environment. 3. Request is processed and dispatched to the appropriate content service provider. 4. Content service provider provides react to the users request e.g. food delivery, medical treatment.

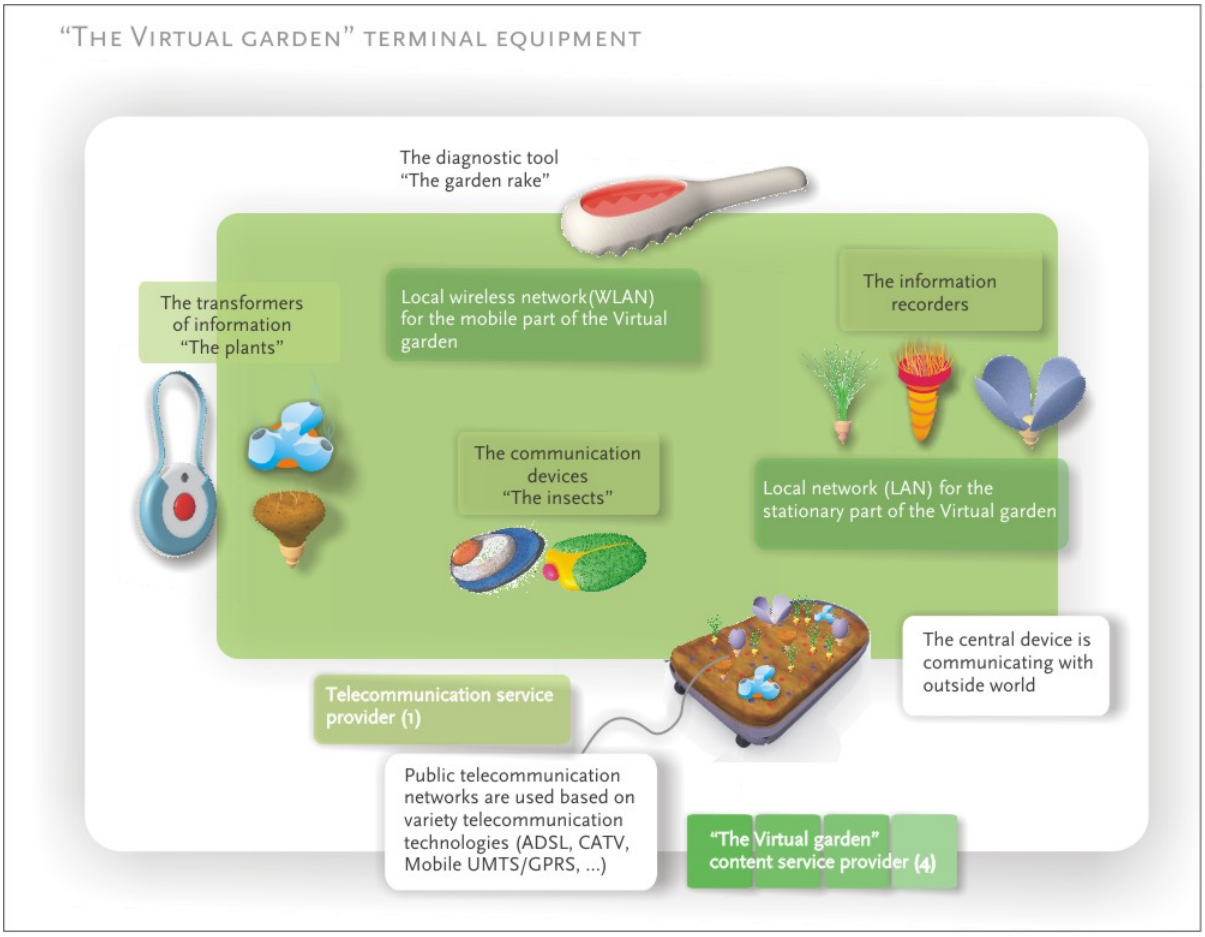

Figure 4: "The Virtual garden" terminal equipment: "The Virtual garden" terminal equipment is actively connected to the services provided by "the Virtual garden" content service provider (4) using wire line and wireless technologies (LAN based on Ethernet, WLAN, and Bluetooth ...)

3 APPENDIX 3: STUDY 1: EXPLORATORY STATEMENT AND INFORMED CONCERT FORM

Explanatory Statement[2]

Project Title: *Evaluation of the mock-up model*
Principle Investigator: Panayiotis Zaphiris, Zaphiris@soi.city.ac.uk
Investigator: Helena Sustar, Helena.Sustar.1@soi.city.ac.uk,+44 (0)20 7040 4214

An explanation of the research project
This study will investigate how different age groups regard the mock-up model designed in the product design process where user is not involved normally. The study is divided at two parts. At the first part participants will be required to answer at two pages long questionnaire about: i.) personal particulars (gender, age, status, education, employment), health condition and use of any special equipment, leisure activities, social contacts and provided help, technology (e.g. on-line banking) and at the end gardening. The second part of study will involve an interview, which can last up to one hour and will have three sections related to the mock-up model: i.) familiarization with the mock-up model, ii.) your opinion (criticism) on the mock-up model, and iii.) adoption of the mock-up model as an interaction device in a daily routine. The interview will be conducted at the Guy Chester House Halls of Residence. The interview will be videoed and audio taped.

Your answers will help us to develop better products that can help older people and their family members performing daily activities and communicate with relatives, institutions and their social environment.

Data protection
Please note only the principle investigator and co-investigator will use the data collected from the study. The data collected will only used as part of the co-investigator PhD study. The audio and video recordings will be stored securely and only the principle and co-investigator will view and have access to the recordings. All data will be stored until the end of the PhD study and then destroyed. Furthermore, appropriate measures have been put in to place to protect the participant's confidentiality and no identifiable personal data will be published or shared with any other organization.

The participant's participation at the study is voluntary, and the participant can choose not to participate in part or the entire study, withdraw at any stage, or avoid answering

[2] Explanatory Statement and Informed Consent Form were written based on guidelines provided by Research Ethics Committee (Senate Research Ethics Committee, 2008)

questions that are felt too personal or intrusive. The participant's will also have the right to terminate/suspend the recording at any time withhold being penalised or disadvantaged in any way. If there is an aspect of the study, which concerns you, you may make a complaint. The City University London has established a complaints procedure via the Secretary Dr. Naomi Hammond at the Research Ethics Committee. To complain about the study, you need to phone 020 7040 8106. When you will speak to the Secretary of the Research Ethics Committee inform them that the name of the project is: *Evaluation of the mock-up model*.

You could also write to the Secretary of the Research Ethics Committee Dr. Naomi Hammond at:
Secretary to Senate Ethical Committee
Academic Development and Services
City University London
Northampton Square
London EC1V 0HB
Email: naomi.hammond.1@city.ac.uk

Centre for Human Computer Interaction Design
School of Informatics, City University London
Northampton Square, London EC1V 0HB
Tel: +44 (0)20 7040 4214; Fax: +44 (0)20 7040;
Email: Helena.Sustar.1@soi.city.ac.uk

Informed Consent Form

Project Title: *Evaluation of the mock-up model*

I agree to take part in the above the City University London, Centre for Human Computer Interaction Design research project. I have had the project explained to me, and I have read the Explanatory Statement, which I may keep for my records. I understand that taking part in this study that regard the mock-up model designed in the product design process (where user is not involved normally) in three sections i.) familiarization with the mock-up model, ii.) your opinion (criticism) on the mock-up model, and iii.) adoption of the mock-up model as an interaction device in a daily routine. This means that I am willing to:

- provide the principal investigator to use data that were collected in their investigation and
- be video/audio taped while participating in this study

I understand that volunteers participating at this study will inform designers who are designing products for older population to design better products for them. I understand that the value offered to designers and researchers could benefit in involving this generation in to the creative user centred design process.

Data Protection

This information will be held and processed for the purpose of investigating the suitability and usability of mock-up model for older population. I understand that any information I provide will be treated as confidential and that no information that could lead to the identification of any individual will be disclosed in any reports on the project, or to any other party. I understand that no identifiable personal data will be published or shared with any other organization.

I understand that only the principle investigator and co-investigator will use the data collected from the study and the data collected will only be used as part of the co-investigator's PhD study. I understand that all audio and video recordings and all data collected will be stored for the end of the PhD study and then destroyed.

I agree to the City University London recording and processing gathered information from this study. I understand that this information will be used only for the purpose(s) set out in this statement and my consent is conditional on the University complying with its duties and obligations under the Data Protection Act 1998.

Withdrawal from study

I understand that my participation is voluntary, that I can choose not to participate in part or the entire project, and withdraw at any stage, or avoid answering questions that are felt too personal or intrusive. I understand that I have the right to terminate/suspend the recording at any time, without being penalised or disadvantaged in any way.

Name: ……..... (Please print)

Signature: .....……

Date: .....

(Senate Research Ethics Committee, 2008)

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4 APPENDIX 4: STUDY 1: THE CONTENT OF THE SEMI-STRUCTURED INTERVIEW

Introduction

1. **Introduce yourself** to participants.
2. **Explain the content of the evaluations,** how collected data will be protected and where participants could make a complaint, if they will identify that the procedure was carried out incorrectly. Give participants **The Explanation Statement** of the study to read**.**
3. Explain participants what is **Inform Concert Form** and ask them to sign it.

Instructions

Demonstrate participants the mock-up model with all additional gadgets, and then ask them the following questions:

1.) Familiarization with the model: users' acceptance of the mock-up model visually and physically

- *What do you think this is?.... Is this a toy? / Is this a tool?*
- *Can you play with it?*
- *Do you like the size of the model?*
- *What do you think about colours, materials and shapes of the model?*
- *Can you imagine the model as real device, which can blink, glow, produce sounds and change colour?*

2.) User's opinion (criticism) on the mock-up model

- *How do you like the interaction with the model?*
- *Would you have this device in your home, for example, in your living room or in your office?*
- *Would you use this device in your daily routine?*

If the answer is no, then ask: *Who do you think that the potential user could be?*

3.) Adoption of mock-up model as an interactive device in a daily routine

Ask participants where they will be able to apply mock-up model in three different scenarios:

Scenario 1: Talk with your family members

Imagine yourself in the situation when you need ***to make a phone call****. Can you use the mock-up model as communication device? Imagine that you have this mock-up model placed somewhere in a living room and you use it to be connected with your family members. Can you show me how you will do this with the model and its parts?*

Scenario 2: Be reminded of something

Imagine that this mock-up model is able to ***remind you on your daily activities.*** *For example:*

- *to take medicine or remind you of your appointment with GP*
- *remind you to go to the shop or*
- *call a friend*

Can you show me how you will use model or its parts in any of these situations?

Scenario 3: Managing the smart house

Do you think that this model can help you to manage a house, for example the smart house?

Can you show me with a model or its parts how you will do this?

5 APPENDIX 5: STUDY 1: QUALITATIVE ANALYSING DATA

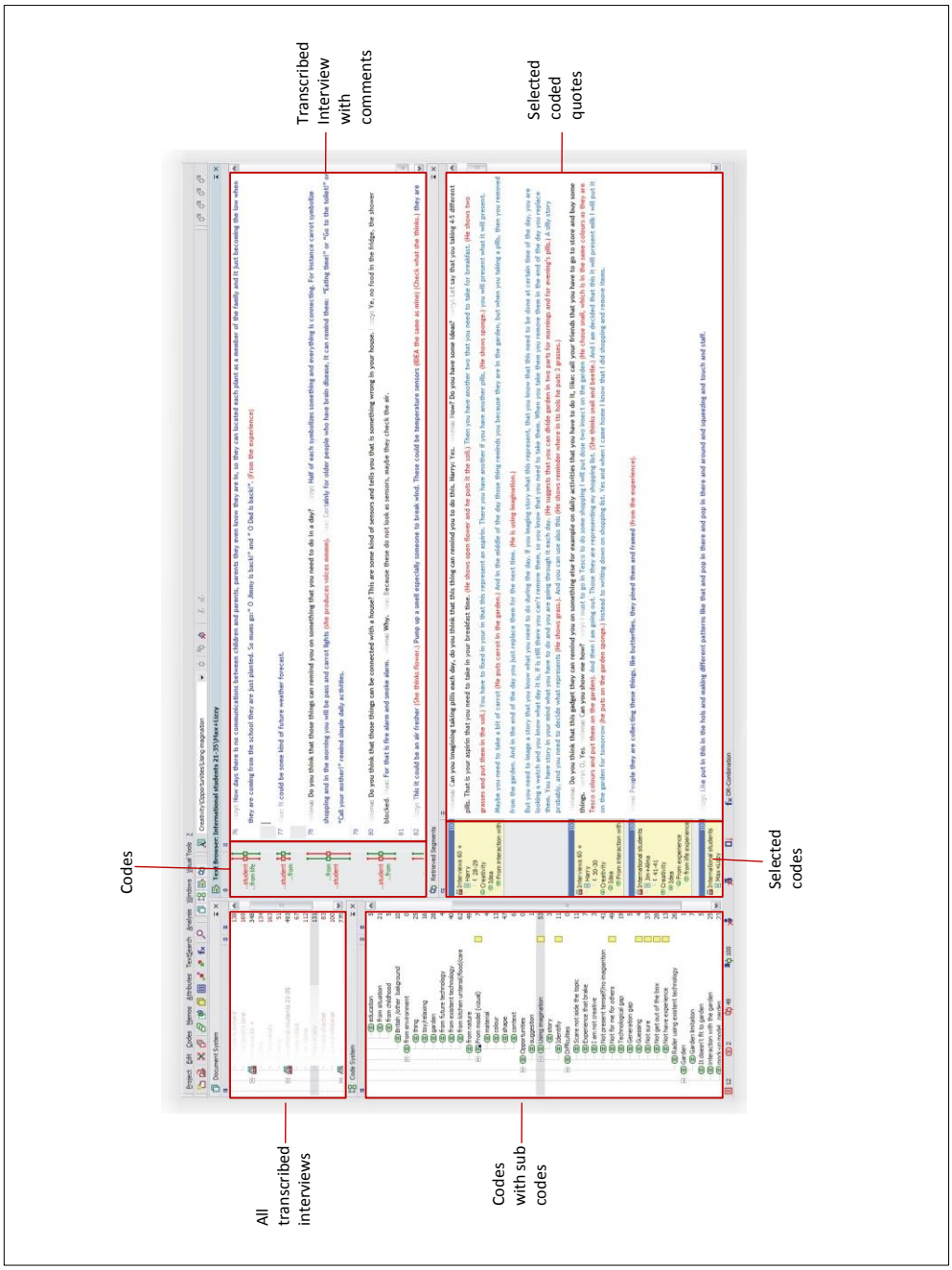

Figure 5: Section from the qualitative data in MAXqda2 with codes.

6 APPENDIX 6: STUDY 1: PARTICIPANTS' STATEMENTS FROM EVALUATION

6.1 VERY OLD PEOPLE FROM THE VINTAGE CLUB

6.1.1 FAMILIARIZATION WITH THE MODEL: USERS' ACCEPTANCE OF THE MOCK-UP MODEL VISUALLY AND PHYSICALLY

i.) Object reminds me of…

/

ii.) Materials, shapes, colours

/

iii.) Imagine / not imagine object (blinking, glowing, producing sound, changing colour)

Example 1

R (researcher): When the information is coming to the garden the flower change colour.

P1 (participant): *Changing colour? No.*

R: Why not?

P1: *I can't think of information coming through different channels. Do you mean that they have some sort of soul? I can appreciate and look at it and it will tell me something?*

R: Yes.

P1: *You do? That is a totally new thought. I know that flowers respond to love if you can care for them, they say. If you want a plant displaying flowers you must love it. I never thought that plants return any information I wouldn't be aware of that.*

6.1.2 USER'S OPINION (CRITICISM) ABOUT THE MOCK-UP MODEL

i.) Participants' interaction with the model

Example 1

P1: *The Internet is a foreign language for both of us. It is too imaginative for me. In fact I don't' know really what it is. I understand that it is far, far bigger than I thought it was. I just thought it is a matter of gathering information, but it does serving too. So that is far from us, we are limited. As I said, because we are old we can't adapt so quickly and we don't want to put energy to try to adapt. We are left on the shelf.*

Example 2

R: Then you prefer listening to a radio because you already know how it works?

P1: *Yes. I know how things look like. I am not forced in to something new.*

Example 3

P1: *It doesn't look useful does it?*

R: Why do you think that it is not useful?

P1: *What is it doing? It doesn't seem useful.*

R: Why?

P2: *Normally you see what something is for.*

P1: *I don't know what it is for.*

ii.) Criticism: negative/positive

Negative

Example 1

P1: *I have just one bathroom flat so space is very precious really; it is a bit too big for me, because I haven't enough room for it. I have got too many plants but there is just a small one in a tray. I haven't room for anything bigger at all. It's just won't be enough room.*

P2*: You need quite a big table.*

iii.) Who is a potential user?

/

6.1.3 Adoption of the mock-up model as an interaction device in a daily routine

i.) Model supports the situation

Example 1

R: Can you imagining that a garden reminds you to take a pill?

P1: *Encourages me, I use a device for that.*

P1: *There in the garden can be a little alarm clock and it will tell you.*

ii.) Model does not support the situation

Example 1

R: Can you imagine that the garden reminds you on daily activity for example, call a friend?

P: *At this moment I would rather write it down. At the beginning of the weekend I look at my diary. I take a sheet of paper and I put down all the small things, first then the main thins and then I put them in the order or I put them around something that I can remember and I'm looking at day by day. So, at that moment I will not buy it.*

Example 2

R: Can you imagine that the garden reminds you to take a pill?

P: *I have a little box and there are all days of the week and times marked: morning, noon and the evening. The chemist puts the pills in that. I can take them on Wednesday morning and evening.*

Example 3

R: Imagine that you need to communicate with your relatives with these gadgets?

P*: I have a mobile phone. This is a better communication than thought your garden.*

Example 4

R: Can you think that you can use this garden for communicating with your relatives?

P1: *No.*

P2: *I have been in the park in the sensitive garden for blind people you mean that. They have one in Brockwell Park, the plants were sensitive and then they had a Braille trail that can read for blind people.*

P1*: It was garden for all ages, lovely.*

6.2 Active older people from the Guy Chester Centre

6.2.1 Familiarization with the model: users' acceptance of the mock-up model visually and physically

i.) Object reminds me of…,

/

ii.) Materials, shapes, colours

Example 1

R: What do you think about the size?

P: *Maybe they are slightly too big.*

iii.) Imagine / not imagine object (blinking, glowing, producing sound, changing colour)

Example 1

P1: *If it would look like a flower then, yes I can imagine smelling it and the flowers being soft.*

P2: *I can see what it presents, and I can imagine movement and you can imagine smells.*

Example 2

P1: *And glowing… I think that you need to be a little bit careful with the blinking there are some peoples who wouldn't be able to take a blinking. I can see these kinds of disorders you know some people just can't take blinking lights.*

P1: *The changing color of the mood lights, yes they certainly can get certain information very simple to getting information. Everybody is different it could be very attractive to a certain group.*

6.2.2 User's opinion (criticism) about the mock-up model

i.) Participants' interaction with the model

Example 1

P1: *You will get a people on both sides. Get the people who thought it was too simple and talking down a little bit. But, I think that some people would not to care for artificial gardens or necessarily doing more useful or anything and they really recognize that is nice for them. On the other hand it will not matter if they don't it; it is not like a*

cat or dog. You can use when you want it to. I am not absolutely sure if they can be made to get emotional attachment of it, I think that because is not a life. If it will die you can go into a shop and buy another one. It doesn't matter.

P1: *But, to use it as an instrument to get in information is a different thing. I am not sure that it is fast to grow this it might be an interesting option for people who want that.*

Example 2

P1: *This idea of a moving thing is old fashioned to me. Because Bang & Olufsen experiment with doing things like this and …. this was 20 years ago and that is why I don't look on this, as peace of technology, for me this is just a children's garden.*

ii.) Criticism: negative/positive

Negative

Example 1

P1: *I think the same as P2; I don't think that they belong in our home. I have some artificial flowers but they are very realistic.*

Positive

Example 1

P1: *I think it will be interesting to have a prototype that you could find somebody and said after using this for two weeks did you actually find it good when you care each day or you get bored to care each day.*

P1: *So you need something that is reasonably simple. You want to keep it quite simple for some people. I am not completely sure about carry to concepts too look after it.*

Example 2

P1: *If you couldn't see very well you can have bigger flowers.*

P1: *I am a sure that some people are like that but there are a lot people who might not be. I don't know maybe it will be the big thing to take on. It will be nice if it grows overnight and you will need to rearrange it. Perhaps they could really appear people in an artificial growing garden that you could go and look it in the morning and see.*

iii.) Who is the potential user?

Example 1

P: *We are still working, we are active, and we are familiar with technology that is coming out now, we still use the DVD very often. But, when people get in their seventies like my mum, they will think that it could be a little bit childish. People who talk to you will always talk about other people who are older or they have a disability. …. This might not be just for elderly people I can imagine that it will be quite interesting for the people who are mentally challenged.*

R: ***Would you use this device in your daily routine?***

P: *People enjoy it, but I can't see my mother or me, but, you can find people that would enjoy it - not each day, maybe occasionally, but not each day.* (Participant's mother is in her eighties.)

Example 2

P1: *People who will talk to you will always talk about other people who are older or they have disability.*

P1: *This might not be just for elderly people I can imagining that it will be quite interesting for the people who are mentally challenge.*

Example 3

P1: *Children, can use this, because they have fantastic imagination.*

Example 4

P1: *I can't get out of fact that idea it is children's garden. It is a little bit like Magic Roundabout isn't it? It is like children's animated toys.*

P1: *So, my granddaughter, who is five, she will play with this. She will make pictures of it. She probably will walk around with this handbag. (Participant means object C, see Figure 6)*

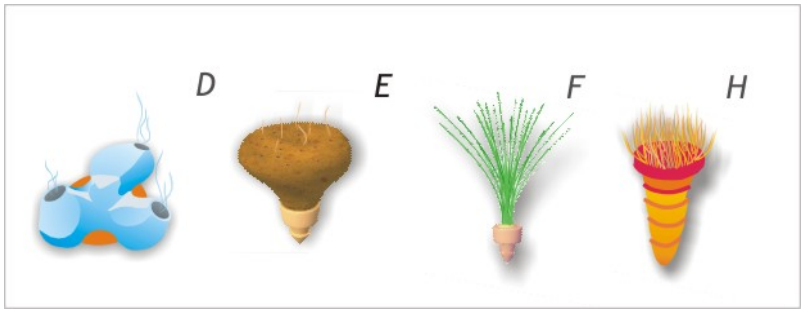

Figure 6: Objects those participants applied for communication in example 3.

6.2.3 Adoption of the mock-up model as an interaction device in a daily routine

i.) Model supports the situation

Example 2

R: Do you think that device can remind you on something; for example, to take a medicine?

P: *O, I see what you mean; when you will take a tablet you remove the flower. If you remember to take a tablet and remove one item each time then you could use the device like that. On the other hand, you can use a little pillbox for each day. It can be difficult for the older people to open a pillbox so this is probably a good idea.*

Example 3

R: Can you imagine taking pills each day? Do you think that the model could remind you to do this?

P: *Yes.*

R: How? Do you have any idea how?

P: *Let's say that you are taking 4-5 different pills. This is your aspirin that you need to take at your breakfast time. (P showed an object G and put it the object J.) Then you have another two that you need to take for breakfast. (P showed two objects F and put them in the object J.) Maybe you need to take a bit of carrot (P put object H in the object J.) And in the middle of the day use things reminds, you because they are in the garden, but, when you have taken pill, then you remove them from the garden. And at in the end of the day you just replace them for the next day. But you need to image a story that you know what you need to do during the day. If you imaging a story that*

this represents, you know that this needs to be done at a certain time of the day. (P suggested division of the mock-up model in two parts for morning and evening pills.) ***(****see Figure 7)*

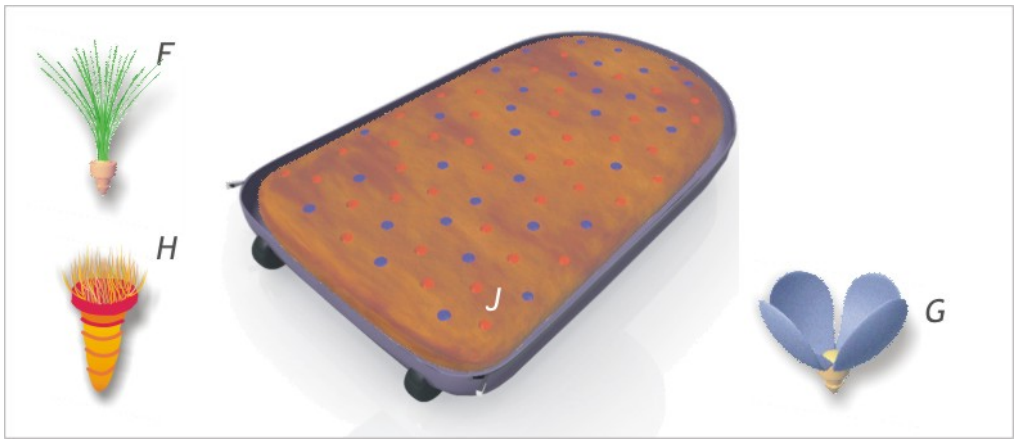

Figure 7: Objects mention at participant imaginative story Example 3.

Example 4

R: Do you think that this gadget they can remind you on something, like to do some shopping?

P1: *Oh yes.*

R: Can you show me how?

P1: *I must to go in Tesco to do some shopping, I will put those two insect on the garden (P chose snail, which is in the same colours as Tesco logo and puts them on object J). And then I am going out. Those are representing my shopping list. (P thinks object A and object B.) When I came home I know that I did shopping and I will remove items* ***(****see Figures 7and 8).*

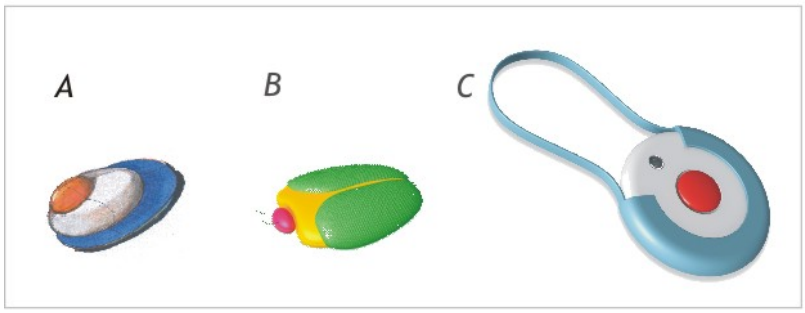

Figure 8: Objects mentioned at participant imaginative story Example 4.

i.) Model does not support the situation

Example 1

R: What about communicating with the family using these gadgets?

P: *I don't quite know how you are thinking to communicate through this. I know that it will be connected with the Internet the whole time, but how you get them to use, how you will use e-mail facilities through this?*

R: I was thinking just a simple task, for example, conversation.

P: *Just talking, but we have a telephone.*

6.3 THE POSTGRADUATE STUDENTS

6.3.1 FAMILIARIZATION WITH THE MODEL: USERS' ACCEPTANCE OF THE MOCK-UP MODEL VISUALLY AND PHYSICALLY

i.) Object reminds me of…

/

ii.) Materials, shapes, colours

Example 1

R: What about the size, is the size appropriate?

P1: *Maybe it is too big. I mean it is very large for something inside.*

P2: *Ye. If you have a big house it's fine but if you have a little flat it is too big for you in the size like this. Something smaller will be better.*

Example 2

P1*: No, I think the shape is too big. It is not conventional. It doesn't fit anywhere because it is a strange shape. It doesn't fit anywhere.*

R: Why?

P1*: Where you will put such a thing? On a table? Why? It doesn't look nice on the table; you can't put it on the kitchen, you can't put it next to the window because you need a big windowsill. You can just put it in the spare room.*

iii.) Imagine / not imagine object (blinking, glowing, producing sound, changing colour)

Example 1

R: Can you imagine that these things can blink or, move or the mushroom can produce a smell?

P1: *These grasses you can move it, what can happen if they can dance if you put music on? If you put on some soft music they will flow, if you put on rock music they will sweep around. And the music player is integrated in to this. Just pop in a CD and it just starts blinking and dancing.*

R: What about growing?

P2: *Toys are not growing. You can rearrange them.*

P1: *They are intelligent toys.*

P2: *Oh I forgot.*

P1: *It will be nice to have a change in the morning.*

R: You can see them as an intelligent toy?

P1: *Why not? If these things will not be doing this kind of things I will get bored in two minutes.*

P2: *Or it will be interesting just at the beginning, you will just rearrange them, but if they will blink and they will have a function….*

…..

P1: *It is like a Tamagotchi, because in Japan they have no space for a pet that is why they rely on these kinds of electronic toys. So this can be the same as a Tamagotchi, which is tangible.*

P1: *I have never seen a product like this, but I will have it just for decoration and to take care of.*

Example 2

R: Can you imagine those things changing colour, growing, singing, and blinking?

P1: *Oh, that will be really funny; it might be tree gadgets start singing, or when you squeeze the "potato". They can tell you the date and time.*

6.3.2 User's opinion (criticism) about the mock-up model

i.) Participants' interaction with the model

Example 1

P1: *And this is too simple. I think that you need to change this concept, to make it more interesting, something that has a proper function. I think that they need some demand.*

Negative

Example 1

P1: *The design is quite childish.*

Example 2

R: Would you like to have these things at home?

P1: *The same? No, no. A real plant yeah, a real garden but not something like this one, no. It is not interesting it doesn't grow. It doesn't move.*

P2: *I don't find it is beautiful enough to have it my room. Real flowers are beautiful so you want to look after them.*

Example 3

P1: *Yes, grandparents and grandchildren are on even better example. I think that they have something in common: because of the generation gap they do not talk much, but when you have a common interest you tend to do more things.*

P1: *It is quite head to design for both - one product for both. Theoretically it shouldn't work.*

R: Would you have these things in your home?

P1: *If you are not a gardener and if you not capable of looking after the garden or do gardening yourself or for to child to have fun or for training gardeners. But I don't think that I will buy one for my house.*

Positive

Example 1

P1: *Some of the plants are getting sick - it is getting yellow, you need to find a way how to treat them, you can learn so much. You can design a thousand accessories. You can make a small pond.*

Example 2

P1: *Maybe people they have this instead of a dog, which is expensive, these kinds of garden give them a feeling that they need to care for someone.*

Example 3

P1: *I like the idea that it been developed to benign used for actual practical purposes. I like that.*

P2: *I like also the idea. And it will be so much nicer then use phone or a computer if it could be take a little garden.*

P1: *I just wish it to be more pleasing to the eye and have a natural purpose as well as this practical purpose.*

ii.) Who is a potential user?

Example 1

R: Do you think that family members can communicate through these things?

P1: *This triggers lot of topics. Definitely a young children, but not teenagers; they want to be more individualistic. And parents will take this opportunity to teach the children.*

Example 2

P1: *Children will be become quite bored after 10 min because nothing is blinking, there is no sound, nothing is moving, everything you need to do on by your own, but if it can do everything it will be more fun for kids.*

Example 3

R: Why do you think that it is too modern?

P1: *I think that this is like an alien garden. I think that they are looking for something more normal. (P means older people.)*

P2: *Yes. Something that is more connected to real time, this is all obviously manmade and alien, like you say. It is not organic it is not natural and old style. I think that 60 and over would not enjoy this.*

Example 4

R: Who do you think that can use this garden?

P1: *I think that older people, for practical things like the temperature, or reminding them about things if that it is the problem that old people have… but, I think that they wont to be more naturalistic. This looks like a toy; young children can play with it. I think that it will need to be adapted for older people. Young adults and adults would like a more modernistic look.*

P2: *I think older people wouldn't like it because it is too modern.*

6.3.3 Adoption of the mock-up model as an interactive device in a daily routine

i.) Model supports the situation

Example 1

R: Do you think that model can remind you of something that you need to do during the day?

P1: *Half of each gadget symbolizes something and everything is connecting. For instance the carrot (P1 thought object H) symbolizes shopping and in the morning you will pass the garden and the carrot will lights.*

P2: *Certainly for older people who have a brain disease, it [mock-up model] can remind them: "Eating time!" or "Go to the toilet!" or "Call your mother!" it can remind them of simple daily activities.* ***(****see Figure 9)*

Example 2

R: Can you demonstrate communication with your family, friends or grandparents through those gadgets.

P1: *So you can use it like a replacement for a phone?*

R: Yes.

P1: *O, yes. If it has the function of communication; I prefer this, because this is so pleasing where the computer is not. If you could speak through this it is like a receiver.*

P2: *La, la. (P2 was singing into the object E.)*

R: Can you show me how you will use these objects?

