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## Kith&Kin Consortium

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## Abbreviations

Abbrev.	Description
AAL	Active & Assisted Living
TP	Test person



## Executive Summary

The second round of lab trials took place in Switzerland and the Netherlands in August and September 2017.

Even though, some instability of the soft- and hardware occurred, the trials brought up some interesting findings according to requirements, the interaction process, labelling, functionality and layout of the modules that need to be considered for the further design of the product.

We found out that the participants liked the clean and well structured screen of the module 'messages'. Even though the visual design is not yet definitive, the layout seems to be a good way to go on. Furthermore, the sound of the hardware must be louder and all in all the device should become slimmer and less technical elements should be seen by the users. For the upcoming field trials the labels should be produced also in Dutch to make sure, they get the information needed in the language they are used to.

The interaction with the combination of person tokens with buttons seems appropriate to the test participants even though they questioned, where to put the tokens as long as not used. But we can say, that using two tangibles for one interaction is logical to the users when they represent an object (for example: Franz) and an action (for example: calling)

The consistency of the visual design over all modules needs to be tightened next. The decisions of Tokens with buttons, Mobile or Stationary device, Enabling 'Expert mode', Features, Hardware and the look of the prototype (hard- and software) are now crucial in order to prepare the prototype 2 and the field trials.



# 1 About this Document

## 1.1 Role of the deliverable

This deliverable lists the findings we got out of the second lab trials. The findings are an important step in our interaction designing process, especially because we develop completely new interaction patterns in this project. In the finalizing conclusion, we discuss the findings and give some recommendations for further work.

## 1.2 Relationship to other Kith&Kin deliverables

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

Deliv:	Relation
D7.1A-2	Definition of 2nd lab trials protocol: this document presents the preparation for these lab trials.
D7.2A-2	Protocol of 2nd 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.
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.





## 2 Initial situation

The following chapters give some information to the situation given for the tests.

### 2.1 Period

Testing period: August – September 2017

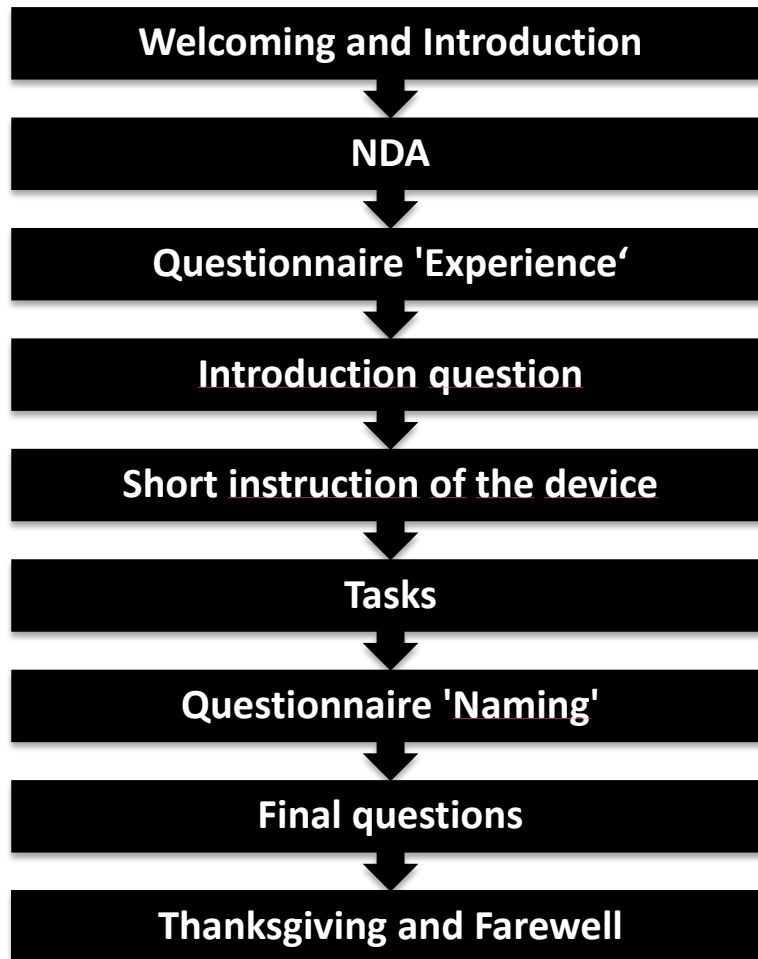
### 2.2 Involved Partners and their roles

