

Interaction development for personal daily support

Design of conversational agent for activity tracking

By Chris ter Beke

Abstract

This report is the result for the final project of the Creative Technology Bachelor's programme. The primary goal is assisting Roessingh Research & Development on the redesign of an activity tracking application in a larger "home caring environment" called eWALL, which is in the process of being moved into an autonomous tablet solution. The major steps to execute were background research, creating a prototype and validation it through user testing. The user test entailed a 4 part questionnaire and 23 people participated. These tests concluded that users would prefer a solution that runs on their own device and that talking to a virtual assistant is still seen as socially uncomfortable. The final solution should use a predefined set of questions available in the user interface instead of using speech recognition.

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1 Introduction

Roessingh Research and Development (RRD) is a center for research on rehabilitation, psychology, biomedical science and computer science¹. They position themselves between university and healthcare practice. RRD works on tools to help people manage their own health, focussing on innovative and user friendly applications that offer monitoring of health data and coaching.

1.1 eWALL

One of the projects RRD is working on is the eWALL - Home Caring Environment², an European Union funded project designed to contribute to the prolongation of independent living for various types of patients and elderly. The distinction between typical healthcare systems and eWALL is that eWALL tries to do this in an unobtrusive way by using advanced sensing technologies. Current target groups of eWALL are people with age related impairments (ARI), mild cognitive impairments (MCI, or early-stage dementia), and COPD and asthma patients.

The eWALL system consists of 2 major components: the eWALL Cloud and eWALL Sensing Environment. The Sensing Environment is installed in the patient's home to gather data about activity, or help them with their daily routine. The eWALL Cloud connects the Sensing Environment with other stakeholders like hospitals, government health care systems and relatives.

¹ <http://www.rrd.nl/>

² <http://ewallproject.eu/>

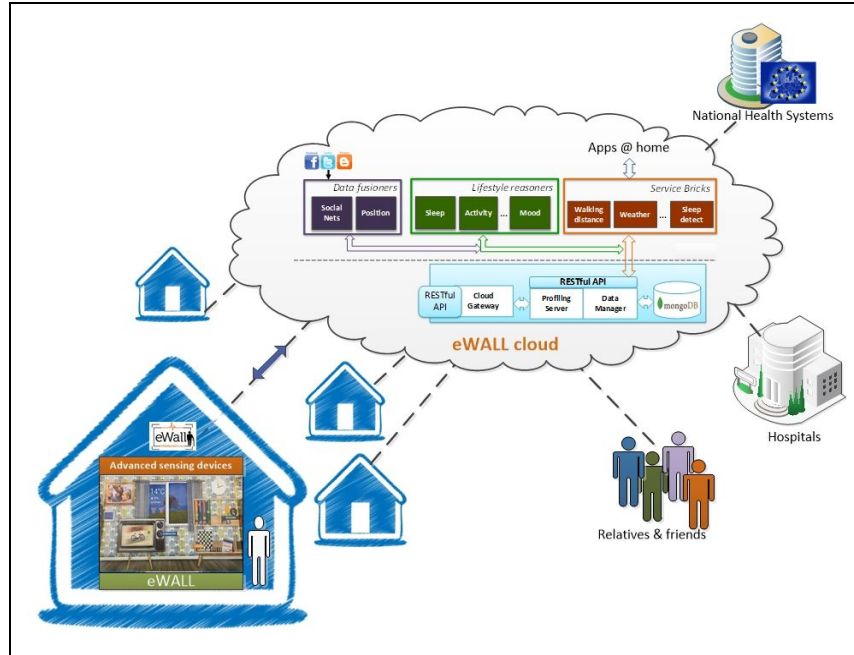


Figure 1: System architecture of eWALL

1.1.1 Design

The Sensing Environment’s major component is a touch screen interface that displays all the information that the patient needs in order to get through their day. During the development phase of eWALL, this was a large touch screen monitor that was mounted on a cabinet containing the hardware, installed in the patient’s living area. This monitor displayed a dashboard with the current time, weather and elements that linked to applications. There is also an agenda available to help MCI patients to remember what is going to happen during the day.



Figure 2: The dashboard of eWALL

1.1.2 Activity application

An important application on eWALL for everyone who needs coaching with everyday physical activity is the activity tracker. This app shows daily activity like step count, but also change over time.



Figure 3: eWALL's activity application

1.2 Problem description

Roessingh Research & Development is working on a continuation of eWALL, named CloudCare2U³, that has significant changes compared to the original project. One of these is that eWALL will now be running on a tablet in people's own home. This brings two challenges to the table regarding the redesign of the activity app: screen size and domain. The change in screen size will affect the entire system, not only the activity app, but for the scope of this project we will focus only on this part.

An outstanding issue is that the current activity app does not fall in line with the design of eWALL; it is flat as opposed to the real-world imitating design of the home screen. In order to make it fit with the rest of eWALL so that it feels like a single product, the redesign should use these imitation design elements.

Furthermore, the redesigned app should allow users to look both at their current activity to see if their daily target is met, but also show them how they're doing over time. This trend analysis is important to let people be aware of their behaviour and hopefully change it to meet their goals.

Lastly, the activity app should be connected to the system's conversational agent "Robin the Robot". It should become clear in the research and testing what type of information people would want to use the conversational agent to retrieve, but also which tasks are better to be performed by the user interface.

³ <http://cloudcare2u.com>

1.2.1 Challenges

Next to these design specifications, there are a number of smaller challenges that became apparent from interviews with the client.

First of all, the system is not in use in its current form (a large touch display on the wall), making it hard to answer questions related to comparisons between the original and new domain (a tablet in the user's own home). Therefore the project will be focussed solely on validating the tablet sized redesign.

Secondly there is no specific user feedback about the activity application from the first version. Test subjects did not comment specifically on the activity application or design of eWALL, but solely on its functionality as a whole. From this, it is known that the activity application was very popular.

2 Research questions

In order to solve the aforementioned problem for the client, the following research questions have been defined:

Primary research question

“Which tasks are better to be executed via an embodied conversational agent instead of the user interface?”

Secondary research question

“How should the activity app be redesigned to help people give insight and reach their goals in an autonomous way?”

3 State of the Art

This project focuses on the application of embodied agents and how they can assist in providing feedback and coaching on daily physical activity, activity goal setting and motivational support. Therefore relevant background information is provided on the subjects of activity tracking, goal setting, conversational agents and human-computer relationships.

