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Kith&Kin Consortium

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Abbreviations

Abbrev.	Description
AAL	Active & Assisted Living
TP	Test person

Executive Summary

In the project "Kith & Kin" we want to develop a device that connects the seniors to family and friends. This connection we can reach with a technical device that is as easy to use as possible because especially the group of the seniors in many cases is technical illiterate. We searched for interaction patterns with interactive system that are closer to interactions in real life. With our tangible objects (tangibles) we found a possibility to develop an easy to use system.

During our development process, the participation of potential real users is very important. Because of such participations, we get feedback if the users understand our interactive system. The participation is guaranteed with our lab trials in that the seniors are encouraged with some task to use our interactive systems.

In the first phase, we made different mock-ups of different interaction patterns from which we have chosen two prototypes that now we are going to test. We call these two interaction patterns prototype A and prototype F.

This document is a description of the lab trials preparation. We designed the lab trials to test different questions that are described in the first chapters. One of the most important main-questions we will test is: Which of these interaction patterns is easier to use? Moreover, in this document we describe the prototypes A and F, the setup of the lab trials and some research instruments that we have constructed to execute the lab trials. To see the instruments we will use during the lab trials go directly to appendix A.

1 About this Document

1.1 Role of the deliverable

Our intention during this project is to develop a device that supports the seniors to get in touch with family and friends. An easy usability for systems that are running on devices is always an important topic for a proper system development. However, especially the group of the seniors has a restricted experience to handle technical devices, therefore it is even more important to develop a system as easy as possible. Moreover, in common literature of technical development the term "intuitive" is used many times. It is a kind of temporary fashion because intuition bases on implicit knowledge that was learned one time in life and helps now to understand new conditions. Therefore, the question behind that is very important for us is how quickly a system can be learned. To mention is, that it depends not coercively on the ability of self-learning. If another person can explain to seniors a system easily, the system fulfils broad usability aspects.

Therefore, we search for interaction patterns that can be learned with or without help easily. Our approach is based on finding new interaction patterns that are closer to interactions in real life and that give seniors more security because of haptic and emotional factors. The interaction element "tangible" is the trial to get closer, what we have already proven partly during the requirement analysis.

We now want to evaluate new interaction patterns that we have developed. For the evaluation, we execute two lab trials (usability tests) in Switzerland and in the Netherlands. In this document, we show the entire preparation of the lab trials.

1.2 Relationship to other Kith & Kin deliverables

The deliverable is related to the following Kith & Kin deliverables:

Deliv:	Relation
D7.2A	Protocol of lab trials: this document presents demographic data's of participants in lab trials and experiences we will have during the execution of the lab trials.
D7.3A	Evaluation report of lab trials: this document presents the findings of the lab trials.
D2.3A	Definition of use cases and scenarios: this document provides the basis for explicit functions/interaction patterns we will test now. Furthermore, it contains first mock-ups of the user interface.
D3.3	Specification of tangible objects, hardware and the user interface: this document presents more details how the tangibles and the user interface has to be designed.
D7.1B	Definition of field trials protocol: this document presents the preparation of the field trials.
D7.2B	Protocol of field trials: this document presents demographic data's of participants in field trials and experiences we will have during the execution of the field trials.
D7.3B	Evaluation report of field trials: this document presents the findings of the field trials.

2 Main- & sub-questions in lab trials

During different iterations, we made mock-ups of interaction patterns that all should contain tangibles as crucial interaction element (see also D2.3A). In a reciprocal voting within the consortium we decided to go on with two of various prototypes we had outlined. As mentioned, the prototypes have to contain tangibles as an interaction element. But the big difference between these two prototypes we decided is that one has additionally hardware buttons and a wheel for scrolling (see figure 1) meanwhile the other has only tangibles and some touch interactions for controlling (see figure 2). Because of these additional interaction elements, the systems work partly different. The screens for this prototypes were made mainly by HSL in collaboration with SOUL. YOO and Wetouch also made a few screens.

The main-questions we want to evaluate are:

- Are tangibles an adequate interaction element?

- Are touch interactions on the screen accepted from our target group?

- Are interactions with hardware buttons and a wheel accepted from our target group?

- What does our target group prefer, an interaction with tangibles and partly with touch screen or an interaction with tangibles and hardware buttons?

As described in deliverable 2.3A we have some use cases we want to enable our target group. For these lab trials, we couldn't design all use cases with mock-ups because we restricted to a few use cases that are (see also appendix B):

1) Scrolling

2) Forwarding a picture

3) Receiving a message

4) Taking a photo and send it to a person

5) Recording a voice message and send it to a person

6) Filtering messages

7) Calling a person

Because of these use cases we want to test some sub-questions, that are (see also deliverable 2.3A):

- Do TPs like the idea with a chronical history/timeline as starting point for all interactions?

- Do TPs understand the main interaction pattern where person tangibles have to be laid on functional software buttons that are shown on the left side on the screen?

- Do TPs understand the process of starting and stopping a function?

- Do TPs understand the main functions they have and are they adequate?

- Is the process of scrolling understandable: prototype A with wheel and prototype F with fingers?

- Is the process of sending a picture that is shown in the timeline understandable?

- Is the process of receiving a message understandable?

- Is the process of taking a picture and sending it to a person understandable: in prototype A users first take a picture that can be send from the timeline and prototype F users first chose the function to send a message, then chose send a picture and after the picture is taken the picture can be send automatically?

- Is the process of recording a voice message and sending it to a person understandable: prototype A users first record a voice message that can be send from the timeline and prototype F users first chose "send a message", then chose "send a voice message" and after the message is recorded the message can be send automatically?

- Is the process of filtering messages understandable?

With further questions, we want to have some feedbacks about the presentation and layout of the different screens (see the different screens in appendix B).

Our main questions concern interaction patterns TPs probably know and such interaction patterns that are new for them.

3 Research design of lab trials

The method usability testing in lab trials is a kind of "behavioral observation" that can be combined with many different additional research methods as "thinking aloud" of the participants during the tests or qualitative and quantitative "questioning techniques". Usual points of critique concern the reliability of the results as most other qualitative methods. It is therefore important to have experienced researchers who know users, the tested system as well as pro and cons of the used research methods.

3.1 Test system

3.1.1 Prototyps

We are going to test with a tablet that is a bit converted because we want to test the interaction with tangibles and hardware buttons instead of only touch. For that reason, we made something around the tablet that can be seen in figure 1, all together we call prototype. The material the prototypes were made is carton and paper. NDU produced the prototypes especially for these lab trials. The prototypes are only a kind of cover in that tablets can be inserted.

Both prototypes have tangibles as interaction elements. In the first prototyping process, we stated that tangibles could have two different types. 1. person tangibles (show person with that the user wants to start an interaction) 2. function tangibles (show different interaction types the users can start). Right before lab trials we decided only to use person tangibles because the functions are already shown on the screen (see Figure 3)

To start a function the user can lay now the person tangible he wants to interact with on the wished function. The only direct function tangible we used partly was the "envelope" (see figure 2).
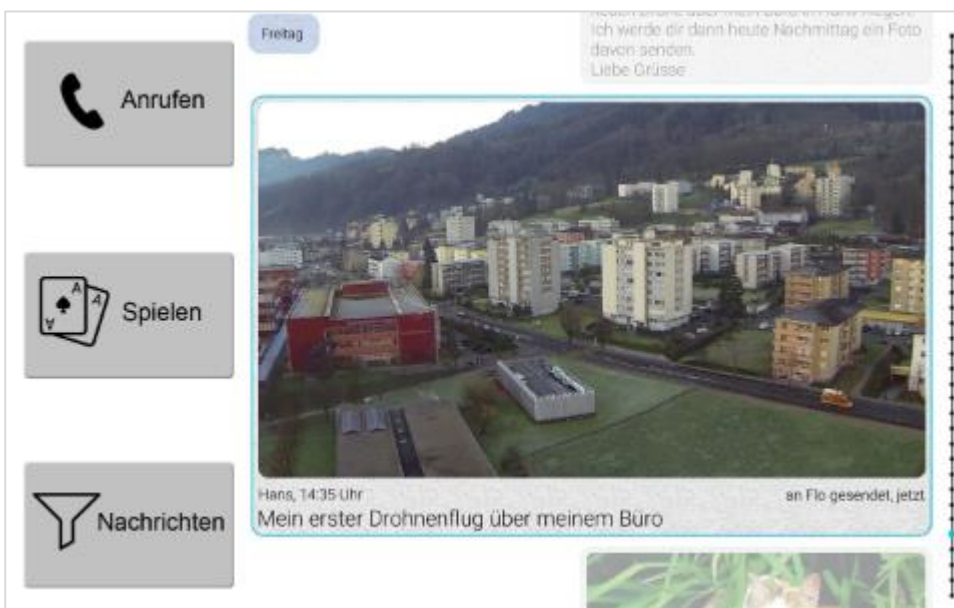
Figure 1: Prototype A

Figure 2: Prototype F

To test the different functions of the system we designed pictures for the screen that should give the TPs a feeling of the processes they can go through (see e.g. figure 3), when they use the system. An overview of all pictures that will be shown to the TPs can be seen in Appendix B.


Figure 3: home screen of prototypes A and F

3.1.2 Run interactions with the Wizard of Oz technique

Usability tests can be made with paper prototypes, interactive prototypes or already with running systems as well. Because we are on a very early stage in development, we chose a kind of testing an interactive prototype that is actually not interactive. What means that indeed on every interaction of the TP in the test another screen will be shown, but a third person with a second tablet controls that. The method is called "Wizard of Oz".

