ALFRED

Personal Interactive Assistant for Independent Living and Active Ageing

WP8- Piloting & Validation

D8.4 Piloting and Validation Report III: Association

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Contributing Partners: NFE

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This document will summarize and analyze the piloting activities carried out in the two associations' pilot sites in the Netherlands and in France.

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Note

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Project Partners

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Executive Summary

The main goal of this deliverable is to describe and analyze the results of the pilot trial. The pilot trials took place from June to July 2016 in France and in the Netherlands at the homes of older people. Users were asked to test an integrated version of the ALFRED system. Several measurement tools have been implemented during the pilot phases to collect the users' feedback including focus groups, interviews with all users and quantitative tools. This deliverable offers an analysis of the pilots and of the results.

The document starts with a generic introduction. Then, a review of the theoretical model is presented, describing the methodology that helps to understand the "real-world" applicability of the ALFRED prototype. The pilots make use of the Technology Acceptance Model methodology TAM (see section 2.3.1). On the one hand, workbooks and diaries of the users and on another hand guidelines and focus group sessions are specific tools used to monitor this pilot session, giving a qualitative and inner-deep understanding of the user's feedbacks. The analysis of the log-files to understand user's experience is also a key point of success as they allow tracking how many times a user opened and used an app

ALFRED prototype itself is then described. The integrated version used for those pilot rounds can be discovered through screenshots, allowing to know not only how ALFRED looks to end users, what they were really experiencing while participating to the tests, but also which applications were tested and how they looked like.

The description of the test participants is the fourth main subject of this deliverable, which there describes their profiles, regarding several parameters, as their age, gender, way of living, but also the use of technology or smartphones. This part also describes the drop out cases.

Ethical and legal issues are then considered. As ALFRED was tested by individuals, a complete guarantee of privacy was given, including anonymous recording of data. All users also had to sign agreement forms, and were free to ask questions at any moment of the pilot, whether during a focus group session or when testing ALFRED at home (via the help desk).

The results then get analysed, thanks to a data matrix included in this document's annexes. Several categories of data were collected to evaluate the use that was made of Alfred during the pilot phase, such as a Post-Study System Usability Questionnaire.

Several trends emerge from this analysis, including the wide use of the system to help mobility or control health issues. The sum up of the measurement tools and of user's diaries, focus groups and interviews can be read in this section.

Finally, an overview of the KPI's related to the pilots is proposed and compared to the actual results obtained during the pilot phase.

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1. Introduction

ALFRED – Personal Interactive Assistant for Independent Living and Active Ageing – is a project funded by the Seventh Framework Programme of the European Commission under Grant Agreement No. 611218. It will allow elderly people to live longer at their own homes with the possibility to act independently and to actively participate in society by providing the technological foundation for an ecosystem consisting out of four pillars:

- **User-Driven Interaction Assistant** to allow older people to "talk" to ALFRED and to ask questions or define commands in order to solve day-to-day problems.
- **Personalized Social Inclusion** by suggesting social events to older people, considering his interests and his social environment.
- A more **Effective & Personalized Care** by allowing medical staff or carer to access vital signs of older people monitored by (wearable) sensors.
- **Physical & Cognitive Impairments Prevention** by incorporating serious gaming to improve the physical and cognitive condition by offering games and quests to older people.

1.1 ALFRED Project Overview

One of the major problems today is the increasing isolation of older people, who do not actively participate in society either because of missing social interactions or because of age-related impairments (physical or cognitive). ALFRED will allow overcoming this problem with an interactive virtual butler for older people, which is fully voice controlled.

The ALFRED project is wrapped around the following very clear main objectives:

- Empowering people with age related dependencies to live independently for longer by delivering a virtual butler with seamless support for tasks in and outside the home. The virtual butler ALFRED will have a very high end-user acceptance by using a fully voice controlled and non-technical environment.
- Prevailing age-related physical and cognitive impairments with the help of personalized, serious games.
- Fostering active participation in society for the ageing population by suggesting and managing events and social contacts.
- Improved care process through direct access to vital signs for carers and other medical stuff as well as alerting in case of emergencies. The data is collected by unobtrusive wearable sensors monitoring the vital signs of older people.

To achieve its goals, the project ALFRED conducts original research and applies technologies from the fields of Ubiquitous Computing, Big Data, Serious Gaming, the Semantic Web, Cyber Physical Systems, the Internet of Things, the Internet of Services, and Human-Computer Interaction. For more information, please refer to the project website at http://www.alfred.eu.

1.2 Deliverable Purpose, Scope and Context

Pilots of ALFRED have been performed in different EU member states. The first pilot was performed in the Netherlands (T8.2), the second one in Germany (T8.3) and the third one in France (T8.4). Results of the pilot held in Germany are gathered in the deliverable D8.3.2 *Piloting and Validation Report II: Hospital* due to its specificity.

1.3 Document Status and Target Audience

This document is listed in the Description of Work (DoW) as "public", as it provides general information about the goals and scope of ALFRED and can therefore be used by external parties in order to get according insight into the project activities.

While the document primarily aims the project partners, this public deliverable can also be useful for the wider scientific and industrial community. This includes other publicly funded projects, which may be interested in collaboration activities.

1.4 Abbreviations and Glossary

All along this report, some acronyms will be used. You can find below a list of these acronyms.

- DoW = Description of Work
- KPI = Key Performance Indicator
- ICT = Information and Communication Technologies
- PSSUQ = Post-Study System Usability Questionnaire
- TP = Test Participant

1.5 Document Structure

This deliverable offers an overview and an analysis of the pilot phase held in the Netherlands and in France following the structure below:

- Chapter 1 is an introduction to the whole document giving an overview of the issues to be deal with during the deliverable.
- Chapter 2 summarizes the theoretical models to be applied during the pilot phase of the ALFRED project.
- Chapter 3 describes the ALFRED prototype that has been tested by the participants.
- Chapter 4 details the test participants (TPs).
- Chapter 5 is exploring the ethical and legal issues that have been tackled during the interaction with the users.
- Chapter 6 analyses the results of the pilot sessions.
- Chapter 7 offers a comparison between the KPIs and the actual results of the pilots.
- Chapter 8 corresponds to the conclusion of the deliverable.

2. Overview Theoretical Models

This section shortly presents the theoretical model that was applied in the pilot phase conducted in France (pilot 3) and the Netherlands (pilot 1) between June and July 2016. The aim of the methodology carried out during the pilot phase was to demonstrate the real-world applicability of ALFRED and to evaluate its impact [DoW].

To achieve this goal, three pilot sites have been selected according to partners' expertises and dispatched as follow:

- Pilot 1: the Dutch pilot carried out by NFE
- Pilot 2: Germany's pilot carried out by CHA.
- Pilot 3: France pilot carried out by ESE

The results of the pilots 2 held in Germany are gathered and analysed in the D8.3.2 *Piloting and Validation Report II: Hospital*.

According to the DoW the Dutch pilot was planned to perform the usability studies and the French pilot to test the integrated solution at the homes of older people. However, already in an early stage of the project it was decided to also test the integrated ALFRED version in a pilot setting at the homes of older people in the Netherlands. Vice versa the French pilot also participated in the usability evaluations with French end users. This made it possible to involve more end users from different countries and obtain more comparable results. The results of the usability evaluations can be found in the D8.2.2.2 and D8.2.2.1.2.

2.1 General Framework

As described in D8.2.2 *Piloting and Validation I: Individual Usability,* the aim of the Dutch and French pilots is to test the fully integrated ALFRED prototype in a real-life environment at the homes of older people and to demonstrate its impact. Four main perspectives that were defined in this methodology compose the essence of the ALFRED impact, illustrated by the figure below:
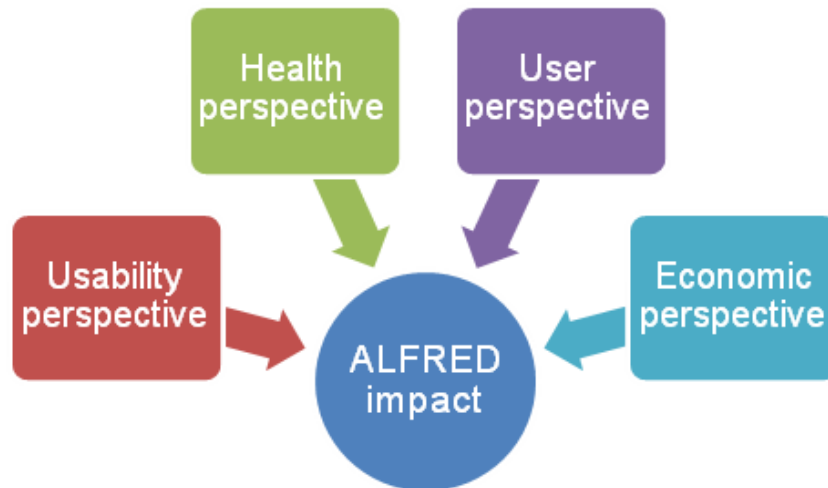
Figure 1: Overall Framework of ALFRED Impact

The four perspectives have been evaluated during the pilot phase with the envisaged methods for evaluation defined in D8.1.2 Piloting Definition. Some of these methods have been adjusted and described in D8.2.2, in order to adapt to the developments in the project.

The health perspective was evaluated by the pilot carried out by CHA, in Germany and will be reported on in D8.3. The usability perspective is reported on in D8.2.2.2 and D8.2.1.2. The results from the economic and end user perspective that are derived from the pilots in France and the Netherlands are reflected in this deliverable.

2.2 Pilot Set Up

The pilot trials were implemented in two waves of two weeks in June and July of 2016. Test participants (TP's) were asked to use the integrated ALFRED system for two weeks independently at home. Previously to the trial, the same TPs participated in a controlled evaluation session in Evaluation Cycle 5. This means that prior to the pilot trial the users already had some knowledge on the use of the integrated ALFRED system. Subsequently the TPs were informed on the objectives of the pilot trial. They filled in an intake questionnaire on their demographics and the intention of use questionnaire. At the end of the pilot the TPs filled the same Intention of Use Questionnaire in again as well as the PSSUQ, log data and diary notes were gathered and a final interview or focus group session took place. The following sections go further into each of these proceedings.

2.3 Materials and Methods

The table below gives a short overview of the pilot methods and materials applied in the two pilots that will be analyzed in this deliverable (France and the Netherlands).

App	Main functionality
Economic Perspective	Structured user interview, focusing on willingness to buy.
End user perspective	TAM methodology [Davis 1989]
End user perspective	PSSUQ [Lew02]
End user perspective	Intention of Use Questionnaire
End user perspective	Personal testing experience diary
End user perspective	Personal System activity log files

Table 1: Overview Pilot Methodology

2.3.1 Technology Acceptance Model

To evaluate ALFRED's impact and acceptance in a real-life environment by users, the Technology Acceptance Model (TAM) has been used. The TAM is a model that explains whether users will accept and use a new technology that is presented to them, such as an application on a smartphone. It defines a set of determinants that influence this [1989, Davis]. The determinants are divided in two groups that influence the user:

- Perceived usefulness
- Perceived ease of use

The perceived usefulness indicates whether users will find a technology useful, determining the intention to accept the technology and the advantages it has for the user. The ease of use has direct influence on the attitude of the user towards the new technology, as well as the usefulness. When the attitude is positive towards a new technology the user will accept the product and most likely buy it. When the intention is low, it is most likely that the user will not adopt the technology and not buy the product. [1989, Davis].
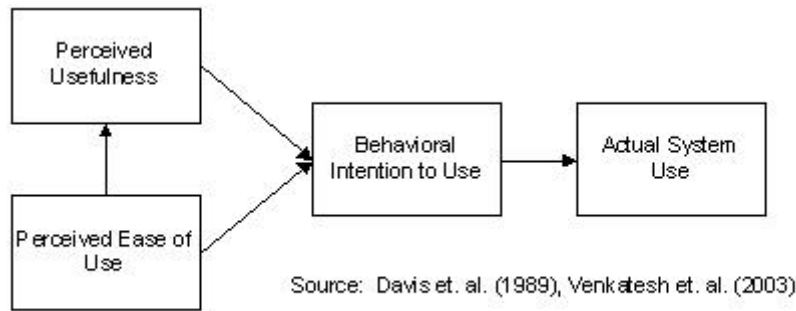
Figure 2: TAM model

The TAM model is widely used in research and has been adapted several times. For the purpose of this research in the ALFRED project, we have used the original TAM model (see Figure 2). A standardized questionnaire has been used to measure the intention to use and perceived usefulness (See Annex 1 in the workbook). Respondents were asked to rate their opinion using a 7 point Likert scale ranging from 1 (Completely agree) to 7 (Completely disagree). The questionnaire was submitted at the very start of the pilot and at the end of the pilot when people were already using the ALFRED system. By implementing two moments for measurement, we can see how their attitude changed over time during the use. The PSSUQ was used also in the pilot to measure the ease of use at the very end of the pilot.

Of course it is difficult to provide concrete conclusions on data based on users' predictions of their future behaviour. Also we are working here with a small sample of only 20 users in two countries. Therefore the questionnaire data is supplemented with information from log files, giving an overview of the actual use and focus group sessions, described below. We have to consider that users were asked to use a preliminary prototype, whereas normally users are used to market ready products. Therefore, the results can be seen as an indicator of the way users would interact with the future ALFRED product and for further improvements that are required on the prototype.