3.1 Activity tracking

Activity trackers are widely used nowadays. Most of these trackers feature a smartphone application combined with a small wristband or wrist worn sensing device. These devices have sensors that keep track of movement and they feed this data back into the smartphone application. The app then translates that data into something that can be understood by the wearer. This often happens in the form of graphs to indicate whether a certain daily goal was met. The representation of these statistics are different per brand, but most of them are very similar. Currently popular brands for personal fitness tracking are FitBit, Jawbone and Apple Watch, but there are many more similar devices on the market.

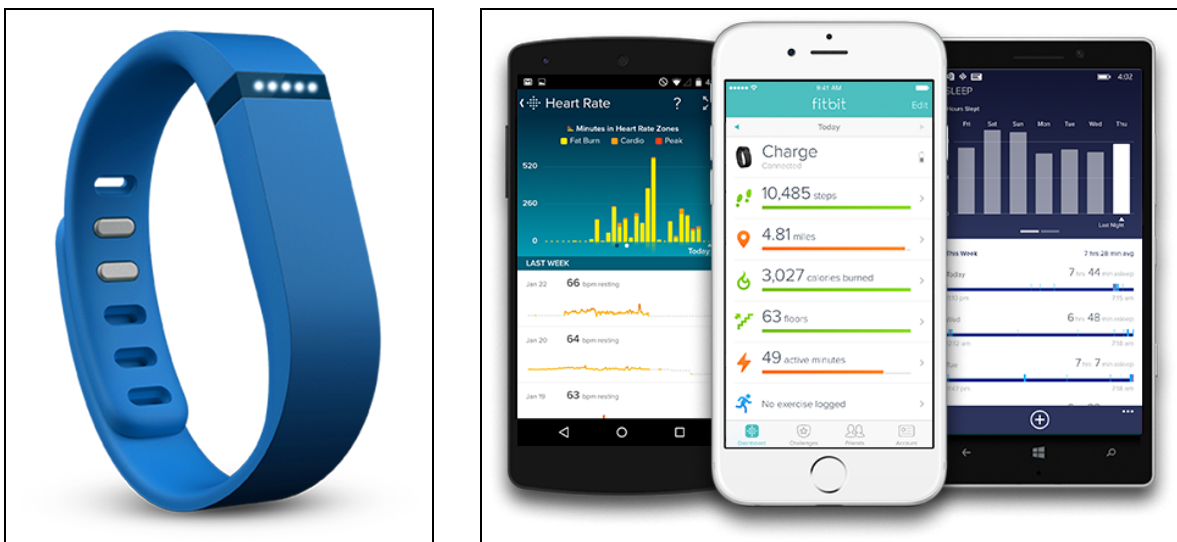


Figure 4: The FitBit wristband and accompanying smartphone app

3.1.1 Goal setting

When activity goals are properly set, they can increase motivation, self-regulation and promote a sense of achievement. This can be improved by setting meaningful goals using a method called SMART (Specific, Measurable, Attainable, Relevant, Timely) ⁴.

Fitness solutions like FitBit allow users to set goals in the app. The idea behind setting these goals is to motivate people to use the device more and become healthier in the process. By allowing to set personalized goals, the user feels more attached to the goals and is more inclined to follow the needed workouts to reach them. This satisfies Specific and Relevant components of SMART. The app allows you to track your progress over time, giving an indication if you will reach your goal or if you need increase your efforts. This helps users with the Measurable and Attainable parts. The timely, or proximal, component of SMART can also be covered by the app, as the user is totally free in selecting when to reach a certain goal (short- or long term goals).

A study performed by *Stavros Asimakopoulos, Grigorios Asimakopoulos and Frank Spillers* in 2017 for Informatics goes in depth into the motivation and user engagement involved with personal fitness trackers. For their study, wearables and smartphone apps from FitBit and Jawbone were used. They conclude that the success of reaching these goals relies greatly on data accuracy, gamification and the design of the application itself⁵. Users felt motivational value from seeing steps and advice in the user interface. They also liked the level of autonomy the smartphone apps were giving them.

Another element in getting users to stick to their workouts is gamification. Most of the popular apps have a badge system, where each time the user reaches a certain milestone, a small award is presented to indicate that the user is doing a good job. Often the next milestone is visible within the app, allowing users to have a new target to work towards.

⁴ <https://vpal.harvard.edu/publications/setting-goals-who-why-how>

⁵ <http://www.mdpi.com/2227-9709/4/1/5/htm>

The second option in gamification is rankings. Users are listed in high score lists together with people they invite in the app, usually friends or family members. This brings a competition element into the fitness tracker and motivates users to get or stay on top of the list. An example of this is the smartphone app Runkeeper. Unlike other solutions it does not require the purchase of a wristband device, but simply uses the phone's location to determine the distance and speed of each run. These are then compared to similar workouts from friends, or even share your progress on social media⁶.

3.2 Conversational agents

A conversational agent or dialog system is a software system designed to interact with humans in a structured way. These systems can use text, speech, graphics or other methods of communicating with a human.

Well-known conversational agents nowadays are the personal assistant type programs that smartphones and domotics systems have. Examples of these are Apple's Siri, Google Now, or Amazon Alexa.

3.2.1 Embodied Virtual Agents

When integrating a conversational agent into a system in such a way that it has a digital or physical representation in the environment that it uses to interact with it, we call it an embodied virtual agent. The current eWALL system has such an agent; Robin the Robot.

The biggest difference between embodied virtual agents and other dialog systems is the amount of interaction that is possible. It can provide a much richer way of communication, for example using gestures or facial expressions to convey a message. When humans communicate, much of our meaning and intentions are expressed via body language. Bringing this trait to a conversational agent greatly enhances its capability to communicate with humans in a natural way.

⁶ <https://runkeeper.com>

The current agent in eWALL is designed like a 1950's robot that fits the living room environment of the system. It is important for an embodied agent to fit in it's surroundings, so the eWALL designers chose to make a character that fits their theme.

An example of an embodied virtual agent can be found in Non-player characters (or NPCs) in games. In the game Civilization, NPCs are used for enemies and council members. You can have a dialogue with them that changes depending on your answers or trade offers. These conversation flows are pre-scripted. However, these unexpected responses keep the game interesting. The characters are historical figures that lead one of the enemy computer players, making them real embodied agents.



Figure 5: Examples of embodied agents as NPCs in the game Civilization V.