With such an approach, processes of system can be evaluated very easily without programming complex interaction patterns. See in figure 4 the controller app in the Wizard of Oz test. We have there the three modules: "communication", "sharing" and "gaming". On every module, some buttons are shown. Each button is related to the screen of the testing tablet. So, if the controller touches the buttons another screen will be shown on the tablet of the TP.
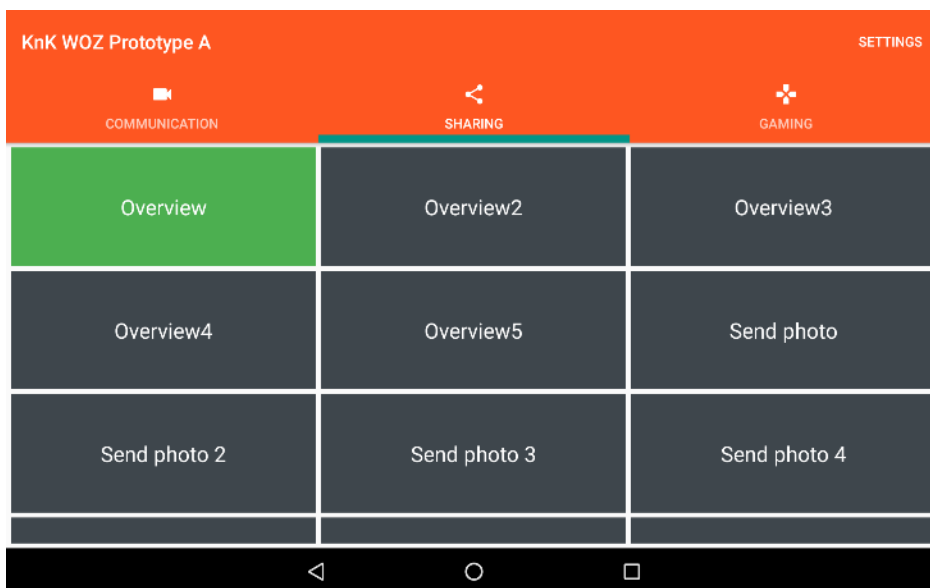
Figure 4: Wizard of Oz controller app

3.2 Test setup

The entire lab trial process consists of four parts:

1) Introduction and signing of the "Informed Consent"

2) Preliminary questionnaire

3) Execution of lab trials where prototype A and F are tested one after another with the same tasks
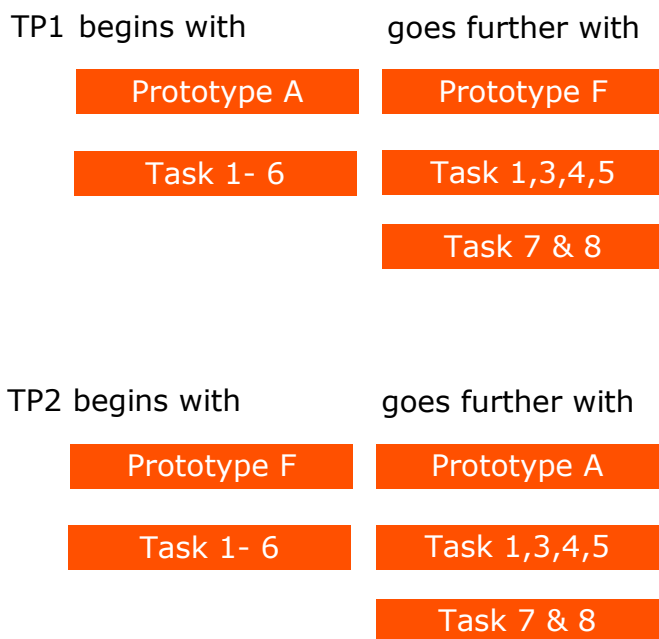
4) Closing interview to sum up the tests

3.2.1 A/B-Testing

The lab trials are setup as A/B-Testing what means two partly different prototypes with partly different interaction processes behind are tested one after another with the same tasks. To prevent test effects, we start alternately with prototype A and F.

Overall, we tested eight tasks with the prototypes that should give insight about functions described in chapter 3.1 or Appendix B. Besides the main-questions, we have some sub-questions that are described more detailed in chapter 2. To mention is

that we test only four tasks on both prototypes other 4 tasks are tested only on one

TP1 begins with	goes further with
Prototype A	Prototype F
Task 1- 6	Task 1,3,4,5
	Task 7 & 8

TP2 begins with	goes further with
Prototype F	Prototype A
Task 1- 6	Task 1,3,4,5
	Task 7 & 8

Figure 5: Test setup – test alternation of prototypes A & F

prototype. The reason is that some tasks have no different interaction between the prototypes A and F.

3.2.2 Construction of research instruments

Every part of the lab trial needs some research instruments.

Part 1

The introduction is orally and the document "Informed Consent" will be given out for signing. This document is quite the same as we already used for requirement analyses.

Part 2

The intention with the preliminary questionnaire is to get an overview about the background of the TPs. Especially the technical experience is of particular interest. To know, if TPs already use computer, tablets or smartphones have a direct impact of using our prototypes. Moreover, we ask three question about the self-confidence with technical devices then this is an important factor if user will/can learn or if they are

motivated to learn new things. The preliminary questionnaire can be seen in appendix A.

Part 3

The execution of lab trials contains overall 4 documents that are:

- Taskscript prototype A (for test leader and controller)
- Taskscript prototype F (for test leader and controller)
- Taskscript both (for test leader and controller)
- Taskscript (for TPs)

Every taskscript contains tasks the TPs should go through with the prototypes during the lab trials. In the taskscripts for the test leader and controller additional instructions are specified. These instructions are e.g. which picture the controller has to show after which interaction of the TP, questions we want to evaluate with the task or special tips for what the test leader has to pay attention.

Because prototype A and F are different, they need different instructions in the taskscript for the six tasks described. The TPs get only one taskscript because they have always the same tasks (1-8) and need no additional instructions. The «taskscript both» contains the last tasks (task 7 and 8) that are for both prototypes the same. That is why there is only one document. All these documents can be seen in the Appendix A.

Part 4

In the last part of te lab trials TPs will be asked orally with different questions what experience they got during the lab trials. This document is a kind of sum up of things TPs properly already mentioned during the lab trials. This document is not listed in the appendix.

3.3 Planned execution of field trials

We plan two sessions of lab trials. The first in Switzerland at 13th of December 2016 and the second at 18th of January 2017. We want to have some time between because sending the devices around needs some time.

soultank got the tablets from iHomeLab to prepare these lab trials. Afterwards soultank will send the tablets to terzStiftung. After the lab trials at terzStiftung the tablets will be sent back to soultank for preparing them for lab trials in the Netherlands at CMO Flevoland. After the lab trials at CMO Flevoland they will send the tablets back to iHomeLab.

4 Recruiting criteria

As recruiting criteria, we have determined the age and the experience with technical devices. For us are especially people over 70 interesting that have not much experience with mobile devices. The experience with mobile devices is a very important criterion, because based on this knowledge people will have another understanding of the interaction patterns that we developed. As we recognized during the requirement analysis in Switzerland it is not that easy to find people that had never contact with mobile devices. There is a huge concentration of mobile devices. Nevertheless, we do not want to have the experience as fall out criterion, what makes no sense. Because the amount of people that use already mobile devices is getting bigger or elderly that use no such device do not live many years any more. Therefore, in a few years when we could bring out such a product, the target group that never used such devices is even smaller. For this reason, we cannot completely concentrate on technical completely illiterate people.

5 Conclusion / Further Work

5.1 Conclusion

To test new interaction patterns that were never used before is very challenging. We cannot suppose that people will understand the interaction the first time they see it because they have no comparable experience of the past. Based on these principles it will be interesting how quickly TPs are able to learn the interaction of our prototypes.

To test systems on devices needs a careful preparation. Especially in lab trials where the system isn't completely interactive and interactions have to be simulated, TPs need more imagination. If it's not completely clear, what will be tested respectively questions behind that have to be evaluated, lab trials run the risk to show findings that are wrong or not enough meaningful.

Test preparation and development of systems should go hand in hand. If it is clear what the important questions are, the test system can be developed exactly in this way. There was a minor timeslot for development and even less time to prepare these lab trials. Because of lacking time, the test preparation was quite difficult.

5.2 Lessons Learned

Development of interactive systems and preparation of lab trials are time consuming. Between finalizing of interactive systems in the development phase and the lab trials, preparing phase there should be calculated some buffers. Otherwise lab trials are running the risk that they can't give the findings that are needed or in worst case they have to be postponed.

Preparing lab trials that someone else will execute is very challenging. Running lab trials need some experience and it is not possible to write down all the things, for what the test leaders have to look at. Finally, to understand test- and taskscript much time is needed with some pretests. So, at the end even more time is needed in the preparation that has to be kept in mind.

Appendix A

A.1 Guidelines lab trials

1.Preparation

Test setting with tablets and router

Before you start plug in the router that connects the two tablets. If the tablets are not connected go to the app settings of each tablet and there to the category wifi. You have to choose the connection "YouDo-HotSpot" (the first one in the list) on each tablet and press connect. They should connect automatically after a while. If that was not the case switch off tablets and router, then switch on router and after that the tablets.

You got also power supplies for the tablets. Please ensure that batteries are full the evening before tests, otherwise plug in the tablets.

For filling batteries, don't despair searching the plug on the tablet. You have to open with finger nails a flap on top the tablet.