2.3.2 Log Files and Diaries

In order to evaluate the impact of ALFRED prototype on the TP's (Test Participants), each research team in France and the Netherlands collected the log files corresponding to know the number of uses per participant for each application integrated in ALFRED. This data allows to provide indications on the users' interests during the pilot phases.

Besides, each participant had the opportunity to write his/her feedback directly in a diary which was collected at the end of the pilot sessions. These inputs illustrate the usefulness of each application, so the opinion of the user and their feelings regarding the system.

2.3.3 Workbook

During the pilot phase, a workbook has been elaborated and translated into the pilots languages (see annexes n°1 and 2) to help the TPs in his/her testing. This document was given to each participant during the preliminary session. Each participant had access to some information: the pilots' objectives, the help desk information in case of any problem,

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a consent form in which they signed their acceptance for participating in the project, and the diary to write down all the eventual remarks they could had.

Also, during the first meeting with the ALFRED team of each end-user organization, the TP was guided in the various functionalities of ALFRED that have been implemented and then introduced to the TP's. A list of functionalities of the ALFRED pilot prototype was communicated on this workbook. These decisions were taken in order to remember the users about the different functionalities that are available. Already during the usability evaluations it became clear that users used a wide range of commands that in the pilot prototype were not available yet. Although the commands have been extended after Evaluation Cycle 4, the system was still not ready to answer all the questions of users. Therefore, an overview was made of the specific functionalities and apps that were usable in the pilot prototype.

2.3.4 Focus Group and Interview Session

At the end of each pilot session, the research teams in France and the Netherlands invited each TP to focus groups or interviews in order to collect their feedback and remarks after two weeks of using ALFRED prototype. The teams followed a developed guideline (see Annexes 2). TP's gave their feedback freely and then answered some general questions regarding usability, their experience and their interest in the system. The idea was to know which applications were the most helpful with ALFRED in the TP's daily life, if it helped them for being more active or for improving their health, and finally if they were willing to buy and pay for such a service.

Due to the schedule (holidays period), most of the participants were not available in the same time. Therefore, the final sessions were conducted with fewer users than expected in the same time. Of the first wave, the final sessions have been realized at the beginning of July 2016. The final sessions from the second wave were planned at the end of July 2016. The table below describes the organization of the final sessions in France and the Netherlands.

Country	Wave 1	Wave 2
France	1 session with 2 TPs 1 session with 2 TPs 1 session with a single TP	1 session with 2 TPs 1 session with a single TP 1 session with a single TP 1 session with a single TP
The Netherlands	1 session with 2 TPs 1 session with 1 TP 1 session with 1 TP	1 session with 3 TPs 1 session with 1 TP

Table 2: TP's in Focus Group and Interview Sessions

Therefore, the applied methodology changed from focus groups to semi-structured interviews. Participants were asked to give general feedback about their experiences. Results will be further described in section 6.5.

3. ALFRED Pilot Prototype

For the pilots in the Netherlands and France a prototype version of ALFRED was delivered that was previously tested in Evaluation Cycle 4, as described in D8.2.2.2. This version was then once more improved and issues were solved to make the prototype work better. This improved integrated version was then used in Evaluation Cycle 5 with end users. Immediately after this session the TP's started the pilot with the ALFRED system independently at home for two weeks.

The ALFRED prototype was previously installed on the Nexus 5X phone by the research teams. Between the first and the second waves of testing, technical changes have been realized in order to fix some technical issues and prevent crashes that were occurring. On the integrated ALFRED prototype, a total of 14 apps were available through voice interaction within the Personal Assistant. The table below provides an overview of the apps and their main functionalities.

	App	Main functionality
1	Tutorial app	ALFRED introduces itself and gives basic instructions on how to be used.
2	Alarm clock	ALFRED asks how the user is feeling today and based on the answer makes a suggestion for an event or to call someone.
3	Location app	The user can ask ALFRED where he/she is; ALFRED then explains the exact location.
4	Reminder app	The user can ask ALFRED to set a reminder for a certain period of time.
5	Posture app	ALFRED gives suggestions for good postures.
6	Battery app	ALFRED indicates the battery status.
7	Agenda app	User can set an appointment in his agenda.
8	Microphone app	User can set ALFRED to his/her preferences by changing the microphone colour.
9	Navigation app	User can ask directions to a certain place.
10	Contact app	User can synchronize his/her contacts stored in the Android call book.
11	Help call	User can ask for help.
12	Meeting app	User can organize a meeting with friends.
13	Group app	User can set up a group discussion.
14	Health monitor app	User can ask what his/her vitals are.

Table 3: Overview of ALFRED Apps in the Integrated Version

To participate in the pilot each user received a smartphone (Nexus 5X) on which the ALFRED PA and ALFREDO marketplace were installed, as well as all 14 apps. It was finally decided to preinstall everything, as based on Evaluation Cycle 4 it was considered too complicated for users to install everything themselves. Hence users were presented with the smartphone as shown in Figure 3.

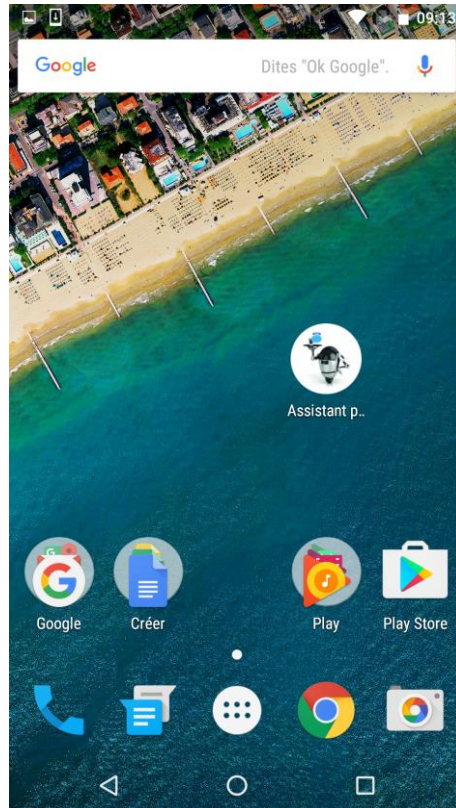| D8.4 - Piloting and Validation Report III - Associations	Document Version: 1.0	Date: 2016-09-30	Status: For Approval	Page: 16 / 84
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Figure 3: Welcome Screen of the Smartphone

The users had to perform a tap gesture to the Personal Assistant app to start the voice interaction. Then, the applications welcome screen shows a microphone. To interact with ALFRED, the TP had to touch the microphone. A sound is produced meaning that the ALFRED system is listening for the user request. Once the user has touched the microphone icon, the microphone's color is changing to red and a sentence below the microphone is appearing saying "Please, speak" to give a visual indicator to the user.
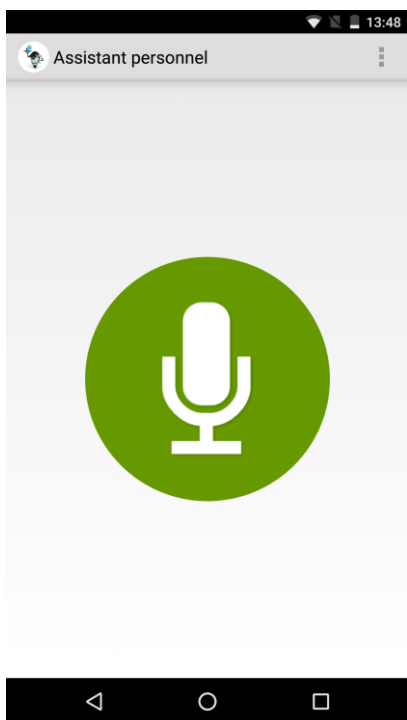
Figure 4: Welcome Screen of ALFRED   Figure 5: ALFRED is Listening
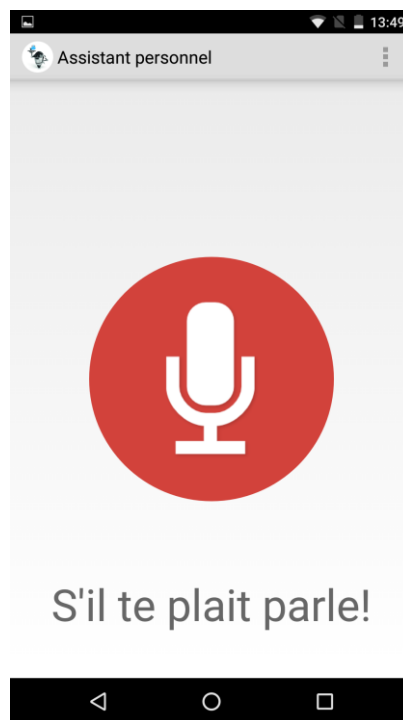
At this stage, the TP can address his/her request to the system. In order to be recorded, the request has to be enunciated after touching the microphone.

A customization of the microphones color was available and the user can change its color at every stage of his/her ALFRED experience.

Figure 6: Customization of the Microphone

In order to guide the user, a tutorial has been implemented. This tutorial explains how ALFRED is working and its main functionalities. The user just has to pronounce the word "Begin" to launch it.
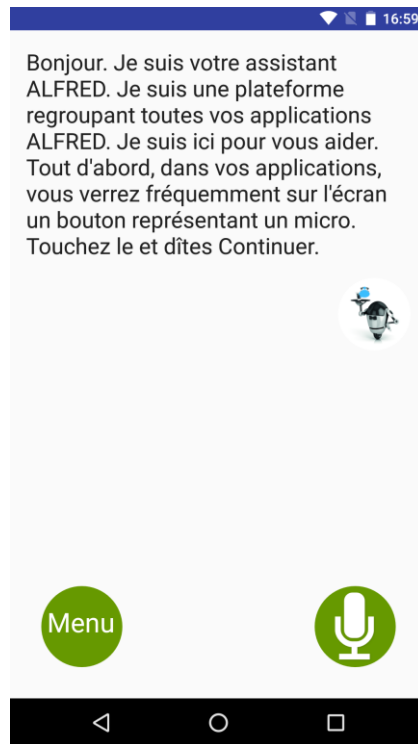
Figure 7: Screenshot of the Tutorial App

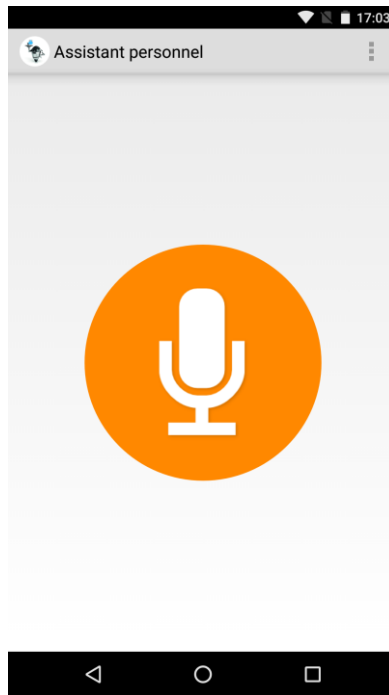During the first waves of testing, the TP didn't have access to the "Menu" button. It has been implemented before the second wave of testing after seeing that users were lost without the big microphone icon. The "Menu" button redirects the user to the main screen of ALFRED (see Figure 4).

One of the most used application of the AFRED system was the Navigation app. Indeed, ALFRED is able to localize the user and to give him/her directions.

Figure 8: ALFRED Localizing the User   Figure 9: Itinerary
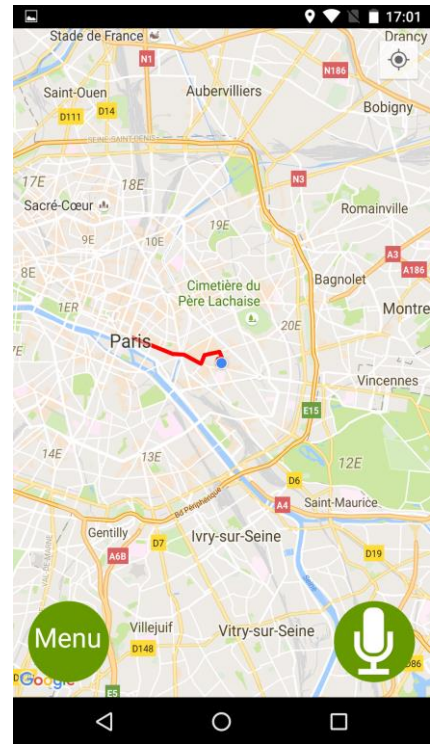
ALFRED was also used as a reminder. The Agenda app was able to remind the user an event happening soon (e.g. taking some pills) or later on (e.g. a birthday). This functionality was working well and has been tested several times by each TP.