3.2.2 Scripted vs relational agents

A conversational agents is a type of Human-Computer interaction that is designed to have a long-term relationship with the user. The interaction between the human and computer over time can be seen as a relationship, making a conversational agent in the role of a personal assistant a relational agent. This area of research was first discussed by T. Bickmore and R. Picard [Bickmore, Picard, 2005]. This relational aspect of an agent sets it apart from the mostly scripted agents that are used in the games mentioned above. Over time, the computer learns more about the user and builds up a context to give more meaning to the conversation.

3.2.3 Why an agent?

Why would any system, eWALL or otherwise, use an embodied agent to interact with users even though it is perceived as burdensome on smartphones?

The best application for virtual assistants lies in the execution of complex tasks. On a typical smartphone these are tasks like setting alarms, finding and playing music, or asking for weather forecasts⁷. All these tasks normally require multiple actions in the user interface. It is difficult to determine which task is difficult and which task is easy, but generally the line lies at the point where using the assistant to do it takes less time and less steps.

When it comes to personal daily support, activity tracking and goal setting, the amount of data that is gathered overtime might overwhelm the user resulting in the inability to make decisions based on this data. A virtual assistant can help organize this information by intelligently translating the data set into actionable goals.

⁷ www.emarketer.com

4 Ideation

During the ideation phase, several brainstorm feedback sessions were held with RRD to make sure the project was going in the direction the client wanted. An important step in the process was pivoting from a design focussed prototype to a virtual agent focussed prototype. The virtual assistant was more interesting to work on as it is using modern technologies and will probably have a larger impact on daily support systems like eWALL in the future.

4.1 Domain

The original eWALL was displayed on a large monitor installed in a living room environment in a nursing home. Going forward, RRD decided to use tablets that can be put in user's own homes. This domain change must be taken into account when designing the prototype. With a smaller screen, it is harder to see from a distance what is displayed. The user either needs to come closer to the device, or an alternative method for interaction is required. This brings us to the implementation of Robin the Robot in the prototype.

4.2 Robin the Robot

The virtual agent in the original eWALL project is called Robin the Robot. Robin is displayed on the home screen and when clicked on it opens a dialog that showed questions that you can ask. However there was no real intelligence in Robin so only these specific questions can be asked. Also the questions need to be clicked as there is no voice recognition or text-to-speech available. This makes interacting with Robin not as seamless as it should be when we work with embodied agents.

A few things from the original Robin were found to be interesting to use in the prototype. Those were the 50's robot design and the awareness of which user was interacting with the system by display the name when opening the Robin dialog.

New ideas were created as well for the prototype. We wanted to see if adding voice recognition and text-to-speech would enhance the experience of the virtual agent, especially

on the smaller screen. This means that the user can talk to Robin using their voice and Robin would talk back with the answers that were found in the system, bringing it closer to other assistants like Siri and Google Now. By adding this type of interaction, we hoped to see a reduction of information displayed in the user interface.

4.3 Interaction

The most important part of the prototype is the interaction with Robin the Robot. There were several discussions about how deep the interaction with Robin should go. For example whether Robin should be able to understand small talk about topics other than activity tracking, or if Robin should be able to ask follow up questions when pieces of context are missing. These types of behaviours would result in a more human-like interaction, but they also complicate the prototype development.

The second point of attention in the interaction is the difficulty of the questions being asked. Simple questions like “How far do I need to walk today?” or “What is my daily step goal?” can be asked, but those would be just as easy to find in the user interface. More difficult questions like “Will I reach my goal this week?” would be harder to read from the interface because multiple pieces of information are needed to construct an answer. The answers given by Robin to questions like these should be constructed in such a way that the user will be able to interpret this information easily.

4.3.1 Example

A user has a goal of 10.000 steps per day. It is currently wednesday evening, meaning there are 4 days left in this week to reach a total of 70000 steps. The user has currently done 23500 steps, leaving 46500 steps, or 11625 steps per day until the end of the week. If this has to be read from the user interface, the user would need to read several graphs and do the needed calculations manually. But when using a virtual agent, they could simply ask “How is my progress this week?”. The agent would respond with a sentence like “To reach your goal of 70000 steps this week you should do at least 11625 steps per day for the next 4 days”, giving clear instructions to the user what to do.

4.4 Scenarios

In order to validate if the prototype could perform all the needed tasks to answer the research question several scenarios were created. The prototype criteria were derived from these scenarios. The scenarios were also used in the evaluation phase as the basis of the questionnaire.

Two major scenarios were created; one with and one without the need of using the embodied agent. The purpose of this is two-fold:

- 1) Detect if the user already uses the agent in the first scenario, indicating a certain level of comfort with using the agent.
- 2) Detect if the user actually uses the agent when instructed to in the second scenario.

In scenario 1, a context is given about the prototype application and its purpose. The user is then asked some questions that can be answered by using the application. All of these answers can be found using the user interface only, but also the virtual agent can be asked.

In scenario 2, the user receives an explanation of the embodied virtual agent. It is revealed that for more difficult questions it might be better to ask the agent for an answer instead of searching for the needed data in the user interface. The user is then asked several more questions, some of which cannot be answered by using the interface alone, or at least not without manually calculating the answer using information that comes from different places in the interface.

5 Method

5.1 Reporting

The research report follows the structure advised by the Creative Technology Graduation Project description with the exception of a separate method section as this was preferred by the external client.

5.2 Evaluation

The evaluation of the ideas described in section 4 will be done via an interactive prototype and an interactive questionnaire with test users. The prototype realisation is discussed in section 6, the evaluation results are discussed in section 7.

5.3 User test setup

The questionnaire will be executed in a closed room with only the participant and researcher in the room. The participant has 2 devices in front of them: a tablet running the interactive prototype and a laptop with the questionnaire as digital form. The participant will receive a short introduction before starting the questionnaire. All other needed information is revealed in the questionnaire itself. After finishing, the participant has the opportunity to ask questions to the researcher.