Explanation apps on tablets

You get two tablets, one for the test person (TP) and one for the controller (wizard of oz) that steer the tablet of the TP. On both tablets is in the middle of the screen the Kith & Kin app. On one app are the letters WOZ, this is the tablet for the controller.
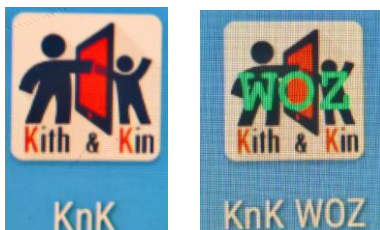
When you open the apps, you see the following start screen from that you can decide which prototype (A or F) you want to open. Test leader and controller must open the same prototype.
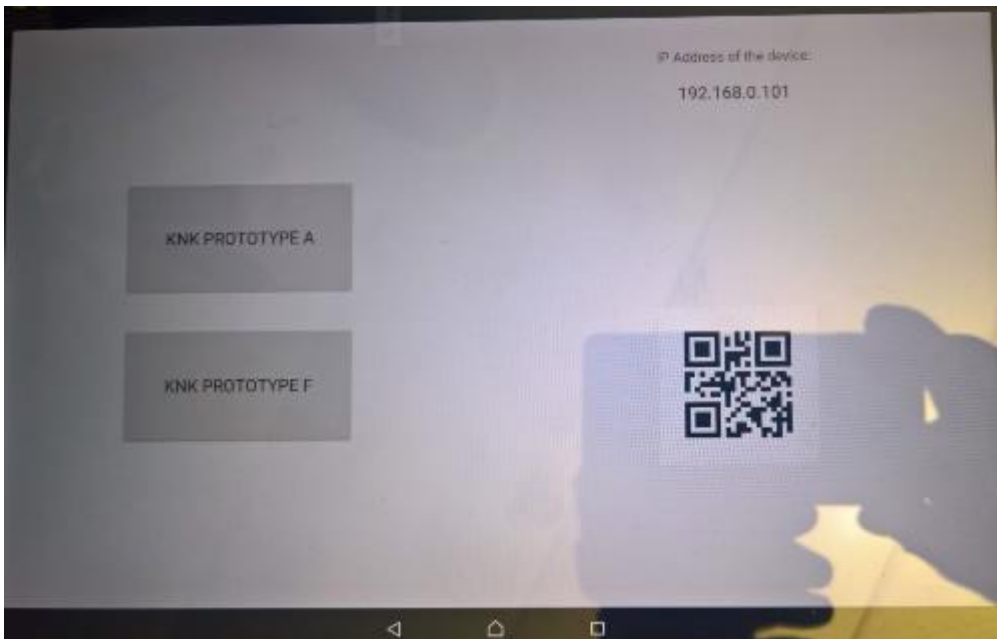
Test leader for testing TP
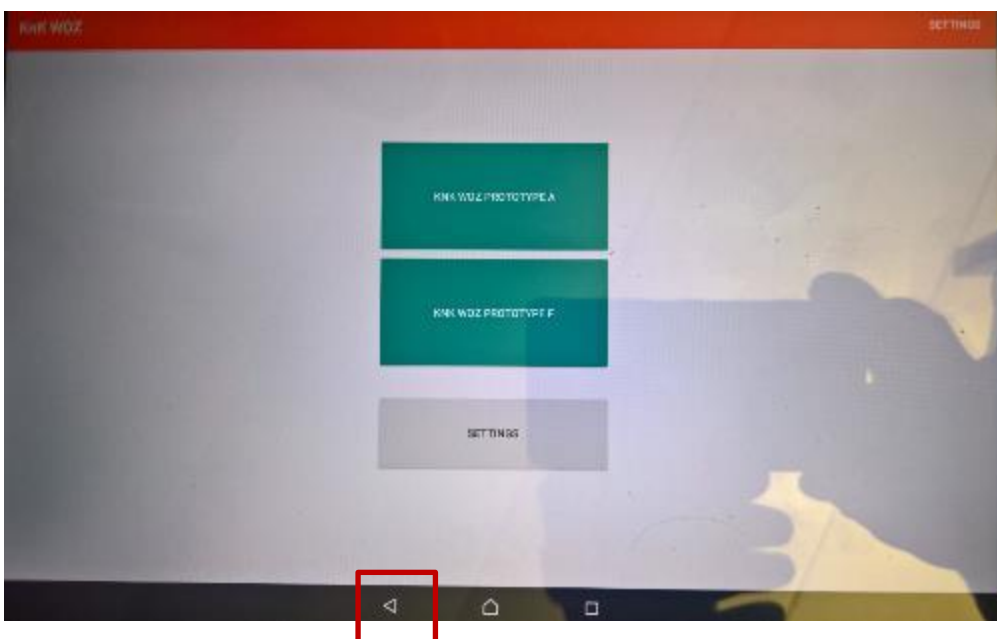
Controller for steering the app of test leader

If you have chosen one prototype and want back to this start screen shown above (changing prototype), use in the task bar the "back" icon. The task bar is visible by wipe up the tablet.

Explanation of covers for the tablet we got from NDU

We got two different covers from NDU for the tablets. These covers include on one hand the tangibles and on other hand hardware buttons (only prototype A)

In the test, one time you have to change the cover but that should be easy, just push the tablet from one side in the cover. If you start with prototype A you have to take the cover with the hardware buttons and the wheel and before you start with prototype F you change the cover to them without hardware buttons.

You have to look at the tangibles in the covers. You have person tangibles and function tangibles (like calling). Person tangibles we need all, function tangibles, there we need only the ones with the icons envelop and basket. Because we have no interactions patterns to test, let them out, otherwise the TPs could be confused.

For test in Netherlands please rename one person tangible with the name "Jaap". In the German tests, we used the name "Flo" that is already existing but "Jaap" is missing. On some screens, you will see the name Jaap that's why it's important.

Moreover, the prototype with the hardware buttons, the current labelling is in German. Pleas change that to Dutch. For example "Audio aufnehmen" you could change in "voice message".

1. **Testing process**
   a. **Before Usability Test**

Please give out the test persons (TPs) for signing the document

- Informed_Consent_Usability-Test-CH

After that, give out the TPs a small questionnaire (Preliminary questionnaire) where we want to know more about their background and experiences. Help them, if they have questions.

- Preliminary-Questionnaire-Usability-Test-CH

b. Usability Test

Test leader and controller

The usability test includes the modules: communication, sharing and gaming. With sharing, we have two different versions to test. The versions are different in interaction what is showed with *prototype A* and *prototype F*. Because we want to know which basic interaction are preferred we test both versions one by one for each TP. That means

- TP1 start with prototype A and right after prototype F
- TP2 start with prototype F and right after prototype A
- TP3 start with prototype A………..

The task the user should do are the same for each prototype, 6 tasks. But because the Task 2 and the Task 6 have no differences in interaction between these two prototypes, test these two tasks only with one prototype. That means at the end, you have 10 Tasks not 12 with both prototypes. The tasks are described in the documents:

- Test-Leader-Usability-Test-Taskscript-1-NL-Prototyp-A-Sharing
- Test-Leader-Usability-Test-Taskscript-2-NL-Prototyp-F-Sharing

In the documents, you can see in the upper area the description, the TP will get. After the description, what the TP exactly has to do, instructions for test leader and controller follow as which screens the controller has to show and which questions we want to find out with the usability test. To repeat, the process is:

- TP1 makes with prototype A Tasks 1-5 and then with prototype F the Tasks 1, 3, 4 and 5

We have also two tasks for the modules communication and gaming but only in one version. That means, after you made all for sharing, you can make the last to Tasks (6 & 7) with TPs. It doesn't matter, if you are in prototype A or F. See following document for this:

- Test-Leader-Usability-Test-Taskscript-3-NL-Prototyp-Communication&Gaming

Test person

The test persons get only the documents with the tasks. In this document, all tasks are together. See document

- Test-person-Usability-Test-Taskscript-NL-Prototyp

c. Final questions

After the usability test you can ask some final questions orally. Maybe you got already answers about for these questions during the test. Then you don't have to ask. See document

- Final-Questions-Usability-Test-NL

A.2 Preliminary questionnaire

Your (past) profession: …………………………………………

Your year: ……………

How often do you use a **computer**? (Solely one response)	
	○ Never
	○ Very rarely
	○ Once a week
	○ Several times a week
	○ Daily
	○ Several times per day

How often do you use a **tablet**? (Solely one response)	
	○ Never
	○ Very rarely
	○ Once a week
	○ Several times a week
	○ Daily
	○ Several times per day

How often do you use a **smartphone**? (Solely one response)	
	○ Never
	○ Very rarely
	○ Once a week
	○ Several times a week
	○ Daily
	○ Several times per day

How often do you use the **internet**? (Solely one response)	
	○ Never
	○ Very rarely
	○ Once a week
	○ Several times a week
	○ Daily

◯ Several times per day

If you specified in the previous questions to use a computer, a tablet or a smartphone, please rate in the following questions your knowledge for these devices. If you have no knowledge, please skip the questions.

How good do you estimate your experiences and knowledge in dealing with **computer**?	Very bad	←———→				Very good
	1	2	3	4	5	6
	◯	◯	◯	◯	◯	◯

How good do you estimate your experiences and knowledge in dealing with **smartphones and/or tablets**?	Very bad	←———→				Very good
	1	2	3	4	5	6
	◯	◯	◯	◯	◯	◯

	Strongly disagree	←———→				Strongly agree
How do you assess your technical experience?	1	2	3	4	5	6
In general, I am interested in technical devices.	◯	◯	◯	◯	◯	◯
I feel mostly <u>not</u> overstrained in dealing with technical devices.	◯	◯	◯	◯	◯	◯
If I succeed with technical devices it depends on me and has nothing to do with accident or luck.	◯	◯	◯	◯	◯	◯

A.3 Taskscript prototype A

Taskscript Prototyp-A-Sharing

With hardware buttons and wheel

Task 1

Initial position

You bought a new technical device, that will support you in the communication with family and friends. The device allows you to call, to send voice messages and photos as well as receiving written messages and photos. To play a game with other persons is another function.

When you turn on the device you see as first overview a timeline. In this timeline, all is saved, what you communicate with other people. The newest messages are shown in each case right at the top and directly visible.

Task

You want now search for an older message. How would you do that with this device?

If TP already has made prototype F, TP should only read to do

Test Object: Sharing – Prototyp A
Initial position: Homepage (*Overview*)
Screens: During scrolling with wheel, following screens are showed successively: *Overview2, Overview3, Overview4, Overview5*

Task: Test person (TP) has to scroll the homepage down with wheel

Test leader:
- Eventually, you have also to explain orally, what they can do with the device. Maybe you have to explain with the example computer or show it on your Smartphone, how they can do it.

Questions tested are:
- How is the first impression?
- Is it understandable for TP how to scroll or rather if TP can learn it?
  (the wheel as paper prototype is not exactly as we want to have)
- On the left of the screen you see a line with small bubbles, that should be for orientation where they are. Unfortunately, it's far too small. But ask, if an orientation system like that (bigger) would help TP?
- Which side would TP prefer for the wheel?
- Would it be ok, if buttons and wheel is on the same side?
- How do the like the idea of timeline as starting screen at all?
- Would TP prefer to scroll with wheel or fingers (prototype F)?

Task 2

Initial position

On the device, you see the photo of « De eerste vlucht met mijn drone over kantoor", that you got from a friend. You want now to forward this photo to Jaap, your son.

Task

Please forward the photo to Jaap, how would you do this?

If TP already has made prototype F, let this task out

Test Object: Sharing – Prototyp A
Initial position: *Overview5*
Figures: In *Overview5*, after TP lays tangible on picture, following screens have to be showed successively: *Send photo, Send photo 2, Send photo 3, Send photo 4, Send photo 5*

Task: TP has to forward picture to person tangible "Jaap"
Detail Task:

- TP lays tangible of "Jaap" on picture "De eerte vlucht met mijn drone…." of the screen (*Overview5*)
- Then loading pictures are showed (*Send photo -5*)

Questions tested are:
- How is the reaction of TP at all?
- First contact with tangibles, does TP something with tangibles or has the test leader to help?
- How has the test leader to help, just say that they should do something with tangibles or has test leader to explain the entire process of sending this picture?
- What does TP think about the process of sending a picture?
- Is the process easy to learn for TP and transparent?
- What does TP think about the progress indicator (green circle) is this clear or not?
- Does TP know, when process is finished and photo out (probably not)?
- What does TP think of the interaction with tangibles?
- What does TP say about gripping the tangibles (small tangibles etc.)?
- More….

Task 3

Initial position

Just now you received a message.

Task

How can you see that you received a message? Is that understandable for you?

