



D4.1 Evaluation Feedback Report

Iterative report on the results of the prototype tests providing feedback to technological partners

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AMBIENT ASSISTED LIVING

JOINT PROGRAMME

AAL-2016



MK Prosopsis Ltd
www.mkprosopsis.com



LIFEtool
computer aided communication



**nationaal
ouderen
fonds**





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1 Introduction

This deliverable gives an overview of the methods and results of the prototype test activities during the design phase of the MI-Tale app.

Wireframes, mockups and prototypes were used to evaluate the early design before the actual real technical development. The prototypes were presented with LIFEtool's Adobe Air framework on actual devices. They included the navigation structure, some interactive functionality as well as the design and were tested with experts and real end-users from the target groups in evaluation sessions. We asked the test users for their feedback, involving them in a co-design process that would lead to better solutions from an early start.

An evaluation manual was created to help the pilot partners to perform the evaluation sessions on the interactive MI-Tale prototype. This manual contains basic information on the evaluation methods as well as the tasks, which the end users should perform within the application.



2 Methods

The evaluation consisted of three parts:

- 1) **Heuristic evaluations** done by evaluators from participating organizations
- 2) **Thinking aloud sessions** with target users observed by researchers from the pilot partners
- 3) **User experience questionnaires** filled out by end users at the ends of the evaluation session

Our goal was to gather as much feedback as possible, which would help us to identify any design issues before the development got to the expensive part of the process.

Running user tests would help us to:

- Identify if users are able to complete specific tasks successfully
- Establish how efficiently users can undertake predetermined tasks
- Pinpoint changes to the design that might need to be made to address any shortcomings
- Make subjective findings: Do users enjoy using the application?

These findings and results provided valuable feedback that helped shape and improve the user experience of the MI-Tale application.

The interactive prototype evaluation was conducted with 2-3 end users per target group (seniors, informal caregivers, formal caregivers) per pilot site. It was suggested that seniors with dementia should not be included (only demo content, triggered emotions are not predictable) and formal caregivers who are already working with the Böhm method are preferred to be included whenever possible. The heuristic evaluation was carried out by 2 experts of each partner. In this phase of the project, where we focus more towards usability, it wouldn't provide additional value to include a bigger amount of users to gain feedback.¹

The identified issues from the evaluations were documented in Trello², where boards for each user group and experts per partner are installed. Individual invitations are sent out to each partner to access the boards. **All issues shall be reported in Trello.** It is likely that the same issues are reported several times, but the frequency of issues is also a valuable information for us in this phase.

¹ <https://goo.gl/X271D3>

² <https://trello.com/>



2.1 Heuristic Evaluation

Developed by Nielsen and Molich, 1990³

In General

Heuristic evaluation is a method for finding the usability problems in a user interface design so that they can be attended to as part of an iterative design process. Heuristic evaluation involves having a small set of evaluators examine the interface and judge its compliance with recognized usability principles (the "heuristics").

The recommended number of evaluators is three to five (since one does not gain that much additional information by using larger numbers).

Heuristic evaluation is performed by having each individual evaluator inspect the interface alone. The results of the evaluation will be recorded as written reports from each evaluator and aggregated afterwards.

Typically, a heuristic evaluation session for an individual evaluator lasts one or two hours. Longer evaluation sessions might be necessary for larger or very complicated interfaces with a substantial number of dialogue elements, but it would be better to split up the evaluation into several smaller sessions, each concentrating on a part of the interface.

During the evaluation session, the evaluator goes through the interface several times and inspects the various dialogue elements and compares them with a list of recognized principles (the heuristics). These heuristics are general rules that seem to describe common properties of usable interfaces. In addition to the checklist of general heuristics to be considered for all dialogue elements, the evaluator obviously is also allowed to consider any additional usability principles or results that come to mind that may be relevant for any specific dialogue element.

In principle, the evaluators decide on their own how they want to proceed with evaluating the interface. A general recommendation would be that they go through the interface at least twice, however. The first pass would be intended to get a feel for the flow of the interaction and the general scope of the system. The second pass then allows the evaluator to focus on specific interface elements while knowing how they fit into the larger whole.

The output from using the heuristic evaluation method is a list of usability problems in the interface with references to those usability principles that were violated by the design in each case in the opinion of the evaluator. The evaluators should try to be as specific as possible and should list each usability problem separately.