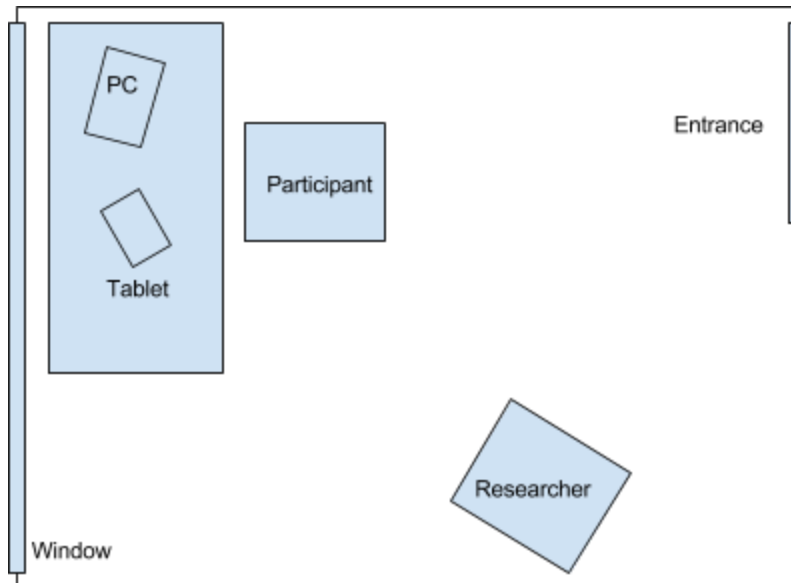


Figure 6: Schematic overview of the user test setup.

5.4 User test process

The participant will enter the room with the aforementioned setup. They are welcomed and have some time to get settled. They are made aware that all information gathered during the test is private and will be treated as confidential (including names and personal details). They are then told that the whole test will take around 20 minutes and that they can follow the digital questionnaire on the laptop. Also they can ask the researcher questions during the entirety of the process. After filling in the questionnaire they have time to ask follow up questions to the researcher.

6 Realisation

For the realisation phase of this project, a prototype system will be build that can be used to evaluate the research questions using the ideas offered in the previous section.

6.1 Criteria

Using the MoSCoW method, the following criteria were set for the prototype. The criteria were deducted from the ideation phase.

<i>ID</i>	<i>Use case</i>	<i>Prio</i>
1	The user can ask simple questions related to their daily activity.	M
2	The user can ask simple questions related to their goals.	M
3	The user can ask about the weather.	C
4	The user can ask about their favourite sports team.	W
5	The user can ask more difficult questions about their activity, progress and goals.	M
6	The user can enter their name for a more personal experience.	S
7	The user can greet Robin and get a warm welcome back.	S
8	The user can see basic activity statistics on a dashboard for scenario 1.	M
9	The user can use their voice to ask a question.	M
10	Robin can talk to the user to give an answer.	M
11	Robin can ask follow-up questions to the user when not enough context is provided.	C

6.2 Prototype development

Existing frameworks were used to speed up prototype development. The following section give some insight in the used technology stack. A full technical explanation and the published source code can be found at <https://github.com/ChrisTerBeke/gp-bot>. Some of the terminology used in this section is explained further in appendix I.

The embodied agent is powered by Api.ai⁸, a Google-powered system for natural language processing and conversational awareness. Api.ai works by defining intents, or the questions the user might ask, and selecting entities in those to recognize them. After several hours of training, the system will learn itself to recognize these intents even if the questions are asked in a slightly different format. Lastly, a context layer is added to make sure each user gets the right information when the system forms response sentences.

For the UI, the JavaScript framework Vue.js⁹ was used. Vue.js is a popular web application framework that allows for writing interactive modules. It uses the reactive programming paradigm to show the user the correct information. In the case of the prototype this feature was used to:

- Load the mocked user data into a data structure that Api.ai uses to build its context layer.
- Show the user the recognized question from the voice recognition API that is available in Google Chrome¹⁰.
- Show the user the derived answer from Api.ai to the user and trigger the HTML5 text-to-speech API to speak to the user.

The last part is a back-end connecting the UI to Api.ai. It is a Firebase¹¹ cloud function that exposes an endpoint that the UI can send the input question and context to. It is also used to deploy the entire prototype to a publicly available website.

⁸ <https://api.ai>

⁹ <https://vuejs.org>

¹⁰ https://developer.mozilla.org/en-US/docs/Web/API/Web_Speech_API

¹¹ <https://firebase.google.com>

6.3 Prototype decisions

While building the prototype several decisions had to be made in order to continue to the next step. These decisions were made to limit the scope of the prototype based on time constraints but that it would not influence the testability.

The scope of the prototype and scenarios was limited to daily activity tracking only. No additional features like workouts or social media were added as those would not provide any value in testing the user interaction.

The prototype is not a part of the greater personal daily support system. Integration would cost a lot of time and added no additional value in testing the user interaction with the embodied agent.

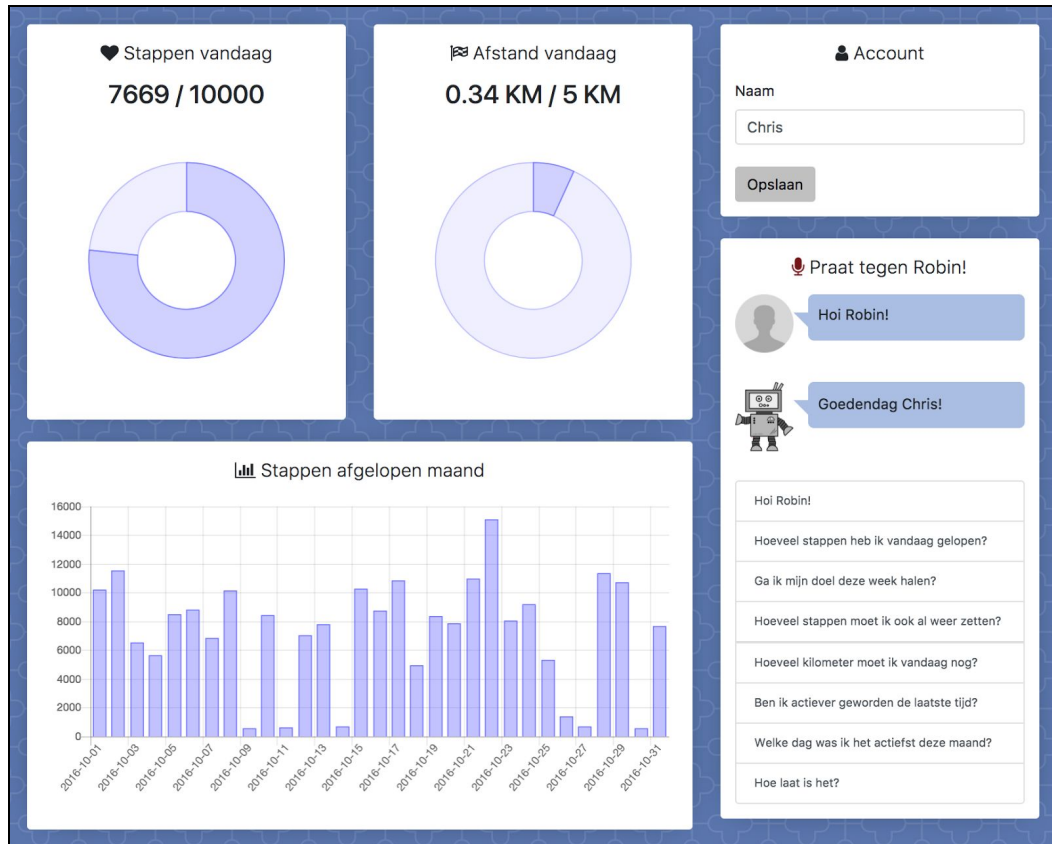
To make it possible to quickly iterate over several versions of the prototype a card design system was used. Each card contains a specific part of the interface. Together they form a dashboard-like structure as seen on the FitBit web application. These cards were re-arranged as the functionality was added to the prototype.