Test Object: Sharing – Prototyp A
Initial position: *New message*
Screens: After TP pressing button "Home" figure *New message 2* is showed

Task: TP gets a message
Detail Task:

- TP gets a message
- Then TP presses Hardware Button "Home"
- After this interaction, the newest message is showed (*New message 2*)

Test leader:

- Please explain the TP: *"When you push the button "Home", you see the newest messages and you can read the messages."*

Questions tested are:

- How understandable is the display of a new message?
- Needs TP something more for display a new message (for example information: "New message from Jaap")?
- What does TP think of pressing the button "home" to read the message, is this understandable and intuitive?
- Was prototype easier to understand? Here TP presses the button "Home" or prototype F with laying the function tangible "Berichten" on the screen?
- Are the messages (picture and font) big enough or too big?
- Is clear what message is focussed?

Task 4

Initial position

To communicate with a person, you have two possibilities: 1. calling and 2. send a voice message. The voice message is especially useful, if it's not that urgent or if the other person not want to be disturbed.

Task

Please send a voice message to Jaap.

Test Object: Sharing – Prototyp A
Initial position: *Take image 10*
Screens: After TP presses button "Audio aufnehmen" (Please change to dutch) the screens Record voice, *Record voice 2, Record voice 3, Record voice 4* are showed successively. When button is leased figure *Record voice 5* is showed. To send record TP lays down person tangible on record of tablet and following screens are showed successively: *Record voice 6, Record voice 7, Record voice 8, Record voice 9* and *Record voice 10*.

Task: Send voice message to person tangible "Jaap"
Detail Task:

- TP presses hardware micro button "Audio aufnehmen" (Please change to dutch) and hold
- Then countdown (screens -5) is showed
- When figure "Aan het opnemen" is showed (*Record voice 5*), TP has to speak something to record
- After stop pressing button the record is finished and the voice record is showed in timeline (*Record voice 6*)
- Now TP has to take tangible of "Jaap" and lay it down to the voice record on screen (send voice record starts, same as Aufgabe 2)

Questions tested are:

- What does the TP think about the two different interaction styles with first, pressing a hardware button and second, lay a tangible on the screen? Is this an interruption for them or not?
- Is the process of record voice ("Opname begint over") clear for TP?
- How clear is the recording ("Aan het opnemen"), is it clear respectively can TP learn that?
- The TP starts with record a voice message that is then showed on the screen. In a next step the TP has that to send that to a person. This process is in reverse order to prototype F, where the person first think she wants to send something to someone, decide what to send and then record a voice message. Which of these processes is easier to understand for the TP?

Aufgabe 4 (only tested in Switzerland)

Ausgangslage

Flo hatte Sie letzthin angefragt, ob er ein aktuelles Foto von Ihnen haben dürfte. Sie können mit diesem Gerät auch Fotos von sich selbst aufnehmen, Ihr Testleiter wird es Ihnen kurz anhand eines Beispiels erklären.

Aufgabe

Senden Sie bitte an *Flo* ein Foto von sich selbst.

Test Object: Sharing – Prototyp A
Initial position: *New message 2*
Screens: After TP presses button "Foto Aufnehmen" the screens *Take image, Take image 2, Take image 3, Take image 4* and *Take image 5* are showed successively. To send photo TP lays down person tangible on photo of tablet and following screens are showed successively: *Take image 6, Take image 7,* Take *image 8, Take image 9* and *Take image 10*

Task: TP wants take a Selfie and send to person tangible "Flo"
Detail Task:

This task needs an introduction:

- TP should focus tablet on themselves to take picture but is only to imagine. You should shortly show a similar process on your own Smartphone of making a Selfie. Because of prototype TPs couldn't held the tablet in hand, they should make the entire process when Tablet is laying on table!

Test process:

- TP presses hardware photo button "Foto Aufnehmen"
- Then countdown (screens Take image -5) is showed (white screen *Take image 4* is like flash)
- Selfie (Uschi Glas) is showed on Screen
- TP should lay down tangible of Person "Flo" on Selfie
- Then sending process starts (*Take image 6-10*)
- Selfie is showed in timeline (*Take image 10*)

Questions tested are:

- What does the TP think about the two different interactions with first, pressing a hardware button and second, lay a tangible on the screen? Is this an interruption for them or not?
- Is the process of taking a picture ("Foto wird aufgenommen") clear for TP?
- Especially the countdown, what does the TP think about?
- The TP starts with taking a photo that is then showed on the screen. In a next step the TP has that to send that to a person. This process is in reverse order to prototype F, where the TP first thinks to send something to someone, hast to decide if sending voice message or photo and then to take a picture. Which of these processes is easier to understand for the TP?

Task 5

Initial position

In task 1 you had maybe trouble to orientate with the many messages you saw on the screen. With this device, you have the chance to show messages only of one person.

Task

Please show only the messages of Jaap on the screen, how would you go on?

If TP already has made prototype F, let this task out

Test Object: Sharing – Prototyp A
Initial position: Homepage (*Overview*)
Screens: *Filter*

Task: Filter items in timeline (*Overview*) that only messages of person tangible "Jaap" are showed

Detail Task:

* TP lays down tangible of "Jaap" on menu button "Berichten" on screen
* Then timeline is filtered and messages only of "Jaap" are showed (*Filter*)

Questions tested are:
* Has the TP an idea, how to filter?
* How much help need the TP of the task leader respectively how fast TP does understand and learn?
* What does TP think of process for filtering messages at all?
* This is a filter function, does somebody recognize from other devices (probably not)?
* Does somebody know the funnel icon (probably not)?

A.4 Taskscript prototype F

Taskscript Prototyp-F-Sharing

Only with tangibles
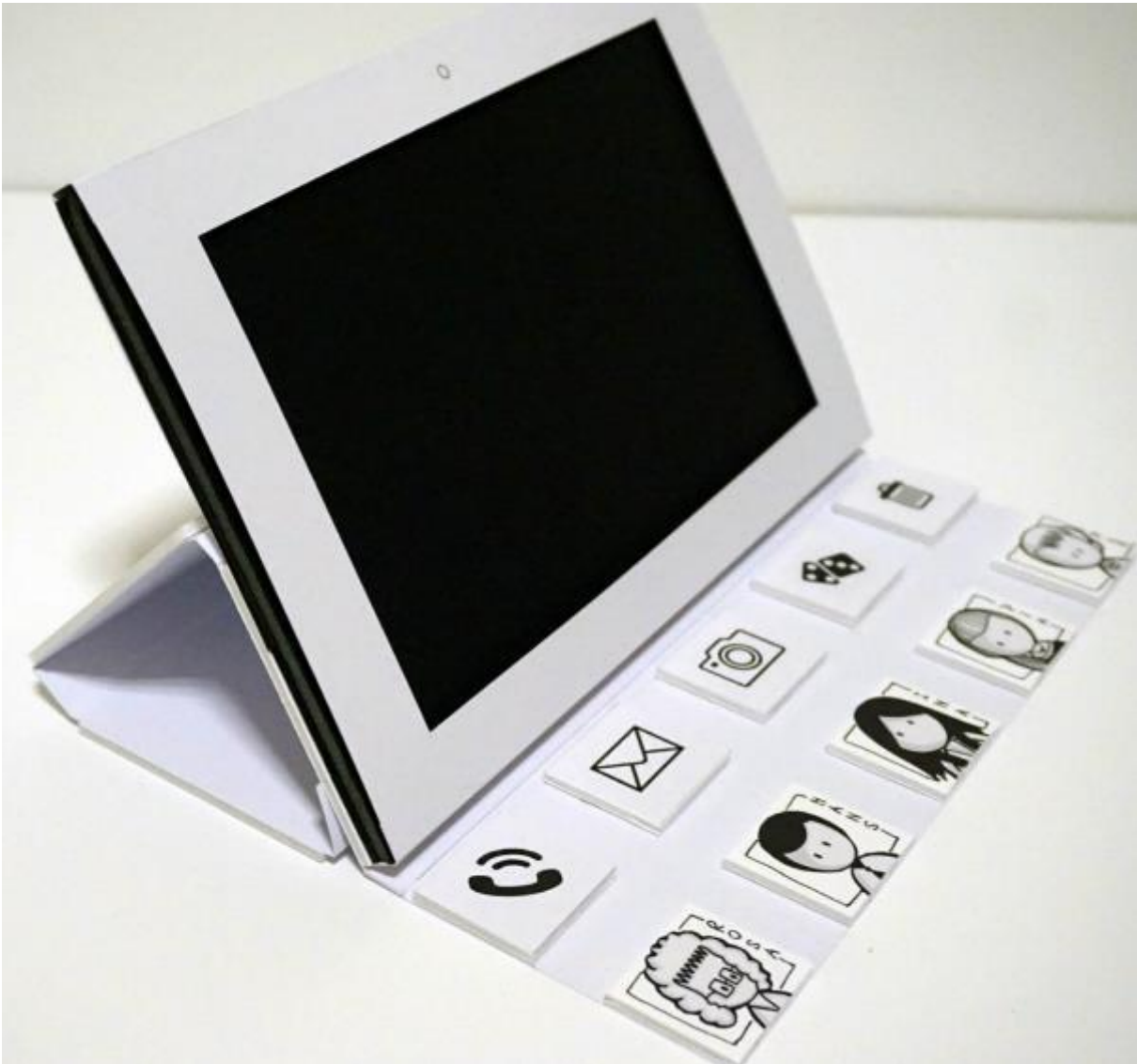
Task 1

Initial position

You bought a new technical device, that will support you in the communication with family and friends. The device allows you to call, to send voice messages and photos as well as receiving written messages and photos. To play a game with other persons is another function.

When you turn on the device you see as first overview a timeline. In this timeline, all is saved, what you communicate with other people. The newest messages are shown in each case right at the top and directly visible.

Task

You want now search for an older message. How would you do that with this device?

If TP already has made prototype A, TP should only read to do

Test Object: Sharing – Prototyp F
Initial position: Homepage (*Overview*)
Screens: During scrolling with finger, following screens are showed successively: *Overview2, Overview3, Overview4, Overview5*

Task: Test person (TP) should scroll the homepage down with fingers

Test leader:
- Eventually, you have also to explain orally, what they can do with the device. Maybe you have to explain with the example computer or show it on your Smartphone, how they can do it.

Questions tested are:
- How is the first impression?
- Are the messages (picture and font) big enough or too big?
- Is clear what message is focussed or shouldn't be one focused?
- Is it understandable for TP how to scroll or rather if TP can learn it?
- Do they already know devices where they can scroll with fingers?
- On the left of the screen you see a line with small bubbles, that should be for orientation where they are. Unfortunately, it's far too small. But ask, if an orientation system like that (bigger) would help TP?
- How do the like the idea of timeline as starting screen at all?
- Would TP prefer to scroll with fingers or wheel (prototype A)?