The aggregated list of usability problems will be the basis for further discussion on what has to be redesigned.

³ <https://goo.gl/hqxqGM>



Ten Usability Heuristics by Jakob Nielsen



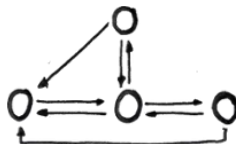
Visibility of system status

Give the users appropriate feedback about what is going on.



Match between system and the real world

Use real-world words, concepts and conventions familiar to the users in a natural and logical order.



User control and freedom

Support undo, redo and exit points to help users leave an unwanted state caused by mistakes.



Error prevention

Prevent problems from occurring; eliminate error-prone conditions or check for them before users commit to the action.



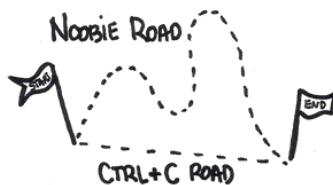
Aesthetic and minimalist design

Don't show irrelevant or rarely needed information since every extra elements diminishes the relevance of the others.



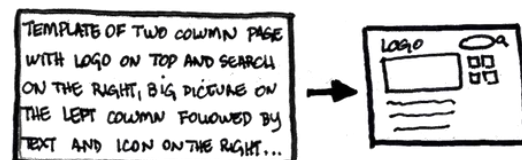
Consistency and standards

Follow platform conventions through consistent words, situations and actions.



Flexibility and efficiency of use

Make the system efficient for different experience levels through shortcuts, advanced tools and frequent actions.



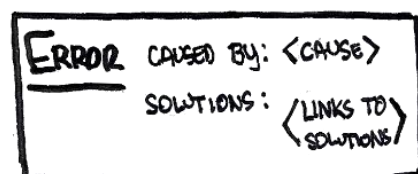
Recognition rather than recall

Make objects, actions, and options visible at the appropriate time to minimize users' memory load and facilitate decisions.



Help and documentation

Make necessary help and documentation easy to find and search, focused



Help users recognize, diagnose, and recover from errors

Express error messages in plain language (no codes) to indicate the problem and suggest solutions.

⁴ Picture taken from: <http://bit.ly/35F35wt>



Set of Heuristics

- **Visibility of system status**
The system should always keep users informed about what is going on, through appropriate feedback within reasonable time.
- **Match between system and the real world**
The system should speak the users' language, with words, phrases and concepts familiar to the user, rather than system-oriented terms. Follow real-world conventions, making information appear in a natural and logical order.
- **User control and freedom**
Users often choose system functions by mistake and will need a clearly marked "emergency exit" to leave the unwanted state without having to go through an extended dialogue. Support undo and redo.
- **Consistency and standards**
Users should not have to wonder whether different words, situations, or actions mean the same thing.
- **Error prevention**
Even better than good error messages is a careful design, which prevents a problem from occurring in the first place. Either eliminate error-prone conditions or check for them and present users with a confirmation option before they commit to the action.
- **Recognition rather than recall**
Minimize the user's memory load by making objects, actions, and options visible. The user should not have to remember information from one part of the dialogue to another. Instructions for use of the system should be visible or easily retrievable whenever appropriate.
- **Flexibility and efficiency of use**
Accelerators -- unseen by the novice user -- may often speed up the interaction for the expert user such that the system can cater to both inexperienced and experienced users. Allow users to tailor frequent actions.
- **Aesthetic and minimalist design**
Dialogues should not contain information, which is irrelevant or rarely needed. Every extra unit of information in a dialogue competes with the relevant units of information and diminishes their relative visibility. This is especially important when designing for users with low digital skills, such as older people.



- **Help users recognize, diagnose, and recover from errors**
Error messages should be expressed in plain language (no codes), precisely indicate the problem and constructively suggest a solution.
- **Help and documentation**
Even though it is better if the system can be used without documentation, it may be necessary to provide help and documentation. Any such information should be easy to search, focused on the user's task, list concrete steps to be carried out, and not be too large.