Mock data was downloaded from FitBit's user forum. This mock data contained all needed information and sped up the implementation of the data structure in the prototype.

All technologies used were standardized libraries or otherwise proven technologies. This made development quick without spending time on researching how to build certain aspects of the prototype.

6.4 Prototype screenshots

Screenshots of major components are added here to give context.



7 Evaluation

To evaluate the prototype, a questionnaire was held with test users. The questionnaire consisted of 4 parts:

- 1) Introduction and general questions
- 2) Scenario 1 questions: using the user interface
- 3) Scenario 2 questions: using the virtual agent
- 4) Evaluation questions

The questionnaire itself can be found in appendix II. The questionnaire is in Dutch since the participants of the questionnaire were all Dutch and some did not speak the needed level of English.

7.1 Hypotheses

To be able to fairly validate the test result, we have created the following hypotheses:

- 1) Users will use Robin the Robot when trying to find answers that can not easily be found in the user interface.
- 2) Users will not be comfortable speaking to Robin the Robot and fall back to the clickable example questions in the user interface.

7.2 Results

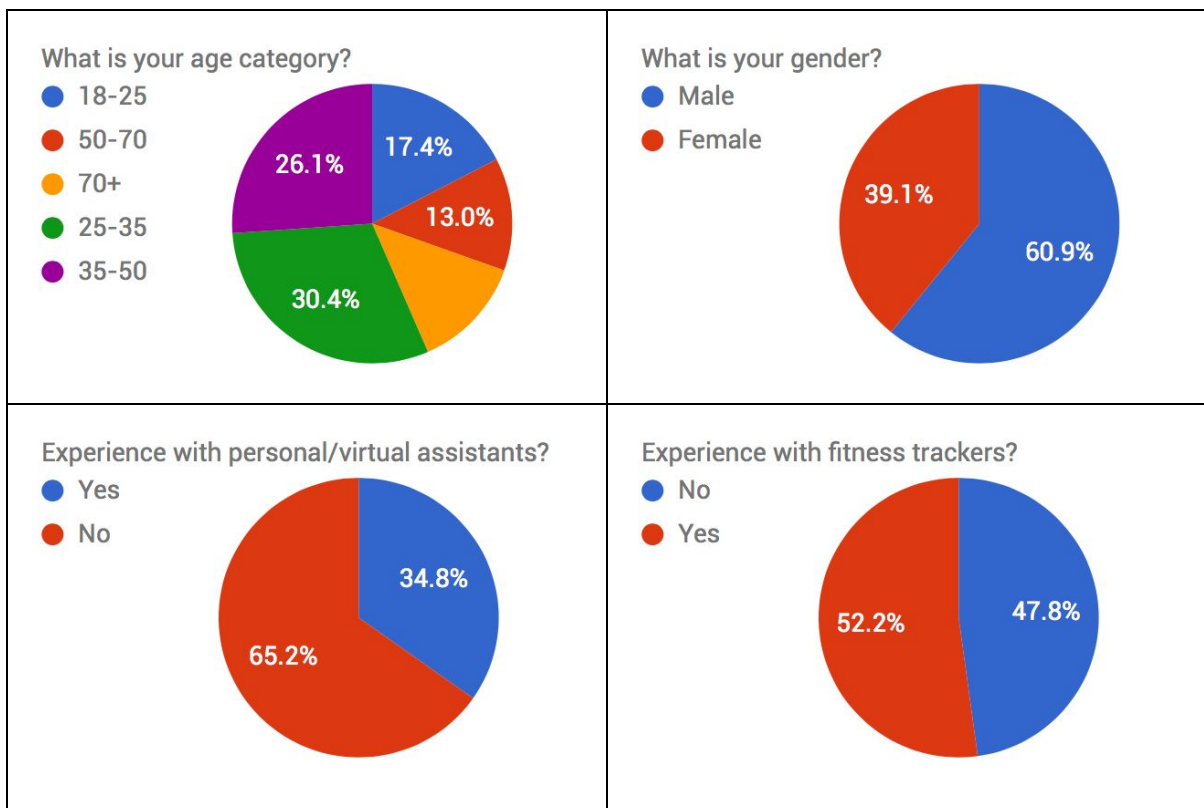
A total of 23 users participated. Open text questions were normalized to group similar answers. This made it easier to interpret the results.

Hypothesis 1 (“Users will use Robin the Robot when trying to find answers that can not easily be found in the user interface”) was confirmed by these results. The majority of test users switched to using Robin in scenario 2 and found the answers to the more elaborate questions.

Hypothesis 2 (“Users will not be comfortable speaking to Robin the Robot and fall back to the clickable example questions in the user interface”) was also confirmed. The example questions were significantly more used than the voice recognition system. Users felt uncomfortable when challenged to try the voice system.