Task 2

Initial position

On the device, you see the photo of « De eerste vlucht met mijn drone over kantoor", that you got from a friend. You want now to forward this photo to Jaap, your son.

Task

Please forward the photo to Jaap, how would you do this?

If TP already has made prototype A, let this task out

Test Object: Sharing – Prototyp F
Initial position: *Overview5*
Screens: In *Overview5*, after TP lays tangible on picture, following screens should be showed successively: *Forward photo, Forward photo 2, Forward photo 3, Forward photo 4, Forward photo 5*

Task: TP has to forward picture to person tangible "Jaap"
Detail Task:

- TP lays tangible of "Jaap" on picture "De eerte vlucht met mijn drone…." of the screen (*Overview5*)
- Then loading pictures are showed (*Forward photo -5*)

Questions tested are:
- How is the reaction of TP at all?
- First contact with tangibles, does TP something with tangibles or has the test leader to help?
- How has the test leader to help, just say that they should do something with tangibles or has test leader to explain the entire process of sending this picture?
- What does TP think about the process of sending a picture?
- Is the process easy to learn for TP and transparent?
- What does TP think about the progress indicator (green circle) is this clear or not?
- Does TP know, when process is finished and photo out (probably not)?
- What does TP think of the interaction with tangibles?
- What does TP say about gripping the tangibles (small tangibles etc.)?
- More….

Task 3

Initial position

Just now you received a message.

Task

How can you see that you received a message? Is that understandable for you?

Test Object: Sharing – Prototyp F
Initial position: *New message*
Screens: After TP lays down function tangible "enveloppe" on menu button "Berichten" on the screen, figure *New message 2* is showed

Task: TP gets a message
Detail Task:

- TP gets a message
- Then TP should lay down function tangible "enveloppe" on menu button "Berichten"
- After this interaction, the newest message is showed (figure *New message 2* is showed)
- Alternatively, TP could also scroll at top because the newest messages are shown there (see also task 1). But this case is not tested.

Questions tested are:
- How understandable is the display of a new message?
- Needs TP something more for display a new message (for example information: "New message from Jaap")?
- What does TP think of laying down the function tangible to read the message, is this understandable and intuitive?
- Was prototype easier to understand? Here TP lays down the function tangible "enveloppe" on the screen or prototype A the TP presses the button "Home" to see the message?

Aufgabe 4 (only tested in Switzerland)

Ausgangslage

Flo hatte Sie letzthin angefragt, ob er ein aktuelles Foto von Ihnen haben dürfte. Sie können mit diesem Gerät auch Fotos von sich selbst aufnehmen, Ihr Testleiter wird es Ihnen kurz anhand eines Beispiels erklären.

Aufgabe

Senden Sie bitte an *Flo* ein Foto von sich selbst.

Test Object: Sharing – Prototyp F
Initial position: *New message 2*
Screens: When tangible lays on menu button "Nachrichten" screen *Send photo* is showed. When TP moves tangible to menu button "Foto" screens *Send photo 2*, *Send photo 3, Send photo 4, Send photo 5, Send photo 6* are showed successively

Task: TP wants take a Selfie and send to person tangible "Flo"
Detail Task:

This task needs an introduction:

- TP should focus tablet on themselves to take picture but is only to imagine. You should shortly show a similar process on your own Smartphone of making a Selfie. Because of prototype TPs couldn't held the tablet in hand, they should make the entire process when Tablet is laying on table!

Test process:

- TP lays down the person tangible *Flo* on the menu button "Nachrichten" of the screen (screen *Send photo* is showed)
- TP can perceive now two new options Buttons on the screen ("Foto" and "Sprache"). TP moves the tangible to the option "Foto" on the screen
- Then countdown for taking Selfie (screens *Send photo -6*) is showed
- Selfie is showed in timeline (*Send photo 6*) and already sent

Task 4

Initial position

To communicate with a person, you have two possibilities: 1. calling and 2. send a voice message. The voice message is especially useful, if it's not that urgent or if the other person not want to be disturbed.

Task

Please send a voice message to Jaap.

Test Object: Sharing – Prototyp F
Initial position: *Send photo 6*
Screens: When tangible lays on menu button "Berichten" screen *Send voice* is showed. When TP moves tangible to menu button "Audio Berichten" screens *Send voice 2*, *Send voice* 3, *Send voice* 4 and *Send voice* 5 are showed successively. After TP presses software button "Stoppen" on screen *Send voice 5* screen *Send voice 6 is showed.*

Task: Send voice message to person tangible "Jaap"
Detail Task:

- TP lays down the tangible "Jaap" on the menu button "Berichten" (screen send voice is showed)
- TP can perceive now two new options (menu buttons "Foto" and "Audio Berichten"). TP moves the tangible to the option "Audio Berichten"
- Then countdown for record voice (screens Send voice 2-5) is showed
- When screen "Aan het opnemen" is showed (*Send voice 5*), TP has to speak something to record
- To stop the record TP has to press the menu button "Stoppen"
- The voice message will be sent directly and TP see voice message in timeline (Send voice 6)

Questions tested are:

- What does the TP think about the appearing menu buttons "Foto" and "Audio Berichten, is this clear?
- What does the TP think about the interaction to move tangible to the wished option (menu buttons)?
- Is the process of sending a voice message ("Aan het opnemen") clear for TP?
- Especially the countdown, what does the TP think about?
- The TP starts with sending a message and has then to decide what kind of message. After deciding "Audio Berichten" the voice is recorded and directly sent. This process is in reverse order to prototype A, where TP records the voice that is then showed on the screen. In a next step the TP has to send that to a person. Which of these processes is easier to understand for the TP?

Task 5

Initial position

In task 1 you had maybe trouble to orientate with the many messages you saw on the screen. With this device, you have the chance to show messages only of one person.

Task

Please show only the messages of Jaap on the screen, how would you go on?

If TP already has made prototype A, let this task out

Test Object: Sharing – Prototyp F
Initial position: Homepage (?)
Screens: *Filter*

Task: Filter items in timeline (*Overview*) that only messages of person tangible "Jaap" are showed

Detail Task:

- TP lays down tangible of "Jaap" on menu button "Berichten" on screen
- Then timeline is filtered and messages only of "Jaap" are showed (*Filter*)

Questions tested are:
- Has the TP an idea, how to filter?
- How much help need the TP of the task leader respectively how fast TP does understand and learn?
- What does TP think of process for filtering messages at all?
- This is a filter function, does somebody recognize from other devices (probably not)?

A.5 Taskscript end tasks for both prototypes

Task 6

Initial position

Jaap has reacted on your message, that you sent to him before. He asks if you have time to call.

Task

Call Jaap.

Test Object: Communication – Prototyp F or A
Initial position: Homepage (*Overview*)
Screens: After TP lays tangible on menu button "Bellen", screens *Show communication start (image)* and 2 seconds later *Start communication video* are showed. After the video show screen *End Communication (image)*

Task: TP starts a call
Detail Task:

- TP lays tangible of "Jaap" on menu button "Bellen"
- Then telephone call starts
- When the video ended, Jaap has finished the call

Questions tested are:
- What does TP think about the function of calling?
- Does the TP something mention about video, if that is liked or not? Otherwise ask
- Does TP want to regulate volume?

Task 7

Initial position

Jaap asked you, if you will play a game with him.

Aufgabe

Please start a game with Jaap.

Test Object: Communication – Prototyp F or A
Initial position: Homepage (*Overview*)
Screens: After TP lays tangible on menu button "Spelletjes", screen *Game 2* is showed.

Task: TP starts a game
Detail Task:

- TP lays tangible of "Jaap" on menu button "Spelletjes"
- Then game starts

Questions tested are:
- Does TP like the option to play a game?
- Does the TP like "Mühle"?
- What do you think is important……