P1: *This can have a camera on it. (P1 showed object D in P2 hands.)*

P2: *Like a web cam. (P2 thought of object D.)*

P1: *This is a speaker (P1 thought of object D.) or maybe this can even represent who is at home. (Objects F represented who was at home.) So, you have 5 people in the family and only 3 are at home. Other people can know who is at home.*

P2: *One of your friends could be in Moscow another other one in Milan and one could say: "Hi, can we communicate?"*

P1: *And maybe they are lit up; maybe in individual colours.*

P2: *O yes, and when they are speaking it will glow.*

P1: *That it will be really cool. I think that is better purpose then just a garden. If it has a technological use then it is… this one is really good. I like it. (see Figure 9)*

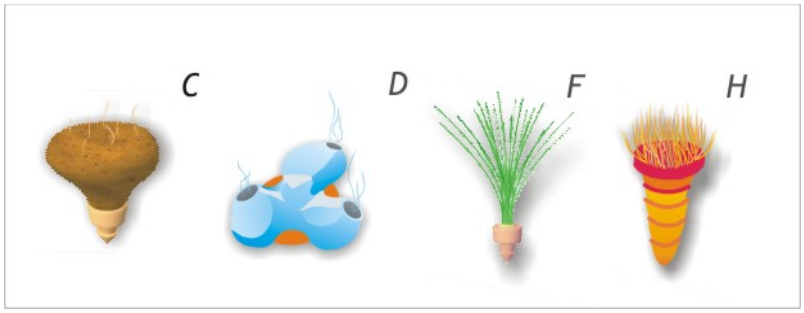

Figure 9: Objects participants applied in communication in Example 1 and 2.

Example 4

R: Can you imagine that peoples communicate through this?

P1: *When somebody calls it is like a real phone.*

P2: *Yes, maybe this it can be carried around like a mobile phone. Like one of those beepers, pager you carried around. If something like in the technology developed. I would much rather has something, which is pretty than what it, looks like at the moment. I think that it just needs to be developed.*

ii.) Model does not support the situation

Example 1

R: Do you think that the mock-up model can remind you of something?

P1: *Like a reminder. No, I am not sure about it.*

P2: *I think it is more entertainment rather that a reminder.*

P1: *It is not something functional like a calendar.*

Example 2

R: Do you think that this thing can be connected with your house – like a smart house?

P1: *If you want to do this, then you should scrub all the ideas that we were talking about growing. It is a completely different kind of design. Of course you can do something more static. For example, this is connected to the fridge; this is connected to the TV, but definitely not something that you can grow. It is getting too complicated and then you don't know what to do. It is a different set of design.*

P2: *Let it is be simple, so do not complicate if there are no connections. It is more connected with the time.*

P1: *This is more social entertainment. This is for fun, but if you connected it with a smart house that it will be not fun on functional. If then I will prefer a small device like this (P show story recorder) the temperature, everything on the screen but not the whole garden.*

Example 3

P1: *I do not need to have a flower to see what kind of weather it is; I can just open the window or listen to the radio. We have a garden at home and I do not open the window and check the flowers on what kind of weather it is. I just check the sky. It will be fun if it will glow, but with this kind of information it will go too far.*

Example 4

R: Do you think that those things can be connected to a house?

P: *For that is a fire alarm and smoke alarm.*

R: Why?

P: *Because these do not look like sensors, maybe they can check the air.*

Example 5

R: Do you think that those thinks can remind you on something? Something that you need to do through day: call a friend buy something in the shop?

P1: *Only if I put some note in it like a little paper here to say: "Call a friend!"*

P2: *I think that it could be quite obvious what each session symbolises, like the grass, it needs to symbolise, let's say: people in your life. May this could result shopping but to the obvious you would need to make some connections in the brain with it.*

P2: *I don't know if it would be specific enough because is visual. Like I say you need bread and milk you can't get that from just one of these things that is so much. … It needs to be more general like: grass represents people I don't think that it is advanced enough. I like it's practical usefulness.*

7 APPENDIX 7: A PILOT STUDY: THE ADVERTISEMENT FOR RECRUITING PARTICIPANTS FOR STUDY

Are you
- a regular PC or Laptop user
- 60+
- have a time and
- interested to learn something new?

WE NEED YOUR HELP **TO DESIGN A BETTER COMPUTER FOR SENIOR CITIZENS**

What will you need to do?

1. 7 days/20 min per day report about your experience of use a computer at your home

You will get a pack with:

1. **The diary** were you will report **7 days** about your experiences and feelings while you use a computer,
2. **the workbook** which contains 22 questions and exercises on how and when you use a computer **and**
3. **the questionnaire** which contains 40 questions related to your background (e.g. your occupation, education and personal characteristics).

2. 1 day creative workshop at the beginning of April 2009

Then you will be required to attend a **Creative Workshop** to be held **at City University London**. You will be placed in a group with 6 other participants and asked to design a device for senior citizens.

For more information please
Helena Sustar at helena.sustar.1@city.ac.uk or
020 70 40 42 14

CITY UNIVERSITY LONDON

8 Appendix 8: Methodology: Introduction part of the Workbook

1 Workbook & Instructions

"Here are a few possible solutions to your computer problems: go for a walk, ride a bike, play ball with your kid, talk to your wife, read a book...."

Dear participant

Let me introduce myself first. My name is Helena Sustar and I am a PhD student at City University London, Centre for Human Computer Interaction Design. I am in the third year of study. As a industrial designer I have been always interested in different social groups, such us: children, people with disabilities or senior citizens. During education I realised that are many products for baby-boomers design by young designers, whom are not familiar with difficulties that brings old age. And here whole story begin. This study is one of the part and you will be the main player. I hope that you will enjoy as much as me, while I was designing this package.

Have a fun!

Helena Sustar

Why is this study?

Nowadays are devices, web sides, and interfaces for older people designed by young designers who are not familiar with difficulties being old. As the result are an inappropriate products, which they do not satisfy senior citizens needs.

From that reason in study bill be brought both sides senior users with their experiences and designers who are designing product for this generation.

Senior people will be included in the all stages of the design process from the beginning to end. In that way, will be participants not just co-designed better products for themselves, but they will be able to change the design process as it self.

About the study

This study has three parts: a Workbook and Instructions, a Questionnaire and a Diary. In the Workbook will be necessary to report what you like or dislike at a computer, who was your first teacher, for what you are using computer and so on. Then, will be necessary to fill in the Questionnaire where you will be asked about your background (occupation, education, personal characteristics) and how you are responding in daily situations. And thirdly there is also the Diary where will be necessary to report about experiences and feelings while you are using a computer.

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How to use this package?

Questions and tasks are divided between days. Some days it will be required more time to complete a task others day les. It is up to you how you will completed tasks. If that particular day you do not have enough time to answer at questions fell free to this any other day.

When you will completed all tasks please contact me. You can keep this package until Wednesday **17th of December.** If you need some more time please let me know.

Please try to answer at all questions.

Good luck!

What mean symbols?

Inside the package you will find several symbols, here is their explanation:

With stickers you will need mark something

You will need to take a photo

Approximate time that you will need to answer at questions that day

Tools, that you will need to complete a task.

The number of questions in one day that need to be answered

How to contact me

In the case of any problems do not hesitate to contact me on:
- e-mail: helena.sustar.1@city.ac.uk
- phone: 020 70 40 42 14
- Mobile: 078 161 323 84

- or send a letter
Helena Sustar
City University London
School of Informatics
Centre for HCI Design
Northampton Square
London EC1V 0HB

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Explanatory Statement

Project Title: Facilitating and measuring adult's people creative engagement in User Centred Design (UCD) process (tentative)
Investigator: Helena Sustar, helena.sustar.1@city.ac.uk, phone 020 70 40 42 14

In this study will be investigated every day creativity at senior citizens during the user centre process. The study is composed from two parts. In the first part will need participant report at their home about experiences of using computer in the Workbook, Questionnaire and the self report Diary. Second part of the study involve one day creative workshop, which will be conducted at City University London, Centre for Human Computer Interaction Design (HCI Design). All data from both parts of the study will be kept for further data analysis. The creative workshop will be monitored and videotaped for later analysis.

Your participation is voluntary, you can choose not to participate in part or the entire project, and withdraw at any stage of the project without being penalised or disadvantaged in any way.

If there is an aspect of the study which concerns you, you may make a complaint. City University London, Department for HCI Design has established a complaints procedure via centre administrator Mrs. Monica Ferraro. To complain about the study, you need to phone 020 7040 8427 and inform her that the name of the project is: Adult's people creative engagement in UCD process.

You could also write to the centre administrator at:
Mrs. Monica Ferraro
HCI Design administrator
City University
Northampton Square
London EC1V 0HB
Email: monicaf@soi.city.ac.uk

Please take this sheet with you.

4

Informed Consent Form

Project Title: Facilitating and measuring adult's people creative engagement in UCD process (tentative)

I agree to take part in the above City University research project. I have had the project explained to me, and I have read the Explanatory Statement, which I may keep for my records. I understand that agreeing to take part means that I am willing to:
- be observed and interviewed by the researcher
- be answered at questionnaires related to this study and
- be videotaped/ audiotaped.

Data Protection
This information will be held and processed for the purpose of facilitating and measuring adult's people creative engagement in UCD process. I understand that any information I provide is confidential, and that no information that could lead to the identification of any individual will be disclosed in any reports on the project, or to any other party. No identifiable personal data will be published. The identifiable data will not be shared with any other organization.

I agree to City University recording and processing this information about me. I understand that this information will be used only for the purposes set out in this statement and my consent is conditional on the University complying with its duties and obligations under the Data Protection Act 1998.

Withdrawal from study
I understand that my participation is voluntary, that I can choose not to participate in part or all of the project, and that I can withdraw at any stage of the project without being penalised or disadvantaged in any way.

Full name: ..... (print name)
Signature: .....
Date: .....

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9 APPENDIX 9: A PILOT STUDY: A QUESTIONNAIRE FROM THE VERIFICATION STAGE

Verification – Questionnaire (Methodology)

I am: **O** HCI student **O** Older person
O male **O** female

1. How did you like the following parts of the creative workshop? (Please circle)

A. Introduction (Ice breaker)

	1	2	3	4	5
Not at all					Like very much

Why?

B. Incubation (Design start points, cards, voting)

	1	2	3	4	5
Not at all					Like very much

Why?

C. Illumination (Make a prototype)

	1	2	3	4	5
Not at all					Like very much

Why?

D. Verification (Questionnaire)

	1	2	3	4	5
Not at all					Like very much

Why?

---

1. What do you think about the content of the "Magic box"?

	1	2	3	4	5
Not at all					Like very much

Why?

---

2. Did you like the way that the tasks have been facilitated? (Please circle)

- Introduction	1	2	3	4	5
- Timeline	1	2	3	4	5
- Breaks	1	2	3	4	5
- Food	1	2	3	4	5
- Presentation	1	2	3	4	5
- Room	1	2	3	4	5

3. Did you think the Culture Probes package helped you during the creative workshop?

---

4. Do you have any comments at the end?

Verification – Questionnaire Novelty and Appropriateness
Please vote the two ideas. You need to know that you are voting for the process and not the people.

I am: **O** Red group **O** Yellow group

Idea from the yellow group
1. How new, surprising or exciting do you think this idea is?
1 2 3 4 5
Not at all new Very new

Why?

---

2. How appropriate, valuable do you think this idea is?
1 2 3 4 5
Not at all appropriate Very useful

Why?

---

3. How well would the idea (device) fit in your life?
1 2 3 4 5
Will not fit at all Very well

Why?

Idea from the red group
1. How new, surprising or exciting do you think this idea is?
1 2 3 4 5
Not at all new Very new

Why?

---

2. How useful, valuable do you think this idea is?
1 2 3 4 5
Not at all useful Very useful

Why?

---

3. How well would the idea (device) fit in your life?

1	2	3	4	5
Will not fit at all				Very well

Why? _____

10 Appendix 10: Pilot study: Analysis from incubation and illumination stage

10.1 The incubation stage

A pilot study: The Incubation stage							
blocks	**stimuli**	**Transcription** **OP1 - Older person 1** **D1- Designer 1** **D2 - Designer 2** **F1 - Facilitator 1** **F2 - Facilitator 2**	**fluency**	**flexibility**	**originality**	**elaboration**	**What is happening during the brainstorming session**
		Stimuli S MM Stimuli from Mind Map S T Stimuli from technology S CC Stimuli from creative cards S P Stimuli from presentation S LE Stimuli from life experiences Blocks TR Block from terminology F Facilitator T Block from technology PC Block from practical constrains CONF Confusion					F explained to the participants what is purpose of the brainstorming session, and what will be required from them. The participants got Creative cards. F1 explained the process: where they need to stick the cards and what the purpose of the blank cards was. Participants start to look at cards. F2 put on the table markers. D2 helped arrange the cards on the table.
CONF F	S CC	F1: What does the device need to do? D2: Maybe can CONNECT you with the people. F2: Yes. F1: Where we would start? Here? What does the device do? F2: Maybe you can look what at you are interested in. Reminds you that you need to design a device for older people. F1: You need to ask OP1 what this device needs to do. F2: Yes. F1: Try to think what this device will need to do, not just stick cards under certain question.					F1 showed them a slide with the question and gave participants an example: *"Maybe the device need to help in a day life. Maybe OP1 can explain what this device can do? Maybe it can help you to organize things."* D1 picked up first two cards in the meantime; OP1 stood up and started to read and looked at cards. D1 and D2 stacked (on the wall) the first two cards. OP1 was still reading the cards. D2 went back to have a look for other cards on the table. There was confusion. D1 stacked two cards under the question HOW THE DEVICE WILL BE USED. Then OP1 came with the bunch of cards and started to stick them under the question WHERE WILL THE DEVICE BE USED? F1 tried to explain participants that they need to think and discuss what will be the purpose of the device?

T CONF	S CC S CC	D2: We need to discuss what the need of the device is. OP1: WIRELESS. Why wireless? D2: What is the need behind that? F1: Yes. Is this important or not? D1: How can we know that we will use it, if we don't know what it will be? OP1: I don't know what I'm doing. I don't know. I don't know what we are doing'" D2: I suppose we need to design a device that it will be useful for you. D1: So is needs to be a WIRELESS.					OP1 was observing creative cards and picked up the cards and put them on a side. They went and removed card CONNECT from the wall. D2 picked up card CONNECTION and put it on the wall.
F CONF PC	S T	D1: Maybe some kind of robot for cleaning the oven? Do you know they have these robotic hovers, maybe you can get one for the oven? OP1: That will be good, I need one of those. D2: Ok. I put down this under WHAT THIS DEVICE NEEDS TO DO? F1: What else can it be? Think what you wrote about computers in Cultural Probes: How are you using a computer, what you like or dislike about computer? Maybe you want to check your package, you can still have a look, and maybe you can help yourself with a Mind map from Cultural probes. Let me help you. OP1: I will sit down. Thank you. I don't know. It is difficult. This is what you really want.			N		D1 gave to them CP packages. They were looking at Mind maps from CP. F1 wanted to help OP1, but she wanted to sit down and look by herself at her pack.
F	S CC S MM S T S T S T	D1: OP1 said ORGANIZE, and I put down in my Mind Map why I like my Blueberry, because I can organize things. Maybe ORGANIZE . OP1: Yes. F2: In the Ice breaker you mentioned that your favourite device is the TV. Is there any extra that you like on TV or on your computer? OP1: I use my computer most of all for e-mailing, but most of all I'll use for writing. I put on the wall card writing.					F put on the wall card ORGANIZE.

F	S CC S T	F1: Anything else? D1: CALCULATING. OP1: Something for creating data a base and easy to use it. OP1: At my computer I have abbreviations. F1: It is easy to use it.					OP1 was looking for the card EASY TO USE IT and she put it under question ANYTHING ELSE. OP1 is looking her workbook.
F	S CC	D2: Is this important? F1: You can add on the card if you want. D1: Shall I put down something like short cuts?					D2 was holding card HELP. D1 put notes on the one of blank cards and stacked on the wall. OP1 was looking Cultural Probes workbook.
F	S CC S T S LE	F1: Where will this device be used? OP1: And when? Well in a emergency and it got something to do in a danger. F2: So what does a device do in an emergency ? OP1: So are the devices that when you fall down and you just press it and it is connected to someone and they just come and they pick you up. If someone falls down on the street, usually if you call someone....					
F	S CC S LE S LE	F1: This is IN A CERTAIN SITUATION. D2: IN A CERTAIN SITUATION when you need help. OP1: Like you when you fall down outside. F1: Is there any other situation? OP1: You can call and an ambulance will came. Someone will calm you down or sit you down F1: Is it like a friend? OP1: Yes. If you can just talk to someone you will feel better, while you will get up F1: Is it important that is friendly? OP1: Yes.					OP1 took blank card HELP and wrote notes: when you fall down.
F	S CC S CC S CC S LE	OP1: IN A NEED F1: When? IN DANGER? OP1: IN A KITCHEN cleaning my oven laughing. F1: Where? OP1: ON A TRAIN. On a train you will need to get certain information to transfer to another train station. D1: So, maybe use it IN THE CAR as well. OP1: Older people, they like to ask about certain information but people are in hurry and they cannot explain slowly to older people. Can you add that?					F1 stacked card ON A TRAIN on the board under the question Where the device will be used.

F F	S CC S CC S CC	F1: Anywhere else? OP1: BUTTONS are useful , as a BUTTON rather than too much. F1: Is there any other situation where you can use this device? OP1: EASY PORTABLE original mobile phones. F1: Yes, yes. OP1: Everyone wants to be SIMPLE it. D2: Does the device need to have one purpose? We can't do everything. F2: For something that you will do afternoon so it's not necessary to decide now.					OP1 is observing cards. F stacked cart WIRELESS under question ANYTHING ELSE.
TR	S CC S P	F1: What else this device can do. OP1: I'm looking card DIGITAL, but I know that DIGITAL could be,… what else could be not digital F2: What do you mean by DIGITAL? OP1: I understand the world digital. This is DIGITAL will this apply to other devices? D1: Your watch applies to mechanical, because it is made from gears, that won't be DIGITAL, the DIGITAL would be like that. DIGITAL is something that involves something like a computer chip or micro chip. D2: DIGITAL means do you want results in words or numbers which glows when they give you a feedback or do you want to …. OP1: Yes, the carrot where was that voice, if it will be this (device) DIGITAL it will give you just reading D1: You mean what will be the interface, how what will the input and output be? D2: She means with DIGITAL l more of product. D1: DIGITAL or creative output, as carrot. Can you write creative output? F2: That remands you of a on waitress? D1: Something different as computer screen. OP1: Carrot . Laughing					D2 explained to OP1 what means digital.

F TR	S T S T	D2: Creative output, organic, natural. F2: Shall we put these cards together so that it will be easier to observe. D2: How we will tell the device what to do? So, we will use a speaker? A lot of devices has gestures. Would you speak to the device? OP1: Have a bit of screen; tell the oven that it needs to be cleaned. TANGIBLE. TANGIBLE what is that? D2: Like to touch. OP1: I am just think of what you could do with TANGIBLE. F1: If you touch this device OP1: Just holding it.					F1 I put card with idea on the anything else shed. OP1 stood up and she is looking for other cards.
F	S CC S CC	F1: What it will be easier for you? We have buttons. …. Is there any other situation or place that we can use this device? OP1: A TOOL D1: This leads you to your own INT THE KITCHEN. D2 Something that you use often. F1: When you will use it? Will you use it everyday?					OP1 stood up and went to see the cards closer.
PC F	S CC S CC	OP1: PORTABLE and MOBILE. I don't know, depends when you are needed. There are certain places that you could use it. You want to use it any time when you need it - IN A NEED. F2: You can put as you want, you can put all of seven of them at the same idea or you can spread around. So you will decide what kind of device you can design for the rest of the day.					F1 is explaining what ideas are under the question "What this device will do?" OP1 went to take a sit. F2 suggested that participants use golden stars to prioritize their ideas. Participants were marking with golden stars their ideas. OP1 was voting the last one.
F	S CC	F1: And the winner is CONNECTION and HELP. Those are the things that are the priorities of this device. OP1: Do we need to use these two things together? D2: It is connection to the help, rather to a different set of things. F2: Ok, great, this give us some kind of central focus when you want to be connected and how you will use the device in certain situations. Now see if any of cards have not been chosen.					Facilitator end the Brainstorming session.

10.2 THE ILLUMINATION STAGE

A pilot study: The illumination stage						
blocks	**stimuli**	**Transcription** **OP1 - Older person 1** **D1- Designer 1** **D2 - Designer 2** **F1 - Facilitator 1** **F2 - Facilitator 2**	**fluency**	**flexibility**	**originality**	**elaboration**
		Stimuli S T Stimuli from technology S LE Stimuli from life experiences S M Stimuli from material S CP Stimuli from Cultural Probes				
	S T S LE S T	OP1: You could have a device that could “countdown”; while you wait for someone to give you help. D2: DVD player. D1: When you get thirsty it makes you a cup of tea and when are you tired it can just check you,… D2: It should just open up a machine and carry on,… to have a chance for need,… small screen, speaker, microphone.				
	S T S LE	OP1: Button. D1: We could say that the button activates the voice – the speak option. Maybe you can press a button for a certain amount of time that it will just automatically call 999 and just take it as an emergency or rather you can speak then call 999 or call Miriam or your carer and could alert that person. Depends on how long you press it. OP1: Would you call the doctor before you call an ambulance? D1: If you press the button you can say for a doctor if that is not that urgent. OP1: Which is less urgent doctor or ambulance? Doctor, cause doctor is just when its getting for worse. D1: Doctor OP1: You don’t just call an ambulance. When I fall down I just bounce.				

	S M S M S T S CP	OP1: Me it's padding so it doesn't break. D1: Maybe that padding can be slightly soft, maybe something like that will protect the thing itself, but it won't help you. OP1: Squelching. D1: A foam or like a sponge that you wash with. D2: If the device is flat like iPhone. D1: One thing to say, it should be slim then and not bulky. OP1: No, not bulky. D1: I don't that it will be like a brick. OP1:.... to break a window.				
	S M S T S M S M S M S M S M	D2: What former factor do you want then? OP1: Does it make.... D1: What? D2: What kind of shape? OP1: That is a chain or something... What material you want to make it out of? You don't want a chain around your neck do you? A ribbon or some thing. D1: Like Astron, it needs to be strong,... This is around my neck and I it didn't break yet. OP1: Really? So what is it? D1: I don't know, I suppose it could be a mix of nylon and plastics. OP1: I like a thick, It is not a thin chain, because that is more comfortable isn't it. D1: So like a thick chain. OP1: Not a chain, like a strap. D1: Yes, a strap. OP1: Nylon. D1: Plastic, man made. OP1: It supposed to be wool. D2: Natural. D1: A wool thing. OP1: Nylon plastic, man made. Around the neck,...				

	S LE	OP1: So I'm going out, then you fall down, you press the button, or you scream. D1: You have a scream word or emergency word. OP1: So it is:" Avis has fallen." Then call one of those. How do you tell it, which one to call, this is your G force. D1: I think that G will be the one. If it is really a heavy G fall, then… you will call for an ambulance OP1: Yes, if it is really serious, right. D1: If you really press the button for a certain period of time, you press like that and you will say:"Call Miriam…" OP1: ….. or if you press it longer. D1: Then you will just hold it down. OP1: Are you be consent to do that? D1: No, if you are unconcern, you will fall down anyway because of the G force but you may record it. OP1: Yes.				
	S T S LE	D2: I know that Astron has a chip that records heart beat, I don't know what it is but if someone falls it sends an alert. D1: Maybe it could be a sensor in the lanyard, when lanyard cross your neck it could be always available and touched and you could probably record your heart beat from the back. You can probably put it in your lanyard or you could put it in an actual device. If is around your neck you could, if is strong enough it could pick up your heart beat, if you chose an attachment on your wrist it will pick up a heart bit in your wrist. It will hold your whole body, so it could be attaches somewhere at someone. Yes. You know when you are going in to the gym and….. you don't it to hold it, you could put your hand near and tell what your heart beat is. OP1: In your lanyard? D1: In a landline or in the back of device maybe.				
	S LE S T S T S M	OP1: Would the device be touching your skin? D1: It doesn't need to touch your skin, it could be 5 centimetres from you. If you are going to Fitness First there you get really powerful. As long is your hand near at you, it will pick up your heart beat. D2: Easy. D1: Yee. If it will be like that, you could see that is flashing. Or you can bend it in your lanyard, and it will be around your neck. OP1: I like a thin lanyard,…. D1: If you find plastic uncomfortable you can stitching in it. The lanyard it could be made up from hieratic plastic. OP1: Yee. The puzzle on the floor. Not self-made, just away. So waterproof. D1: Wau,…				

	S LE S T	D2: What voice to speak, easy to set up for you? D1: I think that it needs to be updated, for a carer or someone, or you could you call them out to someone. D2: Easy to use if it has a voice .				
	S T S LE	D1: And it is one big button. D2: Maybe one big one in the middle. D1: Yes. It is some kind of realise button you press it again and it will pop out and stack. OP1: I don't know I'm a bit worried. If you fall and if you panic, I don't think that you will remember to pres it once to twice or three times. But I don't know D2: You can have green. OP1: Oh, you can have a colour. When you press the button a colour comes. D1: It could light up, the whole button could light up. OP1: Yes, a whole button can light up, as a traffic light . D1: Yes. OP1: Red, green. D1: So, it would be straight red as in an ambulance. D2: You could have red, yellow, and green. And if you press the red one,… OP1: Three buttons. Yes, that could be quite nice. Like a tree little jewel. Beautiful.				
	S LE S LE	D1: And it will be something that people will recognize, because you cross the road in the time…. OP1: Yes, and people know that red mean alerts. D2: Someone will come up to you and he will see the red that you are hurt. D1: And you will announce verbally that is something wrong and it will display in the screen as well. At least someone must stop. Someone will see the flashing red, the sound.				
	S LE S M	D2: So we are James Bond for weekend. I think that is not necessary to mention that the device needs to be attractive. D1: But it is not an important thing. OP1: It needs to be easy for the eyes. Then people's perception of beauty is different. For me it will be beautiful if it will be simple, but for the some people it will be beautiful if it's fancy. D1: Do you know for accessories on the lanyard, why someone wants be able to have something like this, I like it if it will be silver or it has cover. So why not have provide colours? OP1: Yes.				
		D1: So if you want really bright or with it rainbow or something, you can get cover and cover it. You can get a black cover, and because it is foam it has additional protection anyway. So people can pick up whatever they like. OP1: Pretty, pretty, in a provocative sensitive way.				

	S LE S T S LE S LE	D2: Ok. Let's discus again, if it snows and if you fall over,… ok lets go to the buttons again … you press red. OP1: Yes, green, yellow and red. Green will be little ball. D1: Green will probably activate to speak, and if it is a little fall, who you wanted to contact. You said first the ambulance then is a doctor, so maybe the alarm might contact the doctor or maybe your nurse, or carer. OP1: Or maybe your neighbour or carer. D1: For a voice you could tell it. So, lets think that it has been just a minor fall and you might contact your neighbour one day and the next day you might contact your career, because you know that she is closer and has your phone number, so you can press the green one and say:"Contact Miriam" or "Contact John". OP1: Couldn't you activate this before you leave your house? Because what you said ,… everyday. Before you go out you press the green button and say "Call Miriam" and it records that so when you have press it when you fallen it says "Call Miriam". She is an angel.				
		D1: If is the case does it make to have green on the first place otherwise it will be like a toy flashing: "I'm OK, I'm OK". OP1: You are right, this is what green means. D2: You did fell over, but you were OK, then you screen, then you need to use yellow or red, so the green is flashing is ok. Or green is cancel button basically "I'm OK". You can't green say…. D1: Yes, the green can be as an ex one. OP1: True. D1: If you do call you are ok, rather than call an ambulance and G force, or activating the speaker system. You press green to say that you are fine. The red you won't even press, the red was G force it will be alarm start flashing and the all madness will begin.				
		OP1: But how you will distinguish between doctor and ambulance? D1: Alerts will be red. OP1: The doctor will be,….. D1: Amber. Do you remember when you said how you will leave the house it will be seated. So when you leave the house at that day you seat the doctor because I'll be closer to my doctor. OP1: Oh I see the doctor will be the same as Miriam. D1: But then when you know that you are going to library and Bob lives a cross the road you will say to Bob. I don't know who Bob is, but.... D2: You can preset things. OP1: He is another angel, so red is ambulance. D1: The red will be activated from the massive call if you are unconscious, which it will pick up from your hobby that is in your lanyard.				

11 APPENDIX 11: STUDY 3: OLDER PEOPLE AS EQUAL PARTNERS IN DESIGNING A DIGITAL DEVICE FOR OLDER' EVERYDAY NEEDS

OLDER PEOPLE AS EQUAL PARTNERS IN DESIGNING A DIGITAL DEVICE FOR OLDER' EVERYDAY NEEDS

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In this paper, we describe the use of a User Centred Design (UCD) process, including Cultural Probes and creative workshops, intended to stimulate everyday creativity in designers and older people designing digital devices for seniors' everyday needs.

1. Problem statement

Older people represent an increasing proportion of the population, and a huge potential market for digital consumer products. However, they are rarely involved in the process of designing new technologies, or if they are, they are usually brought into focus groups during analysis or at the end of the process as participants in usability tests. Designers are unfamiliar with older users' needs, which results in the development of inadequate products for this population, and often products with low acceptability amongst older people. There is a need to determine the effectiveness of different techniques for involving older people in a creative design process. We want to address this need.

2. Methodology

Our method is based on a four stage model of the creative process that includes activities designed to support preparation, incubation, illumination and verification [2]. In the preparation stage of the process, Cultural Probes [1] were used to prepare participants for activities in the creative workshop, by working through a package, which asked to them to complete a workbook, answer a questionnaire and maintain a 7-day diary. Participants were also asked to develop a Mind Map illustrating their relationship with their computer.

Incubation, illumination and verification were encouraged in creative workshops in which participants worked in groups, including both designers and senior citizens. Incubation was supported in the workshops by the use of ice breaker sessions, where participants needed to tell others their most pleasurable experiences with their favourite devices. Support for illumination involved the use of brainstorming around four key questions

('What should the device be used for?' etc), stimulated by use of 'creative cards', each providing a key concept (e.g. 'connection') and an appropriate visual stimulus (e.g. a picture of grandfather with a grandchild). At the end of this session participants had a chance to vote for "the Golden idea", which was then developed further in the illumination stage. In this stage participants were asked to develop and verify their ideas in three different ways: either visually, using storyboarding techniques, as a concrete prototype, using materials from a 'magic box', or verbally, by recording an oral description or written concept definition. Finally, participants were given a questionnaire and asked to evaluate the novelty, appropriateness and reliability of ideas from their own and other groups, and the methods that had been used in the process as a whole.

Figure 1. An example of the Cultural Probes package (left), the Mind map (middle) and the final result from the pilot study (right).

3. Results, Conclusions and the Future work

The study involved 11 Human Computer Interaction (HCI) Design students from City University London and 13 senior citizens from Hackney Silver Surfers Centre. Altogether 21 participants completed the entire study. 2 students and 1 senior citizen participated in a pilot study. 9 students and 9 senior citizens then took part in three creative workshops with six participants each (2 groups with 3 participants). The first was conducted with HCI students only, the second with students and seniors, and the third with senior citizens only. Three older people withdrew from the study as they couldn't cope with the workload and the personal nature of some of the activities.

All 21 participants successfully completed the Cultural Probes pack. The most enjoyed component was the creation of the Mind Map. In the creative workshops, the HCI students working alone developed 30 creative ideas, the mixed group 18, and seniors 20. The "Golden ideas" (those rated most highly by the participants) were developed into 7 prototypes, where participants had the most pleasure with making prototypes through use of raw materials from "magic box".

We are currently analysing in more detail the creative output, video and audio material that was captured in different stages of the study. More specifically our current focus is to: a.) identify how successful was participants' creative engagement, b.) the success of the facilitation, and c.) what stimulates or blocks creative ideas in the two age groups.