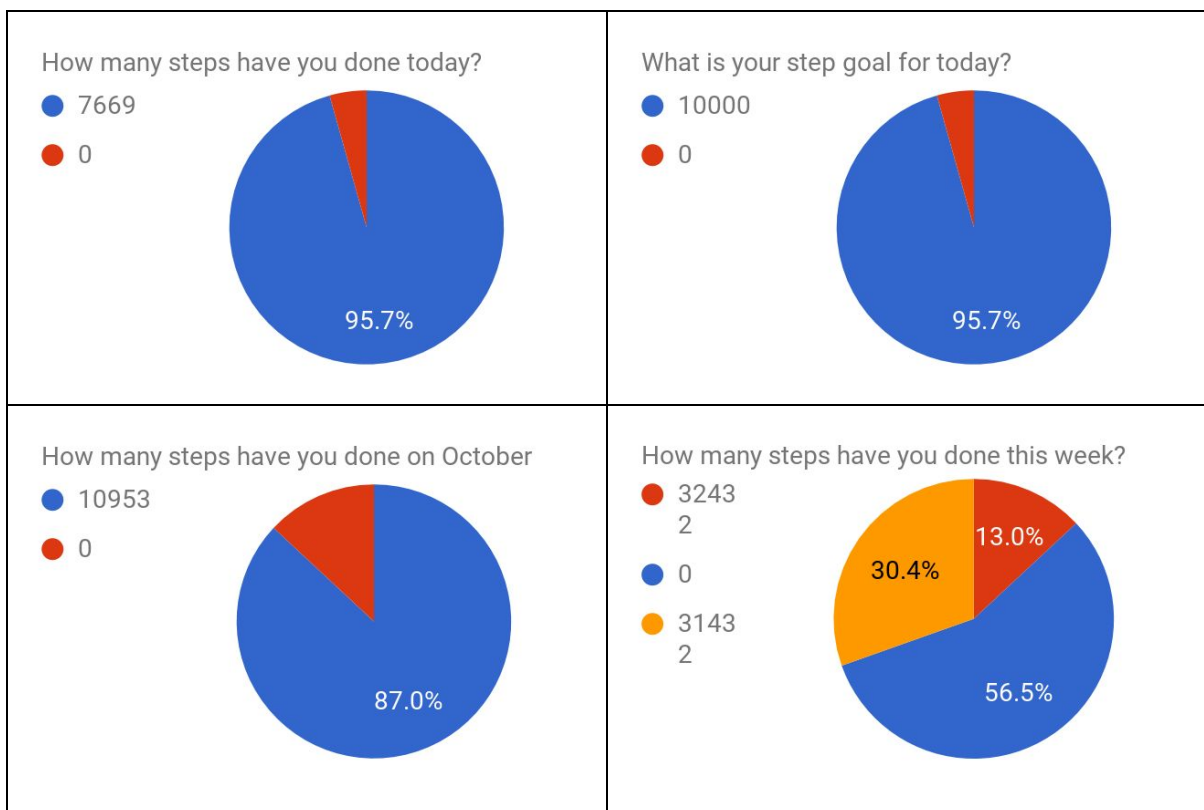
7.2.1 General questions

These questions were used to get a baseline understanding of the test users and their experience with relevant technologies.



7.2.2 Scenario using the user interface

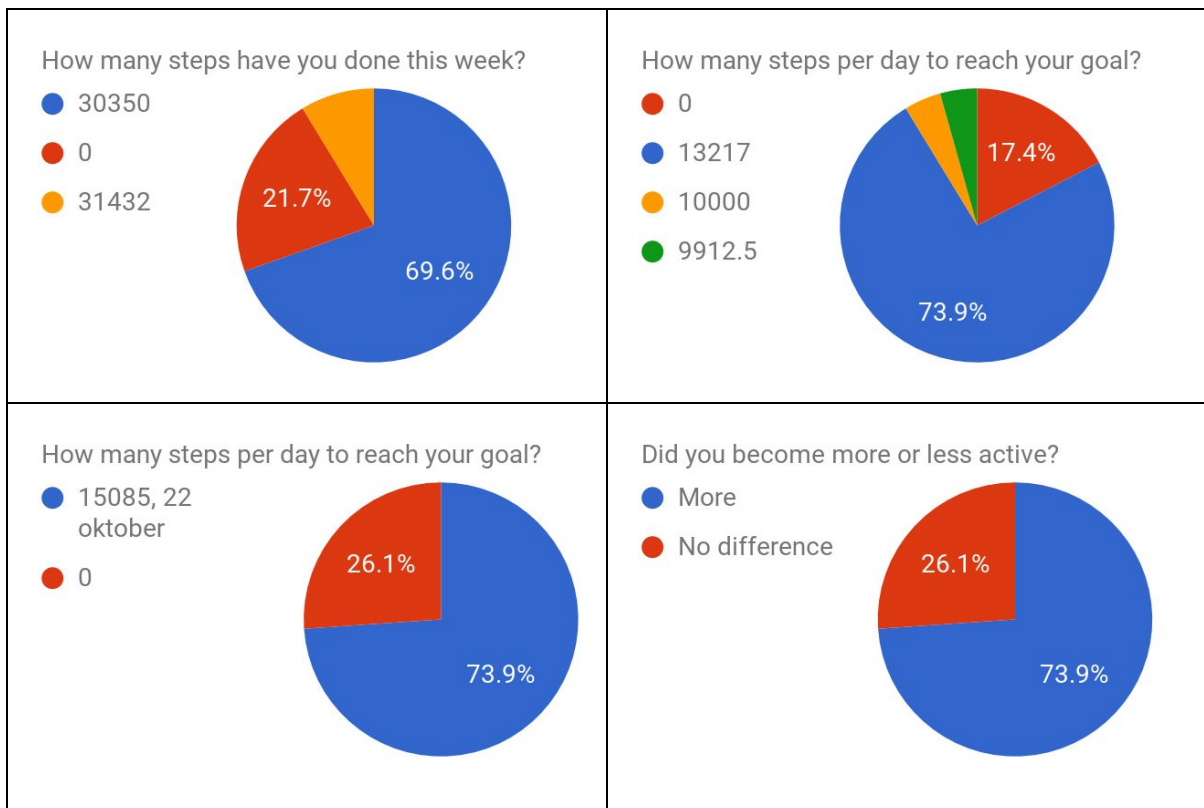
These questions were used to see how users were interacting with the dashboard, and to see if they automatically started using Robin the Robot. Each question that required the user to find an answer in the interface was followed by a question that asked them to explain how they found this answer. Notable findings in those follow-up questions are discussed in the conclusion section of this report. A value of 0 means that a non-numeric answer was given, meaning the test user could not find an answer.



Most users were able to find the correct answer to the first three questions. Questions 4 proved more difficult, as manual calculation of the total steps this week was needed. Most users were not able to manually calculate this answer.