Appendix B
B.1 Screens of prototype A

1) Process of scrolling
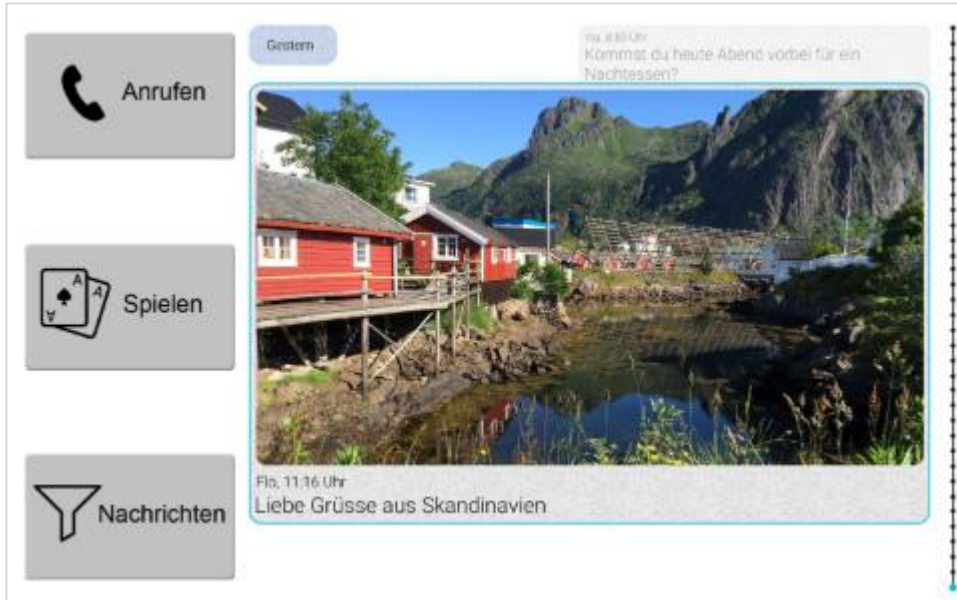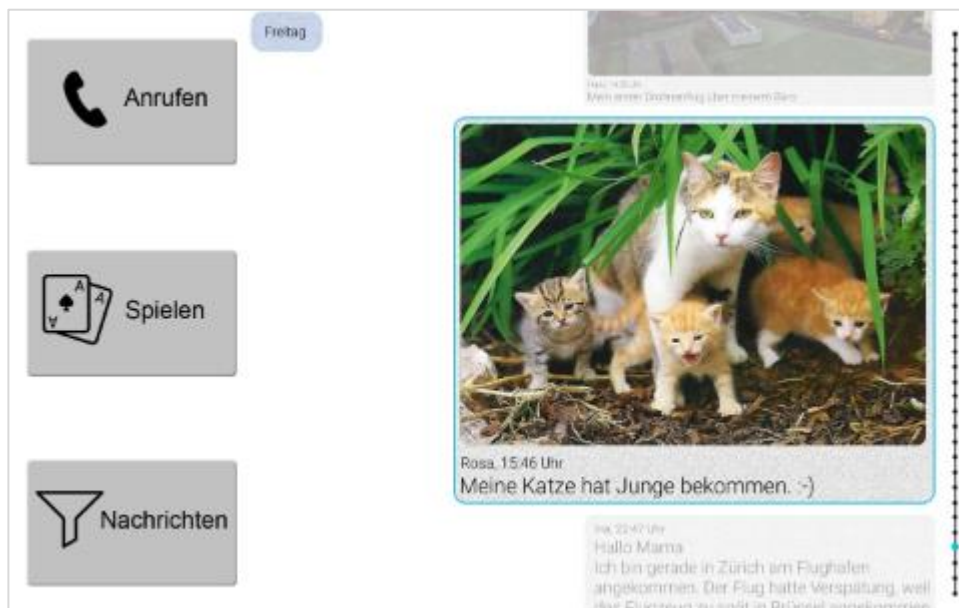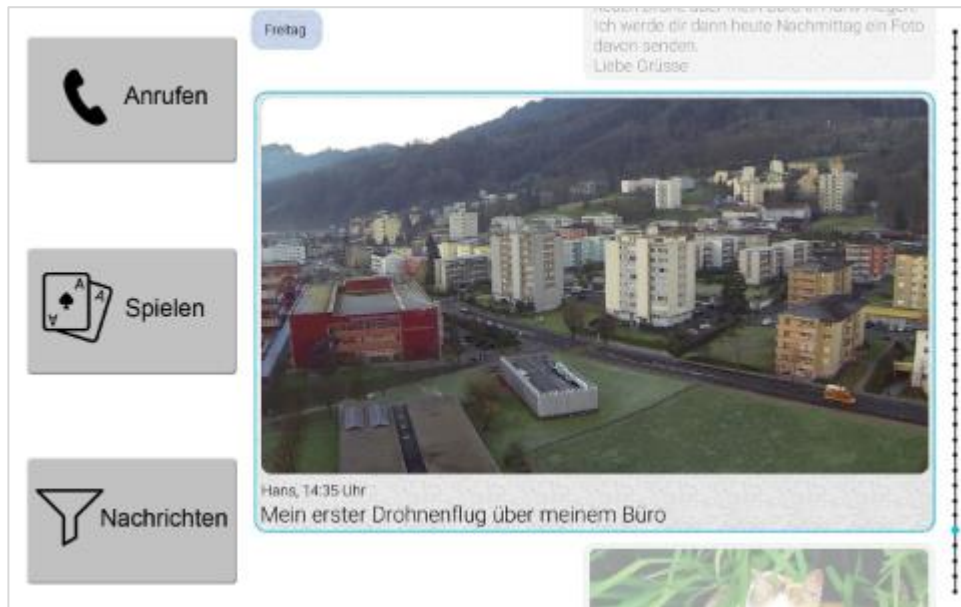
2) Process of forwarding a picture
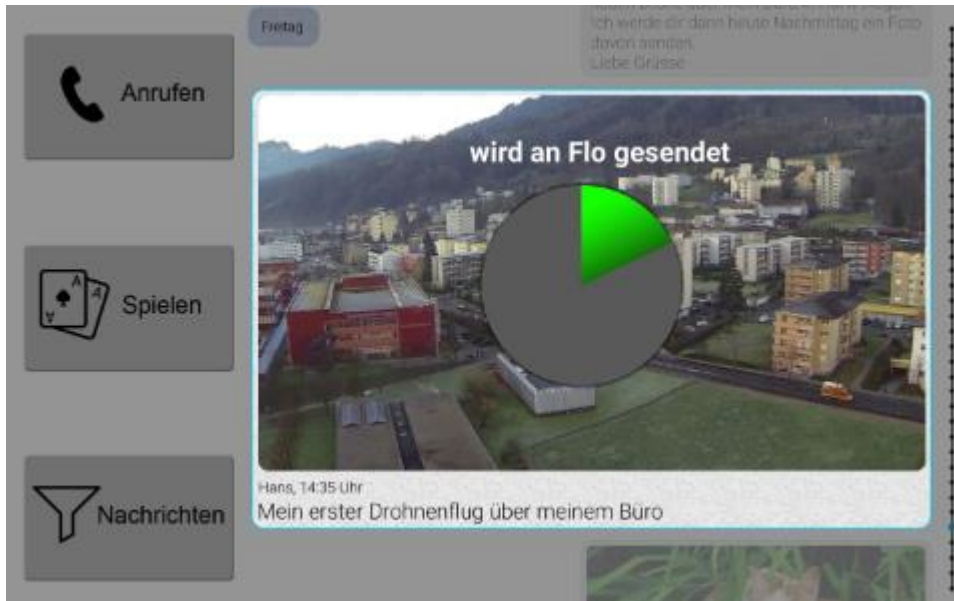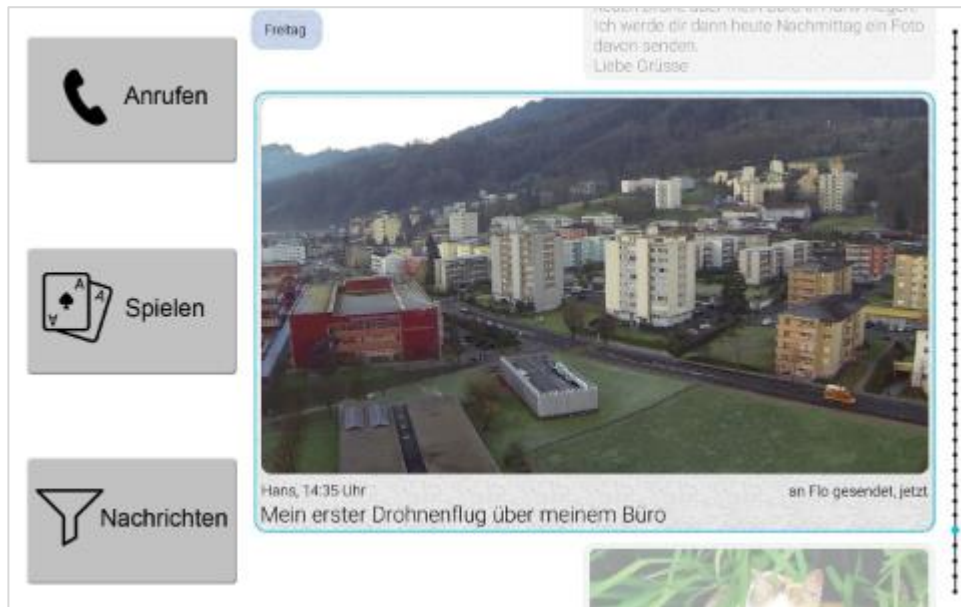
3) Process of receiving a new message
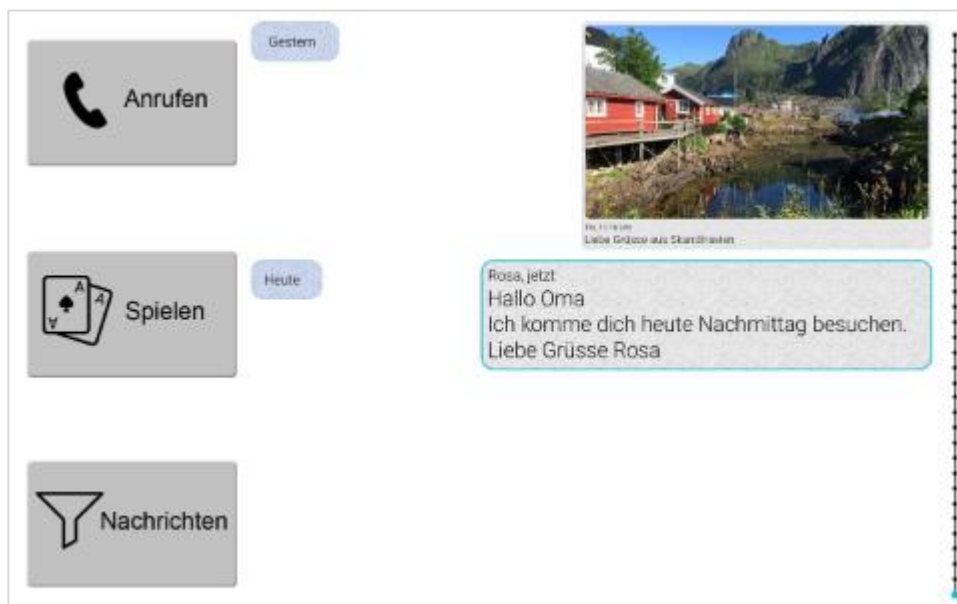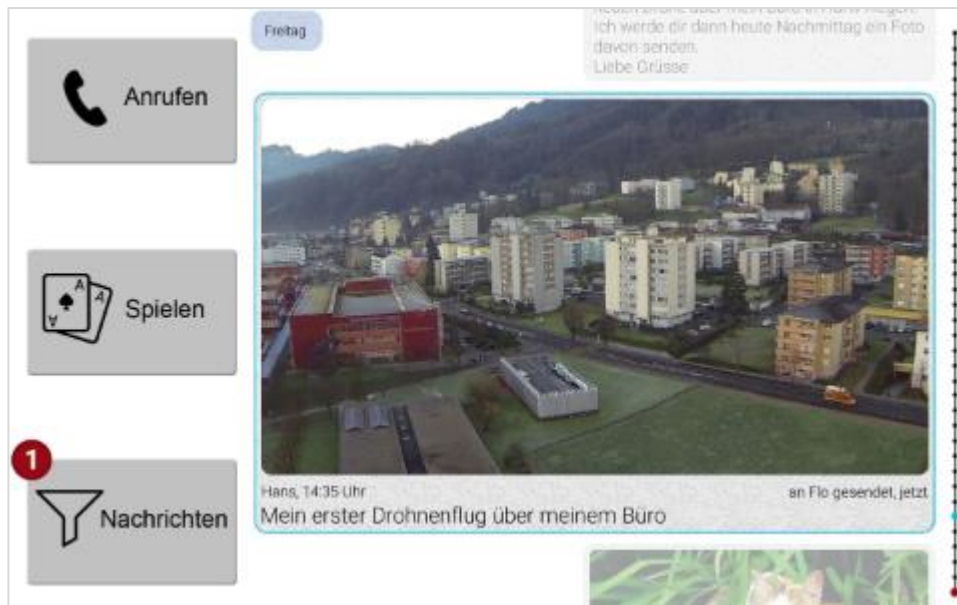
4) Process of taking an image and send to a person