2.2 Thinking Aloud

Developed by Judy Ramey, University of Washington, with additions by Usability Analysis & Design, Xerox Corporation⁵

In General

Think-aloud user tests involve participants thinking aloud as they are performing a set of specified tasks. Participants are asked to say whatever comes into their mind as they complete the task. This might include what they are looking at, thinking, doing, and feeling. This gives observers insight into the participant's cognitive processes (rather than only the tested prototype). Observers are asked to take notes of what participants say and do, without attempting to interpret their actions and words, and especially noting places where they encounter difficulty.



6

⁵ <https://goo.gl/uc1Cmq>

⁶ Picture taken from: <http://bit.ly/2MmjbTZ>



Guidelines for the observer

- **Be careful of the social dynamics you set up with the participant**
 - Don't joke, indulge in sarcasm, flirt or betray your own nervousness
 - Maintain a professional, neutral persona
 - Keep yourself "small" in relationship to the participant. Sit slightly back from the participant, in a chair that is lower.
 - Avoid wearing heavy perfume or aftershave. The participant may have allergies to the odor or find it distracting.
 - Do not wear suggestive, revealing or tight, uncomfortable clothes.
- **Don't bias the participant**
 - Don't betray your own views or opinions of either the participant's level of skill
 - Do not let the participant become aware of any bias you may have about the product.
- **Avoid interactions with the user that can shift the focus from the user's domain to the designer's**
 - Don't expect the user to tell you how to fix problems
 - Don't expect the user to answer other design questions
 - Always keep the focus of attention on the user, not yourself. Avoid "I" statements and long explanations of how the system works.
 - Stay in the relationship with the participant. Do not worry about the next question you are going to ask.
 - Write down design ideas so that you do not need to worry about forgetting them after the test.
 - Do not let yourself get impatient!
 - When the user seems to have a problem, s/he can often unravel it without your help.
 - When you feel you should jump in, count to ten first.
 - If you jump in too soon, you lose valuable data and the user becomes dependent on your help.
- **Learn to probe in a neutral way to get information on which to base your design improvements**



Techniques that encourage thinking out loud

Prompting

- **Focus on tasks, not features**
Do not ask “Do you like that dialog box?” but “Did that dialog box help you reach your goal?”
- **Focus on questions, not answers**
- **Explore user thinking in a neutral way**
 - Do not be too quick to assume that the user is lost or having a problem.
 - Do not say, “What is your problem here?” but ask, “What is your goal?” or “What are you thinking you should do here?”
 - Don’t betray your own interests or point of view by your comments, emphasis, “waking up” and getting interested, showing in facial expression or vocal tones that you disagree
- **Good user-focused questions:**
 - What is your goal?
 - What did you expect when you did that?
 - How did you expect that to work?
 - Can you tell me what you were thinking?
 - What do you want to accomplish here?
 - Describe the steps you are going through here.
 - How did you feel about that process?
 - Tell me about your thinking here.
 - What did you expect to happen when you ...?

Echoing

- **Repeat the users’ own word or phrase back to them as a question: “That message is confusing?”**
Echoing sets up a social dialog and reinforces social conversation expectations: they say something, you repeat it, they say the next thing because that is what is expected in conversation.
- **Don’t put words in the users’ mouth, or offer interpretations**
 - If they say, “I’m not sure what to do here,” do not say, “So you are confused because the menu bar is unclear?”



- If they say, "That didn't happen like I expected, don't ask, "So you thought that the task menu would be displayed here?"
- **Signal that you're listening (Mmm hmm ...)**