7.2.3 Scenario using the virtual agent

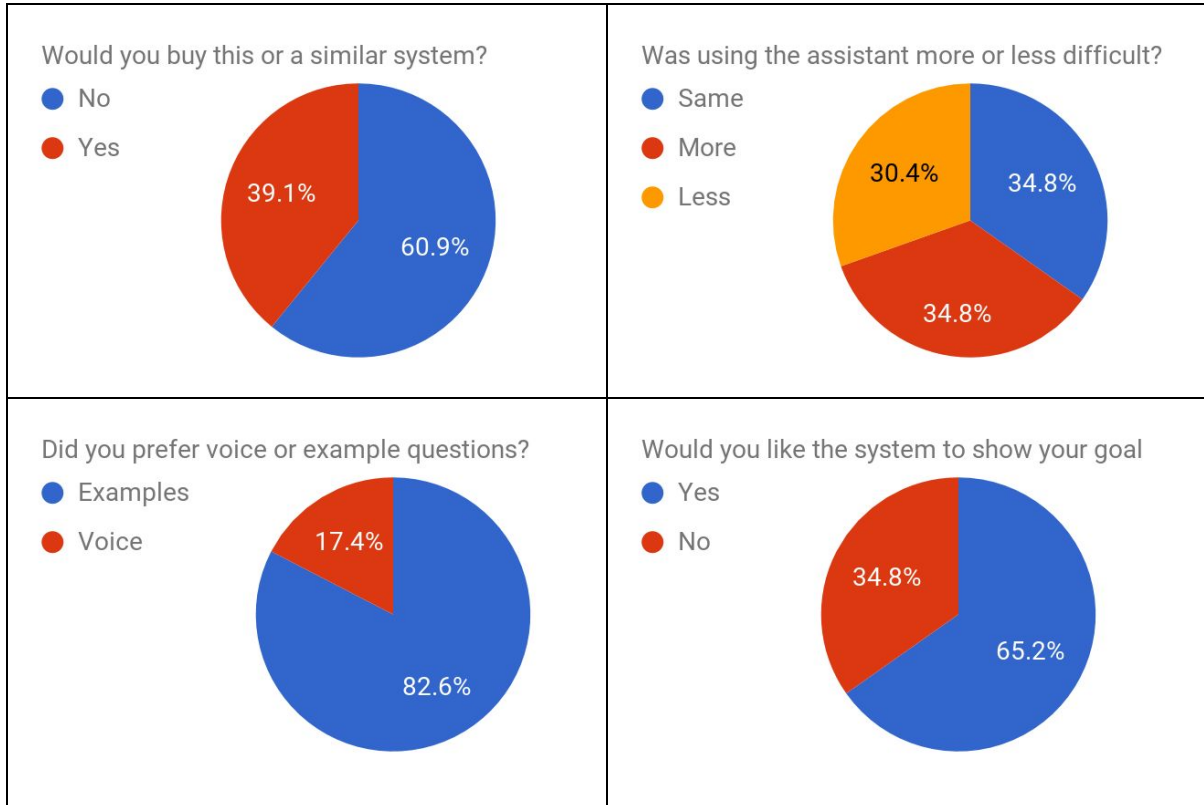
These questions were used to see if people started using Robin the Robot after being made aware of his purpose, and to see if they used speech recognition or the example questions. Each question that required the user to find an answer using the virtual assistant was followed by a question that asked them to explain how they found this answer. Notable findings in those follow-up questions are discussed in the conclusion section of this report. A value of 0 means that a non-numeric answer was given, meaning the test user could not find an answer.



Comparing to question 4 of scenario 1 to question 1 of this scenario, more people were able to find the correct answer by using the virtual assistant. Some users calculated the steps this week manually like they did in scenario 1. The other three questions were answered with an average success rate of around 75 per cent.

7.2.4 Evaluation

These questions were used to evaluate the scenarios and get an insight in the experience of the users.



Most people would not buy a system that is similar to the prototype. In the follow up question regarding this answer it was clear that people prefer their own smartphone over a separate device. The example questions were heavily preferred over the voice recognition. Users are also interested in pro-actively displaying their activity.

8 Conclusion and discussion

Test users were very able to find the answers to the scenario questions. The simple questions about steps were quickly read from the user interface. The questions where reading graphs was needed took longer to answer, but often the virtual assistant was not asked for help. All but one user were able to answer the first scenario question, indicating the test group was familiar with tablet interfaces.

The example questions that were displayed underneath Robin the Robot were needed for users. Most test users had difficulty talking to Robin using their voice. It was perceived as socially uncomfortable, or the voice recognition system failed in interpreting their sentences.

Only three people used the virtual assistant in scenario 1, but it was used by everyone in scenario 2. This means that most people will not use a virtual assistant when there are other options available. The last question of scenario 1 and the first question of scenario 2 are very similar to see if users would use Robin to find the answer instead of calculating it themselves. Robin was used in most cases, but some test users also calculated the answer in scenario 2 themselves.

8.1 Recommendations

An interesting finding was the use of Robin the Robot by the elderly and visually impaired, as for them a user interface is less familiar or not readable. If the final system is deployed in an environment for these users it should be configured to focus more on Robin the Robot than the conventional interface. It could be worth investigating if removing the conventional user interface all together would make this system interesting for these target groups.

Many smartphone owners preferred a solution on their existing device. Adding a new tablet in their homes made them less interested in using the solution. It has to be noted that many users were from the 18-25 and 35-35 age categories, a demographic that heavily relies on the use of smartphones. Nevertheless it could be worth exploring a software-only solution should for CloudCare2U. This would lower costs as many people already have multiple suitable devices at home.

The improved CloudCare2U system should definitely use a virtual assistant to help users answer complex questions that involve larger data sets. However the system should primarily use example questions as input method. Voice recognition could be added, but is probably more suitable in an integrated home automation environment.

9 Acknowledgements

I would like to thank Roessingh Research & Development for hosting this project.

I would like to thank Harm op den Akker in particular for his support during the project. His ideas added a lot of value and helped moving the project forward.

Lastly I would like to thank all the test users for their participation.

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11 Appendices

Appendix I: Terminology

Term	Description
Reactive	A programming paradigm that binds application state directly to the user interface components that display the (partial) state. Often used to build real-time interfaces.
Intent	A question that the user of a natural language system can ask.
Entity	Defined object in a natural language system that is used to match user input to an intent.
Context	Information linked to a single user of a natural language system, also known as “session data”.
Mock, Mocked	A fake data set designed to mimic real-world data. Often used to develop and test software systems before they are in use.

Appendix II: Evaluation questionnaire

The following questionnaire was used for the evaluation phase. The form is an export of a digital form built in Google Forms. It starts on the next page.