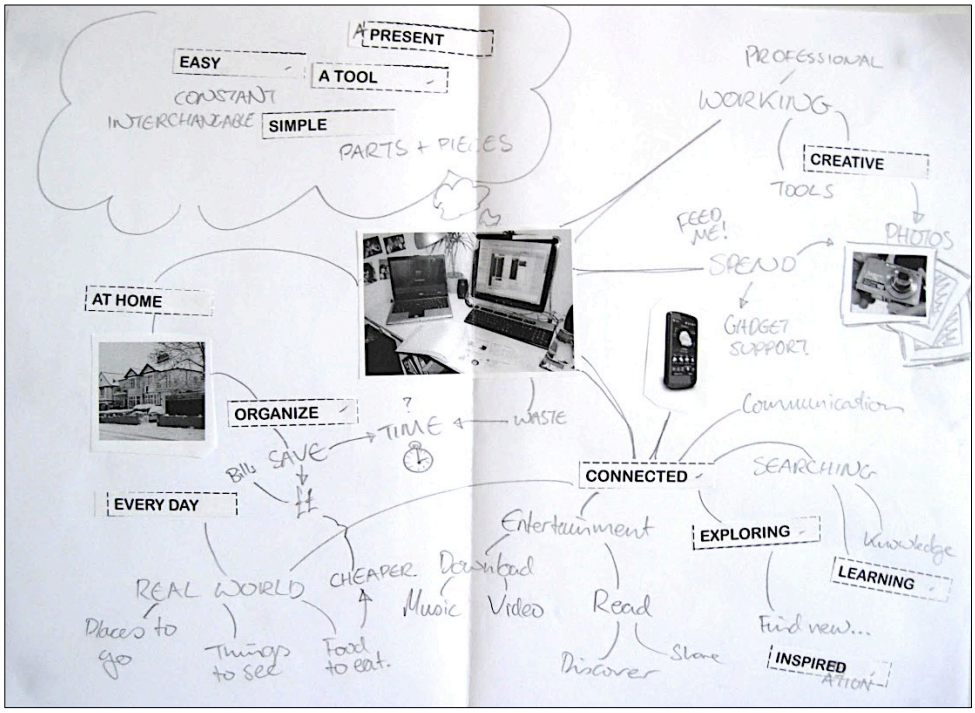
References

Gaver, B. Dunne T. and Pacenti, E. 1999, Design*: Cultural Probes*, January- February 1999, Interaction, (ACM Press) 21-29
Wallas, G., 1926, *The Art of Thought*, Harcourt, (Brace &World), New York

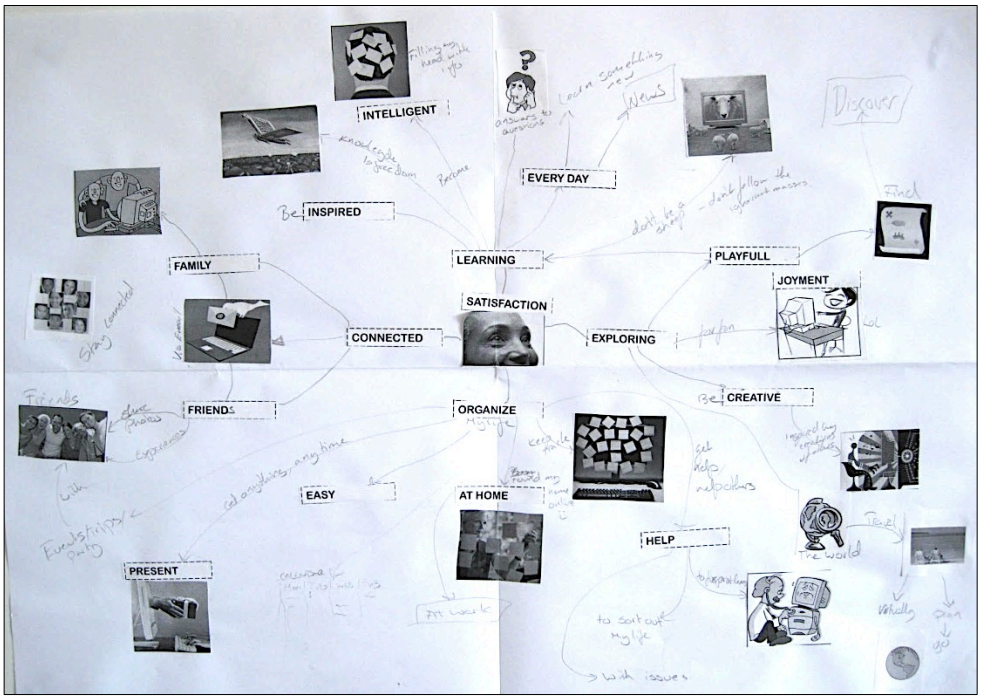
12 Appendix 12: Study 3: The result from the mind map

12.1 Designers - Yellow group

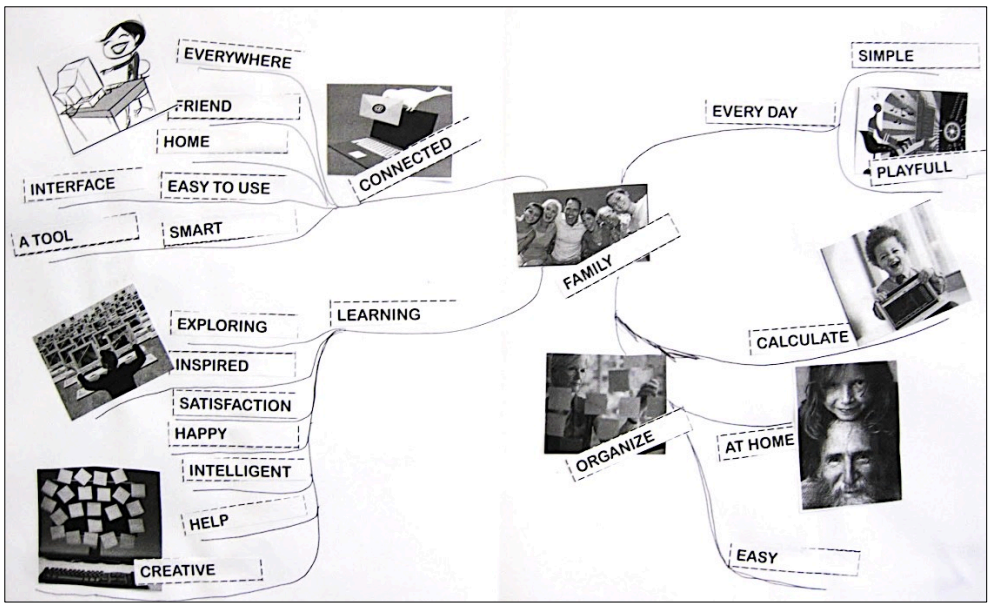
D1



D2



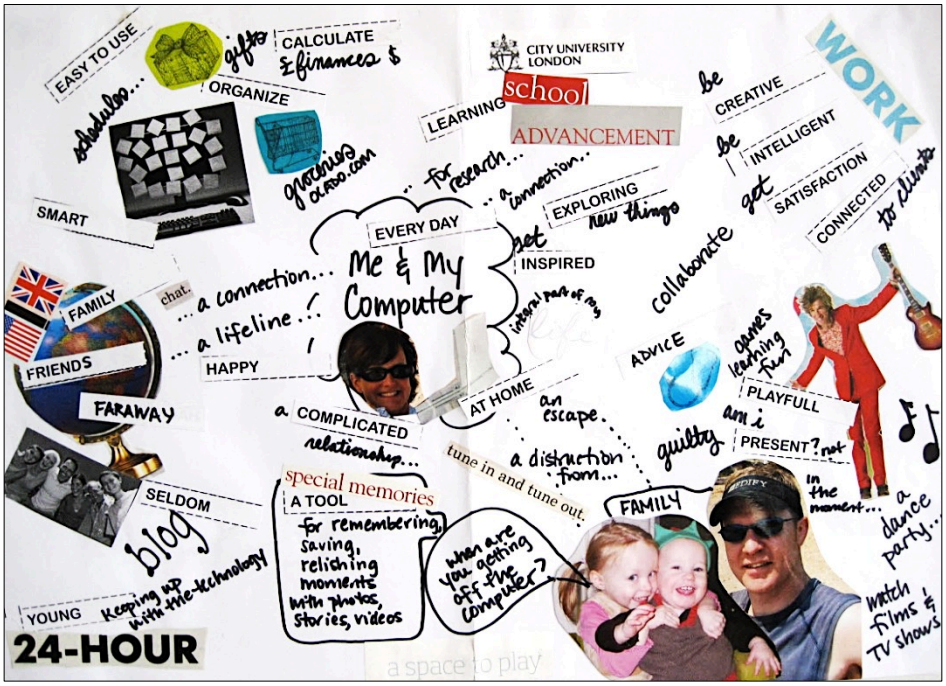
D3



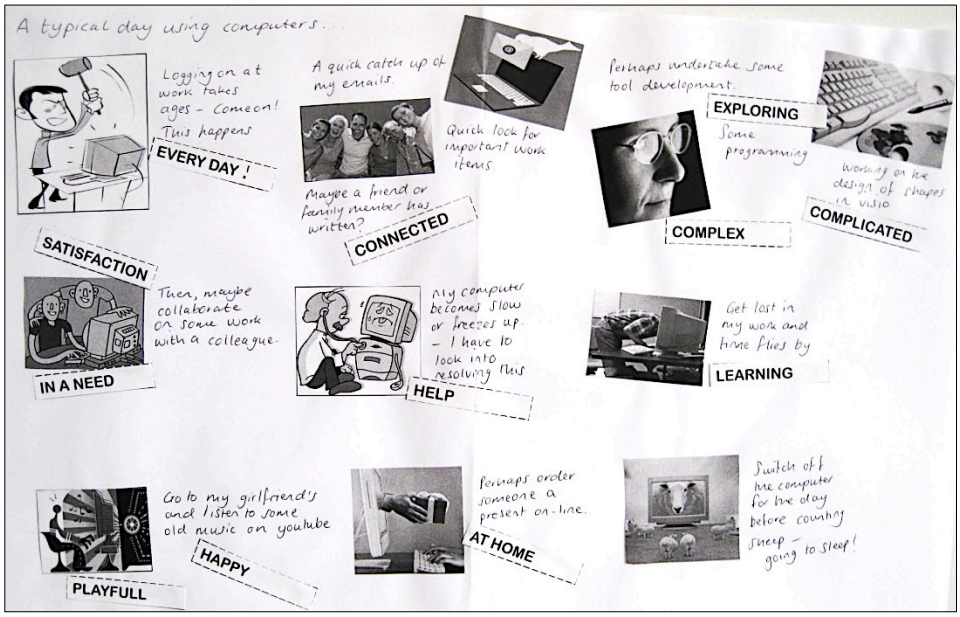
12.2 Designers - Red group

D1

D2

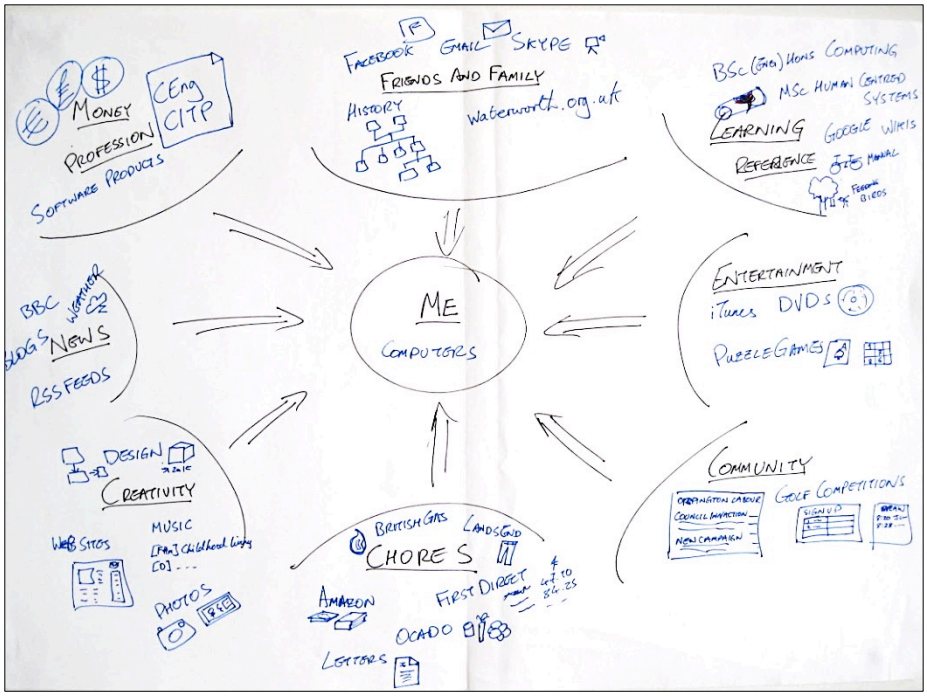

EASY TO USE
CALCULATE
ORGANIZE
SMART
CITY UNIVERSITY LONDON
school
ADVANCEMENT
LEARNING
WORK
CREATIVE
INTELLIGENT
SATISFACTION
CONNECTED
EXPLORING
EVERY DAY
Me & My Computer
INSPIRED
FAMILY
FRIENDS
FARAWAY
HAPPY
AT HOME
ADVICE
PLAYFULL
PRESENT?
COMPLICATED
SELDOM
special memories
A TOOL
FAMILY
YOUNG
24-HOUR
a space to play

D3

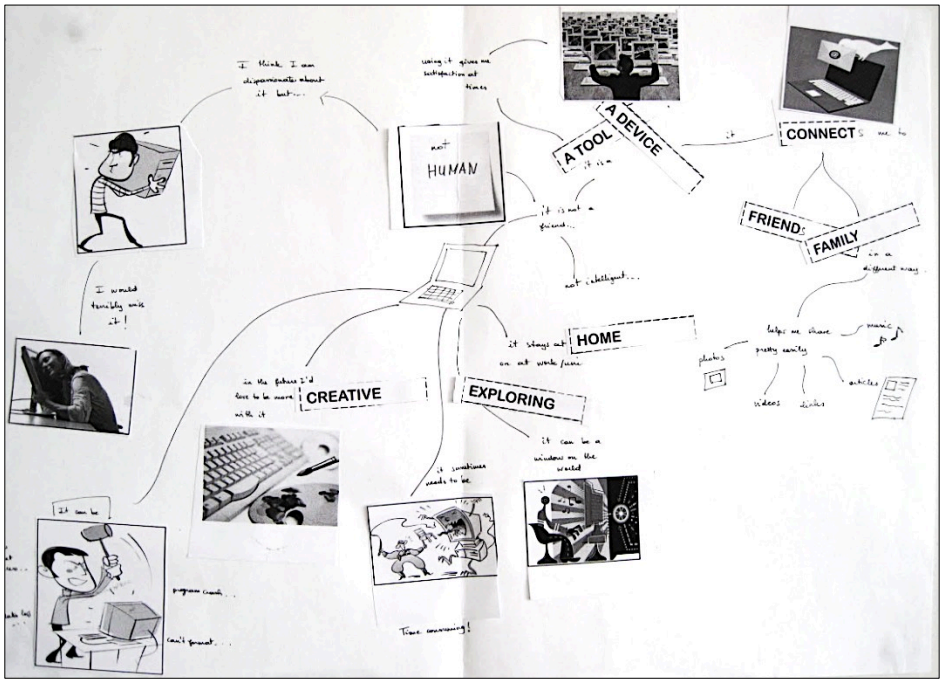

A typical day using computers...
Logging on at work takes ages - Comeon! This happens
EVERY DAY !
A quick catch up of my emails.
Quick look for important work items.
Maybe a friend or family member has written?
CONNECTED
Perhaps undertake some tool development.
EXPLORING
Some programming
working on the design of shapes in visio
COMPLEX
COMPLICATED
SATISFACTION
Then, maybe collaborate on some work with a colleague.
IN A NEED
My computer becomes slow or freezes up - I have to look into resolving this
HELP
Get lost in my work and time flies by
LEARNING
Go to my girlfriend's and listen to some old music on youtube
HAPPY
PLAYFULL
Perhaps order someone a present on-line.
AT HOME
Switch off the computer for the day before coming sheep - going to sleep!

12.3 Mixed group - Yellow group

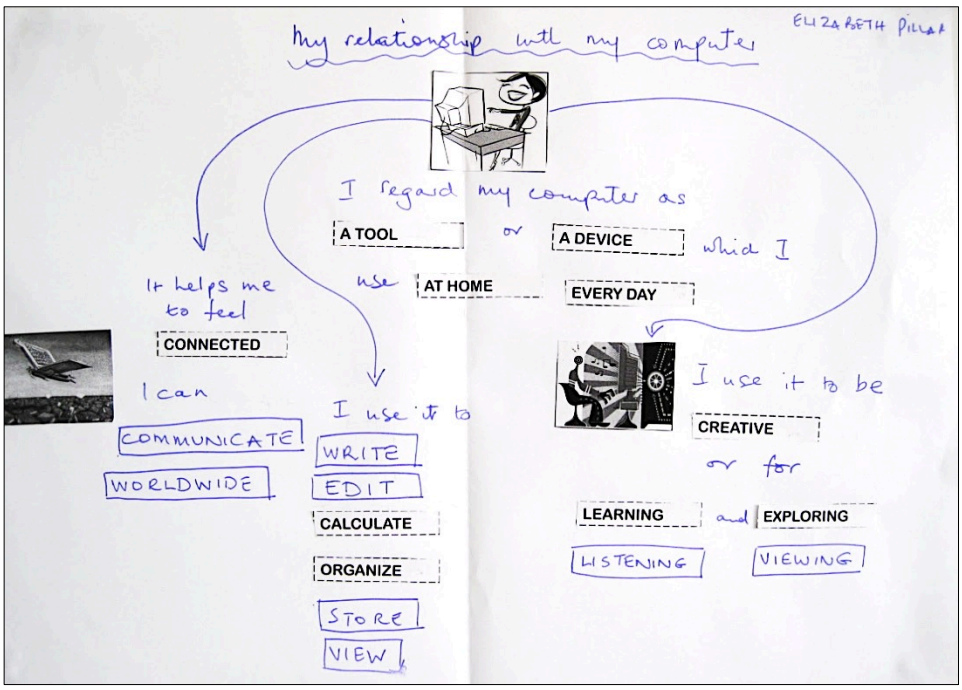
D1



D2

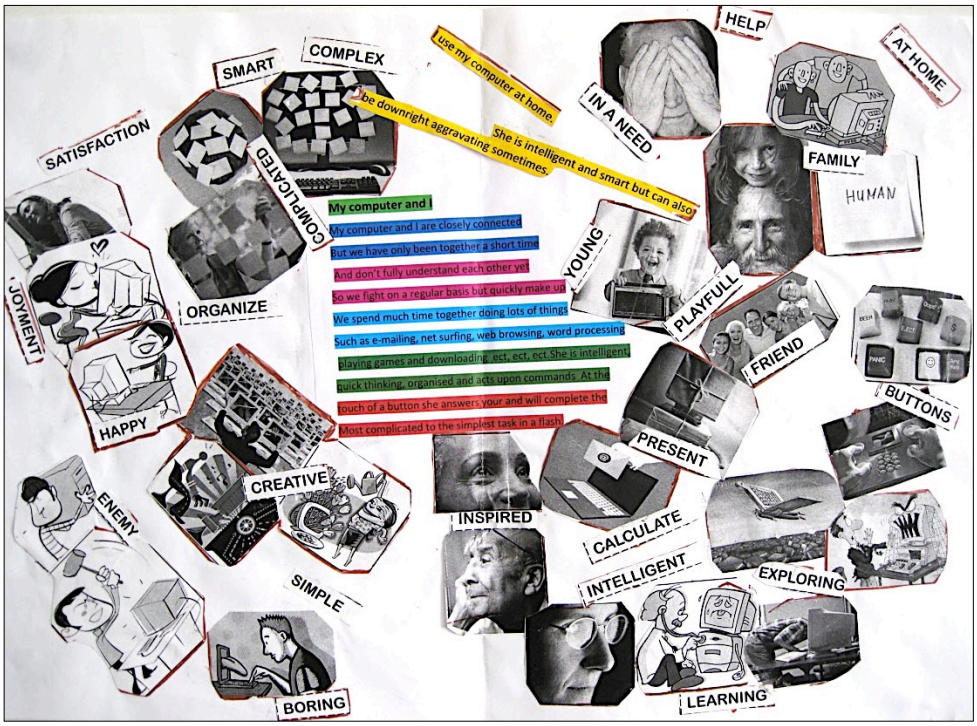


OP1

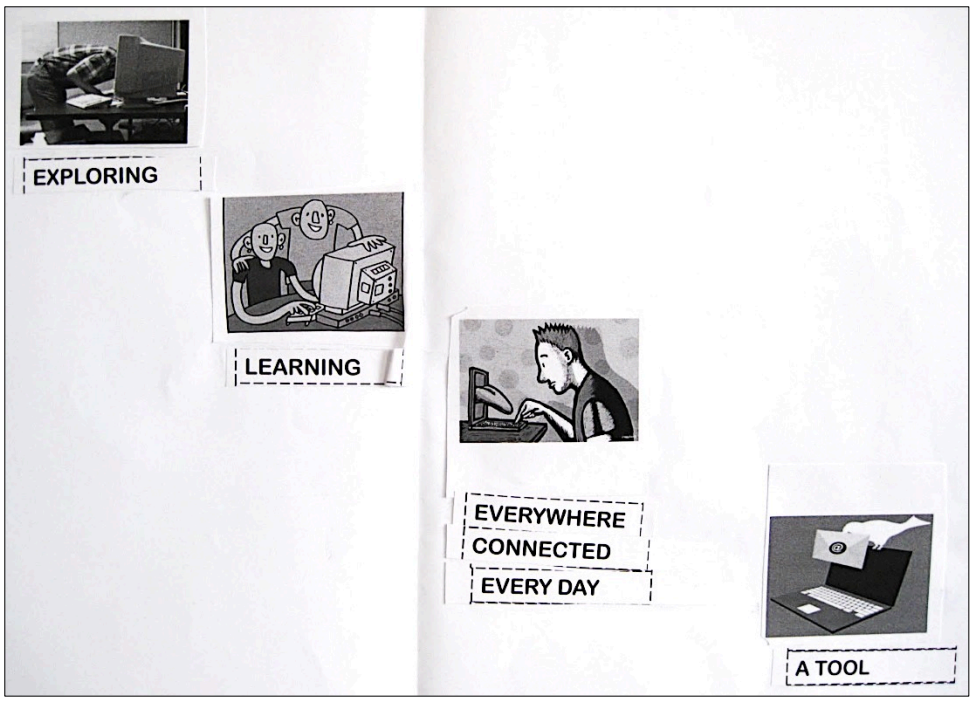


12.4 Mixed group - Red group

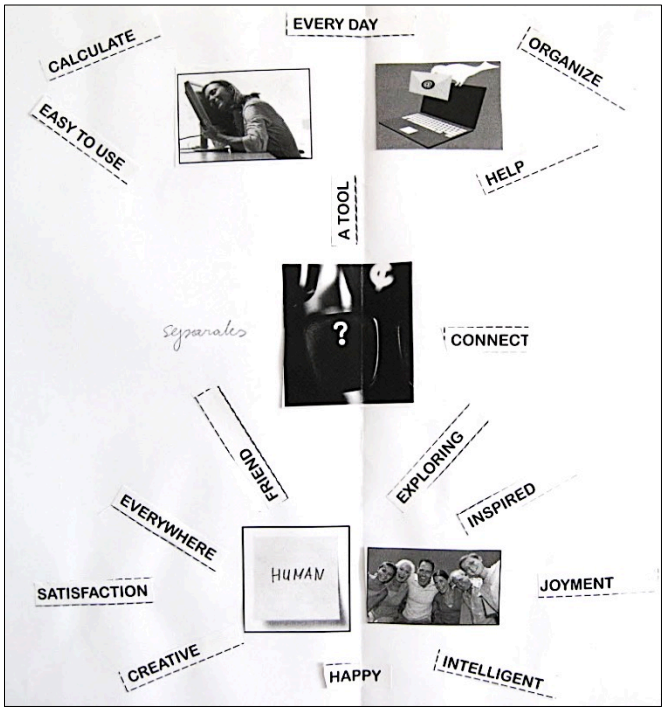
OP1



OP2

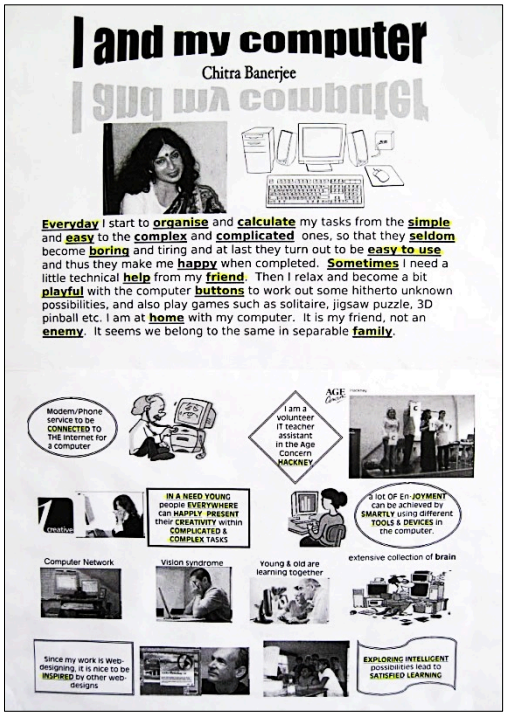

EXPLORING
LEARNING
EVERYWHERE
CONNECTED
EVERY DAY
A TOOL

D1


EVERY DAY
CALCULATE
ORGANIZE
EASY TO USE
HELP
A TOOL
separates
?
CONNECT
FRIEND
EXPLORING
EVERYWHERE
INSPIRED
HUMAN
SATISFACTION
JOYMENT
CREATIVE
HAPPY
INTELLIGENT

12.5 Older people - Yellow group

OP1

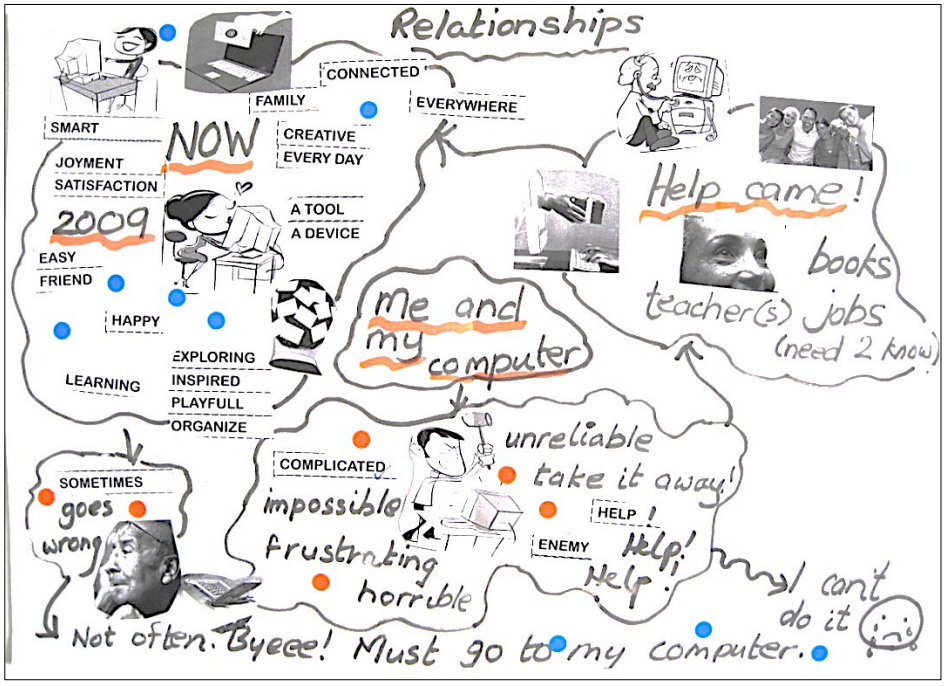


OP2

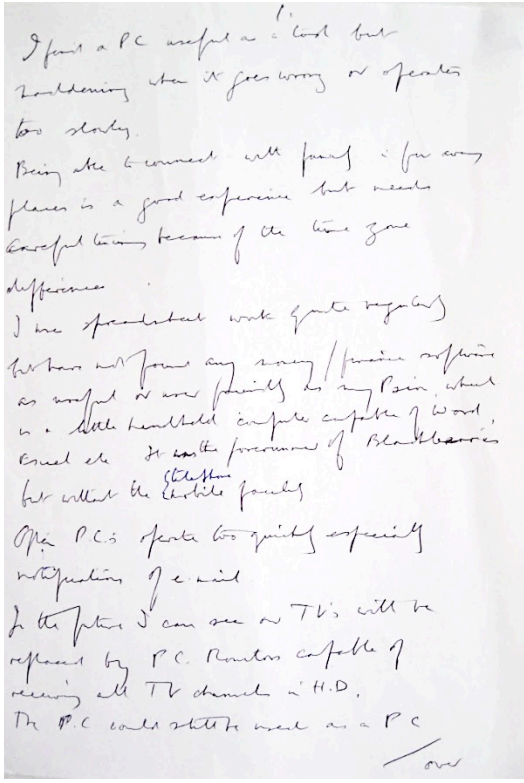
OP3

12.6 Older people - Red group

OP1



OP2

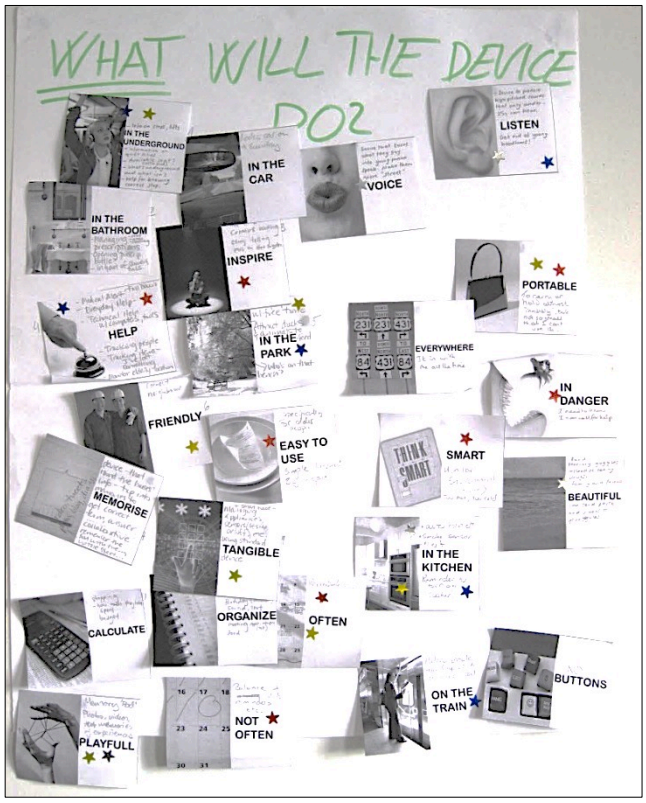

I found a PC useful as a tool but
troublesome when it goes wrong or operates
too slowly.
Being able to connect with family & far away
places is a good experience but needs
careful timing because of the time zone
differences.
I have specialised work quite regularly
but have not found any serious/frustrating aspects
as useful as were promised by my Pain school
in a dark hundred & complete capitals of Word.
Email etc. It was the forerunner of Blackberries
but without the Christmas family
Often P.C.s speak too quickly especially
with speaking of a mind
In the future I can see our TVs will be
replaced by P.C. Monitors capable of
receiving all TV channels in H.D.
The P.C could still be used as a P.C

/over

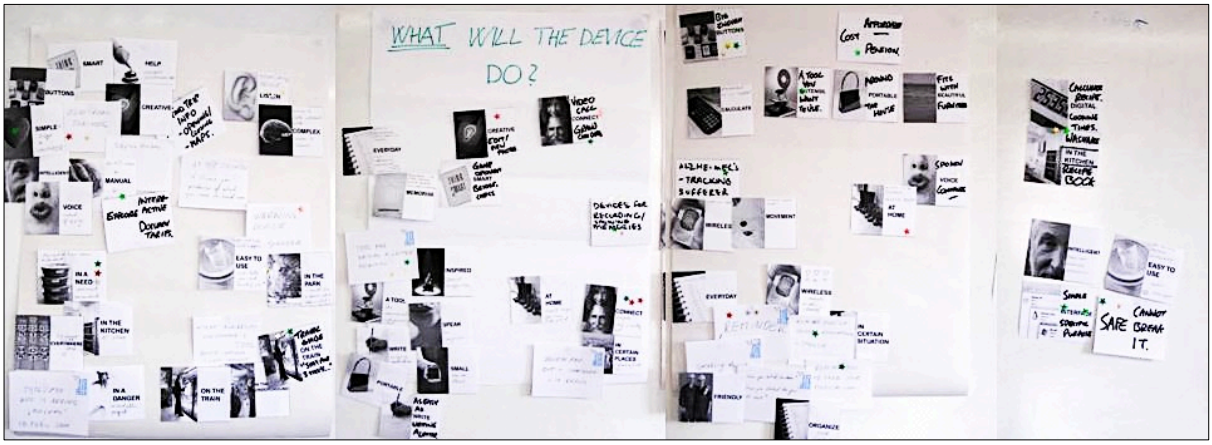
OP3 Participant did not make a Mind Map.