<b>soultank AG:</b>	Testdesign
<b>terzStiftung:</b>	Testing Switzerland
<b>iHomeLab:</b>	Technical support Switzerland
<b>CMOF:</b>	Testing Netherlands
<b>Yoom:</b>	Technical support Netherlands



### 3 Test Procedure

The tests all followed a certain procedure to make sure, the results can be combined properly.





## 4 Test participants

In this chapter some information about the test participants can be found.

### 4.1 Numbers

The numbers show the amount of participants and how it is distributed per country and gender.

<b>Total Number of participants</b>	<b>8</b>
Women Netherlands	3
Men Netherlands	0
Total Netherlands	3
Woman Switzerland	2
Men Switzerland	3
Total Switzerland	5
Total Woman	5
Total Men	3



## 4.2 Age

The age of the participants with different manifestations was as followed.

Maximum Age (oldest person)	82
Minimum Age (youngest person)	67
Average Age all	75
Average Age Switzerland	74
Average Age Netherlands	76
Average Age women	74
Average Age men	75

## 4.3 Professions

The participants covered the following professions.

- Farmer's wife - Retired
- Childcare and Elderly care - Retired
- Psychiatric nurse - Retired
- Teacher, Translator and Interpreter – Part time
- Housewife - Retired
- Teacher and Translator - Retired
- Senior Attorney - Retired
- Engineer and Specialist for quality management – Retired



## 4.4 Experience

In a Questionnaire the experience of the participants was polled. The result can be gathered from the table below.

How often do you use a <b>Computer</b> ? (only one answer possible)	<input type="radio"/> 1 Never
	<input type="radio"/> Rarely
	<input type="radio"/> Once a week
	<input type="radio"/> 2 Several times a week
How often do you use a <b>Tablet</b> ? (only one answer is possible)	<input type="radio"/> 4 Daily
	<input type="radio"/> 3 Never
	<input type="radio"/> 1 Rarely
	<input type="radio"/> 1 Once a week
How often do you use a <b>Smartphone</b> ? (only one answer is possible)	<input type="radio"/> 1 Several times a week
	<input type="radio"/> 2 Daily
	<input type="radio"/> 2 Never
	<input type="radio"/> Rarely
	<input type="radio"/> 1 Once a week
	<input type="radio"/> Several times a week
	<input type="radio"/> 5 Daily



## 4.5 Interest

Furthermore, the interest in using technical devices was questioned.

	←			→		
	I don't agree at all			I fully agree		
	1	2	3	4	5	6
I am <b>generally interested</b> in technical devices.	1			4		3
I <b>often feel overwhelmed</b> in the use of technical devices	3			1	3	1
I would like to do <b>as little as possible</b> with technical devices.	3	3			2	
I am <b>experienced</b> in the use of technical devices.		1	2		3	2

## 4.6 Conclusion

Compared to the target group, most of the test participants were relatively well experienced in the usage of technical devices

Reason for this was that the prototype 1 still had some technical issues and we were concerned if this would overwhelm unexperienced people.

As we still had some unexperienced people in the field trials we are able to make the comparison between the two groups:

- **Literate** with technical devices
- **Illiterate** with technical devices

In order to make the categorisation of «Literate» and «Illiterate» we use the answers of the statement «I often feel overwhelmed in the use of technical devices».

If the answer was 5 or 6, we consider the person as rather unexperienced

Analysing the answers out of other questions, this is a corresponding statement and leads us to a well-balanced categorisation:

Literate	4
Illiterate	4



## 5 Test results

The following test results could be recognized.