Figure 10: Reminder App Ringing
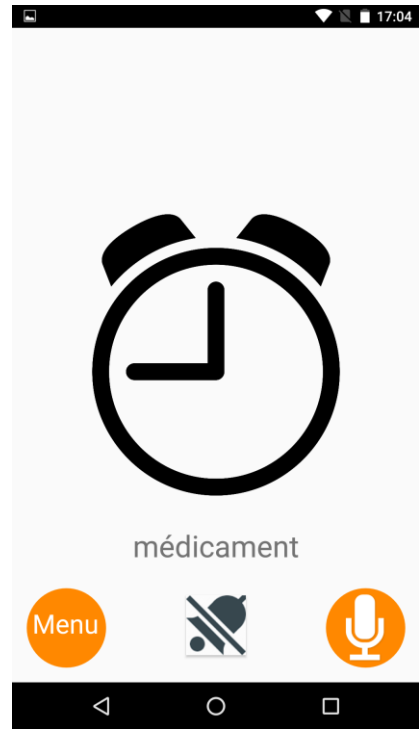
Figure 11: Reminder App Settled
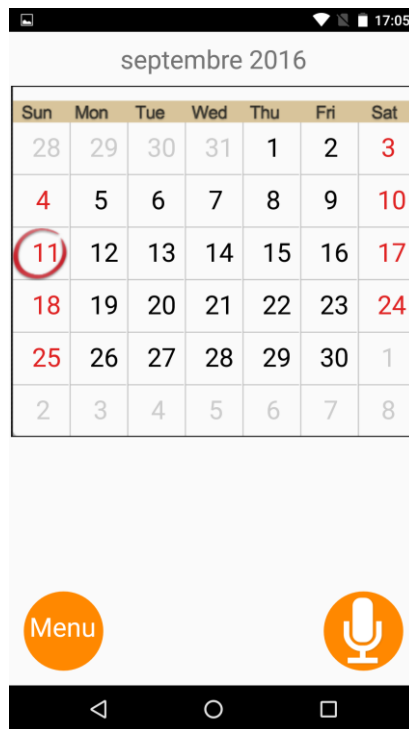
Figure 12: Agenda App

Beside these practical functionalities, ALFRED was able to give the TP some advices about the way to stand to avoid back pain.
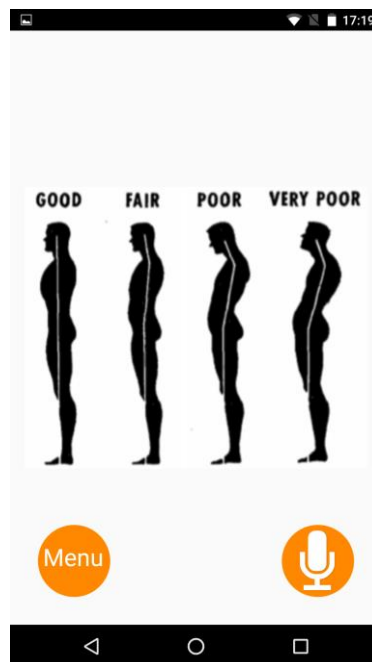
Figure 13: How to Stand Up Properly

In case of emergency, a "Help" function was implemented calling for help to the carer or directly to a recorded emergency number.
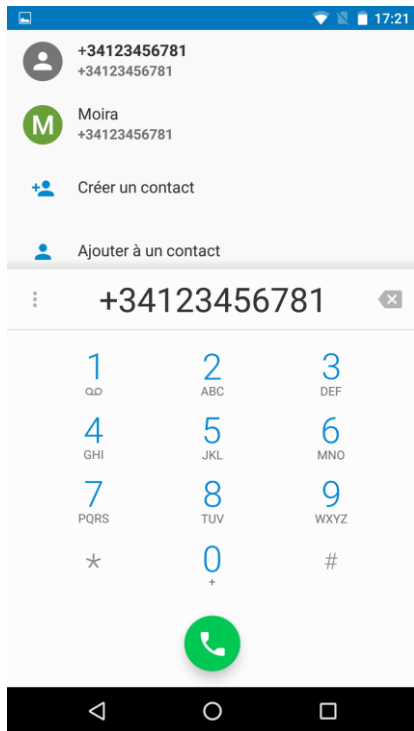
Figure 14: ALFRED Calling for Help   Figure 15: ALFRED Asking Who to Call
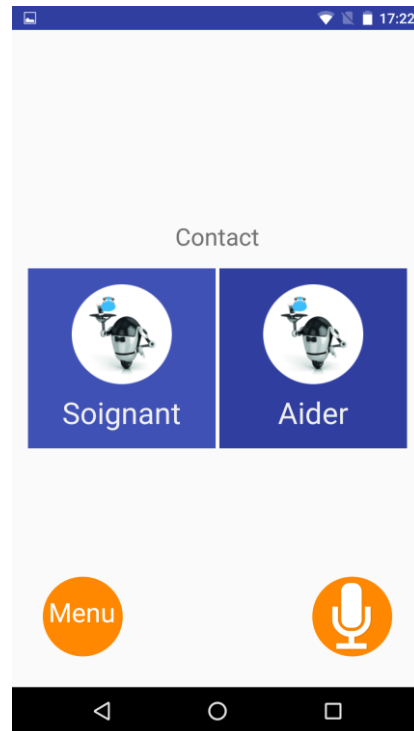
Another functionality of ALFRED was to allow the TP to create some discussion groups with other users. TPs were able to accomplish the process of creation of a group; however, it wasn't possible to interact with other users.
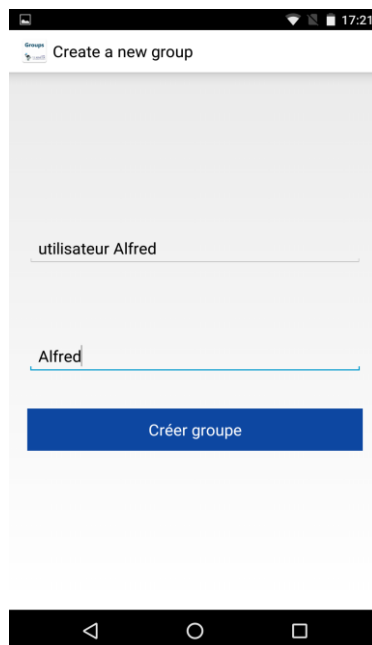

Figure 16: Screenshot of the Creation of a Discussion Group

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ALFRED was also able to give news. This functionality wasn't so much used. In fact, information proposed was only in English.
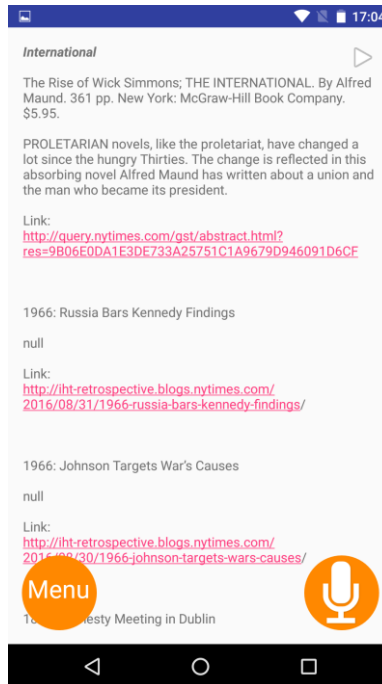
Figure 17: News App Screenshot

As for the health monitor app, TP's were not able to test ALFRED with the connected t-shirt. However, the health monitor app has been tested during the iterative evaluation cycle 2. Details about it are available in D8.2.2.2 Piloting and Validation Usability II Individual Usability, section 2.1. Therefore, during the preliminary session, each ALFRED team explained how ALFRED was supposed to collect health data in order to perform a health monitoring. Results of this monitoring were available with a vocal command.
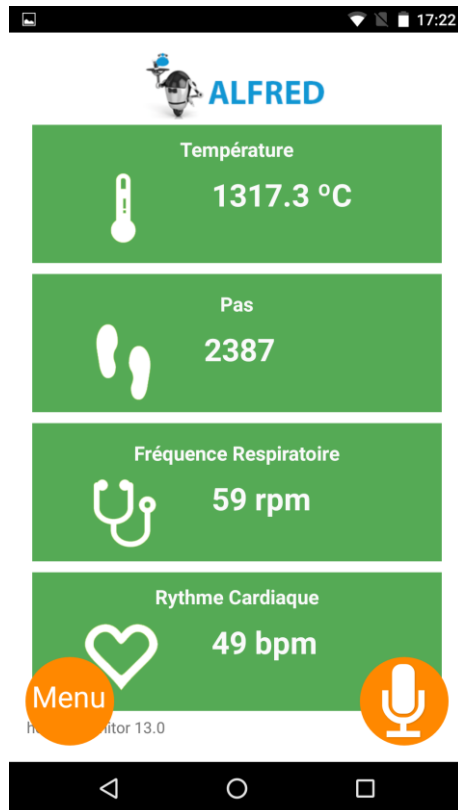
Figure 18: Screenshot of the Health Monitor Screen

4. Test Participants (TPs)

The end-users' organizations (ESE and NFE) are involved in the pilot sessions. Both organizations contacted the TPs among their respective networks and according to their recruiting processes. The participants were involved according to the definition of the Primary Target Group (D2.3). All TP's except for one are living alone, independently at home. One TP lives together with her partner. Due to the fact that no specific functionalities for the Secondary Target Groups were available in the Pilot Prototype, it was decided to involve only test persons from the Primary Target Group. The TP's have been involved through the networks of the end user partners and have been selected based on their interest in the project and the ALFRED solution. The TP's have a varying socio economic background and experience in technology. A total of 22 TPs were involved in the ALFRED pilots. All TP's except for one had already participated in the Evaluation Cycle 5, right before the start of the pilot. Only one Dutch user had not due to a scheduling issue.

4.1 Drop Outs

In France one male user dropped out after the first week. The user collected the smartphone during the preliminary session; objectives were enunciated and the user was aware of his task. However, after two weeks, when collecting the device back, the team realized that no activity was registered on the log file. The user lost interest in the testing right after the preliminary session and didn't use the system. This is explained by the fact that the user was used to handle ICT tools and didn't see the added value of the ALFRED solution. In the Netherlands two female participants dropped out. Although the expectations were made clear before the pilot session, the two users dropped out during the very first try outs with ALFRED. They both felt that they would not be able to use the system and did not feel comfortable testing the system by themselves at their own homes.

4.2 Profiles

In France, a total of 10 TP's were involved, 8 female and 2 male. In the Netherlands 12 TP's were involved, 10 female and 2 male. The average age of the TP's was 77,6 years. In the Netherlands the TP's were older, average age being 81, 3 as it was 74 in France (see Table 4).

	Netherlands (NFE)	France (ESE)	Total
Number of participants	12	10	22
Number of Female and Male participants	10 (F), 2(M)	8 (F), 2 (M)	18(F), 4(M)
Average age of participants	81.3	74	77.6

Table 4: TP's in Pilot

TPs had various profiles since they have different social economic backgrounds, different levels of computer literacy and experiences with smartphones and applications.

In France all TP's were higher educated (1 TP has a higher secondary education, and 9 TP's went to university). In the Netherlands the education level was more evenly divided with 1 higher educated TP, 7 TP's at intermediate education level and 4 were lower educated.

Almost all TP's, except for two in the Netherlands indicate that they do some online activities, such as e-mailing or searching on the internet. The table below gives a short overview on the technological experience indicated by the TP's.

	Netherlands (NFE)	France (ESE)	Total
Very high	1	6	7
High	5	3	8
Medium	3	0	3
Low	2	0	2
Very low	1	1	1

Table 5: TP Experience in Use of Technology

The use of phone devices varied a great deal among the participants. A total of 11 persons has experience with a smartphone (either Apple or Android) and 5 persons didn't have any experience with a mobile device. The table below is a short overview of the types of phone devices in use. It is considered as an important variable for the pilot. From Iterative Evaluations it became clear that the use of ALFRED was easier for people with experience in a smartphone, but the added value of ALFRED was considered higher by people who did not have any experience with a smartphone.

	Netherlands (NFE)	France (ESE)	Total
No mobile device	4	1	5
Normal mobile phone	2	2	4
Smart phone (apple)	3	4	7
Smart phone (Android)	2	2	4
Senior phone	1	0	1

Table 6: Use of Phone

Based on this, we can say that the TP's in France were a bit younger and higher educated than in the Netherlands and probably therefore also had more technological experience and used more often a smartphone. As in the Iterative Evaluation Cycles it is expected that this will influence the results of the pilot.

5. Ethical and Legal Issues

Special attention is given to the respect of ethical and legal issues since the beginning of the project and especially since the beginning of the direct interaction with users (e.g. beginning of the iterative testing phase). The aim of this attention is to guarantee the privacy of the users and their rights. This was also for the pilot trial an important consideration.

5.1 Informed Consent

At the beginning of every session conducted with a user, the research team makes sure that an informed consent is signed. The example of this informed consent can be found in annex 1) of the D8.1.1. The Informed Consent is written in the language of each pilot country and the researcher has obtained the informed consent in written form, confirmed by the TP's signature. The Informed Consent includes that:

a) Personal details and given statements will be treated in strict confidence and will be processed in an anonymous form.
b) In the case the participant doesn't feel comfortable to answer a question he has the possibility to reject the question.
c) At any point during the involvement the participant has the possibility to terminate the research activity without any notice.
d) The decision of rejecting a question as well as to terminate the research activity will not have any consequences for the participant.

5.2 Exclusion criteria

The TP's take part voluntarily and free from coercion in the project. The confidence and wellbeing of TPs during, prior and after the research is considered the highest good for the research in ALFRED. Vulnerable persons have been excluded from the pilot. Specifically this means that the following have been excluded:

- Children and adults without legal capacity
- Persons with diagnosed cognitive impairments
- Persons with psychological diseases or in need of psychological therapies.