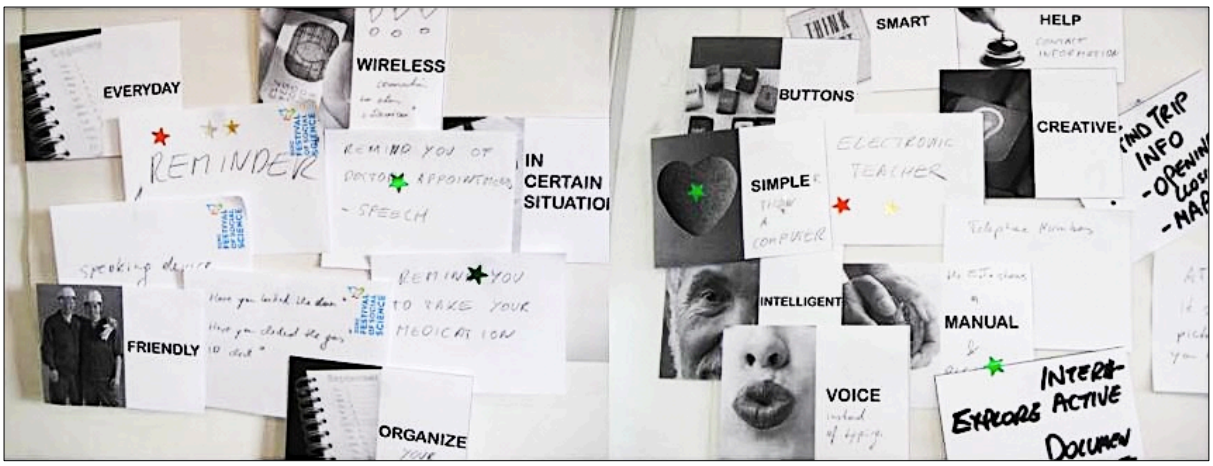
13 Appendix 13: Study 3: Posters with ideas created from the incubation stage

13.1 Designers

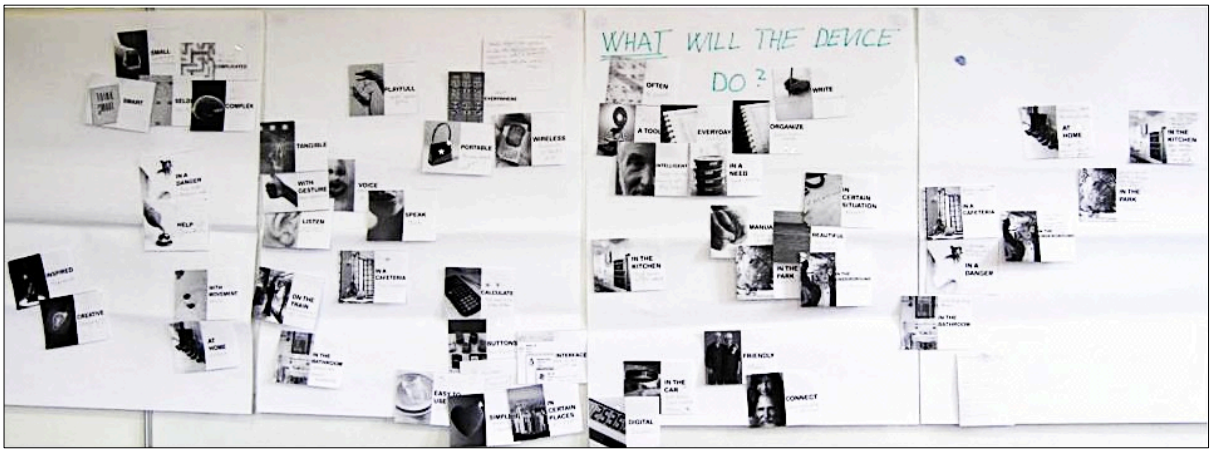


13.2 Mixed group





13.3 Older people



14 APPENDIX 14: STUDY 3: WELCOMING LETTER FOR EXPERTS

Dear >name<

I am looking for experts, such as yourself, in the domain of design, research or web usability for older people, who would be prepared to evaluate some of the outputs of my research.

My name is Helena Sustar and I am a PhD research student at City University London, Centre for Human Computer Interaction Design. The title of my thesis is: *"Older people as equal partners in designing a digital device for older peoples' everyday needs"* and I am supervised by Dr. Sara Jones and Professor Neil Maiden.

As an expert, I am asking whether you would be willing to:
- Complete a short (2 minute) on-line questionnaire related to your age, gender and research area, and your design or usability experiences in the domain of older people
- Watch 6 videos on-line (from 6 to 14 minutes in length) where groups of participants present to you some 3D paper prototypes of digital devices for older people that they have developed.
- For each of the prototypes, answer two questions about how novel and how appropriate for use by older people it is.

The time required to complete the study will be approximately 1 hour 15 min, and the study must be completed by the end of January.

I will be very grateful if you are able to participate in this study, and will, of course, be more than happy to share the results of my study with you as soon as they are available. If you have any questions please do not hesitate to contact me.

Thank you for your time.

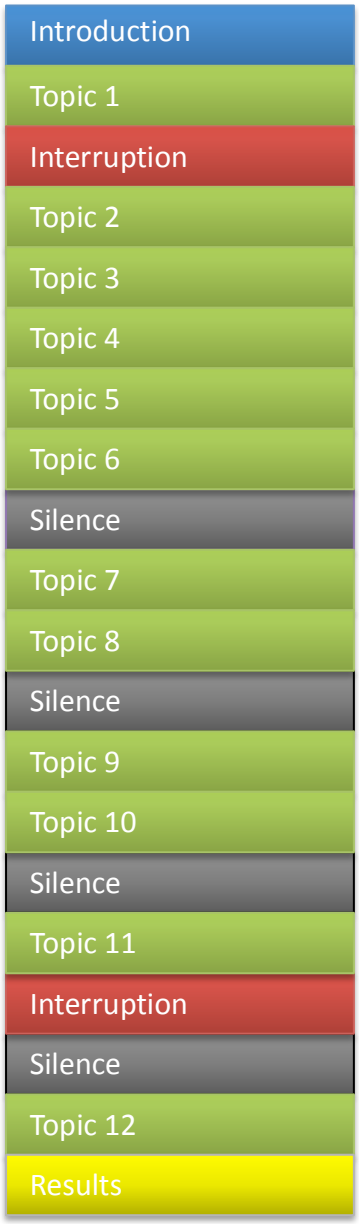
Kind regards,
Helena Sustar

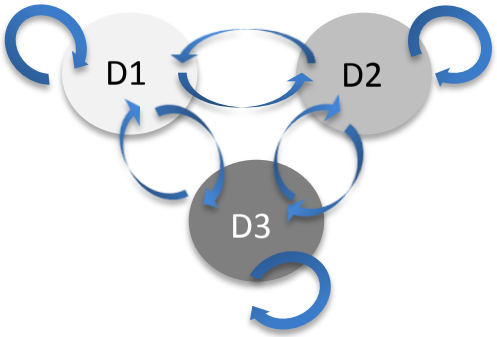
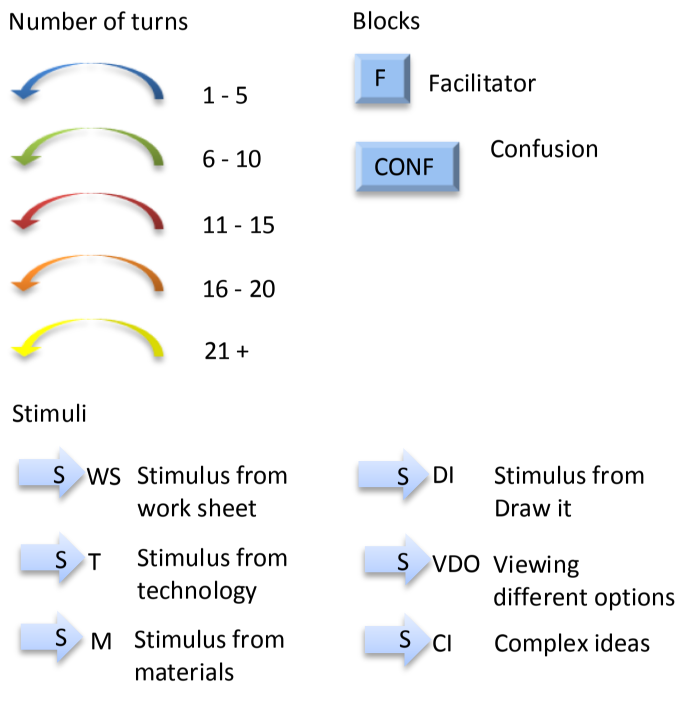
Helena Sustar PhD student
City University London
School of Informatics
Centre for HCI Design
Northampton Square
London EC1V 0HB, UK
phone +44 (0)20 70 40 42 14
helena.sustar.1@city.ac.uk
http://hcid.soi.city.ac.uk/index.tml

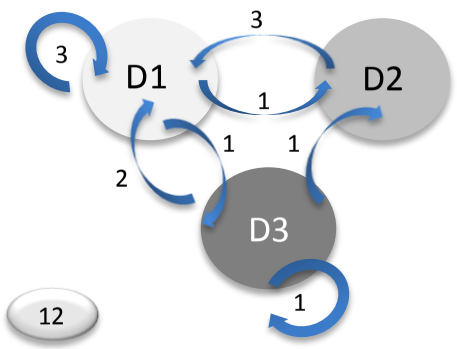
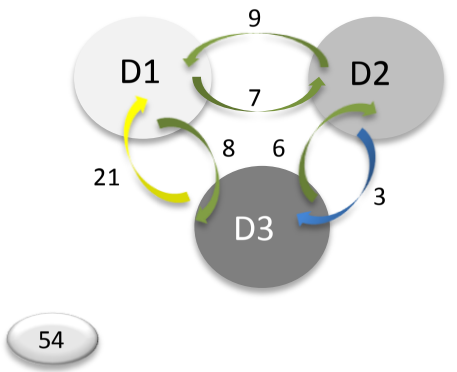
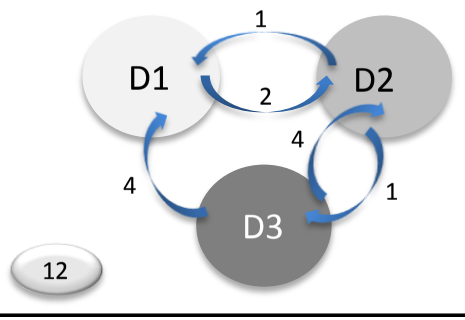
15 APPENDIX 15: STUDY 3: ANALYSED DATA FROM THE ILLUMINATION STAGE

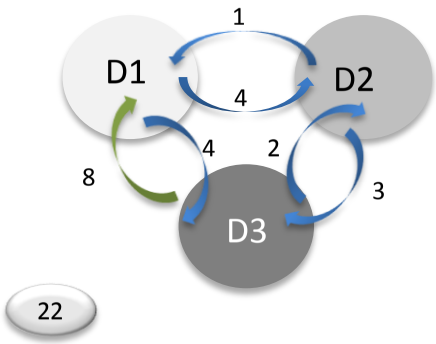
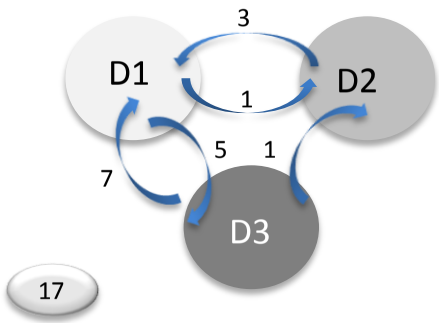
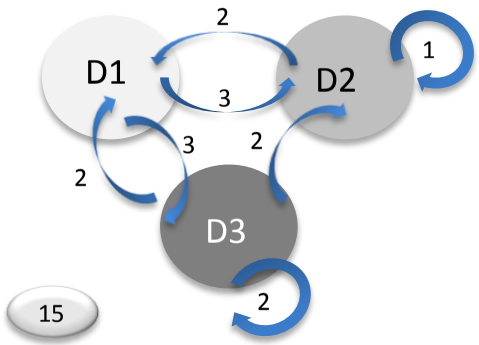
1. Designers - Yellow group
2. Designers - Red group
3. Mixed group - Yellow group
4. Mixed group - Red group
5. Older people - Yellow group
6. Older people - Red group

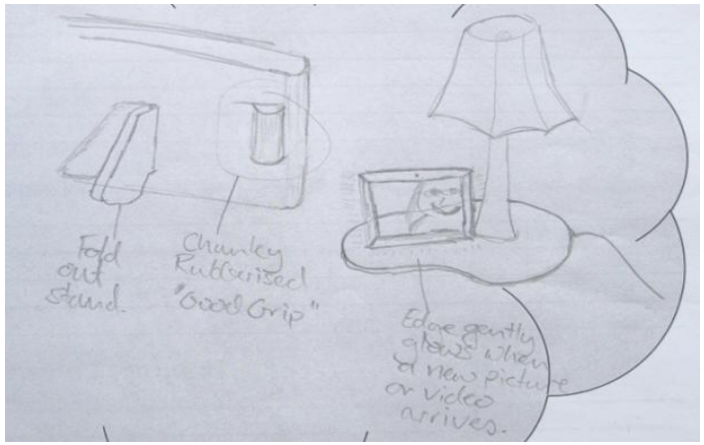
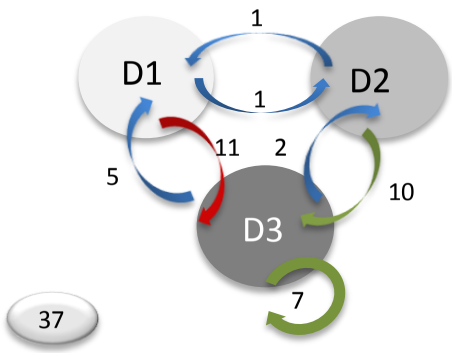
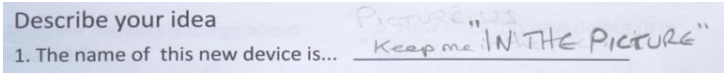
15.1 Designers - Yellow group

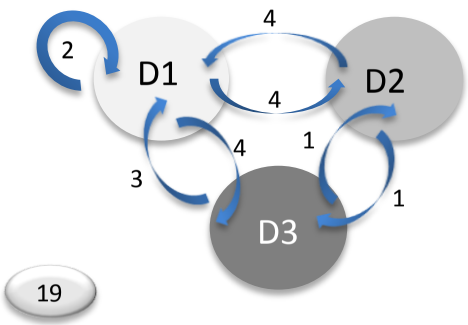
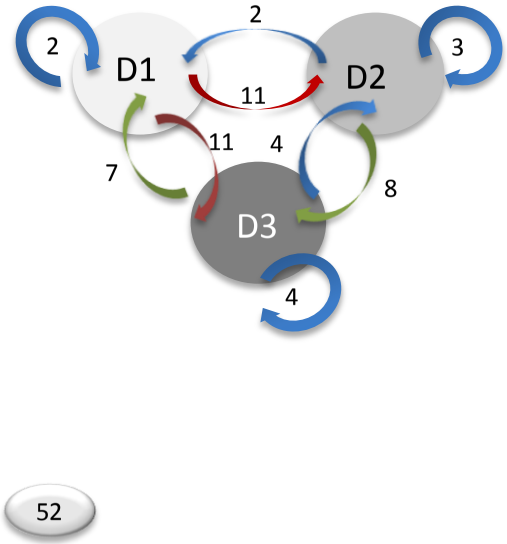
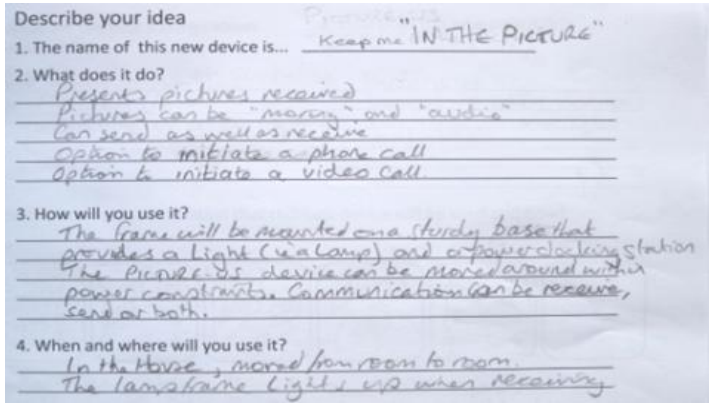


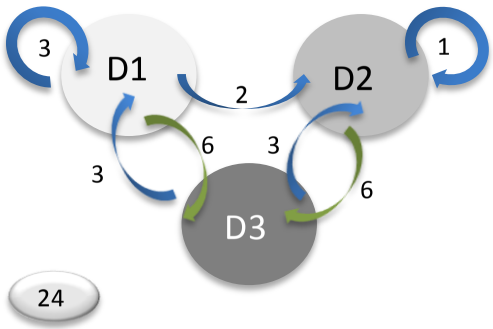
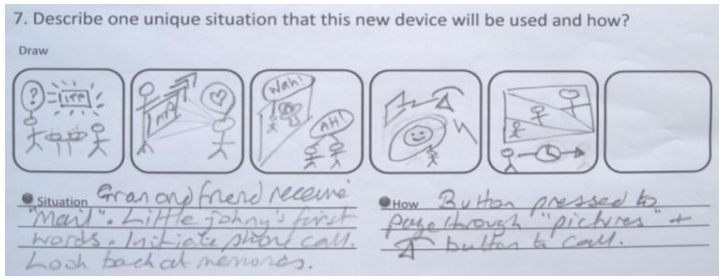
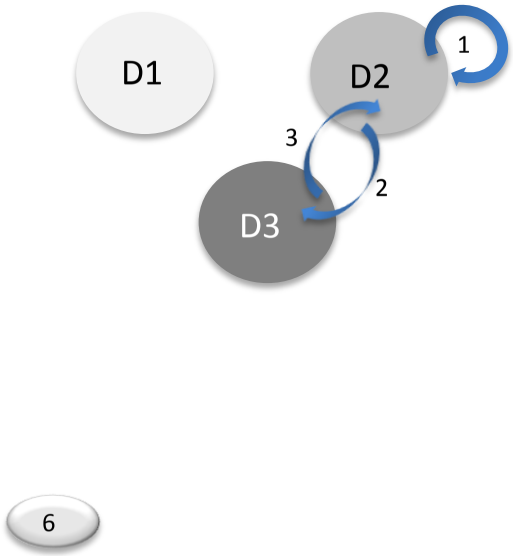
The Illumination stage: Designers - Yellow group					
1. The number of the section **2. Section title** **3. Start of the section** **4. End of section**	**The length of the section Time (audio data)**	**Graphical representation of the turns** **D1 - Designer 1** **D2 - Designer 2** **D3 - Designer 3** **A - Assistant** **F - Facilitator**	**Creative stimuli**	**Creative blocks**	**Content of the section (video data)**
Introduction					
Group design electronic Photoframe called "KEEP ME IN THE PICTURE"	Start of the stage '03:40 1 min 10				

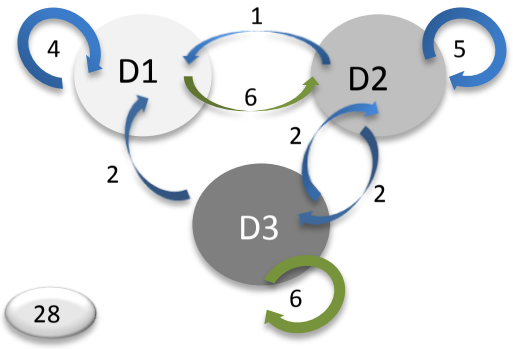
TOPIC 1 **Group is organising their work** **Start of section:** D1 read question on worksheets **End of section:** Interrupted group with showing of example of sketches and storyboard	**Start of topic 03:40** **End of topic 04:47**		S M S WS		D1 was reading questions from worksheets. They were discussing how they would start with the work.
Interruption	**From 04:47 to 05:04**		F		F gave instructions to participants.
TOPIC 2 **D1 described an example of the existing device (digital Photoframe) and based on that example group developed their ideas.** **Start of topic:** D1 opened the section by describing an example of existing technology **End of topic:** D1 started describing a new example of the existing device	**Start of topic 05:04** **End of topic 12:05**		S T		D1 was explaining existing technology - a photo frame. Based on that example, group started to develop idea further: What will the device be able to do?
TOPIC 3 **D1 described second example of existed device (e -book for downloading books)** **Start of topic:** D1 started describing a new example of the existing device **End of topic:** D2 suggested developing something new	**Start of topic 12:05** **End of topic 13:24**		S T		D1 was explaining how you can downloaded e-books from Amazon. Then, group suggested their own design.

TOPIC 4 **Discussion on how the device will look like** **Start of topic:** D3 agreed and suggested idea based on previous example from D1 **End of topic:** D2 started describing a new example of the existing device	**Start of topic** **13:24** **End of topic** **15:15**		S M S VDO		D3 suggested idea based on D1 idea. They discussed possibilities on device visual appearance. D2 started to build a prototype - a stand for the device.
TOPIC 5 **Synergy of the prototype with other objects; D3 described another example of existing technology (a special lamp)** **Start of topic:** D3 started describing a new example of existing device **End of topic:** D1 changed the topic, he started to talk about aesthetics	**Start of topic** **15:15** **End of topic** **16:59**		S T S M		D3 was asking whether need to be any synergy between devices? Then he started to talk about that.
TOPIC 6 **D1 discussed the aesthetics of the device** **Start of topic:** D1 changed the topic, he started to talk about aesthetics **End of topic:** D1 suggested to drawing something first before building a model	**Start of topic** **16:59** **End of topic** **17:56**		S T S M		D1 was thinking whether need to have users chance to chose between different frames - mass customisation.

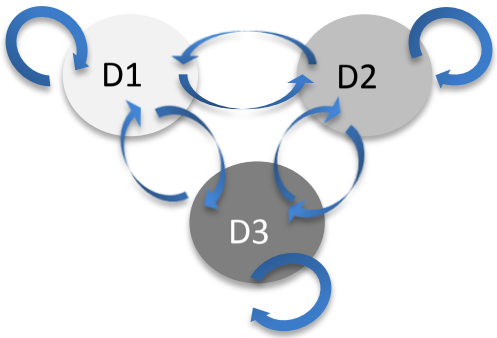
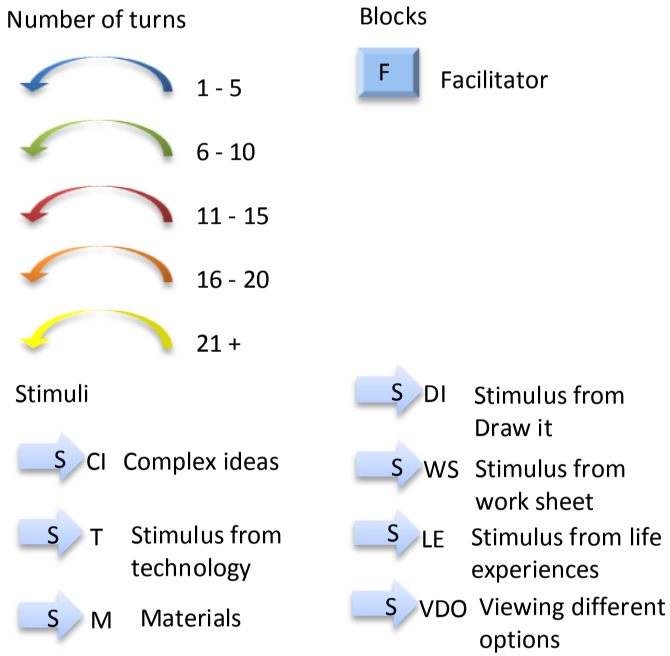
Silence Organising work: D2 was drawing a sketch and D3 was brainstorming on the name of the device	**From 17:56 to 18:46**		S DI S WS S M		D1 was drawing the model, D2 was building a model and D3 was brainstorming the potential names for device. During the silence D2 gave some comments on D3 design of the model. 
TOPIC 7 **Designer 2 reported on names for the device, then they were discussing names for device** **Start of topic:** D2 was reporting on potential names for the device **End of topic:** D1 opened the new topic about web camera	**Start of topic 21:50** **End of topic 25:15**	 	S WS S M		D3 reported on names for the device, then they were discussing on suggested names and at the end decided on the name of the device. 

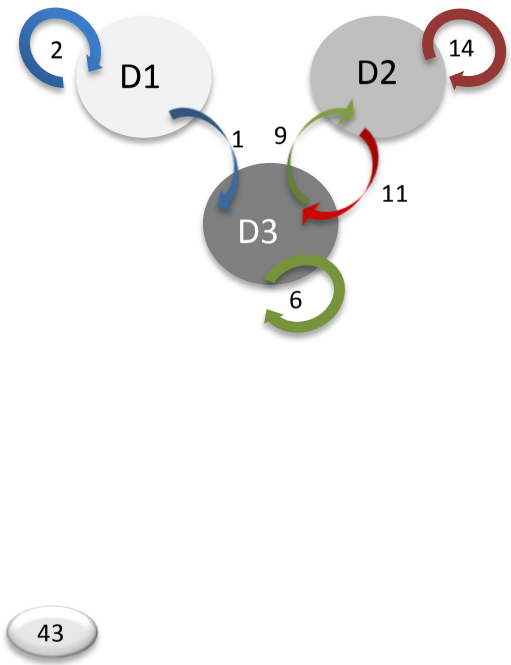
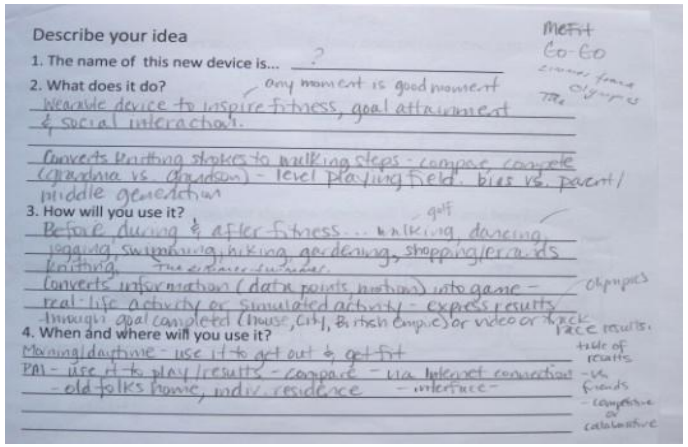
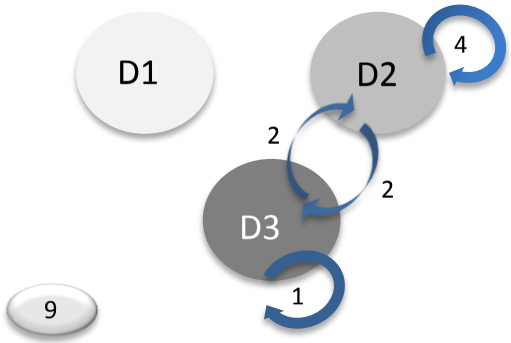
TOPIC 8 **Discussion about web camera, its safety of design and user** **Start of topic:** D1 opened new topic - web cam **End of topic:** D2 said that the model was just a prototype, then they did not need to accept final decision	**Start of topic 25:37** **End of topic 28:04**		S T		D1 opened the topic of web camera. Then, group was discussing how can web camera affects the design of the device and what to do that the user will not have feeling that someone is observing.
Silence	**From 18:46 to 30:41**		S WS S M S DI		D1 was drawing the model, D2 was building a model and D3 was answering work sheets.
TOPIC 9 **Answering at the questions on the worksheets** **Discuss what device will do, when and where it will be used; 3 best features of the device and how device would fit in your life** **Start of topic:** D2 asked what device will do? **End of topic:** F told the participants how much time left	**Start of topic 30:41** **End of topic 35:27**		S WS S M		D2 read their answers to questions:" *What the device will do? When and were you will use it?*" They decided what will be the name of the device and what are three best features of the device. D1 gave a comment on model that D3 was working on.  Describe your idea 1. The name of this new device is... Keep me "IN THE PICTURE" 2. What does it do? Presents pictures received Pictures can be "moving" and "audio" Can send as well as receive Option to initiate a phone call Option to initiate a video call 3. How will you use it? The frame will be mounted on a sturdy base that provides a light (i.e lamp) and a power charging station. The Picture IS device can be moved around within power constraints. Communication can be receive, send or both. 4. When and where will you use it? In the House, moved from room to room. The lamp frame lights up when receiving

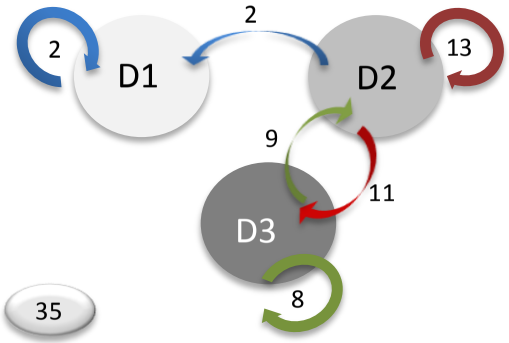
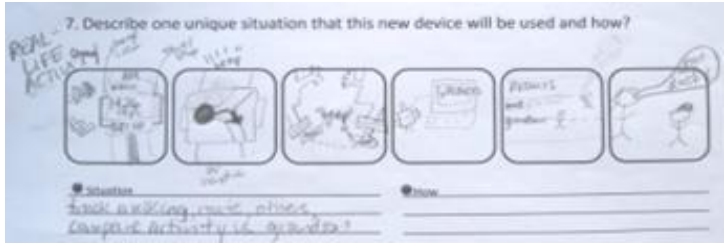
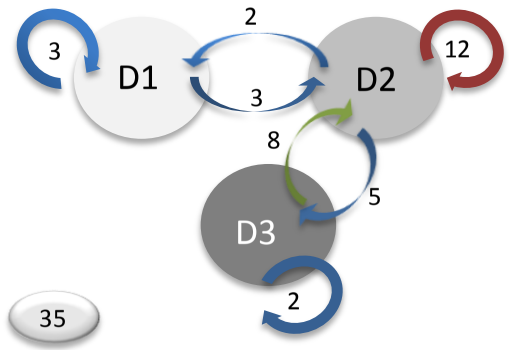
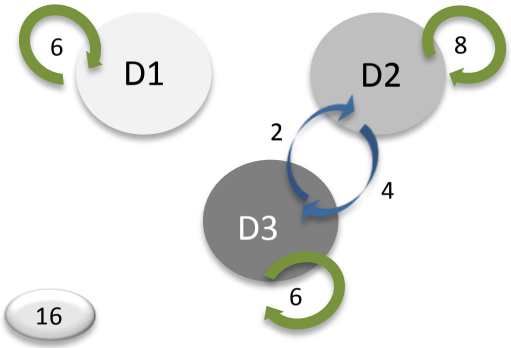
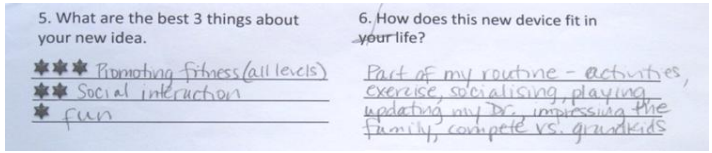
TOPIC 10 **Answering at the questions on the worksheets: Storyboard** **Start of topic:** D2 started section with question on working sheets about devices best features **End of topic:** Silence	**Start of topic 35:35** **End of topic 37:46**		S WS S M S DI		D1 and D3 were building a model. D2 read another questions: *Describe one unique situations where the device will be used?* 
Silence	**Silence from 37:46 to 40:10**		S M		D1 and D3 were building a model.
TOPIC 11 **D2 demonstrated how the device will work** **Start of topic:** D2 started section with question on how the device will work **End of topic:** D2 end of her story	**Start of topic 40:10** **End of topic 40:55**		S VDO		D was describing how the device will work.
Working on the model	**From 40:55 to 41:30**		S M	F CONF	Group was working on the model. Confusion with worksheets; F explained what was the structure of the worksheets.
Silence	**From 41:30 to 41:44**				