### 5.1 First impression

After having a glance at the KnK-device, the question was asked:  
**«What is your first impression of the device?»**

#### 5.1.1 Literate

The following answers were protocolled for people that were literate with technical devices.

- **«Too clumsy or big» (2x)**
- «Clearly labelled»
- «Relation between tokens and device is given»
- «Unfamiliar device»
- «Might be helpful for very old people»
- «Cannot be moved»
- «Screen seems cleaned up and clear»
- «It seems complicated»
- «It is tempting»

#### 5.1.2 Illiterate

The following answers were protocolled for people that were illiterate with technical devices.

- **«It looks complicated» (3x)**
- «Too clumsy or big»
- «Big buttons are a good thing»
- «Clearly arranged»
- «What can be done with this?»
- «Where are the numbers to make a call?»
- «It has many buttons»



## 5.2 Task 1 – Finding and opening message

Task 1 was phrased like this: «Please open the message of Franz, which you received on August 28, 2017»

### 5.2.1 Numbers

The success of fulfillment could be counted as followed.

		Literate (4)	Illiterate (4)	All (8)
<b>Took manual?</b>	Yes:		3	<b>3</b>
	No:	4	1	<b>5</b>
<b>Needed help?</b>	Yes:			
	No:	4	4	<b>8</b>
<b>Task succeeded?</b>	Yes:	4	2	<b>6</b>
	No:		2 1. device did not work 2. Scroll did not work / used filter or play-button	<b>2</b>

### 5.2.2 Conclusion

The task led to the following statements.

#### Mostly the task could be fulfilled successfully

- In two cases, the tasks could not be fulfilled because of the unstable device
- In one of the two cases, the participant did not understand the interaction process at the beginning

**Most of the participants took the manual before starting the tasks over all. For task 1, 3 illiterate participants took the manual to make sure, they are doing it right.**

- Illiterate Users are very uncertain in the use of technical devices. They are not used of just trying out and therefore, are looking for assurance in the manual. This needs to be considered.





## 5.3 Task 2 – Forwarding message

Task 2 was phrased like this: «Please forward this message to Elisabeth»

### 5.3.1 Numbers

The success of fulfillment could be counted as followed.

		Literate (4)	Illiterate (4)	All (8)
<b>Took manual?</b>	Yes:	3		<b>3</b>
	No:	1	4	<b>5</b>
<b>Needed help?</b>	Yes:	1	1	<b>2</b>
	No:	3	3	<b>6</b>
<b>Task succeeded?</b>	Yes:	3	3	<b>6</b>
	No:	1 1. could only fulfill the task with verbal help	1 1. Tangible needed to be taken off first because of technical issues	<b>2</b>

### 5.3.2 Conclusion

The task led to the following statements.

#### The task could not always be fulfilled properly

- In one case, the system was unstable, which caused uncertainties. Explanations were necessary in this very case.
- In one case, there was confusion about the tangible that needed to be taken off first because of technical issues.

#### Experience for the user can be improved

- «The button 'Confirmation' should be green»
- «Feedback, that the message was sent, would be helpful»

#### New feature needs to be considered

- «It should be possible, to send a message to several people at once»



## 5.4 Task 3 – Making and sending messages

Task 3 was phrased like this: «**Please take a new message and send it to Elisabeth**»

### 5.4.1 Numbers

The success of fulfillment could be counted as followed.

		Literate (4)	Illiterate (4)	All (8)
<b>Took manual?</b>	Yes:	2		<b>2</b>
	No:	2	4	<b>6</b>
<b>Needed help?</b>	Yes:	2	3	<b>5</b>
	No:	2	1	<b>3</b>
<b>Task succeeded?</b>	Yes:	1	1	<b>2</b>
	No:	3	3	<b>6</b>
		1./2./3. Many technical issues occurred 2. Placing the paper to the right position caused problems 3. Using pen and paper was unclear	1. Because of technical issues 2. Using the paper was unclear 3. Unclear how to start the process	

### 5.4.2 Conclusion

The task led to the following statements.