Conversational disequilibrium

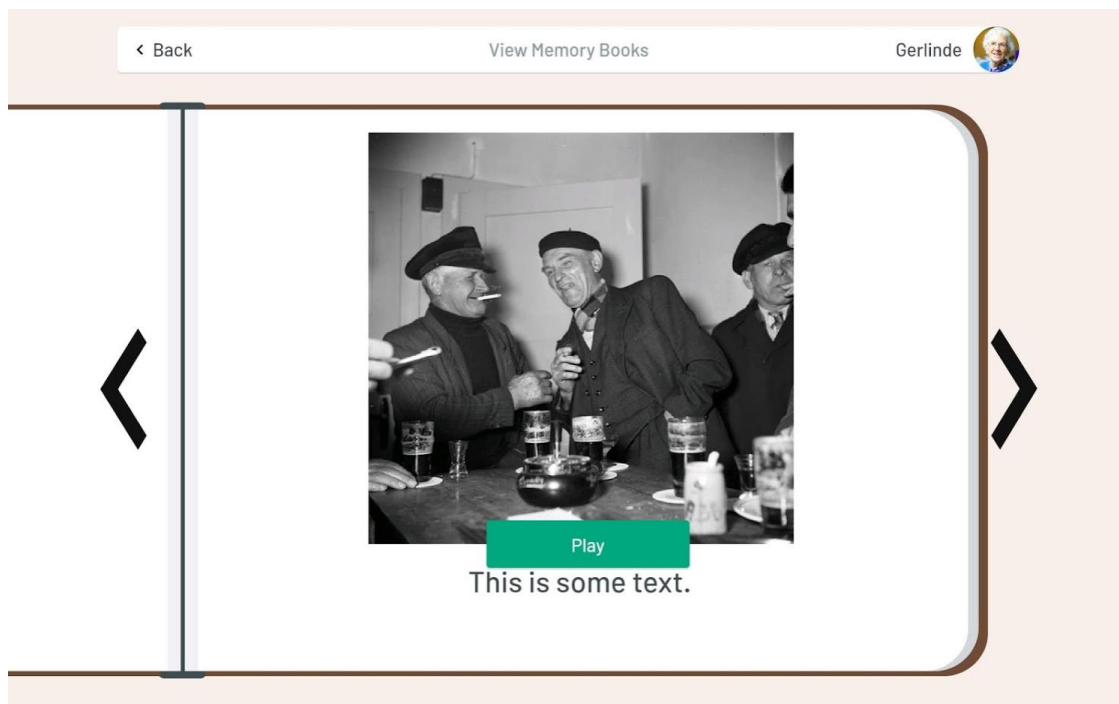
- **Let your statements trail off and end in an upswing, as if you were asking a question. The participant will usually complete your statement.**
 - "And you were expecting. . .?"
 - "And your goal is . . .?"
- **Signal that you are there, you are interested, but that it is still their turn to talk (Mmm hmm)**
- **Speak softly**

Summarizing at key junctions

- When you have learned something new that is key to understanding, summarize the event and the thinking that the user explored, very briefly. Users may offer more detail about their thought process.
- Keep the recorder on or keep taking notes after you think that the test session is finished. Users will often make interesting reflections about their processes during the casual remarks at the end of the session.

2.3 Tasks for Thinking Aloud Sessions

The prototype was presented on the tablet. They included the navigation structure, some interactive functionality as well as the graphical design and were tested with experts and real end-users from the target groups in evaluation sessions.





The tasks below were given to the participants to perform on the interactive prototype. The idea was to look if the participants think the application is logical and if they have any ideas about the design. It was important to see what the participants like, dislike, understand and (most important) do not understand. Therefore, we asked the participant some additional questions about the buttons. These questions would be about the place of the buttons ("Does it make sense where the buttons are?"), if there are too many or too few buttons ("Were there too many functions or maybe did you miss a function?") and if the buttons were clear to them ("Are the buttons/texts/icons clear to you?").

Therefore, we asked in each task to comment on the following:

- Like/dislike and why?
- Understand/do not understand and why?
- Does it make sense to you where the buttons are?
- Are there too many functions?
- Did you miss a function?
- Are the buttons clear enough?

Tasks for Professional Caregivers

Please note, whether the participating professional caregiver is familiar with the Böhm-method or not.

1. Task – Log in, check profile information

- Log in with your account.
- Check, which client is active and view his/her profile information.
- Go back to the start screen.

**2. Task – Prepare a Single Play Session**

- a) Choose Single Play.
- b) Choose two themes:
Achievements, Tasks, Duties - Farming
Achievements, Tasks, Duties - School
- c) Check the Settings and confirm that video recording is on. If not, turn it on.
- d) Check, which Memory Book is selected for sending cards to.
- e) Turn Puzzle Mode on and set Number of Steps to "3".

3. Task – Start a Single Play Session

- a) Start the activity.
- b) Uncover as many cards as you like.
- c) Check whether video recording is on.
- d) Assume that you want to log a positive reaction on a card.
- e) Assume that you want to tag a card for sending it to the selected Memory Book.
- f) End the activity and go back to the start screen.