5.3 Data Collection

All data collected during the pilot phase has been anonymously treated by the respective research teams and were not shared among partners. The anonymity and privacy of participants was respected at all time. Personal information was kept confidential. Guarantees of confidentiality and anonymity given to the participants were honored, unless there are clear and overriding reasons to do otherwise.

In some cases a user agreement has also been signed for the utilization of his/her image in video or photo. In these cases participants were extensively informed in writing and in person for what purposes the video or photo content would be used.

It was fundamental to make sure that the user had the opportunity to ask any questions concerning the project and/or his/her participation in the testing phase. It also has been

D8.4 - Piloting and Validation Report III - Associations	Document Version: 1.0	Date: 2016-09-30	Status: For Approval	Page: 30 / 84
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clearly explained that the user could leave the pilot without any notice. The end users were involved by experienced staff who are used to working with older people on a daily basis, communicating in a clear and understanding manner.

5.4 Exit Strategy

Given that the material (smartphone) used for the pilot was valuable, the research teams asked to the user to sign a loan agreement. The purpose of this agreement was to make the participant fully aware of the value of the equipment.

As part of the exit strategy TP's were given the option to keep the smartphone with or without the ALFRED system installed on it. In the Netherlands a total of 6 TPs decided to continue using the smartphone. However none of them wanted to continue to use the ALFRED prototype at that moment. This is due to the fact that the prototype was still considered too unstable to really be of added value for a longer time at home. The other TPs did not want to continue to use the phone or the ALFRED system.

6. Results

Users' feedbacks have been collected and analyzed by the research teams and are based on the one hand on quantitative output, such as the TAM, PSSUQ and log files and on another hand on qualitative results through focus groups, diaries and interviews. The following sections go deeper into the results of each of these outputs.

6.1 Technology Acceptance Model

The TAM was filled in twice: once, at the beginning of the pilot (but after the Iterative Evaluation Cycle 5 session), when the TPs hadn't used the ALFRED system independently at home yet, and a second time at the end of the pilot trial. The table below gives an overview of the mean results per question. As mentioned, 1 represents the highest rating and 7 the lowest.

	Intention of use session	**Before**	**After**
1	During the time I have access to the system, I intend to use it.	2,53	3,37
2	Given that I have access to the system, I predict that I would use it.	2,84	3,84
3	This services offered in the system are interesting to me.	3,37	4,26
4	I think the services add value.	2,78	4,21
5	I find ALFRED useful on the road.	2,89	4,42
6	I find ALFRED useful at home.	3,11	4,26
7	Using the system increases my mobility.	4,26	4,84
8	Using the system is of added value to my activities.	3,47	5,05
9	I find the system to support me.	4,21	4,53
10	My interaction with the system is clear and understandable.	3,37	4,63
11	Interacting with the system does not require a lot of effort.	3,05	4,26
12	I find the system easy to use.	3,11	4,16

Table 7: Intention of Use of the Sessions with the TP

If we look at the overall mean values of before and after the trial use, we see a mean rating was given of 3.25 (SD=1.83) and after a mean rating 4.32 (SD=2,07). Overall mean results under and around 3 are reasonably positive. As we can see after the use of ALFRED after two weeks the results were reasonably negative. This indicates clearly that more improvements on the prototype are required.

Looking at the mean results per country some other aspects can be highlighted. The following table gives an overview of the TAM results per country. As we can see in the table below, the French TP's started out in the first TAM with a very positive intention rate compared to the Dutch TP's. After the end of the pilot trial, the French TP's had a more negative rate than the Dutch TP's that were only slightly negative. It seems somehow that the French TP's had more expectations and then were more disappointed. Perhaps an

explanation for this can be found in the fact that the French TP's were a bit younger, higher educated and with more technological experience.

Country	M (mean)	M (mean)
Netherlands	3,64	4,04
France	2,79	4,63

Table 8: TAM Rating per Country

When going deeper into each of the questions of the TAM, it is interesting to notice that the intention of using ALFRED because the user "has access to it" is slightly stronger than the intention to use ALFRED "in the 15 coming days". The access to the device (the smartphone) then appears to be a key success point. It would be therefore preferable to offer an access to ALFRED with a smartphone than to just sell the applications. This probably means that providing the device instead of only proposing the system may be a key success point. (i.e. direct access is more successful when it comes to seniors). As input for the exploitation strategy can be given that providing a package with the smart phone and ALFRED installed on it will probably be better accepted.

When we look at the first round we see that users seem to be more interested in using the different services than the global offer, and have a slightly higher intention of using ALFRED outside.

In the end, when they were asked about the usability of the system, the rating mostly shows that users find the interaction quite clear and understandable and ALFRED quite easy to use even if their expectations have not been totally reached.

After one week of using ALFRED, the results are rather significant since they are not really positive. Users' expectations haven't been reached since the answers' mean is higher than before the beginning of the pilot sessions. After two weeks, TPs didn't see the real added value of the service compared to other existing services. Moreover, they considered that the system didn't increase their mobility outdoors nor helped them at home. The results regarding the interaction with the system aren't very good and they are due to some errors detected all along the pilot sessions and to the fact that some applications were only mock ups. From the TAM we can therefore conclude that the attitude of the TPs towards ALFRED is probably not positive enough to adopt the technology and buy the product. The following sections go further into the results from the log files and the focus group sessions, highlighting some specific recommendations on how to reach the adoption of technology with ALFRED.

Two questions (13 and 14) have been added to the second wave of intention of use questionnaire. It is interesting to notice that ALFRED is not a substitute to human help for performing daily task. Also the usability of ALFRED didn't change their relation with a communication device. For some of them who they were not used to handle a smartphone, it was still too complicated. On the contrary for some others, ALFRED didn't change anything regarding to their ability using a communication device.

Question 13	13. With ALFRED, I am able to use a communication device better.	4.21
Question 14	14. With ALFRED I need less support of external persons in my daily tasks.	5.05

Table 9: Intention of Use with Additional Questions

6.2 Post-Study System Usability Questionnaire (PSSUQ)

After the pilot trial the PSSUQ was once more used to reinforce the results of the TAM for the ease of use. The following table shows the results of the PSSUQ. The overall satisfaction rate is very slightly positive. I we look at Q10 to Q12 from the second TAM we see that the ease of use is there slightly more negative than in the PSSUQ. Especially the information quality was rated rather low. This can probably be directly related to the voice interaction. As TP's do not have a visual aid, TP's often found themselves a bit lost when starting to use the system with random commands.

PSSUQ Ratings (1=high satisfaction, 7=low satisfaction)	
Parameters	M (mean)
Overall satisfaction (Q1-Q19)	3.96
System quality (Q1-Q8)	3.93
Information quality (Q9-Q15)	4.04
Interface quality (Q16-Q19)	3.91

Table 10: PSSUQ Rating

Going further into each separate question, (see table below), the analysis of the PSSUQ results highlights the fact that TP's made great efforts to understand ALFRED and tried to use it.

		Mean
1	Overall, I am satisfied with how easy it is to use this system.	4,16
2	It was simple to use this system.	3,95
3	I could effectively complete the tasks and scenarios using this system.	4,21
4	I was able to complete the tasks and scenarios quickly using this system.	3,68
5	I was able to efficiently complete the tasks and scenarios using this system.	4,32
6	I felt comfortable using this system.	3,58
7	It was easy to learn to use this system.	3,32
8	I believe I could become productive quickly using this system.	4,21
9	The system gave error messages that clearly told me how to fix problems.	5,16
10	Whenever I made a mistake using the system, I could recover easily and quickly.	3,68
11	The information provided with the system was clear.	3,95

12	It was easy to find the information I needed.	4,32
13	The information provided for the system was easy to understand.	3,58
14	The information was effective in helping me complete the tasks and scenarios.	4,16
15	The organization of the information the system screens was clear.	3,42
16	The interface of this system was pleasant.	3,05
17	I liked using het interface of this system.	3,84
18	This system has all the functions and capabilities I expect it to have.	4,42
19	Overall, I am satisfied with this system.	4,32

Table 11: PSSUQ Results Question Overview

Indeed, one of the best rate indicators shows that the users thought they could be more 'fluent' with the system, if using it more. This would be even a point if the one of the worst rate indicator shows that recovering when making a mistake is not easy.

The results also show that the users found that the system had all the uses the test leaders presented; therefore, the disappointment feeling was quite low. Still, the variability of the answers concerning scenarios and help issues shows that there may be two main tendencies among users; the one used to ICT tools to whom ALFRED was easy to manipulate but still bugging, and the more 'novice' ones who had issues carrying on with the system.

The main positive point about ALFRED seems to be its interface that suits the needs of the users. The information provided on the different screens and in the different 'inner-apps', seems to be sufficient. Therefore, the global software ergonomics seems suitable and adapted to the users.

However, users had trouble to trigger the commands since regular errors happened directing the users to another app than the one asked to the system. In that case, it seems that the messages provided by ALFRED for helping were not functional enough.

Moreover, the vocal interaction seems often dysfunctional, whether it concerns instructions given by ALFRED to the user (unclear) or vice versa. This will be further explained in section 6.5.2.

6.3 Log Files

The use of the TP's was monitored throughout the pilot trial, each time a TP used an app this was counted. The following figure represents that use per app by all users in France and the Netherlands. If we add up all the logs and divide them by the amount of TPs and trial days, we see that on average 4 apps a day were used.
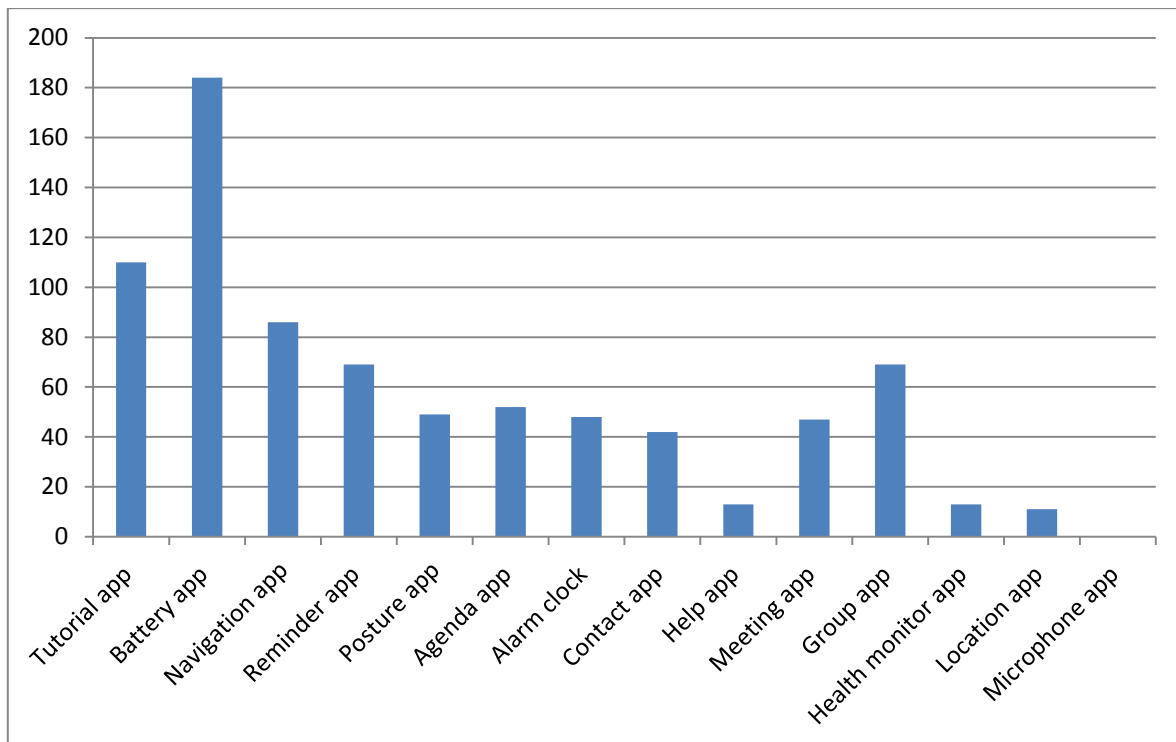
Figure 19: Results of the Log Files

The Battery App has been often used by the TP's. The Tutorial App is definitely one of the most used one, confirming the tendency that most users needed help to carry on with ALFRED, whether they are used to ICT devices or not. However, the kind of help provided may be different depending on the users' profile. The intense use of the Battery level App, which was one of the more functional apps shows that users tended to have a successful experience by using ALFRED.

The Navigation App is the third most used one. This confirms that the users are willing to use ALFRED on a daily basis to help them orientate, even if they initially do not count on it to make them go out, as seen before.

The use of the Agenda App, is also high even if lower than the one of Navigation App. Still, this confirms the tendency that seniors seem to be interested in using this software as an 'organizer' of their social life.

Moreover, health apps as Health Monitoring App and Body Posture App have not been so much used by the TP's as they couldn't access to their data since the t-shirt wasn't a part of the pilot trial (as previously stated, it has been tested during the iterative evaluation cycle 2).

Calendar, Groups and Chat applications constitute a third group of used apps, even if they were used two third less than the Navigation app. The Help application was also used on that type of regularity basis.

The less used apps were: Meetings and Event recommendations, which is due to the fact that they were not completely functional, such as News and Event rating apps that almost did not get used.