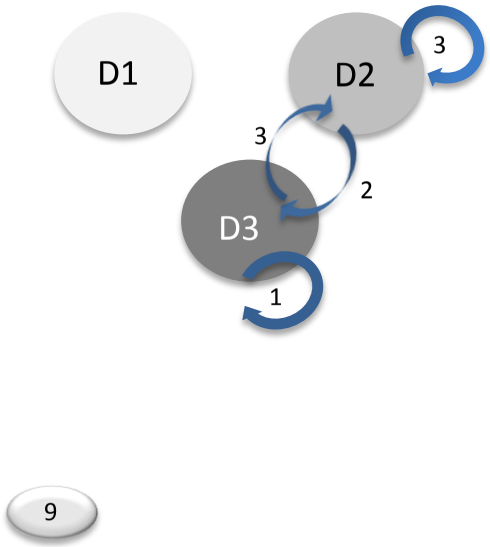
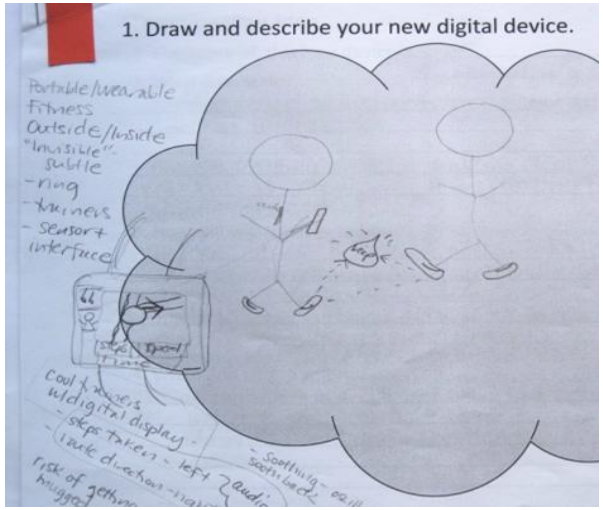
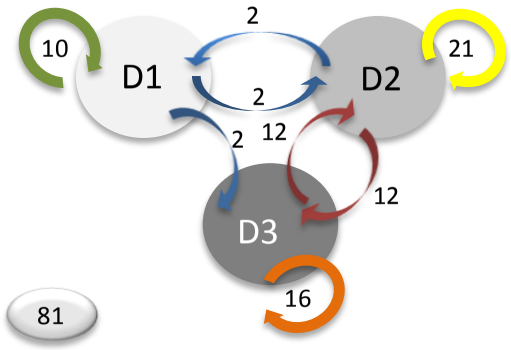
TOPIC 12 **Discussing on last details of the prototype** **Start of topic:** On details started section with question on how the device would work **End of topic:** Cleaning the table	**Start of topic 41:44** **End of topic 44:27**		S VDO		D2 was describing to D1 how the device will interact.
Cleaning the table; F ended this part of the creative workshop by asking participants which group will present first	**From 44:27 to 44:20**	**Results - Total number of turns** 298			

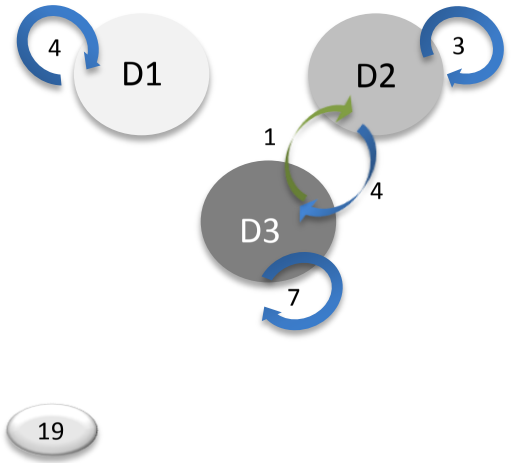
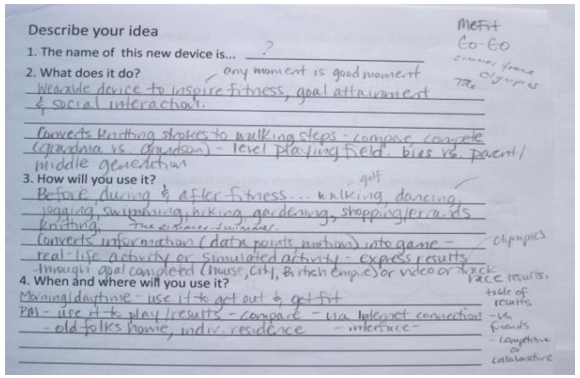
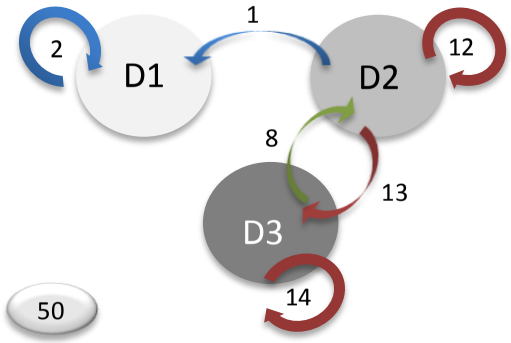
15.2 Designers - Red group

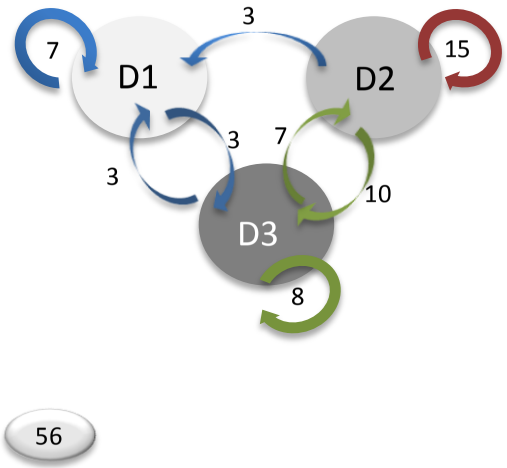
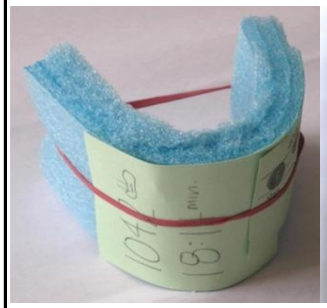
The Illumination stage: Designers - Red group					
1. The number of the section **2. Section title** **3. Start of section** **4. End of section**	**The length of the section Time (audio data)**	**Graphical representation of the turns** **D1 - Designer 1** **D2 - Designer 2** **D3 - Designer 3** **A - Assistant** **F - Facilitator**	**Creative stimuli**	**Creative blocks**	**Content of the section (video data)**
Introduction					
This group was designing a "Moving device", which promoting exercising and fitness.	**Start of the stage '01:21:25** 1 min 10				
Instructions					F was delivering instructions and explaining worksheets. F put "Magic box" on the table. F was giving worksheets to group, explained how long the session will be, and at the end the group will need to present their work.

Silence	**From 01:21:25 to 01:24:13**		S M	F	D2 was checking materials. D3 was looking at worksheets. D1 put a styropor part on the head. D3 used plastic as glasses; D1 put plastic on her eyes as glasses. They were very enthusiastic. All three participants were exploring ideas. F showed examples of sketches, prototypes. F interrupted creative process to give some additional information. There was a long silence.
TOPIC 1 **Design of the device** **Start of topic:** D2 started with the statement that they need to design a moving device **End of section:** D2 suggested starting to work on scenario	**Start of topic 01:23:57** **End of topic 01:27:49**		S T S LE S WS		They were discussing about the design of the device: what it will look like? A broach, more for fitness, used indoor/outdoor at the table and then, like walking stick, wearable, a ring, not visible. They moved to the whiteboard where there were cards with ideas, but they continued with the discussion. D2 was working on worksheets and writing; D2 suggested to work on scenario.  Describe your idea 1. The name of this new device is... 2. What does it do? 3. How will you use it? 4. When and where will you use it?
TOPIC 2 **Scenario** **Start of topic:** D2 suggested to start to work on scenario **End of topic:** D3 suggested pedometer type technology (they stop to work on scenario)	**Start of topic 01:27:49** **End of topic 01:28:30**		S T S WS		D2 and D3 were discussing on storyboard - how to draw it.

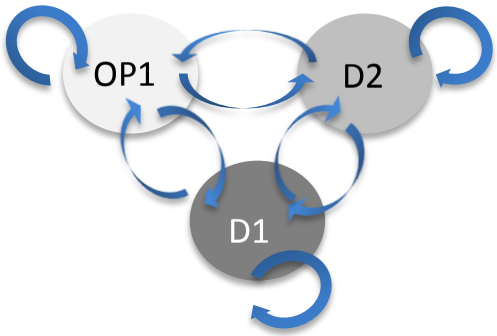
TOPIC 3 **Based on pedometer developed idea in super cool trainers** **Start of topic:** D3 suggested pedometer **End of topic:** D2 asked whether the device will interact with any other device	**Start of topic** **01:28:40** **End of topic** **01:32:54**		S T S VDO S CI S WS		D3 suggested to use existing technology pedometer, which is wearable. D3 asked how device will identify your movement - special trainers. 
TOPIC 4 **The device features** **Start of topic:** D2 asked whether device will interact with any other or it will be self contained **End of topic:** D2 asked what will be the name of the device	**Start of topic** **01:32:54** **End of topic** **01:36:23**		S T S VDO S CI S LE S WS		D2 asked: "*What will make it more useful then usual pedometer?*" D2 and D3 were discussing about Wii. D1 asked "*How the device will detect your movement?* "Designers discussed about: navigation, interaction which will be similar to Wii. D2 was writing about worksheets different options: walking, dancing. The device will show speed of walking, walking distance, both through route the forest, time, achieving goal, racing against somebody else, suggesting breaks, earning rewards, levels (gold level).
TOPIC 5 **The name of the device** **Start of topic:** D2 asked: What will be the name of the device? **End of topic:** D2 asked: What the device will do?	**Start of topic** **01:36:23** **End of topic** **01:38:55**		S VDO S WS		Designers suggested the following names: Walk old man, Gerald, Move, Go, 10 years younger, Past glory. 

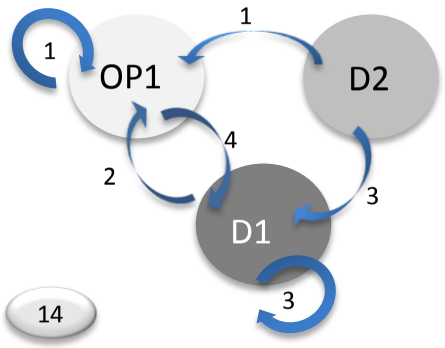
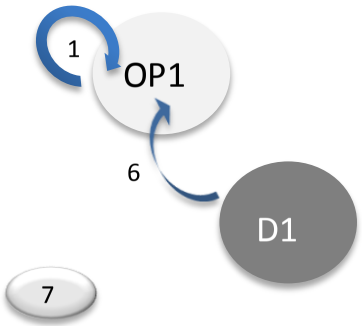
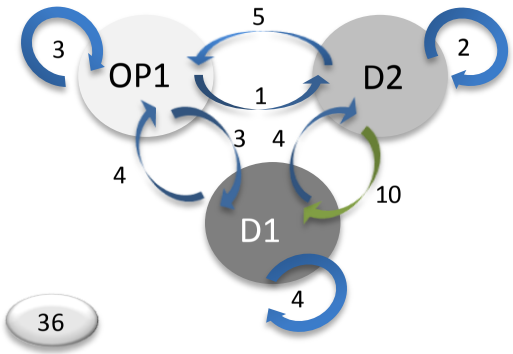
TOPIC 6 **The purpose of the device** **Start of topic:** D2 asked: What will the device do? **End of topic:** D3 asked: How will we used it?	**Start of topic** **01:38:55** **End of topic** **01:39:45**		S WS S DI		D2 was writing on worksheets. 
TOPIC 7 **Where and when will be the device used?** **Start of topic:** D3 asked: How we will use it? **End of topic:** D2 asked: What are best three things about the idea?	**Start of topic** **01:39:45** **End of topic** **01:47:07**		S VDO S T S WS		D2 was writing on worksheets: Where the device will be used? They suggested that at walking, dancing, gardening, underwater, shopping. Converting different information on the the game. Designing some kind of game for older people with scenario where they can for example, build a house and at the evening they can see their and friends' progress: e.g. *Albert's effort to build the roof.* D2 was writing. What thing older people would like to do? D2 rebuild British empire. D2 continued that you can use it at the morning (for activities) at the evening for fun. People need to be linked online (e.g. Play station 3).

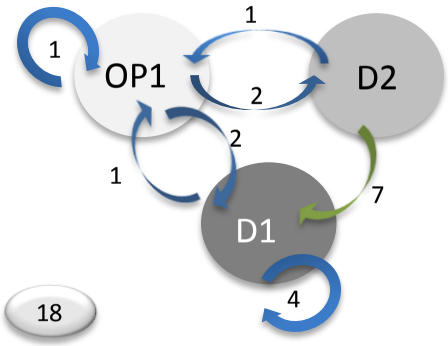
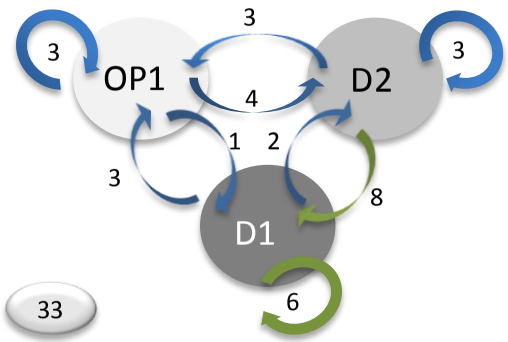
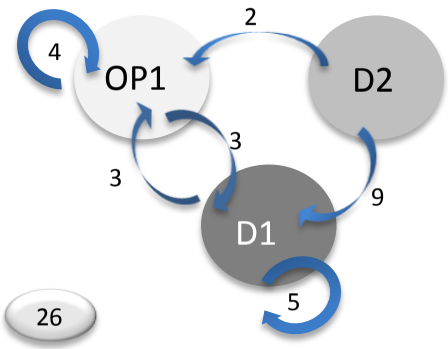
TOPIC 8 **Three best things of the device** **Start of section:** D2 asked: What are three best things about your idea? **End of section:** D2 suggested to go back: What device will do?	**Start of topic** **01:47:07** **End of topic** **01:49:39**		S VDO S WS S LE		D3 said that device will be used for exercising, fun, routine, activities, playing, impressing the family, walking further than grandkids; D2 added socializing.  Describe your idea 1. The name of this new device is... 2. What does it do? 3. How will you use it? 4. When and where will you use it?
TOPIC 9 **What device will do** **Start of topic:** D2 suggested to go back: What device will do? **End of topic:** F came to remind them that is left 15 min	**Start of topic** **01:49:39** **End of topic** **01:55:55**		S WS		D2 was writing on worksheets: "Grandmother is playing a guitar."

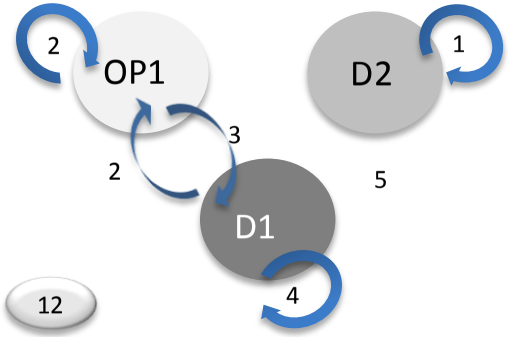
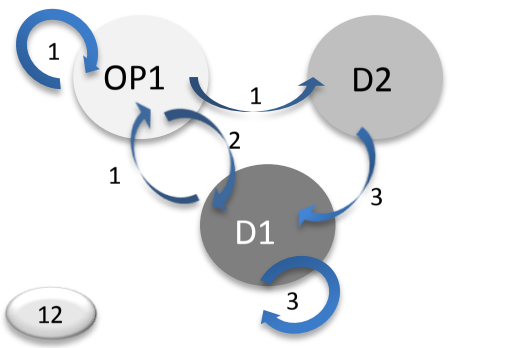
TOPIC 10 **Building a model** **Start of topic:** They started build the model **End of topic:** They started to cleaned the table	**Start of topic** **01:55:55** **End of topic** **02:07:50**		S M S WS		They started to build a model. Most of the time was silence, maybe some comments on the model (jokes, laughing) D2 was writing on worksheets. 
Silence	**From** **02:07:50** **to 02:10:11**	**Results - Total number of turns** 353		F	F asked group to start to present their prototype.

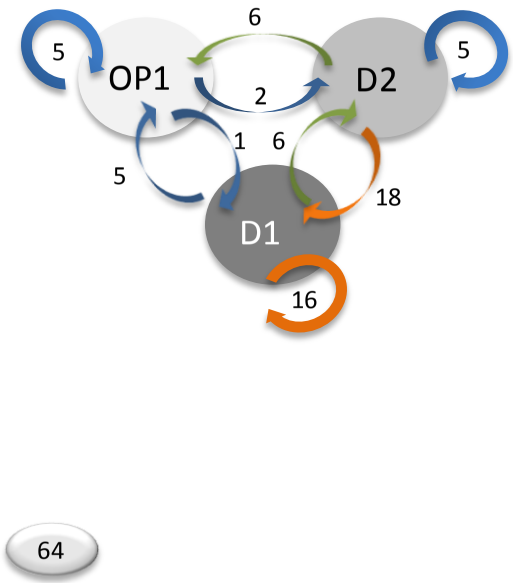
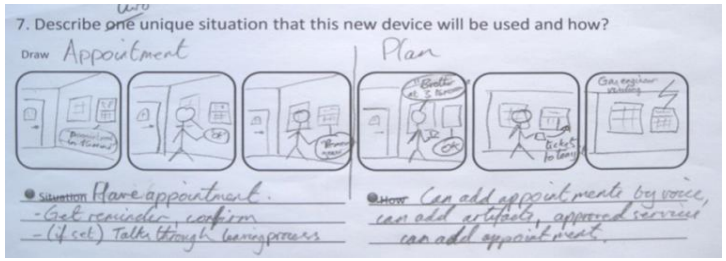
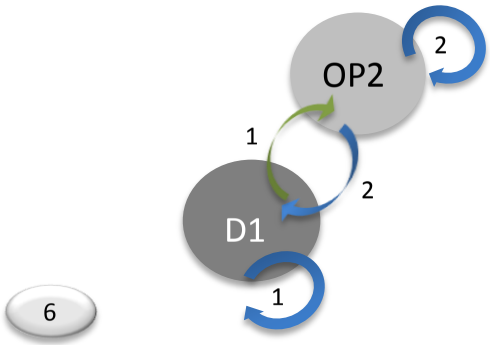
15.3 Mixed group - Yellow group

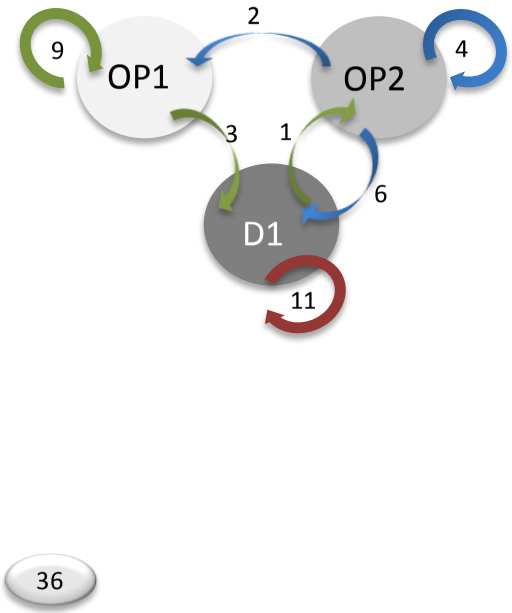
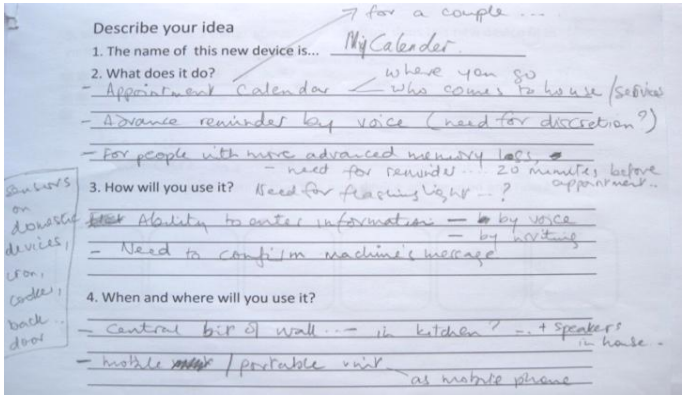
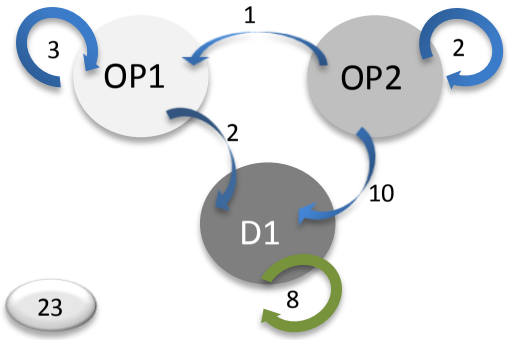
The Illumination stage: Mixed group - Yellow group					
1. The number of the topic **2. Topic title** **3. Start of topic** **4. End of topic**	**The length of the topic Time (audio data)**	**Graphical representation of the turns** **OP 1 - Older Person 1** **D1 - Designer 1** **D2 - Designer 2** **A - Assistant** **F - Facilitator**	**Creative stimuli**	**Creative blocks**	**Content of the topic (video data)**
Introduction					
The group was designing an partial electronic and partly manual calendar.	Start of the stage **02:38:20** 1 min 10				Number of turns 1 - 5 6 - 10 11 - 15 16 - 20 21 + Blocks F Facilitator Stimuli S M Materials S VDO Viewing different options S CO Conflict among members S T Stimulus from technology S LE Stimulus from life experiences S CI Complex ideas S WS Stimulus from work sheet
Instructions			S M S WS		F put a magic box on the table. OP 1 opened the box and started to explore materials in the box. F was delivering instructions, OP1 was making something from materials; she was really exited. D1 and D2 started to explore materials in the box. Participants were looking worksheets.

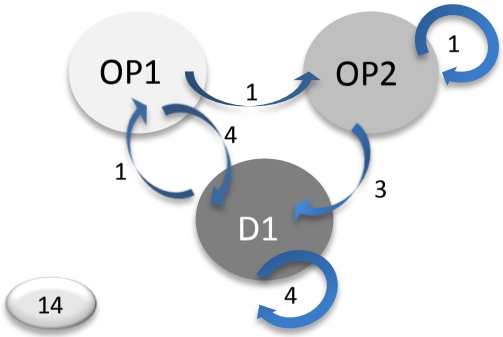
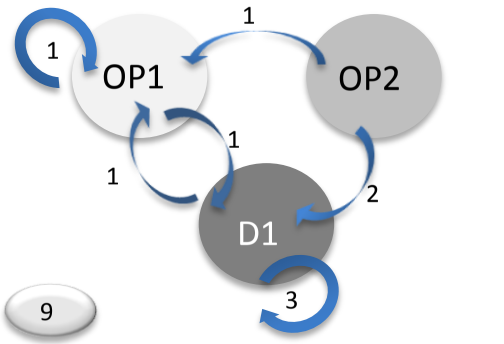
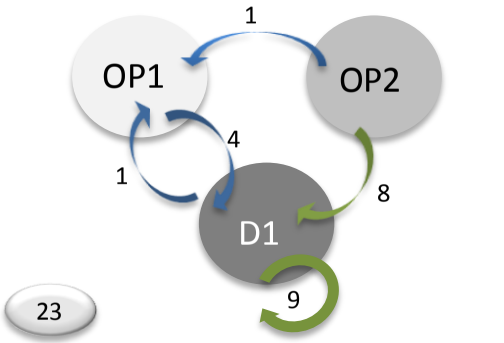
TOPIC 1 **How people use calendars** **Start of topic:** D1 started to discuss how people use calendars **End of topic:** OP1 asked whether it was necessary to address people with memory problems	**Start of topic** **02:38:20** **End of topic** **02:39:33**		S LE		D1 started discussion about how people use calendars.
TOPIC 2 **With device addressing cognitive impaired people** **Start of topic:** OP1 asked whether it was necessary to address people with poor memory **End of topic:** F interrupted discussion with showing examples of the sketches, storyboard	**Start of topic** **02:39:40** **End of topic** **02:39:55**		S LE S CO		OP1 changed the topic from designing something for very busy people in designing something for people with memory problems.
Interruption F presented examples of sketches and paper prototypes	**From** **02:39:55 to** **2:40:13**			F	F presented some examples of sketches, paper prototypes that were expected from participants.
TOPIC 3 **Discussing what the purpose of the calendar will be** **Start of topic:** D1 continuing with discussion about what the calendar will do **End of topic:** D1 suggested to present how the calendar will function as a story	**Start of topic** **2:40:13** **End of topic** **2:43:34**		S T S VDO S CO S CI		D1 was continuing conversation, what will the purpose of the calendar be. OP1 continuing how advanced will the calendar be? D2 was discussing whether the device will be portable or stationary; will be in one piece or in two pieces. D1 replied that user will have 2 devices at home, the second one you will carry around. OP1 was developing idea further; you can use device on the streets; you need some personal identification as well. It could remind you of something. OP1 asked: *"What if you loose the device, than all your records will be lost"*. D2 summarised: that could be a portable device.

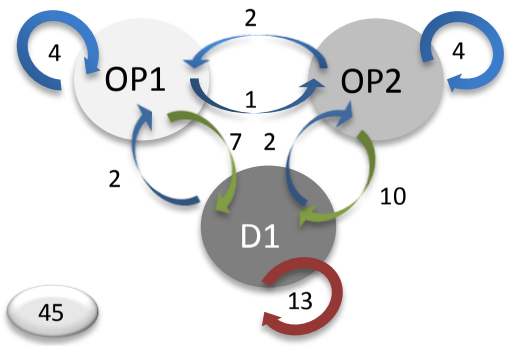
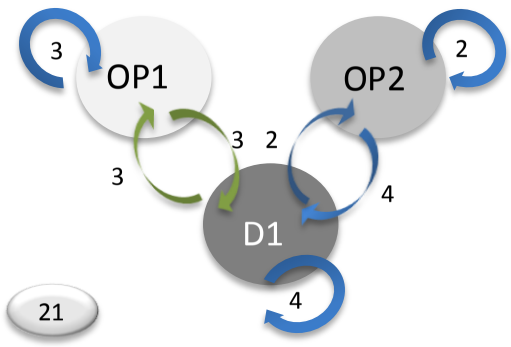
TOPIC 4 **D1 was telling the story of how the calendar will be used** **Start of topic:** D1 suggested to present how the calendar will function as a story **End of topic:** D1 started the discussion on memory problems	**Start of topic** **2:43:34** **End of topic** **2:45:05**		S T S LE		D1 developing idea further and suggested to presented it as a story.
TOPIC 5 **Participants discussed cognitive impairment** **Start of topic:** D2 started the discussion on memory problems **End of topic:** D1 interrupted OP1 to suggest new ideas for the device	**Start of topic** **2:45:05** **End of topic** **2:48:56**		S CO S VDO S LE		D2 said that people with memory problems need to exercise their memory. D1 we were talking about people with short memory problems. OP1 asked: *"How many people have this kind of problems?"*
TOPIC 6 **D1 suggested active diary** **Start of topic:** D1 interrupted OP1 to suggest new ideas about the device **End of topic:** OP1 started with the new topic taking medicine	**Start of topic** **2:48:56** **End of topic** **2:51:33**		S LE S VDO S CI S LE S T		OP1 and D2 were continuing with discussion; D2 was explaining how calendar will change together with the user who has more and more severe problems with memory. D1 was describing his experiences with people with dementia; if they will need to tick something they will be more confident; therefore he suggested active calendar reminder. OP1 suggested connection with GP. D1 mentioned calendar - reminder. OP1 said that the device can support independent living.

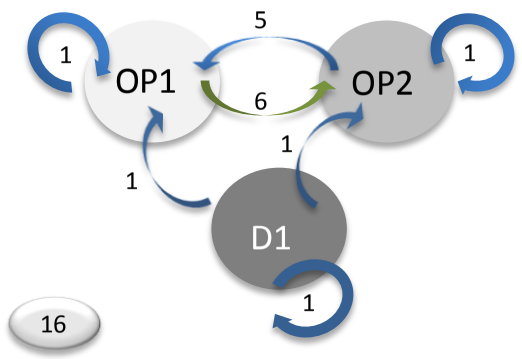
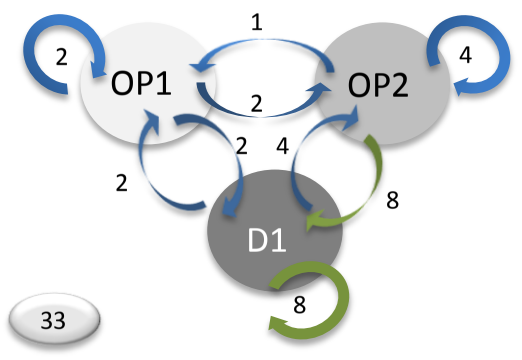
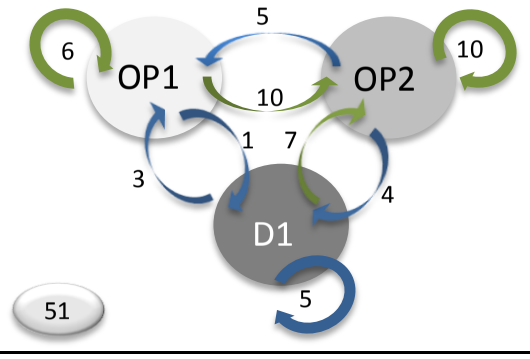
TOPIC 7 **Developing ideas further - planning and organizing unit** **Start of topic:** OP1 started with the new topic of taking medicine **End of topic:** D1 changed the topic of conversation - frustration with taking a lot of different pills	**Start of topic 2:51:40** **End of topic 2:53:20**		S T S CI S VDO S LE		OP1 raised a problem of taking medication and when people do not take medication; how you will remember to take it. D1 suggested existing technical solution. When pattern of taking medicine is getting quite complex you need to give them a week dose. It will be great if they would find solution. D2 was summarising their ideas in planning and organizing unit, which will support independent living.
TOPIC 8 **Care for people with memory problems and how to address this issue** **Start of topic:** D1 changed the topic of conversation - frustration of taking a lot of different pills **End of topic:** OP1 suggested to start writing things	**Start of topic 2:53:20** **End of topic 2:54:22**		S LE S VDO		OP1 started to discuss whether memory problems can be frustrating for carers.
Interruption	**From 2:54:22 to 2:56:10**			F	OP1 suggested to start writing issues that were discussed; F interrupted the process with instructions and explained what they need to do.

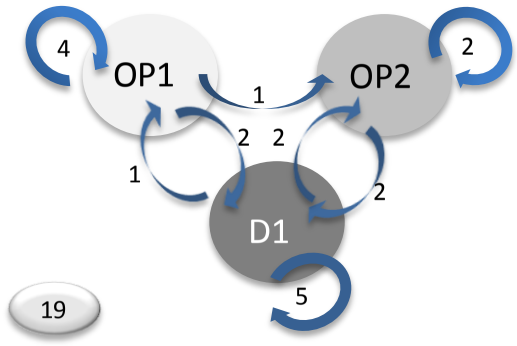
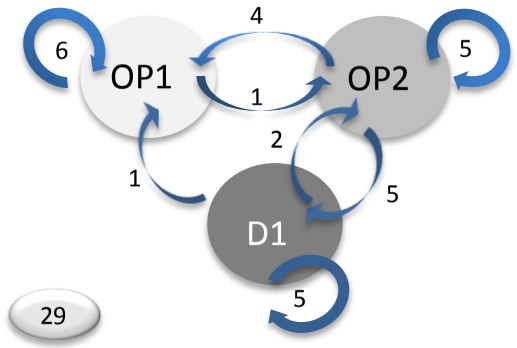
TOPIC 9 **Discussing what the device will do** **Start of topic:** D2 asked what the device will do? **End of topic:** D2 asked another question Where the device will be based?	**Start of topic** **2:56:10** **End of topic** **3:02:15**		S CO S VDO S LE S CI S WS		D2 suggested to start with second question: *"What the device will do?"* D1 suggested situation, service. OP1 asked: *"How you will communicate with the device?* By speaking. D2 suggested alternative ways. Then they were looking for best solutions to interact. D1 suggested that those with severe dementia will have a more strict procedure. D2 was talking about GP and forgetting to close the tap. D1 was discussing what the device would need to have: shopping list, connection to GP. People with memory problems have a list of notes, they were making notes all the time said D1. OP1 was writing on worksheets. 
TOPIC 10 **Where the device will be based?** **Start of topic:** D2 asked another question: Where will the device be based? **End of topic:** OP1 asked how the device will be used?	**Start of topic** **3:02:15** **End of topic** **3:03:03**		S LE		D2 asked:" *Where will the device be based?*" In the kitchen, D2 people using different things as a reminder (post it notes, they stick something on the wall); so, device should support these things.