**The task could be fulfilled properly by all test participants whether they were literate or not**

**Hardware Audio needs to be improved**

- Too quiet

**Technical issues occurred**

- Tangible was not recognized once



## 5.5 Task 4 – Making a call

Task 4 was phrased like this: «**Please call Franz**»

### 5.5.1 Numbers

The success of fulfillment could be counted as followed.

		Literate (4)	Illiterate (4)	All (8)
<b>Took manual?</b>	Yes:	3	2	<b>5</b>
	No:	1	2	<b>3</b>
<b>Needed help?</b>	Yes:			
	No:	4	4	<b>8</b>
<b>Task succeeded?</b>	Yes:	4	4	<b>8</b>
	No:			

### 5.5.2 Conclusion

The task led to the following statements.

**The task could be fulfilled properly by all test participants whether they were literate or not**

**Hardware Audio needs to be improved**

- Too quiet

**Technical issues occurred**

- Token was not recognized once



## 5.6 Task 5 – Accepting an incoming phone call

Task 5 was phrased like this: «**You get a phone call and accept it**»

### 5.6.1 Numbers

The success of fulfillment could be counted as followed.

		Literate (4)	Illiterate (4)	All (8)
<b>Took manual?</b>	Yes:	1	1	<b>2</b>
	No:	3	3	<b>6</b>
<b>Needed help?</b>	Yes:		1	<b>1</b>
	No:	4	3	<b>7</b>
<b>Task succeeded?</b>	Yes:	4	3	<b>7</b>
	No:		1 <small>1. For accepting the phone call, the button 'calling' was pressed</small>	<b>1</b>

### 5.6.2 Conclusion

The task led to the following statements.

**The task could be fulfilled properly nearly by all test participants**

#### **Interaction with the buttons**

- In two cases, the wrong button was pressed in order to accept the phone call



## 5.7 Task 6 – Open a new message

Task 6 was phrased like this: «**You received a new message. How can you open it**»

### 5.7.1 Numbers

The success of fulfillment could be counted as followed.

		Literate (4)	Illiterate (4)	All (8)
<b>Took manual?</b>	Yes:		2	<b>2</b>
	No:	4	2	<b>6</b>
<b>Needed help?</b>	Yes:		1	<b>1</b>
	No:	4	3	<b>7</b>
<b>Task succeeded?</b>	Yes:	4	2	<b>6</b>
	No:		2	<b>2</b>

1. Button did not work (?)  
2. Did not find it

### 5.7.2 Conclusion

The task led to the following statements.

#### Technical issues occurred

- Scrolling wheel did not work properly
- Timeline did not show that, there was a new message at first (one minute later it worked well again)
- Information 'there is a new message' does not disappear automatically

#### Interaction

- Interaction in this task seemed to work quite well. Experience with the device is helpful.



## 5.8 Questionnaire „Labelling“

We asked the test participants to review the labels of the interaction elements. Knowing that the requirements need further analysis, we were looking for first indications, where could possibly be pain points.

### 5.8.1 Switzerland

- Labels were in German
- Swiss people are used to German labels
- 5 Participants were asked (husband of one participant was asked in addition)

**Question asked: How understandable were the following labels for you?**

	Habe ich gut verstanden		Habe ich gar nicht verstanden	
	1	2	3	4
filtern	<input type="radio"/>	2	2	1
aufnehmen	5	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
blättern	4	1	<input type="radio"/>	<input type="radio"/>
bestätigen	3	1	1	<input type="radio"/>
Kopierfeld	2	2	<input type="radio"/>	1

**Question asked: Would you prefer one of the alternatives below?**

	Wie bisher:	Alternativen:	Eigener Vorschlag:		
<b>filtern</b>	<input type="radio"/> filtern	2 anzeigen	<input type="radio"/> suchen	1 finden	<input type="radio"/> 1x Sortieren 1x auswählen
<b>aufnehmen</b>	4 aufnehmen	<input type="radio"/> fotografieren	<input type="radio"/> Bild machen	1 kopieren	<input type="radio"/> _____
<b>blättern</b>	4 blättern	1 scrollen	<input type="radio"/> Vorherige / Nächste	<input type="radio"/> rauf / runter	<input type="radio"/> 1x hoch / runter
<b>bestätigen</b>	1 bestätigen	4 OK	<input type="radio"/> Weiter	<input type="radio"/> Ja	<input type="radio"/> _____
<b>Kopierfeld</b>	2 Kopierfeld	3 Aufnahmefeld	<input type="radio"/> Bereich für Bild	<input type="radio"/> Kamera-bereich	<input type="radio"/> _____