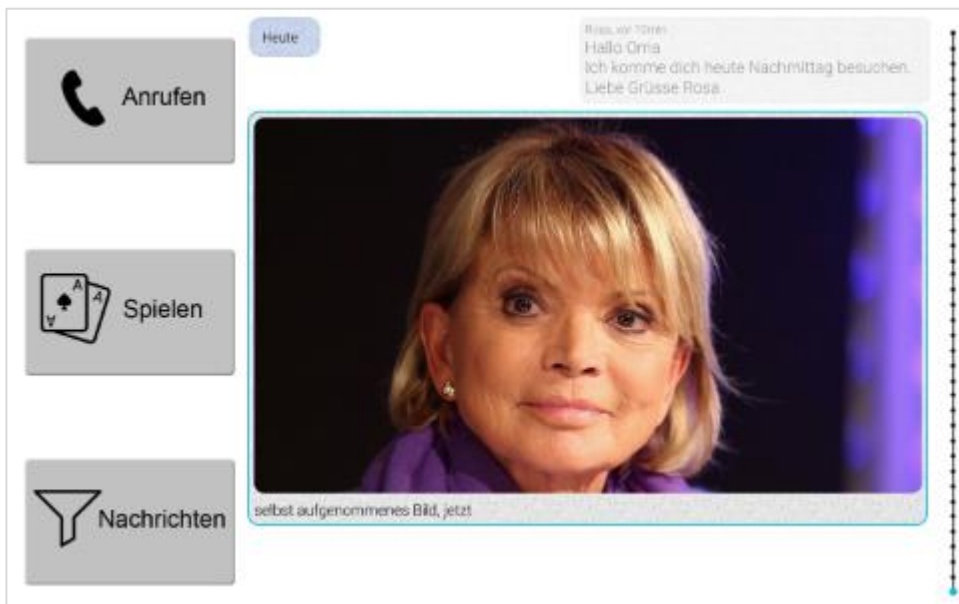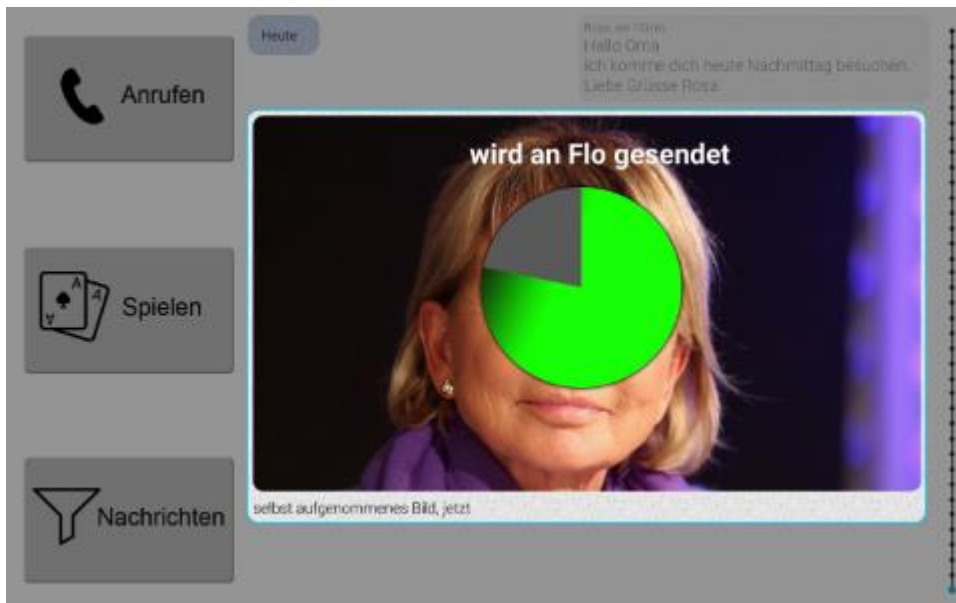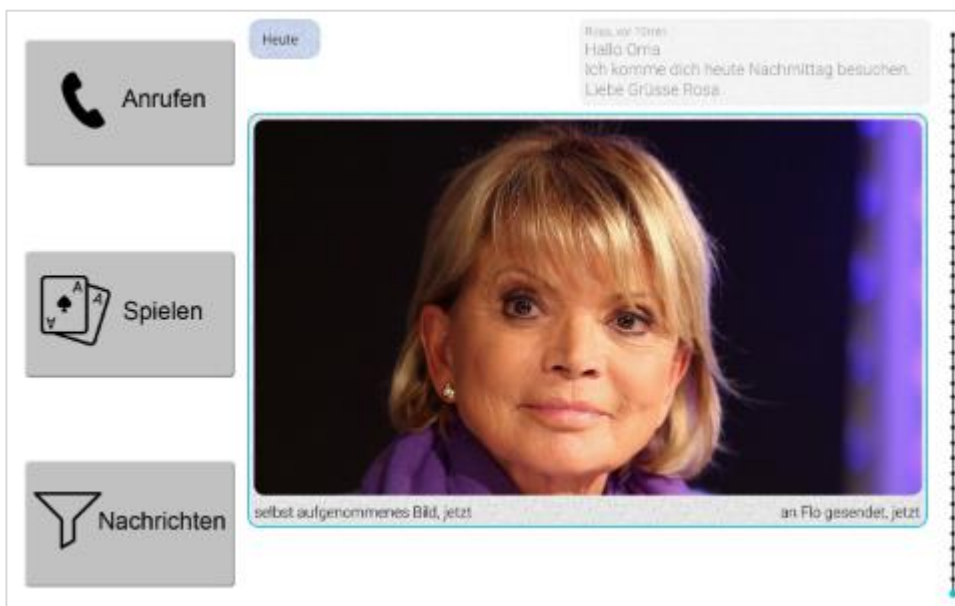
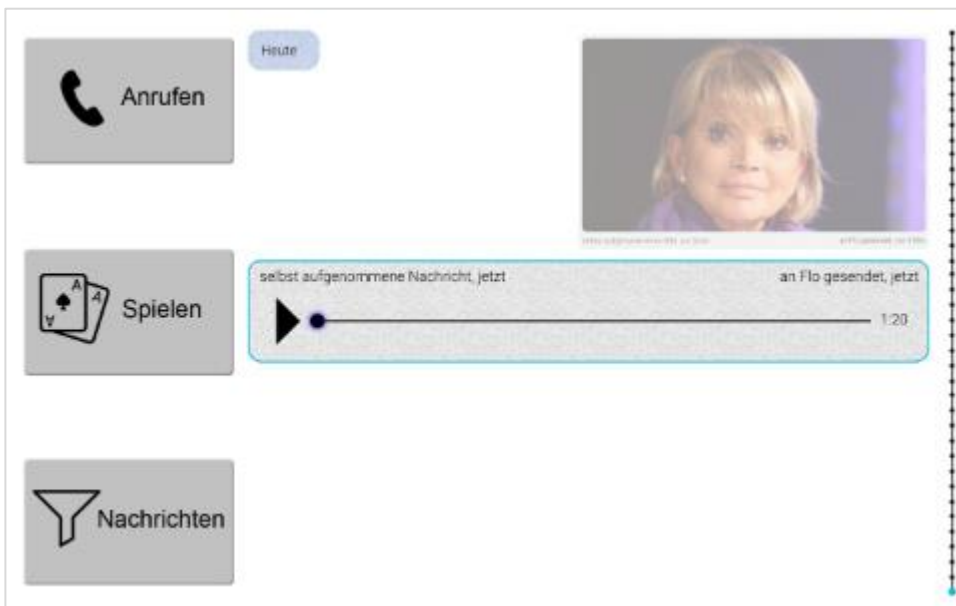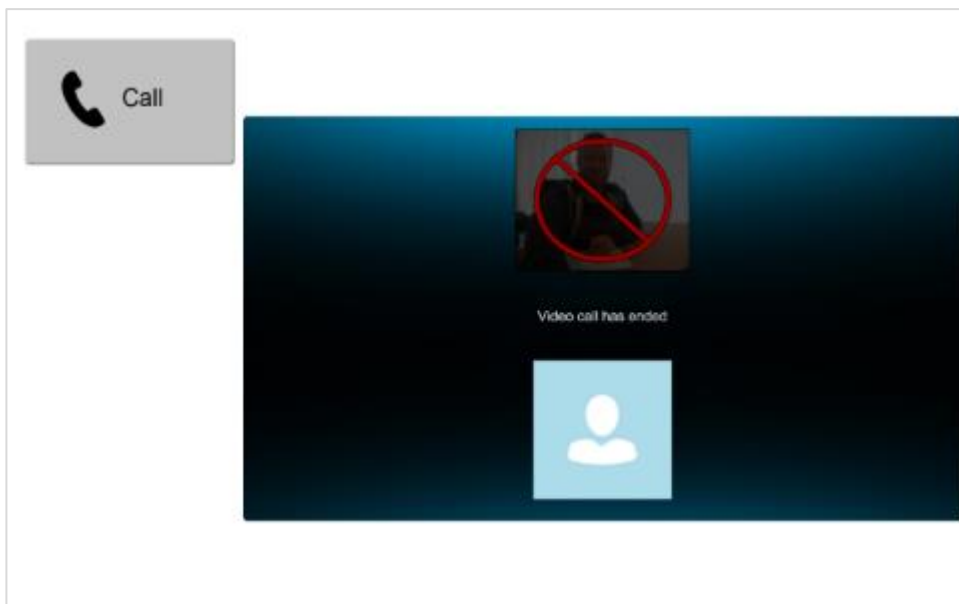## 5) Process of recording a voice message and send to a person
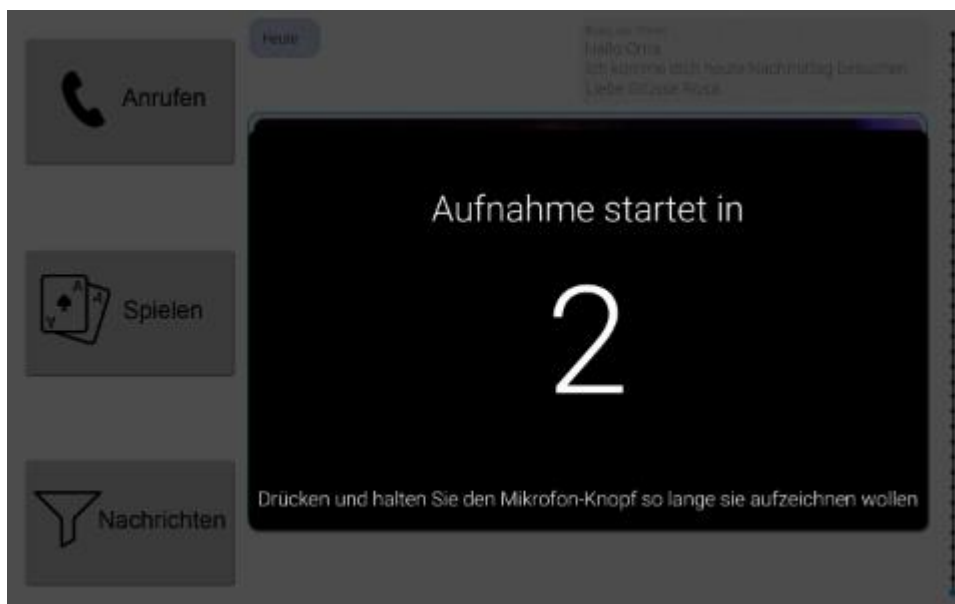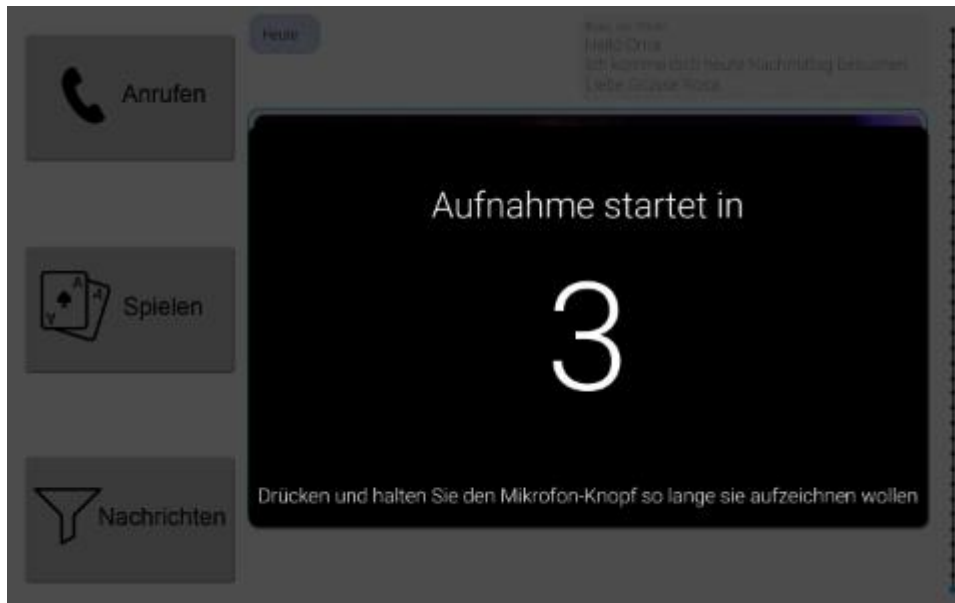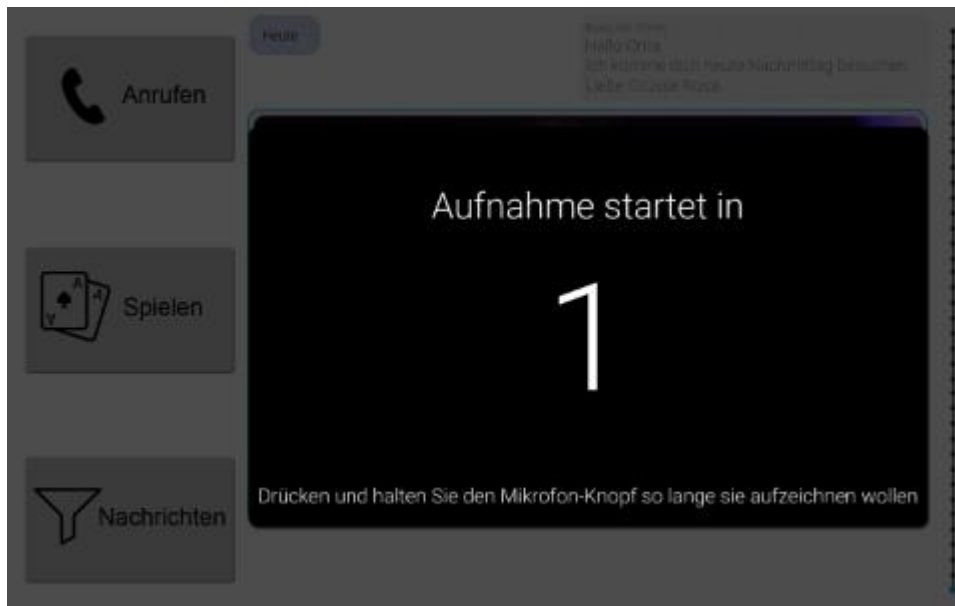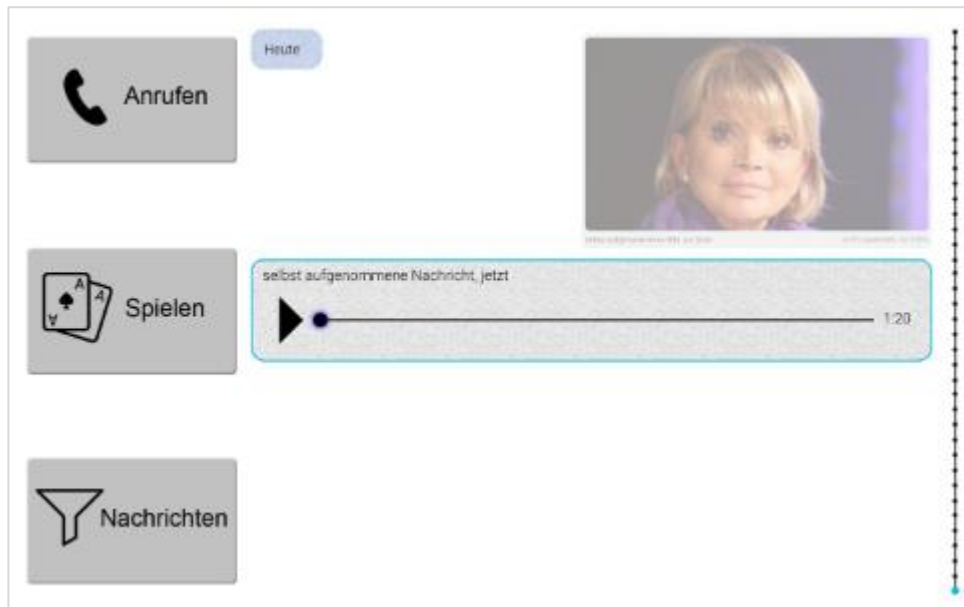
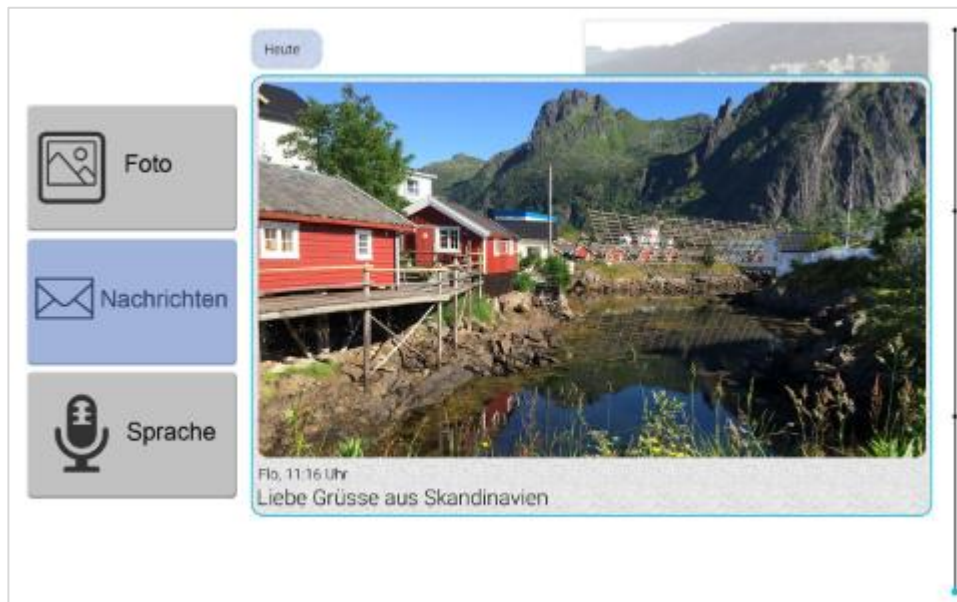## 6) Process of filtering messages