4. Task – View the session logs

- a) Go to the session logs and review the latest session.
- b) Enter a comment.
- c) Check for further functionalities.
- d) Change the client to view other client's logs.
- e) Change back to the original client.
- f) Go back to the start screen.

5. Task – Remove a card from Play/Add a new image

- a) Assume you want to remove a specific card from the theme "Achievements, Tasks, Duties - Farming"
- b) Open the card deck "Achievements, Tasks, Duties - Farming" for editing.
- c) Remove a card from the selected cards for play.
- d) Check whether you can find more information on a specific card and how you can report a problem with a card.
- e) Add a new image.
- f) Go back to the start screen.

6. Task – View Memory Book

- a) Choose a Memory Book and flip through the pages.
- b) Check for further functionalities and settings.

7. Task – Edit a Memory Book



- a) *Choose a Memory Book and choose the edit function.*
- b) *Examine the content of the Memory Book.*
- c) *Add a new page and some text.*

8. Task – Add a new client

- a) *Add a new client.*
- b) *Check for further functionalities.*

9. Task – Add an existing user as a new client

- a) *Assume you want to add a new client, who is already using MI-Tale privately.*
- b) *Add the user to your client list.*

10. Task – Free exploration

Tasks for Informal Caregivers

1. Task – Log in, check profile information

- a) *Log in with the account of the person you care for.*
- b) *Check the profile information.*
- c) *Go back to the start screen.*

2. Task – Prepare a Single Play Session

- a) *Choose Single Play.*
- b) *Choose two themes:*
Achievements, Tasks, Duties - Farming
Achievements, Tasks, Duties - School
- c) *Check the Settings and confirm that video recording is on. If not, turn it on.*
- d) *Check, which Memory Book is selected for sending cards to.*
- e) *Turn Puzzle Mode on and set Number of Steps to "3".*

3. Task – Start a Single Play Session

- a) *Start the activity.*
- b) *Uncover as many cards as you like.*
- c) *Check whether video recording is on.*
- d) *Assume that you want to log a positive reaction on a card.*
- e) *Assume that you want to tag a card for sending it to the selected Memory Book.*
- f) *End the activity and go back to the start screen*

4. Task – View the session logs

- a) *Go to the session logs and review the latest session.*
- b) *Enter a comment.*



- c) *Check for further functionalities.*
- d) *Go back to the start screen.*

5. Task – Remove a card from Play/Add a new image

- a) *Assume you want to remove a specific card from the theme "Achievements, Tasks, Duties - Farming"*
- b) *Open the card deck "Achievements, Tasks, Duties - Farming" for editing.*
- c) *Remove a card from the selected cards for play.*
- d) *Check whether you can find more information on a specific card and how you can report a problem with a card.*
- e) *Add a new image.*
- f) *Go back to the start screen.*

6. Task – View Memory Book

- a) *Choose a Memory Book and flip through the pages.*
- b) *Check for further functionalities and settings.*

7. Task – Edit a Memory Book

- a) *Choose a Memory Book and choose the edit function.*
- b) *Examine the content of the Memory Book.*
- c) *Add a new page and some text.*

8. Task – Free exploration

Tasks for Seniors

1. Task – Log in, check profile information

- a) *Log in with your account.*
- b) *Check your profile information.*
- c) *Go back to the start screen.*

2. Task – Prepare a Single Play Session

- a) *Choose Single Play.*
- b) *Choose two themes:*
Achievements, Tasks, Duties - Farming
Achievements, Tasks, Duties - School.
- c) *Check the Settings and confirm that video recording is on. If not, turn it on.*
- d) *Check, which Memory Book is selected for sending cards to.*
- e) *Turn Puzzle Mode on and set Number of Steps to "3".*

3. Task – Start a Single Play Session



- a) *Start the activity.*
- b) *Uncover as many cards as you like.*
- c) *Check whether video recording is on.*
- d) *Assume that you want to log a positive reaction on a card.*
- e) *Assume that you want to tag a card for sending it to the selected Memory Book.*
- f) *End the activity and go back to the start screen.*

4. Task – Remove a card from Play/Add a new image

- a) *Assume you want to remove a specific card from the theme "Achievements, Tasks, Duties - Farming"*
- b) *Open the card deck "Achievements, Tasks, Duties - Farming" for editing.*
- c) *Remove a card from the selected cards for play.*
- d) *Check whether you can find more information on a specific card and how you can report a problem with a card.*
- e) *Add a new image.*
- f) *Go back to the start screen.*