Graduation Project User Testing

Dit formulier wordt gebruikt om het prototype van het project "Interaction Development for Personal Daily Support" te testen. Het project wordt uitgevoerd in opdracht van Roessingh Research & Development and is executed by Chris ter Beke. Alle informatie die in dit onderzoek verzameld wordt zal anoniem blijven in het eindverslag.

Het dagelijks support systeem houdt bij hoeveel je beweegt. Daarnaast weet het systeem wat je wekelijkse en maandelijkse doelen zijn, bijvoorbeeld om meer stappen te zetten. Je kunt het vergelijken met een soort fitness tracker. De nieuwste iteratie van het systeem draait op een tablet en kan bij gebruikers thuis neer gezet worden. De gebruiker kan het systeem gebruiken om bij te houden of de doelen gehaald worden.

Het formulier bestaat uit 4 onderdelen:

- 1) Algemene vragen
- 2) Scenarios via de user interface
- 3) Scenarios met een alternatieve vorm van interactie
- 4) Evaluatie

Om de scenarios uit te voeren is een demo applicatie beschikbaar op <https://gp-bot-a8235.firebaseio.com>. Deze applicatie werkt alleen in de laatste versie van de Google Chrome browser.

* Required

Introductie vragen

Om het onderzoek goed te kunnen uitvoeren hebben we wat achtergrond informatie nodig. Alle informatie zal geheim worden gehouden. Er hoeft geen privé of contact informatie achtergelaten te worden. De informatie wordt alleen gebruikt om de resultaten te kunnen classificeren.

1. Wat is je leeftijds categorie? *

Mark only one oval.

- 18-25
- 25-35
- 35-50
- 50-70
- 70+

2. Ben je man of vrouw? *

Mark only one oval.

- Man
- Vrouw
- Zeg ik liever niet

3. **Heb je ervaring met bestaande activity trackers zoals FitBit of Apple Watch? ***

Mark only one oval.

- Ja, ik gebruik deze vaak
- Ja, maar ik gebruik deze niet meer
- Nee, maar ik ben wel geïnteresseerd om het te gaan gebruiken
- Nee, en ik ben niet geïnteresseerd

4. **Heb je ervaring met persoonlijke assistenten als Siri, Amazon Alexa of Google Now? ***

Mark only one oval.

- Ja, ik gebruik deze vaak
- Ja, maar ik gebruik deze niet meer
- Nee, maar ik ben wel geïnteresseerd om het te gaan gebruiken
- Nee, en ik ben niet geïnteresseerd

Scenario via de user interface

In dit deel gaan we een aantal scenarios draaien via de demo applicatie om inzicht te krijgen in je dagelijkse activiteit en doelstellingen die opgeslagen worden in het dagelijkse support systeem.

Voor dat je begint kun je je naam invullen in de rechter bovenhoek. Dit maakt het systeem persoonlijker. Kijk nu rond in de interface om te zien wat er beschikbaar is en probeer de volgende vragen te beantwoorden.

5. **Hoeveel stappen heb je vandaag gezet? ***

6. **Wat is je doel voor aantal stappen per dag? ***

7. **Hoeveel stappen heb je op 21 oktober gezet? ***

8. **Hoeveel stappen heb je deze week gezet, gegeven dat de week op 26 oktober begonnen is? ***

9. **Hoe ben je op dit antwoord gekomen? ***

Scenario met een virtuele assistent

In dit deel onderzoeken we de mogelijkheden om een alternatieve vorm van interactie met het dagelijks support systeem te gebruiken. Het alternatief is een slimme hulp, genaamd Robin de Robot, aan wie je vragen kunt stellen om zo inzicht te krijgen in je dagelijkse activiteit en doelstellingen. Robin begrijpt vragen over je activiteit en doelstellingen, maar ook meer!

Als de microfoon rood pulseert kun je met je stem dingen vragen aan Robin! De vraag zal worden ingevuld in het bovenste tekst wolkje. Robins antwoord zal in het onderste wolkje getoond worden.

10. **Hoeveel stappen heb je deze week gezet, gegeven dat de week op 28 oktober begonnen is? ***

11. **Hoe ben je op dit antwoord gekomen? ***

12. **Hoeveel stappen moet je nog per dag lopen om je doel van deze week te halen? ***

13. **Hoe ben je op dit antwoord gekomen? ***

14. **Wat was je actiefste dag afgelopen maand, en hoeveel stappen heb je toen gezet? ***

15. **Hoe ben je op dit antwoord gekomen? ***

16. **Ben je sinds het systeem in gebruik te hebben genomen meer of minder actief geworden? ***

Mark only one oval.

- Meer
- Minder
- Geen verschil

17. **Hoe ben je op dit antwoord gekomen? ***

18. **Probeer uit te vinden wat Robin nog meer kan! Schrijf de gevonden mogelijkheden hier onder op. ***

Evaluatie

Tot slot stellen we je nog een aantal vragen over hoe je het omgaan met het systeem vond. Probeer deze zo eerlijk mogelijk in te vullen.

19. **Zou je dit of een soortgelijk systeem in huis plaatsen om bewuster te worden van je dagelijkse activiteit? ***

Mark only one oval.

- Ja
- Nee

20. **Geef een korte toelichting. ***

21. **Was het vragen om informatie aan Robin gemakkelijker, gelijk aan, of moeilijker dan opzoeken via de user interface? ***

Mark only one oval.

- Gemakkelijker
 Gelijk aan
 Moeilijker

22. **Geef een korte toelichting. ***

23. **Welke invoer methode voor Robin had je voorkeur, het aanklikken van voorbeeld vragen of de spraak interface? ***

Mark only one oval.

- Voorbeeld vragen
 Spraak

24. **Geef een korte toelichting. ***

25. **Zou je het prettig vinden als Robin aan het begin van de dag op het scherm laat zien wat je die dag aan activiteiten moet doen in plaats van hier om te moeten vragen? ***

Mark only one oval.

- Ja
 Nee

26. **Geef een korte toelichting. ***

27. **Wat vind je van het design van het dashboard? ***

Bedankt!

Bedankt voor het participeren in dit onderzoek over het gebruik van een slimme assistent voor het dagelijkse support systeem. Als je meer informatie wilt over het onderzoek kun je hier je email adres achter laten. Dit adres zal voor niets anders gebruikt worden dan het verstrekken van informatie over dit onderzoek.

28. **Je email adres.**

29. **Je vraag of opmerking.**