## 5.8.2 Netherlands

- Labels were in English
- As English is not their mother tongue, the people are not used to English labels
- 2 Participants were asked

Question asked: How understandable were the following labels for you?

	Well understandable		I did not understand at all	
	1	2	3	4
filter	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	2
Record (only one result)	1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
scroll	1	<input type="radio"/>	<input type="radio"/>	1
confirm	1	<input type="radio"/>	<input type="radio"/>	1
Copy field	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	2

Question asked: Would you prefer one of the alternatives below?

	As seen:	Alternatives:			Own proposal:
<b>Filter</b>	<input type="radio"/> filter	1 show → <b>tonen</b>	1 search → <b>zoeken</b>	<input type="radio"/> find	<input type="radio"/> _____
<b>Record</b>	1 record → <b>opnemen</b>	1 take a photo → <b>maak een foto</b>	<input type="radio"/> Take a picture	<input type="radio"/> copy	<input type="radio"/> _____
<b>Scroll</b>	1 scroll	<input type="radio"/> browse	1 previous / next → <b>vorige / volgende</b>	<input type="radio"/> up / down	<input type="radio"/> _____
<b>confirm</b>	1 confirm → <b>bevestigen</b>	1 OK	<input type="radio"/> Go on	<input type="radio"/> Yes	<input type="radio"/> _____
<b>Copy field</b>	<input type="radio"/> Copy field	1 Recording field → <b>opname veld</b>	<input type="radio"/> Area for picture	<input type="radio"/> Camera area	<input type="radio"/> 1x ??? (unclear)



### 5.8.3 Conclusion

Of course, the questionnaire doesn't give us the end-result of the labels, because the research-number is irrelevant. However, there could be found some indications, that will be considered in the next stage of prototyping.

#### German version:

- 'filtern' will be renamed into 'anzeigen'
- 'aufnehmen' will be taken on
- 'blättern' will be taken on
- 'bestätigen' will be renamed into 'OK'
- 'Kopierfeld' will be renamed into 'Aufnahmefeld'

#### English version:

- 'filter' will be renamed into 'show' (NL: 'tonen')
- 'record' will be taken on (NL: 'opnemen')
- 'scroll' will be taken on (NL: 'scroll')
- 'confirm' will be renamed into 'OK'
- 'copy field' will be renamed into 'record field' (NL: 'opname veld')

#### Dutch version:

For the field trials we recommend to prepare a version in Dutch because the people are used to this more.

#### Icons:

Even though, four participants preferred the labels to be only in textual form, **we recommend to go on with labels including an icon**, because we believe, that it can support the textual label.





## 5.9 Final questions

At the end, there was asked the following questions to all of the test participants:

- **What was your overall impression of the device?**
- **What did you not like?**
- **What did you like most?**

### 5.9.1 Answers

The following answers were given by the test users.

#### «What was your overall impression of the device?»

- Explanations are needed especially at the beginning
- Simple and easy to operate (3x)
- Colored buttons would be helpful
- Quite intuitive
- Device has its limitations
- Too less functions (literate person)
- Just as much function as needed (2x)
- Buttons are great for elderly people
- Handwritten messages are fantastic
- Telebanking is missing (2x)
- Are E-Mails possible?
- Unclear, cannot work with this device

#### «What did you not like?»

- Response time is very low
- Touchscreen would be better (literate person)
- Tokens not ideal
- Loudness of sound
- Writing by hands is uncomfortable
- There are too many buttons
- Do I need as many tokens as family members?
- I had many difficulties using this device



**«What did you like most?»**

- Automatization
- Clean Screen with good structure
- Liked the buttons
- Only a few functions
- Good contrasts on the screen
- Simplicity
- As soon as system is understood, it is well understandable
- Scrolling is great



## 5.10 Supplementary questions

If there was enough time, the test manager could ask two supplementary optional questions to the test participants:

- **Imagine that you could play a board game with a loved one. How would you start this game on the device?**
- **What games would you like to play with such a device?**

### 5.10.1 Answers

Here the answers of the supplementary questions can be found.