5. Task – View Memory Book

- a) *Choose a Memory Book and flip through the pages.*
- b) *Check for further functionalities and settings.*

6. Task – Edit a Memory Book

- a) *Choose a Memory Book and choose the edit function.*
- b) *Examine the content of the Memory Book.*
- c) *Add a new page and some text.*

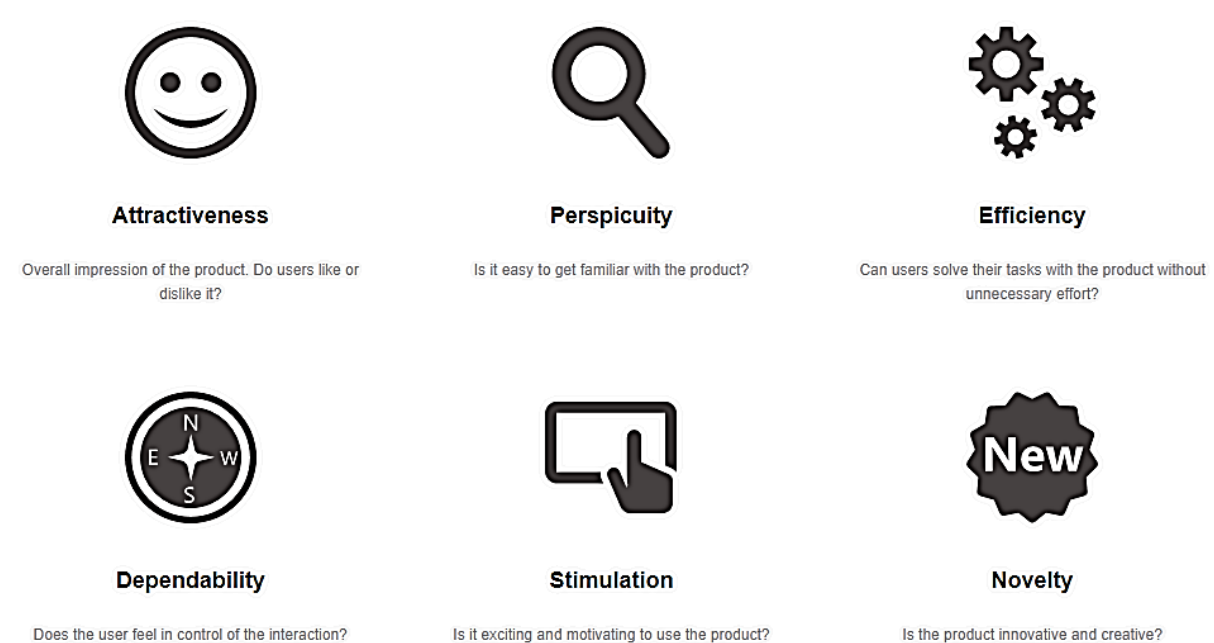
7. Task – Free exploration



3 User Experience Questionnaire

After finishing the tasks and for testing the user experience, we made use of the validated User Experience Questionnaire by Laugwitz, Held and Schrepp ⁷, which allows a quick and simple assessment and comes with a tool for evaluating the results. Besides it is available in all pilot site languages.

The User Experience Questionnaire allows a quick assessment of the user experience of interactive products. The format of the questionnaire supports users to immediately express feelings, impressions, and attitudes that arise when they use a product. The scales of the questionnaire cover a comprehensive impression of classical usability aspects and user experience aspects:



The User Experience questionnaire consists of 26 pairs of contrasting attributes that may apply to the product. Seven circles between the attributes represent gradations between the opposites. The agreement can be expressed with the attributes by ticking the circle that most closely reflects the impression about the product. The user should decide as spontaneously as possible in order to make sure that the original impression is conveyed. In order to analyse the results of the questionnaire an MS Excel tool is available where the researcher can fill in the data.

Example:

attractive	<input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	unattractive
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This response would mean that you rate the application as more attractive than unattractive.

⁷ <https://goo.gl/a5jVtC>



Participants were asked to decide spontaneously and to not think too long about their decisions to make sure that they convey their original impression, even if some terms don't seem quite appropriate.