6.4 Diary Notes

When going further into the diary notes, the results of the TAM, PSSUQ and log files can be given more context. When looking at the overall diary notes, it is noticed that the notes were mostly on a negative tone. Of course it can be assumed that users are more inclined to write down something in their diary when things go wrong, then when they go well. This gives some interesting points for further improvement.

Most remarks made concerning interaction with ALFRED are linked to vocal understanding. TP's noted that ALFRED was often asking them "What do you want to do" or "I don't understand, what would you like to do". The main point of confusion for the users is the fact that ALFRED repeated TPs remarks even if it couldn't understand them.

The fact that ALFRED was often repeating "So, what would you like to do", was a bit irritating for users. The fact that it was asking this question without proposing any activity had also been pointed out by all participants.

The sound background is a key matter expressed by users as well: in a noisy environment it becomes hard to use Alfred, especially for users with hearing issues (some of them asked to increase the volume made by the software when typing on the button). At the same time some TP's noted that the voice was clear and loud enough when using it at home.

On a visual plan, some users made the suggestion of using pictograms. TP's noted that mostly the navigation, help and health status are of added value to them.

6.5 Interviews and Focus Groups Results

After each pilot session in France and the Netherlands, semi-structured interviews and focus groups have been realized with all TPs in order to compile their feedback, to answer some questions asked by the research team and to react spontaneously on different topics.

6.5.1 Ease of Use

Each TP highlighted that they were very motivated to use ALFRED at the beginning of the pilot session. They were globally really interested using the voice interaction as they were not used to do it by themselves in their daily life. Moreover they highly appreciated ALFRED interface they found pleasant. When asking users about whether they found it easy to use and why, TP's indicated that they had to get very much used to the system. They mentioned that the tapping on the screen was easy as a way to start talking. However some TP's also mentioned that they found it difficult because some things were not working correctly, influencing the interaction in a negative way. ALFRED would for example say very often "I do not understand what you mean".

6.5.2 Main Criticism

One of the main criticisms was that ALFRED does not always give the correct answer to your questions and that at the moment it only answers to very specific functionalities.

In general, older TP's found the ALFRED system more difficult to use as they had some difficulties using the smartphone. Several TP's in the Netherlands turned the smartphone off and then didn't know how to turn it on again. Therefore, this target group has contacted the research team most to help them remotely with the usability of their phone or their Wi-Fi connection. Some of them would have liked having an instruction plan. Some TP's found the interaction too difficult. The system was sometimes too slow for giving an answer or information. Also, they have detected regular bugs and error messages (for instance when a TP opened the system with the tutorial app, they could read "backend error"). Finally, they have also noticed that ALFRED and the vocal understanding didn't work very well. It didn't understand TP's remarks and didn't answer them properly or mixed some internal apps. It also mixed languages between French and English or Dutch and English. The TP asked a question in their own language and the system answered in English. Sometimes, there was a mix of languages in the same sentence as well (i.e. "Do you want *insérer*?"). This caused an astonishment among the TPs. Therefore all TPs highlighted that the repetition of "What do you want to do?" was a bit annoying. Finally, they were disappointed with the playful side since the games didn't work through the voice interaction.

6.5.3 Most Used Application

When asking about the applications they used most, several users stated that they used the battery app most. This coincides with the log files. When asking why, some users indicate that it is a very simple thing but very important to be able to use your phone. Other TPs indicate that they find the logo of the battery status very small and that with the ALFRED app it was very easy and useful information.

TPs generally agreed on the relevance and the usefulness of the help and chat app for people living alone. However, they emphasized on the fact that the emergency call through help app should be directly linked with a doctor or emergency instead of a parent or a friend. Also, they appreciated the reminder app as it was working properly for the same day. Still, an extension of the duration of the reminders should be added in order to remind events or activities occurring another day.

6.5.4 Most Helpful for Everyday Life

When asking about whether ALFRED could be helpful in everyday life, users indicate very much "yes". However, they also indicate that considerable improvement is required to obtain this. Also the opinions about functionalities that are useful vary a great deal. The tutorial app for example, TPs assessed that it was necessary to understand how ALFRED is working and they liked the nice interaction of questions and answers. Also the navigation app was particularly appreciated during those pilot sessions as well as the health monitoring app. This app was considered as relevant, as elderly people receive some health information directly on their phone like the body temperature, heart rate, and step number etc. and they can change their habits in accordance. TPs also liked the agenda and calendar apps to plan their activities and events. Those three last applications were appreciated as they encouraged or at least accompanied people to go out and have a social life.

ALFRED system is mainly adapted to elderly people in isolation or in disease prevention but it should be simplified with an extension of vocabulary and a large amount of

commands that work properly and where ALFRED guides the users more through the voice interaction. Since the French TPs were younger than Dutch TPs, the first ones agreed on the fact that they didn't need it for now, but it could be relevant and useful within a decade.

6.5.5 Willingness to Buy

In France, several TPs point out that some ALFRED features already exist for free in marketplaces. Consequently, some of them weren't really interested in the idea of paying for such a service. Others were interested, but with some conditions. For example several TP's mentioned and agreed that they would be very much interested in buying the alarm service outdoors. For the pricing they compared the ALFRED app to their current alarm system with alarm button at home, paying approximately 14€ to 15€ per month. They would like to use the smartphone with a key-cord so they can wear it around their neck. Others were more thinking of a lump sum for an overall ALFRED package, but TPs found it difficult to mention an exact amount. Some amounts that were mentioned lie between 75€ and 150€.

6.6 Conclusion

To conclude, if we refer to the intention of use questionnaire results and if we compare it with the real use of the system (reported by the log files collected after two weeks of utilization), we can see that users have really used the system and have tried almost all applications, depending on their functionality and usefulness for the users. They mostly used the battery app, which was a simple functionality with a short interaction. It helped the TP's to use their smartphone better.

However, we can notice that, after an utilization in a real life environment, the intention of use of the system is lower than before actually trying the ALFRED solution. This is mainly due to the fact that the pilots were conducted with an early prototype of the ALFRED integrated version that still needs some improvements. In fact, some errors have prevented users of a fluid interaction with the system.

7. KPI's and Sucess Indicators

This section uses the results from the previous sections to offer an analysis on the different KPIs relevant for the pilot trials. Several KPI's were defined that were measured within the pilot trials. First of all there were two KPI's defined in the DoW and secondly a number of KPIs were defined in the framework of D8.2.2 within the ALFRED model, specifically on the economic and the end user perspective (See Table 12 below). The following sections go in each of these KPI's giving the overall conclusion of the ALFRED pilot trials.

	Concept	**KPI**	**Strategic goal**
1	Empowering people with age related dependencies to live independently for longer in and outside the home.	Reduction in the amount of tasks that need external support.	10%
2	Fostering active participation in society for the ageing population by suggesting and managing events and social contacts.	Average participation of ALFRED users in suggested events	4
3	Acceptance of ALFRED by older end users – User Driven Interaction Assistant.	Amount of successfully sent messages with ALFRED per user.	5 messages per user
4	Acceptance of ALFRED by older end users – User Driven Interaction Assistant.	Amount of successfully made calls to contacts per user.	10 calls per user
5	Acceptance of ALFRED by older end users – Social Inclusion.	Amount of suggestions that were successfully responded by the end user.	3 events per user
6	Acceptance of ALFRED by older end users – Effective and Personalized Care.	Amount of successful checks on physical parameters per end user.	6 checks per user
7	Perceived ease of use and usefulness for older end users.	The intention of use is higher after using ALFRED for two weeks.	5% higher value in the Intention of use questionnaire at the end of the pilot
8	ALFRED impact on end user willingness to buy Alfred.	Percentage of TPs interested in buying the ALFRED system. Either with a lump sum or with a subscription.	50% of the TP's.

Table 12: KPI's for the Pilot Trials

7.1 Reduction of Support from External Persons

This KPI that was defined in the DoW is directly linked to the TAM questionnaire, where an additional question was posed to the TPs after the pilot trials, reflecting on their two weeks experience with the ALFRED system. TPs were asked whether they considered that with the help of ALFRED they would need less support of external persons in their daily tasks.

The outcome (M=5,05, SD=1,96) indicates that users do not agree with this hypothesis. When we look at the rating per country, we see that in France the rating is still a bit lower (M=5.2) then in the Netherlands (M=4,9). This might be explained by the level of ICT use of the French TP's that were a bit more experienced and younger than the Dutch TP's.

7.2 Participation in Events

The objective for the ALFRED project was to stimulate social inclusion by suggesting events that users could attend to. In order to measure this, a strategic goal of 4 events was set.

Unfortunately, the event recommendation app wasn't functioning during the pilot phase; therefore, we don't have any indicator toward this success indicator. However, while presenting ALFRED's functionalities, users seemed interested by the app. The social inclusion pillar has often been underlined by users as an added value of the system during focus group sessions and interviews.

7.3 Acceptance of ALFRED by Older End-users

This KPI has been subdivided in several sub KPI's for different components of the ALFRED system. It goes into the acceptance of the User Driven Interaction Assistant, the Social Inclusion and the Effective and Personalized Care pillars.

The User Driven Interaction Assistant is measured by the amount of successfully sent messages and calls to contacts per user. The strategic goals for these two KPI's were 5 messages per user and 10 calls per user. If we relate these two KPIs to log files of the Chat application, we see that is has been used 48 times throughout the pilot trial by all TPs together. If we take the average per TP, we see that we have reached a strategic goal of 2,52 for both these apps per TP. This means that the strategic goal hasn't been met, probably due to the fact that these were mock versions of the app, without the possibility to really make a call or send a message.

The strategic goal for the Social Inclusion was 3 events per user. Also here we see that this strategic goal has not been met, as it was only used 11 times by all TPs together meaning less than one time per user. As stated in section 7.2, the event recommendation app wasn't functioning preventing users of a complete use of this functionality.

Finally going into the strategic goal for Personalized and Effective Care the results look more promising. The health monitor app has been used 69 times by all TPs meaning an average of 3.63 per user. Although this reflects a better result than the previous KPI's, the strategic goal of 6 checks per user has still not been met. Also here the app was partly a mock version, as the ALFRED t-shirt was not communicating with the app and therefore no real data could be shown to the users.

7.4 Ease of Use and Usefulness for Older End-users

Objective 7 is based on the TAM questionnaire, measured once before the pilot trial and once after. The strategic goal was to obtain a higher rating by 5% between the first and the last ratings.

After two weeks of testing, the results of the intention of use are unfortunately lower than during the preliminary session. This is mainly due to the fact that they didn't really see the added value of ALFRED. The TP's simply detected too many errors and noticed that some applications were only mock ups which didn't allow experimenting deeply the product.

7.5 Willingness to Buy

Finally the pilots gave information on the willingness of TPs to buy the ALFRED solution.

This issue has been addressed during the focus groups/group interviews that happened after the two weeks pilots. As the prototype was not completely functioning (e.g. a lot of apps were working with mock information), users found it difficult to evaluate the added value of ALFRED. Therefore, many TPs were not keen on paying anything for the use of ALFRED. Other TPs demonstrated interest in buying the ALFRED but with specific requirements. For example several TPs indicated that they would buy the system if it would have a reliable alarm function that would work both in and outdoors. Others indicated that they would be interested if the health monitoring would work properly and they could easily retrieve their physical data through voice interaction.

In overall Dutch users were keener for paying a subscription going until 30 Euros per month. In France, users were more in favour of a lump sum of 5 Euros to access to the whole system. This could be explained by the fact that E-Seniors is providing courses dedicated to modest seniors and most of the users were not wealthy. French users refused to fill the question related to the household income in the intake questionnaire preventing any analysis of their economic situation. However, due to the nature and prices of the services provided by E-Seniors, targeting older people with fewer pensions, it appears that the users selected through E-Seniors network belong to its category.

8. Conclusion

By including users since the early stages of the development of the ALFRED product, the consortium has developed a user's tailored application. Indeed, all users underlined the ergonomic of the ALFRED system and its ease to use. This is the result of the strong collaboration between technical partners and the end-users organisations which has been a higher priority since the beginning of the project. Even if some substantial errors occurred during the pilot phase, users were convinced of the usefulness of ALFRED and its relevance regarding the ageing of the population in Europe. The users demonstrated goodwill while the two weeks of testing, having the feeling to help research.

Annexes

Annex 1: Researcher workbook used during the pilot sessions

ALFRED

Personal Interactive Assistant for Independent Living and Active Ageing

Researcher workbook

June 2016

Introduction for the researcher

This workbook gives you for each session and each TP the necessary questionnaires and forms in the right order. Please make sure to follow these guidelines and implement the results in the correspondent excel file so you can make a uniform report on pilot experiences per TP.

Pre-session

1. Make sure the participant is aware of his/her role in the ALFRED project. Agree on the dates for the start and end of the pilot and set a date to meet each other.
2. Proceed to signing the Informed Consent and the Equipment Loan Agreement (below). The participant will receive a signed copy of the Equipment Loan Agreement in his/her workbook.
3. Proceed to filling in the pre-questionnaire and the questionnaire on the intention of use.

General information:

Participant nr ALFRED	*Filled in by researcher*	
Name and last name:		
Start pilot date		
End pilot date	(14 days after the start)	

Informed consent for participation in the ALFRED evaluation

I volunteer to participate in the ALFRED evaluation study. The purpose and objective of this investigation is to test the ALFRED apps at my home for 2 weeks. The apps have been installed on a smart phone that I can use independently at my home. The anticipated benefits of this study are the understanding of how users will work with ALFRED so that they can be improved.