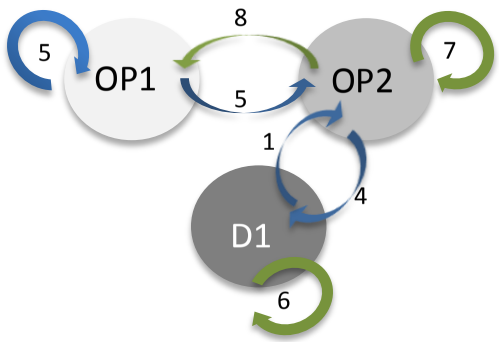
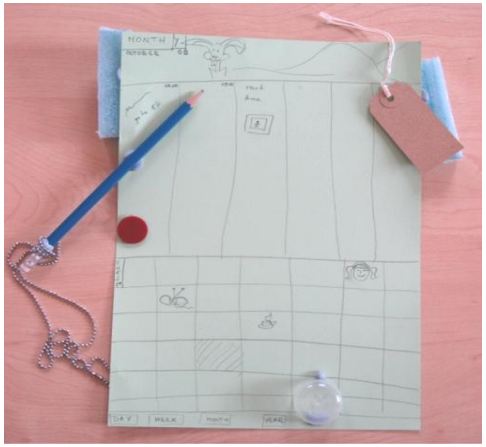
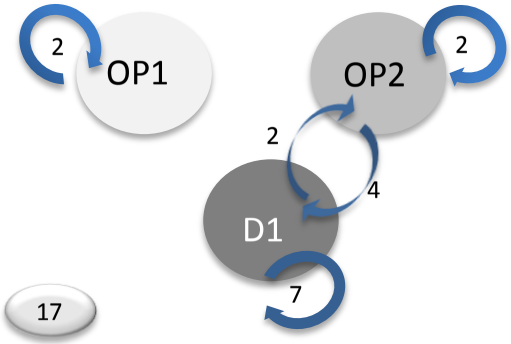
TOPIC 11 **How the device will be used?** **Start of topic:** OP1 asked how the device will be used? **End of topic:** OP1 asked where device will be located?	**Start of topic** **3:03:03** **End of topic** **3:05:56**		S WS S VDO S T S CI		OP1 asked: *How you will used the device?* D1 flat wall that you can look it. D2 so you could add information there. OP1 asked: *"Will person talk to or write on the calendar?"* D1 said that people rather write more complex things than learn sophisticated things. D2 suggested to make a list of technology that already exists. OP1 asked: *"How you will check that person was reacting to the device?"*  Describe your idea 1. The name of this new device is... My Calender 2. What does it do? 3. How will you use it? 4. When and where will you use it?
TOPIC 12 **They discussed where the device in the house will be based** **Start of topic:** OP1 asked where the device will be located? **End of topic:** D1 developing idea with speakers further.	**Start of topic** **3:05:56** **End of topic** **3:08:20**		S CI S VDO S T		OP1 asked: "*Where the device will be located?* "Anywhere, you could wear it. D1 suggested wall, kitchen. D2 added that device could be a central thing. D1 added whenever they decided that the place will be. need to have speakers you will be able to hear it everywhere.

TOPIC 13 **Discussion about audio speakers that device needed** **Start of topic:** D1 was developing idea with speakers further. **End of topic:** OP1 started discussion about the interaction with the device	**Start of topic** **3:08:20** **End of topic** **3:09:30**		S LE S VDO		D1 described his experience with the loudspeakers.
TOPIC 14 **How the device will interact?** **Start of topic:** OP1 started discussion about the interaction with the device **End of topic:** D1 changed topic; he started to talk about the design of the device	**Start of topic** **3:09:30** **End of topic** **3:10:04**		S VDO		D1 described interaction with the device.
TOPIC 15 **Discussion about what the design of the device will be** **Start of topic:** D1 changed topic; he started to talk about the design of the device **End of topic:** OP1 asked what will be the best three features of the device?	**Start of topic** **3:10:04** **End of topic** **3:12:15**		S VDO S LE S CI		Participants exchanged different opinions. D1 expressed his experiences with the door bell. OP1 added that it cannot be flashing. D1 suggested piece of furniture - a picture frame. D1 suggested that calendar can have electronic pictures that you can change each day.

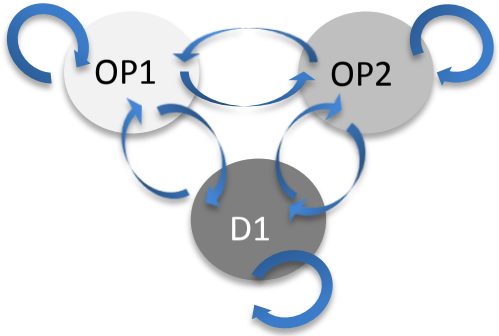
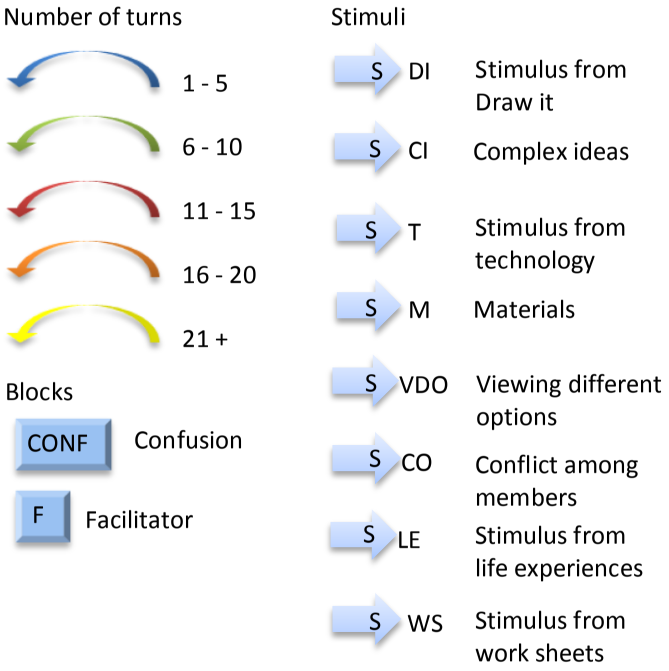
TOPIC 16 **Discussed devices' features 1** **Start of topic:** OP1 asked what will be the best three features of the device? **End of topic:** F interrupted by suggesting to start to build the model	**Start of topic** **3:12:15** **End of topic** **3:13:00**		S WS		OP1 asked "W*hat the best three features of the device will be?* " D2 said that it is not to enter information twice.
Interruption	**From 3:13:00 to 3:13:05**			F	F interrupted group work with suggestion to start to build the model.
TOPIC 17 **Discussed devices' features 2** **Start of topic:** D2 was developing ideas further **End of topic:** OP1 asked what the next feature will be?	**Start of topic** **3:13:05** **End of topic** **3:16:50**		S WS S VDO S CI S T		D2 said that device should reduce anxieties, for example unplugged iron. D1 developing idea further and he suggested "Magic sensors" that you added to things. Everyone was happy about the idea.
TOPIC 18 **Discussed devices' features 3** **Start of topic:** OP1 what the next feature will be? **End of topic:** D2 asked next question how device fits in your life?	**Start of topic** **3:16:50** **End of topic** **3:18:45**		S CI S VDO S T		D1 was developing his idea with "Magic sensors" further. D1 said that you do not need to do things differently, but the same way as before.

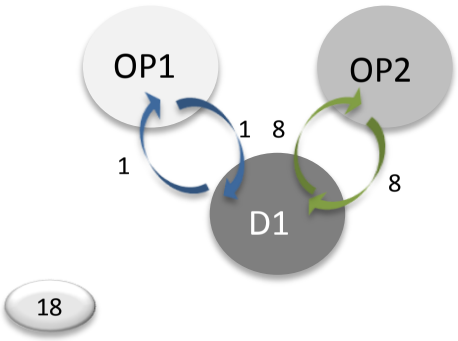
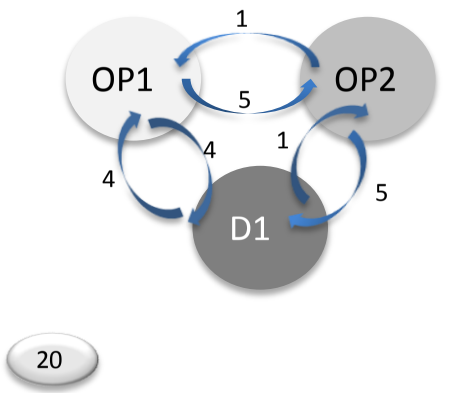
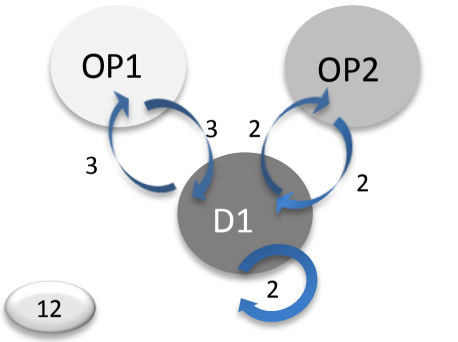
TOPIC 19 **Discussed devices' features 3 and about the model** **Start of topic:** D2 asked next question: How the device will stick in your life? **End of topic:** D1 changed the topic and started to talk about mobile phones technology	**Start of topic** **3:18:45** **End of topic** **3:19:52**		S VDO S T S CI		D2 said that device will be integrated in your life; it will only be an extension what you already have.
Interruption	**From 3:19:45 to 03:19:52**			F	F reminded participants on time that left.
TOPIC 20 **Discussion on mobile phone technology and how this is related to the model** **Start of topic:** D1 changed the topic and started to talk about mobile phone technology **End of topic:** D2 changed the topic and how this can be related to their model	**Start of topic** **03:19:52** **End of topic** **03:22:41**		S T S CI		D1 was discussing about mobile phone technologies and how this can link to their paper prototype.
TOPIC 21 **Building the model - discussing details in calendar 1** **Start of topic:** D2 changed the topic and how this can be related to their model **End of topic:** Silence	**Start of topic** **03:22:41** **End of topic** **03:25:52**		S VDO S CI		Participants were discussing different options that calendar potentially could have.

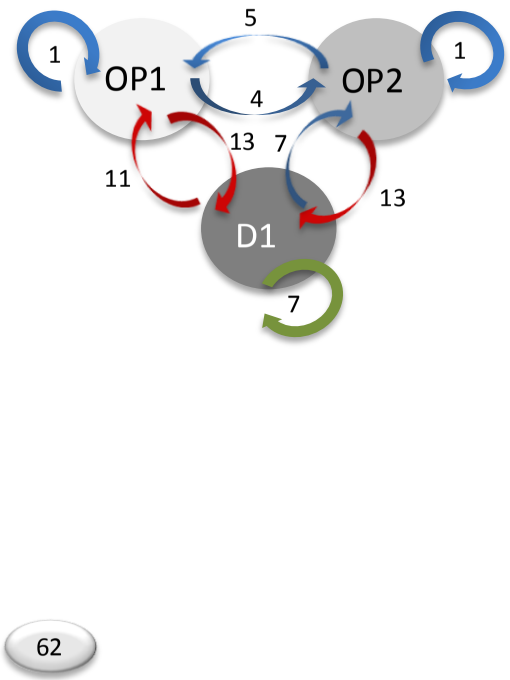
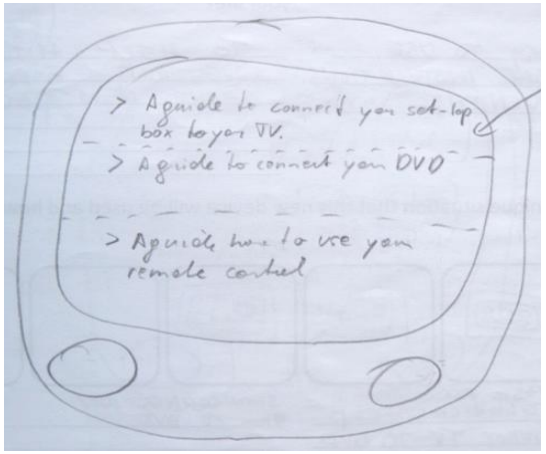
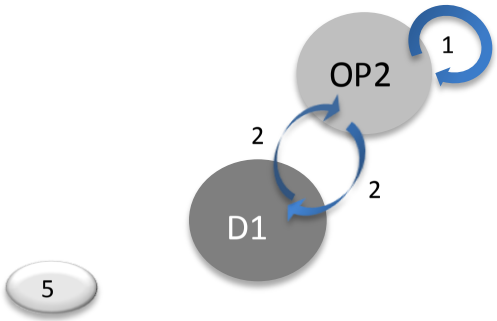
Silence	**From 03:25:52 to 03:26:46**		S M		Silence. D2 was building a model; OP1 and D1 were observing.
TOPIC 22 **Building the model - discussing details days in calendar 2** **Start of topic:** D1 was discussing his experience with notebooks/calendars **End of topic:** Silence	**Start of topic 03:26:46** **End of topic 03:27:50**		S LE S VDO S M		D1 was discussing experience with notebooks and calendars.
Silence	**From 03:27:50 to 03:28:17**			F	F reminded participants on the time that was left (7 min).
TOPIC 23 **Building the model - discussing details in calendar 3** **Start of topic:** D2 asked for opinion about the model **End of topic:** Silence	**Start of topic 03:28:17** **End of topic 03:30:44**		S VDO S LE S CI S M		D2 was building a model.
Silence	**From 03:30:44 to 03:31:15**				Silence

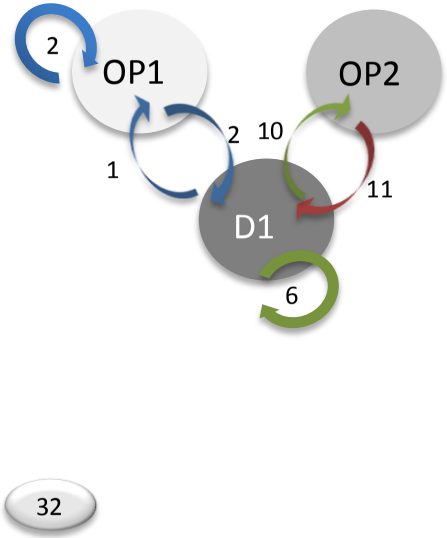
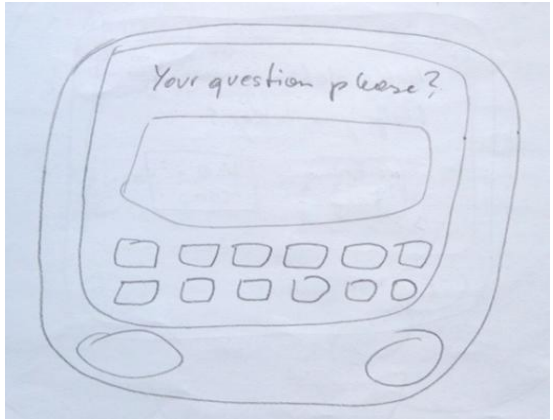
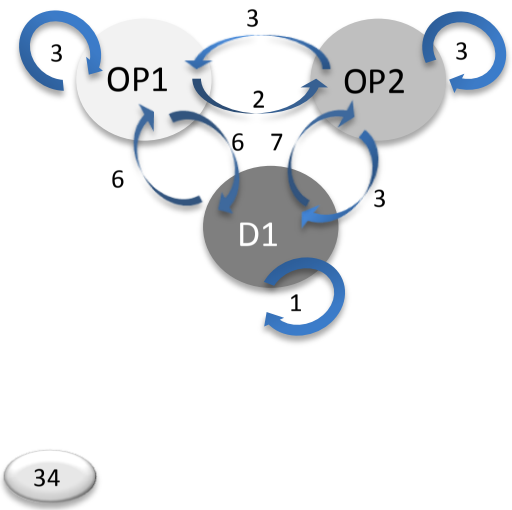
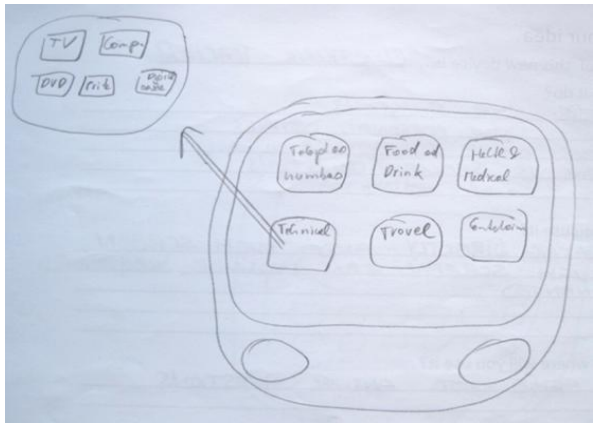
TOPIC 24 **Building the model - discussing details days in calendar 4** **Start of topic:** D2 express opinion about the model **End of topic:** Silence	**Start of topic** **03:31:15** **End of topic** **03:34:25**	 36	S CO S M		Group was discussing about the model's details. 
Silence	**From** **03:34:25** **to 03:36:35**		S M		Silence; D2 was building a model; other two participants gave some comments on the model.
TOPIC 25 **Building the model - discussing details in calendar 5** **Start of topic:** D2 asked others about the speakers **End of topic:** F asked the group to present their model	**Start of topic** **03:36:35** **End of topic** **03:38:15**	 17	S M		
		Results - Total number of turns 604			

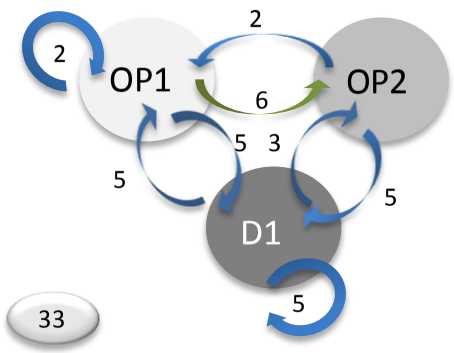
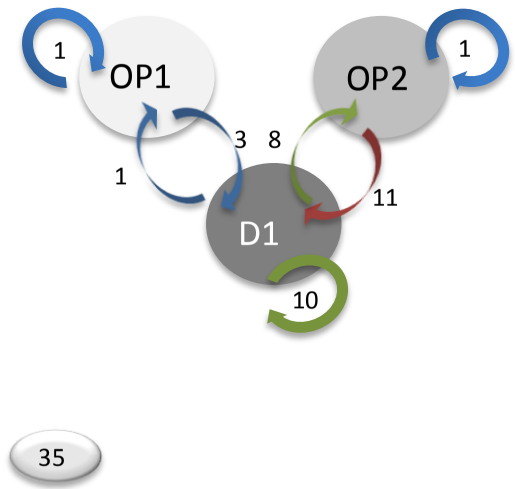
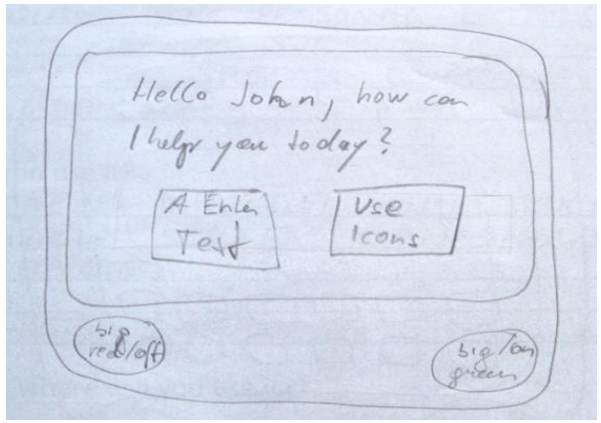
15.4 Mixed group - Red group

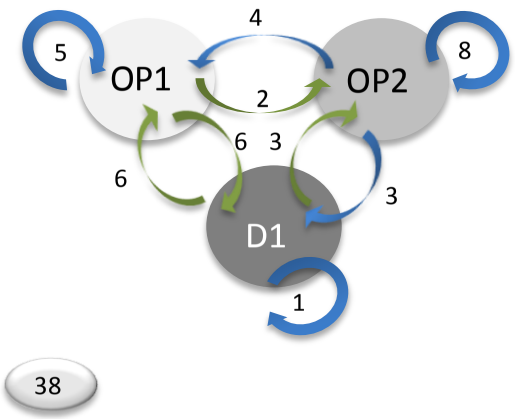
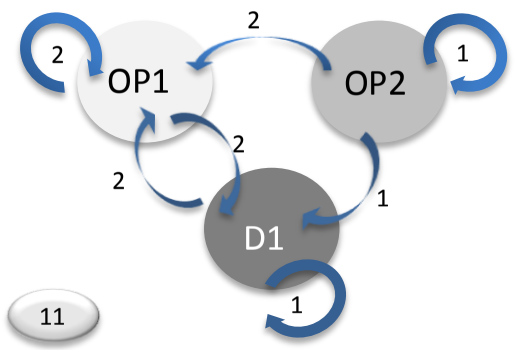
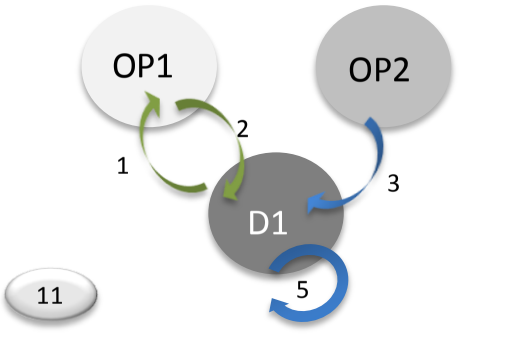
The Illumination stage: Mixed group - Red group					
1. The number of the topic **2. Topic title** **3. Start of topic** **4. End of topic**	**The length of the topic Time (audio data)**	**Graphical representation of the turns** **OP1 - Older person 1** **OP2 - Older person 2** **D1 - Designer 1** **A - Assistant** **F - Facilitator**	**Creative stimuli**	**Creative blocks**	**Content of the topic (video data)**
Introduction					
This group was designing an electronic teacher.	Start of the stage **01:58:11** 1 min 10				
Instructions			S M S WS		F put magic box on the table. OP1 opened the box and with OP2 were looking what was inside. OP1 and D1 were exploring materials from box. OP1 answered the phone. Participants were exploring materials and arranging them on the table. OP1 was reading work sheets. F was explaining worksheets.

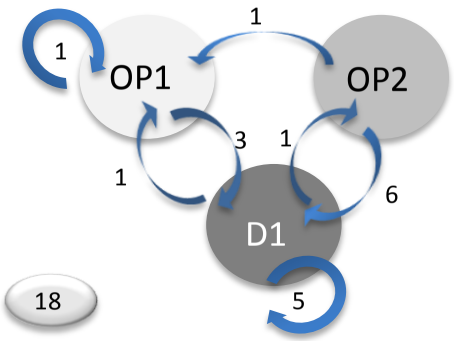
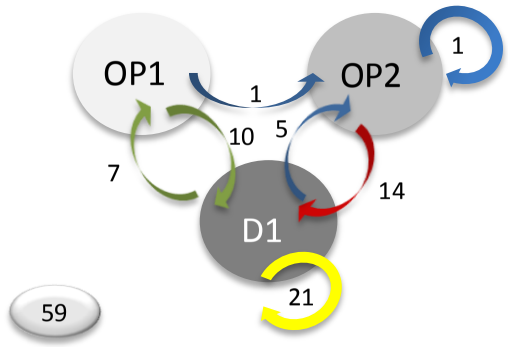
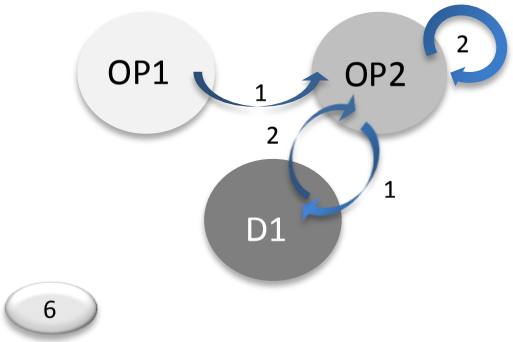
TOPIC 1 **Designing an electronic teacher they were discussing what they will do.** **Start of topic:** D1 started with the question: "What will the device do?" **End of topic:** F was presenting an example of sketches and storyboard	**Start of topic 01:58:11** **End of topic 01:59:08**		S T S LE S WS S VDO		D started with the question *"What will the device do?"* OP2 started to talk about cartoon characters. D suggested screen for presenting information.
Interruption	**From 01:59:08 to 01:59:23**			F	F interrupted the session to show the example sketches, storyboard, models. D1 was sending text message. F was delivering instructions. OP2's phone rang.
TOPIC 2 **How to present information on the device (discussion about the screen) at the end decided on a touch screen** **Start of topic:** D1 started with the suggestion: "I liked the idea of not having screen, but using TV." **End of topic:** They changed the topic; D1 was presenting his iPhone to OP1 and OP2	**Start of topic 01:59:23** **End of topic 02:00:30**		S T S VDO S CO		D1 liked the idea of not having screen, but use TV, OP2 was suggesting cameras, TV screens, projecting, discussing voice option.
TOPIC 3 **D1 presenting how his iPhone works** **Start of topic:** D1 was presenting how his iPhone works **End of topic:** Change the topic; D1 was presenting his iPhone to OP1 and OP2	**Start of topic 02:00:32** **End of topic 02:01:20**		S T		D1 was explaining to both older persons how the iPhone works.

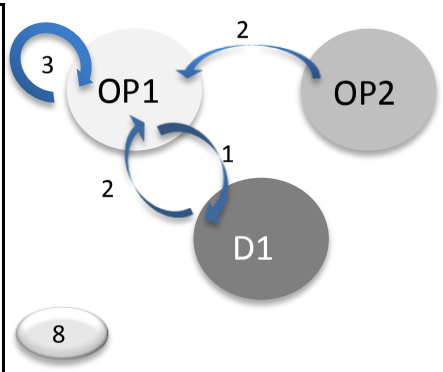
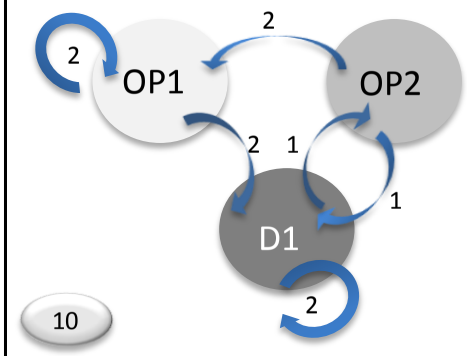
TOPIC 4 **Discussion on different options how to present data** **Start of topic:** D1 based on iPhone suggested touch screen **End of topic:** They changed the topic of conversation; they started to talked about speakers	**Start of topic** **02:01:20** **End of topic** **02:05:15**		S T S CO S LE S DI S VDO		OP2 was drawing on post note. D1 suggested interactive table, a TV. OP2 was drawing. D was suggesting different possible options that were available on the market. D1 was presenting different possibilities of TV. OP2 was drawing and listening. OP2 said that the device did not need to be that basic. OP1 and OP2 were suggesting different possibilities. D1 draw touch screen. 
TOPIC 5 **Discussion on audio speakers** **Start of topic:** OP2 started to talk about speakers **End of topic:** D1 started to discuss about form of device	**Start of topic** **02:05:15** **End of topic** **02:06:08**		S LE S T S VDO		D asked:" *Do we need speakers?*" OP2 said that not everyone want to talk to device, everyone is different. OP2 suggested different ideas.

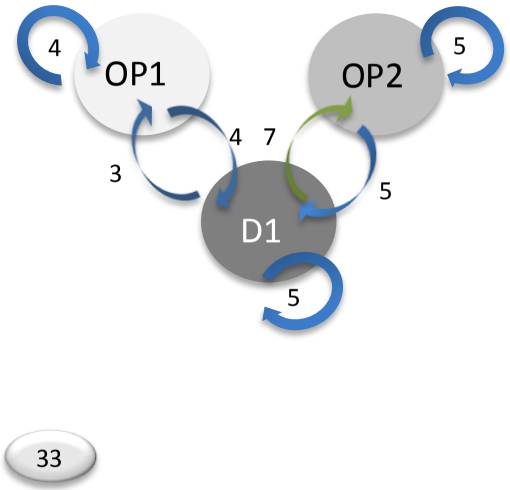
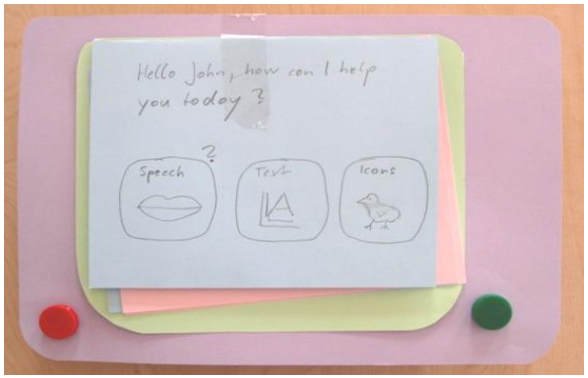
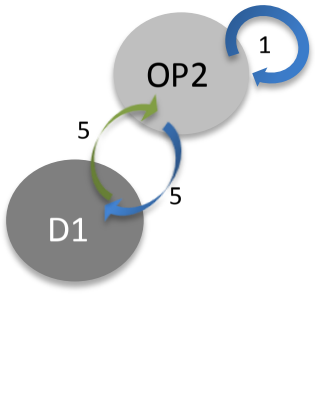
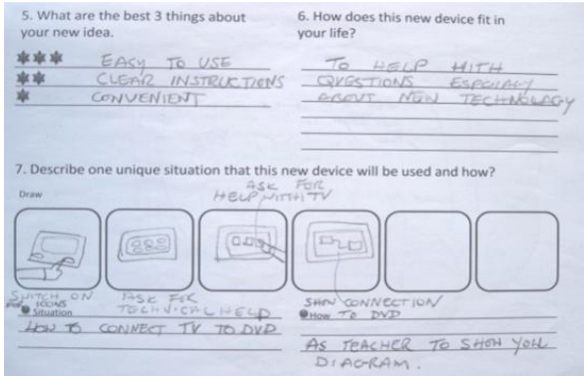
TOPIC 6 **Discussion on dimensions, shape, form, portable of the device** **Start of topic:** D1 stated to discuss about the form of device **End of topic:** F interrupted the process with instructions	**Start of topic 02:06:08** **End of topic '02:08:22**		S T S M S DI S WS		D1 took a paper and started showed the size of device, showing where speakers could be , how thick it will be, where will buttons b. OP1 and OP2 were looking for suitable materials. D1 was writing on the worksheets, what device will look like. 
Interruption	**From 02:08:19 to 02:08:32**			F	F interrupted the process with instructions.
TOPIC 7 **Build the model** **Start of topic:** D1 suggested another idea about key board **End of topic:** They started to build the model	**Start of topic 02:08:32** **End of topic 02:11:38**		S M S CO S T S DI		OP2 took a paper and start showing what to do and showing where the buttons will be. D1 started discussion on interaction. D was drawing device with buttons and touch screen. 

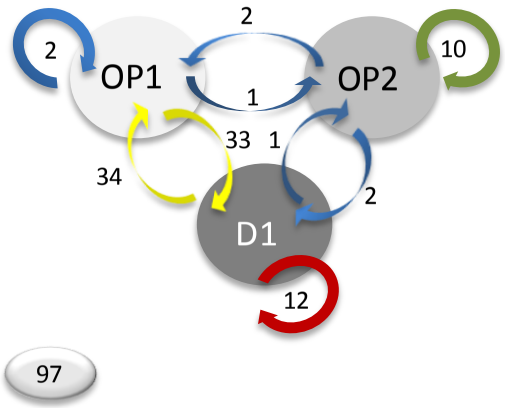
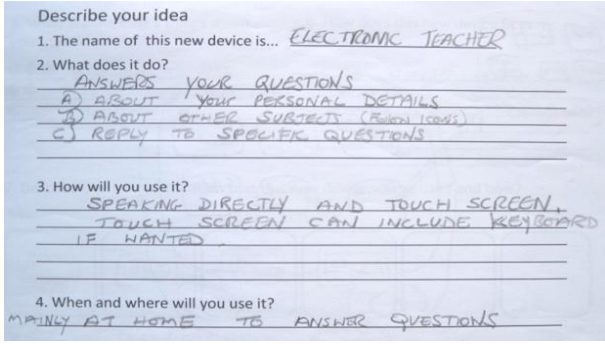
TOPIC 8 **Discussion on interaction with the device 1** **Start of topic:** D1 asked what the interface of the device will be like **End of topic:** D1 asked what the interaction with the device will be?	**Start of topic** **02:11:38** **End of topic** **02:14:10**		S T S CI		D1 asked further: *"What the interaction with the device will be?"* They discussed about different buttons.
TOPIC 9 **Discussion on interaction with the device 2** **Start of topic:** D1 asked what the interaction with device will be? **End of topic:** OP2 suggested additional icons - features of device	**Start of topic** **02:11:38** **End of topic** **02:15:35**		S LE S DI		OP2 was saying: *"Dear John. Hello, how are you?"* D1 was drawing. OP2 said: *"No, no we need to put icons".* 

TOPIC 10 **Discussion on interaction with the device 3** **Start of topic:** OP2 suggested additional icons (features of device) **End of topic:** OP2 started to talk about the key board	**Start of topic** **02:15:35** **End of topic** **02:20:00**		S M S CI S CO S VDO S T S LE		OP2 gave some suggestions about interactions and icons should look like: history, English history, battles. When the screen changes will there be another step? Confrontation between OP2 and D1. OP1 was continuing with delivering examples. D1 summarized what they decided. OP2 was smiling.
TOPIC 11 **Discussion on key board and icons** **Start of topic:** D1 suggested additional icons - features of device **End of topic:** OP2 was developing interaction with the device further	**Start of topic** **02:20:00** **End of topic** **02:20:40**		S CO S VDO S T S DI S M		OP1 and D1 were discussing use of keyboard and icons.
TOPIC 12 **D1 presenting his first idea of possible interaction with the device** **Start of topic:** D1 suggested first idea for interaction **End of topic:** D1 suggested second idea for interaction	**Start of topic** **02:20:49** **End of topic** **02:22:00**		S M S DI		D1 started developing another screen. D1 was drawing and showing with his fingers how you will use the device.