	1	2	3	4	5	6	7		
annoying	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	enjoyable	1
not understandable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	understandable	2
creative	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	dull	3
easy to learn	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	difficult to learn	4
valuable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	inferior	5
boring	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	exciting	6
not interesting	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	interesting	7
unpredictable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	predictable	8
fast	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	slow	9
inventive	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	conventional	10
obstructive	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	supportive	11
good	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	bad	12
complicated	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	easy	13
unlikable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	pleasing	14
usual	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	leading edge	15
unpleasant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	pleasant	16
secure	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	not secure	17
motivating	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	demotivating	18
meets expectations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	does not meet expectations	19
inefficient	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	efficient	20
clear	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	confusing	21
impractical	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	practical	22
organized	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	cluttered	23
attractive	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	unattractive	24
friendly	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	unfriendly	25
conservative	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	innovative	26



4 Results of Prototype Tests

4.1 Heuristic Evaluation

Experts of the pilot site partner LIFEtool, ENPP, CZG and NFE went through the heuristic evaluation with the following results:

Violated usability principle	Usability issues
Consistency and standards	Select Themes: If empty, the whole field shall react like a button, not only the small "Add"-button
Aesthetic and minimalistic design	<p>In some places issues with font size and contrast.</p> <p>Choose Themes page: not enough space for text (text is cropped)</p> <p>Quiz-mode: It is hard to recognize the images even with clicks set to 3: covering/uncovering should be simplified/optimized.</p>
Visibility of system status	In Single Play: Not sufficient feedback when a card was rated or tagged for use in memory books; needs clearer visualization.
Help and documentation	<p>Start page: "Options" is not clear, needs explanation.</p> <p>Edit Cards Page: This page is not self-explanatory. Help is needed on the different sections of the page and how to select/remove cards for the activities.</p> <p>Adding a new client needs explanation (what is the difference between adding a new client and adding an existing user?)</p>
Error prevention	<p>Some problems in different parts of the app arise due to bad/insufficient wording.</p> <p>Profile section: Control for entering year of birth is too sensitive.</p> <p>Single (and Group) Play: It should not be possible to add the same theme twice.</p>
Flexibility and efficiency of use	<p>Text fields in general: Remove standard text automatically when adding new text.</p> <p>Shortcut missing for quick return to start page.</p> <p>It should be able to add more themes at a time.</p>



4.2 Thinking Aloud Tests (End-users)

Iterative tests with seniors, informal and formal caregivers were executed by LIFEtool, ENPP, CZG, MKP and NFE. The issues were gathered and sorted with the use of the online tool Trello. In the following, the most important issues are presented.

Seniors

- Some need support for better orientation on start page to find “Options” and “Profile”.
- Some need support for better orientation on the Single Play page to find “Settings”.
- Test users repeatedly clicked on the plus-icon to add a theme, but nothing happened.
- Single Play: One user wanted to add more than one theme at a time.
- Single Play: It is unclear to some users how to get to the next card.
- Single Play: Some test users missed feedback when choosing a rating and when tagging a card for use in memory books.
- Some users did not know where to find the “Start page”. One user wants a “Home Button” for quick navigation.
- Edit Cards page: almost all test users need explanation here. The yellow information button was not clear to some.
- Edit Memory Books: Some users expected to find the edit function in the View Memory Book section.
- Edit Memory Books: There should be a confirmation necessary when you delete an image/video.



Informal Caregivers

- Some need support for better orientation on start page to find “Options” and “Profile”.
- Test users repeatedly clicked on the plus-icon to add a theme, but nothing happened.
- Single Play: It is unclear to some users how to get to the next card.
- Single Play: Some test users missed feedback when choosing a rating for a card and when tagging a card for use in memory books.
- Edit Cards page: almost all test users need explanation here. One user wants to swipe instead of tapping.