I understand and agree that personal information about me and my interaction with the ALFRED service applications will be collected during this investigation, which will be used and processed (manually and/or by computer) by the researcher responsible for this investigation.

I understand that pictures, video-files or audio recording depicting my work with the equipment during this testing session will be used only for the accomplishment of project's goals and only by the project partners.
I also understand that all the collected information will remain anonymous. The data acquired will be used to evaluate the ALFRED services. The data will not be used in any way outside the scope of the ALFRED research project. I understand that I am entitled to access the personal information collected about me and to have inaccuracies corrected.

I am aware that participation in this investigation is completely voluntary. Furthermore, I realize that I may decide to refuse participation or stop participation at any time, without providing reason. I will indicate the researcher if I wish to stop.

I understand that I am entitled to signal, discuss and solve any possible unwanted situation by contacting the principal investigator of the pilot site at the helpdesk.
I agree to participate in this investigation.

Name:
Place:
Date:
Signature:

Name researcher:
Place:
Date:
Signature:

Equipment Loan Agreement (owner)

This agreement is between (name end user) as the research participant and (insert pilot organization) as the owner.

Terms and Conditions of Loan
1. The owner will lend a Google Nexus 5x phone to the research participant on the terms and conditions of this agreement
2. The equipment shall be loaned from (insert date) until (insert date), the loan period
3. The loan period may be extended by mutual consent of both parties
4. No variation or amendment of this agreement will be effective unless it is made in writing, this can be by email.

Collection and Delivery of Equipment
1. The owner will arrange a mutually convenient time to hand the equipment over on the first day of the loan period and to remove it on the last day of the loan period

Payment
1. The equipment is to be loaned free of charge

Title and Risk
1. Title and all rights to the equipment shall at all times remain with the owner of the equipment. The research participant acknowledges that he or she has no right, title or property in the equipment
2. The owner will have the equipment checked to ensure it is fit for purpose prior to instalment.
3. Risk or any loss or damage to the equipment will become the responsibility of the research participant upon the instalment and shall not revert back to the owner until the equipment is back on the owners premises
4. The owner will ensure that the equipment to be borrowed is appropriate to its intended audience

Owners Obligations
1. Provide the research participant with operating, maintenance and servicing instructions as appropriate.
2. Provide the necessary information about training requirements for the correct use of the equipment.
3. Ensure the equipment has undergone the checks detailed in 'Title and Risk' point 2.

The research participation undertakings
The research participant borrowing the equipment agrees that during the loan period it shall:
1. Keep the equipment in its possession and control and ensure that it is secure against loss, damage and theft
2. Operate the equipment in accordance with any operating instructions issued for it and for the purpose it was designed
3. Any required maintenance and repair of equipment shall be performed by the owner.

4. Inform the owner directly when theft or damage occurs.
5. Keep the equipment in good working order, fair wear and tear excepted
6. Ensure that identification marks or labels on the equipment are not removed, defaced, amended, and obscured including those which identify the equipment as belonging to the owner.
7. The research participant will not borrow the equipment to another person.

Insurance
The equipment is covered under the owners insurance, the owner will ensure the equipment is covered for use off site.

Please choose one of the above options

Inventory of Equipment

Equipment on loan:	Replacement costs

Signed on behalf of the owner:

Signature...Date...................................
Print Name.. Position...............................

Signed on behalf of research participant

Signature...Date...................................
Print Name.. Position...............................

Intake questions

1. Family name:	
2. Gender:	☐ Female ☐ Male
3. Year of birth:	
4. Nationality:	
5. Household Income:	☐ 500 – 1000 € ☐ 1000 – 2000 € ☐ 2000 – 3000 € ☐ > 3000 €
6. Marital status	☐ Single ☐ Married ☐ Divorced ☐ Widowed
7. Living situation	☐ Living alone ☐ Living with children ☐ Living with partner, no children ☐ Living with partner and children
8. Education (highest level, whether or not completed)	☐ Primary education ☐ Lower vocational training ☐ Intermediate vocational 49raining ☐ Intermediate secondary training ☐ Higher secondary education ☐ Higher vocational training ☐ University
9. Employment:	☐ Retired ☐ Employed ☐ Unemployed ☐ Voluntary work ☐ Other

10. Residential situation	☐ Living independently at home ☐ Independent planned housing, congregate housing ☐ Home for older people
11. Self-rated health	☐ Poor ☐ Not so good ☐ Fair ☐ Good ☐ Very good
12. Vision: Is your eyesight good enough to read ordinary newspaper print? (with glasses if usually worn)	☐ Yes without difficulty ☐ Yes, with minor difficulty ☐ Yes, with major difficulty ☐ No, not able to
13. Hearing: Do you hear what is said in a normal conversation with 3 or 4 other persons? (with hearing aid if you wear one)	☐ Yes without difficulty ☐ Yes, with minor difficulty ☐ Yes, with major difficulty ☐ No, not able to
14. Motor control A: Can you press small items like buttons on a remote control?	☐ Yes without difficulty ☐ Yes, with minor difficulty ☐ Yes, with major difficulty ☐ No, not able to
15. Motor control B: Can you get dressed all by yourself?	☐ Yes, without difficulty ☐ Yes, with minor difficulty ☐ Yes, but I need some help, for example with tying my shoelaces or putting on my socks. ☐ No, I am not able to get dressed by myself
16. Self-rated mobility level	☐ Poor ☐ Not so good ☐ Fair ☐ Good ☐ Very good
17. What is your technological experience?	

☐ **Very high:** I use different devices on a daily basis to get onto the internet. I use different applications, such as e-mail, whats-app, social networks, etc.

☐ **High:** I use on a daily basis internet and e-mail.

☐ **Medium:** I have a PC and I use it a few times a week.

☐ **Low:** I have a PC but I hardly use it and do not feel like it to use it more.

☐ **Very low:** I do not have a PC or internet and have never or very rarely used any technological devices.

18. What is your attitude towards technology?

☐ **Positive:** I don't mind trying out new devices when they are handed to me.

☐ **Neutral:** I don't know or I don't really care.

☐ **Negative:** I don't like technology and stay far away from it.

19. Your use of ICT Tools (computer, smartphone, tablets):

☐Daily Use   ☐Weekly Use   ☐Monthly Use   ☐Rarely   ☐Never

20. What type of phone do you use?

☐ Normal mobile phone

☐ Senior mobile phone (with big buttons)

☐ Smartphone (Android, e.g. Samsung)

☐ Smart phone (Apple)

☐ Other:

21. How often do you receive support from friends of family to use technology?

☐Daily Use   ☐Weekly Use   ☐Monthly Use   ☐Rarely   ☐Never

Please explain more about what kind of support you receive:

22. Please indicate which of the following online activities you have undertaken in the last 30

days on your mobile phone:
☐   E-mail
☐   Chat (whatsapp)
☐   Look up a recipe
☐   Web search
☐   Look for health/medical information
☐   Look for information on a hobby or interest
☐   Look for transport information
☐   Look on a map for directions
☐   News
☐   Weather
☐   Sports
☐   Online banking
☐   Shopping
☐   Playing games
☐   Job search
☐   Financial/stock trading
☐   Visit a local, state or federal government website
☐   Other:

Questionnaire on the intention of use of the ALFRED integrated system

1. During the time I have access to the system, I intend to use it.

Completely agree ☐☐☐☐☐☐☐ *Completely disagree*

2. Given that I have access to the system, I predict that I would use it.

Completely agree ☐☐☐☐☐☐☐ *Completely disagree*

3. This services offered in the system are interesting to me.

Completely agree ☐☐☐☐☐☐☐ *Completely disagree*

4. I think the services add value

Completely agree ☐☐☐☐☐☐☐ *Completely disagree*

5. I find ALFRED useful on the road

Completely agree ☐☐☐☐☐☐☐ *Completely disagree*

6. I find ALFRED useful at home

Completely agree ☐☐☐☐☐☐☐ *Completely disagree*

7. Using the system increases my mobility outdoors

Completely agree ☐☐☐☐☐☐☐ *Completely disagree*

8. Using the system is of added value to my activities on the road.

Completely agree ☐☐☐☐☐☐☐ *Completely disagree*

9. I find the system to support my mobility.

Completely agree								*Completely disagree*

10. My interaction with the system is clear and understandable.

Completely agree								*Completely disagree*

11. Interacting with the system does not require a lot of effort.

Completely agree								*Completely disagree*

12. I find the system to be easy to use.

Completely agree								*Completely disagree*

End of the pilot

During the final test session, the following actions are required
- Answer the first questions below.
- Fill in the PSSUQ below.
- Fill in the intention of use questionnaire, to know whether test participants intend to use ALFRED after the pilot phase.
- Download the log file (ALFRED-log) from the phone.
- Discuss the exit strategy with the participants.
    o Do they want to continue using ALFRED?
    o Do they want to take over the smartphone?
    o Do they need further support to continue using it?
    o Or take in ALFRED and reset the settings in order to erase all the user data.
- Invite the user to the focus group session.
- What apps did you use mostly and why?

What apps are most interesting for you if they would all work correctly?

POST STUDY SYSTEM USABILITY QUESTIONNAIRE

1. Overall, I am satisfied with how easy it is to use this system.
- o I completely agree
- o I agree
- o I agree a bit
- o Neutral/no opinion
- o I disagree a bit
- o I disagree
- o I completely disagree

2. It was simple to use this system.
- o I completely agree
- o I agree
- o I agree a bit
- o Neutral/no opinion
- o I disagree a bit
- o I disagree
- o I completely disagree

3. I could effectively complete the tasks and scenarios using this system.
- o I completely agree
- o I agree
- o I agree a bit
- o Neutral/no opinion
- o I disagree a bit
- o I disagree
- o I completely disagree

4. I was able to complete the tasks and scenarios quickly using this system.
- o I completely agree
- o I agree
- o I agree a bit
- o Neutral/no opinion
- o I disagree a bit
- o I disagree
- o I completely disagree

5. I was able to efficiently complete the tasks and scenarios using this system.
- o I completely agree
- o I agree
- o I agree a bit
- o Neutral/no opinion
- o I disagree a bit
- o I disagree
- o I completely disagree

6. I felt comfortable using this system.
- o I completely agree
- o I agree
- o I agree a bit
- o Neutral/no opinion
- o I disagree a bit
- o I disagree
- o I completely disagree

7. It was easy to learn to use this system.
- o I completely agree
- o I agree
- o I agree a bit
- o Neutral/no opinion
- o I disagree a bit
- o I disagree
- o I completely disagree

8. I believe I could become productive quickly using this system.
- o I completely agree
- o I agree
- o I agree a bit
- o Neutral/no opinion
- o I disagree a bit
- o I disagree
- o I completely disagree

9. The system gave error messages that clearly told me how to fix problems.
- o I completely agree
- o I agree
- o I agree a bit
- o Neutral/no opinion
- o I disagree a bit
- o I disagree
- o I completely disagree

10. Whenever I made a mistake using the system, I could recover easily and quickly.
- o I completely agree
- o I agree
- o I agree a bit
- o Neutral/no opinion
- o I disagree a bit
- o I disagree
- o I completely disagree

11. The information (such as on-line help, on-screen messages and other documentation) provided with this system was clear.
- o I completely agree
- o I agree
- o I agree a bit
- o Neutral/no opinion
- o I disagree a bit

o I disagree

o I completely disagree

12. It was easy to find the information I needed.

o I completely agree

o I agree

o I agree a bit

o Neutral/no opinion

o I disagree a bit

o I disagree

o I completely disagree

13. The information provided for the system was easy to understand.

o I completely agree

o I agree

o I agree a bit

o Neutral/no opinion

o I disagree a bit

o I disagree

o I completely disagree

14. The information was effective in helping me complete the tasks and scenarios.

o I completely agree

o I agree

o I agree a bit

o Neutral/no opinion

o I disagree a bit

o I disagree

o I completely disagree

15. The organization of information on the system screens was clear.

o I completely agree

o I agree

o I agree a bit

o Neutral/no opinion

o I disagree a bit

o I disagree

o I completely disagree

16. The interface of this system was pleasant.

o I completely agree

o I agree

o I agree a bit

o Neutral/no opinion

o I disagree a bit

o I disagree

o I completely disagree

17. I liked using the interface of this system.

o I completely agree

o I agree

o I agree a bit

o Neutral/no opinion

o I disagree a bit

o I disagree

o I completely disagree

18. This system has all the functions and capabilities I expect it to have

o I completely agree

o I agree

o I agree a bit

o Neutral/no opinion

o I disagree a bit

o I disagree

o I completely disagree

19. Overall, I am satisfied with this system.

o I completely agree

o I agree

o I agree a bit

o Neutral/no opinion

o I disagree a bit

- o I disagree
- o I completely disagree

Questionnaire on the intention of use of the ALFRED integrated system

1. During the time I have access to the system, I intend to use it.

Completely agree   *Completely disagree*

2. Given that I have access to the system, I predict that I would use it.

Completely agree   *Completely disagree*

3. This services offered in the system are interesting to me.

Completely agree   *Completely disagree*

4. I think the services add value.

Completely agree   *Completely disagree*

5. I find ALFRED useful on the road.

Completely agree   *Completely disagree*

6. I find ALFRED useful at home.

Completely agree   *Completely disagree*

7. Using the system increases my mobility outdoors.

Completely agree   *Completely disagree*

8. Using the system is of added value to my activities on the road.

Completely agree   *Completely disagree*

9. I find the system to support my mobility.

Completely   *Completely*

agree | | | | | | | | | | *disagree*

10. My interaction with the system is clear and understandable.

Completely agree | | | | | | | | | | *Completely disagree*

11. Interacting with the system does not require a lot of effort.

Completely agree | | | | | | | | | | *Completely disagree*

12. I find the system to be easy to use.

Completely agree | | | | | | | | | | *Completely disagree*

Additional:

13. With ALFRED I am able to use a communication device

Completely agree | | | | | | | | | | *Completely disagree*

14. With ALFRED I need less support of external persons in my daily tasks.

Completely agree | | | | | | | | | | *Completely disagree*

Annex 2: End-user workbook during the pilot sessions

ALFRED

Personal Interactive Assistant for Independent Living and Active Ageing

End user workbook

June 2016

Introduction

The objective of this research is to define the usefulness of the integrated ALFRED system in everyday situations and life.