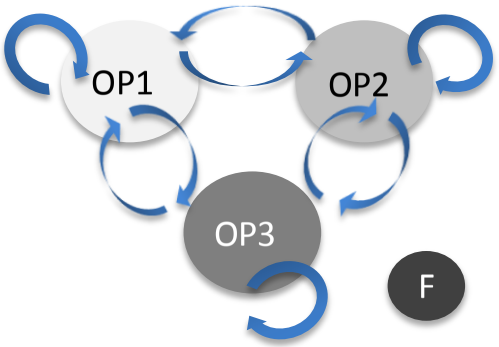
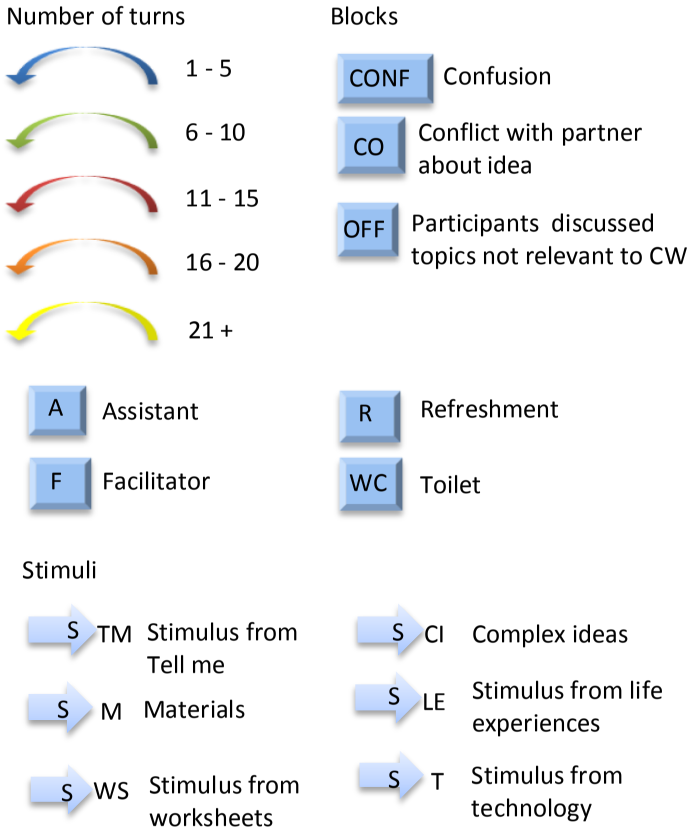
TOPIC 13 **D1 presenting second idea of possible interaction with the device** **Start of topic:** D1 suggested second idea for interaction with device **End of topic:** D1 wanted to demonstrate practical use of device	**Start of topic** **02:22:00** **End of topic** **02:23:14**		S VDO S CI S DI S M S T		D was drawing another part. OP1 and OP2 were giving comments on interface, features, technical issues. D1 was explaining what needed to be on interface. All three were laughing.
TOPIC 14 **D1 suggested to develop interaction with the device further** **Start of topic:** D1 asked what the next action will be **End of topic:** D1 was demonstrating how the device will work	**Start of topic** **'02:23:23** **End of topic** **'02:27:57**		S DI S CI S VDO S CO S T		D1 asked:" *What could be the next stage?*" OP1 and OP2 were adding their comments, TV, entertaining. D was drawing future interface and showing with his hands how user will be able to use the interface.
TOPIC 15 **D1 was demonstrating how the device will work** **Start of topic:** D1 was demonstrating how the device will work **End of topic:** OP1 started to tell her experience with the "computer centre"	**Start of topic** **02:27:57** **End of topic** **02:28:55**		S VDO		OP1 tried to show the interaction with the device.

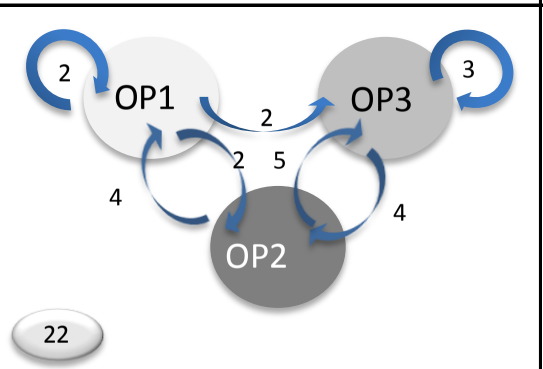
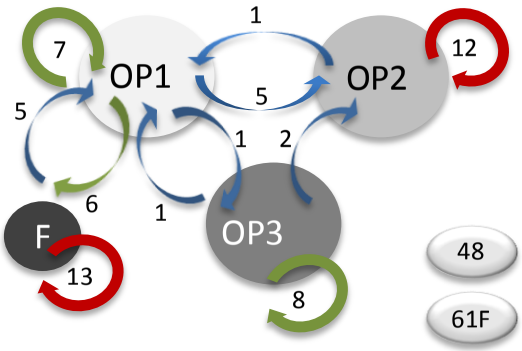
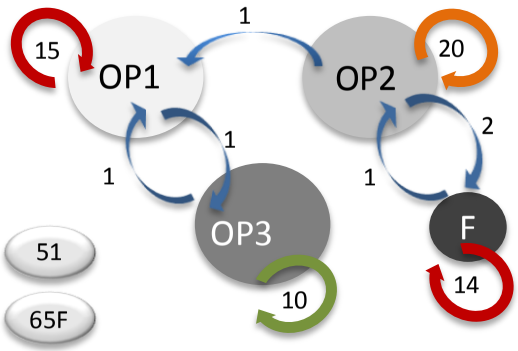
TOPIC 16 **OP1 related her personal experience** **Start of topic:** OP1 started to tell experience **End of topic:** D1 started further discussion on interaction of device	**Start of topic 02:28:55** **End of topic 02:29:38**		S LE S VDO		OP1 told the experience of getting help in a computer centre.
TOPIC 17 **Further discussion on interaction 1** **Start of topic:** D1 started further discussion on interaction of device **End of topic:** F interrupted flow with instruction - she remained participants to start to build a prototype	**Start of topic 02:29:28** **End of topic 02:30:20**		S M		D1 was developing interaction further. OP2 said that the less buttons better the device will be. OP2 started to have look at materials on the table.
Interruption	**From '02:30:20 to '02:30:34**			F	F was giving instructions - 20 min left. OP1 added the last comment on the interface.

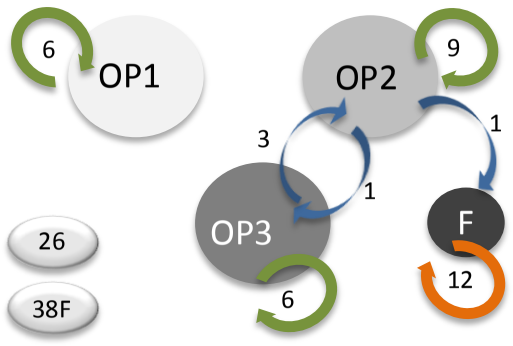
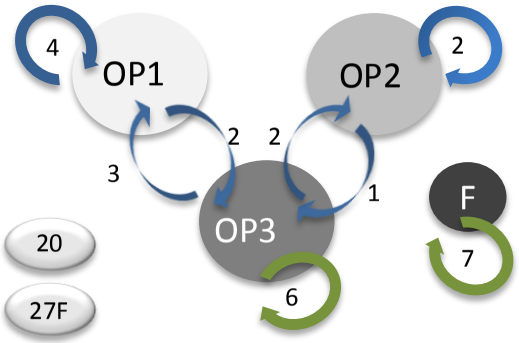
TOPIC 18 **Further discussion on interaction 2** **Start of topic:** D1 started further discussion on interaction of device **End of topic:** Working on a prototype quietly	**Start of topic 02:30:34** **End of topic 02:33:16**		S M S CO S VDO S T		OP1 started to build a model. D1 and OP1 were continuing with discussion on interaction. OP2 was exploring materials and building a prototype (laughing). OP2 was proposing base for the model. D1 was working on a screen and OP2 on the buttons. 
Silence	**From 02:33:16 to 02:40:20**				All three participants were working quietly on a prototype. They were talking issues related to the model. Silence between the statements.
TOPIC 19 **Further discussion on interaction 2** **Start of topic:** OP2 asked how the device will actually interact **End of topic:** F interrupted with delivering instructions on worksheets	**Start of topic 02:40:18** **End of topic 02:41:25**		S VDO		D1 and OP2 were discussing how the device will actually interact. 
Interruption	**From 02:41:25 to 02:42:10**			F	F was giving instructions on work sheets.

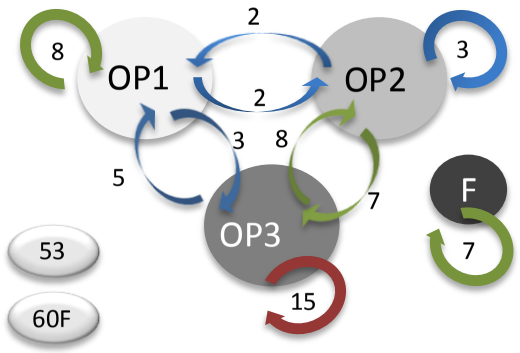
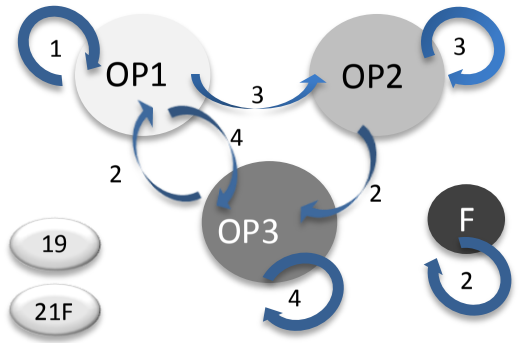
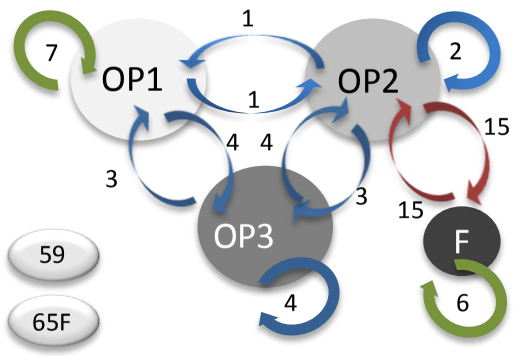
TOPIC 20 **Further discussion on interaction 3 and working on worksheets** **Start of topic:** D1 and OP1 discussed interaction of the device **End of topic:** F interrupted with delivering of information	**Start of topic** **02:42:10** **End of topic** **02:50:59**		S VDO S LE S WS S CO	CONF	D1 and OP1 discussed interaction of the device. OP2 was working on worksheets.  Describe your idea 1. The name of this new device is... ELECTRONIC TEACHER 2. What does it do? ANSWERS YOUR QUESTIONS A) ABOUT YOUR PERSONAL DETAILS B) ABOUT OTHER SUBJECTS (FROM ICONS) C) REPLY TO SPECIFIC QUESTIONS 3. How will you use it? SPEAKING DIRECTLY AND TOUCH SCREEN. TOUCH SCREEN CAN INCLUDE KEYBOARD IF WANTED. 4. When and where will you use it? MAINLY AT HOME TO ANSWER QUESTIONS
Results		491		F	F finished the creative workshop.

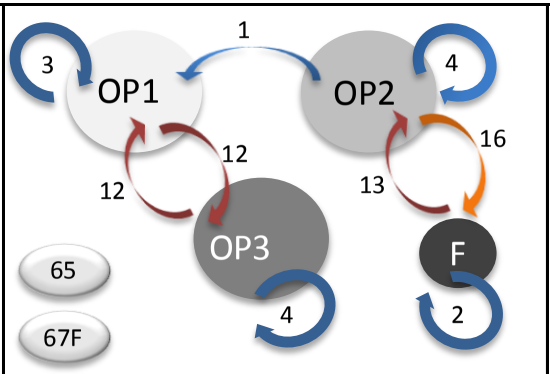
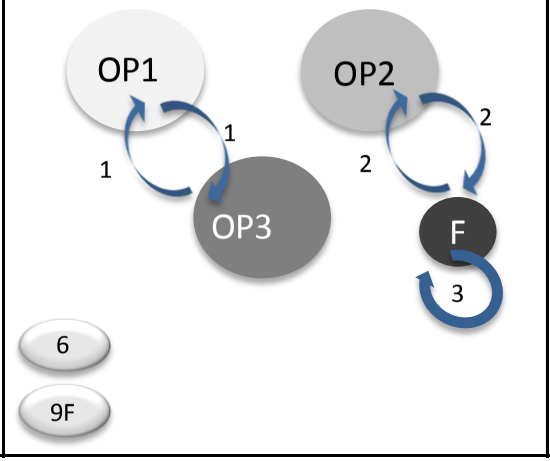
15.5 Older people - Yellow group

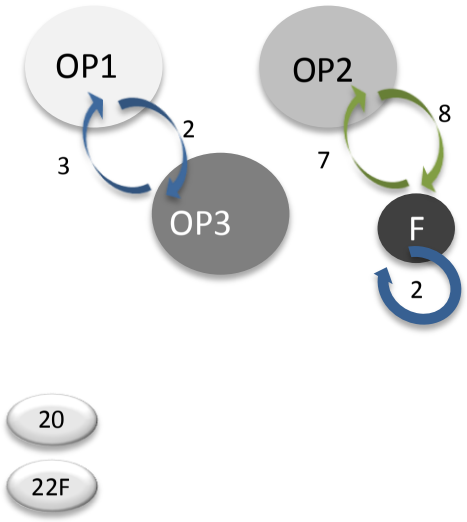
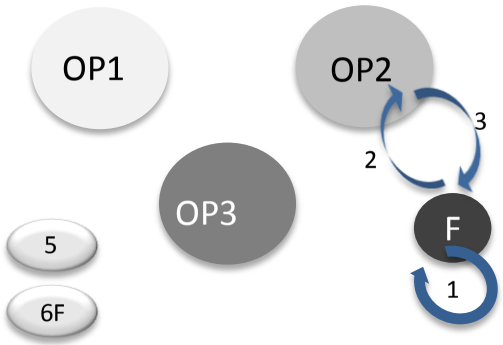
The Illumination stage: Older - Yellow group					
1. The number of the topic **2. Topic title** **3. Start of topic** **4. End of topic**	**The length of the topic Time (audio data)**	**Graphical representation of the turns** **OP1 - Older person 1** **OP2 - Older person 2** **OP3 - Older person 3** **A - Assistant** **F - Facilitator**	**Creative stimuli**	**Creative blocks**	**Content of the topic (video data)**
Introduction					
This group was designing a navigation device used in a car.	start of the illumination stage **05:12** 1 min 10				
Instructions	**from 05:12 to 07:55**			CONF	F put "Magic boxes" on the table and explained what was necessary to do. There was a trouble to find cards with winning idea. After 5 minutes of searching the cards were found in OP3's books, which were on the table.

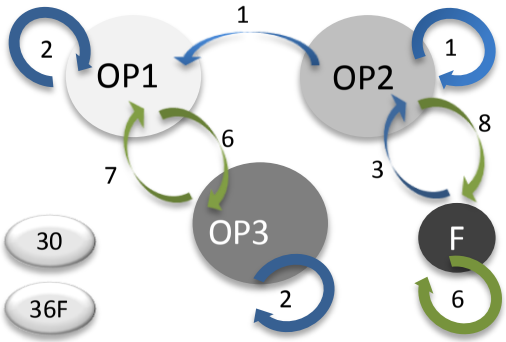
Instructions	**from 07:55 to 09:25**			CONF	F try to explain once again the instructions - what was necessary to do. OP3 was looking for a pen. OP1 and OP2 started to have a look at materials. F was explaining instructions and worksheets. OP3 put glasses on and started to have look at work sheets.
TOPIC 1 **Exploring the content of the magic box** **Start of topic:** OP2 started to talk about the materials that could be used for a model **End of topic:** F came to give additional information	**start of topic 09:25** **end of topic 10:57**		S M	A	Participants started to have a look at what was in the "Magic box". OP1 and OP2 were exploring how to use materials at building a paper prototype. OP3 was getting distracted by the A who was taking photo. OP3 was observing OP1 and OP2.
TOPIC 2 **Facilitator stimulated the group** **Start of topic:** OP2 started to talk about the materials that could be used for a model **End of topic:** F became a part of the group and asked the group what the device will do (in the car)?	**start of topic 10:57** **end of topic 15:14**		S LE S T	F UI CONF CO	F tried to explain instructions about what was necessary to do: to build a device which will help you in the car, for example with navigation (e.g. Tom Tom, GPRS). OP3 suggested an idea. *"How can this device help you in the car?"* asked F. OP1 was discussing with F. OP1 was sharing ideas with F. F try to demonstrate how they needed to answer to questions. F became a moderator in the group. OP3 was completely confused about what he was required to write on the worksheets. The participants started to work independently when facilitator did not come back. OP2 had conflict about her idea with OP1.
TOPIC 3 **What will be the purpose of the device?** **Start of topic:** F became a part of the group and asked the group what the device will do (in the car)? **End of topic:** F asked new question what will the device look like?	**start of topic 15:14** **end of topic 20:20**		S LE S T S CI S WS	CO R	F came to help the group with the worksheets, which all they agreed. F asked the group: *"What the device will do (in the car)?"* OP1 suggested a Tom Tom device. OP1 left the group to drink something. They disagreed about their ideas, however they developed complex ideas.

TOPIC 4 **Discussion about the position of the device in the car** **Start of topic:** F asked what will the device look like? **End of topic:** F encouraged participants to start to build a model	**start of topic 20:20** **end of topic 23:11**		S LE S T S WS	CONF CO	F was helping with additional questions: "*What will be the shape of device? Where will the device be positioned in the car?*" There was confusion what they needed to build. F suggested to build the device with use of materials from the "Magic box". They showed the Creative card as size of the device. F attached the card on the working sheets. OP2 and OP3 they misunderstood each other.
Interruption	**from 23:11 to 23:45**		S M		F suggested to participants to use the materials from the "Magic box", to build the device. Participants started to have look materials.
TOPIC 5 **Building the model - car 1** **Start of topic:** Participants started to build a model - F suggested them to build the model **End of topic:** OP3 started to talk to F about blue tag	**start of topic 23:45** **end of topic 25:25**		S T S WS S M		They started to built a model. OP3 was talking to F. A came to ask for information. F asked where will the device will be positioned and what the size of device will be. F was writing on the worksheets.
Off topic	**from 25:25 to 27:48**			OFF A	OP2 started to talk to about blue tag with F. A came to asked for the scissor. All three participants were working on a paper prototype.

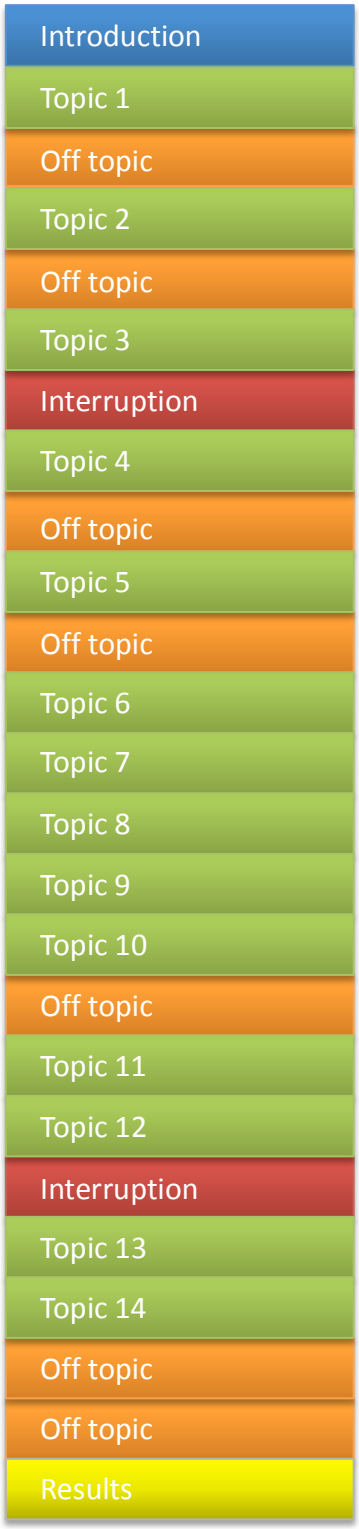
TOPIC 6 **Building a model - car 2** **Start of topic:** OP1 and OP2 were discussing about the paper prototype **End of topic:** F asked: Where will the device be in the car?	**start of topic** **27:48** **end of topic** **31:10**		S M S T	CO	All three participants were working on a paper prototype and discussing about it. F suggested to OP3 to show what would be the size of the actual screen of the device. They disagreed about the presentation of the paper prototype.
TOPIC 7 **The position of device in the car** **Start of topic:** F asked: Where will the device be in the car? **End of topic:** F asked: "what will the device look like?"	**start of topic** **31:10** **end of topic** **32:11**		S M S T S WS	CO T	F asked:" *Where will the device be in the car?"* Conflict among the participants as to where the device will be based in the car. OP2 was not familiar with the Tom Tom device. They had disagreement about the position of the device in the car.
TOPIC 8 **Design of the device** **Start of topic:** F asked: "What will the device look like?" **End of topic:** F asked: "How will people use the device?"	**start of topic** **32:11** **end of topic** **38:15**		S M S T S WS		F tried to stimulate participants to design actual device: *"What will this device look like? What will be the size of the device?"*

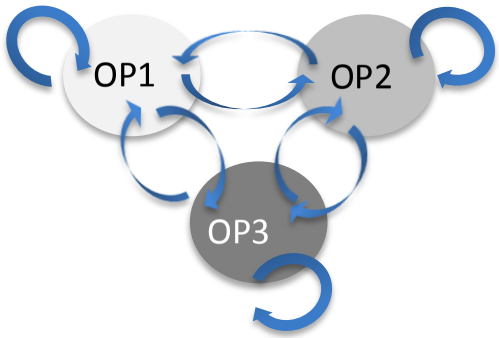
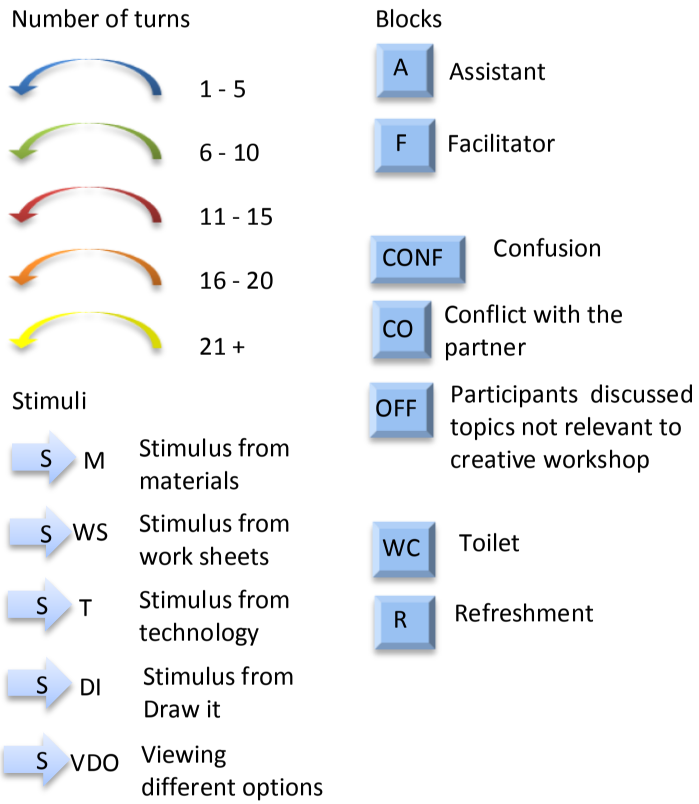
TOPIC 9 **How the device will be used** **Start of topic:** F asked: "How will people used the device?" **End of topic:** F asked: "Where and when this device will be used?"	**start of topic** **38:15** **end of topic** **43:20**		S M S T S WS		F asked further:*"How will people use the device? Will the device have any buttons? What will be the interaction with it?"* They showed with their hands how the device will look like and then they built a simple model. OP3 was drawing the screen of the device. OP1 and OP2 tried to build the model; they had some problems. OP3 was showing to F the design of the monitor.
TOPIC 10 **Where the device will be used** **Start of topic:** F asked: "Where and when will the device be used?" **End of topic:** F asked: "What will the 3 features of the device be?"	**start of topic** **43:20** **end of topic** **44:00**		S M S WS		F tried to answer questions in the work sheets. F asked OP3: "Where and when the device will be used?" OP1 and OP2 were finalizing the model.

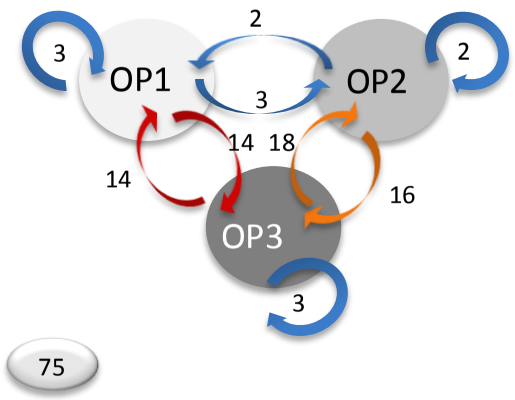
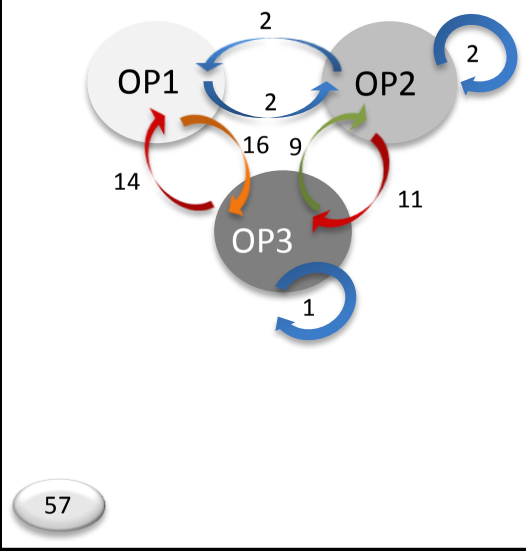
TOPIC 11 **Three best features of the device** **Start of topic:** F asked OP3: What will 3 features of the device be? **End of topic:** F left the table as to give the advice to next group	**start of topic 44:00** **end of topic 46:22**		S LE S M S TM		F asked OP3: "*What will 3 features of the device be?*" OP1 and OP2 were finalizing the model.
Interruption	**from 46:22 to 46:53**			F	F left the group for a moment, since the other group finished their job.
TOPIC 12 **How the device will fit in someone's life** **Start of topic:** F asked: How will the device help you in your life? **End of topic:** F asked: What will be the unique situation where the device will be used	**start of topic 46:53** **end of topic 47:22**		S M S WS		F was writing on the work sheets. F asked: *"How will this device help you in your life".* OP1 was describing to A the paper prototype. OP1 and OP2 were discussing and finalizing the model .

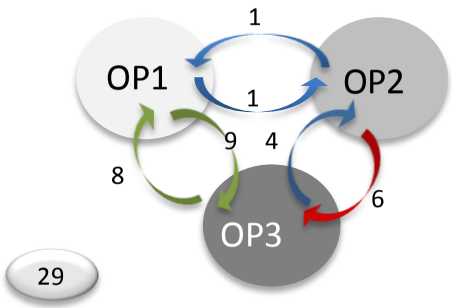
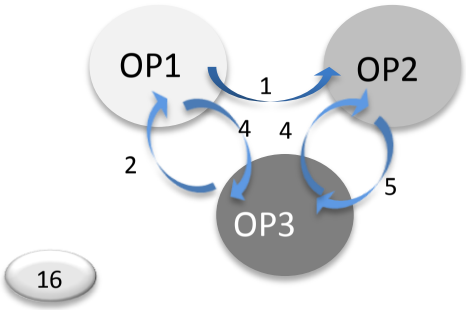
TOPIC 13 **Situation where the device will be used** **Start of topic:** F asked: In what unique situation where the device will be used. **End of topic:** F checked what was situation with the model	**start of topic 47:22** **end of topic 50:00**		S M S LE S WS	CONF	F asked: "*In what unique situation the device will be used?*" OP3 was telling to F where the device can be use. OP1 left the group to collect some cups to use them to finish the paper prototype.
Results	**from 50:00 to 54:34**	424 491F		F WC A	Group was finalizing their model. F told them that they needed to think about how they will present their model. OP3 was talking to other members. A was taking photos and talking to participants. F went to the toilet.