5 Suggested Changes & Comments

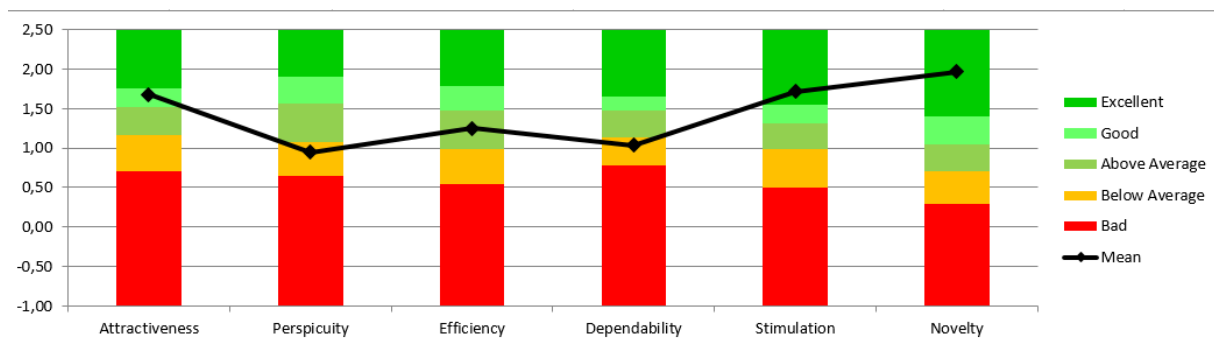
Suggested changes	Comments
Implement help functions.	<p>Examples on how the help function should look like are implemented in the next version of the prototype. As many test users clicked on the owl to get information we will use it to display help.</p> <p>We suggest to have a help function on almost every page.</p> <p>More complex pages like the Edit Cards page get contextual help.</p>
Fix wording and translation issues.	Yes, this is an ongoing, iterative process.
Fix the issue with the Add Themes button.	Yes.
Add more than one theme at once.	To be discussed.
Better visualization of feedback in Single Play.	<p>The selected rating is highlighted.</p> <p>If a card is tagged for use in memory books, the button is removed.</p>
Improve information button on Edit Cards page.	Yes.



Home button for quick navigation.	To be discussed.
Confirmations when deleting images/videos:	To be implemented in the fully functional prototype.
Edit memory book function in the View Memory Book section.	Rejected as we are in favour of a clear separation between using the app as an activity and managing the app.
Quiz-mode: covering/uncovering should be simplified/optimized.	To be implemented in the fully functional prototype.
Information on gender missing in the profile. ⁸	To be implemented, not so much for automatic adaption of content but possible scientific evaluation.
It is important to end a MI-Tale session in a positive emotional state. ⁶	To be implemented: videos, images of people that create a positive emotional state (e.g. smiling friendly, laughing happily...) and that can be viewed at the end of a MI-Tale session. Suggestion: realize in form of a dedicated memory book.

6 Results of the User Experience Questionnaire

This chapter gives a presentation of the results of the User Experience Questionnaire



⁸ Feedback from MI-Tale presentation at Böhm Teacher workshop, June 2018



Scale	Mean	Comparison to benchmark	Interpretation
Attractiveness	1,68	Good	10% of results better, 75% of results worse
Perspicuity	0,95	Below Average	50% of results better, 25% of results worse
Efficiency	1,25	Above Average	25% of results better, 50% of results worse
Dependability	1,04	Below Average	50% of results better, 25% of results worse
Stimulation	1,71	Excellent	In the range of the 10% best results
Novelty	1,96	Excellent	In the range of the 10% best results

The measured scale means are set in relation to existing values from a benchmark data set. This data set contains data from 9905 persons from 246 studies concerning different products (business software, web pages, web shops, social networks). The comparison of the results for the MI-Tale prototype with the data in the benchmark allows conclusions about the relative quality of the evaluated product compared to other products. The graph shows that the MI-Tale prototype is on the right way regarding user experience and only below average in the areas of perspicuity and dependability. These areas may be targeted in the next version by e.g. integrating contextual help functionalities.

7 Next Steps

The collected feedback is analysed and either implemented in the next version of the prototype, rejected or transferred to WP3, Development and Implementation. The updated prototype version will be – together with the functional design document and the list of approved suggestions – the basis for the development of the full version.

8 References

- [1] Xerox Corporation, Pieratti, 1995, "Methods for successful 'Thinking-Out-Loud' procedures" developed by Judy Ramey, University of Washington, with additions by Usability Analysis & Design
- [2] Nielsen, J, 1994, Heuristic evaluation. In Nielsen, J., and Mack, R.L. (Eds.), Usability Inspection Methods