**«Imagine that you could play a board game with a loved one. How would you start this game on the device?»** The test participant could show how to do it.

- Was initiated correctly three times
- Was not initiated correctly once
- «It prevents from loneliness and social isolation!»

**«What games would you like to play with such a device?»**

- Nine men's Morris 3x
- Jassen (Swiss Card game) 2x
- Solitaire 2x
- Chess 2x
- Ludo 2x
- Bridge
- Chinese checkers
- Domino
- Sudoku
- Battleships
- «No game but internet banking»
- «I don't play games»



## 6 Over all conclusions and recommendations

### 6.1 Requirements

#### 1. Hardware

- a. Sound must be louder
- b. The first impression of some of the users was, that the prototype is too clumsy and big. Furthermore, it seemed complicated at first glance.
- c. The design of the hardware should become slimmer and with less technical elements that can be seen by the users.
- d. Also, the layout of the buttons will be helpful to make it seem better structured.

#### 2. Expert Mode

- a. E-Banking was mentioned twice (literate + illiterate person)
- b. In the consortium the discussion already started, if the product should be built in consideration, that the people start wanting to do more with the device at a later stage (expert-mode).
- c. The wish for E-Banking indicates, that the possibility should be given. However, it is important, that this does not compete with the simplicity with very few functions for people that don't want more.
- d. Some of the participants mentioned that they liked the fact, that it has just as many functions as needed and not more.

#### 3. Mobility

- a. This was not asked in the tests explicitly. However, the test participants did not mention this either. This indicates that this is not an important concern to them or that the prototype just wasn't inviting this idea.

However, we would recommend to focus on the stationary device at this stage.

#### 4. Playing

- a. There were voices for and against the module of playing. In order to really connect the people, we would recommend to keep this up.



## 6.2 Interaction process

1. Tokens in combination with buttons
  - a. Most of the test participants liked the buttons a lot. The combination with tokens, however, brought up some uncertainties according to mobility and the number of possible tokens.
  - b. The consortium must decide, whether they want to hold on to the tokens or not. Also in consideration of producing the tokens for the future buyers...
2. Having an action with the combination out of two different tokens (buttons and person tokens) seemed to be okay for all of the test participants. It was logical that an action needs to be done in combination with a person.

## 6.3 Layout of the module 'Messages'

1. Even though we did not ask the test participants we got many feedbacks, that the screen looks clean and well structured.

However, we point out that all the modules must be visually adjusted to each other in order to produce a complete and rounded experience for the user.

A stringent interface design concept is needed

## 6.4 Functionality

1. The prototype 1 was quite instable in the usage.
  - a. Buttons and the scroll wheel did not work properly at all times
  - b. Reaction time was very slow at some points
  - c. Tokens were not recognized every time
  - d. Not always a feedback of sending a message was recognized
  - e. An incoming message was not always indicated

As the tests were conducted, some of the issues could be explained by the test manager.

For the field trials, though, it is **indispensable** to have a prototype that works stable over all modules. Otherwise support will take too much time and the test results are not as meaningful.

2. Feedback: Sometimes the users got uncertain because they did not get any feedback of the system such as an indication or something was happening on the screen as soon as they interacted with it.
  - a. Every action of the user should cause a reaction of the system in some way



## 7 Decisions to be made

In order to go on in the design process of prototype 2 for the field trials, some decisions need to be made. These are the most important topics:

- Tokens with buttons / Only buttons?
- Mobile / Stationary / Hybrid?
- Enabling 'Expert mode'?
- Complete feature list
- Hardware-Requirements
- Look of the prototype