7) Process of calling a person
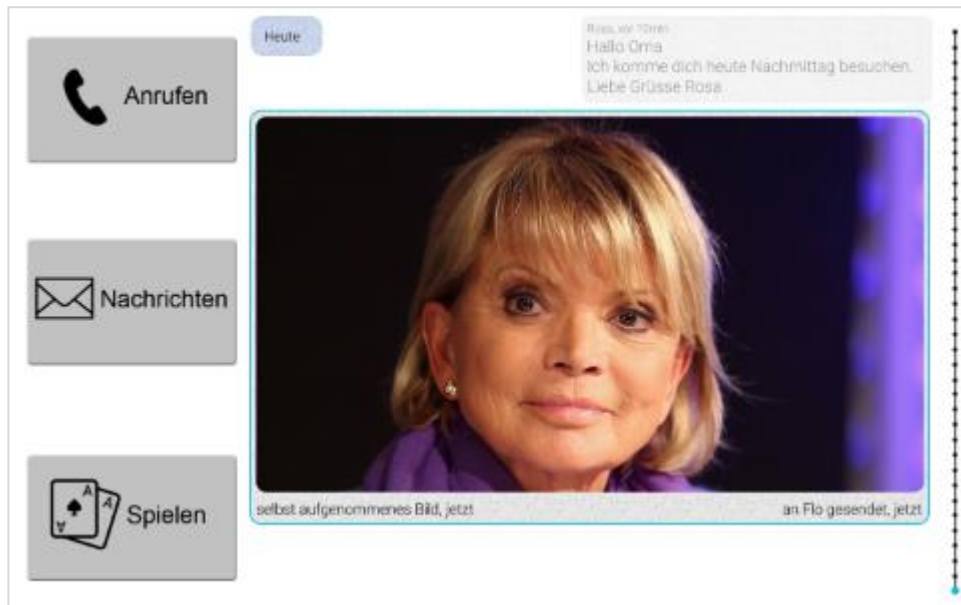
8) Process of playing a game with a person

B.2 Screens of prototype F

Many of the already showed pictures on prototype 1 are the same with prototype 2. The following list shows only pictures that are new in prototype F.

4) Process of taking an image and send to a person

5) Process of taking a voice message and send to a person