We would like to ask you to use the system during a total duration of 14 days. You will receive the explanation on the ALFRED pilot with this workbook so you can easily read the information again.

At the first day we will conduct a set of initial questions that help us to set a baseline for our research. After 14 days we will meet again after which we have a new set of questions and ask you about your use. This is your personal workbook which you will use together with one of our researchers. The contents of this workbook will only be read by the responsible researcher. All information will be treated anonymous and once the data has been converted into statistical numbers the workbook will be destroyed.

You will participate with the pilot during the following period.

Start pilot date	
End pilot date	(14 days after the start)

Diary

We will ask you to use a diary during the period that you are using the system. You are provided with a template to this objective. In the diary you can indicate any issues related to the use of ALFRED. These can be positive as well as negative.

Helpdesk

During the pilot you will have a helpdesk at your disposal for any doubts or problems that occur. You can contact the helpdesk at the following data:

Name:

E-mail:

Phone:

Hours of business:

Informed consent for participation in the ALFRED evaluation (research participant)

I volunteer to participate in the ALFRED evaluation study. The purpose and objective of this investigation is to test the ALFRED apps at my home for 2 weeks. The apps have been installed on a smart phone that I can use independently at my home. The anticipated benefits of this study are the understanding of how users will work with ALFRED so that they can be improved.

I understand and agree that personal information about me and my interaction with the ALFRED service applications will be collected during this investigation, which will be used and processed (manually and/or by computer) by the researcher responsible for this investigation.

I understand that pictures, video-files or audio recording depicting my work with the equipment during this testing session will be used only for the accomplishment of project's goals and only by the project partners.
I also understand that all the collected information will remain anonymous. The data acquired will be used to evaluate the ALFRED services. The data will not be used in any way outside the scope of the ALFRED research project. I understand that I am entitled to access the personal information collected about me and to have inaccuracies corrected.

I am aware that participation in this investigation is completely voluntary. Furthermore, I realize that I may decide to refuse participation or stop participation at any time, without providing reason. I will indicate the researcher if I wish to stop.

I understand that I am entitled to signal, discuss and solve any possible unwanted situation by contacting the principal investigator of the pilot site at the helpdesk.
I agree to participate in this investigation.

Name:
Place:
Date:
Signature:

Name researcher:
Place:
Date:
Signature:

Equipment Loan Agreement (research participant)

This agreement is between (name end user) as the research participant and (insert pilot organization) as the owner.

Terms and Conditions of Loan
5. The owner will lend the equipment to the research participant on the terms and conditions of this agreement
6. The equipment shall be loaned from (insert date) until (insert date), the loan period
7. The loan period may be extended by mutual consent of both parties
8. No variation or amendment of this agreement will be effective unless it is made in writing, this can be by email.

Collection and Delivery of Equipment
2. The owner will arrange a mutually convenient time to install the equipment on the first day of the loan period and to remove it on the last day of the loan period

Payment
2. The equipment is to be loaned free of charge

Title and Risk
5. Title and all rights to the equipment shall at all times remain with the owner of the equipment. The research participant acknowledges that he or she has no right, title or property in the equipment
6. The owner will have the equipment checked to ensure it is fit for purpose prior to instalment.
7. Risk or any loss or damage to the equipment will become the responsibility of the research participant upon the instalment and shall not revert back to the owner until the equipment is back on the owners premises
8. The owner will ensure that the equipment to be borrowed is appropriate to its intended audience

Owners Obligations
4. Provide the research participant with operating, maintenance and servicing instructions as appropriate.
5. Provide the necessary information about training requirements for the correct use of the equipment.
6. Ensure the equipment has undergone the checks detailed in 'Title and Risk' point 2.

The research participation undertakings
The research participant borrowing the equipment agrees that during the loan period it shall:
8. Keep the equipment in its possession and control and ensure that it is secure against loss, damage and theft
9. Operate the equipment in accordance with any operating instructions issued for it and for the purpose it was designed
10. Any required maintenance and repair of equipment shall be performed by the owner.

11. Keep the equipment in good working order, fair wear and tear excepted
12. Ensure that identification marks or labels on the equipment are not removed, defaced, amended, and obscured including those which identify the equipment as belonging to the owner

Insurance

The equipment is covered under the owner's insurance, the owner will ensure the equipment is covered for use off site.

Please choose one of the above options

Inventory of Equipment

Equipment on loan:	Replacement costs

Signed on behalf of the owner:

Signature...Date...................................
Print Name.. Position...............................

Signed on behalf of research participant

Signature...Date...................................
Print Name.. Position...............................

ALFRED functionalities

ALFRED can introduce himself and give some information on his use by saying 'start'.

ALFRED asks how you are. Say 'goodmorning' and he will answer you.

Imagine you are lost and you don't know where you are. ALFRED can tell you were you are now.

ALFRED can remind you anything, you just have to ask him!

ALFRED can help you to adopt the right posture when you are sitting in front of the TV or reading.

ALFRED is able to tell you if your phone needs to be plugged. Ask ALFRED to show you your battery status.

ALFRED can manage your agenda. Ask him to create an event for the 26th of May. It is your grandson's Thomas birthday!

You can adapt ALFRED to your own preferences.

ALFRED can help you to reach your destination.

You can use ALFRED to easily make phone calls.

ALFRED can give you direct help.

ALFRED can help you to set up a meeting with friends.

You can set up a discussion group with ALFRED.

ALFRED can give you information on your physical parameters (temperature, heartrate, etc.). These are not yet real at the moment!

Diary

Date:	**Activity:**
Statement:	

Date:	**Activity:**
Statement:	

Date:	**Activity:**
Statement:	

Annex 3: Focus group guideline in English

FOCUS GROUP GUIDELINE
June 2016

Introduction
This document is dedicated to researchers in order to help them to conduct focus groups once the pilot phase of the ALFRED product is accomplished. Users already gave back the devices and users' workbooks with their inputs. The focus group session should happen shortly after the end of the pilot phase in order to collect "fresh" feedback.

Goal of the session
The aim of the focus group session is to create a friendly atmosphere in which users, gathered in a group, will feel free to express themselves about ALFRED. The research team, in this purpose, should have bought some beverages and snacks.
The outcome of the discussion will help the researcher to elaborate an exit strategy for the project.

Note for the researchers
The researcher should remain as discreet as possible not to influence users' experience.
The research team should be composed with at least 2 persons: one directly conducting and moderating the discussion and another one remaining as invisible as possible to collect and note feedback and non-verbal communication.

Practical organisation
The focus group should last two hours maximum divided as follow:
- Welcome and presentation of the team and participants: 15mn
- Brief presentation of the project and aims of the outcomes of the focus group: 15mn
- Focus group itself: 45mn
- Wrapping up and conclusion: 15mn

Questions to be answered to
In order to collect valuable feedback, some questions should be asked if the group is digressing. If the conversation is evaluating directly to these topics, the researcher should not interfere.
- Did you find ALFRED easy to use? Why?
- Did you manage to deal with the market place? Why?

- Did you manage to update the different applications? Why?
- What would be your main criticisms toward ALFRED? Why?
- Which applications did you use the most and why?
- Did you already used any health monitoring app? If yes, which one?
- Do you usually play games on your smartphone? Which kind?
- What do you find most helpful in ALFRED for your daily life?
  - It helps me to act more independently (if yes, how?)
  - It can help me to communicate with my family having them constantly informed about my health status, and with my friends by sharing the social activities I am attending.
  - It helps me being more active and improve my health (more exercise and serious games).
- Which app is most interesting for you? Why?
- If ALFRED would be on the market, are you willing to buy it and what would be the price that you are ready to pay for such a service? Why?

Conclusion

As a conclusion the research team should make the users sure that they will be kept informed of the next steps of the project. It is important to make the users know that they have been helping the consortium team.

Annex 4: Interview minutes (Netherlands)

Focus group - 22 july 2016
Participants: NL001, NL010, NL012, Researcher 1 (R1)

Question: Did you think it was easy to use Alfred? Why?
NL001: Yes, but I had to get used to the system first. After some practice, it was much easier to use.

NL010: Yes, but I also had to get used to the system first. And the system didn't always work correctly. But after some practice, I thought it was easy to use. Especially the tapping on the screen. But then again, if the system doesn't work correctly it gets tougher.

NL012: No, I thought the system was very difficult to use.

R1: What did you find the most difficult thing to do?

NL012: Everything. I had a hard time understanding the system.

NL001: That's also because Alfred regularly answers your questions with: "I do not understand what you mean".

Question: What is the main criticism regarding Alfred? Why?
NL010: Alfred doesn't always give the correct answer to your questions. He only answers some questions correctly.

NL001: The functionalities of the system are limited. I would like to have more options. For instance, an option to find my keys.

NL010: Calling someone should be much easier. This was quite difficult for me to do.

NL012: The whole smart phone was difficult to understand. To use Alfred, you have to learn how to use the smart phone first.

NL001: I would like to have the smart phone on a key-cord so I can hang it around my neck. Otherwise I forget to take it with me.

NL010/NL012: We both have an emergency button on a key-cord. We always carry it with us. If something happens, inside the house or outside, we can push this button for help. We would like to have a distinct emergency button on Alfred that can be pushed for help.

Question: What application did you use the most?
NL001: I used Google and I used the telephone function of the smart phone itself. About Alfred: I asked questions he couldn't answer. Then I asked all the questions of the questionnaire you gave me.

NL010: I asked all the questions of the questionnaire as well. I did this every day. I also used the telephone function of the smart phone itself.

NL012: I received assistance from my domestic help. I asked the questions of the questionnaire as well. But you really have to force yourself to use Alfred.

NL010: I used Alfred because the NFE asked me to test the system. But I've tried it extensively!

Question: What applications of Alfred do you find useful in your daily life?
NL010: The reminder to take your medication is very useful. As well as calling people. But again, it's only useful if the system works properly. The application where Alfred shows

how to sit correctly, wasn't very useful to me. And I wanted to play a game, but that application didn't work.

NL012: I would like Alfred to have an application where I can receive help to use the smart phone ánd Alfred itself correctly. Some kind of instructions would be nice.

NL010: But overall it's very useful to set a reminder or a clock to remind you of things.

Question: Does Alfred help to live independently at home?

NL001: Yes, I think it might help if you extend the functionalities of Alfred.

NL012/NL010: That's true, it's nice if you can add functionality so a user of Alfred can reach out for home care. Especially if you are confined to bed.

NL010: Alfred is quite useful if you still live independently at home and need some extra help.

Question: Do you want your family to be informed via Alfred about your health status?

NL001/NL010/NL012: No, that's not necessary. This is private information. Alfred does not have to share my heart rate (for instance) with my family. My general practitioner is informed about my health status. That's enough.

NL001: I would not like Alfred to send a list with my health status to my children.

Question: Alfred helps me to be more active and helps me to improve my health (by playing games)

NL010: It could be nice to play a game if you are waiting for a bus or a taxi. But you can play games on any smart phone. You don't necessarily need Alfred for playing a game.

R1: And what about training games?

NL001: No, to be honest, I only play patience.

Question: If Alfred was for sale, would you buy it? And what would be a fair price?

NL012: No, I don't think I would purchase Alfred if it was for sale right now.

NL010/NL001: Maybe if I started to get forgetful. Then Alfred would be a useful supplement.

R1: What would you think is a fair price?

NL001: 30 euro a month, max.

NL010: It is difficult to determine…

NL012: ...because you are talking about a future situation.

NL001: You mean; Alfred is not working correctly now, so it's hard to determine.

NL010: It would be very nice if you don't have to push any buttons at all. Especially if you are limited in using your arms and hands, then a voice activated application is very useful.

NL001/NL010/NL012: The device buttons on the smart phone itself are unclear.

NL001: I had to work it out myself to understand the meaning of those buttons. And maybe slightly engraved buttons would be clearer. But that's more something of the smart phone itself.

Question: Would you be interested in a 2.0 version of Alfred as soon as it becomes available?

NL001/NL010/NL012: Yes of course, it's always interesting to see and test a new version.

NL012: It's good to be informed about new developments. Especially when you don't use computers and smart phones a lot yourself.