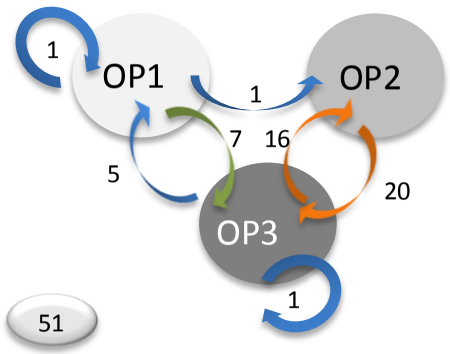
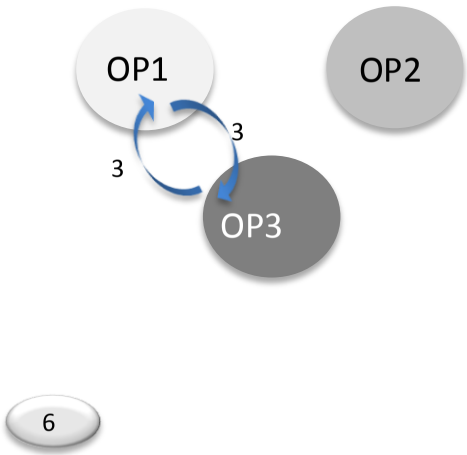
15.6 Older people - Red group

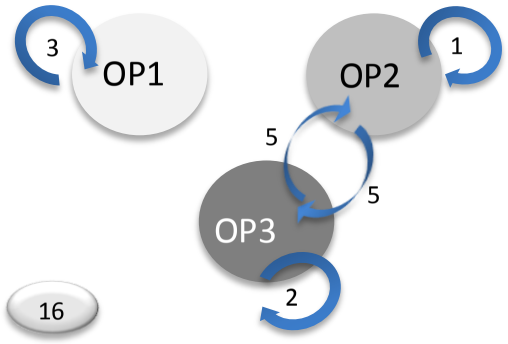
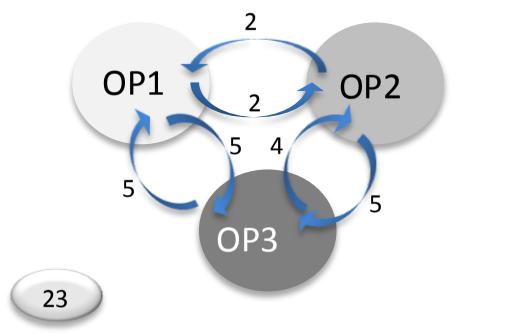
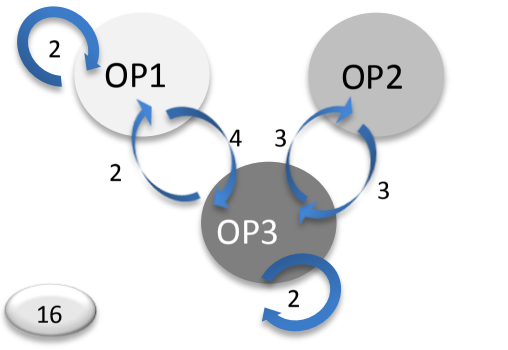


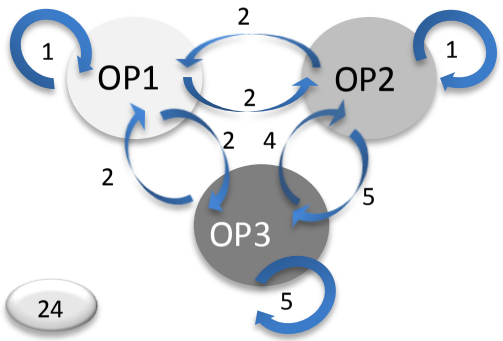
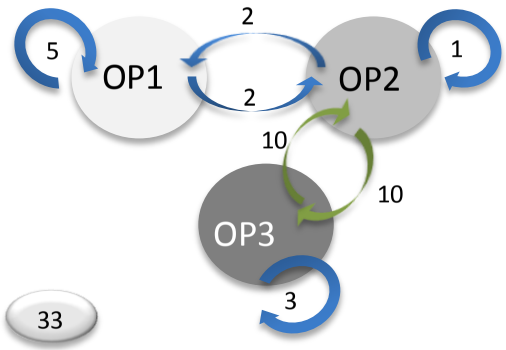
The Illumination stage: Older people - Red group					
1. The number of the topic **2. Topic title** **3. Start of topic** **4. End of topic**	**The length of the topic Time (audio data)**	**Graphical representation of the turns** **OP1 - Older person 1** **OP2 - Older person 2** **OP3 - Older person 3** **A - Assistant** **F - Facilitator**	**Creative stimuli**	**Creative blocks**	**Content of the topic (video data)**
Introduction					
The group was designing an massage chair called "Lynosit".	Start of the stage 05:12 1 min 10				

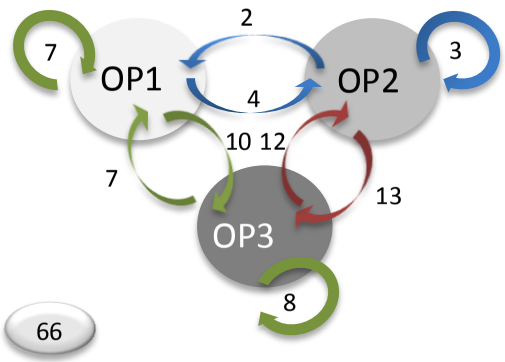
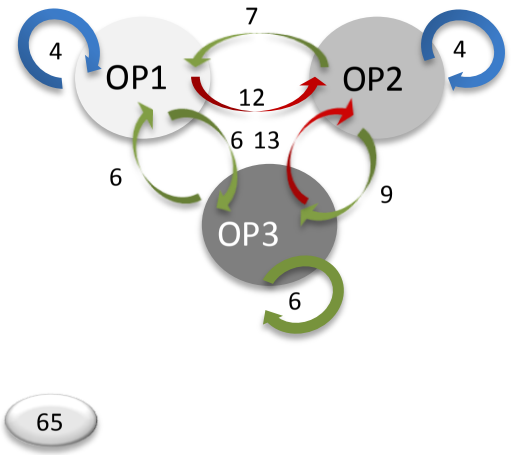
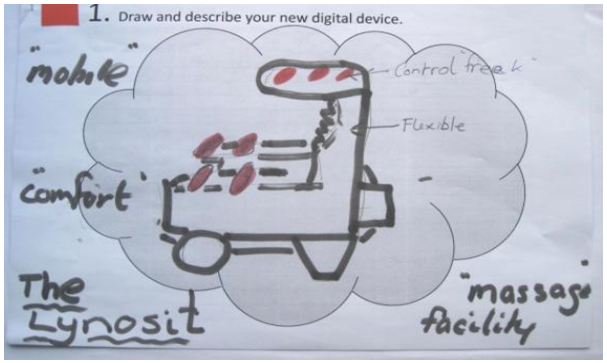
TOPIC 1 **Exploring materials in the "Magic box"** **Start of topic:** F gave participants "Magic box" and worksheets **End of topic:** OP3 started to talk to F who passed by the group.	**Start of topic 05:12** **End of topic 09:35**		S M	A CONF CO F	F gave participants magic box. First they were looking what was inside, laughing, they were not sure if they want to do it or not. OP1 was looked worksheets. OP2 and OP3 were exploring materials in the "Magic box" not sure what they suppose to do. OP3 mentioned collaborative design. A was helping with the type to OP2. A was taking photos. Conflict between OP2 and OP3. OP2 and OP3 built a model on their own.
Off topic **F was explaining worksheets and what were the questions.**	**From 09:35 to 11:10**			F OFF R	During the time when facilitator was explaining worksheets the other two participants were discussing issues not related to creative workshop - philosophy club, a TV series on at the moment. OP2 and OP3 changed topic of the conversation and they did not listen to the facilitator who was explaining instructions. OP3 drank a coffee.
TOPIC 2 **Building a model 1** **Start of topic:** OP2 started to talk about the materials that could be used for a model **End of topic:** OP1 changed the topic of conversation	**Start of topic 11:10** **End of topic 15:18**		S M S T	A R	OP2 and OP3 were working on prototype, OP1 was observing. OP2 and OP3 were really enjoying building prototype. All they were exploring materials and discussing which materials can present certain parts in their paper prototype - chair. OP2 was really engaged; he was cutting carton tube with his own pocket knife, OP3 was exploring whether they can use a certain material for a head set. OP3 drank a coffee. Even OP1 was getting engaged (she added certain materials to the paper prototype). Everyone was doing something. They were trying to use different materials, to make chair moving. All three were really engaged - first time they were working as a group. All three they were working together and trying to help: fixing chair on the base. A took photos. They tried to use different materials to fix their chair (blue tag, pins, tape). OP1 added arms to the prototype. All three participants were engaged: one was holding parts that they wanted to attach, the other had tape, third person was holding the model. They were happy, laughing and really engaged. *"This brings the child out of you for a couple of hours"* said OP3.

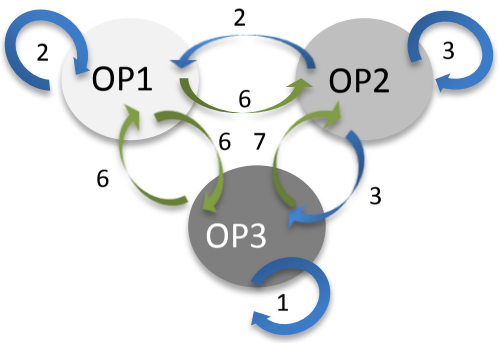
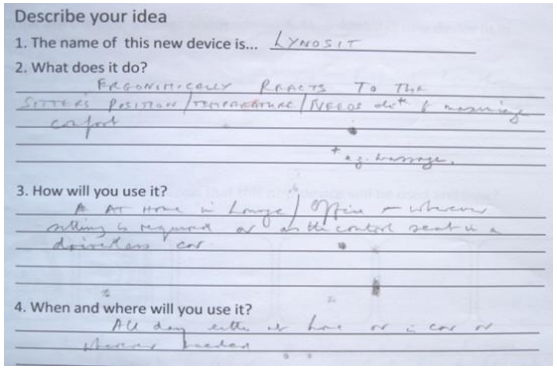
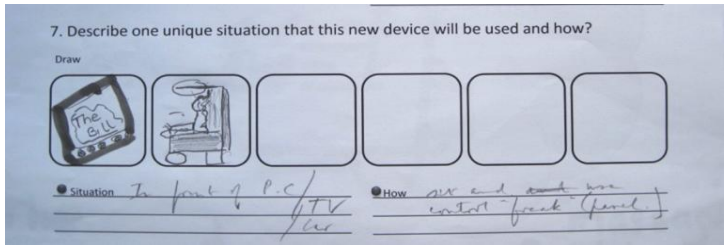
Off topic **Discussing their primary teacher experiences**	**From 15:18** **to 15:41**			OFF	OP1 changed the topic of conversation: they discussed how pupils in were unable to build the wheels.
TOPIC 3 **Building a model 2** **Start of topic:** OP3 and OP2 were continuing building a model **End of topic:** A came	**Start of topic** **15:41** **End of topic** **17:23**		S M		They were discussing how to find a solution that they had alongside building a model. All three of them were really engaged. OP3 said: "Look collaborative action". They were continuing to work on a model with adding additional parts.
Interruption	**From 17:15** **to 17:37**			A	A came to took photos. OP2 and OP3 try to fix upper part. OP1 was adding buttons. OP3 showed what they did to A and OP3 said to A*: "Look collaborative action TARARARA."*
TOPIC 4 **Building a model 3** **Start of topic:** OP3 and OP2 were continuing building a model **End of topic:** OP1 told the joke about the pins	**Start of topic** **17:37** **End of topic** **18:23**		S M	A WC	OP3 wished to have stickers in the shape of stars. A brought stickers and pins. OP2 wanted to add computer a hard disc control. OP2 left the room; he went for a toilet.
Off topic **OP1 told the joke about the pins**	**From 18:23** **to 18:32**			OFF	They were laughing OP1's joke.

TOPIC 5 **Building a model 3** **Start of topic:** OP1 was giving instructions how to fixed prototype with pins. **End of topic:** OP3 changed the topic; she started to tell OP3 what was on TV the night before	**Start of topic 18:32** **End of topic 22:28**		S M		Participants were discussing how to fix the chair with the pins. OP2 was suggesting to use sellotape. OP2 and OP3 were fixing a model with the sellotape. OP3 said that she loved the model: *"It is like a Christmas gift"*. OP1 and OP3 were laughing.
Off topic	**From 22:28 to 23:30**			OFF	OP1 and OP3 were discussing about the TV series - Young Apprentices.
TOPIC 6 **Building a model 4** **Start of topic:** OP3 was getting back to the model and said something about the pins. **End of topic:** Assistant came to take a photo. OP3 started to talk to her.	**Start of topic 23:30** **End of topic 23:42**		S M	A	OP1 and OP3 were working on their own. A was taking photos. A gave participants some additional items from creative box.

TOPIC 7 **Building a model 5 (control unit)** **Start of topic:** OP3 started to talk about headset. **End of topic:** Assistant started to talk to participants.	**Start of topic** **23:42** **End of topic** **24:23**		S M S VDO	A	All three of them were discussing additional features, for example control unit. They were playing with the model to see how it works. They were discussing about controllers; all three participants were engaged. A came to take a photo and she made a comments on prototype.
TOPIC 8 **Building a model 6 (hard disc control)** **Start of topic:** OP2 started to talk about hard disc that paper prototype was supposed to have. **End of topic:** A brought stickers in the shape of stars.	**Start of topic** **24:23** **End of topic** **26:10**		S M S VDO	A	They were discussing about how to fix the model with pins. OP1 said that: *"That was the way how the art and creativity was coming out."* They were laughing and really enjoying themselves. A was taking photos and gave them some stickers that they would be able to use in building the model.
TOPIC 9 **Building a model 7 (humanoid the massage chair)** **Start of topic:** OP1 asked where the stars will be? **End of topic:** OP2 and OP3 changed the topic of conversation; humanoid the model and add hard disc	**Start of topic** **26:10** **End of topic** **26:57**		S M		OP3 was summarising chairs features. A gave participants pencils, but she did not disturbed the creative process.

TOPIC 10 **Building a model 8 (hard disc)** **Start of topic:** OP2 and OP3 changed the topic of conversation; humanoid and added hard disc **End of topic:** OP2 left the room to go to toilet.	**Start of topic 26:57** **End of topic 28:18**		S M	WC	OP2 and OP3 were working on a model. Suddenly OP2 decided to leave; he went to a toilet.
Off topic **OP3 changed the topic of conversation**	**From 28:18 to 29:42**			OFF A WC	OP3 changed the topic of conversation. A brought some additional materials and OP1 came from the toilet.
TOPIC 11 **Building a model 9 (hard disc)** **Start of topic:** OP3 started to talk about the model **End of topic:** OP2 changed the topic of conversation - chair could be used in a car	**Start of topic 29:42** **End of topic 31:55**		S M		All three were working on a paper prototype, which they tried to finish.

TOPIC 12 **Discussing that chair has to be a part of the car** **Start of topic:** OP2 changed the topic of conversation: chair could be used in a car **End of topic:** A was coming to take photos and participants started to talk to him.	**Start of topic 31:55** **End of topic 35:57**		S M	A	OP2 said that they sort of finished. A gave participants glue.
Interruption **F was explaining worksheets and questions there.**	**From 35:57 to 36:44**			F	They were discussing how to improve model. F asked them whether they answered the questions on worksheets?
TOPIC 13 **Working on worksheets 1** **Start of topic:** OP2 changed the topic of conversation; the name of the chair **End of topic:** OP1 started to design label for the chair (OP2 was still working on worksheets).	**Start of topic 36:44** **End of topic 40:15**		S WS S M S DI		They started to discuss the name of the chair; OP2 started to write-up the worksheets. OP1 and OP2 were decorating the paper prototype. OP1 was getting tired; OP3 was finalising the prototype. 

TOPIC 14 **Working on work sheets 2** **Start of topic:** OP1 started to design label for the chair **End of topic:** They changed the topic, OP2 asked OP1 to draw a storyboard	**Start of topic 40:12** **End of topic 42:10**	 36	S WS	CO CONF	OP1 and OP2 were discussing on questions on worksheets, OP2 was writing on worksheets. OP1 was designing card with the name. OP2 discussing where, and how people will use the chair. OP2 do not want to draw therefore OP1 continuing with drawings. OP1 was not sure about the instructions (storyboard). OP3 left the group.  Describe your idea 1. The name of this new device is... LYNOSIT 2. What does it do? 3. How will you use it? 4. When and where will you use it?
Off topic	**From 42:10 to 43:40**		S WS	CO CONF OFF A	OP1 and OP3 were arguing who will draw the storyboard. OP1 was drawing storyboard. OP2 and OP3 were waiting. They were finished. OP1 was struggling with the instructions for storyboard. They were mainly done with the model. OP1 was just finalising with the working sheets. OP1 was drawing chair. OP2 and OP3 were discussing other things. OP2 started to clean remaining material, OP3 was helping him. A took photo of the model. OP1 was finalising worksheets.  7. Describe one unique situation that this new device will be used and how? Draw Situation How
Off topic	**From 42:40 to 51:51**		S WS	A OFF	OP1 was working quietly on worksheets on her own; OP2 and OP3 were chatting about issues not related to workshop. OP2 and OP3 cleaned the table. OP1 was still working on worksheets. A took a photo of the model with the group. OP1 was still working on worksheets

Results	**From 51:51 to 53:38**	513		OFF	The group was discussing issues not related to workshop, since they were waiting for other group. OP3 talked most of the time.

16 APPENDIX 16: STUDY 3: THE ON-LINE SURVEY FOR EVALUATION OF THE CREATIVE OUTPUT

Copy of Evaluation of the 3D paper prototypes 1

1. Personal particulars

Instruction:
Please answer the following questions. Questions marked with a an asterisk (*) are required.

1. Gender

○ Female ○ Male

2. Age

○ 30 - 40 years ○ 40 - 50 years ○ 50 + years

*** 3. Using 5 to 7 keywords explain your occupation related to older people. (e.g. research, creativity, UCD process, usability, web design).**

4. How long have you been doing design/research in the area of older people?(Please mark the most appropriate answer)

○ 1 - 5 years ○ 5 - 10 years ○ 10 - 15 years

2. Instruction

1. Open the email sent by Helena Sustar (Subject: Study on involving older people as equal partners in designing digital devices), where you will find instructions about how to log in to Vimeo. Open Vimeo in a new window in your browser. Once you are logged into Vimeo insert e-mail: sustar.hell@gmail.com and password: helsus at the required places.

2. Once you are in Vimeo, go to Videos and then click on My Albums. It will appears three albums: DESIGNERS, DESIGNERS:OLDER PEOPLE and OLDER PEOPLE. Open album OLDER PEOPLE and watch video OLDER PEOPLE: Yellow group.

3. For each video, please do the following:
- click on the video to watch it
- scroll down at the bottom of the page to see photographs of the prototype that were being presented in the video
- return to SurveyMonkey to answer the two questions shown below to indicate how new, surprising or exciting the idea behind the prototype is, and how appropriate it is for use by older people
- add any additional comments you may have
- watch videos in the same order as they are page titles

Note: you will be asked the same 2 questions for each video. Questions for each video will be on the next page.

Please make sure that you will answer at the right questions after you watched the video.

3. OLDER PEOPLE: Yellow group

Copy of Evaluation of the 3D paper prototypes 1

*** 1. 1. How novel, surprising or exciting do you think this prototype is?**
1 = Not at all novel
5 = Very novel

	Not at all novel				Very novel
1	○	○	○	○	○

Comments on the appropriateness prototype for use by older people, if any:

*** 2. How appropriate do you think the presented prototype is for use by older people?**
1 = Not at all appropriate
5 = Very appropriate

	Not at all appropriate				Very appropriate
1	○	○	○	○	○

Comments on the appropriateness prototype for use by older people, if any:

4. OLDER PEOPLE: Red group

*** 1. How novel, surprising or exciting do you think this prototype is?**
1 = Not at all novel
5 = Very novel

	Not at all novel				Very novel
1	○	○	○	○	○

Comments on novelty of the prototype, if any:

*** 2. How appropriate do you think that is the presented prototype for older population?**
1 = Not at all appropriate
5 = Very appropriate

	Not at all appropriate				Very appropriate
1	○	○	○	○	○

Comments on the appropriateness prototype for use by older people, if any:

5. DESIGNERS & OLDER PEOPLE: Yellow group

Copy of Evaluation of the 3D paper prototypes 1

*** 1. How novel, surprising or exciting do you think this prototype is?**
1 = Not at all novel
5 = Very novel

	Not at all novel				Very novel
1	○	○	○	○	○

Comments on novelty of the prototype, if any:

*** 2. How appropriate do you think the presented prototype is for use by for older people?**
1 = Not at all appropriate
5 = Very appropriate

	Not at all appropriate				Very appropriate
1	○	○	○	○	○

Comments on the appropriateness prototype for use by older people, if any:

6. DESIGNERS & OLDER PEOPLE: Red group

*** 1. How novel, surprising or exciting do you think this prototype is?**
1 = Not at all novel
5 = Very novel

	Not at all novel				Very novel
1	○	○	○	○	○

Comments on novelty of the prototype, if any:

*** 2. How appropriate do you think the presented prototype is for use by for older people?**
1 = Not at all appropriate
5 = Very appropriate

	Not at all appropriate				Very appropriate
1	○	○	○	○	○

Comments on the appropriateness prototype for use by older people, if any:

7. DESIGNERS: Yellow group

Copy of Evaluation of the 3D paper prototypes 1

*** 1. How novel, surprising or exciting do you think this prototype is?**
1 = Not at all novel
5 = Very novel

	Not at all novel				Very novel
1	○	○	○	○	○

Comments on novelty of the prototype, if any:

*** 2. How appropriate do you think the presented prototype is for use by for older people?**
1 = Not at all appropriate
5 = Very appropriate

	Not at all appropriate				Very appropriate
1	○	○	○	○	○

Comments on the appropriateness prototype for use by older people, if any:

8. DESIGNERS: Red group

*** 1. How novel, surprising or exciting do you think this prototype is?**
1 = Not at all novel
5 = Very novel

	Not at all novel				Very novel
1	○	○	○	○	○

Comments on novelty of the prototype, if any:

*** 2. How appropriate do you think the presented prototype is for use by for older people?**
1 = Not at all appropriate
5 = Very appropriate

	Not at all appropriate				Very appropriate
1	○	○	○	○	○

Comments on the appropriateness prototype for use by older people, if any:

THIS IS THE END OF THE STUDY. THANK YOU FOR YOUR TIME AND FOR PARTICIPATION.

17 Appendix 17: Study 3: Experts responses on evaluating the creative output

Page: Personal particulars

1. Gender — Create Chart | Download

	Response Percent	Response Count
Female	**100.0%**	**2**
Male	0.0%	0
	answered question	**2**
	skipped question	**0**

2. Age — Create Chart | Download

	Response Percent	Response Count
30 - 40 years	**100.0%**	**2**
40 - 50 years	0.0%	0
50 + years	0.0%	0
	answered question	**2**
	skipped question	**0**

3. Using 5 to 7 keywords explain your occupation related to older people.(e.g. research, creativity, UCD process, usability, web design). — Download

	Response Count
Hide replies	2

1. reseach, inclusive design, usability, product design — Mon, Mar 29, 2010 10:05 AM — Find...
2. Accessibility and usability consultant — Wed, Mar 24, 2010 1:42 PM — Find...

answered question	**2**
skipped question	**0**

4. How long have you been doing design/research in the area of older people?(Please mark the most appropriate answer) — Create Chart | Download

	Response Percent	Response Count
1 - 5 years	**50.0%**	**1**
5 - 10 years	**50.0%**	**1**
10 - 15 years	0.0%	0
	answered question	**2**
	skipped question	**0**

Page: OLDER PEOPLE: Yellow group

1. 1. How novel, surprising or exciting do you think this prototype is? 1 = Not at all novel 5 = Very novel Create Chart Download

	Not at all novel				Very novel	Rating Average	Response Count
1	**50.0% (1)**	0.0% (0)	**50.0% (1)**	0.0% (0)	0.0% (0)	2.00	2
					Hide replies Comments on the appropriateness prototype for use by older people, if any:		2

1. It was very difficult to tell what the prototype was, I would have guessed it was a car. Practically I think this would be very difficult to implement and use. I.e. voice control. Also it would be expensive. Therefore, I would say this wasn't very useful - but it is novel.

   I think this hands on way is a good way to encourage people who may not be that technical to be creative about technology. — Fri, Apr 9, 2010 10:42 AM — Find...
2. I couldn't really gather many details of the device from the video. It seems to just be a small electric car/mobility cart with a GPS navigation system, that might also tell you when to change the gears, etc. (which an automatic, as opposed to manual, car already does implicitly). — Mon, Mar 29, 2010 10:20 AM — Find...

	answered question	2
	skipped question	0

2. How appropriate do you think the presented prototype is for use by older people? 1 = Not at all appropriate 5 = Very appropriate Create Chart Download

	Not at all appropriate				Very appropriate	Rating Average	Response Count
1	0.0% (0)	0.0% (0)	**50.0% (1)**	**50.0% (1)**	0.0% (0)	3.50	2
					Hide replies Comments on the appropriateness prototype for use by older people, if any:		2

1. Only useful with support material. — Fri, Apr 9, 2010 10:42 AM — Find...
2. There aren't really enough details given to say whether it would be suitable or not. The basic idea is suitable in the sense that electric mobility carts and navigation systems are suitable. Whether the actual device was suitable would be highly dependent on how usable it was, how the details were designed, and what specific functions (in addition to the navigation) it would do. The suggestion of telling you when to change the gears doesn't seem very helpful, as by the time it tells you it would be rather late, and you might as well have an automatic car. — Mon, Mar 29, 2010 10:20 AM — Find...

	answered question	2
	skipped question	0

Page: OLDER PEOPLE: Red group

1. How novel, surprising or exciting do you think this prototype is? 1 = Not at all novel 5 = Very novel Create Chart Download

	Not at all novel				Very novel	Rating Average	Response Count
1	0.0% (0)	**50.0% (1)**	0.0% (0)	**50.0% (1)**	0.0% (0)	3.00	2
					Hide replies Comments on novelty of the prototype, if any:		2

1. I'm not to sure what to assess it's novelty against. Fri, Apr 9, 2010 10:44 AM Find...

   I liked the smart chair idea but I wonder how different this would be from adjustable chairs on the market already and whether it would be viable to produce.

2. The main individual elements aren't that novel (massage chair, mobility cart, commode) but the combination is fairly novel and there are some interesting features (e.g. temperature controlled) Mon, Mar 29, 2010 10:30 AM Find...

	answered question	2
	skipped question	0

2. How appropriate do you think that is the presented prototype for older population? 1 = Not at all appropriate 5 = Very appropriate Create Chart Download

	Not at all appropriate				Very appropriate	Rating Average	Response Count
1	0.0% (0)	**50.0% (1)**	**50.0% (1)**	0.0% (0)	0.0% (0)	2.50	2
					Hide replies Comments on the appropriateness prototype for use by older people, if any:		2

1. Good with back up presentation, ideas. Fri, Apr 9, 2010 10:44 AM Find...
2. It would be prohibitively expensive (though not as expensive as they joke in the workshop!). Also it would discourage older people from moving around and getting necessary exercise (while not being quite suitable as a wheelchair for people who can't actually walk). The actual usability would be highly dependent on the controls, etc which aren't really described in the video. Mon, Mar 29, 2010 10:30 AM Find...

	answered question	2
	skipped question	0

Page: DESIGNERS & OLDER PEOPLE: Yellow group

1. How novel, surprising or exciting do you think this prototype is? 1 = Not at all novel 5 = Very novel Create Chart Download

	Not at all novel				Very novel	Rating Average	Response Count
1	0.0% (0)	0.0% (0)	0.0% (0)	**100.0% (2)**	0.0% (0)	4.00	2
					Hide replies Comments on novelty of the prototype, if any:		2

1. The idea is very interesting. Fri, Apr 9, 2010 10:46 AM Find...

   I thought this idea was very appropriate and practical. I like the interface, I think something so closely modelled on an analogue calendar would stand a good chance of being useful. From a practical point of view i think it would be difficult to implement smart technologies into many people's houses.

   I can't see the prototype itself. I have looked at the photograph, this doesn't add any more to my comments. As I stated before I think the recorded conversations people have around the objects are much more important than the objects themselves.

2. The idea of an electronic calendar is not novel but combining it with spoken reminders and sensors that you can stick on equipment is interesting. Mon, Mar 29, 2010 10:50 AM Find...

	answered question	2
	skipped question	0

2. How appropriate do you think the presented prototype is for use by for older people? 1 = Not at all appropriate 5 = Very appropriate Create Chart Download

	Not at all appropriate				Very appropriate	Rating Average	Response Count
1	0.0% (0)	0.0% (0)	**50.0% (1)**	**50.0% (1)**	0.0% (0)	3.50	2
					Hide replies Comments on the appropriateness prototype for use by older people, if any:		2

1. Would be very useful if it worked properly, was accessible and affordable. might be irritating too! Fri, Apr 9, 2010 10:46 AM Find...
2. The electronic, tough-screen interaction may be a little difficult, but it will depend on the details, and they have attempted to make it very similar to a conventional calendar. This would also make it much more suited to having in your house and much more discrete. Mon, Mar 29, 2010 10:50 AM Find...

	answered question	2
	skipped question	0

Page: DESIGNERS & OLDER PEOPLE: Red group

1. How novel, surprising or exciting do you think this prototype is? 1 = Not at all novel 5 = Very novel Create Chart Download

	Not at all novel				Very novel	Rating Average	Response Count
1	0.0% (0)	**50.0% (1)**	0.0% (0)	**50.0% (1)**	0.0% (0)	3.00	2
					Hide replies Comments on novelty of the prototype, if any:		2

1. I think this is a good idea but it just a simplified version of something in existence. Fri, Apr 9, 2010 10:48 AM Find...

   Too much like the ipad to be novel, or was this session recorded before the ipad?

2. An electronic, touch-screen device mounted on a wall at home, which answers questions, particularly on how to do things. Mon, Mar 29, 2010 10:57 AM Find...

	answered question	2
	skipped question	0

2. How appropriate do you think the presented prototype is for use by for older people? 1 = Not at all appropriate 5 = Very appropriate Create Chart Download

	Not at all appropriate				Very appropriate	Rating Average	Response Count
1	0.0% (0)	0.0% (0)	0.0% (0)	**100.0% (2)**	0.0% (0)	4.00	2
					Hide replies Comments on the appropriateness prototype for use by older people, if any:		2

1. Useful if all practical considerations are accounted for. Not really that specific for older people Fri, Apr 9, 2010 10:48 AM Find...

   This object was useful because it was to scale. Also the video can be analysed to observe how an older user might interact with a touch screen intuitively. Again the video / audio recording is very important, more than the object.

2. It seems like a fairly simple device, focused on just one function, with a simple interaction. Mon, Mar 29, 2010 10:57 AM Find...

	answered question	2
	skipped question	0

Page: DESIGNERS: Yellow group

1. How novel, surprising or exciting do you think this prototype is? 1 = Not at all novel 5 = Very novel Create Chart Download

	Not at all novel				Very novel	Rating Average	Response Count
1	0.0% (0)	0.0% (0)	0.0% (0)	**100.0% (2)**	0.0% (0)	4.00	2
					Hide replies Comments on novelty of the prototype, if any:		2

1. Very useful, it's integrated into the home. Many needs of older people have been considered. Fri, Apr 9, 2010 10:48 AM Find...
2. Digital photo frame that also does communication of photos and allows phone calls. Mon, Mar 29, 2010 11:06 AM Find...

	answered question	2
	skipped question	0

2. How appropriate do you think the presented prototype is for use by for older people? 1 = Not at all appropriate 5 = Very appropriate Create Chart Download

	Not at all appropriate				Very appropriate	Rating Average	Response Count
1	0.0% (0)	0.0% (0)	**50.0% (1)**	**50.0% (1)**	0.0% (0)	3.50	2
					Hide replies Comments on the appropriateness prototype for use by older people, if any:		2

1. Very appropriate, older people are getting used to having computers and TVs in the home and the calendar metaphor would make it easier to understand. Fri, Apr 9, 2010 10:48 AM Find...
2. The basic interaction seems quite simple but it's not clear, for example, how you choose who you want to call. Would this have to be through a menu system? These can be quite difficult for older people.
Note that the audio on this video was very bad and I found it hard to figure out what they were saying, so some of these points may actually have been addressed. Mon, Mar 29, 2010 11:06 AM Find...

	answered question	2
	skipped question	0

Page: DESIGNERS: Red group

1. How novel, surprising or exciting do you think this prototype is? 1 = Not at all novel 5 = Very novel Create Chart Download

	Not at all novel				Very novel	Rating Average	Response Count
1	0.0% (0)	0.0% (0)	**50.0% (1)**	0.0% (0)	**50.0% (1)**	4.00	2
					Hide replies Comments on novelty of the prototype, if any:		2

1. Like a super pedometer. Fri, Apr 9, 2010 10:48 AM Find...
2. The device encourages exercise and fitness. It is novel in that it registers movement of any type and can be worn on different parts of the body. You can also compare your attainment, etc with others. And it could be used to simulate activities (e.g. hiking) in a nursing home, though it is rather unclear how it would do that. There is also a doll that you can use to modify the attainment, though again this was rather unclear. Mon, Mar 29, 2010 11:19 AM Find...

	answered question	2
	skipped question	0

2. How appropriate do you think the presented prototype is for use by for older people? 1 = Not at all appropriate 5 = Very appropriate Create Chart Download

	Not at all appropriate				Very appropriate	Rating Average	Response Count
1	**50.0% (1)**	0.0% (0)	**50.0% (1)**	0.0% (0)	0.0% (0)	2.00	2
					Hide replies Comments on the appropriateness prototype for use by older people, if any:		2

1. Not too sure whether people would want to use it. I suspect most pedometers don't get used. Many older people are isolated and don't have ready access to social situations were this aspect of the device could become useful. Fri, Apr 9, 2010 10:48 AM Find...
2. The basic idea is good - it is good to encourage fitness in older people. However, the interfaces seemed very complicated, e.g. feedback was displayed on small screens strapped to parts of the body (which would be awkward enough with the lower arm and could be very hard with the leg!). The device could also be docked to another device at home and the interface for displaying this information seemed extremely abstract, representing the progress with beans, etc. I think this would be extremely hard for an older people to use. The device is also supposed to encourage social interaction but I didn't see how it would really help with that. You can compare your achievement with others, but it's hard to see how this would really generate new social contact, and existing social contact can probably be better encouraged in other, existing ways. Mon, Mar 29, 2010 11:19 AM Find...

	answered question	2
	skipped question	0

18 APPENDIX 18: PUBLICATIONS AND PRESENTATIONS

a.) Publications

1. Sustar, H., Jones, S. and Zaphiris, P. (2009) Older people as equal partners in designing a digital device for olders' everyday needs. Create09 conference, London, UK.
2. Sustar, H., Pfeil, U., and Zaphiris, P. (2008). Requirements Elicitation with and for Older Adults. IEEE Software Journal, Volume 25, Issue 3, Pages 16-17.
3. Zaphiris, P., Sustar, H., Pfeil, U. (2008). Inclusive Design for Older People. In proceedings of HCI and the Older Population workshop of British HCI 2008 Conference.
4. Sustar, H., Zaphiris, P. (2007). Emotional Interaction as a Way of Communication. In Proceedings of Designing Pleasurable Products and Interfaces 2007 conference. Helsinki, Finland. Pages 438-445.

b.) Presentations

03/2010	University of Uppsala (Sweden): Department of Information Technology, Centre for HCI
07/2009	Create, London, (Great Britain)
06/2009	University of Uppsala: - Department for Information Science, Centre for HCI - Department of Information Technology, Centre for HCI
06/2009	Royal Institute of Technology: School of Computer science and Communication, Centre for HCI, Stockholm
08/2008	British HCI; Liverpool
07/2008	Microsoft Research Centre, Cambridge
05/2008	DESRIT, Atlanta, Georga, (USA)
08/2007	DPPI: Designing Pleasurable Product and Interfaces, August 2007 University of Art and Design, Helsinki, Finland
04/2007	City University London, at the Department for Human Computer Interaction Design - Centre seminar