ALFRED Interview sessie

NL002

Date: 14th of June 2016

Did you find ALFRED easy to use? Why?

In principle yes, but you need some experience with a smartphone. I have an i-phone and this really helped me to manage ALFRED well. The principle of voice interaction is very appropriate, but it needs more functionalities to really work for older people.

What would be your main criticisms toward ALFRED? Why?

The use of a smartphone is too difficult to be used by older people. It would be necessary to offer a course together with the phone. Even if the app is easy to use a smartphone always gives problems.

Which applications did you use the most and why?

I used the battery status a lot. It is a very simple thing but it is easy to use and it gives important information. The small logo in the screen is often difficult to see and this helps a lot. When it comes near to 15% I charge the phone.

What do you find most helpful in ALFRED for your daily life?

o   It helps me to act more independently (if yes, how?)
I would like to use it more in case of an emergency if it works well. I suffered a fall a few months ago and that was quite scary. Since then I have an alarm button, but this only helps me when I am at home. If ALFRED would help me to with an emergency situation on the road I would use it. Also I would use it if it would give me advice in case of difficult situations.

o   It can help me to communicate with my family having them constantly informed about my health status, and with my friends by sharing the social activities I am attending.
It would be nice if it would help me to contact my family in case of an emergency situation. Not the social activities. I would like to share my heartrate with my family. I have had heart problems and it would be reassuring to monitor this more with my family.

o   It helps me being more active and improve my health (more exercise and serious games).
No, I am already very active. Maybe if the information was more personal I would use it for this.

If ALFRED would be on the market, are you willing to buy it and what would be the price that you are ready to pay for such a service? Why?

I think if it would have the alarm outdoors and work well I would buy it. I would pay approximately 14/15% a month as I do not with my indoor alarm button.

ALFRED Interview session
NL004

Date: 4th of July 2016

Did you find ALFRED easy to use? Why?

In principle yes, if ALFRED works. To get answers to your questions is very nice, so the principle of voice interaction is very appropriate.

What would be your main criticisms toward ALFRED? Why?

At this moment of testing the answers of the questions were not correct. Most of the time I received an error.

Which applications did you use the most and why?

I used the body posture a lot and it is nice to know/hear the battery status.

What do you find most helpful in ALFRED for your daily life?

o   It helps me to act more independently (if yes, how?)
I would like to use it if ALFRED responds on all the questions I ask. No matter what I ask ALFRED should give me the right instructions.

o   It can help me to communicate with my family having them constantly informed about my health status, and with my friends by sharing the social activities I am attending.
It would be nice, instead of 'whatsappen', that ALFRED contact my family to have a 'real' chat/conversation with them. And contact them in case of an emergency situation.

o   It helps me being more active and improve my health (more exercise and serious games).
No, I am already very active. Maybe if the information was more personal I would use it for this.

If ALFRED would be on the market, are you willing to buy it and what would be the price that you are ready to pay for such a service? Why?

If ALFRED work well I would buy it. It depends on the price, max € 75 for the phone including the ALFRED apps.

Annex 5: Focus group minutes n°1 (France)
FOCUS GROUP Alfred in Paris
1st Wave - June 2016- Part 1 (29.06.2016)

User 2 and User 5 gave back their smartphones and could provide feedback, answering the different questions but also reacting spontaneously on different topics:

About **the reminder app**.: it has been the more used by one of the user who clearly says that it is **the most useful one.**

Global opinion is that this integrated version of Alfred (end of June 2016) is not ready to be launched at all as it mostly is disappointing. To them, the system **is 10 years old late** and does not lead to any improvement in quality living.

The users note that there is no interest in proposing this tool to unused ICT elders, as it could even be counter-productive. Especially when it comes to the translation issue and the **mix of languages** that Alfred can make when answering the user (for instance it would tell people: '**you want insérer'**, '**you want navigation'**).

Navigation app is not complete enough, as even if you choose to go to a city that is well registered such as Marseille, **you cannot access the detail of the map of the city**. The same problem happens with **the map of Paris**. Users were frustrated when they wanted to ask for an itinerary.

It is also a problem that Alfred does not answer when **it is asked** the **time**, which appears to be an **important functionality** to one of the user.

When being lost Alfred is always referring to **the wrong app** saying to the **user 'insérer' 'montrer' or 'de quelle année parlons nous?'** ('insert', 'show', 'which year are you talking about').

The **reminder app should ring several times**, or at least, ring until it has been shut down.
Still, one of the user notes that when she asked for the precise command 'TV show' when using that app, Alfred was able to even **write down correctly the name of the reminder.**
One of the user noted that the reminder she set for the next day (a friend's birthday) **did not work**. She just noticed it in the written agenda, but by chance and 3 days after.

When using the **'call' app,** users got lost when Alfred is asking the **name of the contact to be called**; users were mixed between their name and the name of the person to call.

Users pointed out a **lack of links** between the apps leading to a lack of consistency in the whole system.

Localisation app also **is dysfunctional**, as it seems that most of the time, Alfred would say 'Voulez-vous connaître le paramètre?' which is a sentence linked to the health app that opens also at that moment.

When asking ''Comment vous sentez-vous?'' (How do you feel) **Alfred is also crashing** as when the user answers the system is saying 'Vous voulez connaître le sentiment?' ('Do you want to know the feeling?).

Both users note that there is a crucial function necessary: **helping the user when he or she is lost.**
Therefore, Alfred should understand the following sentence 'Où suis-je?' (where am I?) 'Je veux rentrer chez moi' (i want to go back home).

User also indicates that Alfred should work immediately **when trying to call someone** (especially if it is an emergency call).

The idea of including an **automatic writing assistant** when sending text message could be useful.

The idea of the **health monitoring app** is **seductive but not working yet**, so the research team asked the user if they already use such tools: one of the users has a connected wristband, and mostly enjoys the *pedometer function*. It would enable her to know if she moved enough in a day, and go for an additional walk if needed.

About games app only of the user is playing on her Smartphone, using candy crush, 94% or playing cards or scrabble for instance.

When asking about the price that users should be ready to pay for such a service, users indicate that usually, apps are not very expensive and **it should not be above 5 euros**. But both of them are **not ready to buy ALFRED** since they have ICT experience and therefore **have access for free to every service that ALFRED provides.**

Other general remarks are made:
'Alfred is too complicated to use for old people',
'The microphone button shall not be pressed any time the user wants to collaborate with Alfred, 'Alfred should react to its name'.
Alfred doesn't recognise the vocabulary that it is supposed to know.

Reminder: When trying to set up a reminder, a user noted that Alfred seems to understand only **indications about minutes and not about hours??** She, therefore asked to set up a reminder in 80 min. Alfred didn't understand and set a reminder 4 minutes later.

Regarding the whole process of the **agenda app**, the user said **that it is too long** when Alfred is asking the year, then the month, then the day.

One of the 2 users was used to use "OK Google".

Annex 6: Focus group minutes n°2 (France)

FOCUS GROUP Alfred
June 2016- Part 2 (01.07.2016)

User 1, User 3 & User 4 filled in the workbook and gave their feedback and contribution regarding their experience during 2 weeks with the smartphones.
They are not used to manipulate the voice command on their own phone.

Reminder app: the system doesn't recognize hours but only minutes. It's relevant for taking medicines but it could be better with an alarm for reminding to take each medicine. They noticed that Alfred doesn't understand "Une minute" (One minute) since "Une" is not pronounced as the number 1. The user had therefore to say the number 1 "Un".

Navigation app: this one is working but the users would like to have a more precise route with the different ways to go there. They cannot enlarge the image. It could be also more interesting for the users to know the itinerary for their daily life as going to the doctor etc.

Battery app and posture app are working very well. The battery app is telling the battery level, including decimals (22,263%)

Call app: they would like to join a real contact.

Group discussion: this one is very interesting in the framework of the community. It can be relevant for getting out. ALFRED can be useful for getting out if the community is working. Even thought they are reluctant toward social networks, they enjoyed this app.

Health monitor: interesting for them to know this information (temperature etc.). One of them already used an application to know his heart rate.

Games app: they liked to play to Sudoku, Mahjong, Bridge and cards.

Microphone app: One of the user underlined that when you change the microphone colour, the small one that we added later was staying blue. Could be confusing.

General remarks :
- The system is working only with an Internet connection. This is not very practical.
- They are willing to pay for an app but it depends on the offer. They will not pay for ALFRED right now. We have to trigger the target group. They emphasized that some similar apps already exist.
- The vocabulary has to be registered on the phone to detect what they're saying. This is a little frustrating. We have to extend it.
- Language issues
- The repetition of "Que voulez-vous faire" ("What do you want to do") is annoying
- The users insisted on the lack of visual indicators

- They prefer icons to lists
- They had to remember to push the microphone before talking to Alfred; difficult at the beginning but got used to it.
- Apps they have found the more useful: Reminder, Help
- Alfred is not working properly when the user is staying in a lively (noisy) environment.

Annex 7: Focus group minutes n°3 (France)

Minutes Focus Group 27.07.2016

ESE gathered users 6, 7, 8 and 9 for a focus group in which ESE team asked them about their use of ALFRED during the two weeks of tests.

TUTORIAL
It didn't recognize « continuer » → Error each time and for each user.
It should be more precise to verbally clearly explain the use of ALFRED as a real guide for the users!

ALARM CLOCK
« Que voulez-vous faire ? » (What do you want to do?) is repeating several times. It proposed games but they were not integrated.
When someone said "Ca va" (I'm fine), ALFRED mixed up with "pas" (steps).

NAVIGATION APP
Geotracking works for users 6 and 7 but not for user 9 (she was on holidays and she has some problems to connect herself with her phone).
 2 ways were proposed for going to the 12th arr. of Paris.
It says also « Google ne comprends pas » when geotracking is not working.
What do you mean by « *Transit* » ???

AGENDA
OK
POSTURE
OK but then they couldn't go back to the main menu since it was blocked. They had to close the PA and restart the app.
BATTERY
It doesn't work anymore! It says « Ok, you want a "navigation".
CREATE AN EVENT
They could create event but it didn't ask the hour. Calendar is blocked on the current month. When an event is created with the voice interaction, it is not registered.
MICROPHONE
OK
CHAT
Ok but if someone says "appel" (a call) instead of "appeler" (verb call), the system mixes up with "rappel" (alarm clock).
HELP
It refers to only one number and says "What do you want to do". Not really a help.
MEETING
It says « You want à Agenda », « dans combien de minutes dois-je vous le rappeler? ». This is as in the Alarm Clock.
SOCIAL GROUPS APP
Users have to launch manually the application to find their groups. It doesn't work with the voice.
HEALTH MONITOR

D8.4 - Piloting and Validation Report III - Associations	Document Version: 1.0	Date: 2016-09-30	Status: For Approval	Page: 82 / 84
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It says « *La paramètre, vous voulez connaître la paramètre* ? » and then error.

USER PROFIL
User 7 cannot see her data. What is the point?
EVENT RATING
« Que voulez-vous faire ? » (What do you want to do?). No further events available.
NEWS
What do you want to do and then error
QUESTIONNAIRE
6 possibilities : sport information etc.
It says « Ok you want à « information ». This is the « culture information »? But nothing happens.
GAMES
No games are implemented.

1)   Did you find ALFRED easy to use?

Regular bugs, sometimes slow to answer, recording time of given information is too long. Too long steps. Mix of the applications. Not enough interactive and the playful side is missing.

2) Did you manage to deal with the market place ?

Users 8 and 9 didn't use it. Users 6 & 7 did it.

3) Did you manage to update the different applications ? Why ?

NO, not needed.

4) What would be your main criticisms toward ALFRED ? Why ?

- Why touch the microphone before speaking?
- Logging on to the Internet each time Alfred is being used can be an issue.
- The emergency call ('HELP') should be linked to a doctor or the emergencies, more than a friend.
- Few 'error' messages.
- No games

5)   Which applications did you use the most and why?

Generally, no application in particular. User 9 had great troubles processing through Alfred.

6)   Did you already use any health monitoring app? If yes, which one ?

User 6 finds pedometer relevant, especially for people experiencing health issues; it's useful to have this information. User 8 has on her IPhone this information and she likes consulting it, it's interesting.

7) Do you usually play games on your smartphone? Which kind?

Users 7 and 9 show appetite for games ; but if User 9 plays Candy Crush or Pokémon Go (etc.) on a smartphone, user 7 plays on computer. User 8 doesn't have time to play.

User 6 does not have time to play games but finds it relevant for people who do.

8)   What do you find most helpful in ALFRED for your daily life?

Users don't find it useful right now, while they are in pretty good shape, it does not interfere with their habits. Still, they may use it later, if their health should break down.

9)   Which app is most interesting for you? Why?

User 9 & 6 finds that the 'navigation app' is the most interesting app, health monitoring app (temperature, etc.) wwould also be great in users' 8 and 9 opinion.

User 7 is more eager to use the 'social groups' app. User 6 liked the phone in itself.

User 8 likes also the chat app for calling directly someone just saying his/her name.

10)   If ALFRED should be on the market, are you willing to buy it?

Users are not ready to buy ALFRED, they don't feel like needing it.

User 6 does not feel like buying such an app, as she is already connected through a digital tablet. Same reaction for user 8. It seems more adapted for people in isolation or in disease prevention.

The system should be simplified.